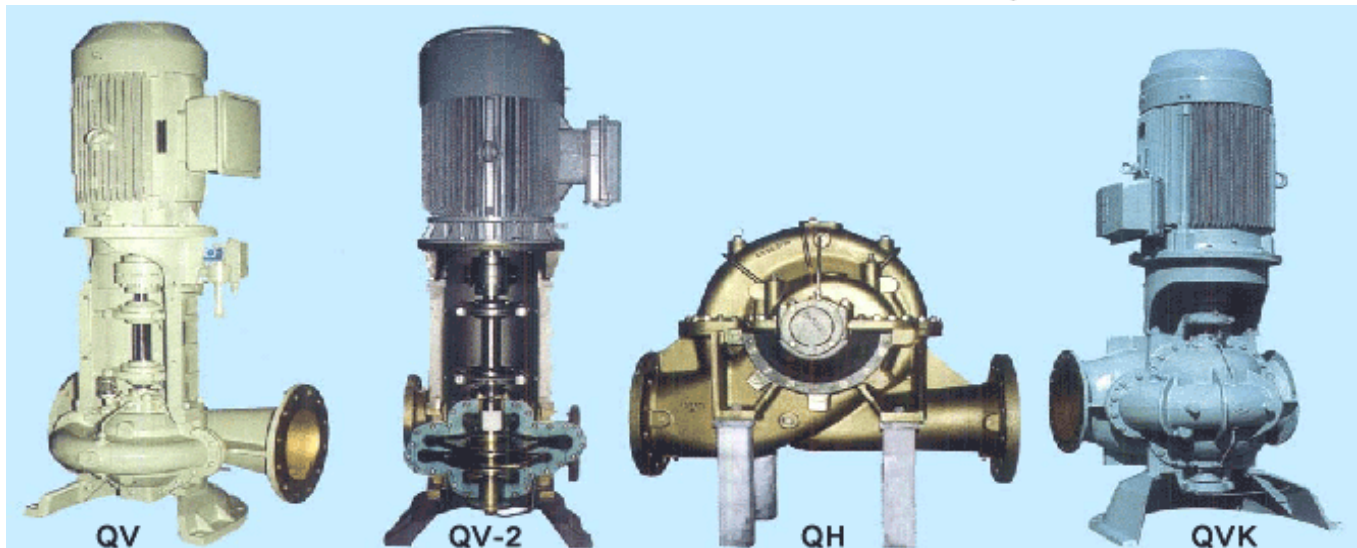


## Centrifugal pumps

Acial split casing type

Capacity: 40...3000m<sup>3</sup>/h  
 Manometric head: max. 160 mWG  
 Connection flanges: DN100...600  
 Static pressure: max. 10 Bar  
 Medium temperature: max. 100°C



### Introduction

Maskinfabriken IRON A/S was founded in 1906 and since then it has manufactured a great variety of pumps covering both the marine and industrial markets.

Through the years the most popular pump type has been the Split Casing which has proven itself in many applications. It is impractical to cover all pump parameters in one brochure, so we have chosen only to describe models designed for fresh water and sea water within the above-mentioned limits.

If an actual pump specification does not correspond to the parameters described in this brochure - being pump medium, capacity, head, temperature, viscosity etc., - the problem can often be solved by altering the Split Casing pump or by choice of another pump type. Notably many Split Casing Pumps have been delivered for static pressure up to 25 Bars, for temperatures of medium up to 180°C or for aggressive process medium.

### Selection of Split Casing Pumps

Page 29-30 of this brochure gives instructions for the selection of the complete pump type No.

Pump part	Application/Material Code			
	Fresh Water		Sea Water	
	F1	F2	S1	S2
Casing	Cast iron GG25	Nodular cast iron GGG40.3	Bronze RG10	Nickel aluminium bronze
Impeller and wear rings	Nickel aluminium bronze G-NiAlBz F60			
Shaft	Stainless steel W. No. 1.4460			

Pump size DN	Capacity m <sup>3</sup> /h	Pump type No.	Max. pressure Bar material code				Page	
			F1	F2	S1	S2		
100	4"	40...100	Q..4/300	8	16	8	12	4
			Q..2-4/300	10	25	10	16	
125	5"	80...150	Q..5/300	8	25	8	12	5
			Q..2-5/300	10	25	10	16	
			Q..2-5/330	10	16	10	16	
150	6"	125...250	Q..6/300	8	25	8	12	6
			Q..6/350	10	16	10	16	
			Q..2-6/330	10	16	10	16	
			Q..2-6/400	16	25	16	25	
200	8"	200...400	Q..8/300	8	25	8	12	7
			Q..8/350	10	16	10	16	
			Q..2-8/350	10	16	10	16	
250	10"	300...600	Q..10/300	8	25	8	12	8
			Q..10/320	10	25	6	10	
			Q..10/350	8	25	8	12	
			Q..10/360	8	25	8	12	
300	12"	500...900	Q..10/360	8	25	8	12	9
			Q..2-10/350	10	16	10	16	
			Q..12/320	10	25	6	10	
			Q..12/350	8	25	8	12	
			Q..12/360	8	25	8	12	
350	14"	700...1300	Q..12/500	10	16	10	16	10
			Q..12/630	10	25	10	16	
			Q..14/320	10	25	6	10	
			Q..14/350	10	16	10	16	
400	16"	1000...1700	Q..14/500	10	16	10	16	11
			Q..14/630	10	25	10	16	
			Q..16/320	10	25	6	10	
			Q..16/350	10	16	10	16	
450	18"	1500...3000	Q..16/500	10	16	10	16	12
			Q..16/630	10	25	10	16	
			Q..18/320	10	25	6	10	
			Q..20/320	10	25	6	10	
500	20"	1500...3000	Q..20/450	10	16	6	16	12
			Q..24/450	10	16	6	16	
600	24"	1500...3000	Q..24/630	10	25	10	16	12
			Q..24/630	10	25	10	16	

**DESCRIPTION**

**Type of Pump**

Horizontally or vertically mounted axial split casing centrifugal pump of single or multi stage design.

**Application**

Fresh and Sea Water applications (see materials) in maritime and industrial service e.g. cooling water, ballast, fire fighting, public water supply, irrigation etc.

**Special Features**

- Easy pump service where connecting pipes, driver and related installations remain untouched.
- Low NPSH-value (good suction capability).
- Robust design with two outboard anti-friction bearings.
- Axially balanced rotating element giving longer bearing life.

**PUMP LAY OUT**

**Impeller dimensioning**

On pages 6... 24 the various sizes of pumps are shown with curves of relevant speeds and at max. impeller diameter (on the conditions given).

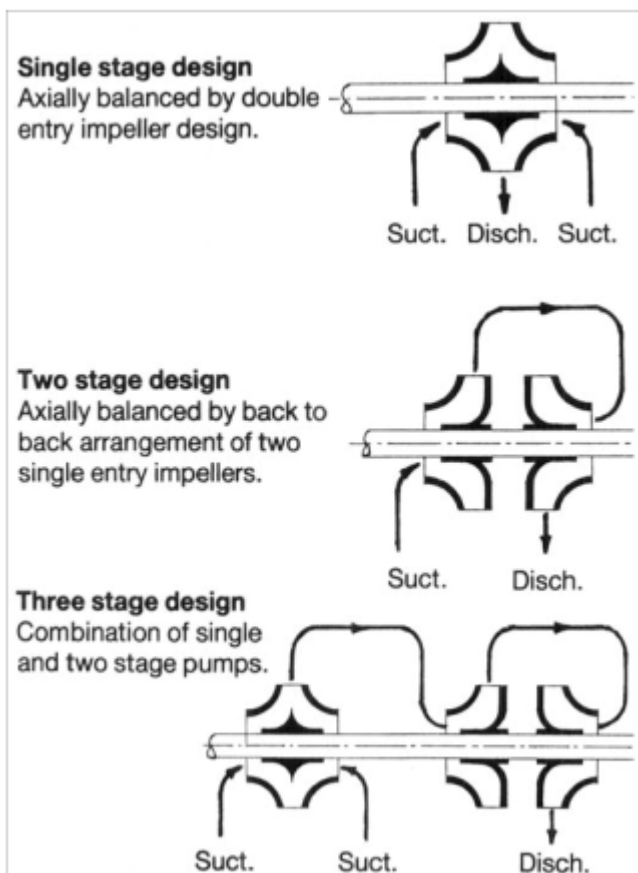
To minimize the power consumption it is of great importance that the duty point(s) of each single pump is defined where the impeller ( with the best efficiency at the duty point) can be specified and the correct diameter can be calculated. The adjustment of the pump to a specific performance (defined capacity and head) is made by reducing the impeller to a defined diameter.

With reasonable accuracy the following formula may be used:

Capacity	(m <sup>3</sup> /h):	$Q2 = Q1 \frac{D2}{D1}$
Head	(mLC):	$H2 = H1 \left(\frac{D2}{D1}\right)^2$
Power	(kW):	$P2 = P1 \left(\frac{D2}{D1}\right)^3$

whereby D1 is the original impeller diameter and D2 the new reduced diameter.

**Hydraulic balancing of split casing centrifugal pumps**



The same formula may be used by replacing the impeller diameters with the pump speed. When the efficiency of the pump at duty point has been defined by using the actual standard pump curve the power consumption (at duty point) can be calculated using the following formula:

$$\text{FRESH WATER: } P_{kW} = \frac{Q \text{ m}^3/\text{h} \times H \text{ mLC}}{3,67 \times \eta \%}$$

$$\text{SEA WATER: } P_{kW} = P_{kW \text{ Fresh Water}} \times \text{Specific weight of the sea water}$$

Before the size of the motor is defined the maximum power consumption of the pump must be taken into account.

## Suction

In order to avoid cavitation it is important that the suction capability of the pump is better than the total suction head of the application.

For this reason the actual standard curve of each pump shows the theoretical or measured NPSH-values while the NPSH-values for the suction pipes system has to be calculated as the difference between the barometric pressure and the geometric and hydraulic resistance together with the partial steam pressure of the water. If the NPSH-value of the pump is less than that of the suction pipe the system will work without cavitation. In practice the NPSH-value of the pump should be a minimum of 1 mtr.W.G less than the system NPSH-value.

As conventional centrifugal pumps are not able to evacuate the air of a suction pipe, it should be taken into account that a pump system, not flooded, must be primed before start-up. In all events caution should be taken not to start-up an empty pump as the shaft seals may be damaged.

## EXPLANATION OF PUMP TYPE NO.

### Example:

**QVP-2-4/300-EA**

#### First letter

Q = axial split casing type

#### Second letter

V = vertical (shaft) mounting.

H = horizontal (shaft) mounting.

#### Third letter, if any

P = priming pump incorporated.

K = vertical pump with the impeller(s) mounted between the bearings.

#### Cipher here, if any

No cipher = single stage pump.

Cipher 2 = two stage pump.

Cipher 3 = three stage pump.

#### Number before the oblique

4 = 4" flanges (DN100)

5 = 5" flanges (DN125)

-  
24 = 24" flanges (DN600)

#### Number after the oblique

Nominal impeller diameter in mm (not the maximum diameter).

#### Letters here, if any

E = built-on manual operated priming ejector.

EA = built-on automatic priming ejector.

PA = built-on separate driven automatic operated priming pump.

## DESIGNS ELEMENTS

### Shaft seal(s)

Pump type QV and QVP are equipped with one mechanical shaft seal while type QH and QVK contain two in number for the through-going shaft.

The seals are of the single seat type with rotating carbon ring and a stationary ceramic seat together with VITON rubber bellows. Spring and other metal parts are made of stainless steel.

Special shaft seals - mechanical types or conventional packing with shaft sleeve - are available upon request.

### Flexible coupling

The built-in flexible coupling between motor and pump shafts is of the three part types like N-Eupex model A. The coupling that is made of cast iron with rubber flexible elements makes it possible to release the rotating element of the pump without loosening the motor or pump mounting.

### Outboard bearings

The pump shaft is equipped with two ball bearings make SKF/FAG with external grease nipples. The bearings are designed at nominal speed for min. 25.000 hours life time.

### Internal bearing bush

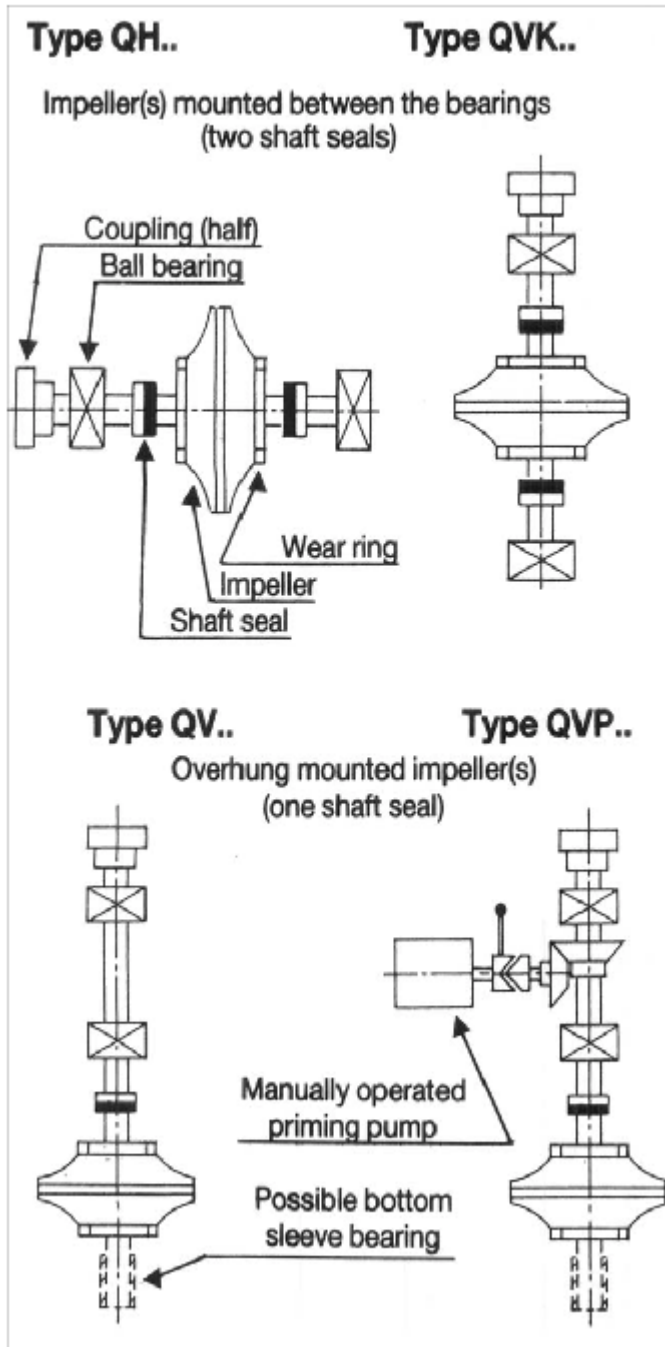
The pump types QV and QVP are for pumping head above 60 mWG provided with an internal medium lubricated synthetic sleeve bearing.

### Electric motor

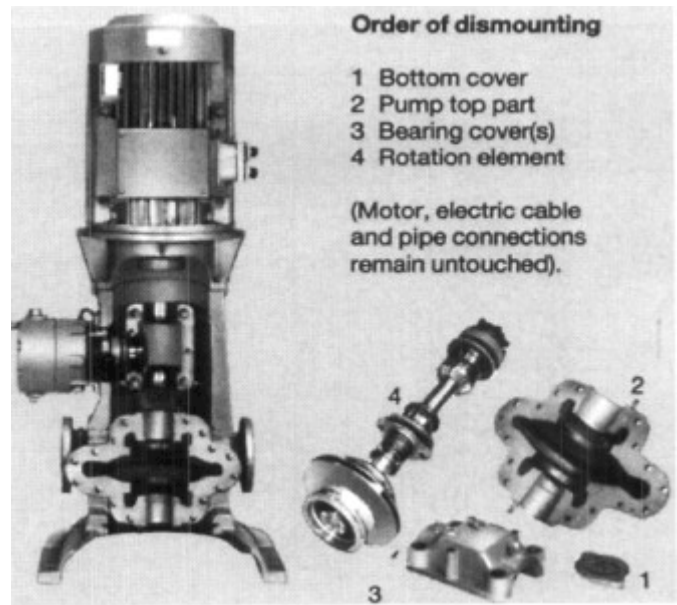
The pump design incorporates IEC standard motor from size 132 as the smallest on the 4" dia. pumps to size 400 as the largest on the 24" dia. pumps.

The motors are delivered according to the required power supply usually with IP54 protection and cooling according to IC 0141. Unless otherwise specified the motor power will usually cover the maximum pump power consumption.

Arrangement of bearings and shaft seals in various types of split casing centrifugal pumps



Dismounting of Split Casing Centrifugal Pumps



**TEST**

**Pressure test**

After machining the casing parts are assembled and tested with water at a pressure of minimum 1.5 times the highest pump pressure or 8 Bar if greater. According to customer's wishes the test may be witnessed by himself or his representative. Unless otherwise specified the connection flanges are drilled acc. to PN10 for maximum discharge pressure less than 10 bar and acc. to Pn16 above 10 bar.

**Capacity test**

Before delivery the complete assembled pump and its driver are tested for capacity, head and power consumption acc. to DIN 1944 class II.

The test is made at 5-8 different duty points between 0 and 125-150% capacity enabling the user to draw the complete performance curve.

The pump efficiency is calculated at relevant duty points. According to customer's wishes the test may be witnessed by himself or his representative.

**Additional tests**

Upon request the following additional tests can be arranged for:

- Pressure test acc. to special standard.
- Capacity test acc. to special standard.
- Long run test (the time is specified by customer).
- NPSH-test.
- Sound pressure test (not standardized).
- Overspeed test (of impeller).
- Dismounting after test.
- Paint thickness measurement.

## **PAINTING**

### **Factory standard painting**

The surface treatment of the approved pump is as standard:

- Carefully cleaned
- 2 x primer app. 40 my ALKYD total.
- 2 x covering paint app. 40 my ALKYD total, grey (RAL 7011).

### **Special surface treatment**

Acc. to customer's wishes the pump can be surface treated - internally as well as externally - according to specifications.

## **DOKUMENTATION**

### **Test certificates**

The results of the pressure, capacity and other testes are certified by the factory and the documents are delivered with the pumps together with other ordered certificates.

### **Manuals**

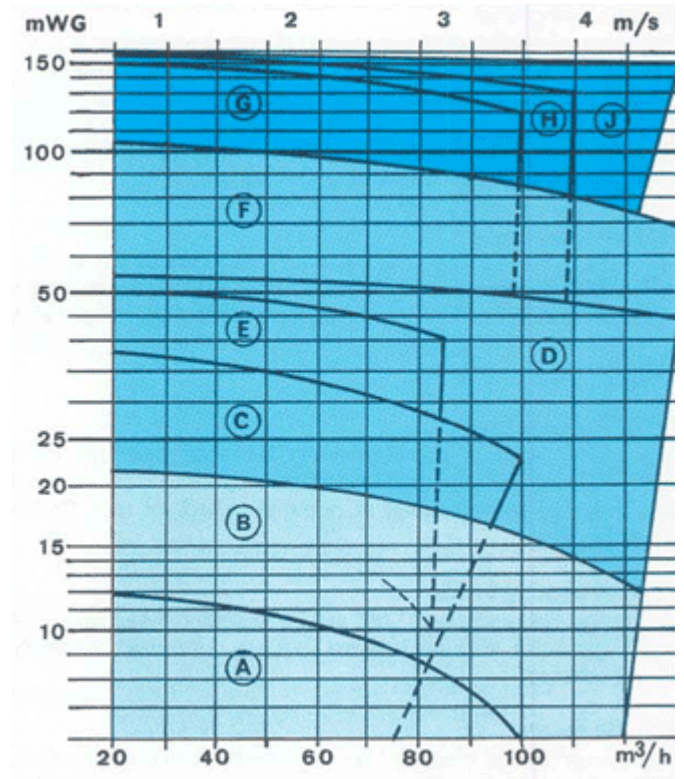
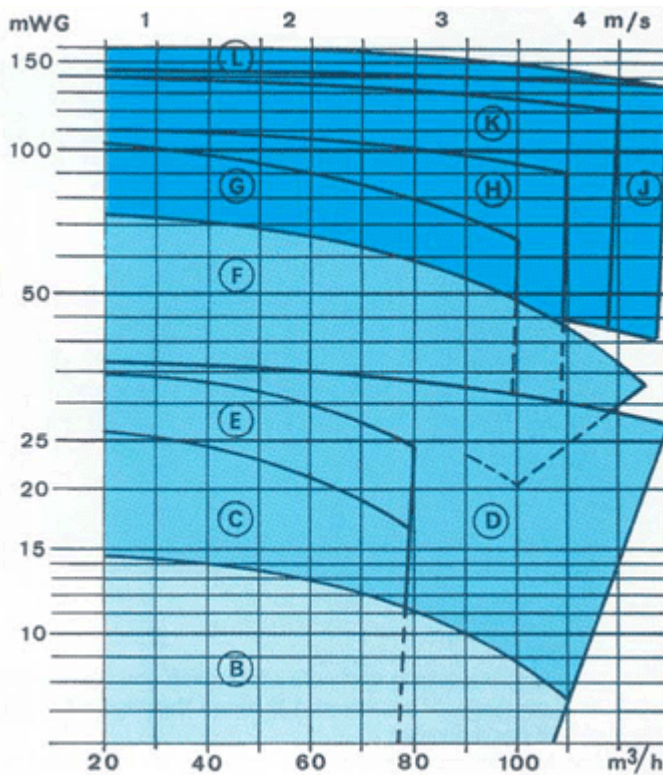
As build manuals covering sectional drawing, spare parts list and instructions for mounting, operation and repair are supplied in three copies.

# Capacity: 40...100 m<sup>3</sup>/h

DN 100 (4" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz							Data for continuous duty at 60 Hz						
							Max. allowed power transmission kW							Max. allowed power transmission kW		
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH		
A	Q..4/300	2017							900	03.91	58		58	58		
B	Q..4/300	2017	1000	01.91	64		64	64	1200	04.91	77		77	77		
C	Q..4/300	3200	1500	51.80	96	96	96	96	1800	52.80	115	115	115	115		
D	Q..4/300	2017	1500	05.72	96	96	96	96	1800	07.72	115	115	115	115		
E	Q..4/300	3400	1500	02.78	96	96	96	96	1800	03.78	115	115	115	115		
F	Q..2-4/300	2950 H+V	1500	19.76	88*	56*		67	1800	01.76	105*	66*		80		
G	Q..4/300	3427	3000	31.76	130*	130*	130	130	3600	20.81	130*		130	130		
H	Q..4/300	3200	3000	06.81	130*	130*	130	130	3600	07.81	130*		130	130		
J	Q..4/300	2017	3000	44.80	130*	130*	130	130	3600	45.80	130*		130	130		
K	Q..4/300	3400	3000	09.81	130*	130*	130	130								
L	Q..4/300	2950 H+V	3000	02.91	130*	110*		130								

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	Min. spalt mm
2017	340 200	17 12	0.082 0.019	8
2950 H+V	330 250	2×12 2×10	0.109 0.051	9
3200	300 200	12 9	0.043 0.015	4
3400	340 200	15 12	0.072 0.019	4
3427	300 200	17 15	0.064 0.024	4

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data					Pump casing data			
	Bearing type C3		Mech. seal		Coup- ling end mm <sup>o</sup>	Material Gauge	Max. test pressure Bar	Weight* kg	
DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>	mm					
QV-4/300	6309	22210	45		36	GG25	9	12	89
QVP-4/300	6308	N210	42		36	GGG40	9	18	89
QVK-4/300	21309	6407	45	42	36	RG5	9	12	103
QH-4/300	6309	6407	48	42	36	NiAlBz	9	12	93
QV-2-4/300	3309	22210	42		36	GG25	12	16	146
QVP-2-4/300	3308	22210	42		36	GGG40	12	37.5	146
QH-2-4/300	22508	3307	35	35	32	RG5	8	16	160
						NiAlBz	8	25	139

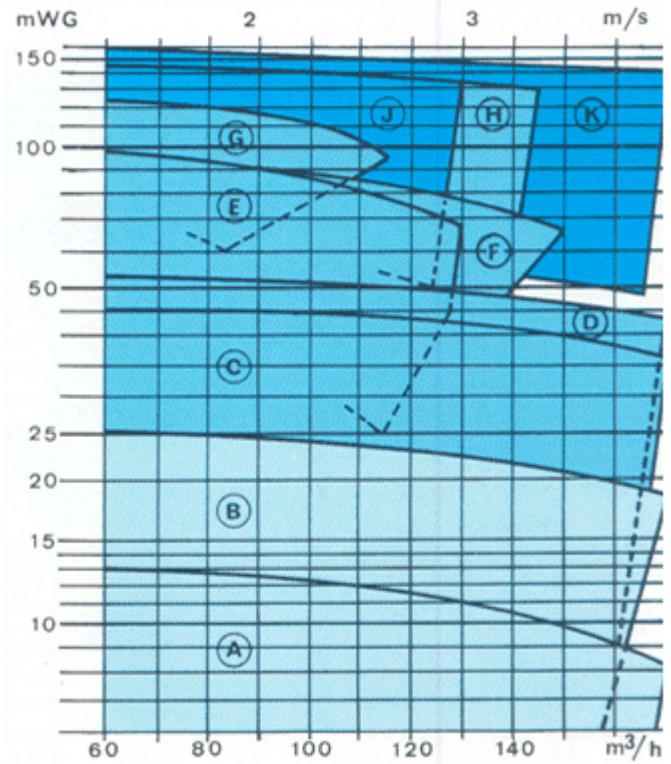
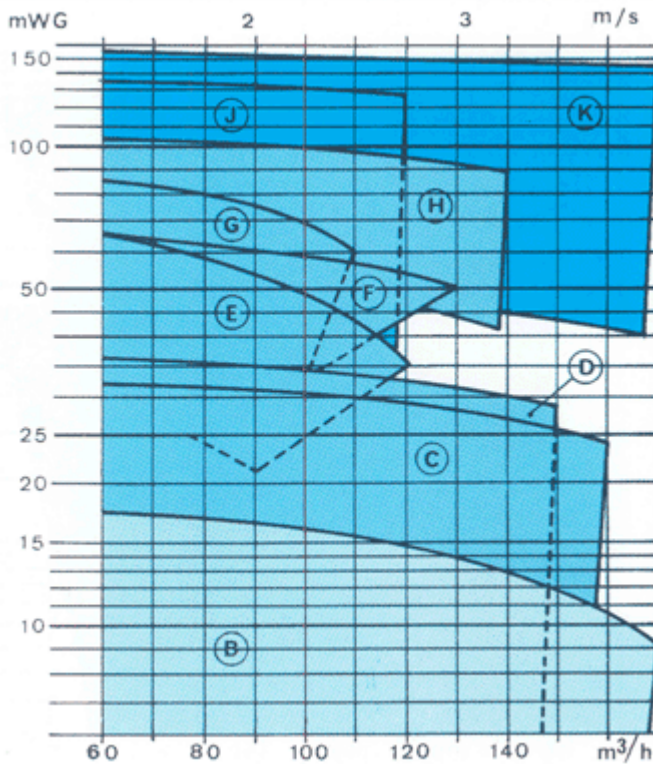
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 80...150 m<sup>3</sup>/h

DN 125 (5" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
			RpM	Curve No.	Max. allowed power transmission kW				o/min.	Curve No.	Max. allowed power transmission kW			
					QV	QVP	QVK	QH			QV	QVP	QVK	QH
A	Q..5/300	3442							900	08.91	58		58	58
B	Q..5/300	3517	1000	07.91	64		64	64	1200	06.91	77		77	77
C	Q..5/300	1550	1500	10.72	96	96	96	96	1800	09.72	115	115	115	115
D	Q..5/300	2017	1500	06.72	96	96	96	96	1800	08.72	115	115	115	115
E	Q..2-5/300	2950 H+V	1500	19.76	88	56		67	1800	01.76	105*	66*		80
F	Q..2-5/300	3343 H+V	1500	10.76	96	96	96	67	1800	12.76	115*	115*	115	80
G	Q..2-5/300	3481 +82-6	1500	55.78	96*	96*	96	67	1800	56.78	115*	115*	115	80
H	Q..2-5/300	3481 +82-11	1500	13.81	96*	96*	96	67	1800	15.83	115*	115*	115	80
J	Q..5/300	3400	3000	04.78	130*	130*	130	130	3600	05.78	130*		130	130
K	Q..5/300	2017	3000	29.76	130*	130*	130	130	3600	32.76	130*		130	130

\*Valid for built-in bottom sleeve bearing only



## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	
1550	305	14	0.053	12
	220	12	0.023	
2017	340	17	0.082	8
	200	12	0.019	
2950 H+V	330	2×12	0.109	9
	250	2×10	0.051	
3343 H+V	345	2×17	0.169	9
	300	2×15	0.115	
3400	340	15	0.072	4
	200	12	0.019	
3442	345	15	0.074	10
	220	11	0.022	
3481 + 3482 - 6	390	2×22	0.254	6
	300	2×17	0.125	
3481 + 3482 - 11	400	2×22	0.293	11
	300	2×17	0.125	
3517	345	16	0.079	8
	240	13	0.030	

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data				Coup- ling end mm <sup>o</sup>	Pump casing data			Weight* kg
	Bearing type C3		Mech. seal			Material	Gauge mm	Max. test pressure Bar	
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-5/300	6309	22210	45		36	GG25	9	12	98
QVP-5/300	6308	N210	42		36	GGG40	9	18	98
QVK-5/300	21309	6407	45	42	36	RG5	9	16	112
QH-5/300	6309	6407	48	42	36	NiAlBz	9	18	100
						GGG40	14	37.5	130
QV-2-5/300	3309	22210	42		36	GG25	12	16	146
QVP-2-5/300	3308	22210	42		36	GGG40	12	40	146
QH-2-5/300	22508	3307	35	35	32	RG5	8	16	183
						NiAlBz	8	25	159
QV-2-5/330	3309	22210	48		36	GG25	12	16	240
QVP-2-5/330	3308	N210	48		36	GGG40	12	25	240
QVK-2-5/330	3309	6407	48	42	36	RG5	12	16	266
QH-2-5/330	3309	6407	48	35	36	NiAlBz	12	25	231

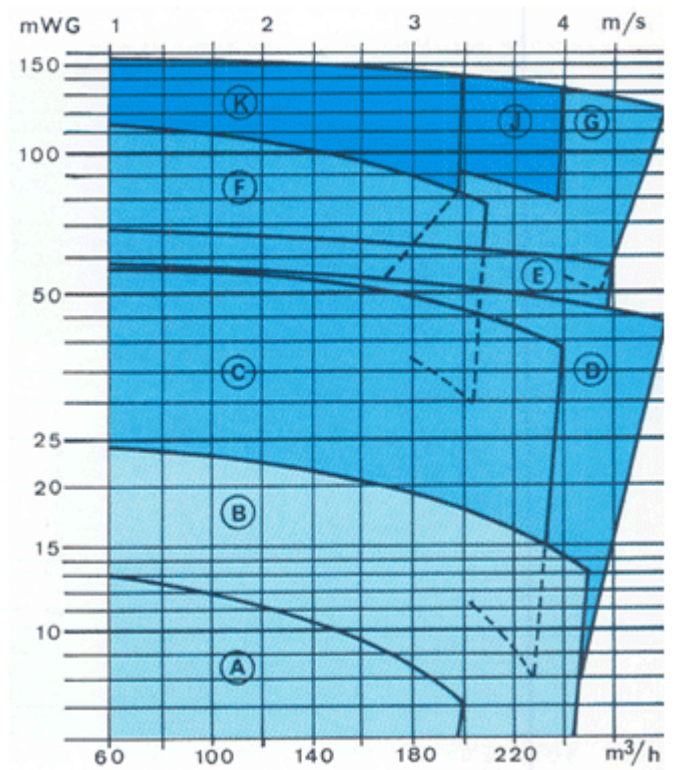
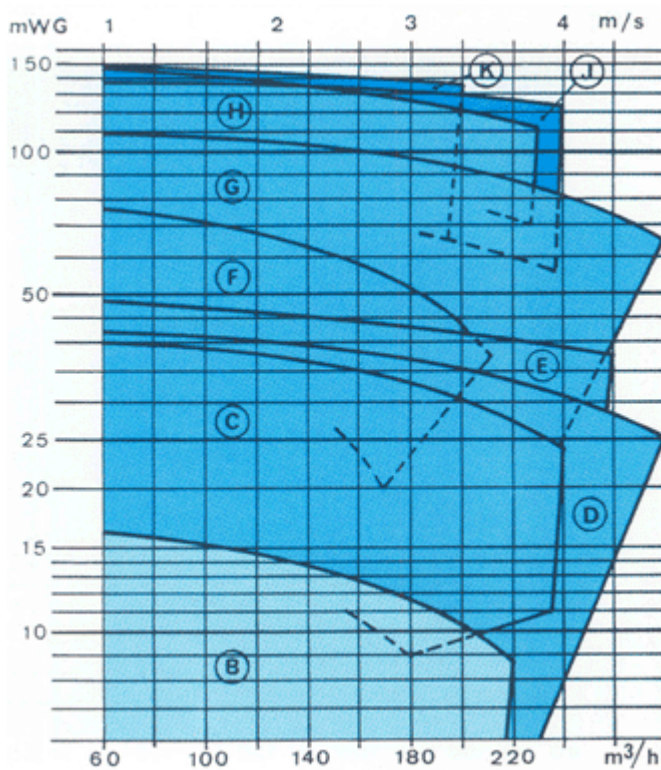
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 125...250 m<sup>3</sup>/h

DN 150 (6" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
					Max. allowed power transmission kW						Max. allowed power transmission kW			
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH
A	Q..6/300	3442							900	08.91	58		58	58
B	Q..6/300	3442	1000	17.87	64		64	64	1200	06.91	77		77	77
C	Q..6/300	3517	1500	01.77	96	96	96	96	1800	10.79	115	115	115	115
D	Q..6/300	3442	1500	02.77	96	96	96	96	1800	10.91	115	115	115	115
E	Q..6/300	3767	1500	11.91			260	445	1800	12.91			310	535
F	Q..2-6/330	3443 H+V	1500	54.78	96*	96*	96	67	1800	13.76	115*	115*	96	80
G	Q..2-6/400	4120+21	1500	30.86	340			230	1800	13.91	410*			275
H	Q..2-6/350	37676+3811+12	1500	14.91				260						
J	Q..6/300	3517	3000	06.80	130*	130*	130	130	3600	43.79	130*		130	130
K	Q..6/300	2017	3000	29.76	130*	130*	130	130	3600	32.76	130*		130	130

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	
2017	340	17	0.082	8
	200	12	0.019	
3442	345	15	0.074	10
	220	11	0.022	
3443 H+V	355	2×14	0.147	14
	280	2×12	0.077	
3517	345	16	0.079	8
	240	13	0.030	
3767	400	27	0.180	6
	350	25	0.124	
3767+ 3811+3812	400	3×26	0.514	6
	300	3×21	0.229	
4120+ 4121	400	2×23	0.300	16
	300	2×19	0.138	

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data				Coup-ling end mm <sup>o</sup>	Pump casing data			Weight* kg
	Bearing type C3		Mech. seal			Material	Gauge mm	Max. test pressure Bar	
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-6/300	6309	22210	45		36	GG25	9	12	98
QVP-6/300	6308	N210	42		36	GGG40	9	18	98
QVK-6/300	21309	6407	45	42	36	RG5	9	16	114
QH-6/300	6309	6407	48	42	36	NiAlBz	9	18	102
						GGG40	14	37.5	130
QV-2-6/330	3309	22210	48		36	GG25	12	16	240
QVP-2-6/330	3308	N210	48		36	GGG40	12	25	240
QVK-2-6/330	3309	6407	48	42	36	RG5	12	16	266
QH-2-6/330	3309	6407	48	35	36	NiAlBz	12	25	231
QVK-6/350	6311	3311	60	60	50	GG25	12	16	190
QH-6/350	22313	22313	70	70	60	GGG40	12	25	190
						RG5	12	16	227
						NiAlBz	12	25	197
QV-2-6/400	6312	3311	60	60	50	GG25	12	24	275
QH-2-6/400	21311	21311	60	60	48	GGG40	12	37.5	275
						RG5	12	24	329
						NiAlBz	12	37.5	286
QVK-3-6/350	6311	3311	60	60	50	GG25	20	16	543
QH-3-6/350	6311	3311	60	60	50	GGG40	20	37.5	543
						RG5	20	16	649
						NiAlBz	20	37.5	564

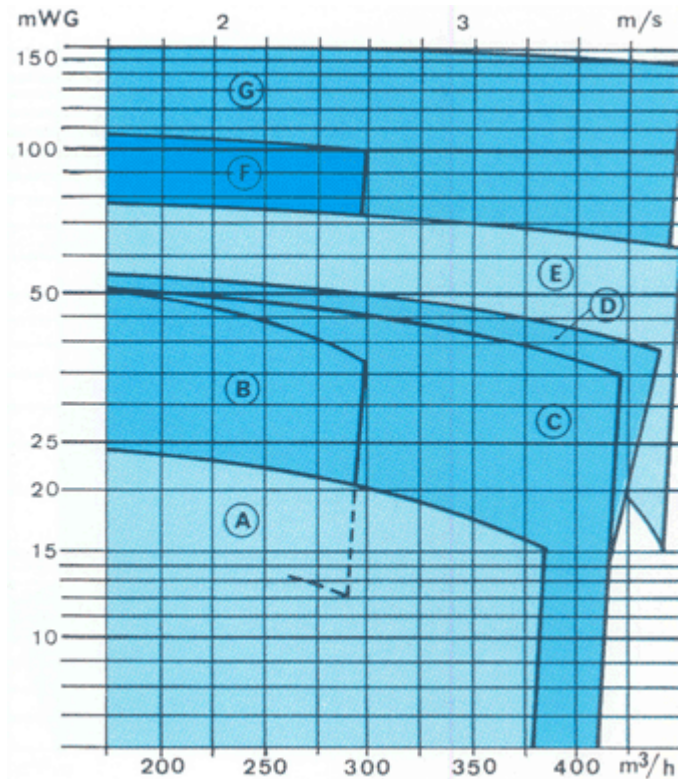
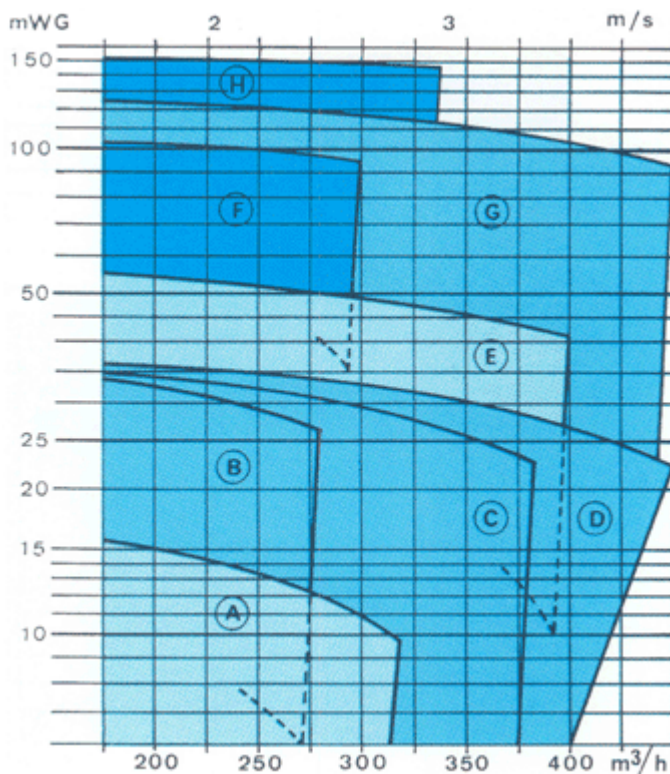
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 200...400 m<sup>3</sup>/h

DN 200 (8" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH
A	Q..8/300	3404	1000	16.91	64		64	64	1200	04.76	77		77	77
B	Q..8/300	3442	1500	16.81	96	96	96	96	1800	13.78	115	115	115	115
C	Q..8/300	3849	1500	10.87	96	96	96	96	1800	11.87	115	115	115	115
D	Q..8/300	3404	1500	06.76	96	96	96	96	1800	08.76	115	115	115	115
E	Q..2-8/350	3720 H+V	1000	66.91	265			230	1200	65.91	320*			275
F	Q..8/300	3442	3000	14.78	130*	130*	130	130	3600	18.91	130*		130	130
G	Q..2-8/350	3359 H+V	1500	52.76	400*			340	1800	11.97	480*			410
H	Q..8/350	3768	3000	19.91				515						880

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	
3359 H+V	420 280	2×32 2×26	0.470 0.171	27
3404	340 220	16 12	0.077 0.024	15
3442	345 220	15 11	0.074 0.022	10
3720 H+V	420 300	2×32 2×27	0.463 0.198	37
3768	410 340	37 33	0.259 0.160	9
3849	370 225	18 13	0.103 0.027	13

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data				Coup-ling end mm <sup>o</sup>	Pump casing data			Weight* kg
	Bearing type C3		Mech. seal			Material	Gauge mm	Max. test pressure Bar	
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-8/300	6309	22210	45		36	GG25	8	12	127
QVP-8/300	6308	N210	42		36	GGG40	8	18	127
QVK-8/300	21309	6407	45	42	36	RG5	8	12	159
QH-8/300	6309	6407	48	42	36	NiAlBz GGG40	8 13	18 37.5	140 206
QVK-8/350	6311	3311	60	60	50	GG25	14	16	282
QH-8/350	22313	22313	70	70	60	GGG40 RG5 NiAlBz	14 14 14	25 16 25	282 338 294
QV-2-8/350	3313	N214	70		60	GG25	18	16	485
QH-2-8/350	3312	3312	70	70	55	GGG40 RG5 NiAlBz	18 18 18	25 16 25	485 531 462

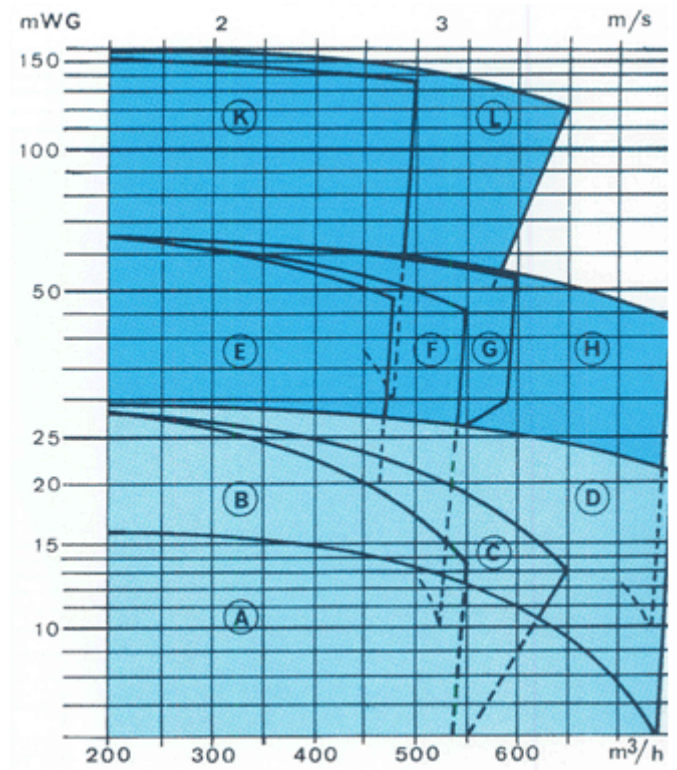
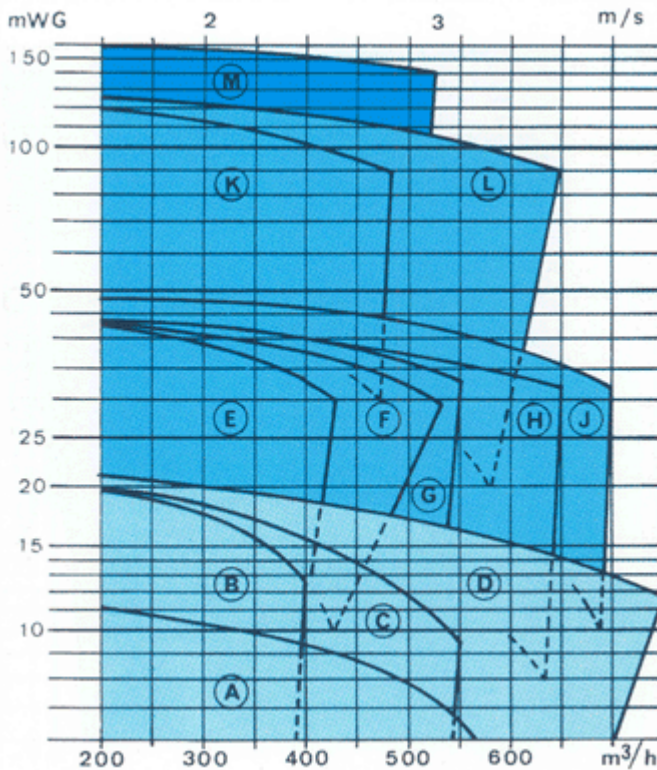
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 300...600 m<sup>3</sup>/h

DN 250 (10" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
			RpM	Curve No.	Max. allowed power transmission kW				RpM	Curve No.	Max. allowed power transmission kW			
					QV	QVP	QVK	QH			QV	QVP	QVK	QH
A	Q..10/320	3390	750	20.91	170		145	130	900	21.91	205		175	155
B	Q..10/300	3505	1000	23.91	64		64	64	1200	08.81	77		77	77
C	Q..10/320	3389	1000	24.91	230		190	170	1200	25.91	275		230	205
D	Q..10/320	3390	1000	14.87	230		190	170	1200	22.91	275		230	205
E	Q..10/300	3849	1500	13.87	96	96	96	96	1800	26.91	115	115	115	115
F	Q..10/300	3504	1500	06.78	96	96	96	96	1800	07.78	115	115	115	115
G	Q..10/300	3505	1500	15.79	96	96	96	96	1800	05.80	115	115	115	115
H	Q..10/320	3389	1500	47.76	340		290	260	1800	21.76	410		350	310
J	Q..10/360	4281	1500	01.90	96	96	96	96						
K	Q..2-10/350	3359 H+V	1500	52.76	400*			340	1800	11.79	480*			410
L	Q..2-10/350	3720 H+V	1500	27.91	400*			340	1800	28.91	480*			410
M	Q..10/350	3765	3000	29.91				515	880					

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	
3359 H+V	420 280	2×32 2×26	0.470 0.171	27
3389	370 270	30 26	0.171 0.080	22
3390	375 270	37 33	0.217 0.100	32
3504	360 260	22 18	0.116 0.050	17
3505	400 260	23 18	0.153 0.049	17
3720 H+V	420 300	2×32 2×27	0.463 0.198	37
3765	410 340	38 34	0.266 0.165	10
3849	370 225	18 13	0.103 0.027	13
4281	370 270	28 24	0.160 0.072	21

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data				Coup-ling end mm <sup>o</sup>	Pump casing data			Weight* kg
	Bearing type C3		Mech. seal			Material	Gauge mm	Max. test pressure Bar	
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-10/300	6309	22210	45		36	GG25	9	12	150
QVP-10/300	6308	N210	42		36	GGG40	9	18	150
QVK-10/300	21309	6407	45	42	36	RG5	9	12	191
QH-10/300	6309	6407	48	42	36	NiAlBz	9	18	161
						GGG40	15	37.5	240
QV-10/320	6312	22213	60		55	GG25	15	16	343
QVK-10/320	21311	21311	60	60	55	GGG40	15	37.5	343
QH-10/320	6411	6411	60	60	50	RG5	10	10	327
						NiAlBz	10	16	284
QVK-10/350	6311	3311	60	60	50	GG25	14	16	334
QH-10/350	22313	22313	70	70	60	GGG40	14	25	334
						RG5	14	16	400
						NiAlBz	14	25	347
QV-10/360	6309	22210	45		36	GG25	14	12	197
QVP-10/360	6308	N210	45		36	GGG40	14	37.5	197
QVK-10/360	6309	6407	45	42	36	RG5	9	12	220
QH-10/360	6309	6407	48	42	36	NiAlBz	9	18	193
QV-2-10/350	3313	N214	70		60	GG25	18	16	485
QH-2-10/350	3312	3312	70	70	55	GGG40	18	25	485
						RG5	18	16	578
						NiAlBz	18	25	503

\*Weight of the complete pump is indicated on page 26 and 29.

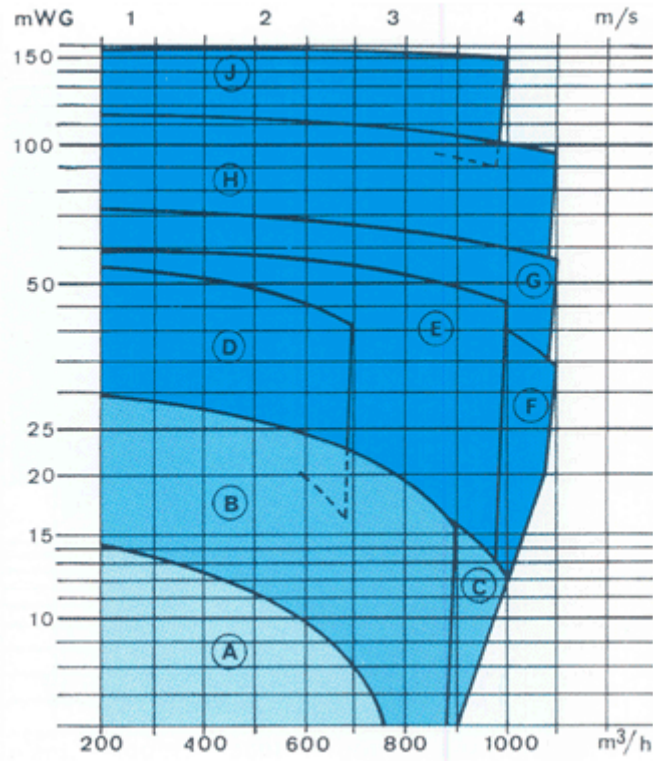
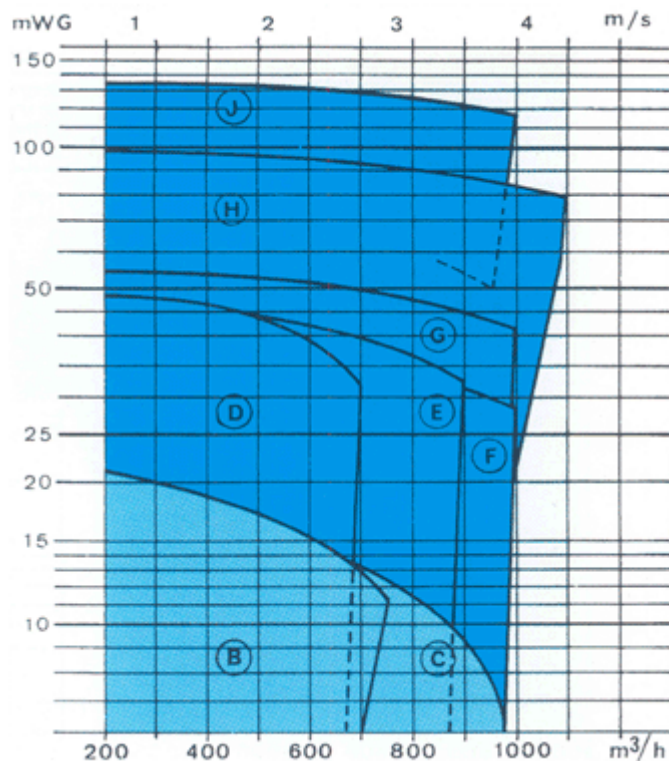


# Capacity: 500...900 m<sup>3</sup>/h

DN 300 (12" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz											
			Max. allowed power transmission kW						Max. allowed power transmission kW											
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH						
A	Q..12/320	3031	900	30.91	205															
B	Q..12/320	3390	1200	22.91	273															
C	Q..12/320	3031	1200	01.87	273															
D	Q..12/360	4281	1800	32.91	115															
E	Q..12/320	3390	1800	33.91	410															
F	Q..12/320	3031	1800	35.91	410															
G	Q..12/350	3831	1800	37.91	480*															
H	Q..12/500	4116	1800	38.91																
J	Q..12/630	3830	1800	64.91																

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	
3031	368	30	0.169	24
	270	25	0.077	
3390	370	37	0.217	32
	270	33	0.100	
3830	650	114	2.007	10
	500	100	1.039	
3831	450	38	0.321	20
	350	33	0.170	
4116	560	76	0.993	11
	350	63	0.319	
4281	370	28	0.160	21
	270	24	0.074	

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data					Pump casing data			
	Bearing type C3		Mech. seal		Coup-ling end mm <sup>o</sup>	Material	Gauge mm	Max. test pressure Bar	Weight* kg
DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>						
QV-12/320	6312	22213	60		55	GG25	15	16	368
QVK-12/320	21311	21311	60	60	55	GGG40	15	37.5	368
QH-12/320	6411	6411	60	60	50	RG5	10	10	348
						NiAlBz	10	16	303
QV-12/350	6313	N214	60		60	GG25	15	12	486
QH-12/350	3312	3312	70	70	55	GGG40	15	37.5	486
						RG5	15	12	547
						NiAlBz	15	18	476
QV-12/360	6309	22210	45		36	GG25	14	12	197
QVK-12/360	6309	6407	45	42	36	GGG40	14	37.5	197
QH-12/360	6309	6407	48	42	36	RG5	9	12	220
						NiAlBz	9	18	193
QVK-12/500	7311	22311	60	60	48	GG25	14	16	712
QH-12/500	7311	22311	60	60	48	GGG40	14	25	712
						RG5	14	16	850
						NiAlBz	14	25	739
QH-12/630	22320	22320	110	110	95	GG25	16	16	927
						GGG40	16	37.5	927
						RG5	16	16	1107
						NiAlBz	16	25	963

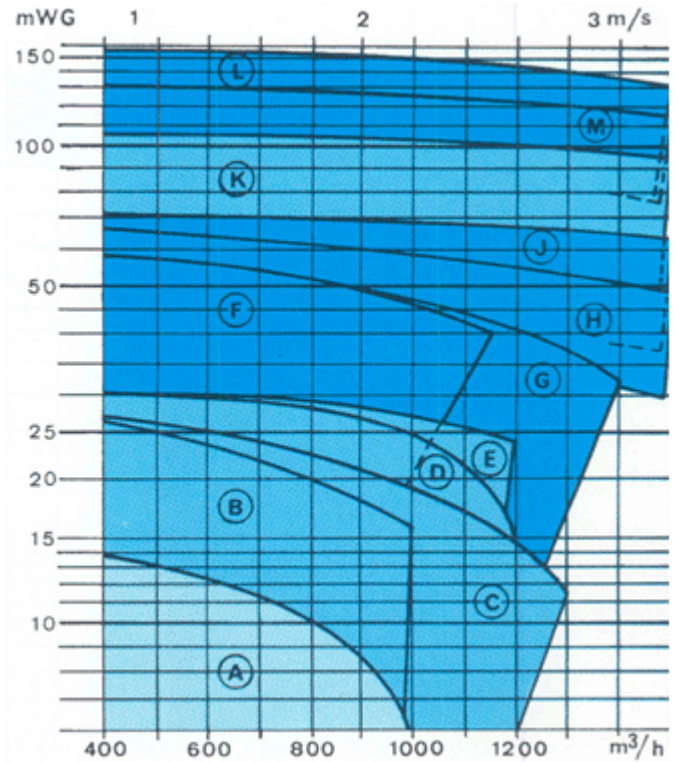
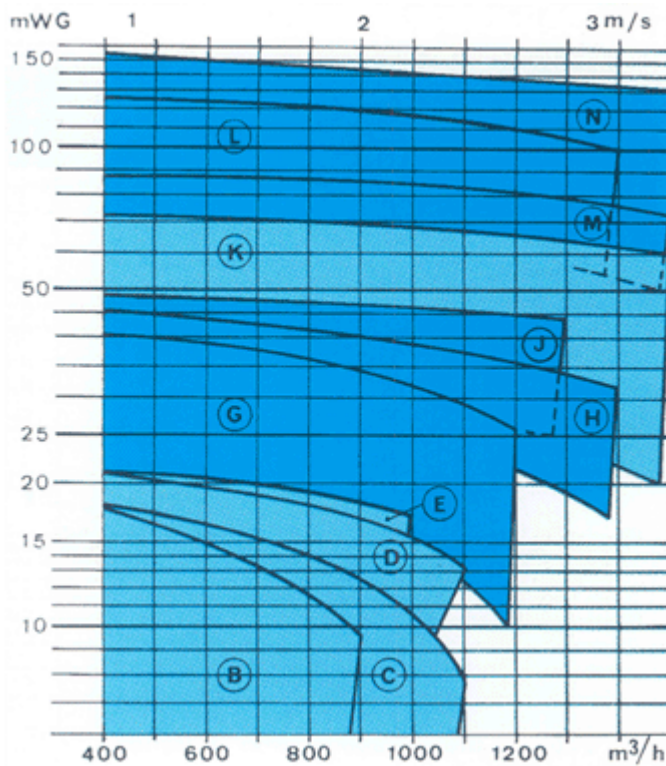
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 700...1300 m<sup>3</sup>/h

DN 350 (14" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
			Max. allowed power transmission kW		Max. allowed power transmission kW				Max. allowed power transmission kW		Max. allowed power transmission kW			
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH
A	Q..14/320	3401							900	39.91	240		175	155
B	Q..14/320	3101	1000	43.91	270		190	170	1200	57.80	320		230	205
C	Q..14/320	3401	1000	40.91	270		190	170	1200	37.80	320		230	205
D	Q..14/320	3773	1000	04.82	270		190	170	1200	05.82	320		230	205
E	Q..14/350	3401	1000	29.80	170			170	1200	60.76	205			205
F	Q..14/320	3390							1800	48.76	480		350	310
G	Q..14/320	3101	1500	58.80	400		190	260	1800	44.76	480		350	310
H	Q..14/320	3401	1500	38.80	400		190	260	1800	41.91	480*		350	310
J	Q..14/350	3401	1500	67.78	400			260	1800	42.91	480*			310
K	Q..14/630	3687	1000	04.80				1175	1200	55.79				1410
L	Q..14/630	3829	1500	40.86				1765	1800	44.91				2120
M	Q..14/500	4061	1500	06.86			705	705	1800	45.91			850	850
N	Q..14/500	4265	1500	46.91			705	705						

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			
	Diameter Max. mm Min. mm	Weight raw NiAlBz kg	Moment of Inertia kgm <sup>2</sup>	Min. spalt mm
3101	400 270	39 37	0.260 0.098	30
3390	370 270	37 33	0.217 0.100	32
3401	450 310	43 33	0.363 0.132	29
3687	660 500	108 91	1.960 0.943	30
3773	380 310	31 28	0.187 0.110	44
3829	630 500	113 100	1.869 1.051	15
4061	500 450	90 86	0.938 0.722	22
4265	650 600	100 94	1.760 1.412	15

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

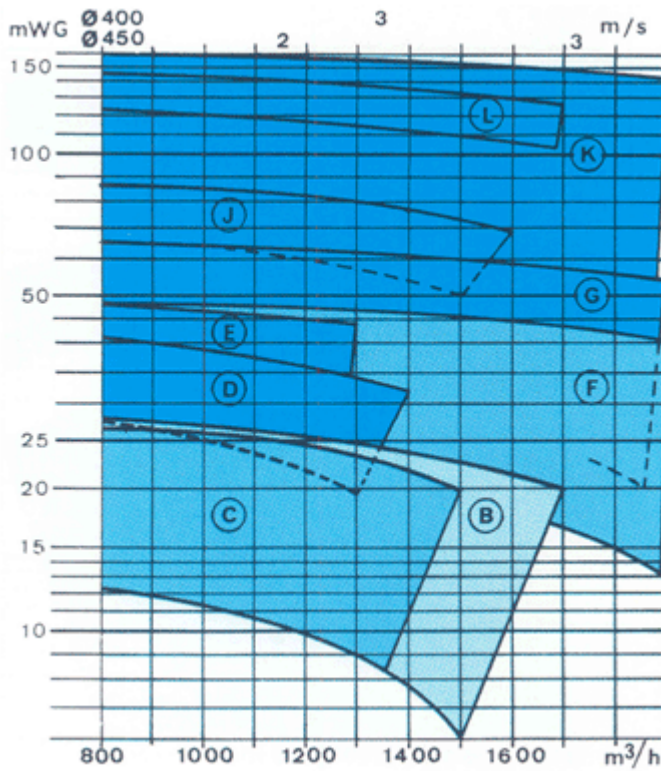
Complete pump type No.	Shaft data					Pump casing data			
	Bearing type C3		Mech. seal		Coup-ling end mm <sup>o</sup>	Material	Gauge mm	Max. test pressure Bar	Weight* kg
DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>						
QV-14/320	6312	22213	60		55	GG25	15	16	364
QVK-14/320	21311	21311	60	60	55	GGG40	15	37.5	364
QH-14/320	6411	6411	60	60	50	RG5	10	10	416
						NiAlBz	10	16	362
QV-14/350	6313	N214	60		60	GG25	15	16	552
QH-14/350	6311	21311	60	60	50	GGG40	15	25	552
						RG5	15	15	659
						NiAlBz	15	25	593
QVK-14/500	7315	2215	80	80	70	GG25	20	16	1330
QH-14/500	22215	22215	80	80	70	GGG40	20	25	1330
						RG5	20	15	1590
						NiAlBz	20	25	1385
QH-14/630	22320	22320	Stuff.	box	95	GG25	16	16	927
						GGG40	16	37.5	927
						RG5	16	16	1107
						NiAlBz	16	25	963

\*Weight of the complete pump is indicated on page 26 and 29.

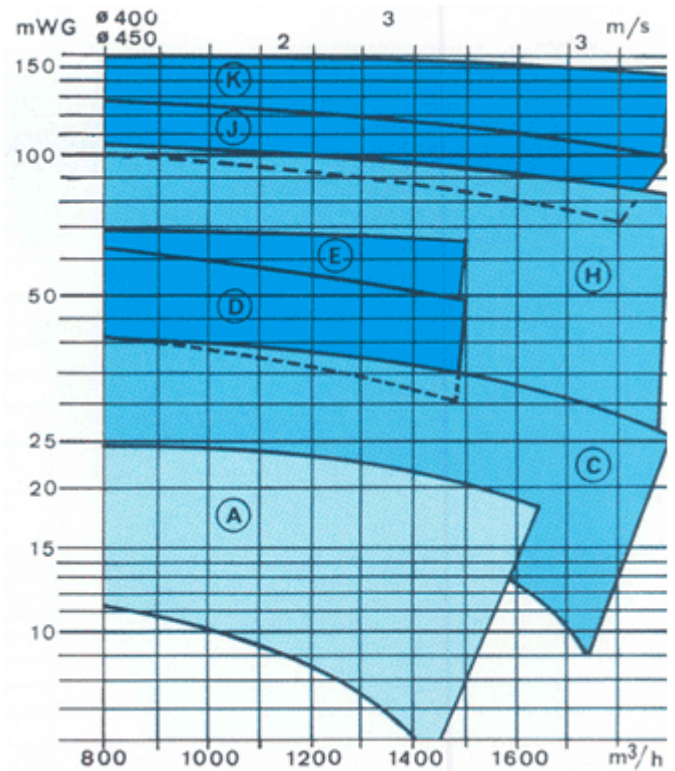
# Capacity: 1000...1700 m<sup>3</sup>/h

DN 400/450 (16"/18" dia) Flange connections

## 50 Hz power supply



## 60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
					Max. allowed power transmission kW						Max. allowed power transmission kW			
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH
A	Q..18/320	3290						720	47.91	170		215	340	
B	Q..18/320	3290	750	48.91	170		220	350						
C	Q..18/320	3860	1000	49.91	230		300	470	1200	15.87	275		355	565
D	Q..16/320	3401	1500	38.80	400		290	260	1800	41.91	480		350	310
E	Q..16/350	3401	1500	67.78	400			260	1800	42.91	480*			310
F	Q..18/320	3290	1000	50.80	230		445	470						
G	Q..18/320	3860	1500	50.91	340*		445	705						
H	Q..16/630	3687							1200	55.79				1410
J	Q..16/500	4061	1500	06.86			705	705	1800	45.91			850	850
K	Q..16/630	3687	1500	56.79				1765	1800	57.79				2115
L	Q..16/500	4265	1500	46.91			705	705						

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			
	Diameter	Weight raw	Moment of	Min. spalt mm
	Max. mm Min. mm	NiAlBz kg	Inertia kgm <sup>2</sup>	
3290	600 400	100 77	1.500 0.510	33
3401	450 310	43 33	0.363 0.132	29
3687	660 500	108 91	1.960 0.943	30
3860	500 380	94 84	0.979 0.506	33
4061	500 450	90 86	0.938 0.722	22
4265	650 600	100 94	1.760 1.412	15

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data					Pump casing data			
	Bearing type C3		Mech. seal		Coup-ling end mm <sup>o</sup>	Material	Gauge mm	Max. test pressure Bar	Weight* kg
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-16/320	6312	22213	60		55	GG25	15	16	382
QVK-16/320	21311	21311	60	60	55	GGG40	15	37.5	382
QH-16/320	6411	6411	60	60	50	RG5	10	10	429
						NiAlBz	10	16	373
QV-16/350	6313	N214	60		60	GG25	15	16	541
QH-16/350	6311	21311	60	60	50	GGG40	15	25	541
						RG5	15	15	647
						NiAlBz	15	25	563
QV-18/320	6312	22213	60		55	GG25	12	16	963
QVK-18/320	7315	22215	80	80	70	GGG40	12	37.5	963
QH-18/320	7315	22215	80	80	70	RG5	15	10	857
						NiAlBz	15	16	846
QVK-16/500	7315	22215	80	80	70	GG25	20	16	1330
QH-16/500	22215	22215	80	80	70	GGG40	20	25	1330
						RG5	20	15	1590
						NiAlBz	20	25	1385
QH-16/630	22320	22320	Stuff.	box	95	GG25	16	16	927
						GGG40	16	37.5	927
						RG5	16	16	1107
						NiAlBz	16	25	965

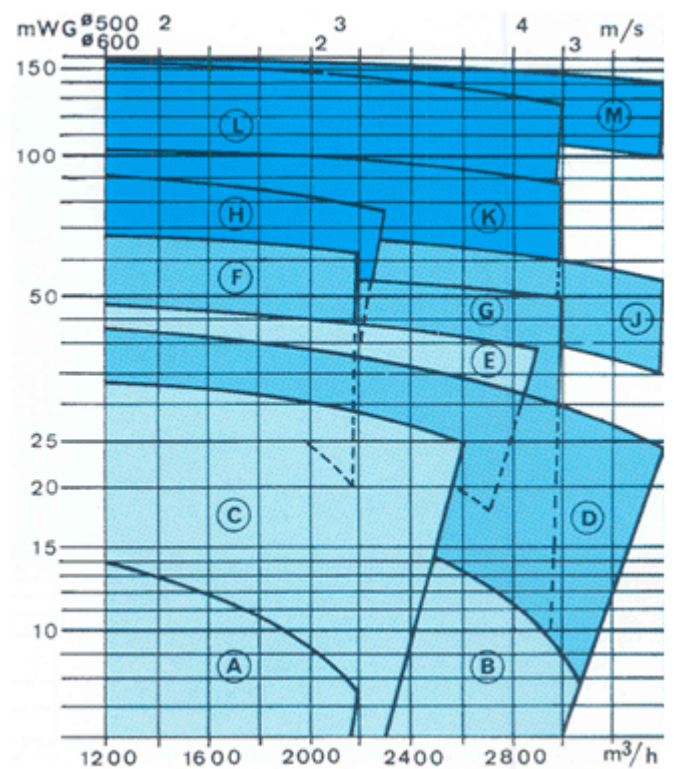
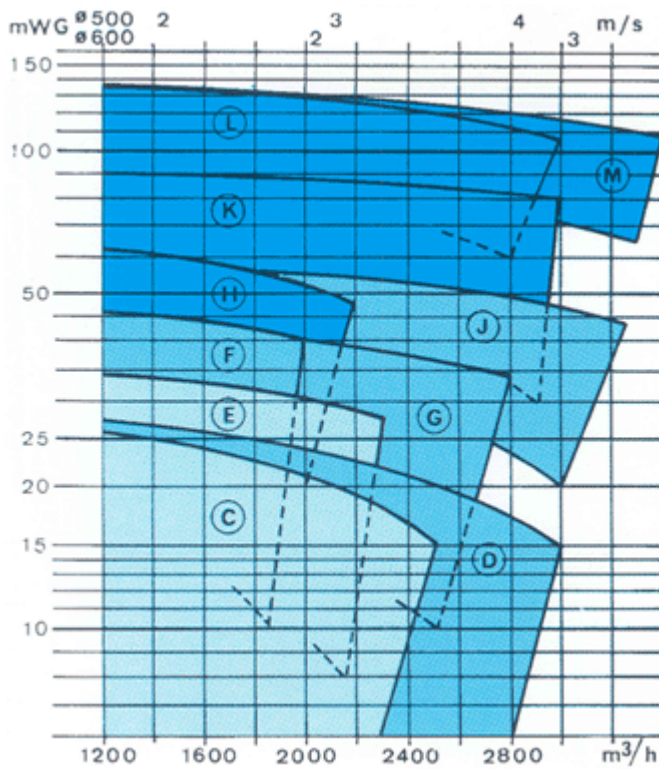
\*Weight of the complete pump is indicated on page 26 and 29.

# Capacity: 1500...3000 m<sup>3</sup>/h

DN 500/600 (20"/24" dia) Flange connections

50 Hz power supply

60 Hz power supply



## IDENTIFICATION OF PUMP TYPE NO. AND CURVE SHEET NO.

Index letter	Basic type No.	Impeller No.	Data for continuous duty at 50 Hz						Data for continuous duty at 60 Hz					
					Max. allowed power transmission kW						Max. allowed power transmission kW			
			RpM	Curve No.	QV	QVP	QVK	QH	RpM	Curve No.	QV	QVP	QVK	QH
A	Q..20/450	4214							720	51.91	215		340	415
B	Q..20/450	4214							900	53.91	265		425	520
C	Q..20/450	3290	750	62.76	220		350	435	900	63.76	265		425	520
D	Q..20/450	4214	1000	54.91	300		470	580	1200	55.91	355		565	695
E	Q..20/450	3631	750	11.81	220		350	435	900	17.80	265		425	520
F	Q..20/320	3290	1000	50.80	230		300	470	1200	56.91	275*		355	565
G	Q..24/450	3290	1000	61.76	300		470	580	1200	64.76	355		565	695
H	Q..20/320	3860	1500	50.91	340*		445	705	1800	57.91	410*		540	845
J	Q..24/450	3631	1000	21.79	295*		470	580	1200	58.91	355*		565	695
K	Q..20/320	3290	1500	59.91	340*		445	705	1800	63.91	410*		540	845
L	Q..24/630	4239	1500	03.89				1765	1800	60.91				2115
M	Q..24/630	4062	1500	26.86				1765	1800	61.91				2115

\*Valid for built-in bottom sleeve bearing only

## IMPELLER DATA

Impeller No.	Related physical data*			Min. spalt mm
	Diameter	Weight raw	Moment of	
	Max. mm Min. mm	NiAlBz kg	Inertia kgm <sup>2</sup>	
3290	600	100	1.500	33
	400	77	0.510	
3631	660	105	1.906	58
	500	88	0.912	
3860	500	94	0.979	33
	380	84	0.506	
4062	635	184	3.091	33
	520	169	1.897	
4214	500	107	1.115	72
	410	100	0.695	
4239	635	196	3.293	29
	520	180	2.032	

\*Dimensions between min. and max. impeller diameters may be calculated by interpolation.

## DATA OF SHAFT AND PUMP CASING

Complete pump type No.	Shaft data					Pump casing data			Weight* kg
	Bearing type C3		Mech. seal		Coup-ling end mm <sup>o</sup>	Material	Gauge mm	Max. test pressure Bar	
	DE No.	NDE No.	DE mm <sup>o</sup>	NDE mm <sup>o</sup>					
QV-20/320	6312	22213	60		55	GG25	15	16	963
QVK-20/320	7315	22215	80	80	70	GGG40	15	37.5	963
QH-20/320	7315	22215	80	80	70	RG5 NiAlBz	12 12	10 16	888 772
QV-20/450	6313	N214	70		60	GG25	16	16	1630
QVK-20/450	6315	N215	80	80	70	GGG40	16	25	1630
QH-20/450	6316	6316	Stuff.	box	75	RG5 NiAlBz	12 12	10 25	1347 1171
QV-24/450	6313	N214	70		60	GG25	16	16	1630
QVK-24/450	6315	N215	80	80	70	GGG40	16	25	1630
QH-24/450	6316	6316	Stuff.	box	75	RG5 NiAlBz	12 12	10 25	1347 1171
QH-24/630	21320	21320	110	110	95	GG25 GGG40	22 22	16 37.5	3130 3130

\*Weight of the complete pump is indicated on page 26 and 29.

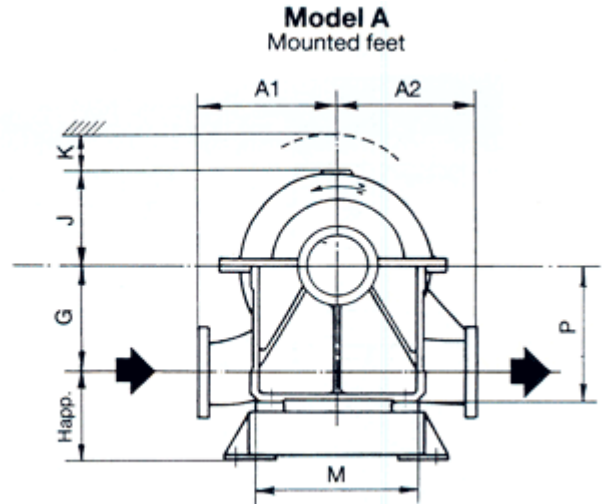
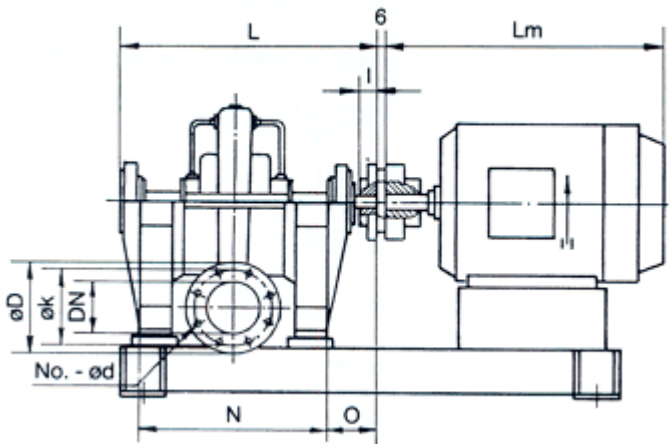


# Dimensions

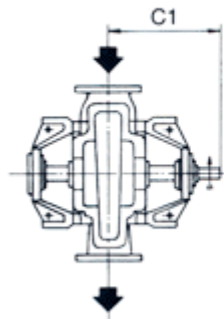
## Horizontally mounted pumps

The dimensions given are for guidance only. Manufactured drawings are delivered with each order.

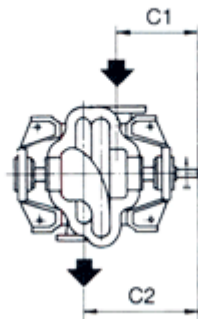
Dimensions of pump connection flanges and length of motors Lm, See page 27



**Type QH..**  
Single stage design



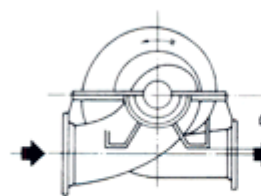
**Type QH-2(3)..**  
Multi stage design



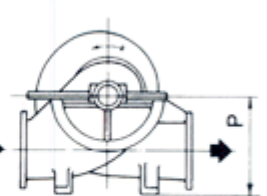
**Pump shaft end**



**Model B**  
Cast feet



**Model C**  
Cast feet



The shaft drive end shown is standard.  
Drive at the opposite end can be specified with order.

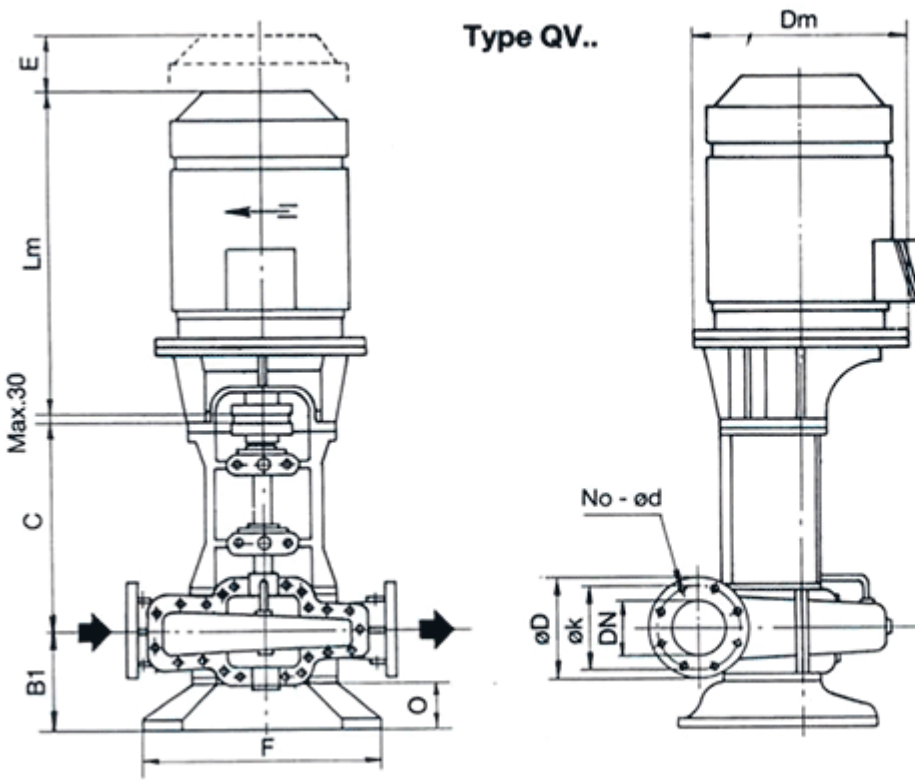
All dimensions are given in mm.

Pump type No.	Flangers DN Suct/Disch	A1/A2	C1/C2	G	Happ	J	K	L	M	N	O	P	I	d	t	u	Weight kg	Model (feet)
QH-4/300	100	260	385	180	365	215	170	705	400	480	145	355	60	36	39	10	200	A
QH-5/300	125	290	385	210	335	225	180	705	400	480	145	355	60	36	39	10	200	A
QH-6/300	150	290	385	210	335	225	180	705	400	480	145	355	60	36	39	10	210	A
QH-8/300	200	350	385	213	332	245	180	705	400	480	145	355	60	36	39	10	230	A
QH-10/300	250	400	385	255	290	270	200	705	400	480	145	355	60	36	39	10	240	A
QH-10/360	250	400	430	255	290	280	190	795	400	480	190	355	60	36	39	10	290	A
QH-12/360	300	400	430	255	290	280	190	795	400	480	190	355	60	36	39	10	290	A
QH-2-4/300	100	250	296/416	190	240	260	170	705	400	500	130	355	60	32	35	10	330	A
QH-2-5/300	125	275	296/416	190	240	260	170	705	400	500	130	355	60	32	35	10	330	A
QH-2-5/330	125	320	273/477	245	300	335	200	755	400	612	104	355	60	36	39	10	420	A
QH-2-6/330	150	320	173/477	245	300	355	200	755	400	612	104	355	60	36	39	10	420	A
QH-2-6/400	150	350	405/545	260	370	360	200	910	510	700	160	290	110	48	51.5	14	460	A
QH-3-6/350	150	350	491/831	260	270	360	200	1135	500	920	175	355	100	50	54	14	800	A
QH-2-8/350	200	425	420/655	260	490	410	210	1060	600	500	340	500	110	55	59	16	550	C
QH-2-10/350	250	425	420/655	260	490	410	210	1060	600	500	340	500	110	55	59	16	550	C
QH-6/350	150	380	500	260	300	280	200	875	500	670	165	290	120	60	64	18	450	A
QH-8/350	200	425	500	275	285	330	210	875	500	670	165	290	120	60	64	18	560	A
QH-10/350	250	425	500	275	285	330	210	875	500	670	165	290	120	60	64	18	580	A
QH-12/350	300	500	595	320	420	380	230	1070	600	500	345	560	110	55	59	16	750	C
QH-14/350	350	550	625	350	430	390	230	1100	700	600	325	625	100	50	54	14	750	C
QH-16/350	400	550	625	350	430	390	230	1100	700	600	325	625	100	50	54	14	750	C
QH-10/320	250	400	570	270	360	330	190	1020	500	820	160	290	95	50	54	14	400	A
QH-12/320	300	400	570	270	360	330	190	1020	500	820	160	290	95	50	54	14	400	A
QH-14/320	350	475	610	300	360	350	230	1100	500	900	160	290	95	50	54	14	500	A
QH-16/320	400	475	610	300	360	350	230	1100	500	900	160	290	95	50	54	14	500	A
QH-18/320	450	630	820	400	590	450	300	1465	820	870	385	400	140	70	74.5	20	1000	B
QH-20/320	500	630	820	400	590	450	300	1465	820	870	385	400	140	70	74.5	20	1000	B
QH-20/450	500	820/580	680	525	725	600	330	1260	900	830	265	945	140	75	79.5	20	1450	C
QH-24/450	600	820/580	680	525	725	600	330	1260	900	830	265	945	140	75	79.5	20	1450	C
QH-12/500	300	630	650	355	375	430	290	1190	660	640	330	330	110	48	51.5	14	950	B
QH-14/500	400/350	800/630	800	500	360	580	290	1450	800	800	400	500	140	70	74.5	20	1350	B
QH-16/500	400/350	800/630	800	500	360	580	290	1450	800	800	400	500	140	70	74.5	20	1350	B
QH-12/630	350/300	630	810	355	405	440	330	1420	660	740	440	330	140	95	100	25	1250	B
QH-14/630	350	630	810	355	405	440	330	1420	660	740	440	330	140	95	100	25	1250	B
QH-16/630	400/350	630	810	355	405	440	330	1420	660	740	440	330	140	95	100	25	1250	B
QH-24/630	600/500	1000/850	950	630	550	750	320	1720	1100	1160	370	630	170	95	100	25	3700	B

# Dimensions

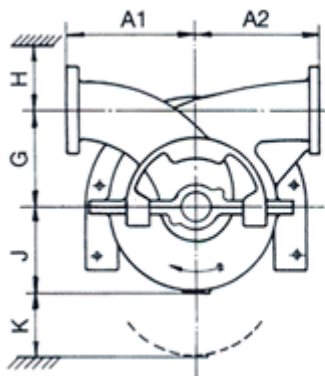
## Vertically mounted pumps

The dimensions given are for guidance only. Manufactured drawings are delivered with each order.



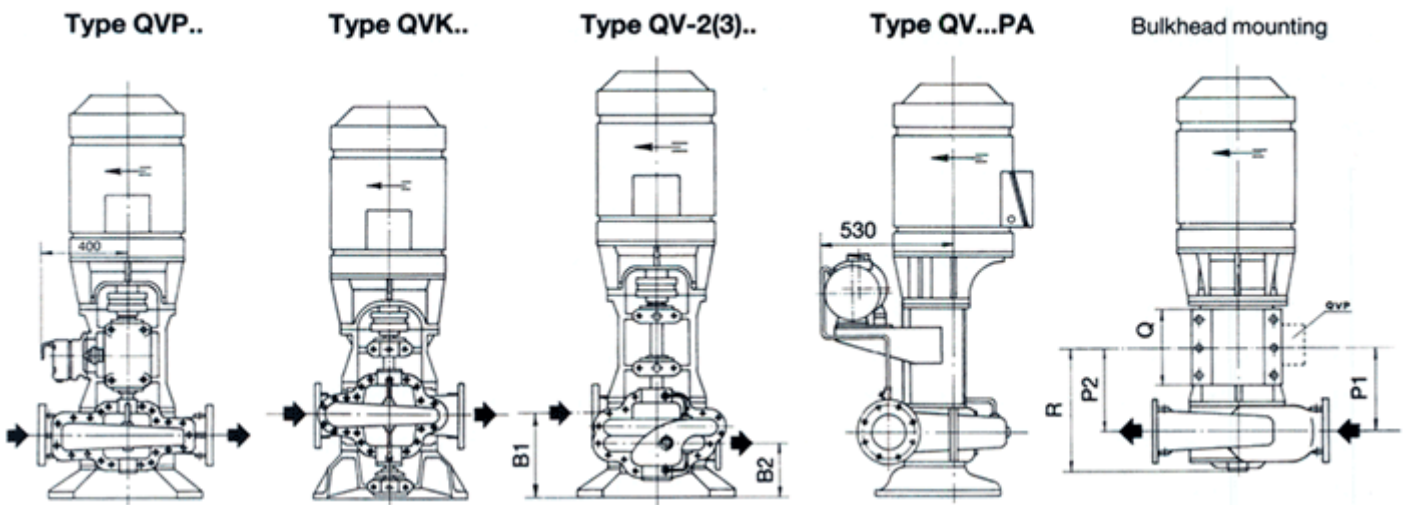
### MOTOR DIMENSIONS

IEC Size	Length Lm	Flange-diameter m	Weight kg
132S	530	300	50
132M	570	300	60
160M	590	350	80
160L	640	350	120
180M	655	350	140
180L	690	350	150
200S	740	400	200
200L	760	400	220
225S	820	450	290
225M	860	450	320
250M	930	550	400
280S	990	550	540
280M	1045	550	600
315S	1120	660	800
315M	1165	660	900
315L	1215	660	1400
355S	1350	800	1600
355M	1400	800	1800
355L	1500	800	2000
400M	1635	1000	2700
400L	1940	1000	2900

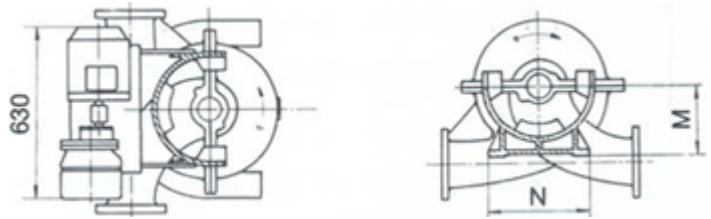


### FLANGE DIMENSIONS

Nominal pressure		Connection flanges – Nominal diameter DN										
ISO PN	Dimension mm	(4") DN100	(5") DN125	(6") DN150	(8") DN200	(10") DN250	(12") DN300	(14") DN350	(16") DN400	(18") DN450	(20") DN500	(24") DN600
10	øD	220	250	285	340	395	445	505	565	615	670	780
	øk	180	210	240	295	350	400	460	515	565	620	725
	No. - ød	8-18	8-18	8-22	8-22	12-22	12-22	16-22	16-26	20-26	20-26	20-30
16	øD	220	250	285	340	405	460	520	580	640	715	840
	øk	180	210	240	295	355	410	470	525	585	650	770
	No. - ød	8-18	8-18	8-22	8-22	12-26	12-26	16-26	16-30	20-30	20-33	20-36



The shown direction of flow is standard.  
 Opposite flow direction (and rotation) is available  
 if specified with order.



All dimensions are given in mm.

Pump type No.	Flangers DN Suct/Disch	A1/A2	B1/B2	C	Emin	F	G	Hmin	J	K	M	N	O	P1/P2	Q	R	Weight kg
QV-4/300	100	260	250	581	140	620	180	130	215	170	200	370	120	305	190	488	270
QV-5/300	125	290	250	581	140	620	210	125	225	180	200	370	120	305	190	488	275
QV-6/300	150	290	250	581	140	620	210	145	225	180	200	370	120	305	190	488	280
QV-8/300	200	350	250	581	140	620	213	170	245	180	200	370	120	305	190	488	300
QV-10/300	250	400	250	581	140	620	255	210	270	200	200	370	120	305	190	488	345
QV-10/360	250	400	295	626	140	620	255	210	280	190			120				400
QV-12/360	300	400	295	626	140	620	255	230	280	190			120				410
QV-2-4/300	100	250	335/215	496	140	620	190	125	260	170	200	370	120	221/341	190	488	350
QV-2-5/300	125	275	335/215	496	140	620	190	125	260	170	200	370	120	221/341	190	488	375
QV-2-5/330	125	320	446/239	500	140	620	245	125	335	200	200	370	120	224/428	190	586	440
QV-2-6/330	150	320	446/239	500	140	620	245	145	335	200	200	370	120	224/428	190	586	460
QV-2-6/400	150	350	468/328	663	170	760	245	145	360	200			165				600
QV-2-8/350	200	425	565/330	717	200	1000	260	250	410	210			140				830
QV-2-10/350	200	425	565/330	717	200	1000	260	250	410	210			140				830
QV-12/350	300	500	400	895	170	1000	320	230	380	230			140				1020
QV-14/350	350	550	450	945	170	1000	350	260	400	230			140				1270
QV-16/350	400	550	450	945	170	1000	350	2290	400	230			140				1300
QV-16/400	400	560/500	525	890	170	760	340	290	350	250			165				800
QV-18/400	450	560/500	525	890	170	760	340	310	350	250			165				810
QV-10/320	250	400	425	830	170	760	270	210	330	190			165				470
QV-12/320	300	400	425	830	170	760	270	230	330	190			165				480
QV-14/320	350	475	465	870	170	760	300	260	350	230			165				570
QV-16/320	400	475	465	870	170	760	300	290	350	300			165				580
QV-18/320	450	630	730	970	170	1200	400	320	450	300			330				1020
QV-20/320	500	630	730	970	170	1200	400	360	450	300			330				1070
QV-20/450	500	820/580	555	1050	250	1000	525	360	600	330			140				1860
QV-24/450	600	820/580	555	1050	250	1000	525	420	600	330			140				1880
QVP-4/300	100	260	250	581	140	620	180	130	215	170	250	350	120	355	300	538	300
QVP-5/300	125	290	250	581	140	620	210	125	225	180	250	350	120	355	300	538	305
QVP-6/300	150	290	250	581	140	620	210	145	225	180	250	350	120	355	300	538	310
QVP-8/300	200	350	250	581	140	620	213	170	245	180	250	350	120	355	300	538	330
QVP-10/300	250	400	250	581	140	620	255	210	270	200	250	350	120	355	300	538	345
QVP-2-4/300	100	250	335/215	496	140	620	190	125	260	170	250	350	120	271/391	300	538	380
QVP-2-5/300	125	275	335/215	496	140	620	190	125	260	170	250	350	120	271/391	300	538	405
QVP-5-5/330	125	320	446/239	500	140	620	245	125	335	200	250	350	120	274/478	300	636	470
QVP-2-6/330	150	320	446/239	500	140	620	245	145	335	200	250	350	120	274/478	300	636	490
QVK-4/300	100	260	320	370	140	620	180	130	215	170			190				250
QVK-5/300	125	290	320	370	140	620	210	125	225	180			190				255
QVK-6/300	150	290	320	370	140	620	210	145	225	180			190				260
QVK-8/300	200	350	320	370	140	620	213	170	245	180			190				280
QVK-10/300	250	400	320	370	140	620	255	210	270	200			190				325
QVK-10/360	250	400	365	415	140	620	255	210	280	190			190				380
QVK-12/360	300	400	365	415	140	620	255	230	280	190			190				390
QVK-6/350	150	380	395	487	170	800	260	145	280	200			220				450
QVK-8/350	200	425	395	487	170	800	275	170	330	210			220				500
QVK-10/350	250	425	395	487	170	800	275	200	330	210			220				550
QVK-2-5/330	125	320	516/309	289	140	620	245	125	335	200			190				440
QVK-2-5/330	150	320	516/309	289	140	620	245	145	335	200			190				460
QVK-3-6/350	150	360	724/384	464	200	800	260	145	360	200			220				960
QVK-10/320	250	400	425	500	200	760	270	210	330	190			165				520
QVK-12/320	300	400	425	500	200	760	270	230	330	190			165				530
QVK-14/320	350	475	465	540	200	760	300	260	350	230			165				600
QVK-16/320	400	475	765	540	200	760	300	290	350	300			165				630
QVK-18/320	450	630	730	640	230	1200	400	320	450	300			330				1070
QVK-20/320	500	630	730	640	230	1200	400	360	450	300			330				1120
QVK-20/450	500	820/580	663	748	250	1430	525	360	600	330			248				1890
QVK-24/450	600	820/580	663	748	250	1430	525	420	600	330			248				1900
QVK-12/500	300	630	616	650	230	1200	500	230	430	290			330				1200
QVK-14/500	400/350	800/630	700	800	230	1200	500	260	580	290			330				1900
QVK-16/500	400/350	800/630	700	800	230	1200	500	290	580	325			330				1950

# **SELECTION OF SPLIT CASING PUMPS**

## **1. Capacity**

From the table of contents on the front page choose the page No. corresponding to the pump capacity required.

## **2. Differential Head**

Use the curve diagrams on the chosen page, according to the frequency of the power supply, to find the index letter for capacity and head required.

## **3. Identification of Basic Pump Type**

Use the index letter to identify the basic pump type, the pump speed and the curve sheet No. from the table below the diagrams, again, according to the frequency of the power supply.

## **4. Pump Speed/NPSH**

By means of the curve sheet (\*to be requested separately according to chosen sheet No.) decide if the pump speed and NPSH values are acceptable. If not, look for the pump on the next page of the brochure

## **5. Material/Max. Pressure**

Choose the material of the pump casing according to the table of materials on the front page and at the same time check that the max. pressure - stated in the table of contents - under all circumstances - exceeds the total sum of the static and the dynamic pressure of the pump. Furthermore decide if the pump flanges must be drilled according to PN10 or Pn16.

## **6. Motor**

Note from the chosen curve sheet the power demand of the pump at both duty point and max. point. Size, if possible, the motor according to the power demand at the max. point.

## **7. Mounting**

Decide, with regard to available space, motor size and maintenance facilities, if the pump(s) are to be vertically or horizontally mounted.

## **8. Max. Power Transmission**

Check in the Identification Table for the actual pump that the max. power demand of the pump does not exceed the max. allowable power transmission for continuous duty.

## **9. Complet Pump Type No.**

On this page and page 26 all pump types and sizes are indicated and the complete pump type No. can be taken from these two tables.

## **PRIMING**

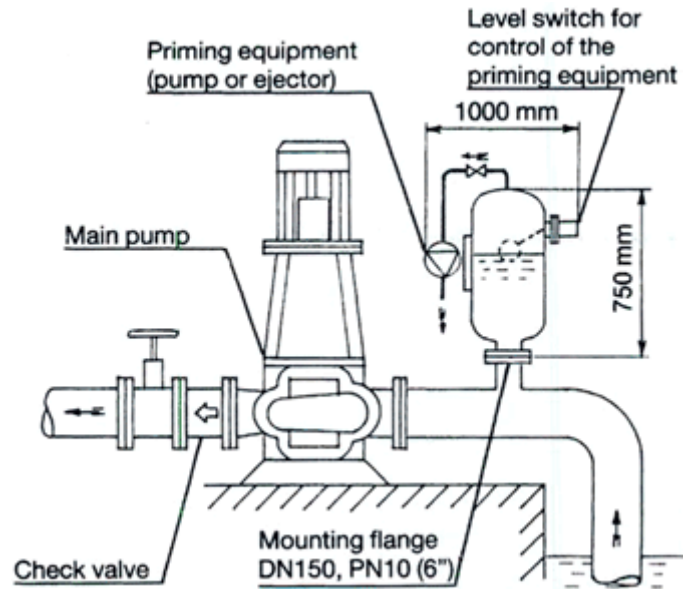
Conventional centrifugal pumps can, by fitting of a suitable priming system either consists of a water ring pump with built-on cooling water tank or of one or more pressure air ejectors. Both systems, depending on needs, can be operated manually and/or automatically. The time of priming is preferably kept below 3 minutes but depends of course on the evacuated volume, the geometric suction head and the capacity of the equipment. The table opposite show equipment suitable for pumps covered by this brochure.

### **Automatic priming system type APS75/..**

In pump systems, vulnerable to accumulation of air in the suction pipe during operation, it is recommended that an air receiver be added to the suction pipe (as illustrated opposite). Type APS75 is a standardized system for solving this problem and the priming equipment mentioned can all be an integral part of the pump system. Opposite the most important parts are shown.

**Priming equipment**

Pump type respectively Ejector type	Capacity by 50% vacuum litre air/min.		Driver kW/RpM	
	50 Hz	60 Hz	50Hz	60Hz
QVP..	200	200	QV	QV
-PA	200	200	1,1/1400	1,3/1700
-FVP 1351	700	800	3,0/2900	3,6/3500
-FVP 2081	1300	1500	4,0/1450	4,8/1750
-E/EA 1/2"		450	1200 NI/min. 6 Bar press. air	
-E/EA 3/4"		700	1400 NI/min. 6 Bar press. air	
-E/EA 3/4" Twin		1400	2800 NI/min. 6 Bar press. air	



## **SPARE PARTS**

The mentioned recommended spare parts must be considered for guidance only as pump speed, pump medium / materials, temperature sand, cavitation etc. have vital influence on their life time.

### **1) Commissioning spare parts**

Parts that may be damaged during transport, mounting or startup procedure.

### **2) Standard spare parts**

Parts that may wear / tear relatively fast depending on external conditions:

- 1....3 years continuous duty in sea water.
- 3....5 years continuous duty in clear fresh water.

### **Complet set of spare parts**

Includes the standard spare parts set as well as the remaining slow wearing parts item no. 1-19:

- 3....6 years continuous duty in sea water.
- 5....10 years continuous duty in clear fresh water.

Item No.	Description (All parts include keys, nuts, screws, washers, circlips etc. necessary for correct mounting)	Commissionsing spare parts See 1) opposite	Standard spare parts See 2) opposite
		Unit	Unit
1	Mechanical Shaft seal(s), complete	1 set/type	1 set/pump
2	Gland(s) for mech. seal		
3	Distance sleeve for mech. seal (if any)	1 set/type	1 set/type
4	Oil glass for mech. seal (if any)	1 no.	1 no.
5	Ball bearings	1 set/type	1 set/type
6	Covers for ball bearings		
7	Oil seal rings for above covers		1 set/pump
8	Internal bearing bush (if any)		1 no./pump
9	Bearing carrier for above bush		
10	Shaft sleeve for above bush		1 no./pump
11	Set of gaskets, complete incl. casing gasket	1 set/type	1 set/pump
12	Casing wear rings		1 set/pump
13	Impeller(s)		
14	Impeller wear rings (if any)		1 set/pump
15	Pump shaft		
16	Water thrower(s)		1 set/type
17	Coupling elements		1 set/pump
18	Spare priming pump, complete (if any)		
19	Set of standard spares for above pump		1 set/pump

Each item no. indicates a complete set of parts i.e. 2 nos. ball bearings, 1 or 2 mech. shaft seals etc.



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