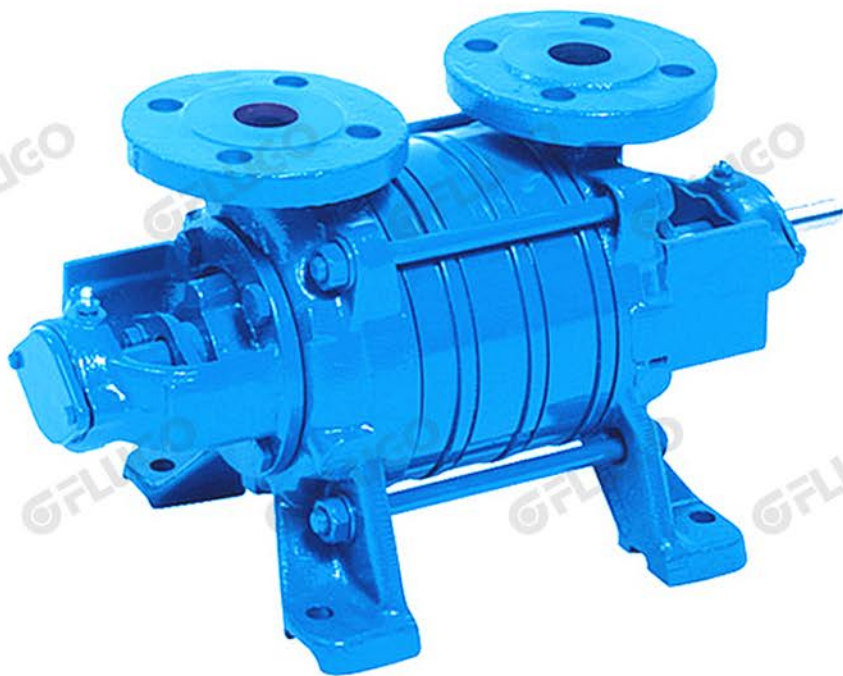




Technical Catalogue



# AKHK Series

Side Channel Pump

## TECHNICAL DATA

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| Capacity:               | max. 35 m <sup>3</sup> /h                                |
| Head:                   | max. 144 m                                               |
| Speed:                  | max. 1800 rpm                                            |
| Temperature:            | max. 120 °C                                              |
| Casing pressure:        | PN 16                                                    |
| Shaft sealing:          | stuffing box or<br>stand. mechanical seal                |
| Flange connection size: | DIN 2501 PN 16                                           |
| Direction of rotation:  | clockwise when looking at the<br>pump from the drive end |



## APPLICATION

Flugo side channel pumps

- self-priming
- can handle gas during normal liquid duty
- are of noiseless operation

Pumps of series AKHK distinguish themselves by an advantageous weight per unit power, a feature that has lead to a great deal of applications in such lines as:

- mineral oil, petrochemical and chemical industries,
- steel industry, mechanical engineering and construction of cars,
- food and confectionary industry,
- building sub-trades
- plastics, rubber and asbestos industry,
- electrical industry
- refinement and hardening of surfaces,
- dockyards

where clean or turbid liquids, without abrasive matter, are trouble-free to be handled and circulated.

In the catalogues of the specialized technical distributors listing the different fields of application, the series of these universal side channel pumps holds a firm place.

## DESIGN

Segmental type, horizontal side channel pumps, self-priming and handling gases during normal liquid duty, operating with unshrouded vane wheel impellers. Contrary to the customary models, these pumps offer, due to constructional and productional devices, the same characteristic data for a variety of material designs. All components which provide the hydraulic effect of the machine are taken from our system of mechanical assembly technique (M.A.T.) for side channel pumps.

## CONSTRUCTION

### Casing pressure:

Maximum 16 bar for temperatures -40 °C to + 120 °C

#### Please note:

Casing pressure = inlet pressure + discharge head at minimum flow rate

### Position of branches:

Suction and delivery branches showing radially upwards.

### Flanges:

The flanges comply with DIN 2533 PN 16. In any case, a grooved-type flange according to DIN 2512, or flanges drilled either according to ANSI 150, 300 or to BS, table F, can be supplied.

### Bearings:

Either one grease-lubricated deep-groove ball bearing according to DIN 625 and one sleeve bearing flushed by the liquid handled.

Designation of this construction type: A•

or two grease-lubricated deep-groove ball bearings according to DIN 625. The first filling with grease is made in the factory.

Designation of this construction type: B•

### Direction of rotation:

Clockwise when looking at the pump from the drive end.

Designation of this construction type: •N

### Shaft sealing:

The sealing of the shaft passage, according to choice, can be effected by a stuffing box or by a standard mechanical seal.

Designation 001: Stuffing box internal flushing

Temperature range: 0 °C to 120 °C

Designation 135: Standard mechanical seal, unbalanced, with internal flushing.

Temperature range: -40 °C to 120 °C

## Material Design

| Item       | COMPONENTS                    | MATERIAL DESIGN                                           |                      |                       |
|------------|-------------------------------|-----------------------------------------------------------|----------------------|-----------------------|
|            |                               | 01                                                        | 32                   | 42                    |
| 1          | suction casing                | GG 25                                                     | G-Cu Sn 10           | G-X 6 Cr Ni Mo 18 10  |
| 2          | discharge casing              |                                                           | G-Sn Bz 16           |                       |
| 10, 11, 12 | stage casing                  |                                                           |                      |                       |
| 30         | vane wheel impeller           | So Ms die-pressed                                         | G-Sn Bz chrom-plated | G-X 3 Cr Ni Mo Cu 266 |
| 200        | shaft                         | X 20 Cr 13                                                | X 5 Cr Ni 18 9       | X 5 Cr Ni Mo 18 10    |
| 400        | shaft sealing stuffing box    | soft packing                                              |                      |                       |
| 500        | shaft sealing mechanical seal | Cr-casting, carbon, Perbunan / Cr Ni steel, carbon, Viton |                      |                       |
| 241        | bearing bush                  | special carbon                                            |                      |                       |

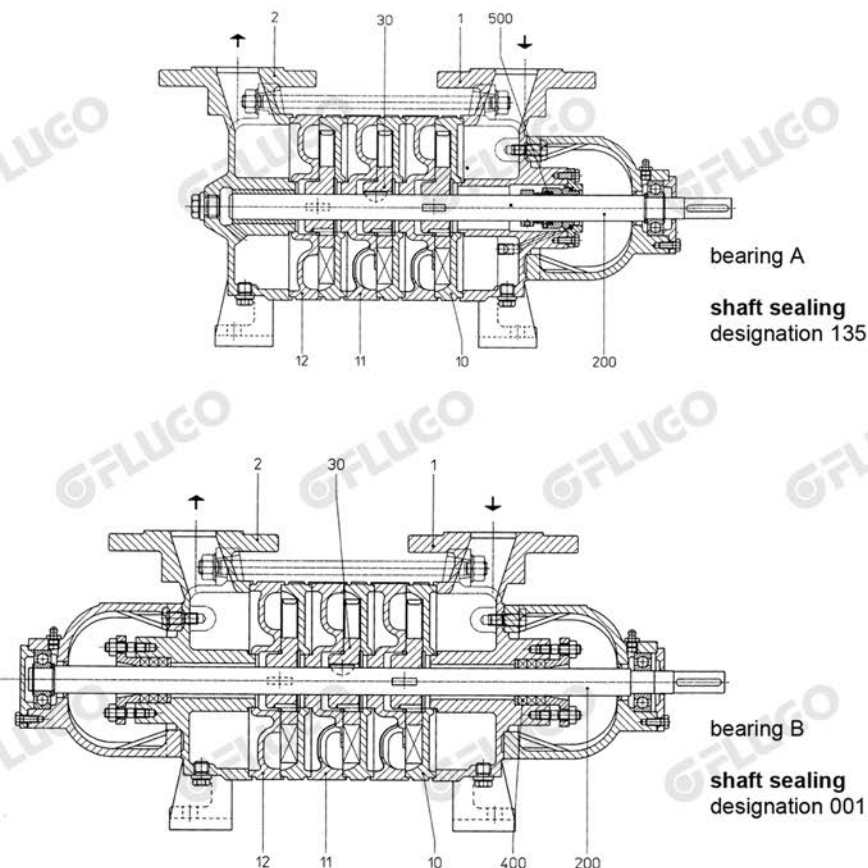
## Casing seal:

For material designs 01 and 32 the casing joints consist of a liquid sealing compound. Designation of this construction type: 0  
In case of material design 42, the jointing of the casing is effected by soft teflon. Designation of this construction type: 4

## Drive:

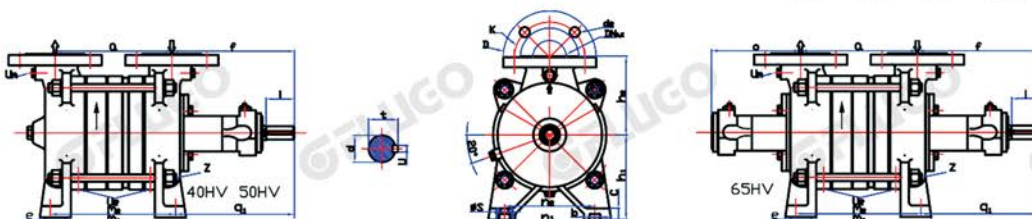
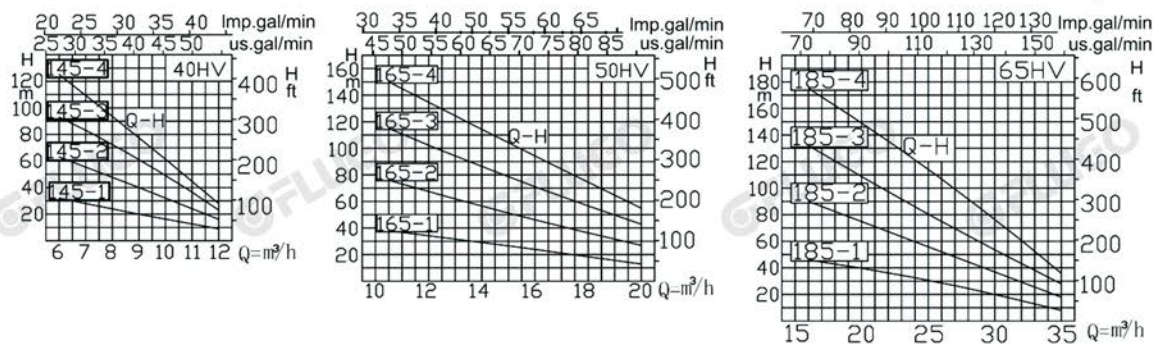
By customary electric motors, type IM B3.

## Sectional drawing and nomenclature

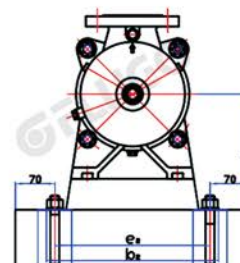
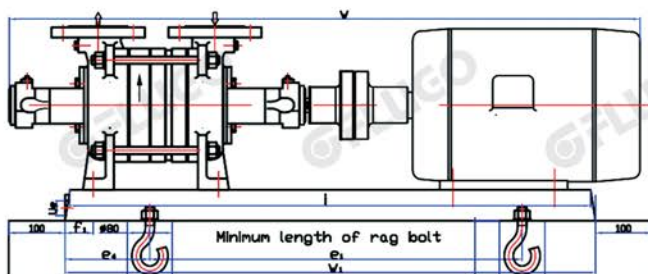


- 1 suction casing
- 2 discharge casing
- 10,11,12 intermediate piece
- 30 vane wheel impeller
- 200 shaft
- 241 bearing bush
- 400 stuffing box
- 500 mechanical seal

**Performance Curves**



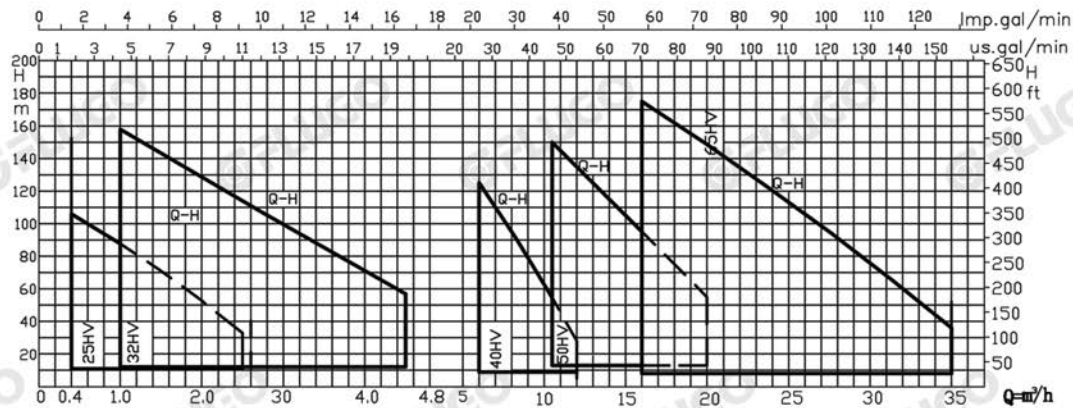
| Type of Pump | DNA,AE | a   | m1  | m2  | l   | h1  | h2  | O   | z | b  | c  | e  | n1  | n2  | s  | q1  | l  | D   | k   | d2 x<br>Num | d  | l  | u |
|--------------|--------|-----|-----|-----|-----|-----|-----|-----|---|----|----|----|-----|-----|----|-----|----|-----|-----|-------------|----|----|---|
| 40HV.145-1   | 40     | 156 | 195 | 155 | 205 | 132 | 132 | /   | 4 | 47 |    | 55 | 218 | 160 | 13 | 205 | 45 | 150 | 110 |             | 19 | 22 | 6 |
| 40HV.145-2   |        | 210 | 250 | 210 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 40HV.145-3   |        | 265 | 305 | 265 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 40HV.145-4   |        | 320 | 360 | 320 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-1   | 50     | 170 | 220 | 185 | 217 |     | 140 | /   |   | 48 | 20 |    |     |     |    |     |    |     |     | 18 x 4      | 24 | 27 |   |
| 50HV.165-2   |        | 245 | 295 | 260 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-3   |        | 320 | 370 | 335 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-4   |        | 390 | 445 | 410 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-1   | 65     | 190 | 276 | 220 | 251 |     | 150 | 180 | 6 | 50 |    | 65 | 250 | 200 | 15 | 234 | 65 | 185 | 145 |             | 28 | 31 | 8 |
| 65HV.185-2   |        | 280 | 366 | 310 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-3   |        | 370 | 456 | 400 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-4   |        | 460 | 546 | 490 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |



| Type Of Pump | Motor    |      | baseplate | coupling | Pump Weight | b2  | c   | e1  | e2  | e4  | f1  | h    | h3   | l    | p1   | p2     | w      | w1     | ue     | Rag Bolt<br>DIN 525 |      |        |      |
|--------------|----------|------|-----------|----------|-------------|-----|-----|-----|-----|-----|-----|------|------|------|------|--------|--------|--------|--------|---------------------|------|--------|------|
|              | Type     | Kw   |           |          |             |     |     |     |     |     |     |      |      |      |      |        |        |        |        |                     |      |        |      |
| 40HV.145-1   | Y90L-4   | 1.5  | 240       | Z90      | 27          | 330 | 25  | 480 | 290 | 115 | 62  | 65   | 197  | 710  | /    | 42     | 786    | 730    | M16x20 |                     |      |        |      |
|              | Y100L1-4 | 2.2  |           |          |             |     |     |     |     |     | 42  |      |      |      |      | 836    |        |        |        |                     |      |        |      |
| 40HV.145-2   | Y100L2-4 | 3.0  | 270       |          | 32          | 360 |     | 62  | 540 | 320 | 130 |      |      |      |      | 52     | 800    | 32     |        |                     | 891  | 820    |      |
|              | Y112M-4  | 4.0  |           |          |             |     |     | 22  | 540 | 320 | 130 |      |      |      |      | 52     | 800    | 20     |        |                     | 906  |        |      |
| 40HV.145-3   | Y132S-4  | 5.5  | 300       | Z105     | 37          | 390 | 600 | 350 | 150 | 52  | 900 | 1000 | /    | 1032 | 920  | M20x20 |        |        |        |                     |      |        |      |
|              | Y112M-4  | 4.0  |           | Z90      |             |     |     |     |     | 42  |     |      |      | 450  |      |        |        | 30     | 660    | 400                 | 170  | 52     | 80   |
| 40HV.145-4   | Y132S-4  | 5.5  | 340       | Z105     | 42          | 450 | 30  | 660 | 400 | 170 |     |      |      | 52   |      |        |        | 80     | 212    | 1000                | 1032 | M20x20 |      |
|              | Y132M-4  | 7.5  |           |          |             |     |     |     |     |     |     |      |      | 450  |      |        |        |        |        | 30                  | 660  |        |      |
| 50HV.165-1   | Y100L2-4 | 3.0  | 240       | Z90      | 37          | 330 | 25  | 480 | 290 | 115 | 28  | 65   | 215  | 800  | 900  | 50     | 871    | 730    | M16x20 | R1/2                |      |        |      |
|              | Y112M-4  | 4.0  | 270       |          |             | 360 |     |     |     |     | 58  |      |      | 800  |      | 38     | 886    | 820    |        |                     |      |        |      |
| 50HV.165-2   | Y132S-4  | 5.5  | 300       | Z105     | 46          | 390 | 600 | 350 | 150 | 58  | 65  | 215  | 900  | 18   | 1032 | 920    | M16x20 | R1/2   |        |                     |      |        |      |
|              | Y132M-4  | 7.5  | 450       |          |             | 30  |     |     |     | 660 |     |      | 400  | 170  | 58   |        |        |        |        |                     | 80   | 230    | 1000 |
| 50HV.165-3   | Y160M-4  | 11.0 | 340       | Z120     | 55          | 450 | 30  | 660 | 400 | 170 | 58  | 80   | 240  | 1000 | 10   | 1180   | 1020   |        | M20x20 |                     |      |        |      |
|              | Y160M-4  | 7.5  |           |          |             | 450 |     |     |     |     | 30  |      |      |      | 660  | 400    |        |        |        |                     | 170  | 58     | 80   |
| 50HV.165-4   | Y160L-4  | 11.0 | 380       | Z120     | 64          | 490 | 36  | 740 | 440 | 190 | 58  | 110  | 270  | 1120 | 10   | 1255   | 1310   | M20x20 |        |                     |      |        |      |
|              | Y160L-4  | 15.0 |           |          |             | 490 |     |     |     |     | 36  |      |      |      | 740  | 440    |        |        |        |                     |      | 190    | 58   |
| 50HV.165-4   | Y180M-4  | 18.5 | 300       | Z105     | 58          | 390 | 25  | 600 | 350 | 150 | 83  | 65   | 215  | 900  | /    | 1116   | 920    |        | M16x20 |                     |      |        |      |
|              | Y132S-4  | 5.5  |           |          |             |     |     |     |     |     | 83  |      |      |      |      | 1116   |        |        |        |                     |      |        |      |
| 65HV.185-2   | Y132M-4  | 7.5  | 380       | Z120     | 67          | 490 | 36  | 740 | 440 | 190 | 93  | 110  | 270  | 1120 | 10   | 1354   | 1100   | M20x20 |        |                     |      |        |      |
|              | Y160L-4  | 15.0 |           |          |             |     |     |     |     |     | 93  |      |      |      |      | 1409   |        |        |        |                     |      |        |      |
| 65HV.185-3   | Y180M-4  | 18.5 | 430       | Z165     | 79          | 540 | 30  | 840 | 490 | 205 | 83  | 80   | 260  | 1250 | 30   | 1531   | 1270   |        | M20x20 |                     |      |        |      |
|              | Y180L-4  | 22.0 |           |          |             |     |     |     |     |     | 83  |      |      |      |      | 1571   |        |        |        |                     |      |        |      |
| 65HV.185-4   | Y200L-4  | 30   | 480       | 91       | 540         | 30  | 900 | 490 | 250 | 60  | 50  | 200  | 1450 |      |      | 1690   | 1470   |        |        |                     |      |        |      |
|              |          |      |           |          |             |     |     |     |     |     |     |      |      |      |      |        |        |        |        |                     |      |        |      |

## Performance Graph

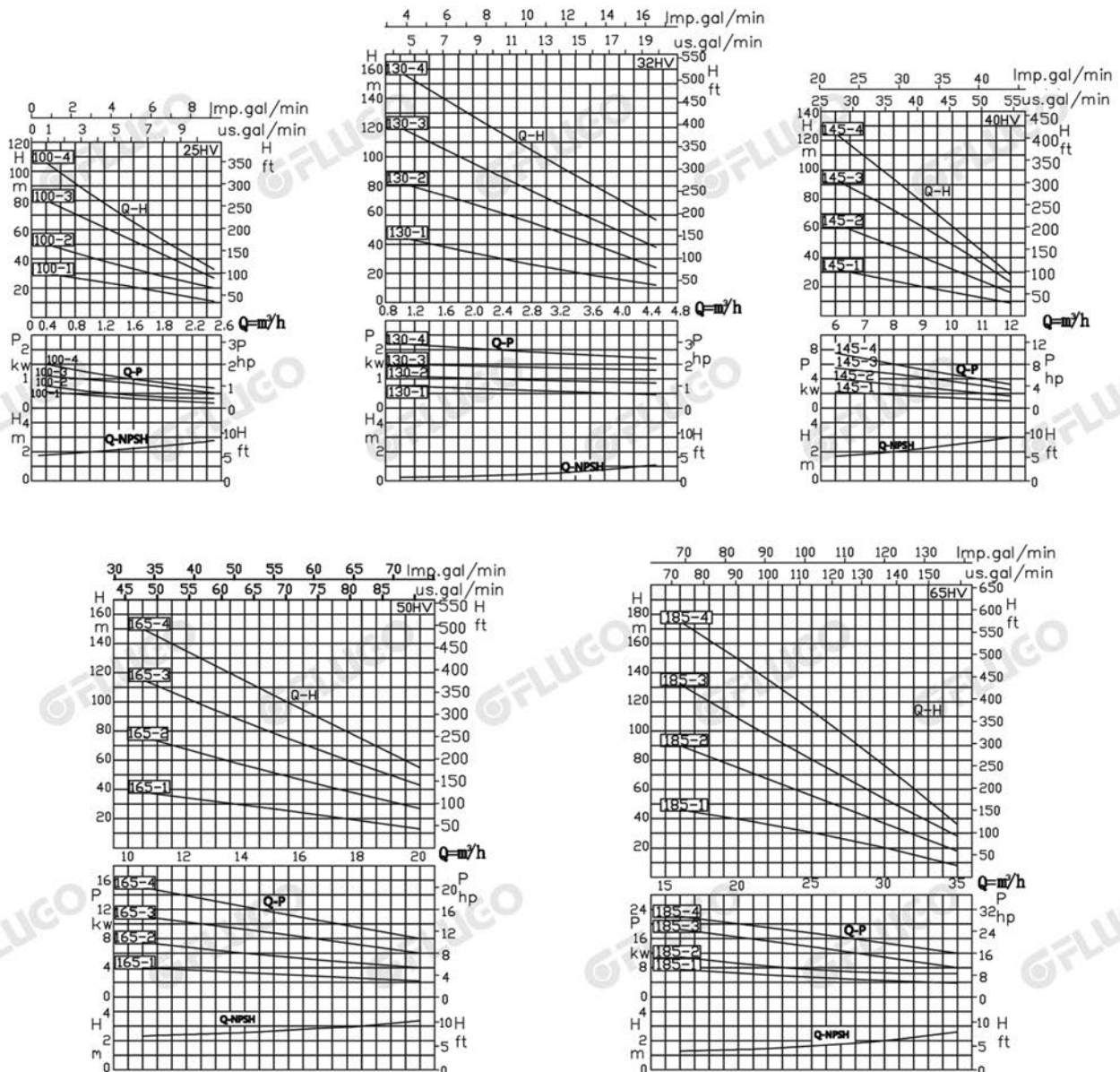
n=1450rpm



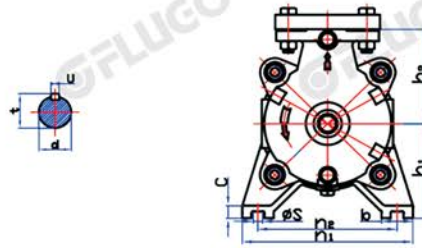
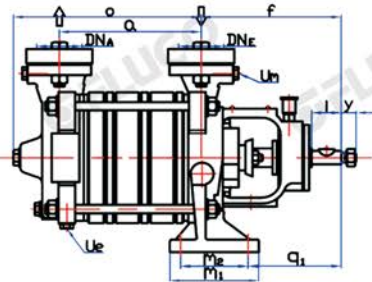
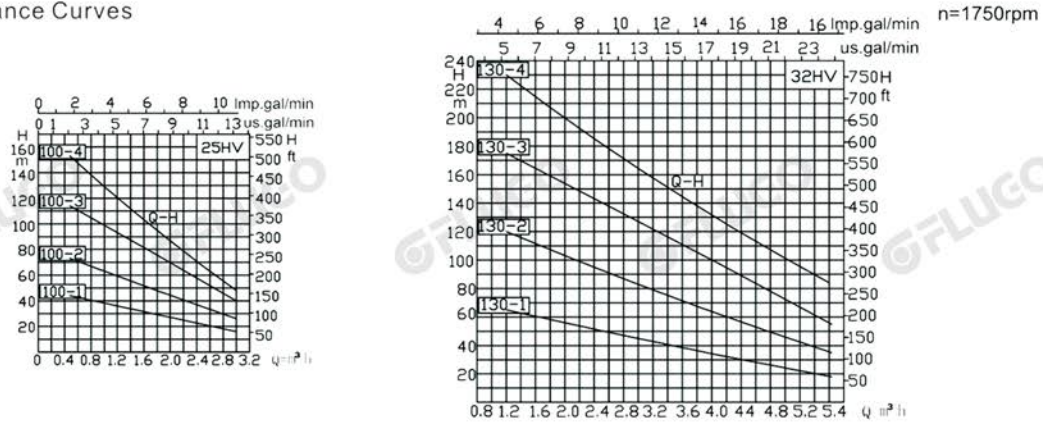
### Characteristic curves

The following tolerances are applicable for the values indicate in the characteristic curve sheets

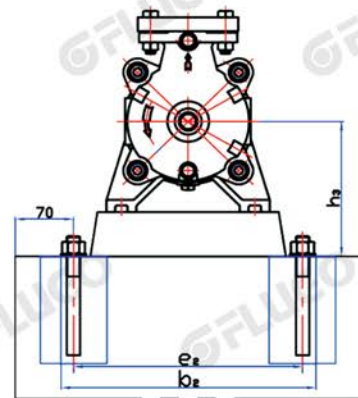
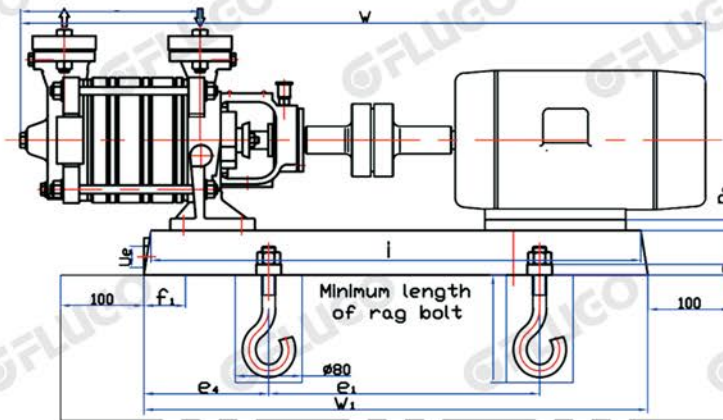
Design tolerances : Output  $\pm 5\%$  delivery head  $\pm 5\%$   
power absorbed  $+10\%$   
measuring tolerances : to DIN 1944



Performance Curves

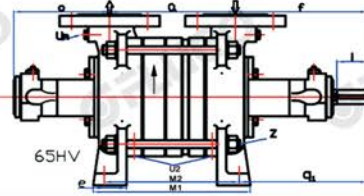
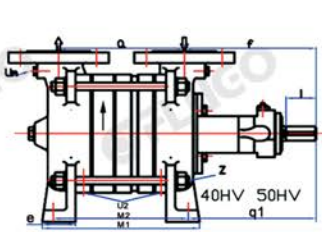
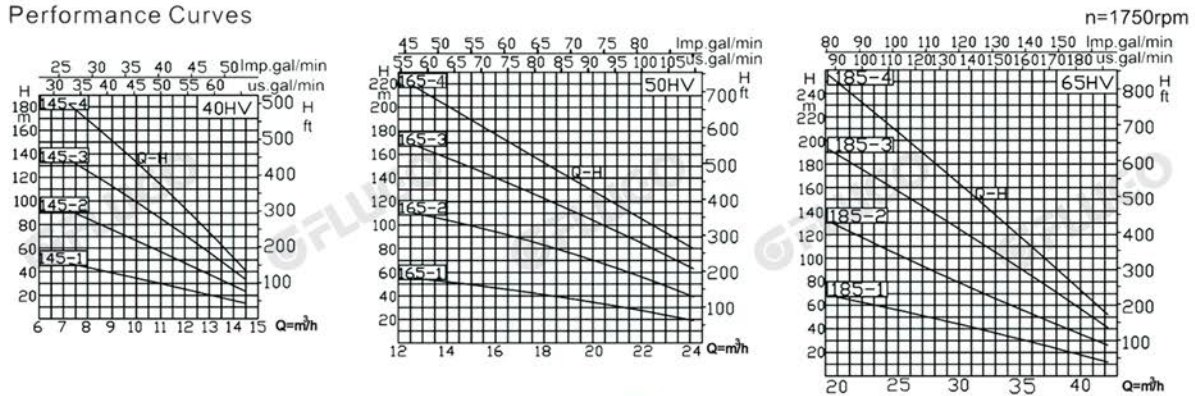


| Type Of Pump | DN, Ae | a   | o   | f   | m1  | m2 | q1  | y  | h1  | h2 | c   | n1  | n2 | b  | s  | l  | d  | t | u |
|--------------|--------|-----|-----|-----|-----|----|-----|----|-----|----|-----|-----|----|----|----|----|----|---|---|
| 25 HV.100-1  | R1     | 78  | 120 | 145 | 83  | 50 | 127 | 9  | 90  | 12 | 156 | 120 | 36 | 13 | 30 | 12 | 15 | 4 |   |
| 25 HV.100-2  |        | 112 | 154 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |
| 25 HV.100-3  |        | 146 | 188 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |
| 25 HV.100-4  |        | 180 | 222 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |
| 32 HV.130-1  | R1 1/4 | 83  | 140 | 167 | 102 | 70 | 117 | 17 | 112 | 15 | 196 | 160 | 36 | 13 | 37 | 16 | 18 | 5 |   |
| 32 HV.130-2  |        | 123 | 180 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |
| 32 HV.130-3  |        | 163 | 220 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |
| 32 HV.130-4  |        | 203 | 260 |     |     |    |     |    |     |    |     |     |    |    |    |    |    |   |   |

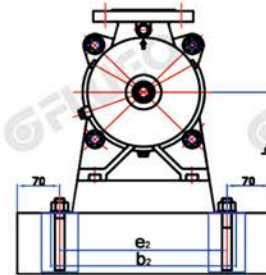
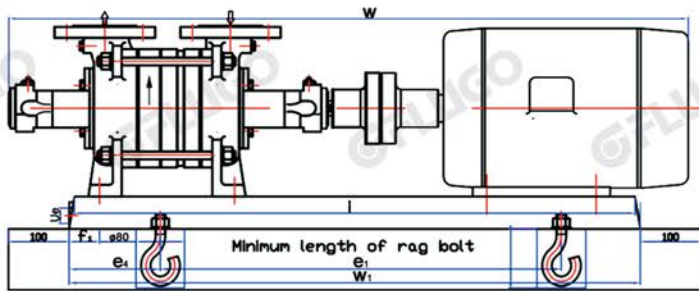


| Type Of Pump | Motor Kw | Baseplate | Coupling | Pump Weight | b2  | c  | e1  | e2  | e4  | f1  | h   | h3  | l   | p2 | w   | w1  | ue  | Rag Bolt<br>DIN529 |         |     |     |     |     |     |     |     |
|--------------|----------|-----------|----------|-------------|-----|----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|--------------------|---------|-----|-----|-----|-----|-----|-----|-----|
| 25 HV.100-1  | 0.55     | 180       | Z90      | 10          | 262 | 20 | 270 | 230 | 90  | 52  | 35  | 125 | 450 | 10 | 574 | 618 | 470 | R1/2               | M12X125 |     |     |     |     |     |     |     |
| 25 HV.100-2  |          |           |          | 12          |     |    |     |     |     |     |     |     |     |    |     |     |     |                    |         | 14  | 320 | 250 | 721 | 520 |     |     |
| 25 HV.100-3  | 0.75     |           |          | 16          |     |    |     |     |     |     |     |     |     |    |     |     |     |                    |         |     |     |     |     |     | 312 | 282 |
| 25 HV.100-4  | 1.1      |           |          | 15          |     |    |     |     |     |     |     |     |     |    |     |     |     |                    |         | 282 | 270 | 250 | 662 | 721 | 520 |     |
| 32 HV.130-1  | 1.5      | 230       |          | 18          | 312 |    | 320 | 280 |     |     |     |     |     |    | 40  | 147 |     |                    |         | 500 | 22  | 786 | 891 |     |     |     |
| 32 HV.130-2  | 0.75     | 200       |          | 21          |     |    |     |     |     |     |     |     |     |    |     |     |     |                    |         |     |     |     |     | 786 | 891 |     |
| 32 HV.130-3  | 1.1      | 230       |          | 24          |     |    |     |     | 786 | 891 |     |     |     |    |     |     |     |                    |         |     |     |     |     |     |     |     |
| 32 HV.130-4  | 1.5      | 260       |          |             |     |    |     |     |     |     | 786 | 891 |     |    |     |     |     |                    |         |     |     |     |     |     |     |     |
| 32 HV.130-4  | 2.2      | 290       |          |             |     |    | 786 | 891 |     |     |     |     |     |    |     |     |     |                    |         |     |     |     |     |     |     |     |
| 32 HV.130-4  | 3        | 290       |          |             |     |    |     |     | 786 | 891 |     |     |     |    |     |     |     |                    |         |     |     |     |     |     |     |     |

Performance Curves



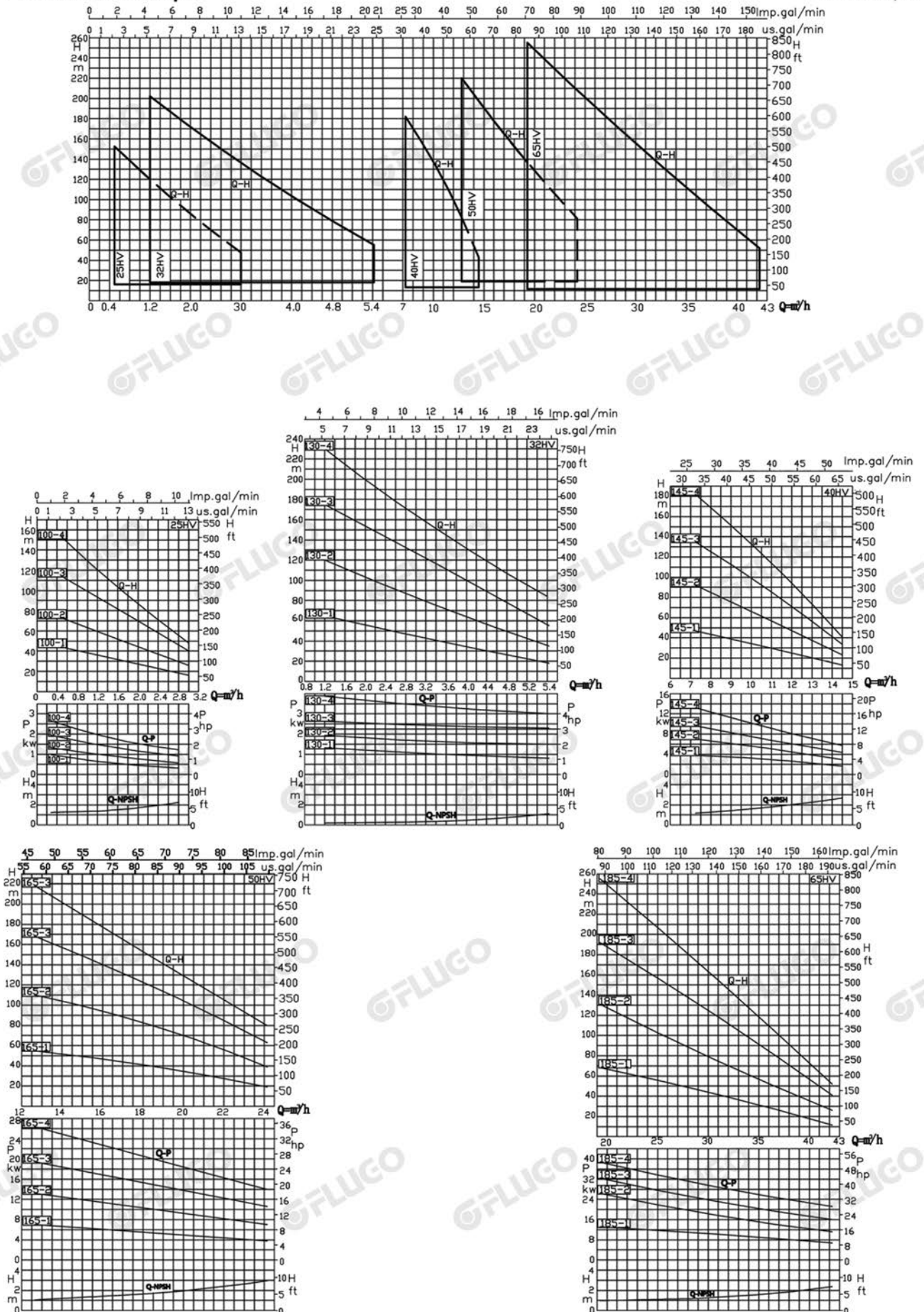
| Type of Pump | DNA,AE | a   | m1  | m2  | l   | h1  | h2  | O   | z | b  | c  | e  | n1  | n2  | s  | q1  | l  | D   | k   | d2 x<br>Num | d  | l  | u |
|--------------|--------|-----|-----|-----|-----|-----|-----|-----|---|----|----|----|-----|-----|----|-----|----|-----|-----|-------------|----|----|---|
| 40HV.145-1   | 40     | 156 | 195 | 155 | 205 | 132 | 132 | /   | 4 | 47 |    | 55 | 218 | 160 | 13 | 205 | 45 | 150 | 110 | 18 x 4      | 19 | 22 | 6 |
| 40HV.145-2   |        | 210 | 250 | 210 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 40HV.145-3   |        | 265 | 305 | 265 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 40HV.145-4   |        | 320 | 360 | 320 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-1   | 50     | 170 | 220 | 185 | 217 | 140 | /   |     |   | 48 | 20 |    |     |     |    | 210 | 50 | 165 | 125 |             | 24 | 27 | 8 |
| 50HV.165-2   |        | 245 | 295 | 260 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-3   |        | 320 | 370 | 335 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 50HV.165-4   |        | 390 | 445 | 410 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-1   | 65     | 190 | 276 | 220 | 251 | 150 | 150 | 180 | 6 | 50 |    | 65 | 250 | 200 | 15 | 234 | 65 | 185 | 145 |             | 28 | 31 |   |
| 65HV.185-2   |        | 280 | 366 | 310 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-3   |        | 370 | 456 | 400 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |
| 65HV.185-4   |        | 460 | 546 | 490 |     |     |     |     |   |    |    |    |     |     |    |     |    |     |     |             |    |    |   |



| Type Of Pump | Motor    |      | baseplate | coupling | Pump Weight | b2  | c  | e1  | e2  | e4  | f1 | h   | h3  | l    | p1 | p2 | w    | w1   | ue | Rag Bolt |
|--------------|----------|------|-----------|----------|-------------|-----|----|-----|-----|-----|----|-----|-----|------|----|----|------|------|----|----------|
| 40HV.145-1   | Y90L-4   | 1.5  | 240       | Z90      | 27          | 330 |    | 480 | 290 | 115 | 62 |     |     | 710  |    | 42 | 786  | 730  |    |          |
|              | Y100L1-4 | 2.2  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 40HV.145-2   | Y100L2-4 | 3.0  | 270       | Z90      | 32          | 360 | 25 | 540 | 320 | 130 | 62 | 65  | 197 | 800  |    | 32 | 836  | 820  |    |          |
|              | Y112M-4  | 4.0  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 40HV.145-3   | Y132S-4  | 5.5  | 300       | Z105     | 37          | 390 |    | 600 | 350 | 150 | 52 |     |     | 900  | /  | /  | 1032 | 920  |    |          |
|              | Y112M-4  | 4.0  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 40HV.145-4   | Y132S-4  | 5.5  | 340       | Z105     | 42          |     |    | 660 | 400 | 170 | 52 | 80  | 212 | 1000 |    | /  | 1087 | 1020 |    |          |
|              | Y132M-4  | 7.5  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 50HV.165-1   | Y100L2-4 | 3.0  | 240       | Z90      | 37          | 330 |    | 480 | 290 | 115 | 28 |     |     | 710  |    | 50 | 871  | 730  |    |          |
|              | Y112M-4  | 4.0  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 50HV.165-2   | Y132S-4  | 5.5  | 270       | Z105     | 46          | 360 | 25 | 600 | 350 | 150 | 58 | 65  | 215 | 800  |    | 38 | 886  | 820  |    |          |
|              | Y132M-4  | 7.5  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 50HV.165-3   | Y160M-4  | 11.0 | 340       | Z120     | 55          | 390 |    | 660 | 400 | 170 | 38 | 80  | 240 | 1000 | 10 | /  | 1180 | 1020 |    |          |
|              | Y160M-4  | 7.5  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 50HV.165-4   | Y160L-4  | 11.0 | 380       | Z120     | 64          | 490 | 36 | 740 | 440 | 190 | 58 | 110 | 270 | 1120 | 10 | /  | 1255 | /    |    |          |
|              | Y160L-4  | 15.0 |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 65HV.185-1   | Y180M-4  | 18.5 | 300       | Z105     | 58          | 390 | 25 | 600 | 350 | 150 | 83 | 65  | 215 | 900  | /  | 18 | 1116 | 920  |    |          |
|              | Y132M-4  | 7.5  |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 65HV.185-2   | Y160M-4  | 11.0 | 380       | Z120     | 67          | 490 | 36 | 740 | 440 | 190 | 93 | 110 | 270 | 1120 | 10 | /  | 1354 | 1100 |    |          |
|              | Y160L-4  | 15.0 |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 65HV.185-3   | Y180M-4  | 18.5 | 430       | Z165     | 79          | 540 | 30 | 840 | 490 | 205 | 83 | 80  | 260 | 1250 | 30 | /  | 1531 | 1270 |    |          |
|              | Y180L-4  | 22.0 |           |          |             |     |    |     |     |     |    |     |     |      |    |    |      |      |    |          |
| 65HV.185-4   | Y200L-4  | 30   | 480       |          | 91          | 540 | 30 | 900 | 490 | 250 | 60 | 50  | 200 | 1450 |    |    | 1690 | 1470 |    |          |

**Performance Graph**

n=1750rpm





AKHK Series Side Channel Pump

Authorized Distributor