



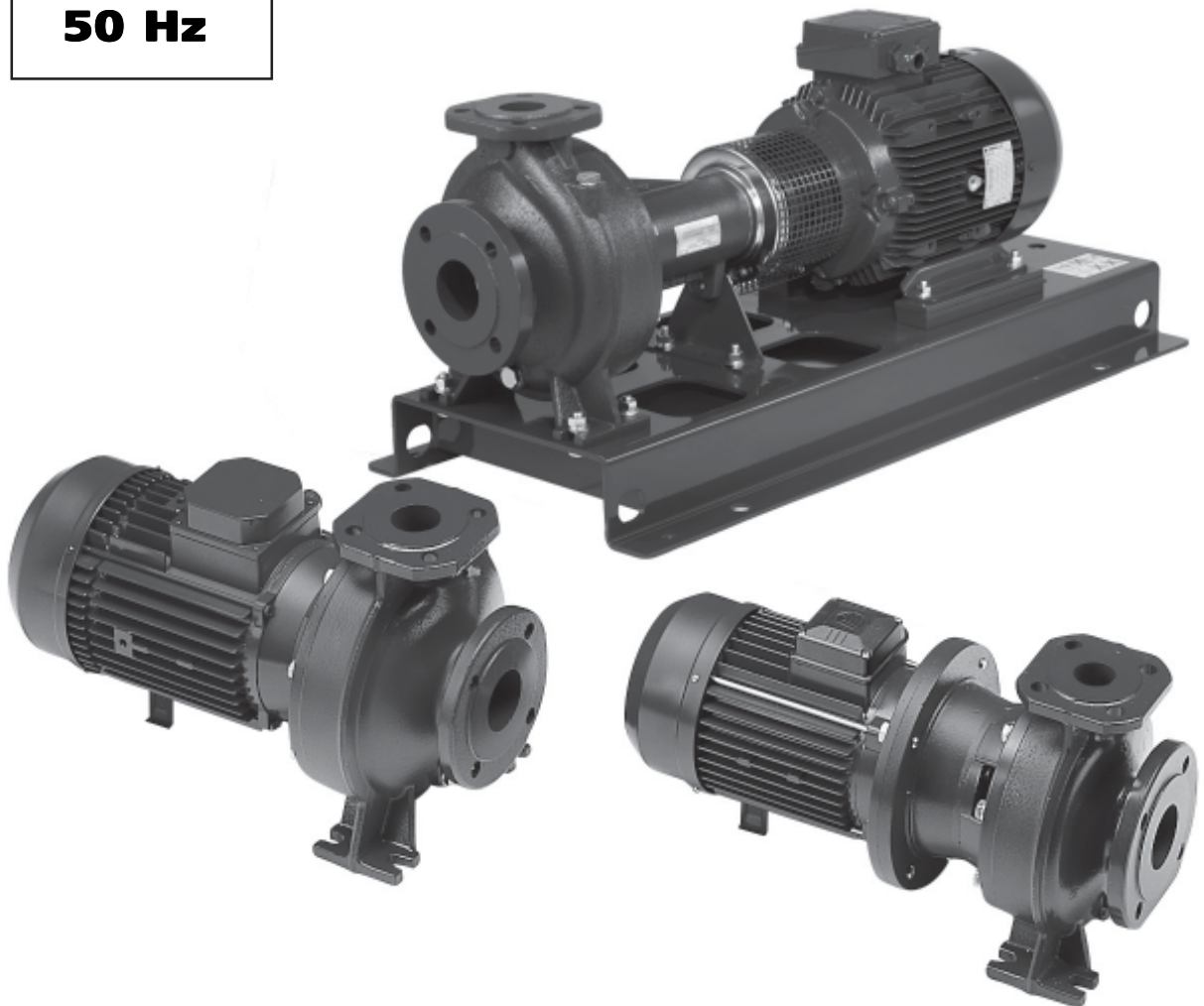
# ITT

Lowara

## FH Series

Centrifugal Electric pumps  
manufactured to standard EN 733  
equipped with IE2 motors  
complying with Regulation (EC) no. 640/2009

**50 Hz**



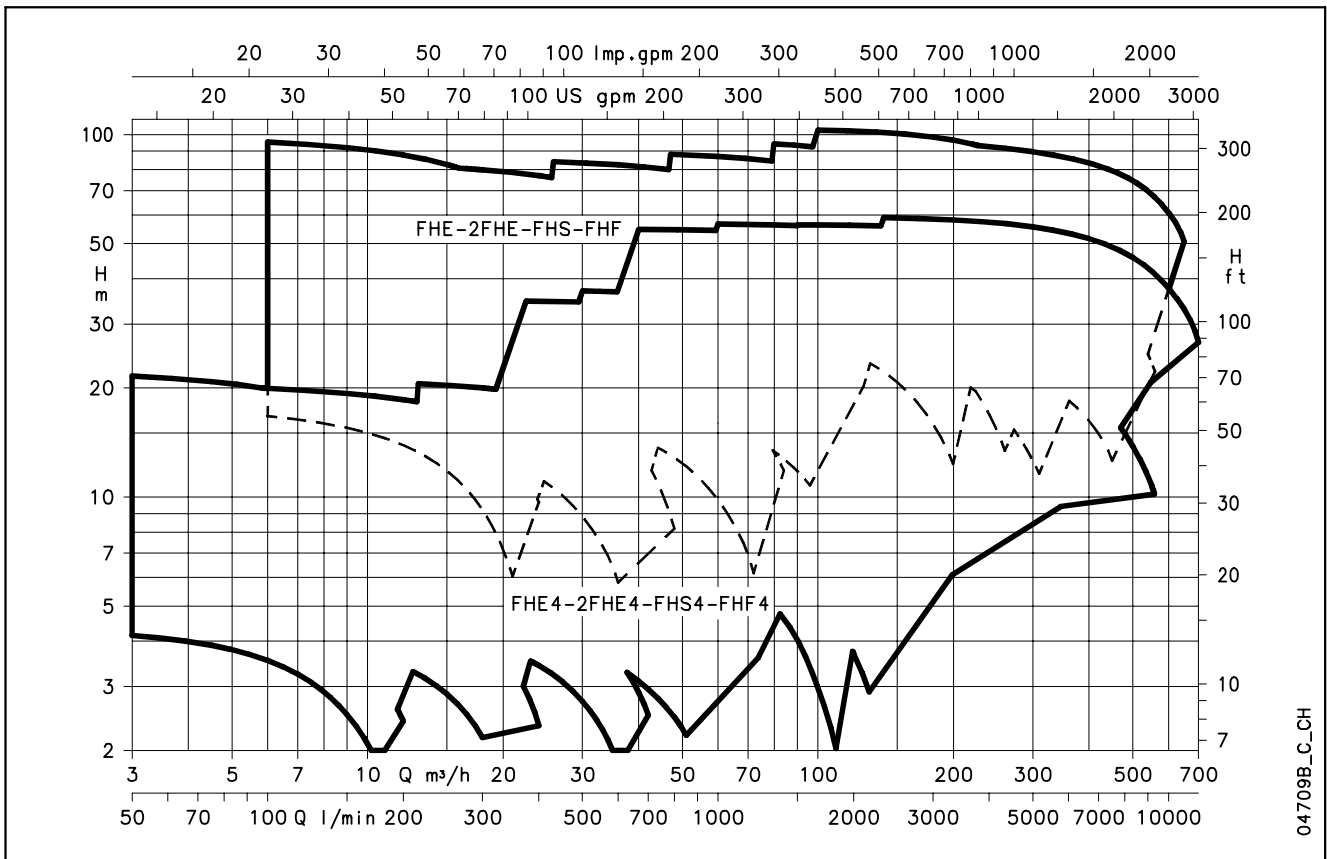
*Engineered for life*



# ITT

# Lowara

## FH SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz



04709B\_C\_CH



## CONTENTS

Specifications .....	<b>5</b>
Construction Characteristics .....	<b>6</b>
List of 2-pole, 50 Hz Models .....	<b>8</b>
List of 4-pole, 50 Hz Models .....	<b>9</b>
List of Models and Table of Materials .....	<b>10</b>
FH Mechanical Seal .....	<b>19</b>
Motors .....	<b>20</b>
Hydraulic Performance Range, 50 Hz, 2 Poles .....	<b>30</b>
Hydraulic Performance Range, 50 Hz, 4 Poles .....	<b>34</b>
Operating Characteristics 50 Hz, 2 Poles .....	<b>38</b>
Operating Characteristics 50 Hz, 4 Poles .....	<b>62</b>
Dimensions and Weights .....	<b>97</b>
Accessories .....	<b>123</b>
Technical Appendix .....	<b>128</b>



**Lowara**

## Centrifugal electric pumps manufactured to Standard EN 733

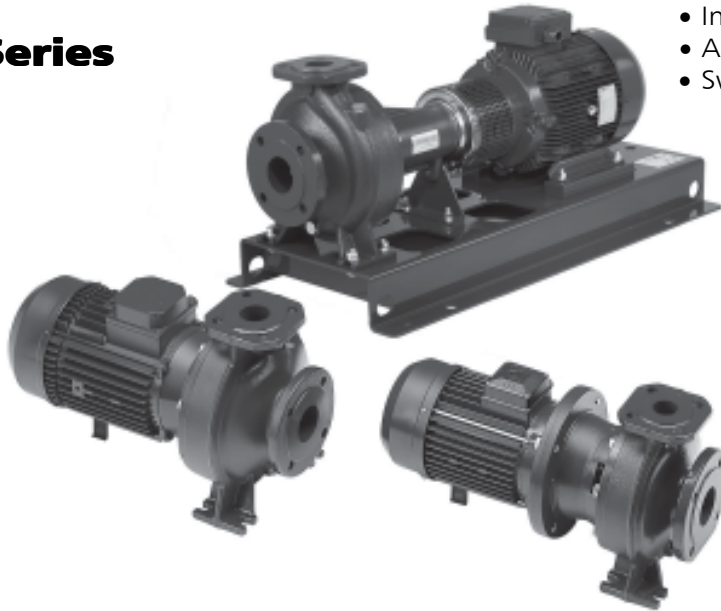
### MARKET SECTORS

CIVIL, AGRICULTURAL, INDUSTRIAL.

### APPLICATIONS

- Handling of clean, chemically non-aggressive water and liquids.
- Water supply and pressure boosting.
- Irrigation.
- Water circulation in air conditioning systems.
  - Washing systems.

## FH Series



- Industry.
- Agriculture.
- Swimming pools.

### SPECIFICATIONS

#### PUMP

- **Delivery** up to 650 m<sup>3</sup>/h, 2 poles.  
750 m<sup>3</sup>/h, 4 poles.
- **Head** over 100 m, 2 poles.  
60 m, 4 poles.
- **Temperature** of pumped liquid
  - -20°C to +85°C for FH 32, 40, 50, 65, 80 standard version.
  - -30°C to +120°C for FH 100, 125, 150 standard version (65-315, 80-315 and 80-400 included).
  - Upon request, up to +140°C for FH 100, 125, 150.
- Maximum operating **pressure**:
  - 12 bar (PN 12) up to FH 80.
  - PN 16 flanges for FH100, 125, 150. Maximum pressure in pump casing: 12 bar for temperatures up to 120°C, 10 bar for temperatures ranging from 120°C to 140°C.
- Wear rings made of AISI 316L stainless steel on impeller front and rear wear plates up to FH80 (65-315, 80-315 and 80-400 excluded).
- Mechanical seal according to EN12756 (ex DIN 24960).

- Mechanical seal lubricated by internal recirculation of pumped liquid to seal housing for FH 32, 40, 50, 65, 80 (65-315, 80-315 and 80-400 excluded).
- Mechanical seal locking pin slot for FH32, 40, 50, 65, 80 (65-315, 80-315 and 80-400 excluded).
- Counter-clockwise rotation when looking at pump from the suction port side.
- **Impeller**: made of AISI 316L stainless steel, **laser technology**, welded for sizes 32, 40, 50, 65-125, cast iron for sizes 65-160, 65-200, 65-250, 65-315, 80, 100, 125, 150.
- **Bronze impeller available on request** (for models normally equipped with cast iron impeller).

#### MOTOR

- Squirrel cage in short circuit, aluminum casing, enclosed construction with external ventilation.
- **Standard supplied IE2 motors are compliant with Regulation (EC) no. 640/2009.**
- IP 55 protection.
- Class 155 (F) insulation.
- Performances according to EN 60034-1.
- Continuous duty.
- Max. ambient temperature: 40°C.
- Condensation drain plugs on all LOWARA motors.
- **Standard voltage:**
  - Single-phase version 220-240 V, 50 Hz
  - Three-phase version 220-240/380-415 V, 50 Hz for powers up to 3 kW;
  - 380-415/660-690 V, 50 Hz for powers above 3 kW.

## CONSTRUCTION CHARACTERISTICS

- Cast iron centrifugal pump with end suction and radial discharge ports.
- Hydraulic sizes and nominal diameter (DN) of suction and discharge ports according to EN 733 (ex DIN 24255).
- Flanges according to EN 1092-2 (ex UNI 2236) and DIN 2532.
- Back pull-out design (impeller, adaptor and motor can be extracted without disconnecting the pump body from the pipes).

## MOTOR-PUMP COUPLING

Three different types of motor/pump coupling are available:

- **FHE**: close-coupled by means of an adaptor bracket with an impeller keyed directly to the motor shaft extension.
- **FHS**: with a bracket, adaptor and rigid coupling keyed to the standard motor shaft extension.
- **FHF**: with bracket, support, flexible coupling and aligning and anchoring base.
- Bare shaft pump and version with spacer coupling are also available.

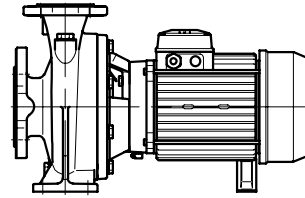
## ACCESSORIES ON REQUEST

- AISI 316 stainless steel or galvanized iron counterflanges.
- Intermediate flange with pressure gauge connection.
- Pump and motor shims.

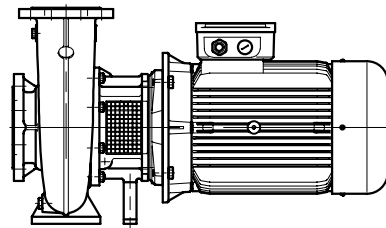
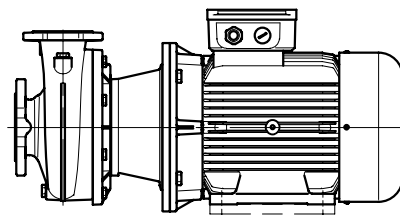
## OPTIONAL FEATURES

- Different voltages and frequencies.
- Special materials for the mechanical seal and gaskets.
- Model with air valve.
- Mechanical seal with anti-rotation lockpin.
- Model with external fluxing of the mechanical seal.
- Tropicalized motors.
- Version with Hydrovar® control system.
- FHF with flexible coupling with spacer.
- Diesel engines.
- Version with bronze impeller.
- ATEX 94/9/CE, Gruppo II, Category 3, gas atmosphere (G).

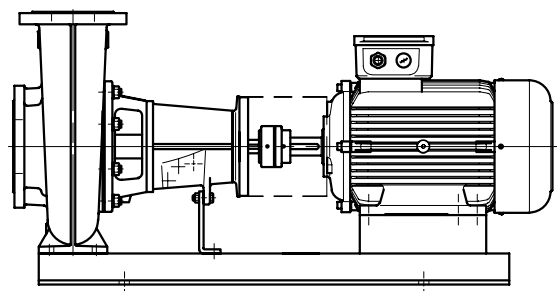
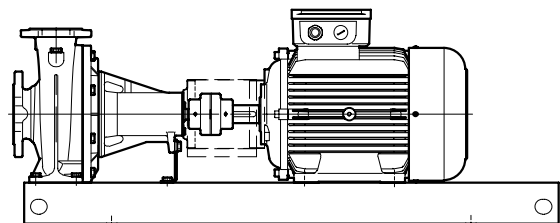
FHE - FHE4



FHS - FHS4



FHF - FHF4



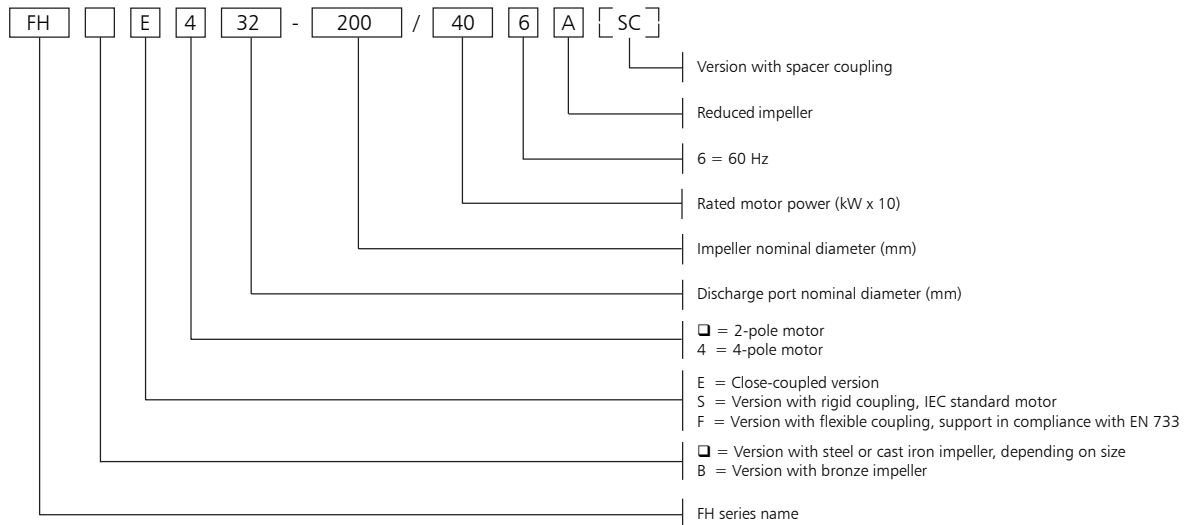
04705A\_C\_SC



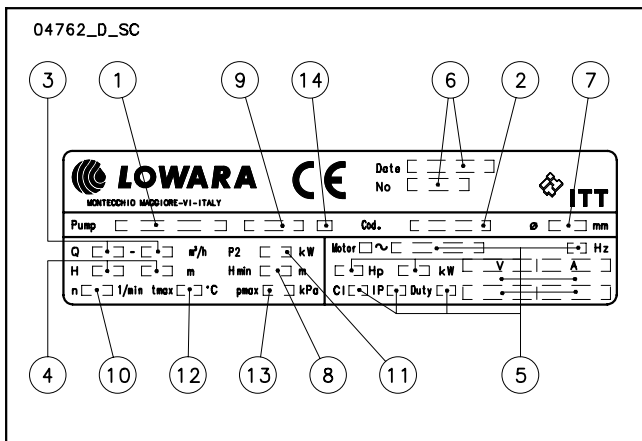
# ITT

# Lowara

## FH SERIES IDENTIFICATION CODE



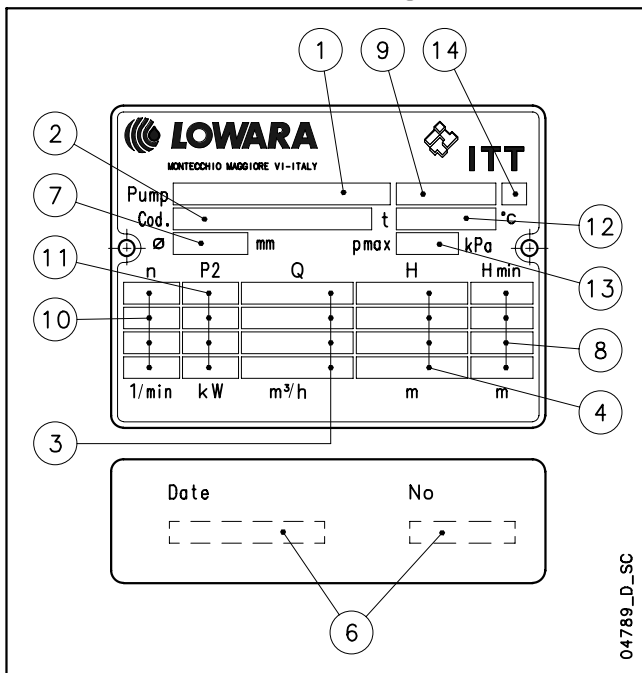
## FHE - FHS RATING PLATE



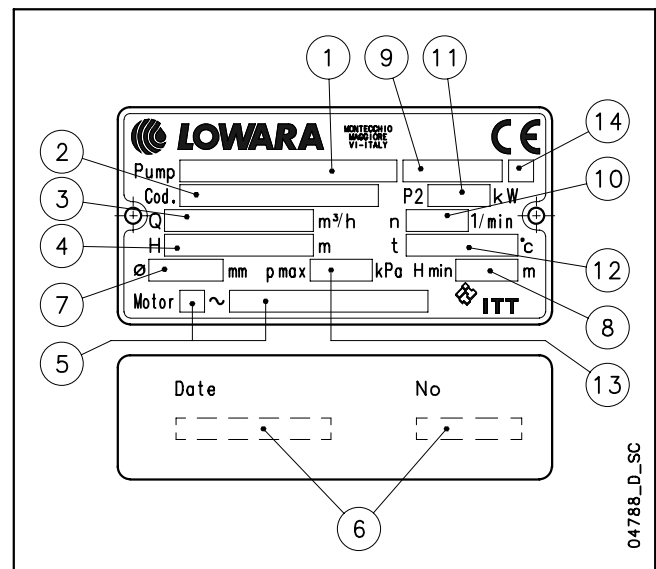
## LEGEND

- 1 - Electric pump type
- 2 - Code
- 3 - Delivery range
- 4 - Head range
- 5 - Motor type
- 6 - Date of manufacturing and serial number
- 7 - Impeller diameter
- 8 - Minimum head
- 9 - Mechanical seal material identification code
- 10 - Speed
- 11 - Rated power
- 12 - Maximum operating temperature
- 13 - Maximum operating pressure
- 14 - O-ring material identification code

## FHF RATING PLATE (PUMP ONLY)



## FHF RATING PLATE (ELECTRIC PUMP)





# ITT

# Lowara

## LIST OF MODELS, FH 50 Hz SERIES 2 POLES

SIZE	kW	VERSION					
		FHEM	2FHE	FHE	FHS	FHF	FHF..SC
32-125/07	0,75	•	-	•	•	•	•
32-125/11	1,1	•	-	•	•	•	•
32-160/15	1,5	•	-	•	•	•	•
32-160/22	2,2	•	-	•	•	•	•
32-200/30	3	-	-	•	•	•	•
32-200/40	4	-	-	•	•	•	•
32-250/55	5,5	-	•	-	-	-	-
32-250/75	7,5	-	•	-	-	-	-
40-125/11	1,1	•	-	•	•	•	•
40-125/15	1,5	•	-	•	•	•	•
40-125/22	2,2	•	-	•	•	•	•
40-160/30	3	-	-	•	•	•	•
40-160/40	4	-	-	•	•	•	•
40-200/55	5,5	-	-	•	•	•	•
40-200/75	7,5	-	-	•	•	•	•
40-250/92	9,2	-	-	•	-	-	-
40-250/110A	11	-	-	-	•	•	•
40-250/110	11	-	-	•	•	•	•
40-250/150	15	-	-	•	•	•	•
50-125/22	2,2	•	-	•	•	•	•
50-125/30	3	-	-	•	•	•	•
50-125/40	4	-	-	•	•	•	•
50-160/55	5,5	-	-	•	•	•	•
50-160/75	7,5	-	-	•	•	•	•
50-200/92	9,2	-	-	•	-	-	-
50-200/110A	11	-	-	-	•	•	•
50-200/110	11	-	-	•	•	•	•
50-250/150	15	-	-	•	•	•	•
50-250/185	18,5	-	-	•	•	•	•
50-250/220	22	-	-	•	•	•	•
65-125/40	4	-	-	•	•	•	•
65-125/55	5,5	-	-	•	•	•	•
65-125/75	7,5	-	-	•	•	•	•
65-160/92	9,2	-	-	•	-	-	-
65-160/110A	11	-	-	-	•	•	•
65-160/110	11	-	-	•	•	•	•
65-160/150	15	-	-	•	•	•	•
65-200/150	15	-	-	•	•	•	•
65-200/185	18,5	-	-	•	•	•	•
65-200/220	22	-	-	•	•	•	•
65-250/220	22	-	-	•	•	•	•
65-250/300	30	-	-	-	•	•	•
65-250/370	37	-	-	-	•	•	•
80-160/110	11	-	-	•	•	•	•
80-160/150	15	-	-	•	•	•	•
80-160/185	18,5	-	-	•	•	•	•
80-200/220	22	-	-	•	•	•	•
80-200/300	30	-	-	-	•	•	•
80-250/370	37	-	-	-	•	•	•
80-250/450	45	-	-	-	•	•	•
80-250/550	55	-	-	-	•	•	•

• = Available

fh\_fhe-fhs-fhf\_2p50-en\_d\_tem

SIZE	kW	VERSION		
		FHS	FHF	FHF..SC
100-160/185	18,5	-	•	•
100-160/220	22	•	•	•
100-160/300	30	•	•	•
100-200/185	18,5	-	•	•
100-200/300	30	•	•	•
100-200/370	37	•	•	•
100-200/450	45	-	•	•
100-250/300	30	-	•	•
100-250/450	45	-	•	•
100-250/550	55	-	•	•
100-250/750	75	-	•	•
100-250/900	90	-	•	•
125-200/300	30	-	•	•
125-200/450	45	-	•	•
125-200/550	55	-	•	•
125-270/750	75	-	•	•
125-270/900	90	-	•	•
125-270/1100	110	-	•	•
125-270/1320	132	-	•	•

• = Available

lm\_fhs\_fhf\_2p50-en\_d\_tem

### LEGEND

**FHE** : Close-coupled version with adapter, and impeller keyed directly to the motor shaft extension.

**2FHE** : Close-coupled version with adapter, and 2 impellers keyed directly to the motor shaft extension.

**FHE M** : FHE version with single-phase motor.

**FHS** : Coupled by means of adapter, bracket and rigid coupling keyed to the standard motor shaft extension.

**FHF** : Coupled by means of adapter, support, flexible coupling and aligning and anchoring base.

**FHF..SC** : Coupled by means of adapter, support, spacer coupling, aligning and anchoring base.



**LIST OF MODELS, FH 50 Hz SERIES  
4 POLES**

SIZE	kW	VERSION			
		FHE4	2FHE4	FHS4	FHF4
32-125/02A	0,25	•	-	-	•
32-125/02	0,25	•	-	-	•
32-160/02	0,25	•	-	-	•
32-160/03	0,37	•	-	-	•
32-200/03	0,37	•	-	-	•
32-200/05	0,55	•	-	-	•
32-250/07	0,75	-	•	-	-
32-250/11	1,1	-	•	-	-
40-125/02A	0,25	•	-	-	•
40-125/02	0,25	•	-	-	•
40-125/03	0,37	•	-	-	•
40-160/03	0,37	•	-	-	•
40-160/05	0,5	•	-	-	•
40-200/07	0,75	•	-	•	•
40-200/11	1,1	•	-	•	•
40-250/11	1,1	•	-	•	•
40-250/15	1,5	•	-	•	•
40-250/22	2,2	•	-	•	•
50-125/03A	0,37	•	-	-	•
50-125/03	0,37	•	-	-	•
50-125/05	0,5	•	-	-	•
50-160/07	0,75	•	-	•	•
50-160/11	1,1	•	-	•	•
50-200/11	1,1	•	-	•	•
50-200/15	1,5	•	-	•	•
50-250/22A	2,2	•	-	•	•
50-250/22	2,2	•	-	•	•
50-250/30	3	•	-	•	•
65-125/05	0,5	•	-	•	•
65-125/07	0,75	•	-	•	•
65-125/11	1,1	•	-	•	•
65-160/11	1,1	•	-	•	•
65-160/15	1,5	•	-	•	•
65-160/22	2,2	•	-	•	•
65-200/15	1,5	•	-	•	•
65-200/22	2,2	•	-	•	•
65-200/30	3	•	-	•	•
65-250/30	3	•	-	•	•
65-250/40	4	•	-	•	•
65-250/55	5,5	•	-	•	•
65-315/40	4	-	-	-	•
65-315/55	5,5	-	-	-	•
65-315/75	7,5	-	-	•	•
65-315/110A	11	-	-	-	•
65-315/110	11	-	-	•	•
80-160/15	1,5	•	-	•	•
80-160/22	2,2	•	-	•	•
80-200/30	3	•	-	•	•
80-200/40	4	•	-	•	•
80-250/40	4	•	-	•	•
80-250/55	5,5	•	-	•	•
80-250/75	7,5	•	-	•	•
80-315/55	5,5	-	-	-	•
80-315/75	7,5	-	-	-	•
80-315/110	11	-	-	•	•
80-315/150	15	-	-	•	•
80-400/185	18,5	-	-	-	•
80-400/220	22	-	-	-	•
80-400/300	30	-	-	-	•

• = Available

fh\_fhe4-fhs4-fhf4\_4p50-en\_d\_tem

SIZE	kW	VERSION	
		FHS4	FHF4
100-160/22	2,2	-	•
100-160/30	3	•	•
100-160/40	4	-	•
100-200/22	2,2	-	•
100-200/40	4	•	•
100-200/55	5,5	•	•
100-250/40	4	-	•
100-250/55	5,5	-	•
100-250/75	7,5	•	•
100-250/110	11	•	•
100-315/150	15	•	•
100-315/185	18,5	•	•
100-315/220	22	•	•
100-400/300	30	-	•
100-400/450	45	-	•
125-200/40	4	-	•
125-200/55	5,5	•	•
125-200/75	7,5	•	•
125-250/75	7,5	-	•
125-250/110	11	•	•
125-250/150	15	•	•
125-250/185	18,5	•	•
125-270/75	7,5	-	•
125-270/110	11	-	•
125-270/150	15	-	•
125-315/185	18,5	-	•
125-315/220	22	•	•
125-315/300	30	•	•
125-315/370	37	-	•
125-400/220	22	-	•
125-400/300	30	-	•
125-400/450	45	-	•
125-400/550	55	-	•
150-250/150	15	•	•
150-250/185	18,5	•	•
150-250/220	22	•	•
150-250/300	30	•	•
150-315/300	30	•	•
150-315/370	37	-	•
150-315/450	45	-	•
150-315/550	55	-	•
150-400/300	30	-	•
150-400/370	37	-	•
150-400/450	45	-	•
150-400/550	55	-	•
150-400/750	75	-	•
150-400/900	90	-	•

• = Available

lm\_fhs4-fhf4\_4p50-en\_d\_tem



## 2FHE-2FHE4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

04736\_B\_DS

VERSIONS	
2 POLES	4 POLES
2FHE 32-250/55	2FHE4 32-250/07
2FHE 32-250/75	2FHE4 32-250/11

fh-2fhe-p-en\_a\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Suction flange	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Diffuser	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
5	Impeller spacer	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
6	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plugs seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
16	Pump body fastening bolts and screws	Galvanized steel		

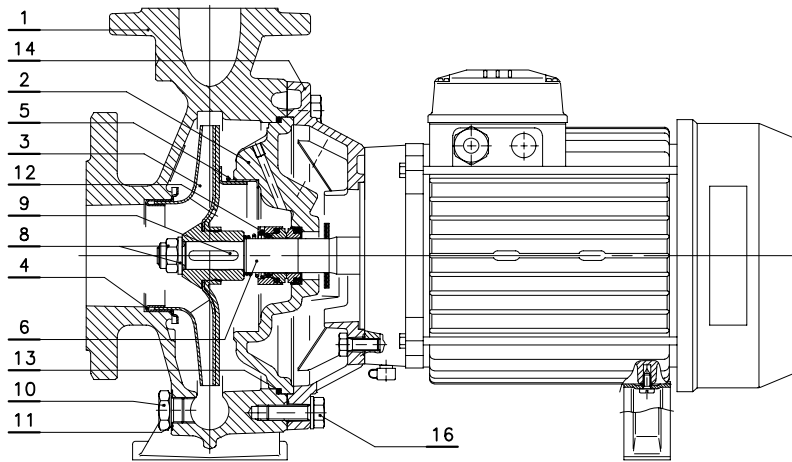


# ITT

# Lowara

## FHE-FHE4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

04702\_B\_DS



VERSIONS	
2 POLES	4 POLES
FHE 32-125/07	FHE4 32-200/05
FHE 32-125/11	FHE4 40-160/05
FHE 32-160/15	FHE4 40-200/07
FHE 32-160/22	FHE4 40-200/11
FHE 32-200/30	FHE4 40-250/11
FHE 32-200/40	FHE4 40-250/15
FHE 40-125/11	FHE4 40-250/22
FHE 40-125/15	FHE4 50-125/05
FHE 40-125/22	FHE4 50-160/07
FHE 40-160/30	FHE4 50-160/11
FHE 40-160/40	FHE4 50-200/11
FHE 40-200/55	FHE4 50-200/15
FHE 40-200/75	FHE4 50-250/22A
FHE 40-250/92	FHE4 50-250/22
FHE 40-250/110	FHE4 50-250/30
FHE 50-125/22	FHE4 65-125/05
FHE 50-125/30	FHE4 65-125/07
FHE 50-125/40	FHE4 65-125/11
FHE 50-160/55	FHE4 65-160/11
FHE 50-160/75	FHE4 65-160/15
FHE 50-200/92	FHE4 65-160/22
FHE 50-200/110	FHE4 65-200/15
FHE 65-125/40	FHE4 65-200/22
FHE 65-125/55	FHE4 65-200/30
FHE 65-125/75	FHE4 65-250/30
FHE 65-160/92	FHE4 65-250/40
FHE 65-160/110	FHE4 65-250/55
FHE 80-160/110	FHE4 80-160/15
	FHE4 80-160/22
	FHE4 80-200/30
	FHE4 80-200/40
	FHE4 80-250/40
	FHE4 80-250/55
	FHE4 80-250/75

fhe-fhe4-p-en\_a\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Seal housing	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
	Impeller	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Impeller	Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Wear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Counterwear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
6	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
7	Shaft rigid coupling	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plugs seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
14	Adapter *	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
16	Pump body fastening bolts and screws	Galvanized steel		

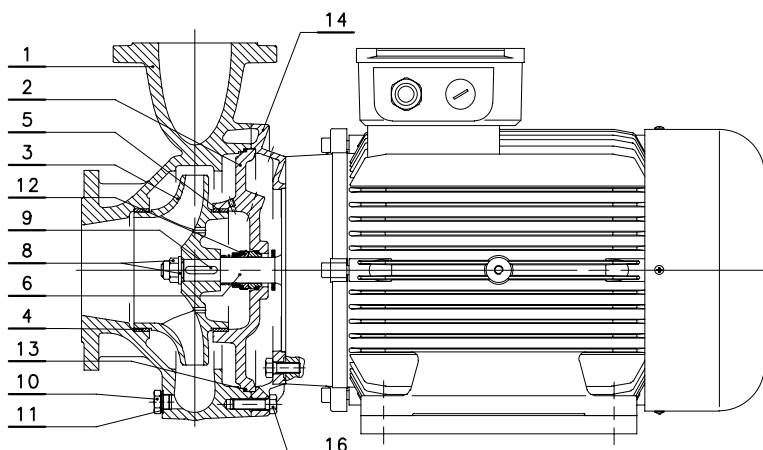
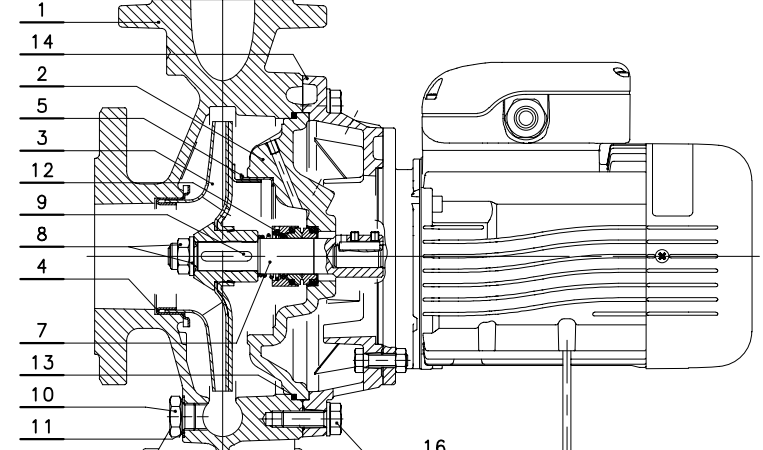
\* For 32/40-125 2/4 pole, 32/40-160 2/4 pole versions



# ITT

# Lowara

## FHE-FHE4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

<p>04702A_B_DS</p> 	<table border="1"> <thead> <tr> <th colspan="2">VERSIONS</th> </tr> <tr> <th colspan="2">2 POLES</th> </tr> </thead> <tbody> <tr><td>FHE 40-250/150</td></tr> <tr><td>FHE 50-250/150</td></tr> <tr><td>FHE 50-250/185</td></tr> <tr><td>FHE 50-250/220</td></tr> <tr><td>FHE 65-160/150</td></tr> <tr><td>FHE 65-200/150</td></tr> <tr><td>FHE 65-200/185</td></tr> <tr><td>FHE 65-200/220</td></tr> <tr><td>FHE 65-250/220</td></tr> <tr><td>FHE 80-160/150</td></tr> <tr><td>FHE 80-160/185</td></tr> <tr><td>FHE 80-200/220</td></tr> </tbody> </table> <p style="text-align: right;">fh-fhe-s-en_a_mo</p>	VERSIONS		2 POLES		FHE 40-250/150	FHE 50-250/150	FHE 50-250/185	FHE 50-250/220	FHE 65-160/150	FHE 65-200/150	FHE 65-200/185	FHE 65-200/220	FHE 65-250/220	FHE 80-160/150	FHE 80-160/185	FHE 80-200/220
VERSIONS																	
2 POLES																	
FHE 40-250/150																	
FHE 50-250/150																	
FHE 50-250/185																	
FHE 50-250/220																	
FHE 65-160/150																	
FHE 65-200/150																	
FHE 65-200/185																	
FHE 65-200/220																	
FHE 65-250/220																	
FHE 80-160/150																	
FHE 80-160/185																	
FHE 80-200/220																	
	<table border="1"> <thead> <tr> <th colspan="2">VERSIONS</th> </tr> <tr> <th colspan="2">4 POLES</th> </tr> </thead> <tbody> <tr><td>FHE4 32-125/02A</td></tr> <tr><td>FHE4 32-125/02</td></tr> <tr><td>FHE4 32-160/02</td></tr> <tr><td>FHE4 32-160/03</td></tr> <tr><td>FHE4 32-200/03</td></tr> <tr><td>FHE4 40-125/02A</td></tr> <tr><td>FHE4 40-125/02</td></tr> <tr><td>FHE4 40-125/03</td></tr> <tr><td>FHE4 40-160/03</td></tr> <tr><td>FHE4 50-125/03A</td></tr> <tr><td>FHE4 50-125/03</td></tr> </tbody> </table> <p style="text-align: right;">fh-fhe4-p-en_a_mo</p>	VERSIONS		4 POLES		FHE4 32-125/02A	FHE4 32-125/02	FHE4 32-160/02	FHE4 32-160/03	FHE4 32-200/03	FHE4 40-125/02A	FHE4 40-125/02	FHE4 40-125/03	FHE4 40-160/03	FHE4 50-125/03A	FHE4 50-125/03	
VERSIONS																	
4 POLES																	
FHE4 32-125/02A																	
FHE4 32-125/02																	
FHE4 32-160/02																	
FHE4 32-160/03																	
FHE4 32-200/03																	
FHE4 40-125/02A																	
FHE4 40-125/02																	
FHE4 40-125/03																	
FHE4 40-160/03																	
FHE4 50-125/03A																	
FHE4 50-125/03																	

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Seal housing	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
	Impeller	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Impeller	Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Wear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Counterwear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
6	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
7	Shaft rigid coupling	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plugs seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
14	Adapter *	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
16	Pump body fastening bolts and screws	Galvanized steel		

\* For 32/40-125 2/4 pole, 32/40-160 2/4 pole versions

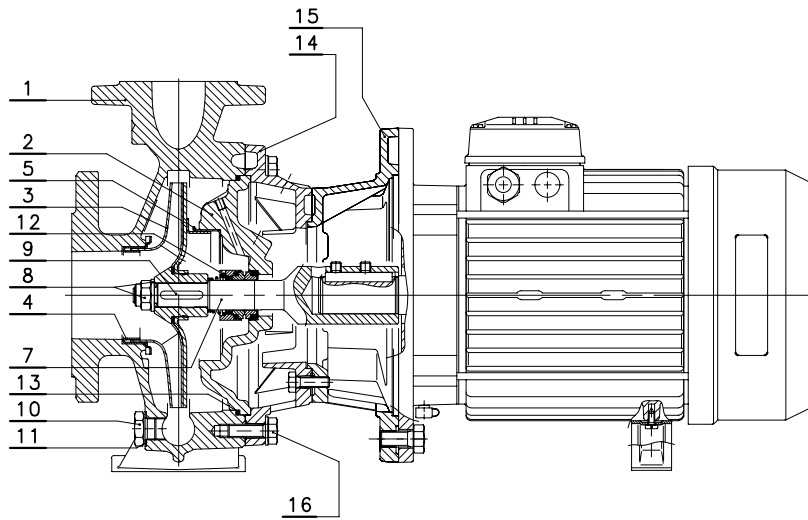


# ITT

# Lowara

## FHS-FHS4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

04756\_B\_DS



VERSIONS	
2 POLES	4 POLES
FHS 32-125/07	FHS4 40-200/07
FHS 32-125/11	FHS4 40-200/11
FHS 32-160/15	FHS4 40-250/11
FHS 32-160/22	FHS4 40-250/15
FHS 32-200/30	FHS4 40-250/22
FHS 32-200/40	FHS4 50-160/07
FHS 40-125/11	FHS4 50-160/11
FHS 40-125/15	FHS4 50-200/11
FHS 40-125/22	FHS4 50-200/15
FHS 40-160/30	FHS4 50-250/22A
FHS 40-160/40	FHS4 50-250/22
FHS 40-200/55	FHS4 50-250/30
FHS 40-200/75	FHS4 65-125/05
FHS 50-125/22	FHS4 65-125/07
FHS 50-125/30	FHS4 65-125/11
FHS 50-125/40	FHS4 65-160/11
FHS 50-160/55	FHS4 65-160/15
FHS 50-160/75	FHS4 65-160/22
FHS 65-125/40	FHS4 65-200/15
FHS 65-125/55	FHS4 65-200/22
FHS 65-125/75	FHS4 65-200/30
	FHS4 65-250/30
	FHS4 65-250/40
	FHS4 65-250/55
	FHS4 80-160/15
	FHS4 80-160/22
	FHS4 80-200/30
	FHS4 80-200/40
	FHS4 80-250/40
	FHS4 80-250/55
	FHS4 80-250/75

fhs-fhs4-p-en\_a\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Seal housing	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
	Impeller	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Impeller	Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Wear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Counterwear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
7	Shaft rigid coupling	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plug seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
14	Adapter *	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Adapter motor connector	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
16	Pump body fastening bolts and screws	Galvanized steel		

\* For 32/40-125 2/4 pole, 32/40-160 2/4 pole



# ITT

# Lowara

## FHS SERIES LIST OF MODELS AND TABLE OF MATERIALS

<p>04757_B_DS</p>	<table border="1"> <thead> <tr> <th colspan="2">VERSIONS 2 POLES</th> </tr> </thead> <tbody> <tr> <td>FHS 40-250/110A</td> <td>FHS 65-160/110A</td> </tr> <tr> <td>FHS 40-250/110</td> <td>FHS 65-160/110</td> </tr> <tr> <td>FHS 40-250/150</td> <td>FHS 65-160/150</td> </tr> <tr> <td>FHS 50-200/110A</td> <td>FHS 65-200/150</td> </tr> <tr> <td>FHS 50-200/110</td> <td>FHS 65-200/185</td> </tr> <tr> <td>FHS 50-250/150</td> <td>FHS 65-200/220</td> </tr> <tr> <td>FHS 50-250/185</td> <td>FHS 65-250/220</td> </tr> <tr> <td>FHS 50-250/220</td> <td>FHS 80-160/110</td> </tr> <tr> <td></td> <td>FHS 80-160/150</td> </tr> <tr> <td></td> <td>FHS 80-160/185</td> </tr> <tr> <td></td> <td>FHS 80-200/220</td> </tr> </tbody> </table> <p style="text-align: right;">fh-fhs-s-en_a_mo</p>	VERSIONS 2 POLES		FHS 40-250/110A	FHS 65-160/110A	FHS 40-250/110	FHS 65-160/110	FHS 40-250/150	FHS 65-160/150	FHS 50-200/110A	FHS 65-200/150	FHS 50-200/110	FHS 65-200/185	FHS 50-250/150	FHS 65-200/220	FHS 50-250/185	FHS 65-250/220	FHS 50-250/220	FHS 80-160/110		FHS 80-160/150		FHS 80-160/185		FHS 80-200/220
VERSIONS 2 POLES																									
FHS 40-250/110A	FHS 65-160/110A																								
FHS 40-250/110	FHS 65-160/110																								
FHS 40-250/150	FHS 65-160/150																								
FHS 50-200/110A	FHS 65-200/150																								
FHS 50-200/110	FHS 65-200/185																								
FHS 50-250/150	FHS 65-200/220																								
FHS 50-250/185	FHS 65-250/220																								
FHS 50-250/220	FHS 80-160/110																								
	FHS 80-160/150																								
	FHS 80-160/185																								
	FHS 80-200/220																								
	<table border="1"> <thead> <tr> <th colspan="2">VERSIONS 2 POLES</th> </tr> </thead> <tbody> <tr> <td>FHS 65-250/300</td> <td></td> </tr> <tr> <td>FHS 65-250/370</td> <td></td> </tr> <tr> <td>FHS 80-200/300</td> <td></td> </tr> <tr> <td>FHS 80-250/370</td> <td></td> </tr> <tr> <td>FHS 80-250/450</td> <td></td> </tr> <tr> <td>FHS 80-250/550</td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">fh-fhs30-55-s-en_a_mo</p>	VERSIONS 2 POLES		FHS 65-250/300		FHS 65-250/370		FHS 80-200/300		FHS 80-250/370		FHS 80-250/450		FHS 80-250/550											
VERSIONS 2 POLES																									
FHS 65-250/300																									
FHS 65-250/370																									
FHS 80-200/300																									
FHS 80-250/370																									
FHS 80-250/450																									
FHS 80-250/550																									

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Seal housing	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
	Impeller	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Impeller	Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Wear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Counterwear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
7	Shaft rigid coupling	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plug seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR (standard version)		
13	Elastomers	NBR (standard version)		
14	Adapter *	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Adapter motor connector	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
16	Pump body fastening bolts and screws	Galvanized steel		

\* For 32/40-125 2/4 pole, 32/40-160 2/4 pole

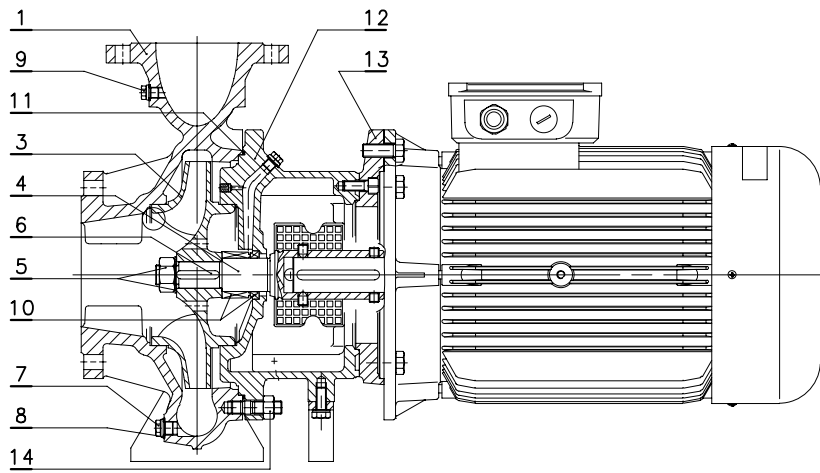


# ITT

# Lowara

## FHS-FHS4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

04766\_C\_DS



VERSIONS	
2 POLES	4 POLES
FHS 100-160/185	FHS4 65-315/75
FHS 100-160/220	FHS4 65-315/110
FHS 100-160/300	FHS4 80-315/110
FHS 100-200/300	FHS4 80-315/150
FHS 100-200/370	FHS4 100-200/55
	FHS4 100-250/75
	FHS4 100-250/110
	FHS4 100-315/150
	FHS4 100-315/185
	FHS4 100-315/220
	FHS4 125-200/55
	FHS4 125-200/75
	FHS4 125-250/110
	FHS4 125-250/150
	FHS4 125-250/185
	FHS4 125-315/220
	FHS4 125-315/300
	FHS4 150-250/150
	FHS4 150-250/185
	FHS4 150-250/220
	FHS4 150-250/300
	FHS4 150-315/300

lm-fhs-fhs4-s-en\_b\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
2	Seal housing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
3	Impeller	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
		Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Rigid coupling	Stainless steel	EN 10088-1-X20Cr13 (1.4021)	AISI 420
5	Impeller lock nut and washer	Steel		
6	Tab	Steel	EN 10083-1-C45E (1.1191)	-
7	Fill and drain plugs	Steel		
8	Fill/drain plug seals	Asbestos-free synthetic fiber AFM34 ®		
9	Plugs for gauge connectors	Steel		
10	Mechanical seal	Silicon carbide / Carbon / EPDM (standard version)		
11	Elastomers	EPDM (standard version)		
12	Adapter	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
13	Adapter motor connector	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
14	Pump body fastening bolts and screws	Steel		

lm\_fhs 65-150-en\_c\_tm



# ITT

# Lowara

## FHS4 SERIES LIST OF MODELS AND TABLE OF MATERIALS

04767\_D\_DS

**VERSIONS**  
**4 POLES**

FHS4 100-160/30
FHS4 100-200/40

lm-fhs4-p-en\_a\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
2	Seal housing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
3	Impeller	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
		Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Rigid coupling	Stainless steel	EN 10088-1-X20Cr13 (1.4021)	AISI 420
5	Impeller lock nut and washer	Steel		
6	Tab	Steel	EN 10083-1-C45E (1.1191)	-
7	Fill and drain plugs	Steel		
8	Fill/drain plug seals	Asbestos-free synthetic fiber AFM34 ®		
9	Plugs for gauge connectors	Steel		
10	Mechanical seal	Silicon carbide / Carbon / EPDM (standard version)		
11	Elastomers	EPDM (standard version)		
12	Adapter	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
13	Adapter motor connector	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
14	Pump body fastening bolts and screws	Steel		

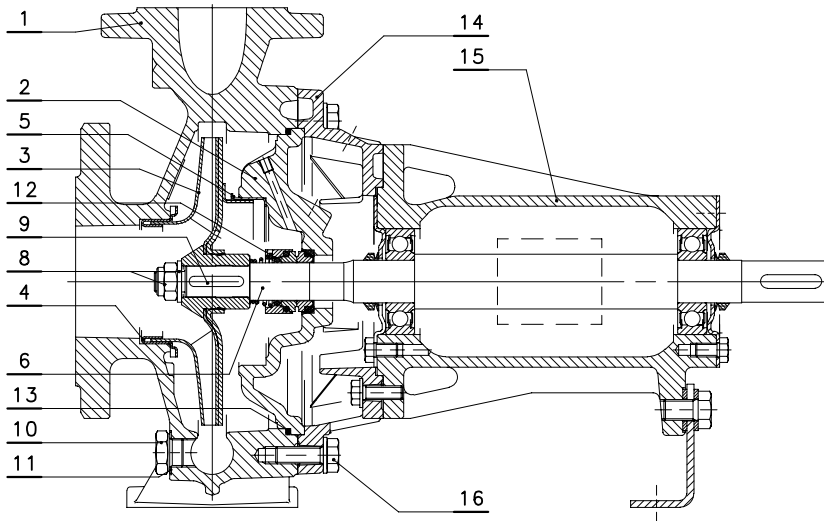
lm\_fhs 65-150-en\_c\_tm





## FHF BARE SHAFT SERIES LIST OF MODELS AND TABLE OF MATERIALS

04779\_B\_DS



### VERSIONS

FHF 32-125
FHF 32-160
FHF 32-200
FHF 40-125
FHF 40-160
FHF 40-200
FHF 40-250
FHF 50-125
FHF 50-160
FHF 50-200
FHF 50-250
FHF 65-125
FHF 65-160
FHF 65-200
FHF 65-250
FHF80-160
FHF 80-200
FHF 80-250

fh-fhf-p-en\_a\_mo

REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
2	Seal housing	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
3	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
	Impeller	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
	Impeller	Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Wear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Counterwear ring	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
6	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Impeller lock nut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
10	Fill and drain plugs	Nickel-plated brass	EN 12164-CuZn39Pb3 (CW614N)	-
11	Fill and drain plug seals	Aluminium	EN 573-AW-AI99,5 (AW1050A)	-
12	Mechanical seal	Ceramic / Carbon / NBR standard version)		
13	Elastomers	NBR (standard version)		
14	Adapter *	Aluminium	EN 1706-AC-AISI11Cu2 (Fe) (AC46100)	-
	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
15	Transmission support body	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
16	Pump body fastening bolts and screws	Galvanized steel		

\* For 32/40-125 2/4 pole, 32/40-160 2/4 pole versions



# ITT

# Lowara

## FHF BARE SHAFT SERIES LIST OF MODELS AND TABLE OF MATERIALS

04784\_C\_DS

VERSIONS	
FHF 65-315	
FHF 80-315	
FHF 80-400	
FHF 100-160	
FHF 100-200	
FHF 100-250	
FHF 100-315	
FHF 100-400	
FHF 125-200	
FHF 125-250	
FHF 125-270	
FHF 125-315	
FHF 125-400	
FHF 150-250	
FHF 150-315	
FHF 150-400	

I-fhf-p-en\_a\_mo

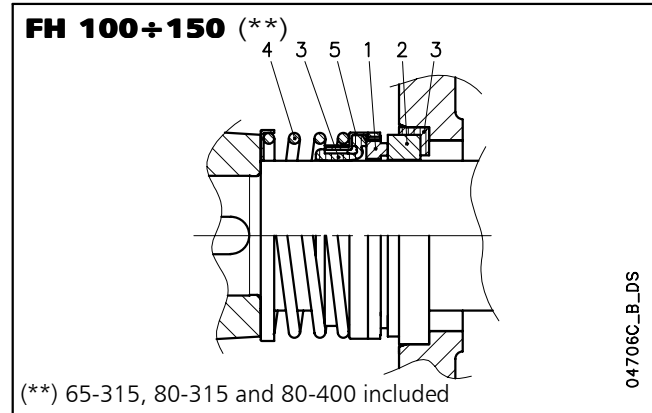
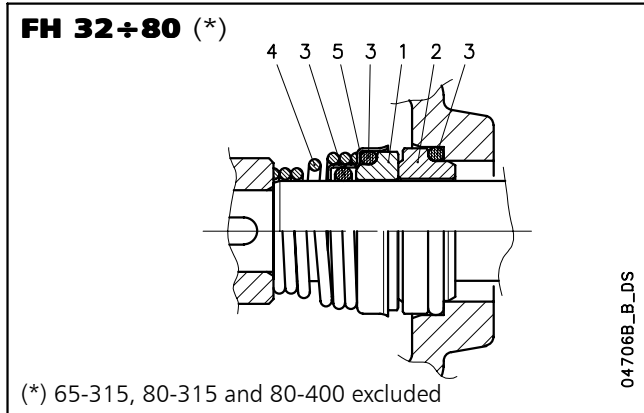
REF. N.	PART	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
2	Seal housing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
3	Impeller	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
		Bronze	EN 1982-CuSn10-C (CC480K)	UNS C90700
4	Shaft extension	Stainless steel	EN 10088-1-X20Cr13 (1.4021)	AISI 420
5	Impeller lock nut and washer	Steel		
6	Tab	Steel	EN 10083-1-C45E (1.1191)	-
7	Fill and drain plugs	Steel		
8	Fill/drain plug seals	Asbestos-free synthetic fiber AFM34 ®		
9	Plugs for gauge connectors	Steel		
10	Mechanical seal	Silicon carbide / Carbon / EPDM (standard version)		
11	Elastomers	EPDM (standard version)		
12	Adapter	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
13	Support body	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
14	Pump body fastening bolts and screws	Steel		

I-fhf-65-150-en\_c\_tm



## FH MECHANICAL SEAL, ACCORDING TO EN 12756

Mechanical seal with mounting dimensions according to EN12756 (ex DIN 24960) and ISO 3069.  
(A version with anti-rotation lockpin and/or external flushing are available on request.)



### LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	E : EPDM	G : AISI 316
Q <sub>1</sub> : Silicon carbide	P : NBR	
V : Ceramic	V : FPM	

### FHE-FHS-FHF 32÷80 SEAL TYPE (65-315, 80-315 and 80-400 excluded)

fh\_ten-mec-en\_a\_tm

TYPE	POSITION					TEMPERATURE (°C)
	1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
STANDARD MECHANICAL SEAL						
V B P G G	V	B	P	G	G	-20 +85
OTHER TYPES OF MECHANICAL SEAL						
V B V G G	V	B	V	G	G	-10 +120
Q <sub>1</sub> B V G G	Q <sub>1</sub>	B	V	G	G	-10 +120
Q <sub>1</sub> Q <sub>1</sub> V G G	Q <sub>1</sub>	Q <sub>1</sub>	V	G	G	-10 +120
V B E G G	V	B	E	G	G	-30 +120
Q <sub>1</sub> B E G G	Q <sub>1</sub>	B	E	G	G	-30 +120
Q <sub>1</sub> Q <sub>1</sub> E G G	Q <sub>1</sub>	Q <sub>1</sub>	E	G	G	-30 +120

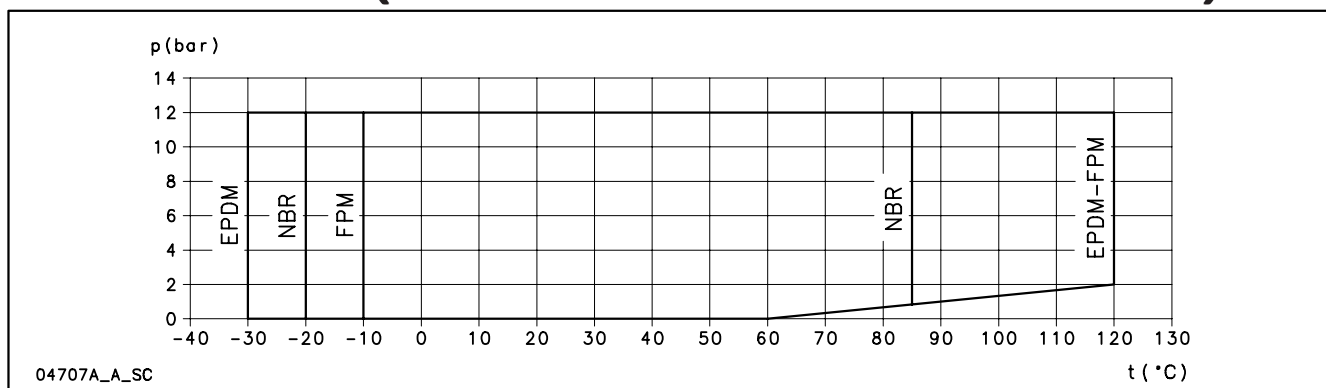
### FHS-FHF 100÷150 SEAL TYPE (65-315, 80-315 and 80-400 included)

fh\_tipi-ten-mec-en\_a\_tc

TYPE	POSITION					TEMPERATURE (°C)
	1 ROTATING ASSEMBLY	2 FIXED ASSEMBLY	3 ELASTOMERS	4 SPRINGS	5 OTHER COMPONENTS	
STANDARD MECHANICAL SEAL						
Q <sub>1</sub> B E G G	Q <sub>1</sub>	B	E	G	G	-30 +120
OTHER TYPES OF MECHANICAL SEAL						
Q <sub>1</sub> B V G G	Q <sub>1</sub>	B	V	G	G	-10 +120
Q <sub>1</sub> Q <sub>1</sub> V G G	Q <sub>1</sub>	Q <sub>1</sub>	V	G	G	-10 +120

### PRESSURE / TEMPERATURE APPLICATION LIMITS FOR COMPLETE PUMP (WITH ANY OF THE SEALS LISTED ABOVE)

lm-fh\_tipi-ten-mec-en\_a\_tc



## MOTORS FOR FH SERIES

**Standard supplied IE2 three-phase surface motors  $\geq 0,75$  kW are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30.**

Enclosed short circuit squirrel cage motor (TEFC), with external ventilation.

Electrical performances according to EN 60034-1.

Insulation class 155 (F).

IP55 protection.

Condensate drain plugs on standard version.

Cooling by fan according to EN 60034-6.

Cable gland metric size according to EN 50262.

Standard voltage:

- Single-phase version: 220-240 V 50 Hz, with incorporated automatic-reset overload protection up to 1,5 kW.
- Three-phase version: 220-240/380-415 V 50 Hz for powers up to 3 kW. 380-415/660-690 V 50 Hz for powers above 3 kW. Overload protection to be provided by the user.

## FHE SERIES SINGLE-PHASE MOTORS AT 50 Hz, 2 POLES

P <sub>N</sub> kW	MOTOR TYPE	IEC SIZE*	Construction Design	INPUT CURRENT I <sub>n</sub> (A) 220-240 V	CAPACITOR		DATA FOR 230 V 50 Hz VOLTAGE						
					μF	V	min <sup>-1</sup>	I <sub>s</sub> / I <sub>n</sub>	η %	cosφ	T <sub>n</sub> Nm	T <sub>s</sub> /T <sub>n</sub>	T <sub>m</sub> /T <sub>n</sub>
0,75	SM90RB14/107	90R	B14	4,83-5,23	30	450	2875	5,28	71,8	0,92	2,49	0,70	2,59
1,1	SM90RB14/111	90R	B14	6,88-6,65	30	450	2800	3,89	74,7	0,96	3,75	0,46	1,72
1,5	SM90RB14/115	90R	B14	9,21-8,58	40	450	2810	4,00	76,1	0,98	5,15	0,39	1,74
2,2	PLM90B14/322	90	B14	12,5-11,6	70	450	2825	4,47	82,4	0,97	7,43	0,53	1,87

\* R = Reduced size of motor casing as compared to shaft extension and flange.

fhe-motm-2p50-en\_d\_te



# ITT

# Lowara

## FHE SERIES THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P <sub>N</sub> kW	Efficiency $\eta_N$ %																		IE	Year of manufacture	
	$\Delta$ 220 V Y 380 V			$\Delta$ 230 V Y 400 V			$\Delta$ 240 V Y 415 V			$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V					
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4			
0,75	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	2	By June 2011	
1,1	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9			
1,5	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8			
2,2	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7			
3	85,5	86,8	85,6	86,1	86,8	85,6	86,3	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6			
4	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3			
5,5	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6			
7,5	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1			
9,2	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8			
11	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,3	90,8	91,1	90,3	91,0	91,1			90,3
15	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3			90,3
18,5	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2			91,2
22	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3			91,3

P <sub>N</sub> kW	Manufacturer		IEC SIZE*	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>N</sub>
	Model										
0,75	SM090RB14/307HE		90R	B14	2	50	0,79	8,70	2,47	4,71	4,09
1,1	SM090RB14/311HE		90R				0,82	8,98	3,63	4,62	4,00
1,5	PLM090B14/315		90				0,86	7,86	4,96	3,34	3,27
2,2	PLM090B14/322		90				0,80	8,63	7,25	3,74	3,71
3	PLM90B14/330		90				0,82	8,39	9,96	3,50	3,32
4	PLM112RB14/340		112R				0,85	9,52	13,1	3,04	4,40
5,5	PLM112B14/355		112				0,87	10,3	18,1	4,43	5,80
7,5	PLM132B14/375		132				0,87	9,21	24,5	3,26	4,55
9,2	PLM132B14/392		132				0,88	9,66	30,3	3,17	4,54
11	PLM132B14/3110		132				0,87	9,72	36,0	3,46	4,56
15	PLM160B34/3150		160				0,91	8,45	48,6	2,26	3,81
18,5	PLM160B34/3185		160				0,88	9,75	59,8	2,82	4,53
22	PLM160B34/3220		160				0,89	9,50	71,1	2,74	4,26

P <sub>N</sub> kW	Voltage U <sub>N</sub> V										n <sub>N</sub> min <sup>-1</sup>	Observe the regulations and codes locally in force regarding sorted waste disposal.	Operating conditions **			
	$\Delta$			Y			$\Delta$			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX	
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V						690 V
0,75	3,10	3,05	3,03	1,79	1,76	1,75	1,78	1,76	1,74	1,03	1,01	2885 ÷ 2905	≤ 1000	-15 / 40	No	
1,1	4,17	4,09	4,07	2,41	2,36	2,35	2,40	2,36	2,34	1,39	1,36	2880 ÷ 2900				
1,5	5,53	5,23	5,13	3,19	3,02	2,96	3,19	3,03	2,96	1,84	1,75	2865 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52	2850 ÷ 2885				
4	13,6	13,5	13,5	7,88	7,77	7,79	7,80	7,63	7,65	4,51	4,41	2895 ÷ 2920				
5,5	18,3	18,0	17,9	10,6	10,4	10,3	10,6	10,4	10,5	6,14	6,02	2885 ÷ 2905				
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935				
9,2	29,7	28,9	28,3	17,2	16,7	16,4	17,3	16,8	16,6	10,0	9,70	2910 ÷ 2930				
11	36,0	35,1	34,7	20,8	20,3	20,0	20,8	20,3	20,1	12,0	11,7	2910 ÷ 2925				
15	47,2	45,3	44,0	27,2	26,2	25,4	27,2	26,0	25,3	15,7	15,0	2940 ÷ 2950				
18,5	58,3	56,9	55,9	33,7	32,9	32,3	34,1	33,2	32,8	19,7	19,1	2945 ÷ 2955				
22	68,3	66,2	64,3	39,4	38,2	37,1	40,0	38,6	37,8	23,1	22,3	2945 ÷ 2955				

\* R = Reduced size of motor casing as compared to shaft extension and flange.

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.



# ITT

# Lowara

## FHS SERIES THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P <sub>N</sub> kW	Efficiency $\eta_N$ %																		IE	Year of manufacture
	$\Delta$ 220 V Y 380 V			$\Delta$ 230 V Y 400 V			$\Delta$ 240 V Y 415 V			$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V				
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
0,75	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	2	By June 2011
1,1	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9		
1,5	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8		
2,2	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7		
3	85,5	86,8	85,6	86,1	86,8	85,6	86,3	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6		
4	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3		
5,5	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6		
7,5	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1		
11	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8		
15	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3		
18,5	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2		
22	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3	91,3		

P <sub>N</sub> kW	Manufacturer		IEC SIZE*	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>N</sub>
	Model										
0,75	SM080B5/307HE		80	B5	2	50	0,79	8,70	2,47	4,71	4,09
1,1	SM080B5/311HE		80				0,82	8,98	3,63	4,62	4,00
1,5	PLM090B5/315		90				0,86	7,86	4,96	3,34	3,27
2,2	PLM090B5/322		90				0,80	8,63	7,25	3,74	3,71
3	PLM100RB5/330		100R				0,82	8,39	9,96	3,50	3,32
4	PLM112RB5/340		112R				0,85	9,52	13,1	3,04	4,40
5,5	PLM132RB5/355		132R				0,87	10,3	18,1	4,43	5,80
7,5	PLM132B5/375		132				0,87	9,21	24,5	3,26	4,55
11	PLM160B35/3110		160				0,88	8,14	35,6	2,22	4,00
15	PLM160B35/3150		160				0,91	8,45	48,6	2,26	3,81
18,5	PLM160B35/3185		160				0,88	9,75	59,8	2,82	4,53
22	PLM180RB35/3220		180R				0,89	9,50	71,1	2,74	4,26

P <sub>N</sub> kW	Voltage U <sub>N</sub> V										n <sub>N</sub> min <sup>-1</sup>	Observe the regulations and codes locally in force regarding sorted waste disposal.	Operating conditions **			
	$\Delta$			Y			$\Delta$			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX	
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V						690 V
0,75	3,10	3,05	3,03	1,79	1,76	1,75	1,78	1,76	1,74	1,03	1,01	2885 ÷ 2905	≤ 1000	-15 / 40	No	
1,1	4,17	4,09	4,07	2,41	2,36	2,35	2,40	2,36	2,34	1,39	1,36	2880 ÷ 2900				
1,5	5,53	5,23	5,13	3,19	3,02	2,96	3,19	3,03	2,96	1,84	1,75	2865 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52	2850 ÷ 2885				
4	13,6	13,5	13,5	7,88	7,77	7,79	7,80	7,63	7,65	4,51	4,41	2895 ÷ 2920				
5,5	18,3	18,0	17,9	10,6	10,4	10,3	10,6	10,4	10,5	6,14	6,02	2885 ÷ 2905				
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935				
11	35,5	34,3	33,4	20,5	19,8	19,3	20,6	19,9	19,5	11,9	11,5	2940 ÷ 2950				
15	47,2	45,3	44,0	27,2	26,2	25,4	27,2	26,0	25,3	15,7	15,0	2940 ÷ 2950				
18,5	58,3	56,9	55,9	33,7	32,9	32,3	34,1	33,2	32,8	19,7	19,1	2945 ÷ 2955				
22	68,3	66,2	64,3	39,4	38,2	37,1	40,0	38,6	37,8	23,1	22,3	2945 ÷ 2955				

\* R = Reduced size of motor casing as compared to shaft extension and flange.

fhs-ie2-mott-2p50-en\_a\_te

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.



# ITT

# Lowara

## FHF SERIES THREE-PHASE MOTORS AT 50 Hz, 2 POLES (up to 18,5 kW)

P <sub>N</sub> kW	Efficiency $\eta_N$ %																		IE	Year of manufacture
	$\Delta$ 220 V Y 380 V			$\Delta$ 230 V Y 400 V			$\Delta$ 240 V Y 415 V			$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V				
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
0,75	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	77,4	77,4	74,0	2	By June 2011
1,1	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9	80,1	80,1	78,9		
1,5	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8		
2,2	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7		
3	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1		
4	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3		
5,5	87,6	87,6	87,0	87,6	87,6	87,0	87,6	87,6	87,0	87,6	87,6	87,0	87,6	87,6	87,0	87,6	87,6	87,0		
7,5	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1		
11	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8		
15	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3	90,3		
18,5	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2	91,2		

P <sub>N</sub> kW	Manufacturer		IEC SIZE*	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>N</sub>
	Model										
0,75	SM080B3/307HE		80	B3	2	50	0,79	8,70	2,47	4,71	4,09
1,1	SM080B3/311HE		80				0,82	8,98	3,63	4,62	4,00
1,5	PLM090B3/315		90				0,86	7,86	4,96	3,34	3,27
2,2	PLM090B3/322		90				0,80	8,63	7,25	3,74	3,71
3	PLM100B3/330		100				0,84	9,45	9,83	3,59	4,27
4	PLM112B3/340		112				0,87	9,16	13,2	3,60	4,59
5,5	PLM132B3/355		132				0,83	9,93	17,9	3,34	4,66
7,5	PLM132B3/375		132				0,87	9,21	24,5	3,26	4,55
11	PLM160B3/3110		160				0,88	8,14	35,6	2,22	4,00
15	PLM160B3/3150		160				0,91	8,45	48,6	2,26	3,81
18,5	PLM160B3/3185		160				0,88	9,75	59,8	2,82	4,53

P <sub>N</sub> kW	Voltage U <sub>N</sub> V										n <sub>N</sub> min <sup>-1</sup>	Observe the regulations and codes locally in force regarding sorted waste disposal.	Operating conditions **				
	$\Delta$			Y			$\Delta$			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX		
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V						690 V	
0,75	3,10	3,05	3,03	1,79	1,76	1,75	1,78	1,76	1,74	1,03	1,01	2885 ÷ 2905	≤ 1000	-15 / 40	No		
1,1	4,17	4,09	4,07	2,41	2,36	2,35	2,40	2,36	2,34	1,39	1,36	2880 ÷ 2900					
1,5	5,53	5,23	5,13	3,19	3,02	2,96	3,19	3,03	2,96	1,84	1,75	2865 ÷ 2895					
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900					
3	10,4	10,2	10,3	5,98	5,91	5,92	6,01	5,95	5,96	3,47	3,44	2905 ÷ 2920					
4	13,3	13,0	12,9	7,67	7,50	7,43	7,68	7,51	7,45	4,44	4,34	2890 ÷ 2905					
5,5	19,2	19,1	19,2	11,1	11,0	11,1	10,9	10,8	10,8	6,30	6,22	2930 ÷ 2945					
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935					
11	35,5	34,3	33,4	20,5	19,8	19,3	20,6	19,9	19,5	11,9	11,5	2940 ÷ 2950					
15	47,2	45,3	44,0	27,2	26,2	25,4	27,2	26,0	25,3	15,7	15,0	2940 ÷ 2950					
18,5	58,3	56,9	55,9	33,7	32,9	32,3	34,1	33,2	32,8	19,7	19,1	2945 ÷ 2955					

\* R = Reduced size of motor casing as compared to shaft extension and flange.

fhf-ie2-mott18-zp50-en\_a\_te

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.



# ITT

# Lowara

## FHS-FHF SERIES

### THREE-PHASE MOTORS AT 50 Hz, 2 POLES (from 22 to 132 kW)

P <sub>N</sub> kW	Efficiency $\eta_N$ %									IE	Year of manufacture
	$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V				
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
22	91,8	92,2	92,2	92,0	92,4	92,2	92,4	92,4	91,8	2	By June 2011
30	92,6	92,9	92,7	92,5	93,0	92,9	93,0	93,0	92,3		
37	93,0	93,3	93,2	93,0	93,4	93,3	93,5	93,4	92,8		
45	93,2	93,5	93,4	93,3	93,6	93,6	93,8	93,6	93,1		
55	93,6	93,8	93,8	93,6	93,9	93,9	94,0	93,8	93,3		
75	94,1	94,3	93,6	93,4	94,3	94,3	94,3	94,2	93,2		
90	94,4	94,6	94,2	94,0	94,6	94,6	94,5	94,5	93,8		
110	94,8	94,9	94,5	94,3	94,9	94,9	94,9	94,8	94,1		
132	94,9	95,1	94,6	94,5	95,1	95,1	95,2	95,1	94,4		

P <sub>N</sub> kW	Manufacturer		IEC SIZE	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	WEG Equipamentos Eletricos S.A. Reg. No. 07.175.725/0010-50 Jaragua do Sul - SC (Brazil)						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>N</sub>
	Model										
22	W22 180M2-B3 22kW		180	B3 / B35	2	50	0,88	7,30	71,40	2,20	3,00
30	W22 200L2-B3 (B35) 30kW		200				0,87	6,50	97,00	2,40	2,70
37	W22 200L2-B3 (B35) 37kW		200				0,87	6,80	120,0	2,40	2,60
45	W22 225S/M2-B3 (B35) 45kW		225				0,89	7,00	145,0	2,20	2,80
55	W22 250S/M2-B3 (B35) 55kW		250				0,89	7,00	178,0	2,20	2,80
75	W22 280S/M2-B3 75kW		280				0,89	7,00	241,0	2,00	2,80
90	W22 280S/M2-B3 90kW		280				0,89	7,00	289,0	2,00	2,80
110	W22 315S/M2-B3 110kW		315				0,89	7,30	353,0	2,00	2,90
132	W22 315S/M2-B3 132kW		315				0,90	7,30	423,0	2,00	2,90

P <sub>N</sub> kW	Voltage U <sub>N</sub> V					n <sub>N</sub> min <sup>-1</sup>	Operating conditions **			
	$\Delta$			Y			Altitude Above Sea Level (m)	T. amb min/max °C	ATEX	
	380 V	400 V	415 V	660 V	690 V					
	I <sub>N</sub> (A)									
22	40,90	39,10	38,10	23,55	22,67	2940 ÷ 2950	See note.	≤ 1000	-15 / 40	No
30	55,90	53,60	52,20	32,18	31,07	2950 ÷ 2960				
37	68,70	65,80	64,00	39,55	38,14	2945 ÷ 2955				
45	81,50	78,00	75,80	46,92	45,22	2955 ÷ 2960				
55	99,20	95,00	92,50	57,12	55,07	2955 ÷ 2960				
75	135,00	129,00	126,00	77-73	74,78	2970 ÷ 2975				
90	161,00	154,00	151,00	92,70	89,28	2970 ÷ 2975				
110	196,00	188,00	183,00	112,85	108,99	2975 ÷ 2980				
132	232,00	223,00	217,00	133,58	129,28	2975 ÷ 2980				

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

fhf-ie2-mott132-2p50-en\_a\_te

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.





# ITT

# Lowara

## FHE4 SERIES THREE-PHASE MOTORS AT 50 Hz, 4 POLES

P <sub>N</sub> kW	Efficiency $\eta_N$ %																		IE	Year of manufacture			
	$\Delta$ 220 V Y 380 V			$\Delta$ 230 V Y 400 V			$\Delta$ 240 V Y 415 V			$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V							
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4					
0,25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0,75	80,4	81,3	79,8	81,1	81,4	79,1	81,4	81,2	78,4	84,4	81,2	78,4	84,4	81,2	78,4	84,4	81,2	78,4	84,4	81,2	78,4	84,4	81,1
1,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,1
1,5	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	82,0
2,2	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7	84,7
3	85,5	85,5	84,1	85,5	85,5	84,1	85,5	85,5	84,1	85,5	85,5	84,1	85,5	85,5	84,1	85,5	85,5	84,1	85,5	85,5	84,1	85,5	84,1
4	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6	86,6
5,5	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0	88,0
7,5	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7	88,7

P <sub>N</sub> kW	Manufacturer		IEC SIZE*	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>n</sub>
	Model										
0,25	SM4071B5/302		71	B5	4	50	0,59	3,58	1,71	3,16	2,63
0,37	SM4071B5/304		71				0,60	3,39	2,57	3,40	2,47
0,55	SM4090RB14/305		90R				0,67	3,95	3,77	2,45	2,38
0,75	LLM4090RB5/307		90R	B5	4	50	0,75	5,78	5,03	2,77	3,31
1,1	PLM4090B5/311		90				0,72	6,34	7,27	2,80	3,43
1,5	PLM4090B5/315		90				0,67	6,79	9,88	3,33	3,67
2,2	PLM4100B5/322		100	B14	4	50	0,77	7,50	14,4	2,71	3,97
3	PLM4100B5/330		100				0,73	7,84	19,6	2,96	4,09
4	PLM4112B5/340		112				0,78	7,91	26,3	2,86	3,94
5,5	PLM4132B14/355		132	B14	4	50	0,78	7,89	35,9	2,79	3,47
7,5	PLM4132B14/375		132				0,78	7,71	49,1	2,75	3,63

P <sub>N</sub> kW	Voltage U <sub>N</sub> V											n <sub>N</sub> min <sup>-1</sup>	Observe the regulations and codes locally in force regarding sorted waste disposal.	Operating conditions **		
	$\Delta$			Y			$\Delta$			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V					
0,25	1,68	1,71	1,77	0,97	0,99	1,02	-	-	-	-	-	1375 ÷ 1400	≤ 1000	-15 / 40	No	
0,37	2,46	2,53	2,62	1,42	1,46	1,51	-	-	-	-	-	1355 ÷ 1380				
0,55	2,98	3,03	3,1	1,72	1,75	1,79	-	-	-	-	-	1380 ÷ 1400				
0,75	3,08	3,03	3,01	1,78	1,75	1,74	1,78	1,75	1,74	1,03	1,01	1410 ÷ 1430				
1,1	4,64	4,61	4,61	2,68	2,66	2,66	2,66	2,64	2,64	1,54	1,53	1435 ÷ 1445				
1,5	6,50	6,51	6,62	3,75	3,76	3,82	3,74	3,75	3,80	2,16	2,16	1440 ÷ 1450				
2,2	8,49	8,31	8,24	4,90	4,80	4,76	4,87	4,78	4,72	2,81	2,76	1445 ÷ 1455				
3	12,0	11,9	12,0	6,91	6,89	6,94	6,88	6,86	6,90	3,97	3,96	1455 ÷ 1465				
4	15,5	15,3	15,2	8,93	8,82	8,78	8,80	8,64	8,60	5,08	4,99	1445 ÷ 1455				
5,5	20,4	19,9	19,6	11,8	11,5	11,3	11,9	11,5	11,5	6,85	6,66	1455 ÷ 1465				
7,5	27,4	26,8	26,4	15,8	15,5	15,2	15,9	15,6	15,4	9,20	8,98	1450 ÷ 1460				

\* R = Reduced size of motor casing as compared to shaft extension and flange.

fhe-ie2-mott-4p50-en\_a\_te

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.





# ITT

# Lowara

## FHS4-FHF4 SERIES THREE-PHASE MOTORS AT 50 Hz, 4 POLES (from 18,5 to 90 kW)

P <sub>N</sub> kW	Efficiency $\eta_N$ %									IE	Year of manufacture
	$\Delta$ 380 V Y 660 V			$\Delta$ 400 V Y 690 V			$\Delta$ 415 V				
	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
18,5	91,2	91,7	91,8	91,5	91,8	91,6	91,7	91,7	91,1	2	By June 2011
22	91,9	92,4	92,5	92,2	92,5	92,3	92,4	92,4	91,8		
30	92,4	92,9	92,9	92,6	93,0	92,8	92,9	92,9	92,3		
37	92,8	93,1	93,2	93,0	93,2	93,2	93,3	93,1	92,7		
45	93,2	93,6	93,5	93,2	93,7	93,6	93,7	93,6	92,9		
55	93,7	93,8	93,8	93,6	93,9	94,0	94,1	93,9	93,3		
75	94,2	94,5	94,2	93,8	94,4	94,4	94,4	94,3	93,5		
90	94,5	94,7	94,4	94,1	94,7	94,7	94,7	94,6	93,8		

P <sub>N</sub> kW	Manufacturer		IEC SIZE	Construction Design	N. of Poles	f <sub>N</sub> Hz	Data for 400 V / 50 Hz Voltage				
	WEG Equipamentos Elétricos S.A. Reg. No. 07.175.725/0010-50 Jaraguá do Sul - SC (Brazil)						cos $\phi$	I <sub>s</sub> / I <sub>N</sub>	T <sub>N</sub> Nm	T <sub>s</sub> /T <sub>N</sub>	T <sub>m</sub> /T <sub>N</sub>
	Model										
18,5	W22 180M4-B3 (B5) 18.5kW		180	B3 / B5	4	50	0,83	6,60	121,0	2,40	2,80
22	W22 180L4-B3 (B5) 22kW		180				0,85	6,80	143,0	2,60	2,90
30	W22 200L4-B3 (B5) 30kW		200				0,83	6,30	195,0	2,20	2,60
37	W22 225S/M4-B3 37kW		225				0,86	6,60	240,0	2,20	2,70
45	W22 225S/M4-B3 45kW		225				0,86	6,80	292,0	2,40	2,70
55	W22 250S/M4-B3 55kW		250				0,87	6,40	356,0	2,20	2,70
75	W22 280S/M4-B3 75kW		280				0,86	7,20	483,0	2,00	2,70
90	W22 280S/M4-B3 90kW		280				0,87	7,20	579,0	2,10	2,70

P <sub>N</sub> kW	Voltage U <sub>N</sub> V					n <sub>N</sub> min <sup>-1</sup>	Operating conditions **			
	$\Delta$			Y			See note.	Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	380 V	400 V	415 V	660 V	690 V					
	I <sub>N</sub> (A)									
18,5	36,30	35,10	34,70	20,90	20,35	1460 ÷ 1470	≤ 1000	-15 / 40	No	
22	41,80	40,50	39,90	24,70	23,48	1460 ÷ 1465				
30	58,00	56,20	55,50	33,39	32,58	1465 ÷ 1470				
37	69,60	66,60	64,90	40,07	38,61	1470 ÷ 1475				
45	83,40	80,70	79,50	48,02	46,78	1470 ÷ 1475				
55	101,00	97,10	94,60	58,15	56,29	1470 ÷ 1475				
75	139,00	133,00	130,00	80,03	77,10	1480 ÷ 1485				
90	164,00	158,00	154,00	94,42	91,59	1480 ÷ 1485				

\*\* Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

fhh-ie2-mott90-4p50-en\_a\_te

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.



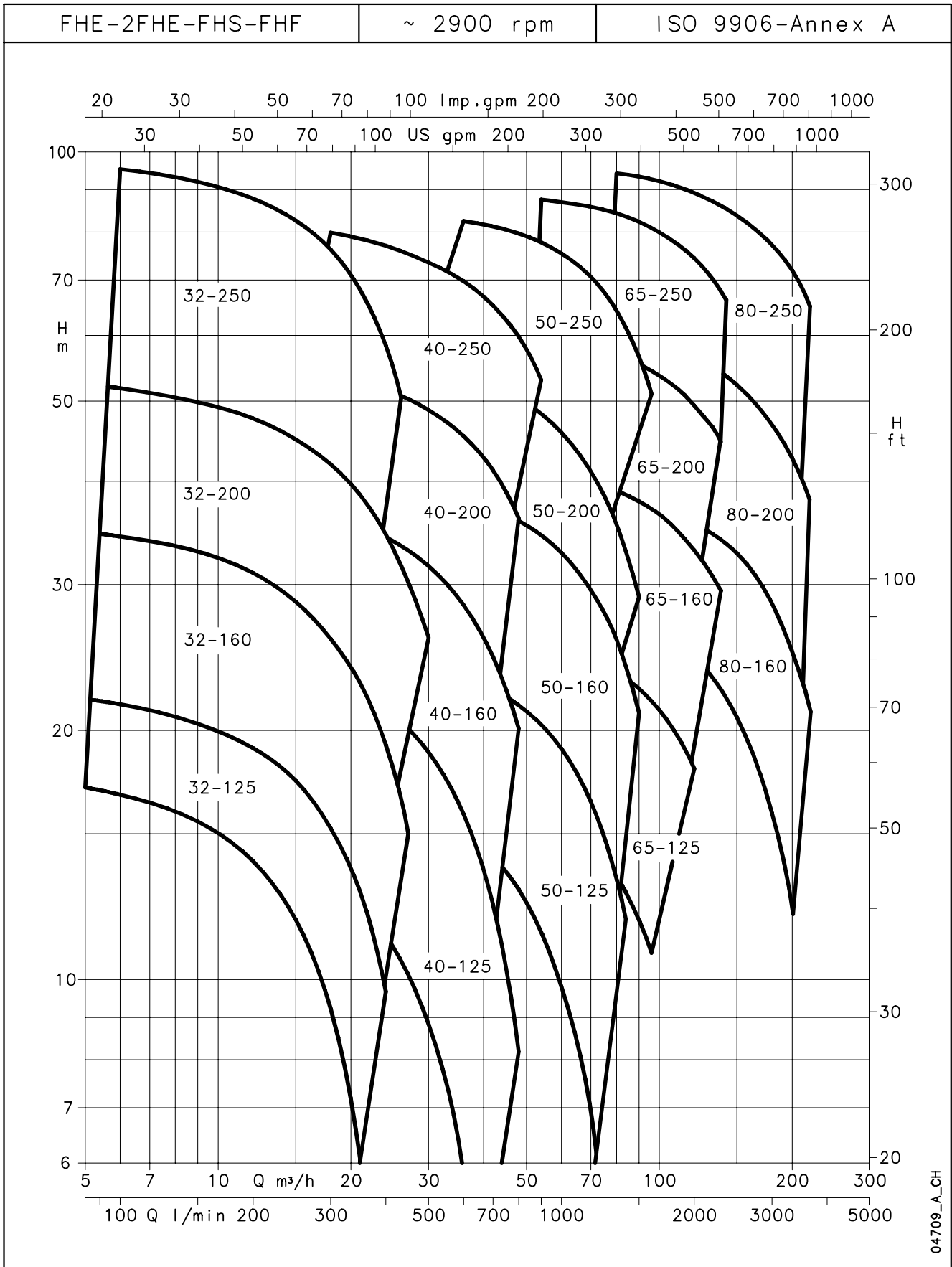




# ITT

# Lowara

## FH-2FHE-FHS-FHF SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-2FHE-FHS-FHF SERIES HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY																		
			l/min	100	150	250	300	400	450	600	700	800	900	1200	1400	1500	1800	2000	2300	3000	3500
	kW	HP	m <sup>3</sup> /h	6	9	15	18	24	27	36	42	48	54	72	84	90	108	120	138	180	210
H = TOTAL HEAD METRES COLUMN OF WATER																					
32-125/07*	0,75	1	16,9		14,6	11	8,7														
32-125/11*	1,1	1,5	21,9		19,6	16,3	14,2	9													
32-160/15*	1,5	2	27,3		24,5	20,5	17,8	11													
32-160/22*	2,2	3	34,7		32	28	25,3	18,8	15												
32-200/30	3	4	44,2		39,8	35,2	32,2	24,6	19,8												
32-200/40	4	5,5	54,4		50	45	41,9	34,6	30,3												
32-250/55	5,5	7,5	79	74,7	71	62	56	37													
32-250/75	7,5	10	99	95,3	92	83	76	58													
40-125/11*	1,1	1,5	14,5				13	11,3	10,1	5,8											
40-125/15*	1,5	2	18,1				16,7	15	13,9	9,6	6										
40-125/22*	2,2	3	24,5				23	21	20,1	15,8	12,3	8,2									
40-160/30	3	4	31,5				29,4	27,5	26,1	21,5	17,4										
40-160/40	4	5,5	38				36,2	34	33	28,5	24,5	20,1									
40-200/55	5,5	7,5	46,5				44	41,5	40,2	34,5	29,5										
40-200/75	7,5	10	57				54	52	50	45,5	41	36,1									
40-250/**	**	**	64				59	56	55	49	45	39,5									
40-250/110	11	15	72				67,5	65	63	57	52	47									
40-250/150	15	20	85				80	77	75	70	65	60									
50-125/22*	2,2	3	17							15,1	14	12,8	11,4	6,2							
50-125/30	3	4	20							18,8	18	16,9	15,6	10,5							
50-125/40	4	5,5	24							23,1	22,5	21,5	20,3	15,8	11,8						
50-160/55	5,5	7,5	32							30,6	29,5	28	26,6	20,5	14,8						
50-160/75	7,5	10	40							38	37	36	34,4	29	24	21					
50-200/**	**	**	50,5							46,8	45	43	40,9	32,5	25,7						
50-200/110	11	15	58							54	53	50	48,3	40	33	29					
50-250/150	15	20	68							64	63	61	59	50	41						
50-250/185	18,5	25	77							73	72	70	68	60	52	47					
50-250/220	22	30	86							82,5	81	80	78	70	61	57					
65-125/40	4	5,5	19									17,3	16,8	14,5	13	11,8					
65-125/55	5,5	7,5	23									21,3	20,9	19	17,5	16,7	13,7				
65-125/75	7,5	10	27									26	25,6	24,5	23	22,5	20	18			
65-160/**	**	**	33										31,5	30	28	27,1	24	21,5			
65-160/110	11	15	36										34,5	33	31,5	30,8	28	25,5			
65-160/150	15	20	42										41	40	38,5	37,8	35	33	29,5		
65-200/150	15	20	45										45,5	43	41	40,2	36,5	34			
65-200/185	18,5	25	52										52	51	49	48	44,5	42			
65-200/220	22	30	59										59,5	58	56	55	52	49,5	44,5		
65-250/220	22	30	62										61	58	56	54	48,5	44			
65-250/300	30	40	76										74,5	73	71	69	64	61	54		
65-250/370	37	50	90										88	86	84	83	78	75	68		
80-160/110	11	15	27													27,3	26	24,5	22,5	16	
80-160/150	15	20	33													32,5	31	30	28	22	16,5
80-160/185	18,5	25	39													38	36,5	35,5	34	28,5	23,3
80-200/220	22	30	48													47	45	43,5	41	32,5	24,5
80-200/300	30	40	60													59,5	58	57	54,5	47	40,5
80-250/370	37	50	71													70	67	65	61	49	38
80-250/450	45	61	80													80,5	78	76	73	62	51
80-250/550	55	75	92													93	91	90	87	77	68

\* Single-phase version ( FHEM ) also available

fhe-fhs-fhf-2p50-en\_b\_th

\*\* /92 = 9,2kW - 12,5HP FHE \*\* /110 = 11kW - 15HP FHS

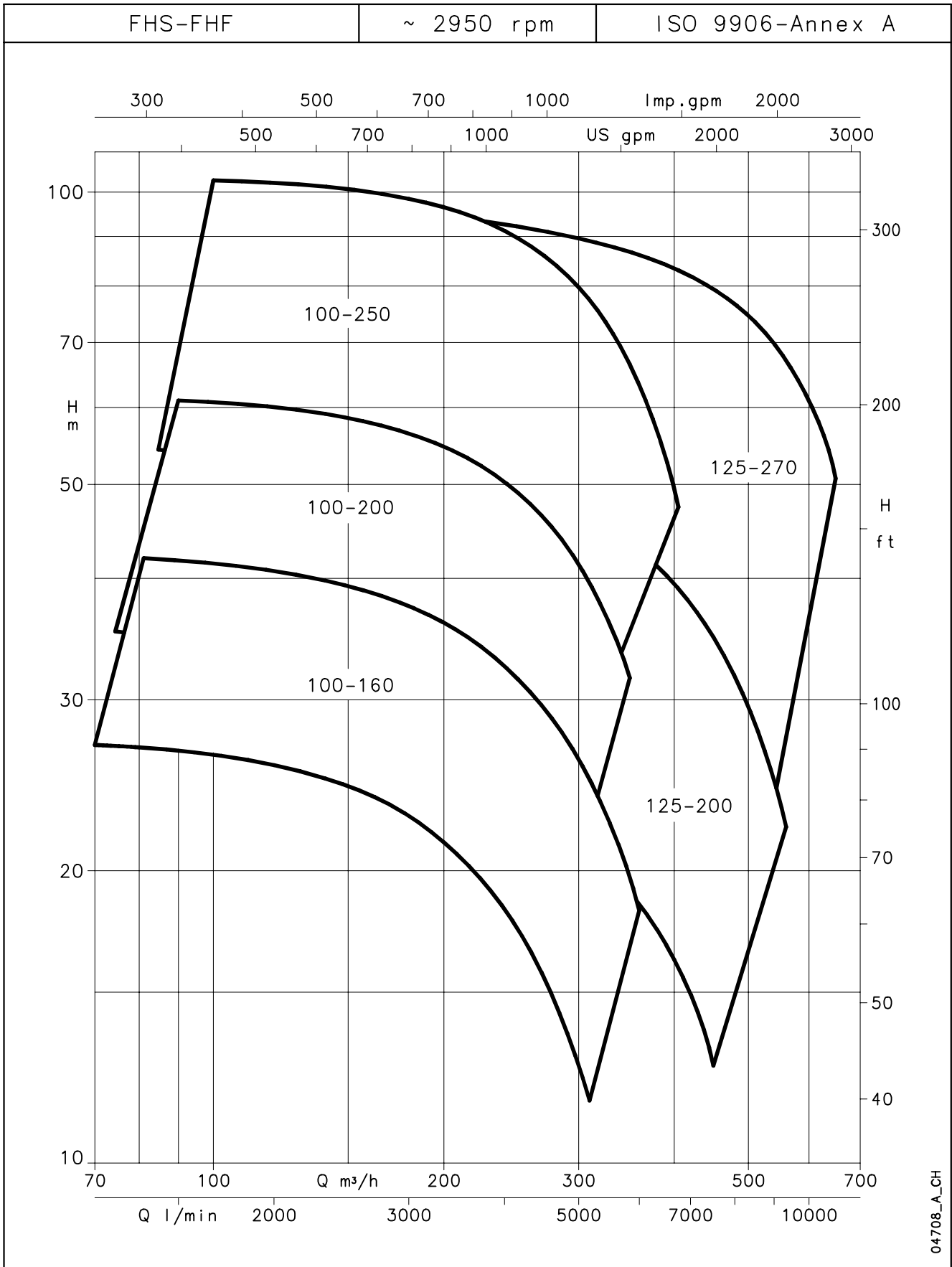
Performances according to ISO 9906 - Annex A.



# ITT

# Lowara

## FHS-FHF SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES



04708\_A\_CH

These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .





# ITT

# Lowara

## FHS-FHF SERIES HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY														
			l/min 0	1333	1500	1667	2000	2500	3333	4167	5000	5833	6667	8333	9167	10000	10833
	kW	HP	m <sup>3</sup> /h 0	79,98	90	100	120	150	200	250	300	350	400	500	550	600	650
H = TOTAL HEAD METRES COLUMN OF WATER																	
100-160/185	18,5	25	26,7	26,8	26,6	26	25,8	24,5	21,4	17,4	12,6						
100-160/220	22	30	33	33	32,7	32,4	31,6	30	26,6	22,2	16,8						
100-160/300	30	40	42,3	42	42	42	41	39	36	31,5	26	19,6					
100-200/185	18,5	25	36,4		34,5	34	32,4	29,5	23,2	15,2							
100-200/300	30	40	49		48,5	48	47	45	40	33,2	24,6						
100-200/370	37	50	56		55,6	55	54	52	48	41	33,2						
100-200/450	45	60	61		61	61	60	59	55	49	41	31,6					
100-250/300	30	40	54,6			53,3	52	48	41	29,5	14,9						
100-250/450	45	60	68,8			68,1	67	65	58	49	36,3						
100-250/550	55	75	78,5			78,1	77	75	70	62	49	34					
100-250/750	75	100	91,8			91,7	91	89	85	78	68	54					
100-250/900	90	120	103			102,8	102	101	97	90	80	66	49				
125-200/300	30	40	32,4				30,5	29,1	26,5	23,9	21,4	19	16,2				
125-200/450	45	60	47				45,5	44	42	39,2	36,2	32,9	29,4	21,0			
125-200/550	55	75	57,3				55,7	55	53	50	47	44	39,5	29,5	23,5		
125-270/750	75	100	64,9					64,6	63	60	57	54	50	40	34,1		
125-270/900	90	120	75,1					74,5	73	71	68	65	61	51	46	36,7	
125-270/1100	110	150	87,6					86,7	85	83	80	77	74	64	56	47	
125-270/1320	132	180	96,8					96,1	94	92	90	87	83	75	69	61	50,7

Performances according to ISO 9906 - Annex A.

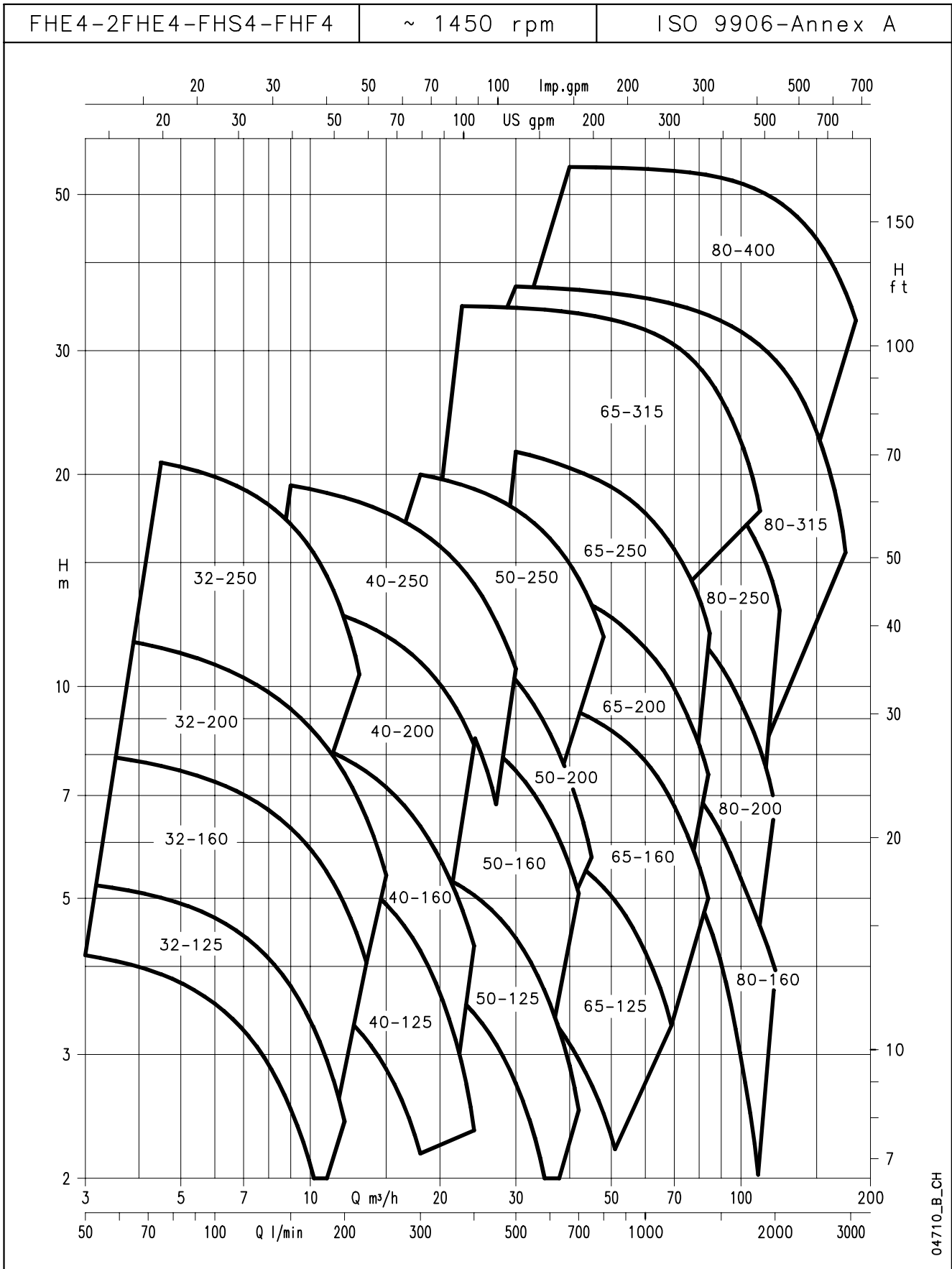
lm-fhs-fhf-2p50-en\_c\_th



# ITT

# Lowara

## FHE4-2FHE4-FHS4-FHF4 SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



04710\_B\_CH

These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

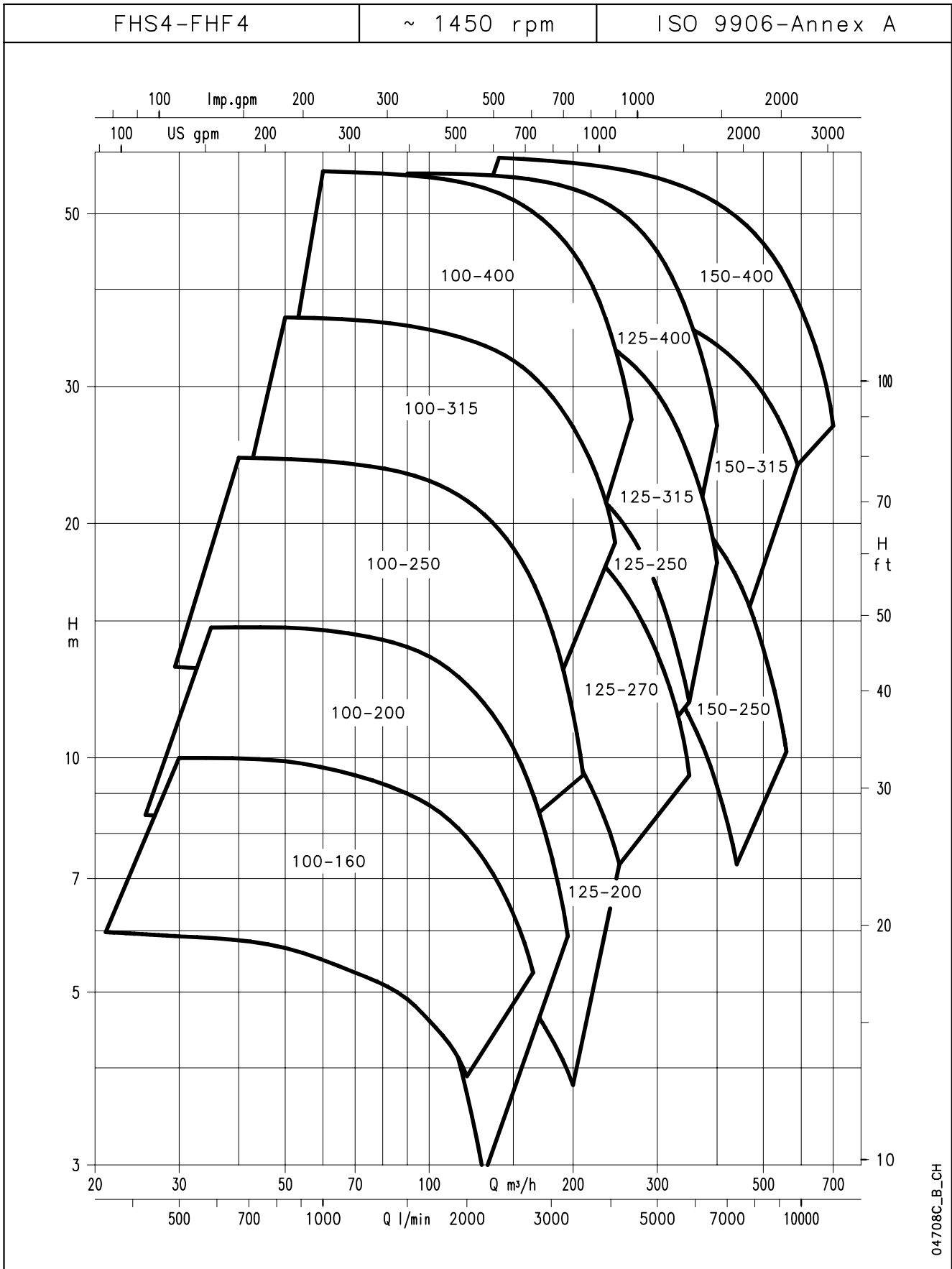




# ITT

# Lowara

## FHS4-FHF4 SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



04708C\_B\_CH

These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHS4-FHF4 SERIES HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY																	
			l/min	500	583	667	833	1000	1500	1667	1833	2333	2500	3333	4167	5000	6667	8333	10000	
			0	30	35	40	50	60	90	100	110	140	150	200	250	300	400	500	600	
			H = TOTAL HEAD METRES COLUMN OF WATER																	
100-160/22	2,2	3	5,9	5,9	5,9	5,8	5,7	5,5	4,9	4,6	4,3									
100-160/30	3	4	8,2	8,2	8,1	8,1	8	7,9	7,2	6,9	6,5	5,1								
100-160/40	4	5,5	10	10	10	9,9	9,7	9	8,7	8,3	6,9	6,3								
100-200/22			8,5		8,3	8,2	7,9	7,5	5,9	5,2	4,5									
100-200/40	4	5,5	11,8		11,8	11,8	11,6	11,4	10,3	9,7	9,1	6,8	5,9							
100-200/55	5,5	7,5	14,8		14,7	14,7	14,7	14,5	13,8	13,5	13	11,1	10,3							
100-250/40	4	5,5	12,9			12,9	12,6	12,1	10,1	9,2	8,2									
100-250/55	5,5	7,5	15,9			15,9	15,7	15,5	14,1	13,4	12,5	9,2	7,9							
100-250/75	7,5	10	19,5			19,5	19,4	19,2	18,1	17,6	16,9	14	12,7							
100-250/110	11	15	24,3			24,3	24,2	24,1	23,1	22,7	22,1	19,7	18,6	11,4						
100-315/150	15	20	29,9				29,7	29,5	28,6	28,1	27,5	25	24	16,8						
100-315/185	18,5	25					34,4	34,2	33,3	32,8	32,2	30	29	22,4						
100-315/220	22	30	37				36,8	36,7	35,9	35,5	35,1	33,2	32,4	26,6						
100-400/300	30	40	46,4					46	46	45	44	42	40	29,6						
100-400/450	45	60	57,1					56,7	56	56	55	53	52	45	32,1					
125-200/40	4	5,5	7,9					7,4	6,7	6,5	6,2	5,4	5,2	3,8						
125-200/55	5,5	7,5	11,4					10,8	10,2	10	9,7	8,9	8,6	6,9						
125-200/75	7,5	10	14,1					13,6	13,1	12,9	12,7	11,9	11,6	9,6						
125-250/75	7,5	10	15,4					15,3	15	14,8	14,6	13,6	13,1							
125-250/110	11	15	19,4					19,3	19,1	19	18,9	18,1	17,8	15,3	11,7					
125-250/150	15	20	23,2					23,3	23,1	23	22,9	22	22	19,8	16,5	12,3				
125-250/185	18,5	25	25,6					25,5	25,5	25,4	25,3	24,9	24,7	23	20,3	16,5				
125-270/75	7,5	10	14,4					14,4	13,9	13,7	13,5	12,6	12,2	10,1	7,3					
125-270/110	11	15	18,0					18,1	17,8	17,7	17,5	16,8	16,5	14,5	11,8	8,3				
125-270/150	15	20	22,6					22,6	22,3	22,1	21,9	21,2	21	19,2	16,7	13,6				
125-315/185	18,5	25	27,3							26,9	26,7	25,9	25,6	23,3	19,7	14,9				
125-315/220	22	30	30							29,7	29,6	28,9	28,6	26,5	23,2	18,4				
125-315/300	30	40	35,6							35,4	35,3	34,8	34,6	32,9	30,1	26,1				
125-315/370	37	50	38,2							38	37,9	37,4	37,2	35,7	33,1	29,4	17,8			
125-400/220	22	30	33,4							32,8	32,5	32,1	30,5	29,7	24,7	17,3				
125-400/300	30	40	41							41	40,5	40,3	39,2	38,6	34,4	27,5	18,3			
125-400/450	45	60	51,4							51	50,9	50,8	50,1	49,8	47	42,2	34,8			
125-400/550	55	75	56,5							56,3	56,3	56,2	55,9	55,7	53,8	50,3	44,7	26,7		
150-250/150	15	20	17,5										16,8	15,9	14,7	13,2	9,2			
150-250/185	18,5	25	21,3										20,8	20	18,9	17,5	13,8	8,7		
150-250/220	22	30	24										23,6	23	22	20,8	17,1	12		
150-250/300	30	40	25,5										25	24,5	23,5	22	18,8	13,8		
150-315/300	30	40	30,2										29,7	29	27,9	26,4	22,3			
150-315/370	37	50	33,6										33,5	32,7	31,7	30,4	26,7	21,4		
150-315/450	45	60	37,7										37,6	36,9	35,9	34,7	31,3	26,5		
150-315/550	55	75	40										40	39,3	38,4	37,2	33,9	29,4		
150-400/300	30	40	32,9										32	31,7	30,2	28,2	25,5	18,6		
150-400/370	37	50	38,3										37,5	37,3	36	34	31,4	24,3		
150-400/450	45	60	42,8										42,2	42	41	39	36,6	30	21,2	
150-400/550	55	75	48,2										47,7	48	46	45	42	36,8	29,2	
150-400/750	75	100	55,4										55	55	54	53	51	47	41	32,2
150-400/900	90	120	59,5										59	59	58	57	56	52	46	37,7

Performances according to ISO 9906 - Annex A.

lm-fhs4fhf4-4p50-en\_d\_th

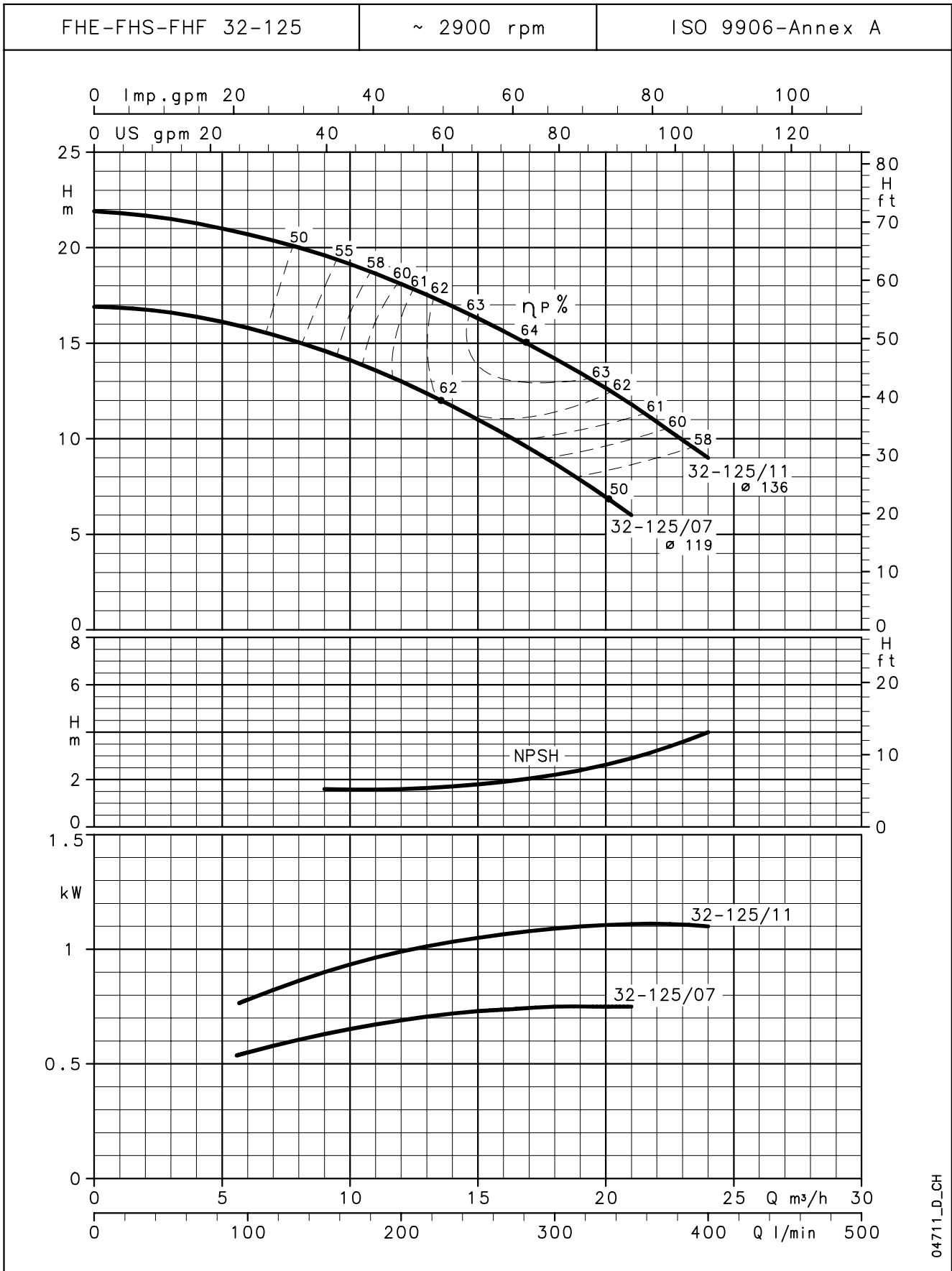


# ITT

# Lowara

## FHE-FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04711\_D\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density ρ = 1,0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

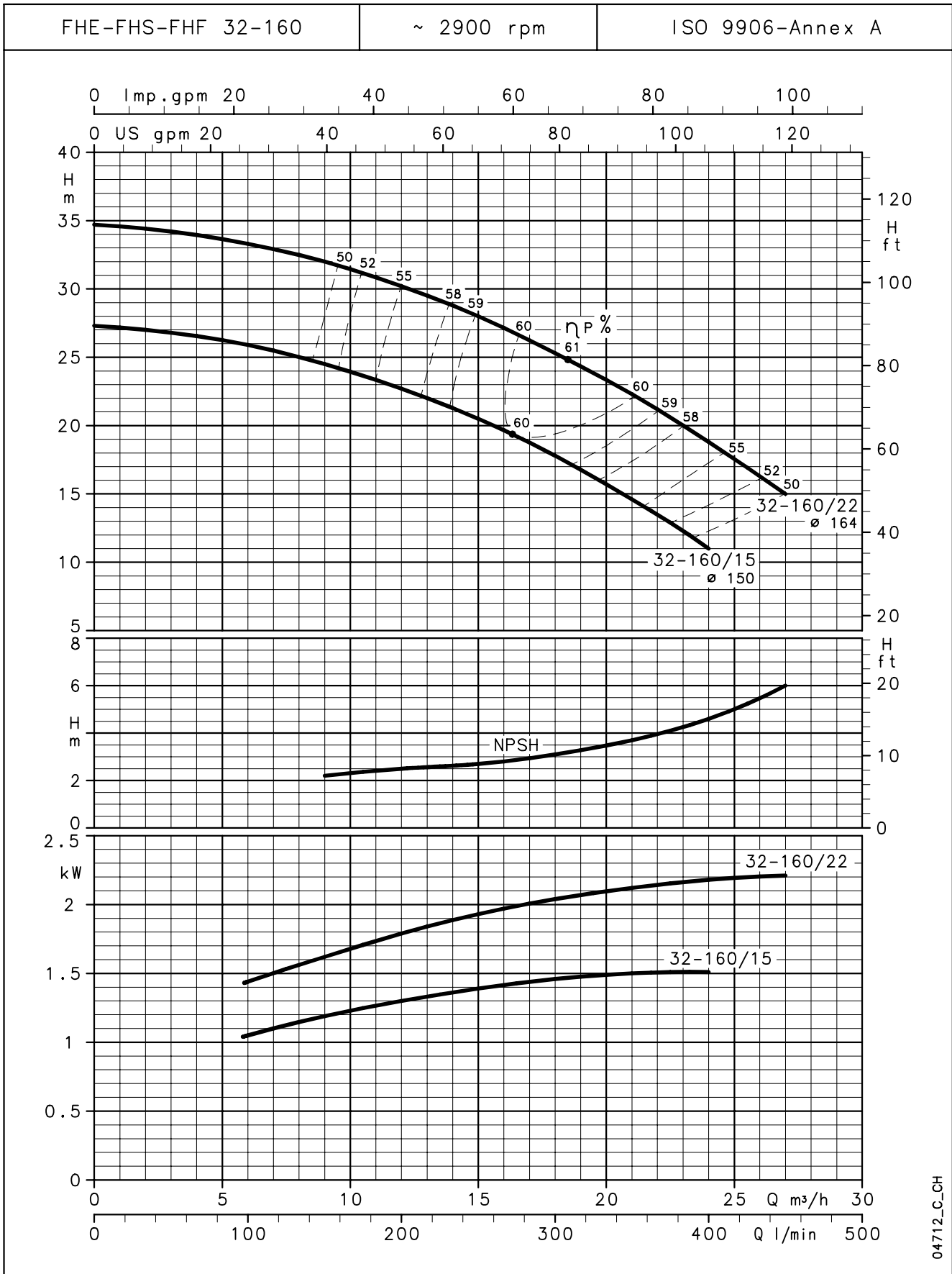


# ITT

# Lowara

## FHE-FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04712\_C\_CH

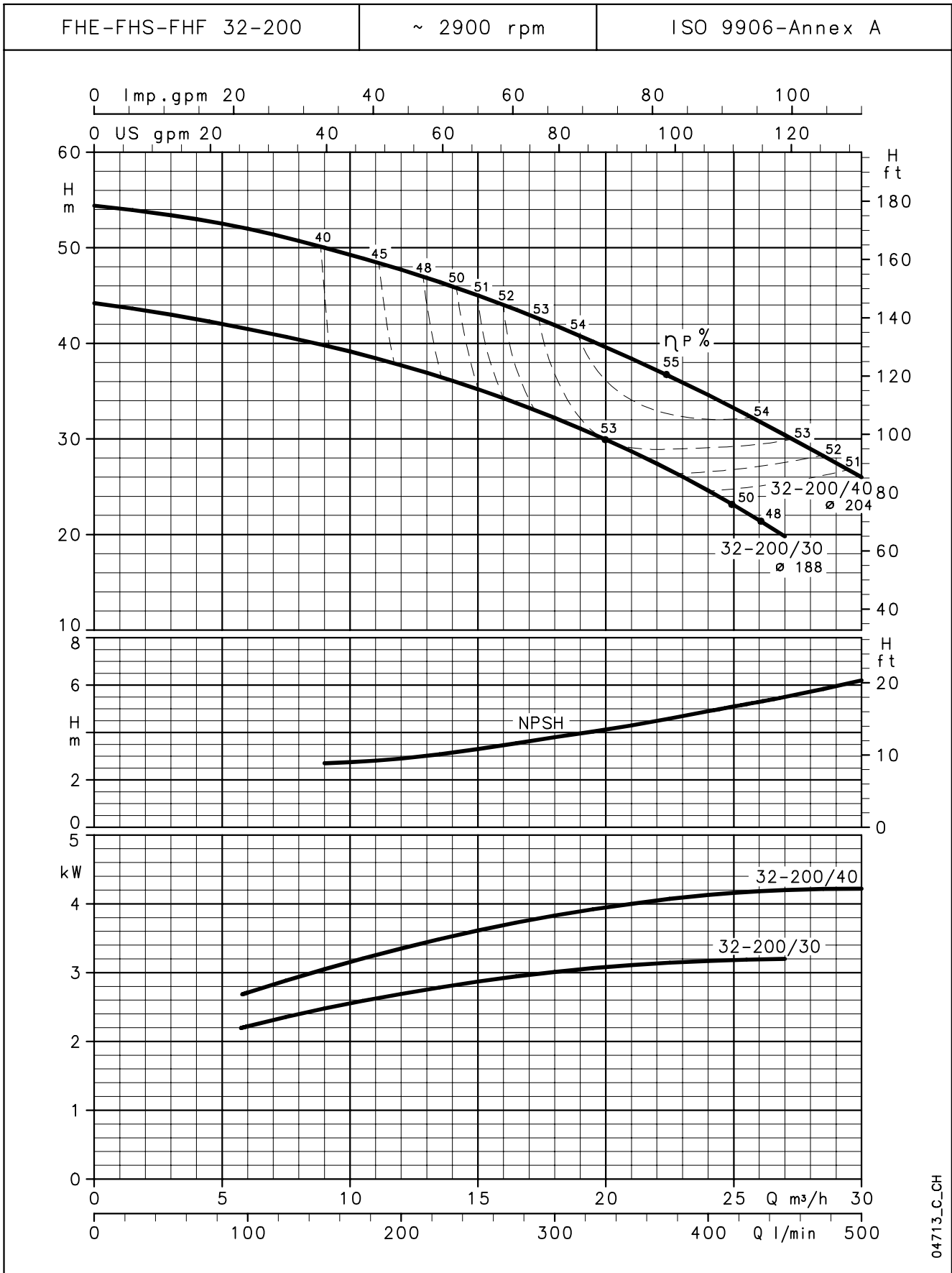
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04713\_C\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

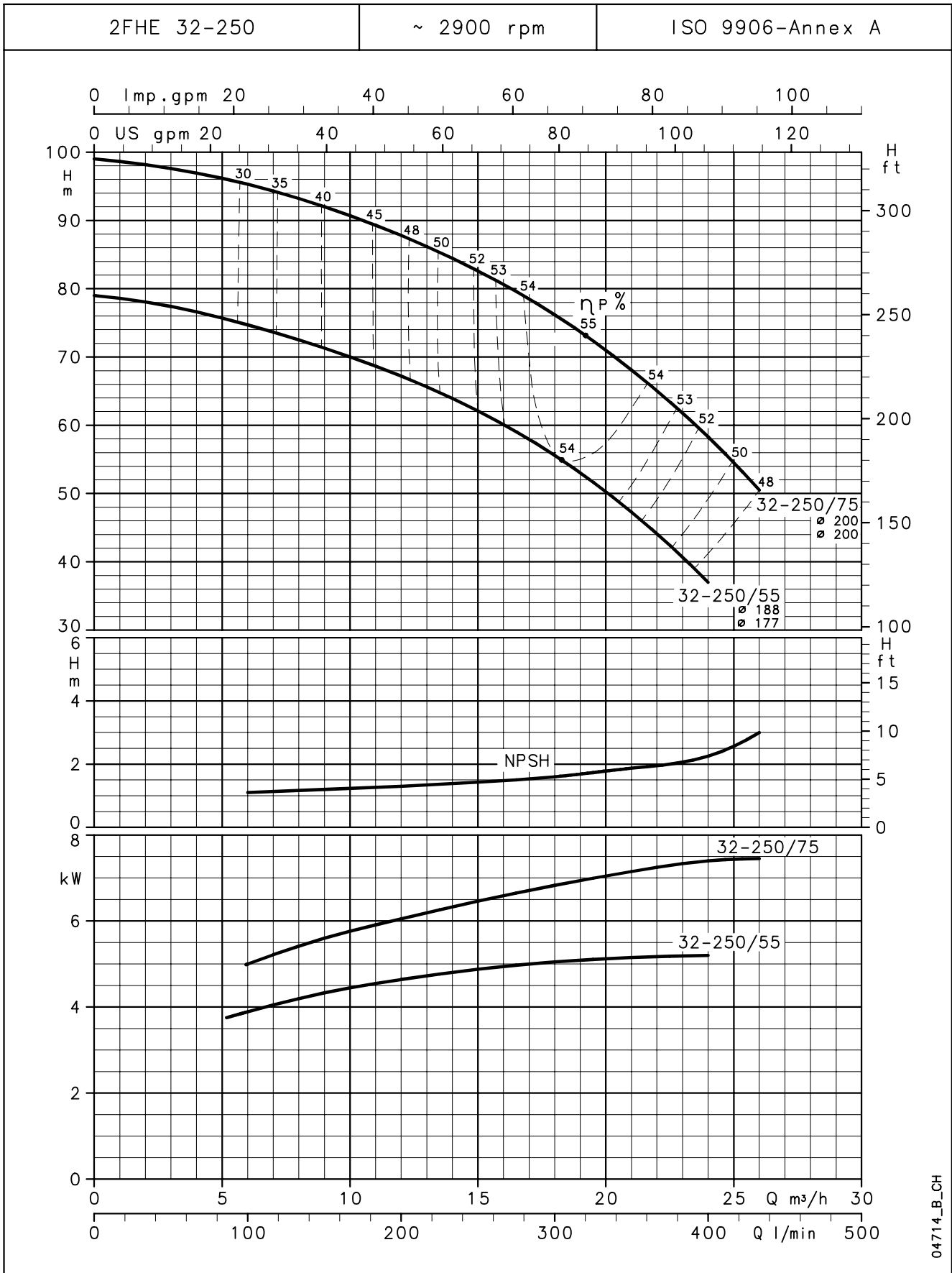




# ITT

# Lowara

## 2FHE SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04714\_B\_CH

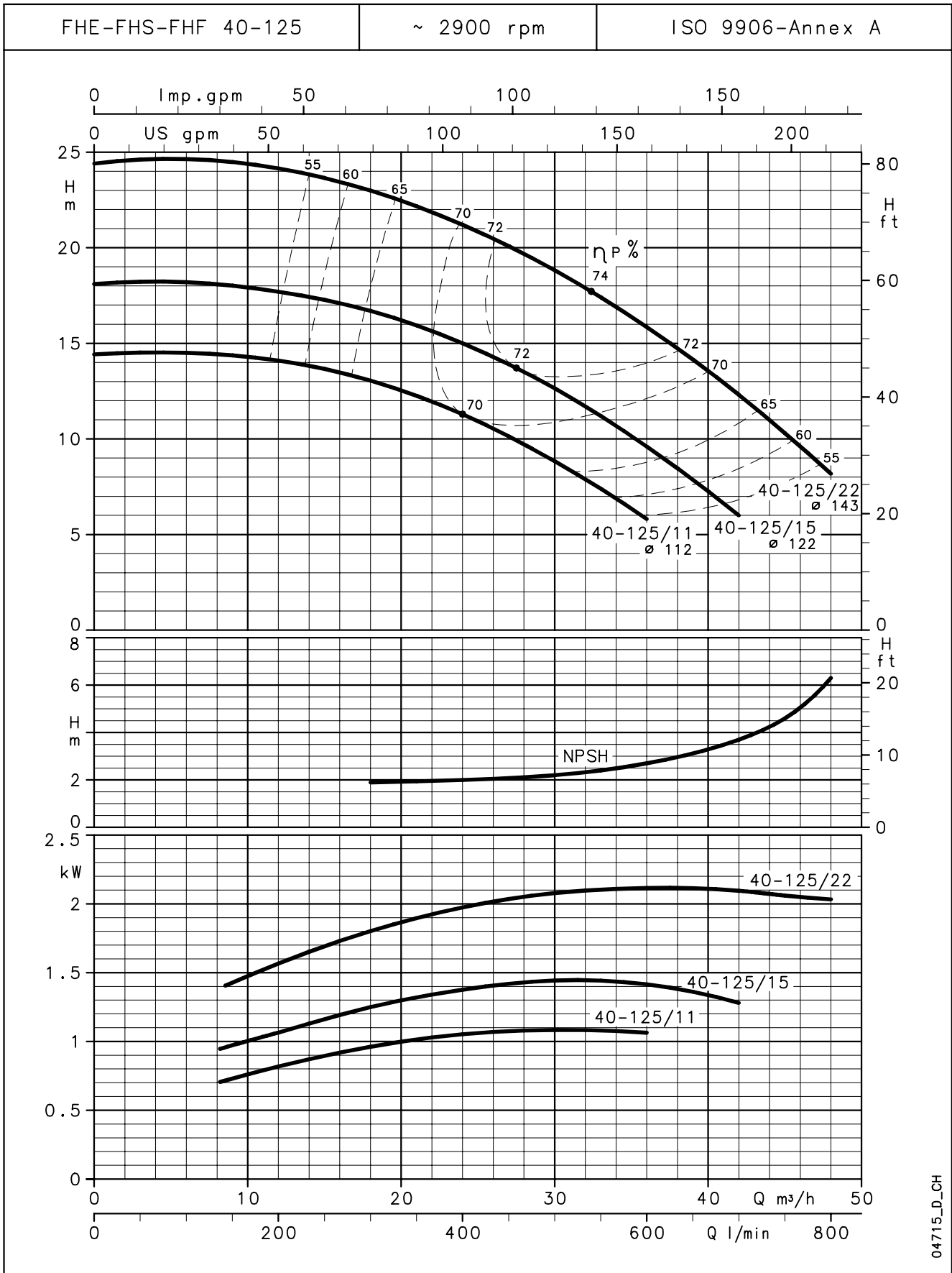
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04715\_D\_CH

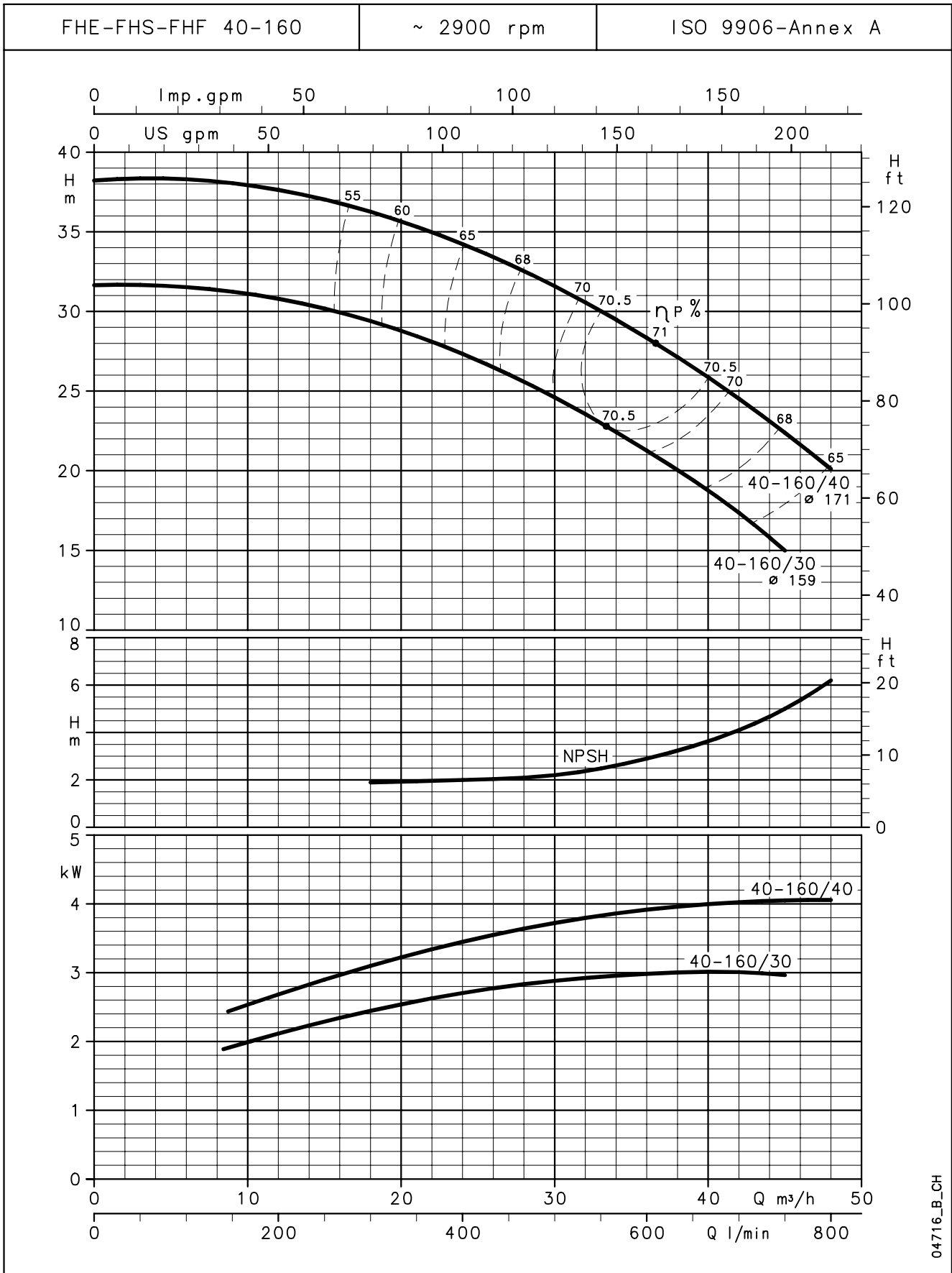
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04716\_B\_CH

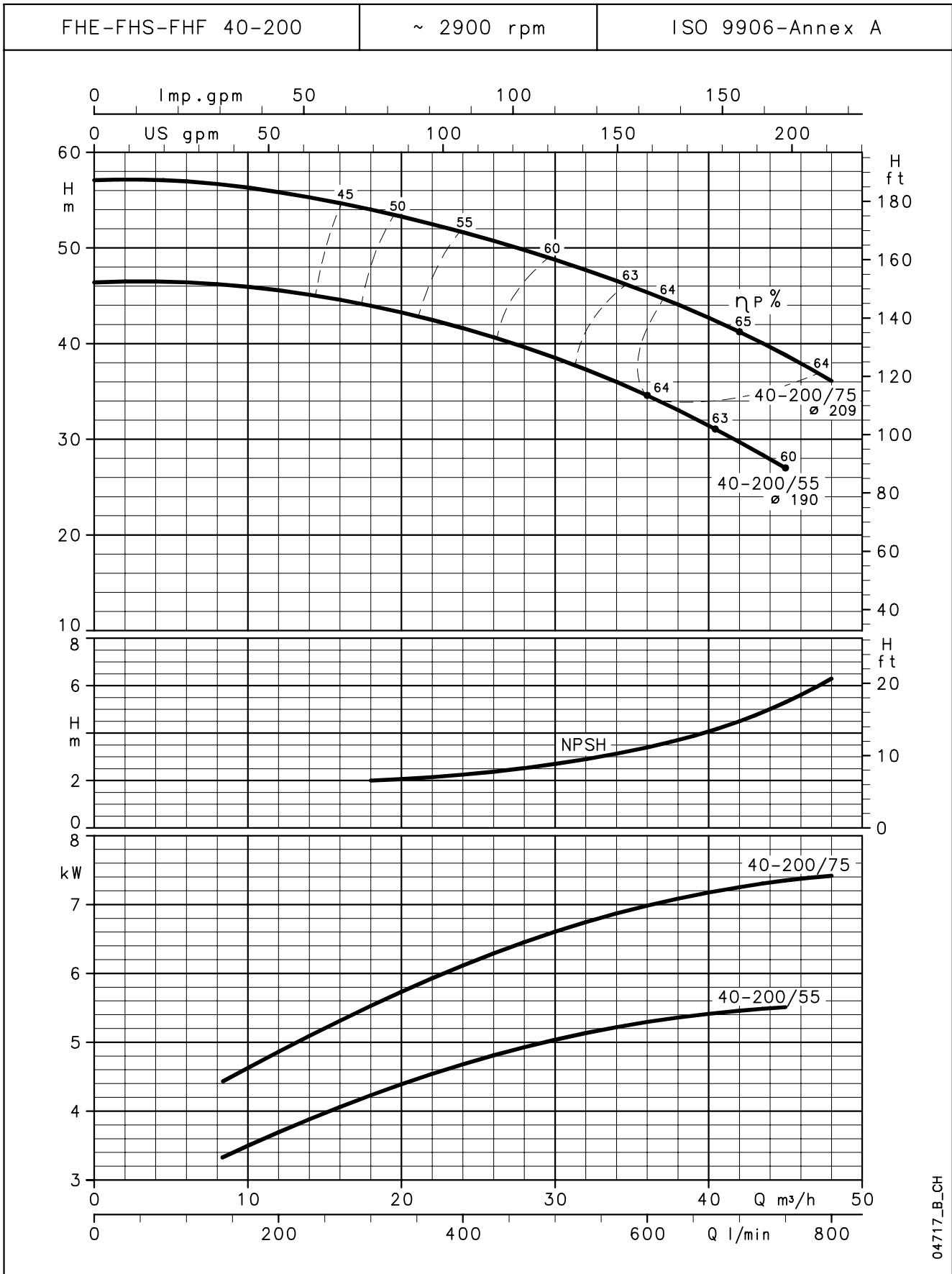
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density ρ = 1,0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04717\_B\_CH

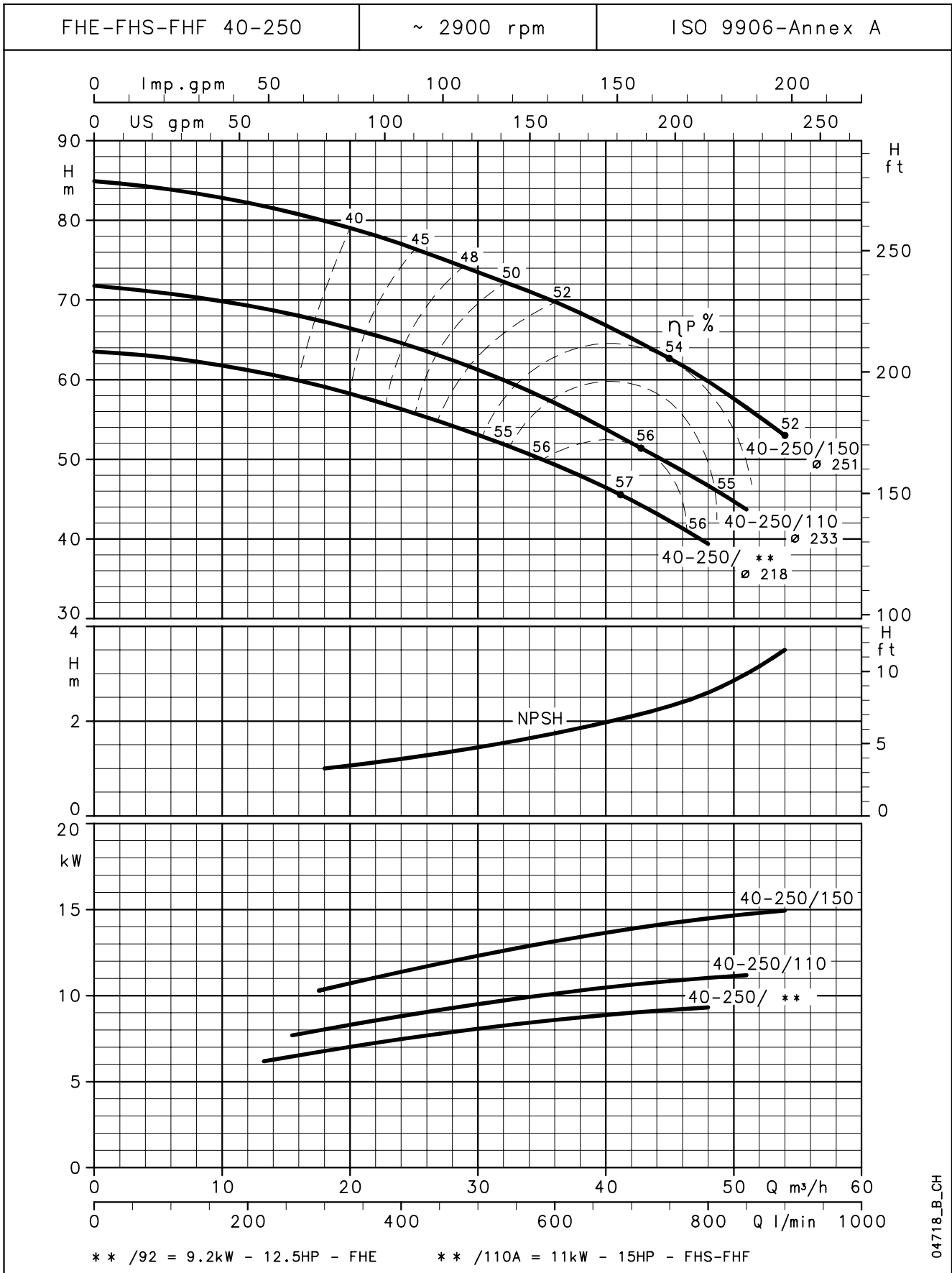
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04718\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

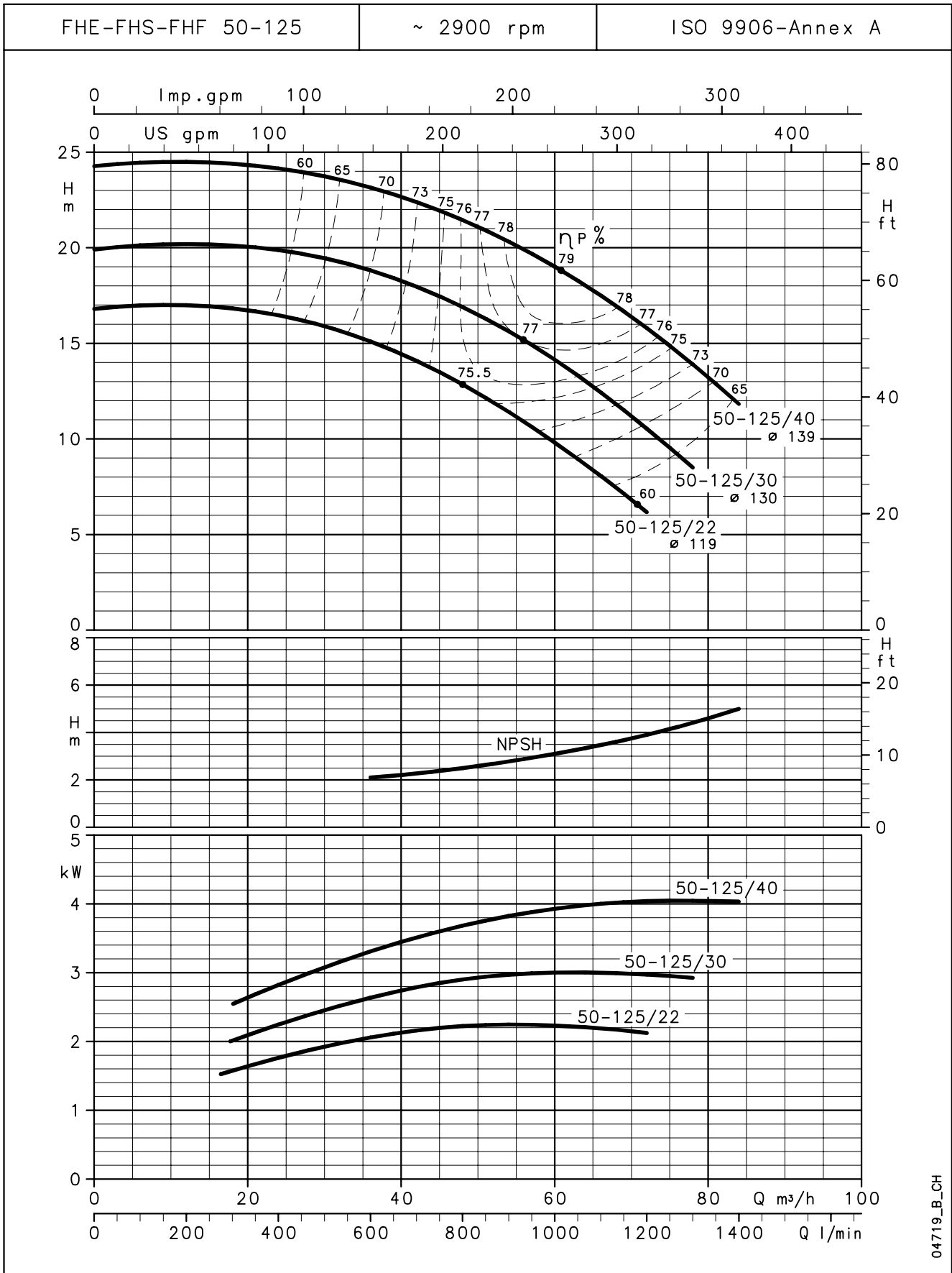


# ITT

# Lowara

## FHE-FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04719\_B\_CH

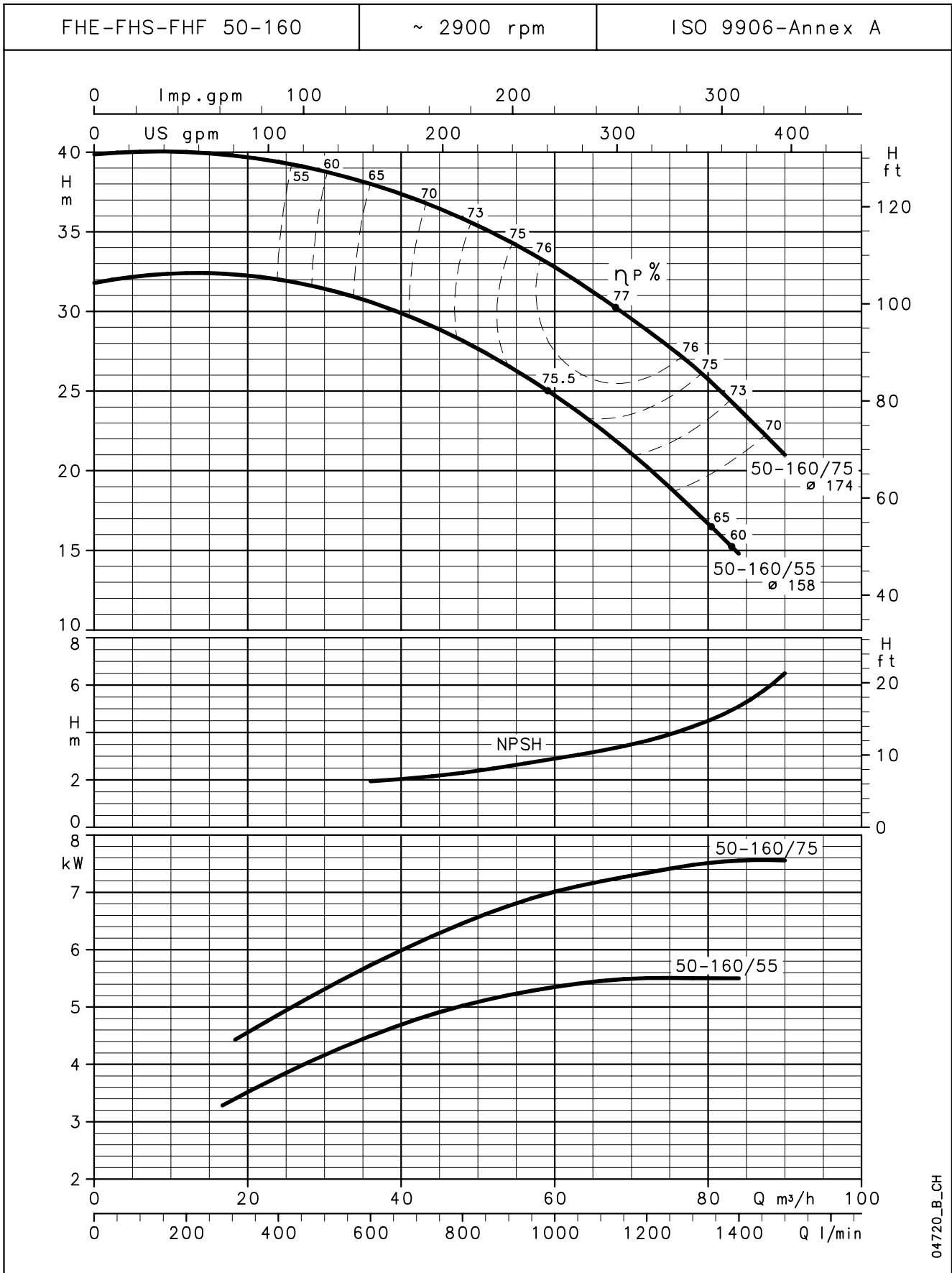
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04720\_B\_CH

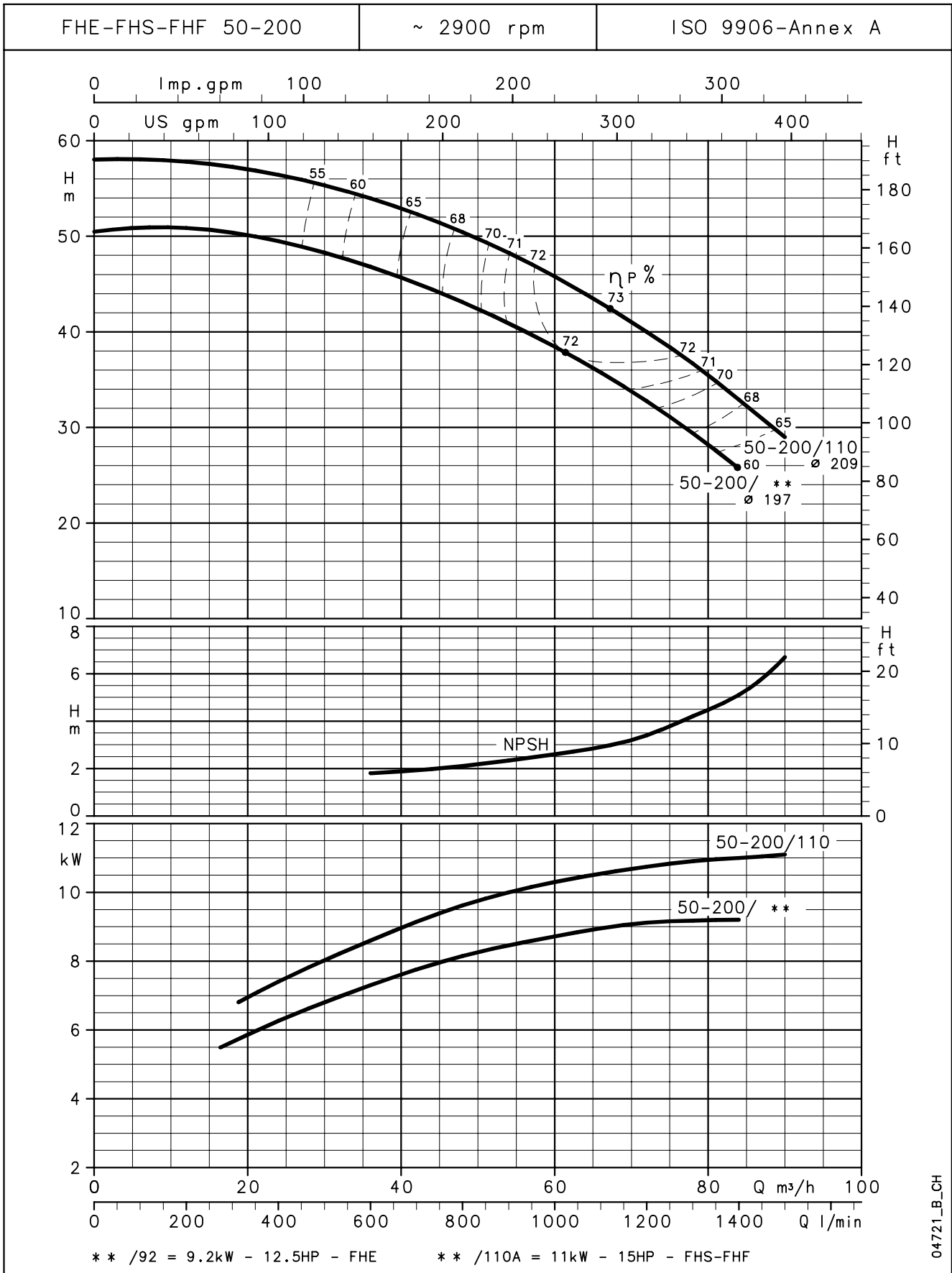
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04721\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



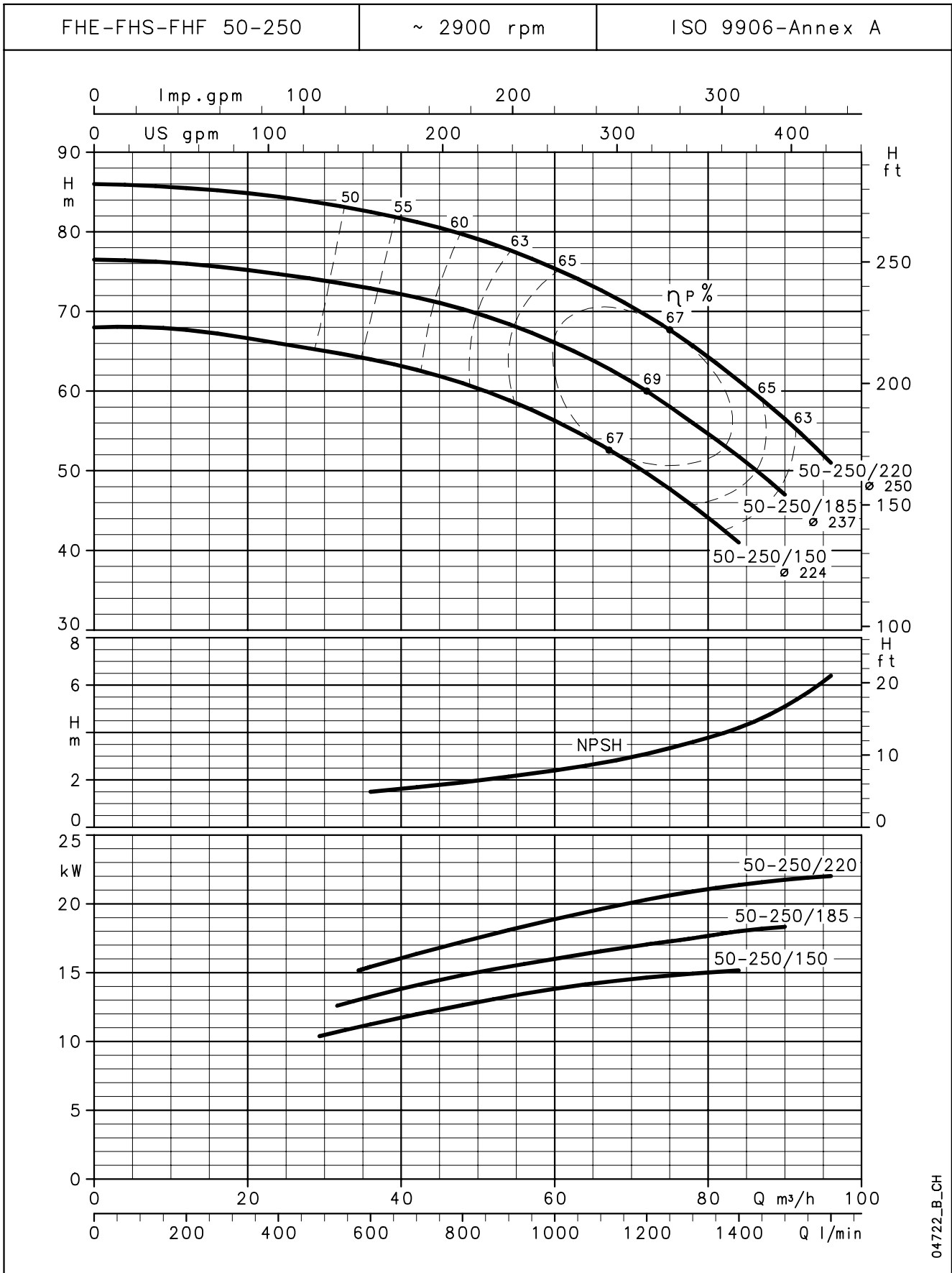


# ITT

# Lowara

## FHE-FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04722\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

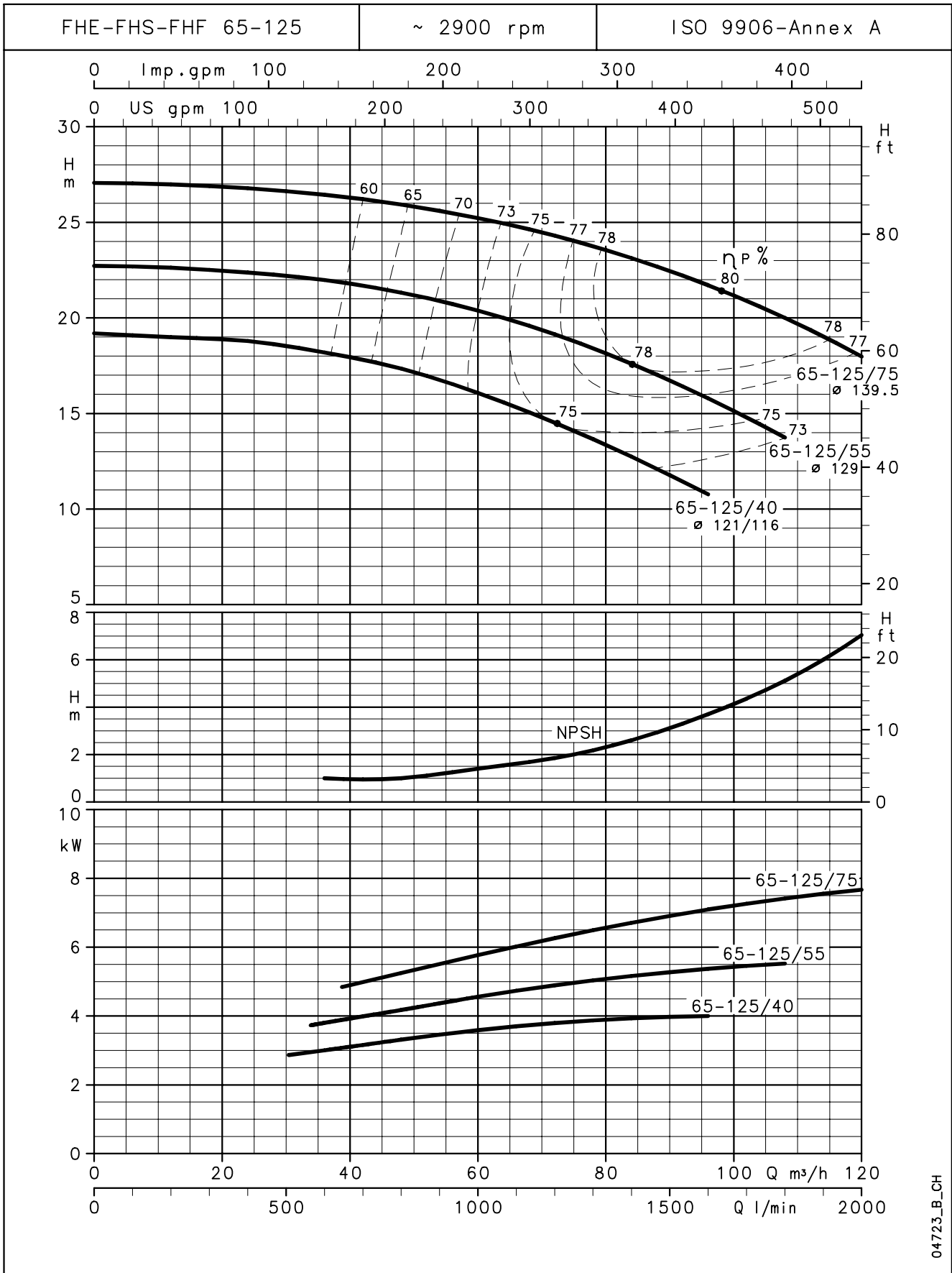


# ITT

# Lowara

## FHE-FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04723\_B\_CH

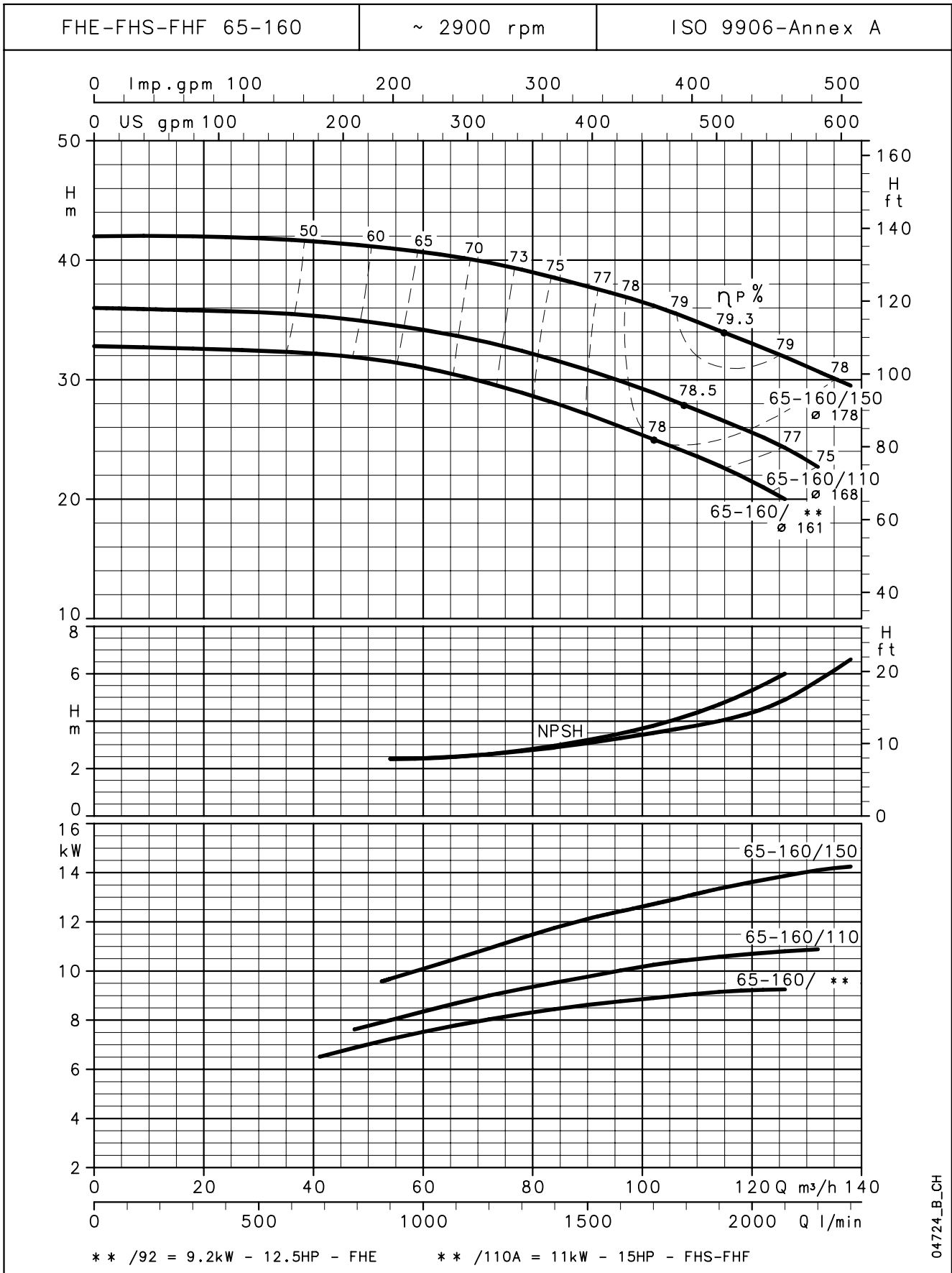
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density ρ = 1,0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04724\_B\_CH

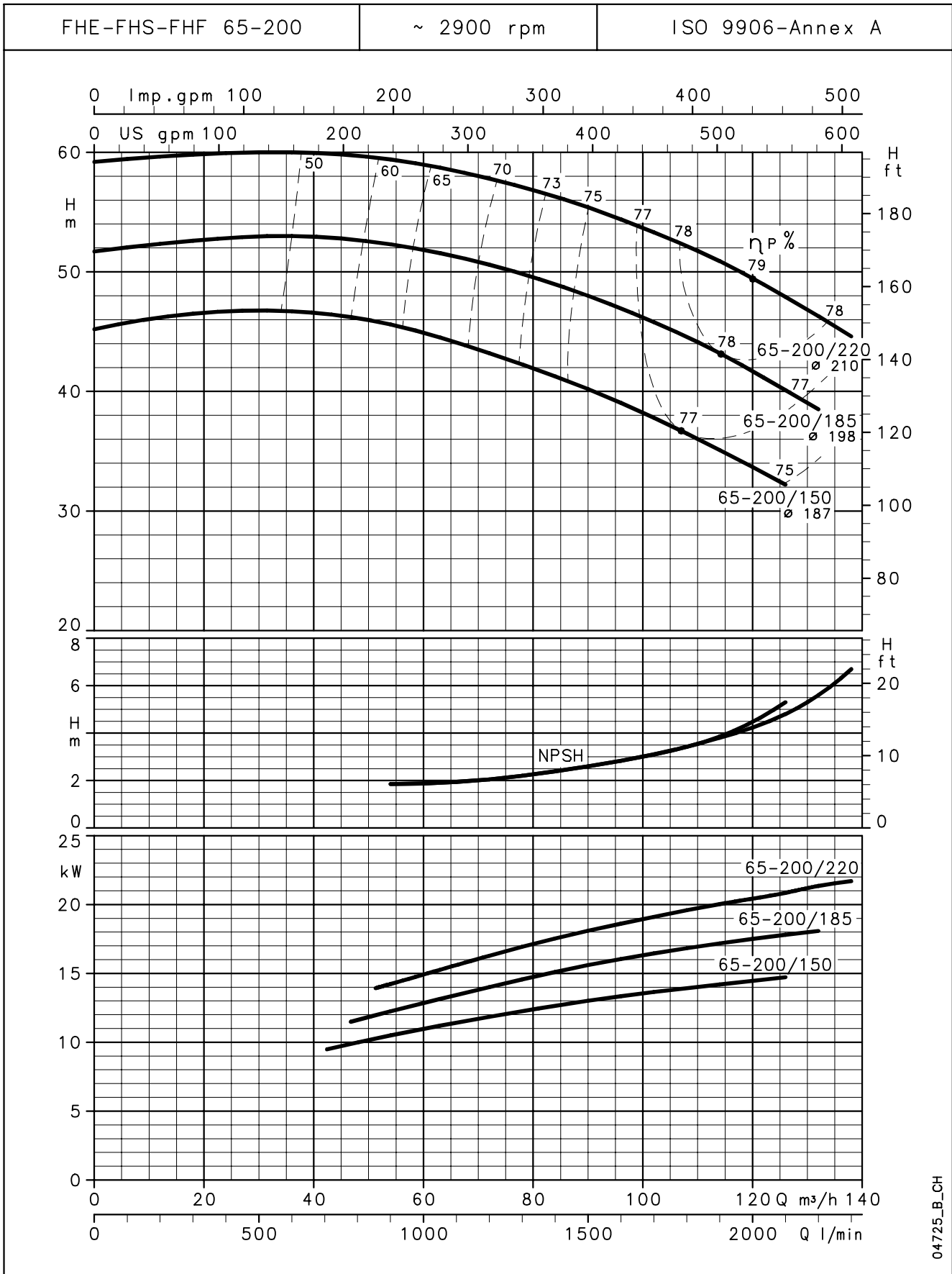
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04725\_B\_CH

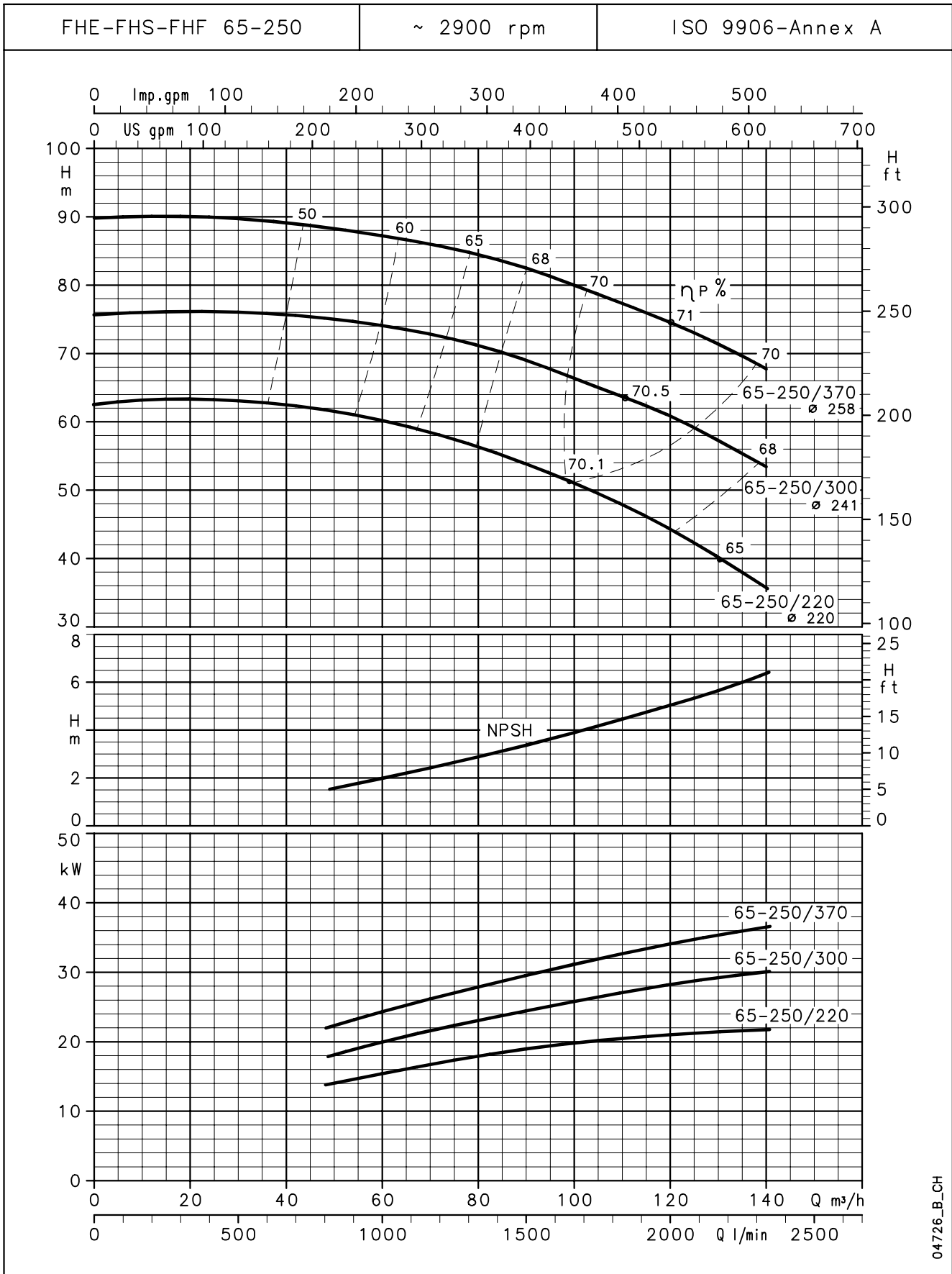
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

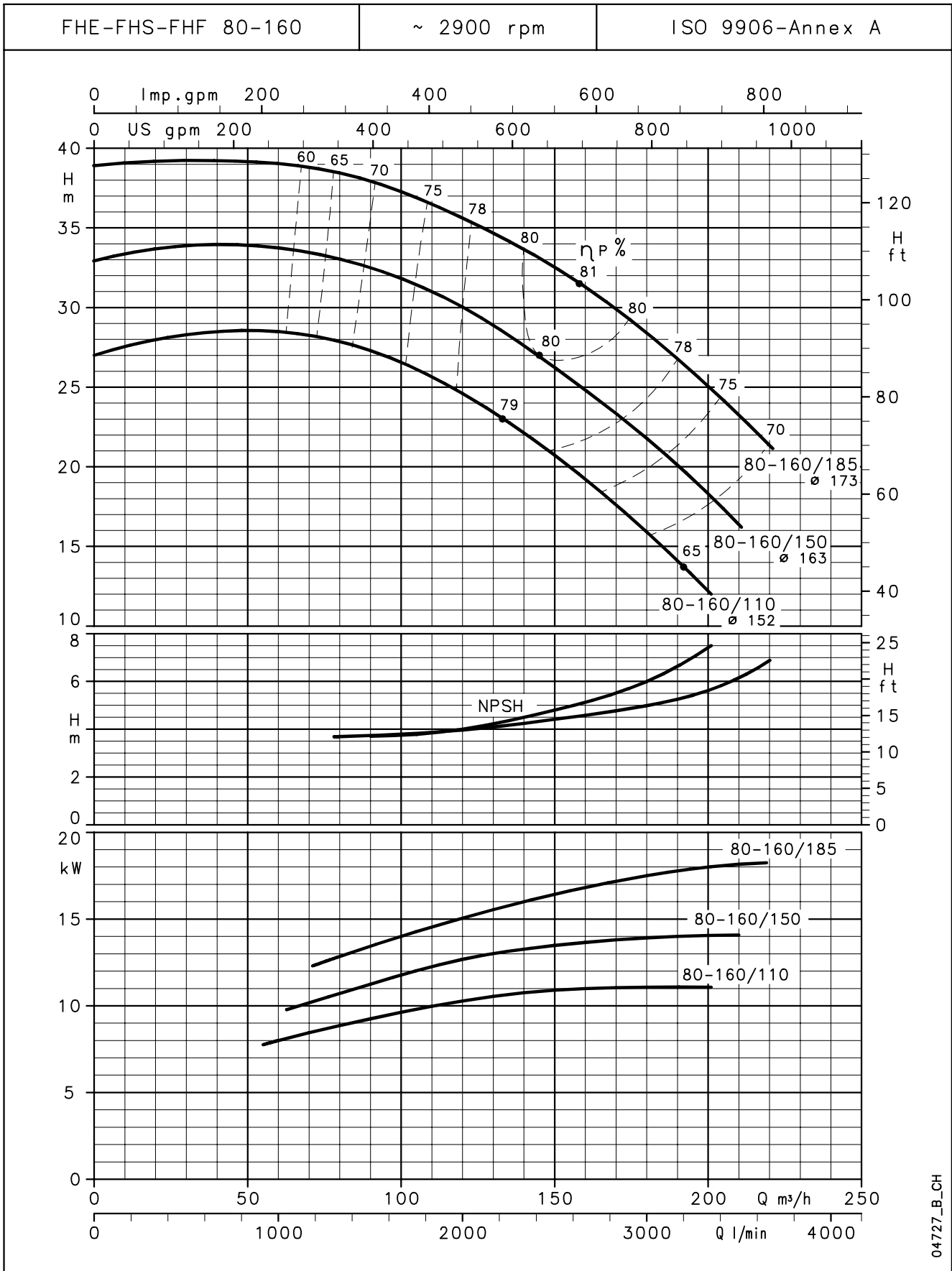


04726\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04727\_B\_CH

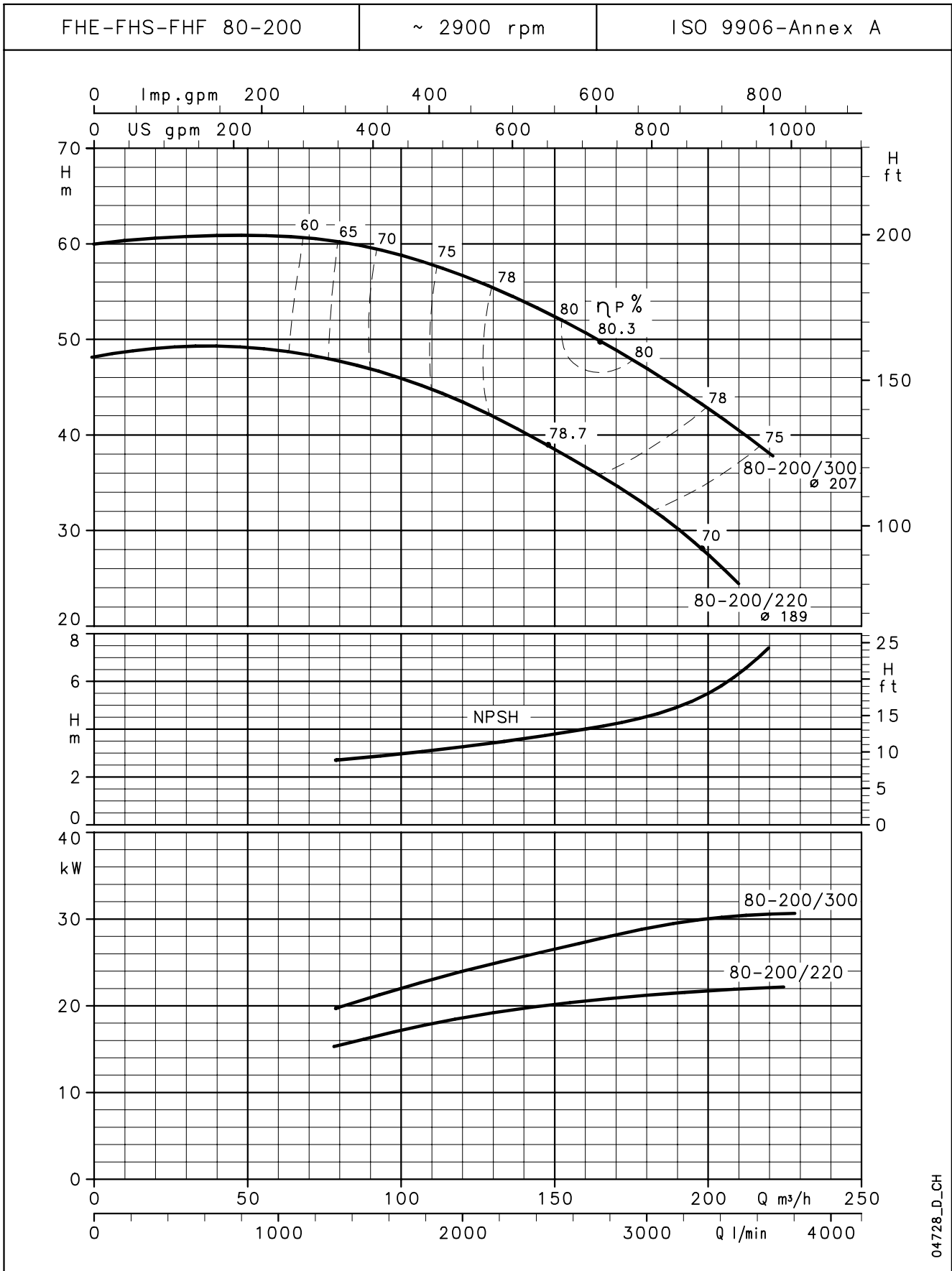
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE-FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04728\_D\_CH

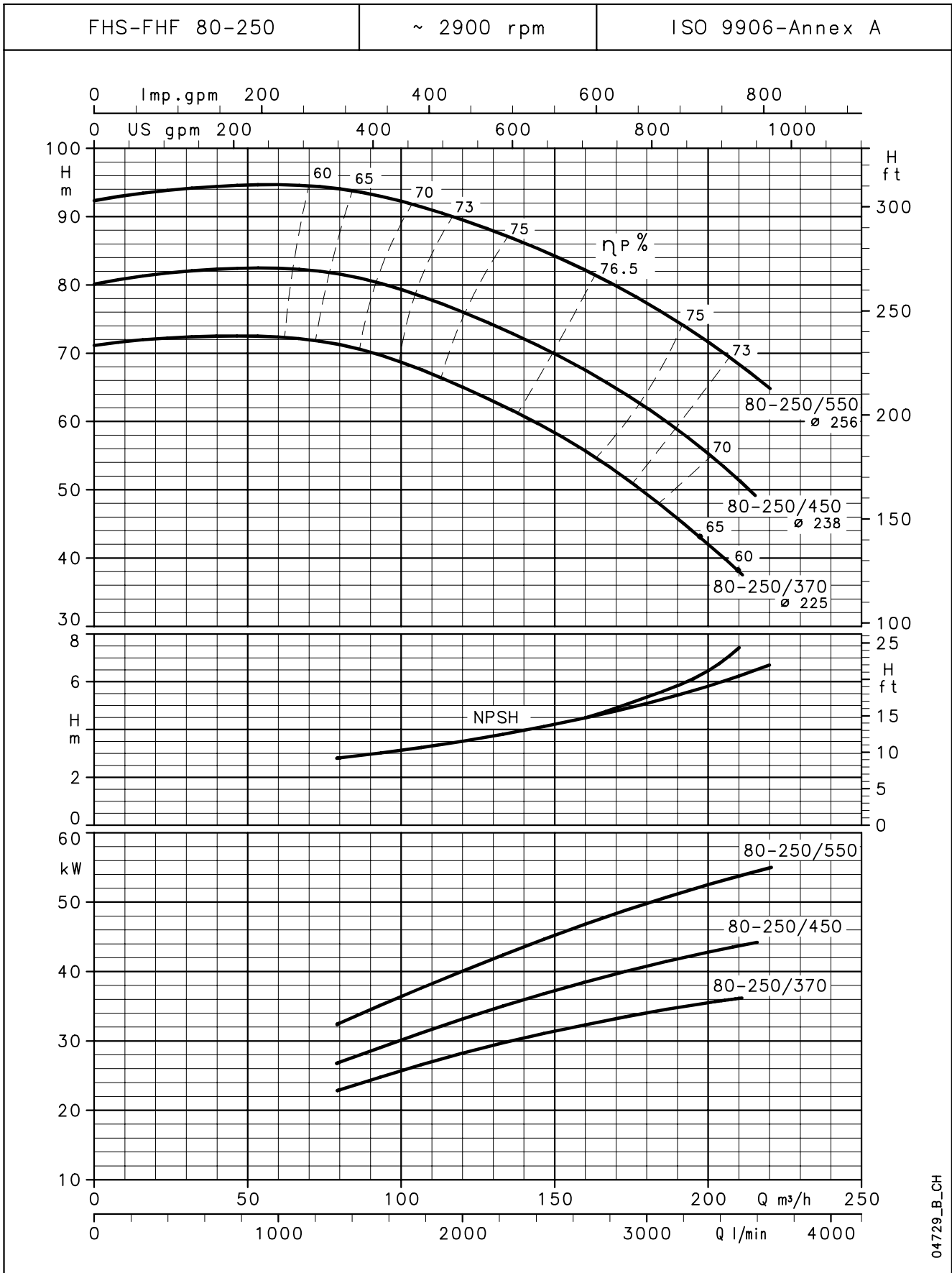
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04729\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



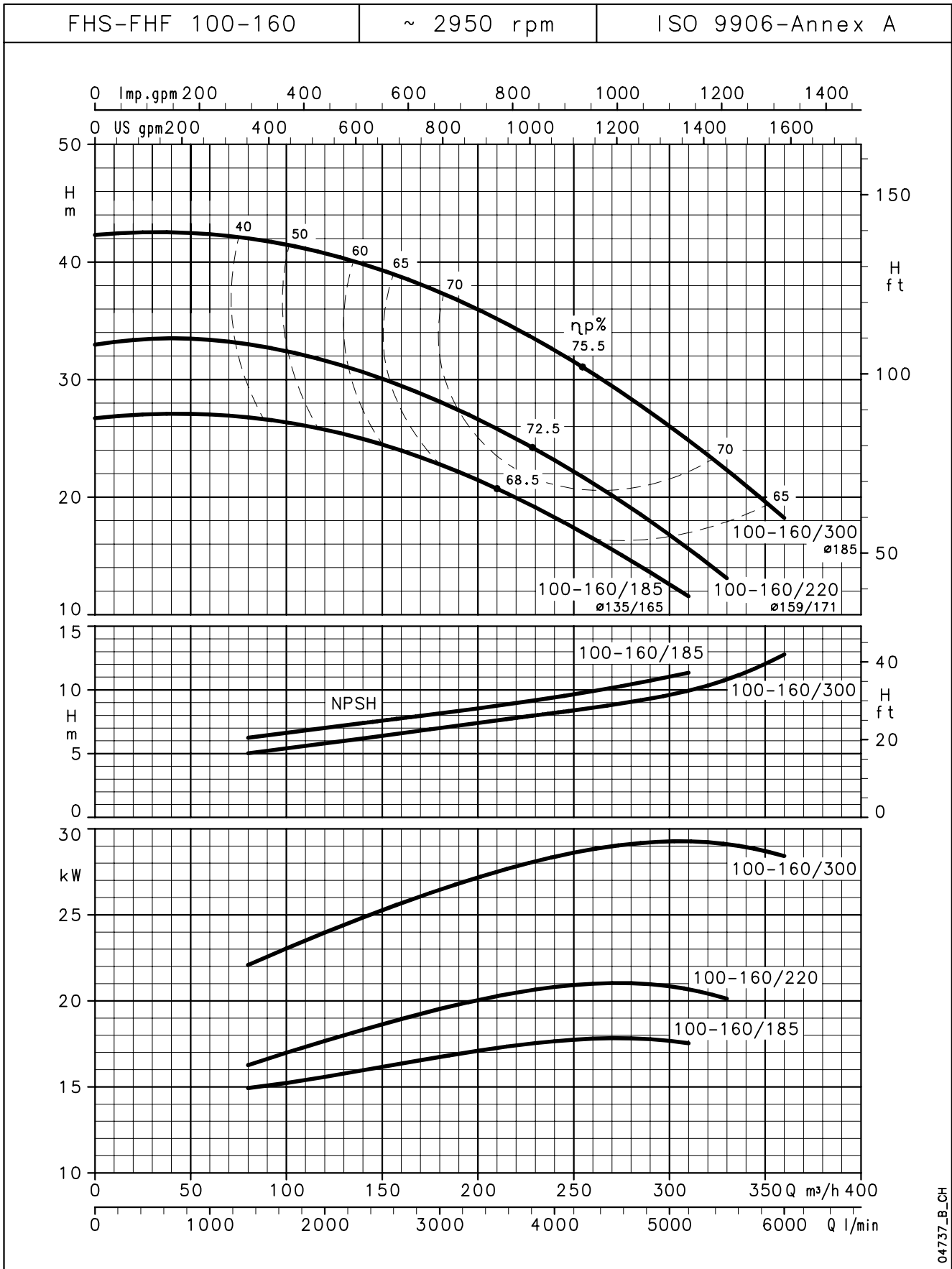


# ITT

# Lowara

## FHS-FHF SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04737\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

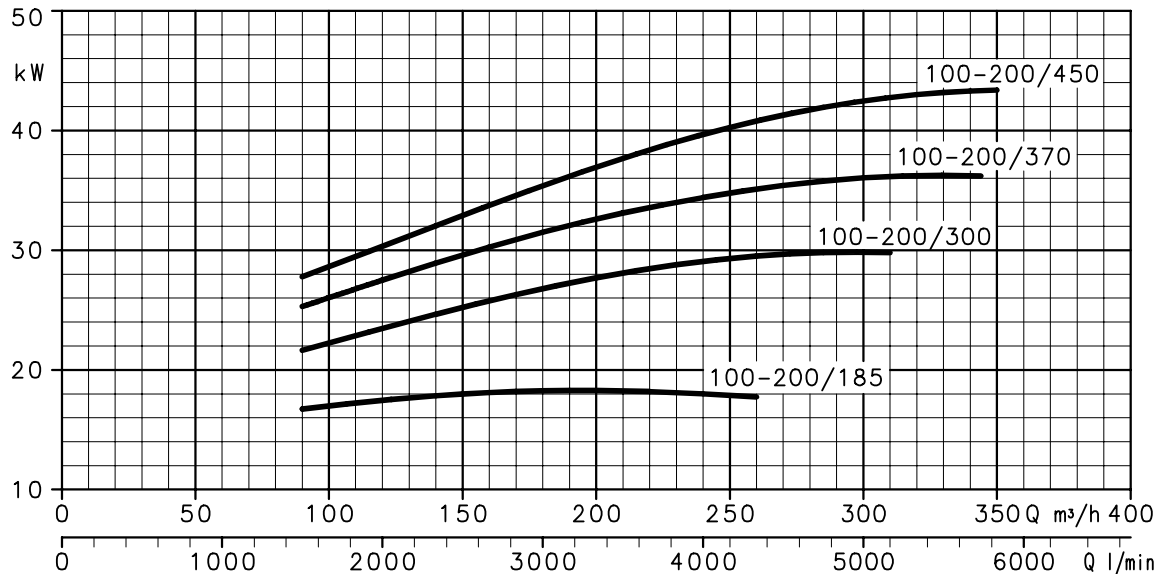
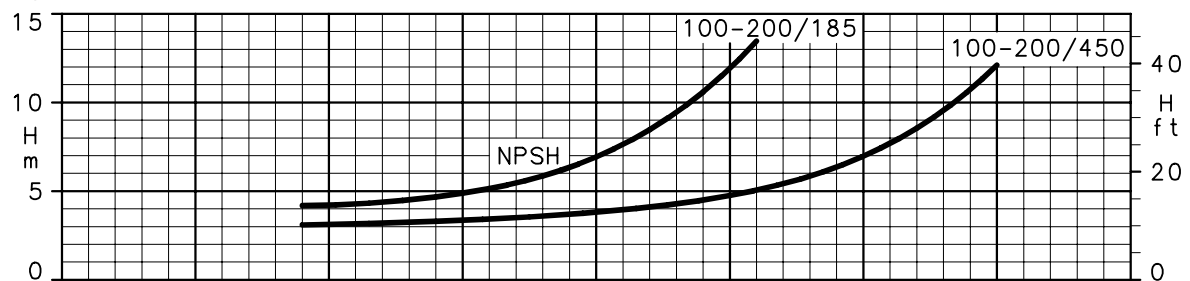
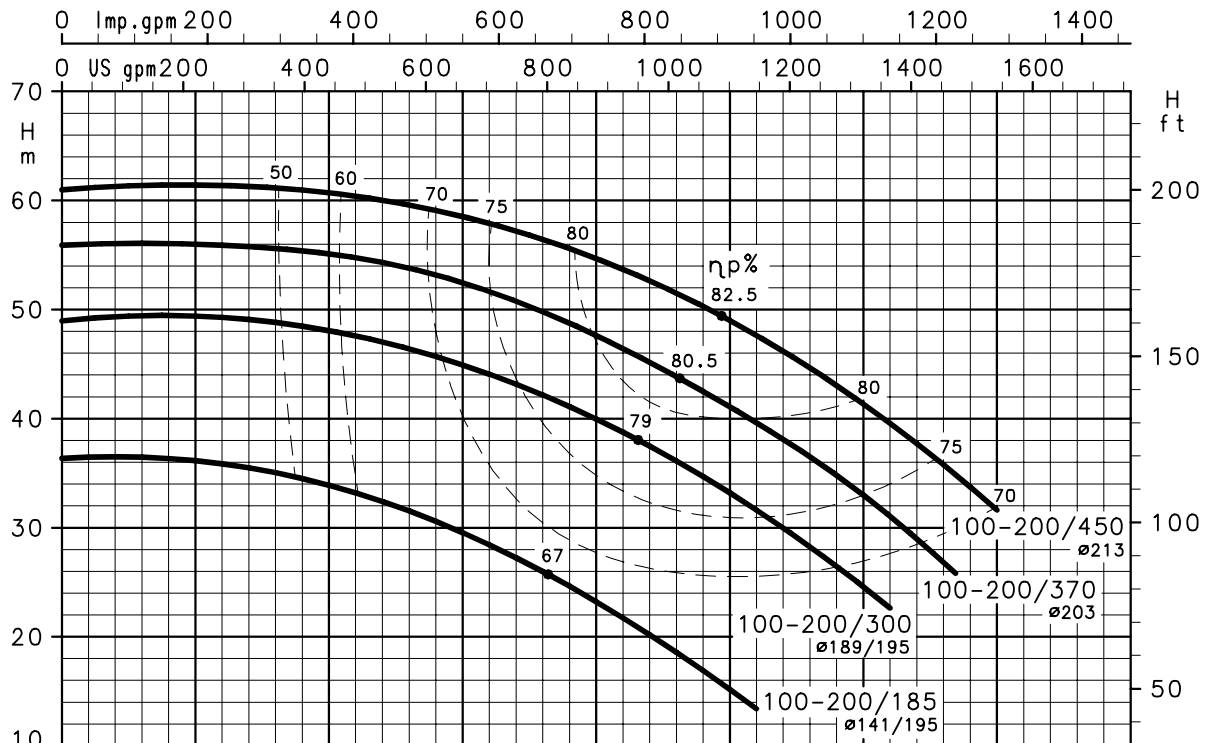
# Lowara

## FHS-FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

FHS-FHF 100-200

~ 2950 rpm

ISO 9906-Annex A



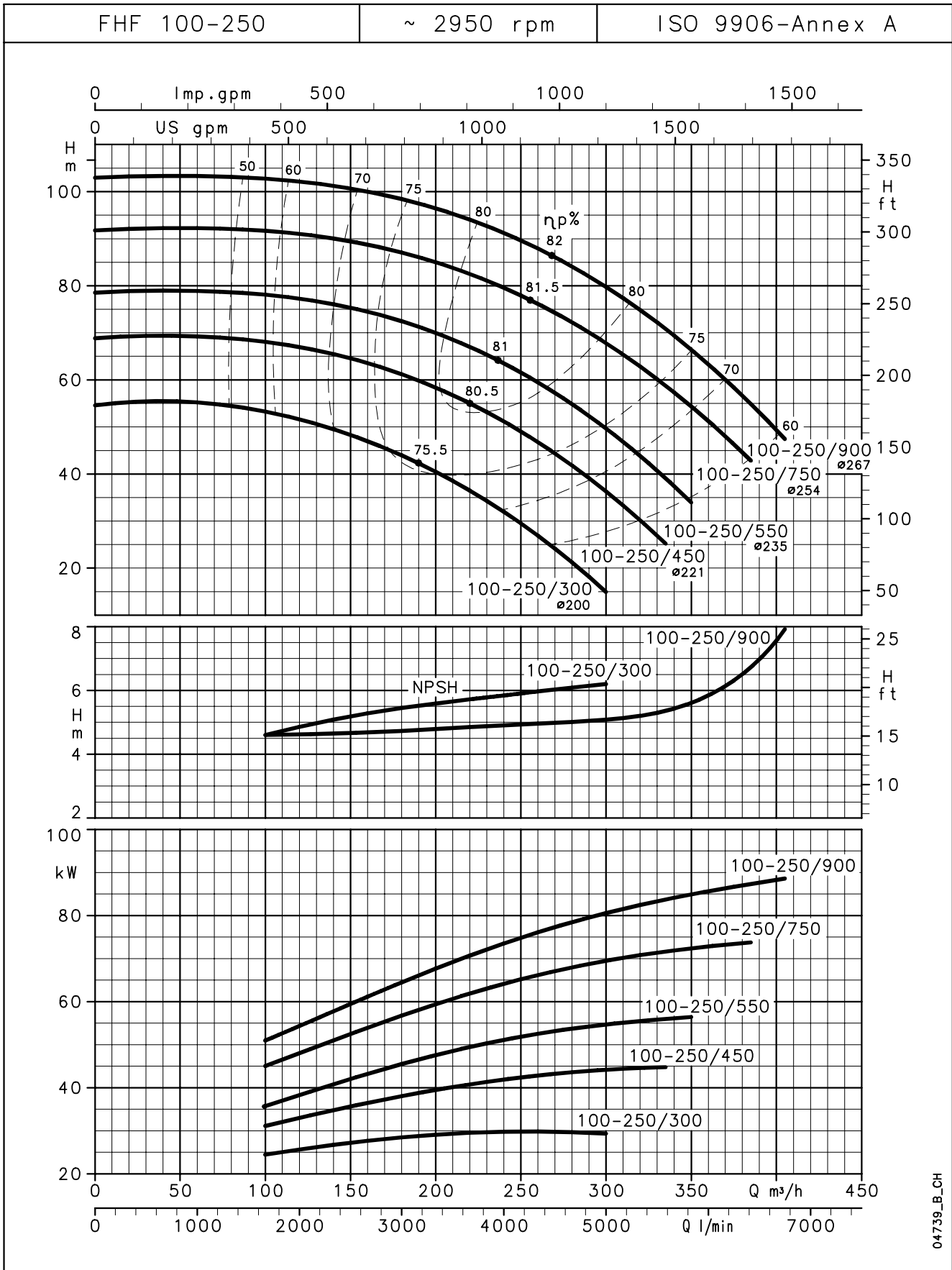
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04739\_B\_CH

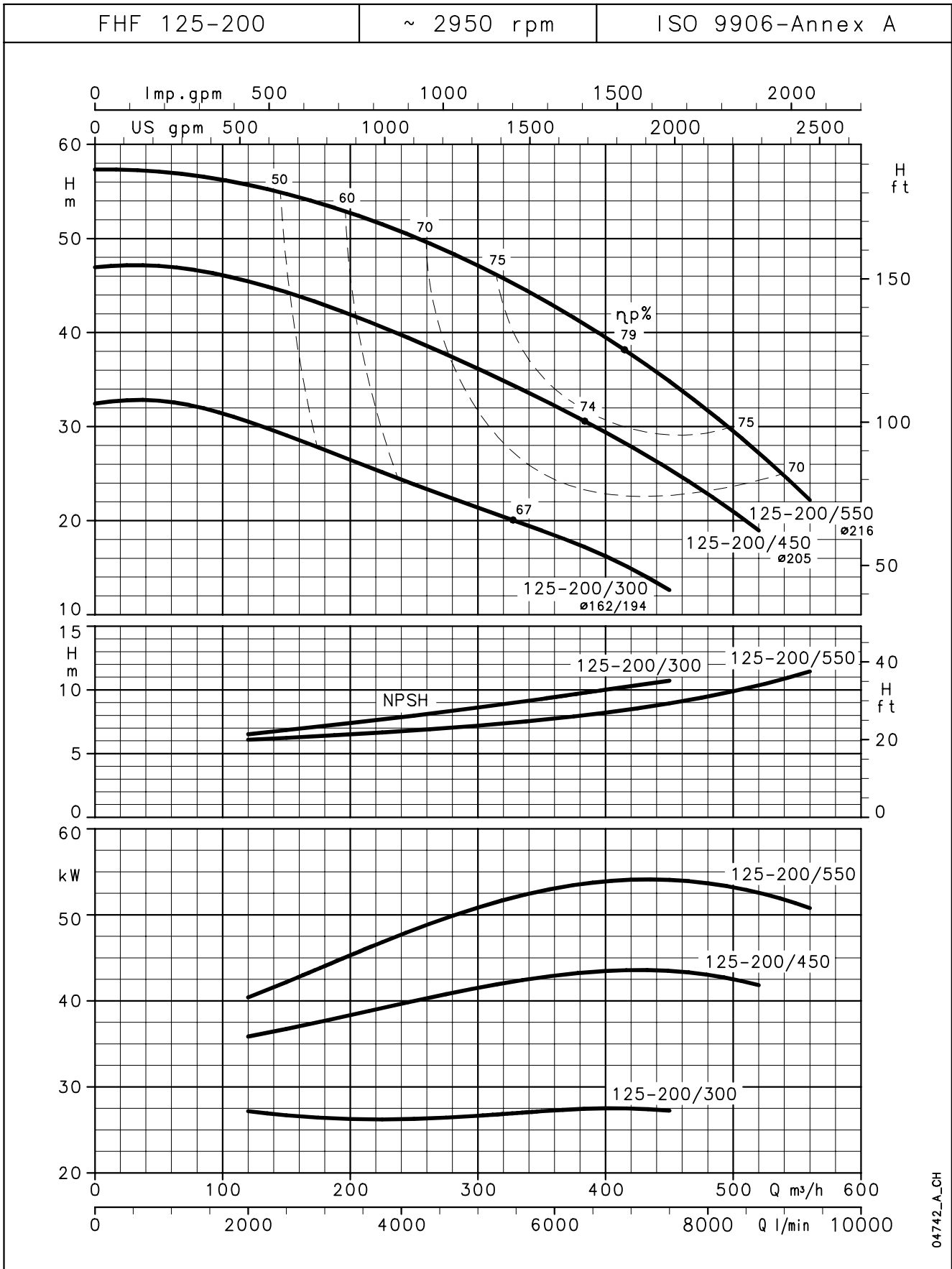
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04742\_A\_CH

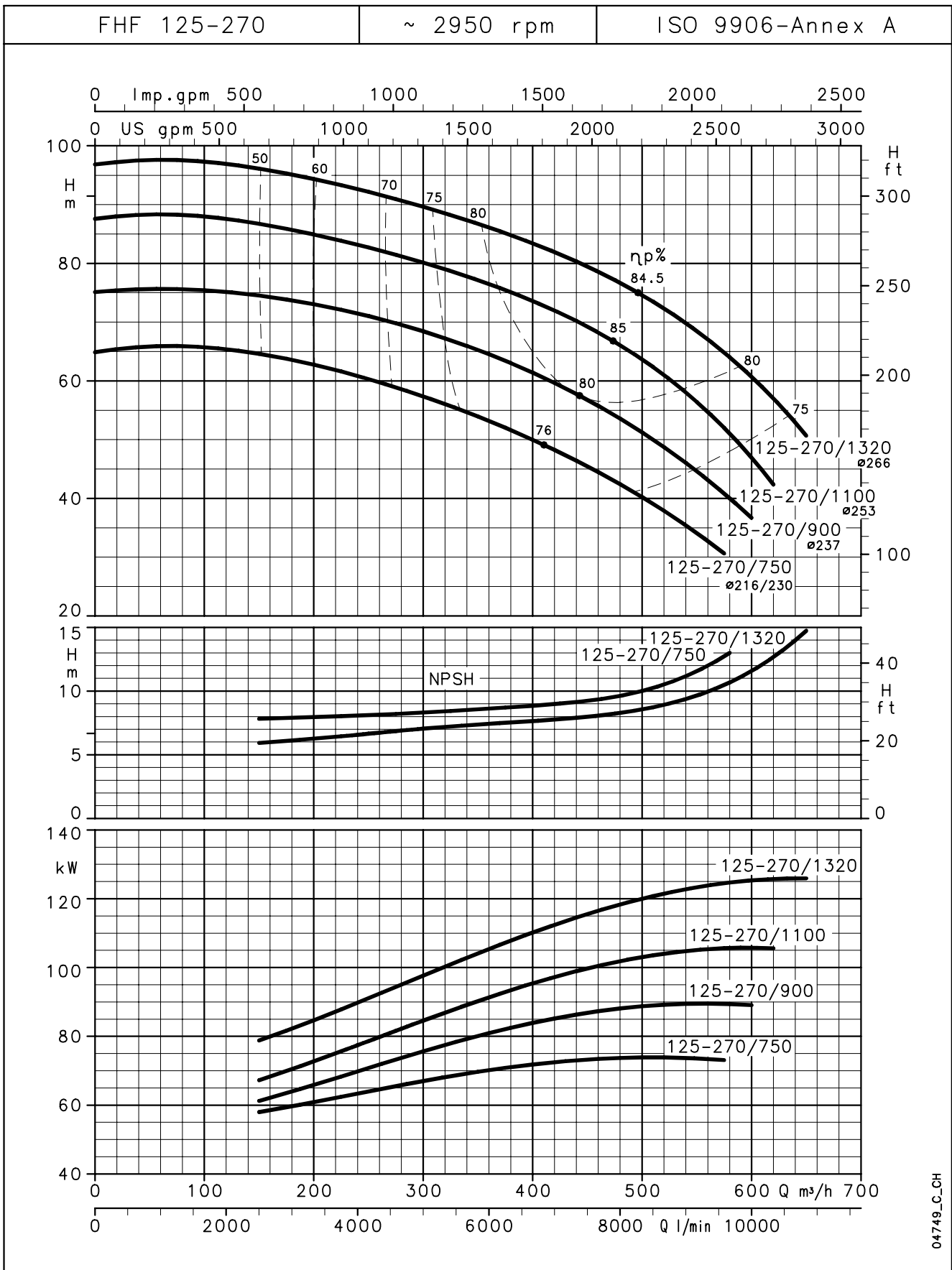
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density ρ = 1,0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.



# ITT

# Lowara

## FHF SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04749\_C\_CH

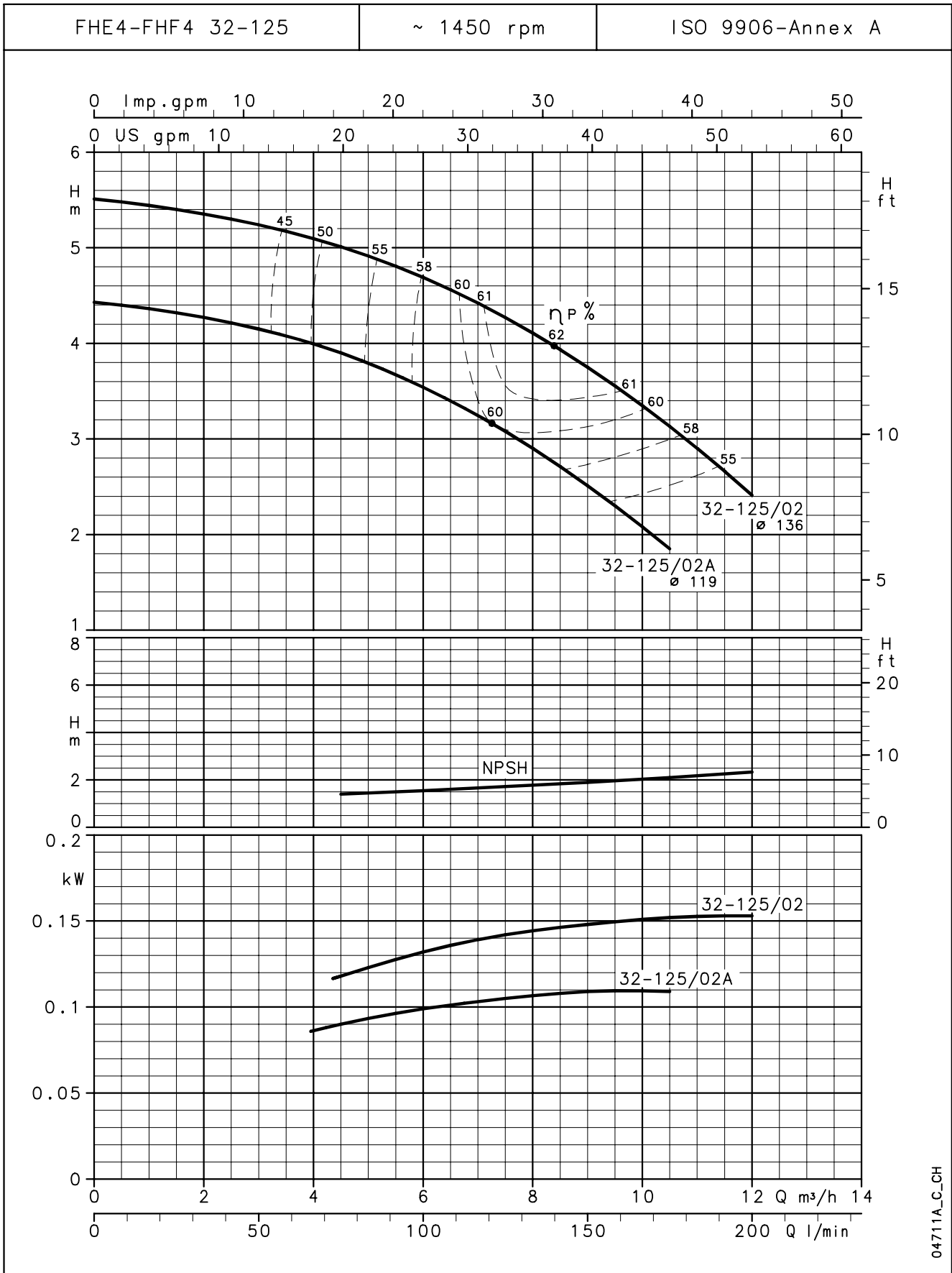
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04711A\_C-CH

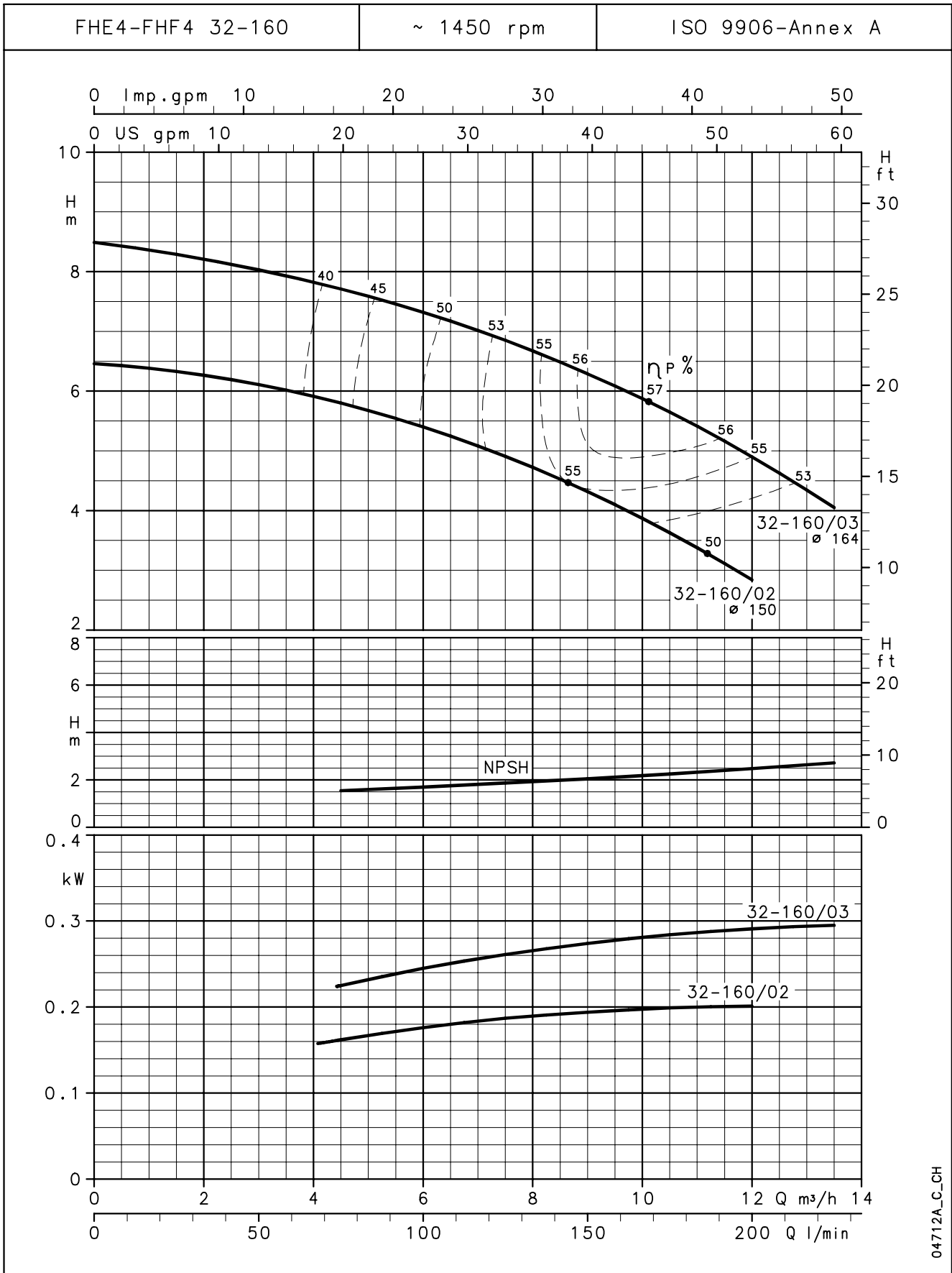
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04712A\_C-CH

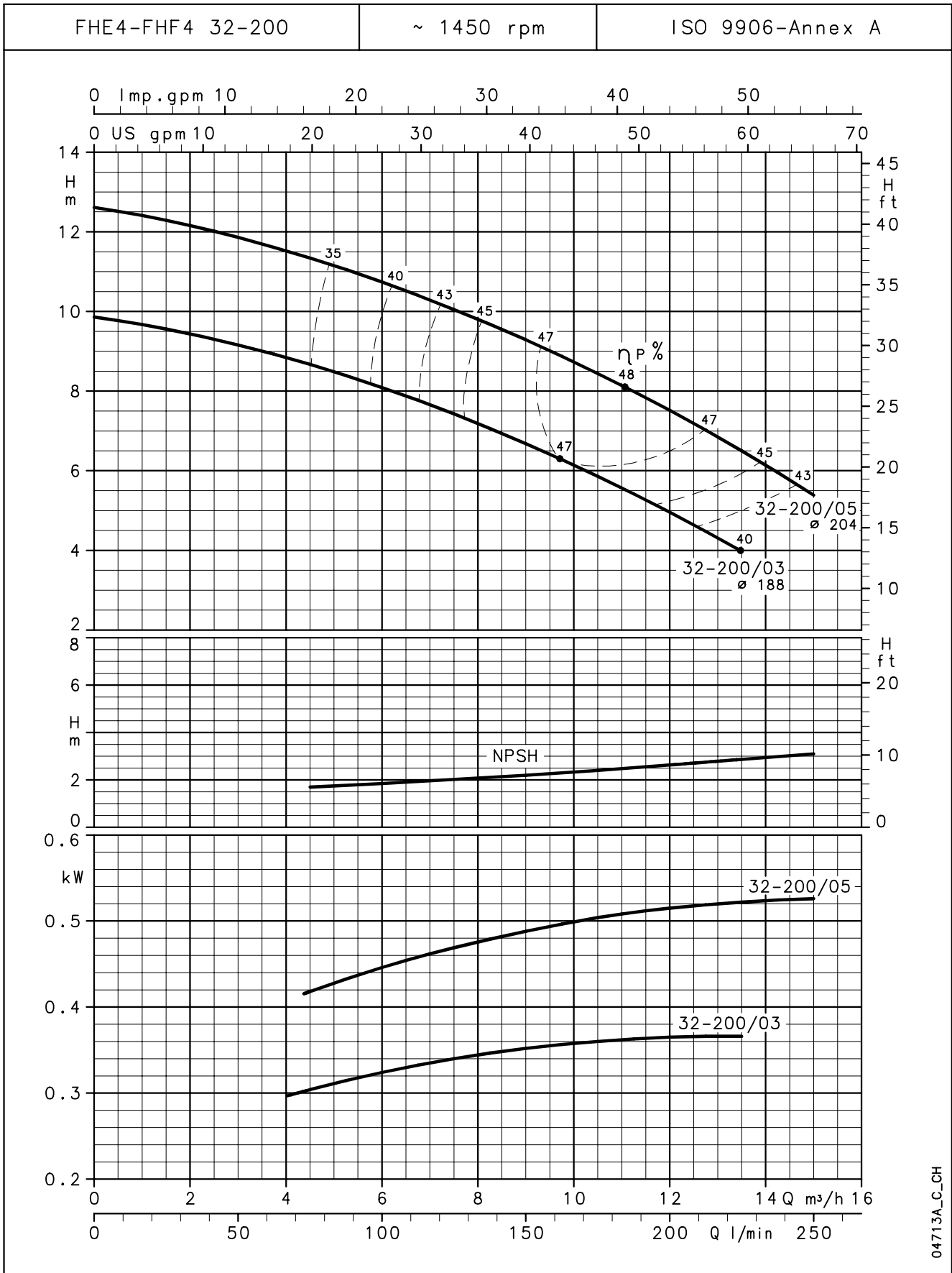
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04713A\_C-CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

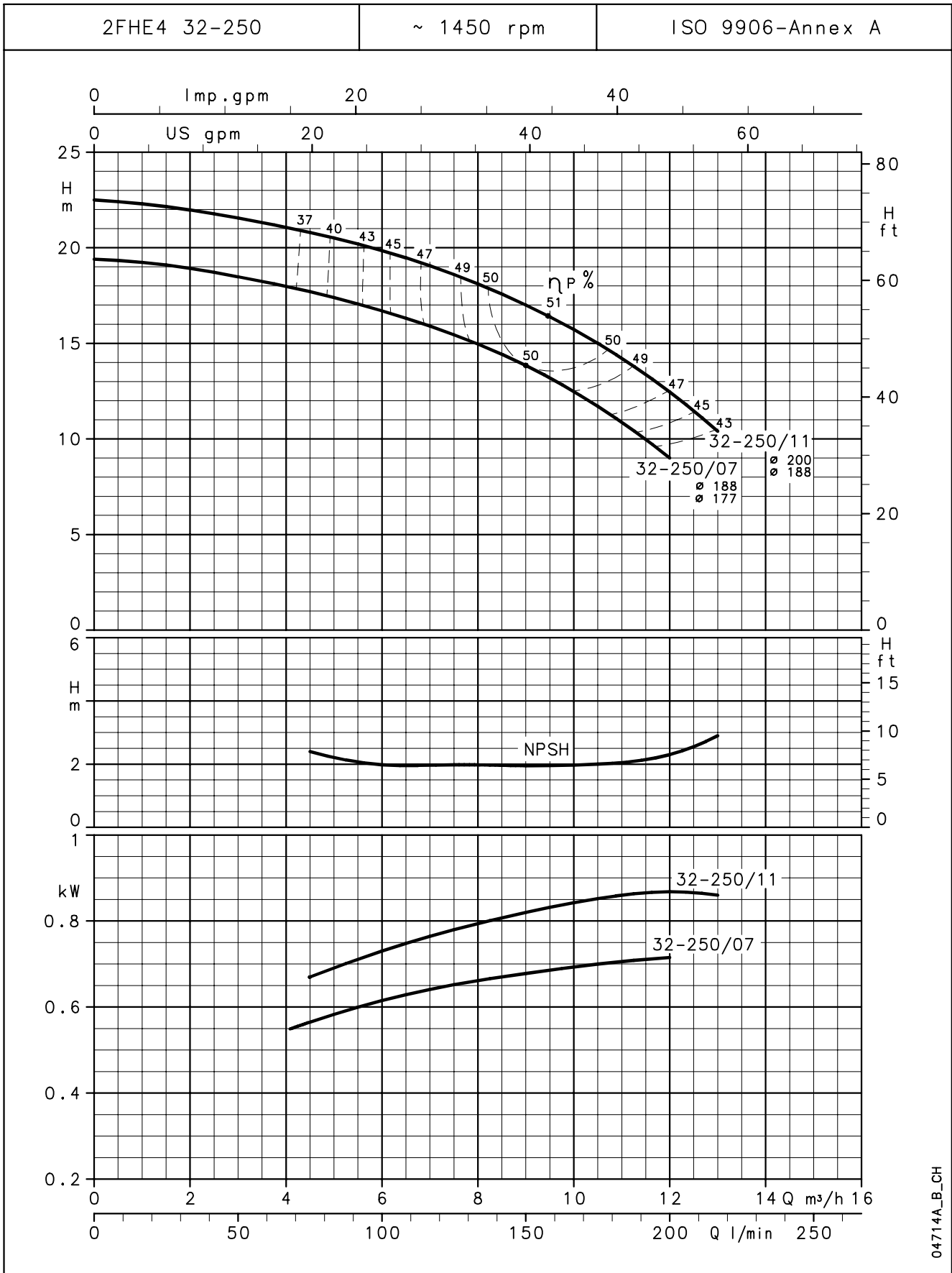




# ITT

# Lowara

## 2FHE4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04714A\_B\_CH

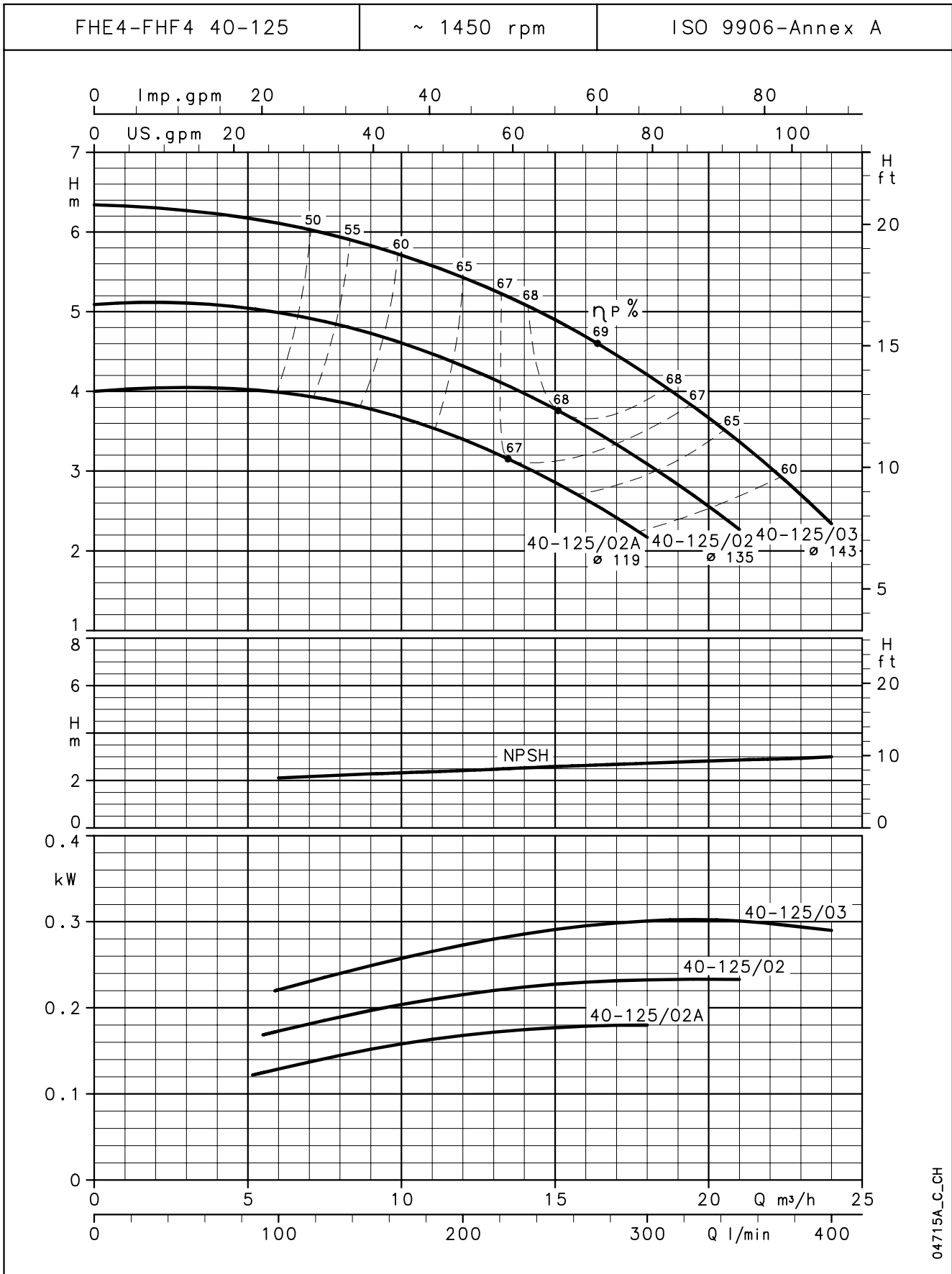
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04715A\_C\_CH

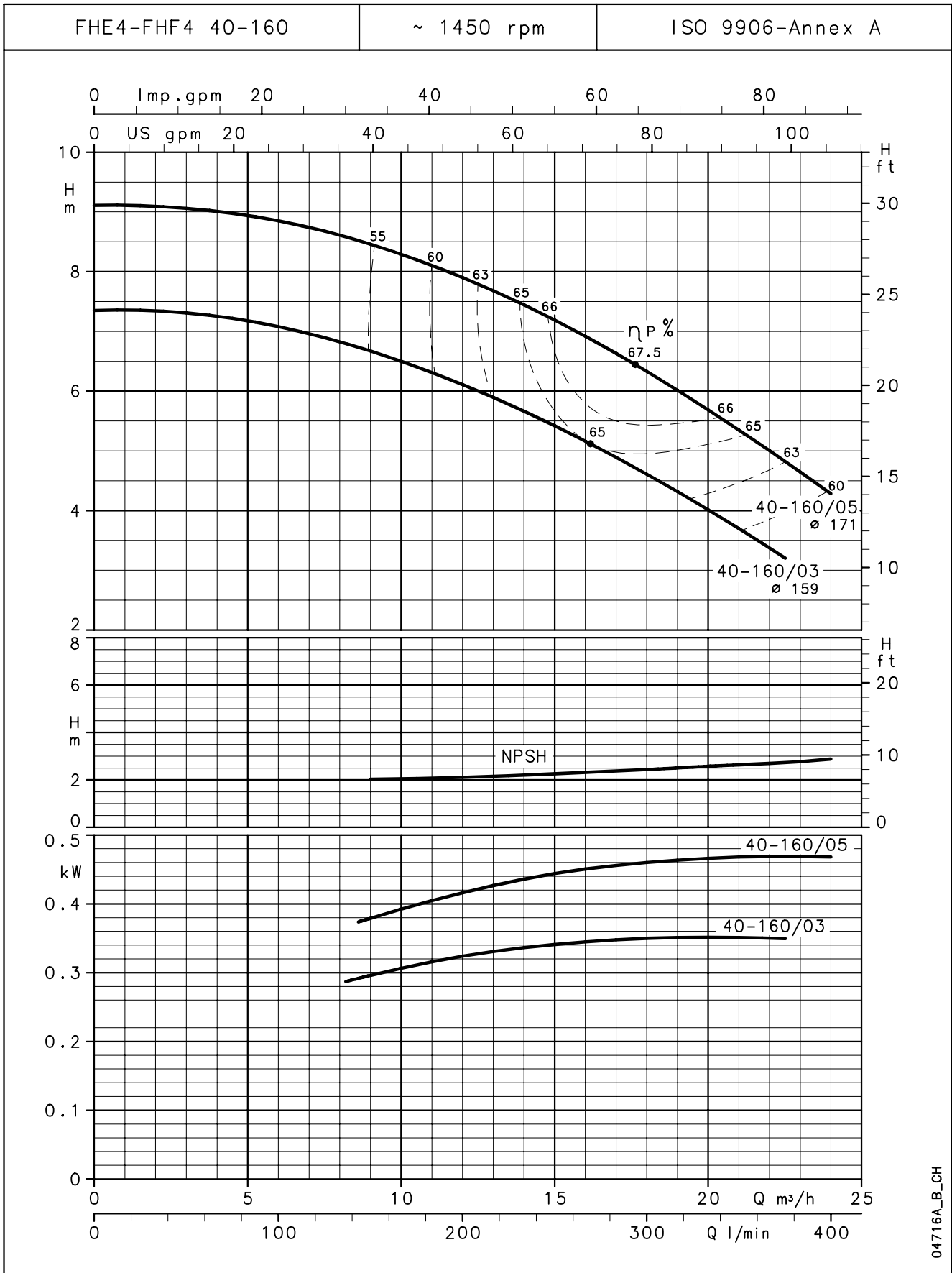
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04716A\_B\_CH

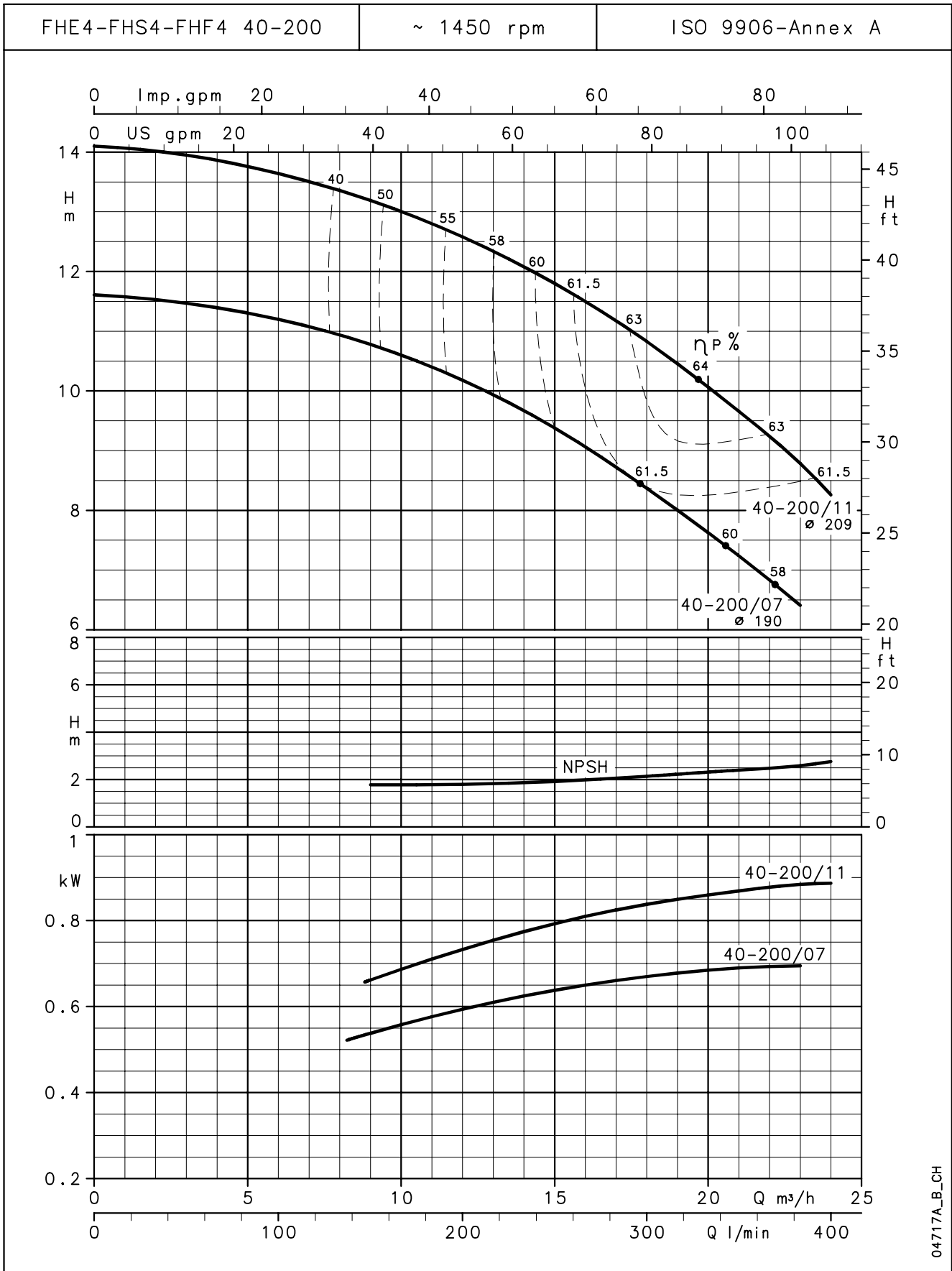
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04717A\_B\_CH

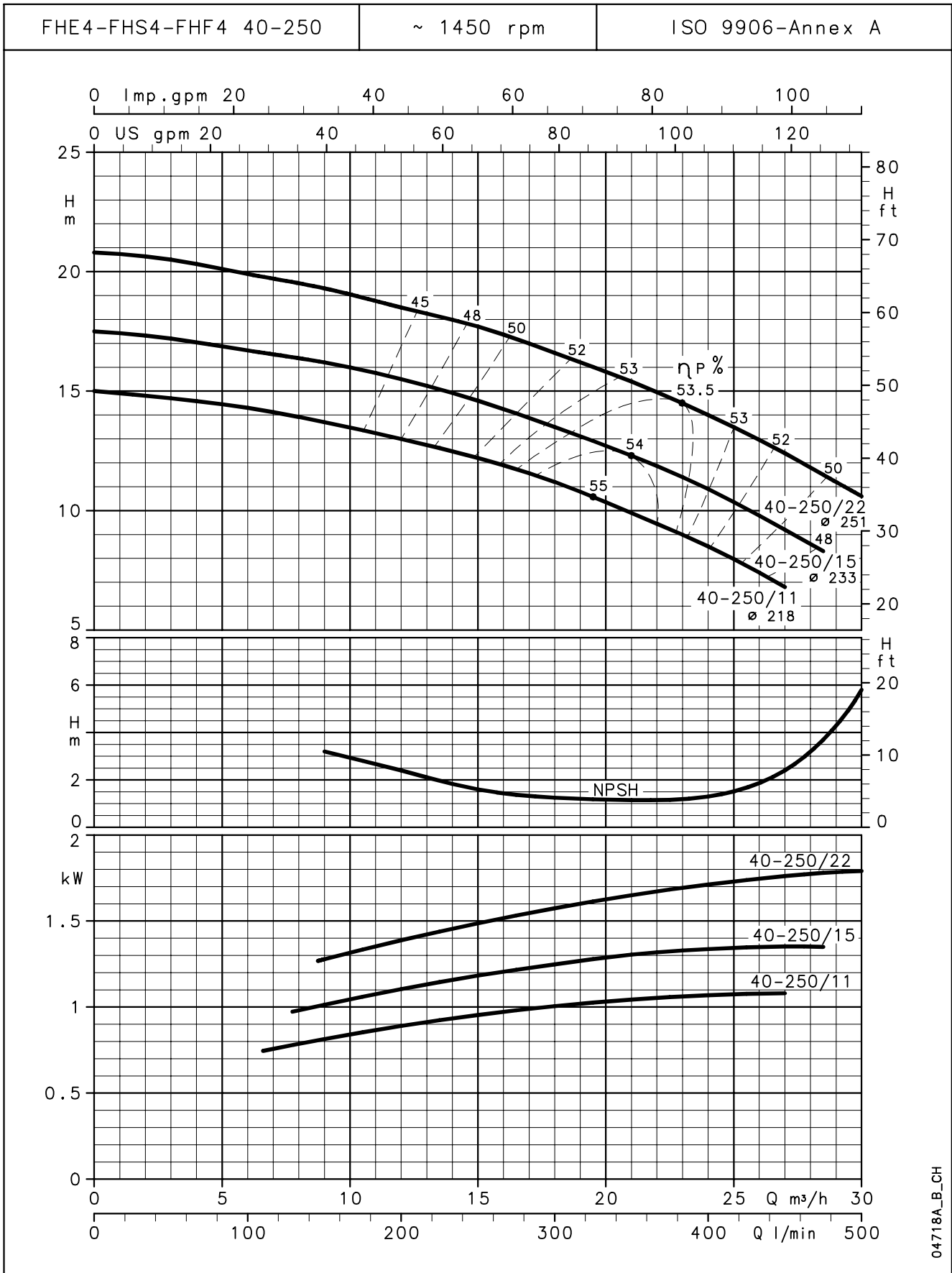
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04718A\_B\_CH

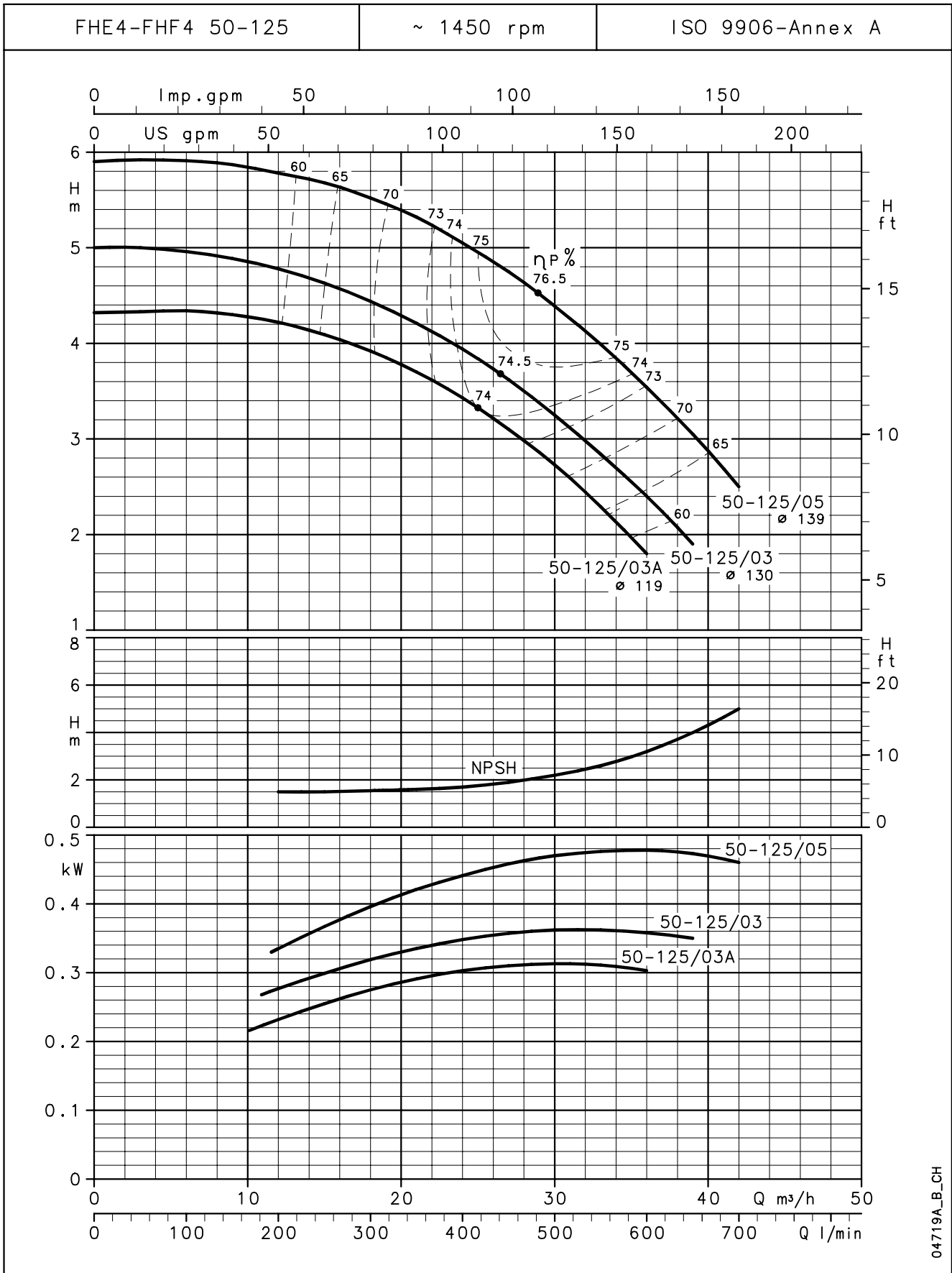
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04719A\_B\_CH

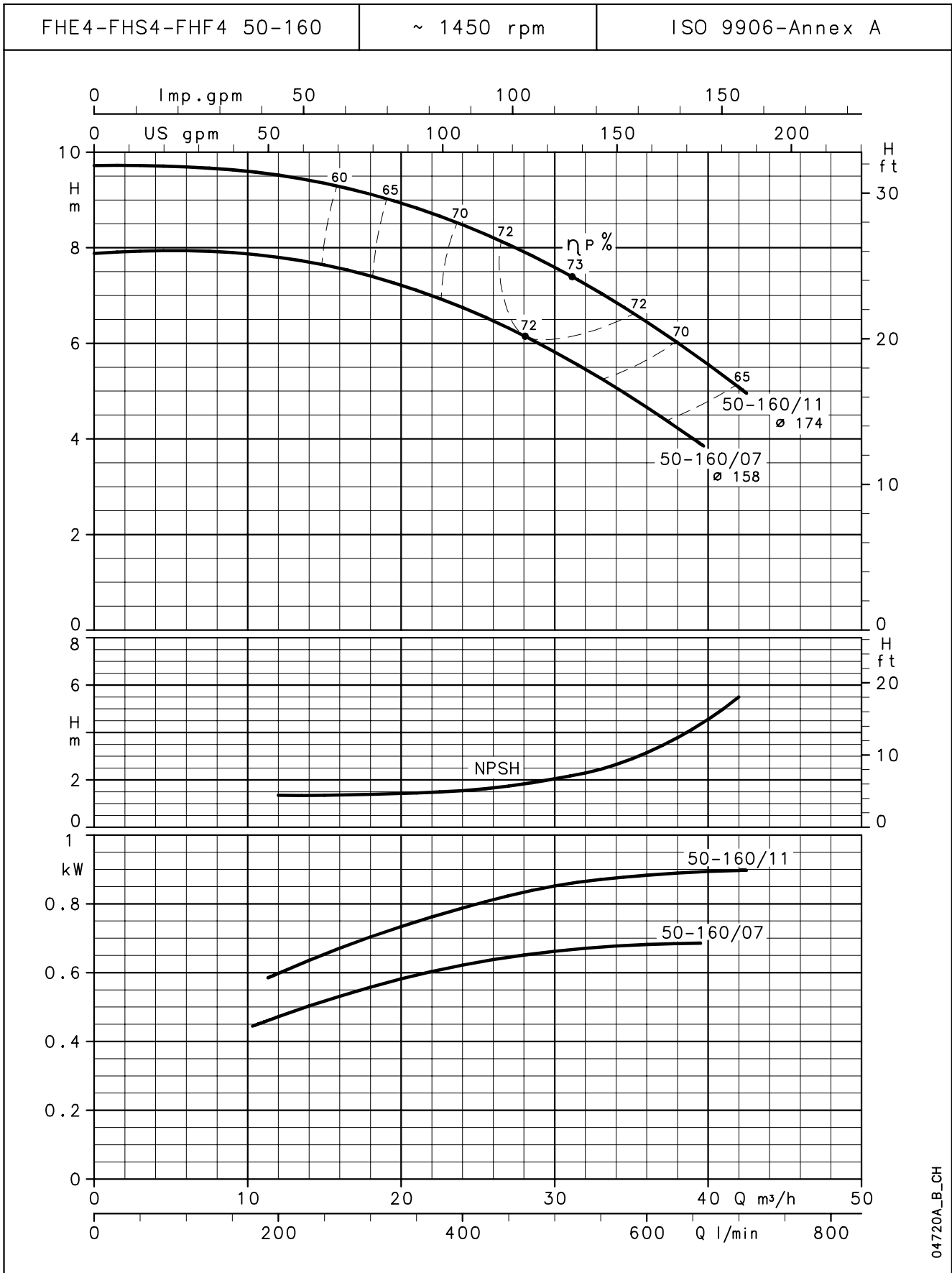
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04720A\_B\_CH

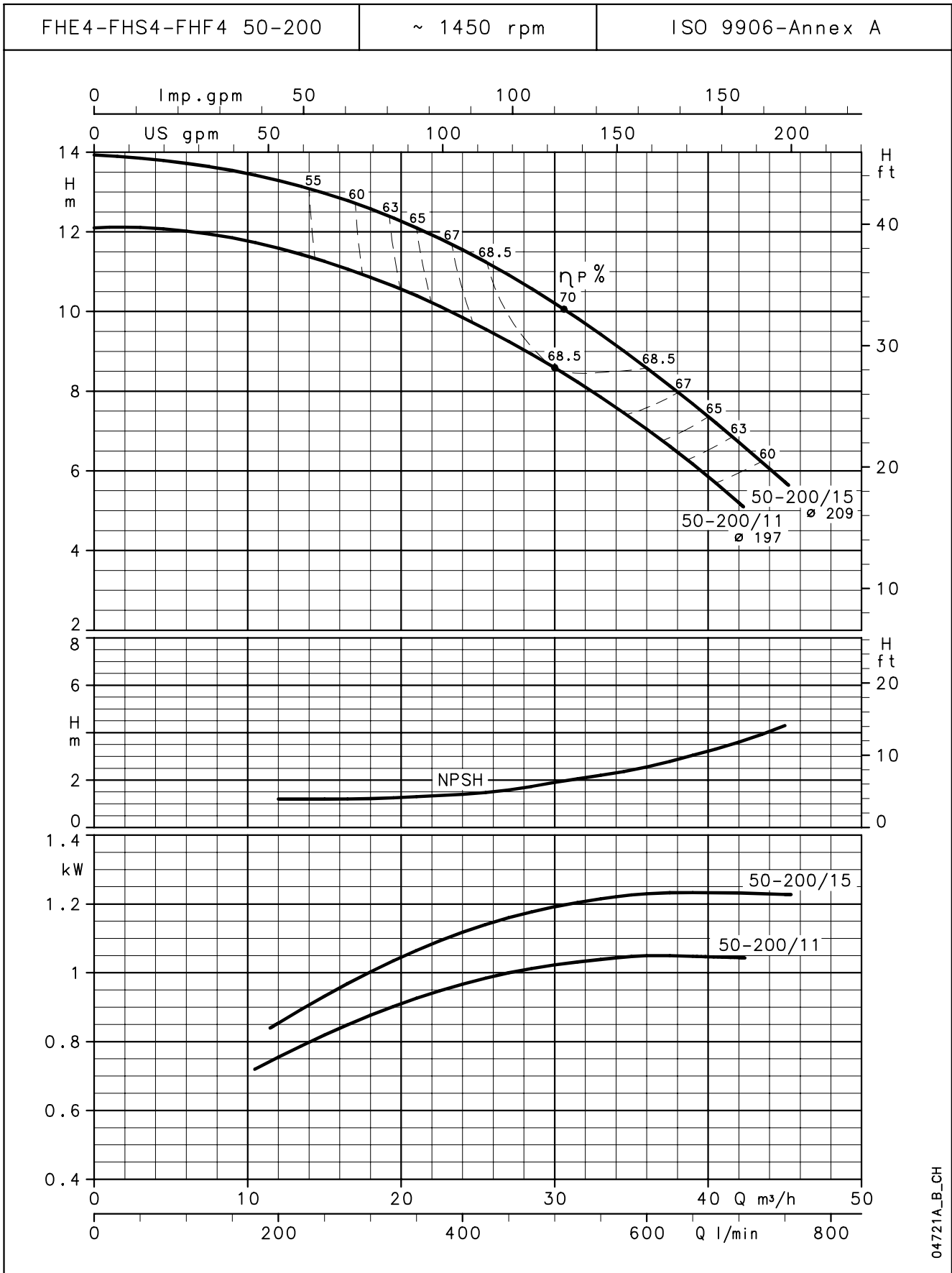
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04721A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

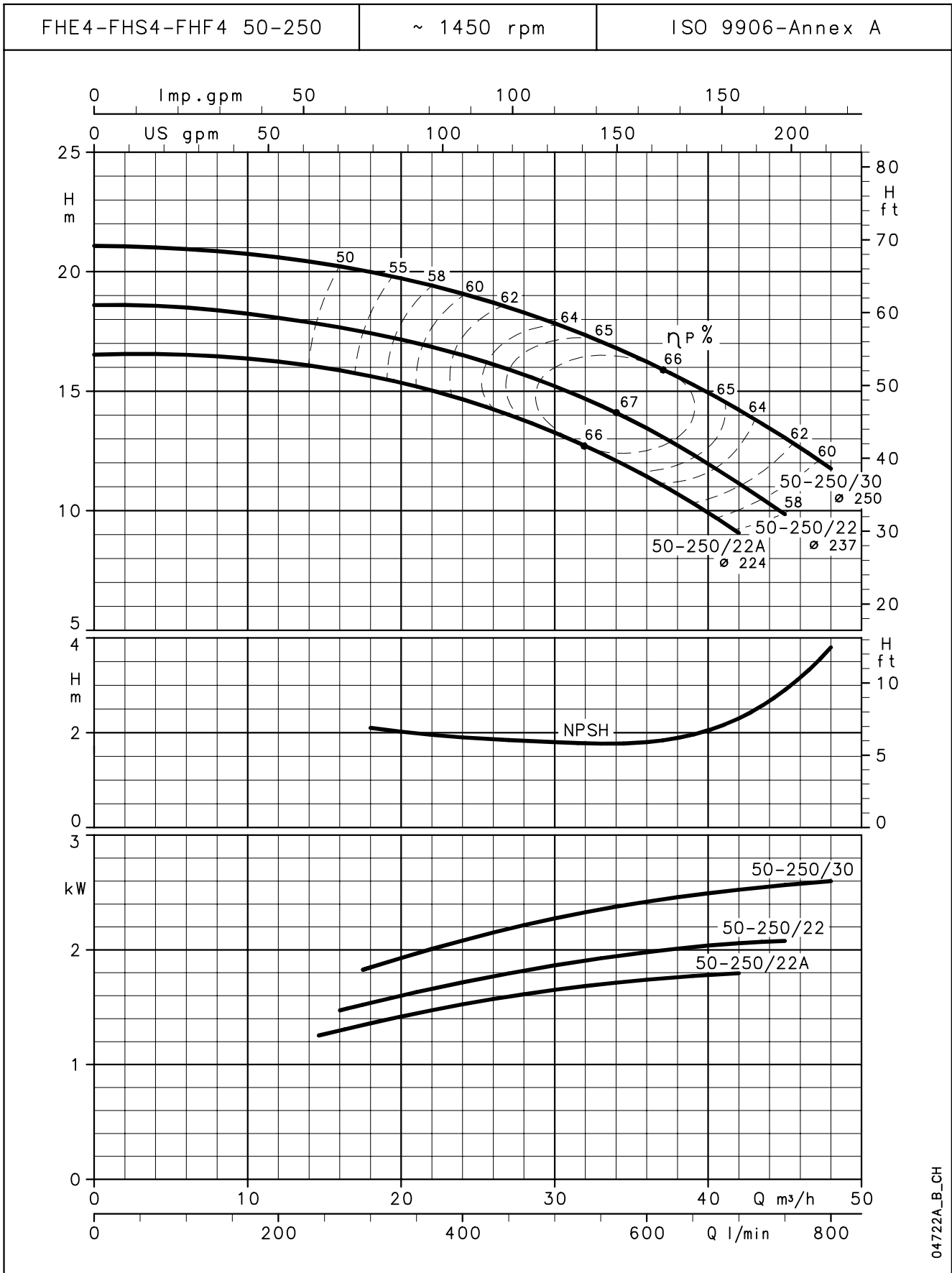




# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04722A\_B\_CH

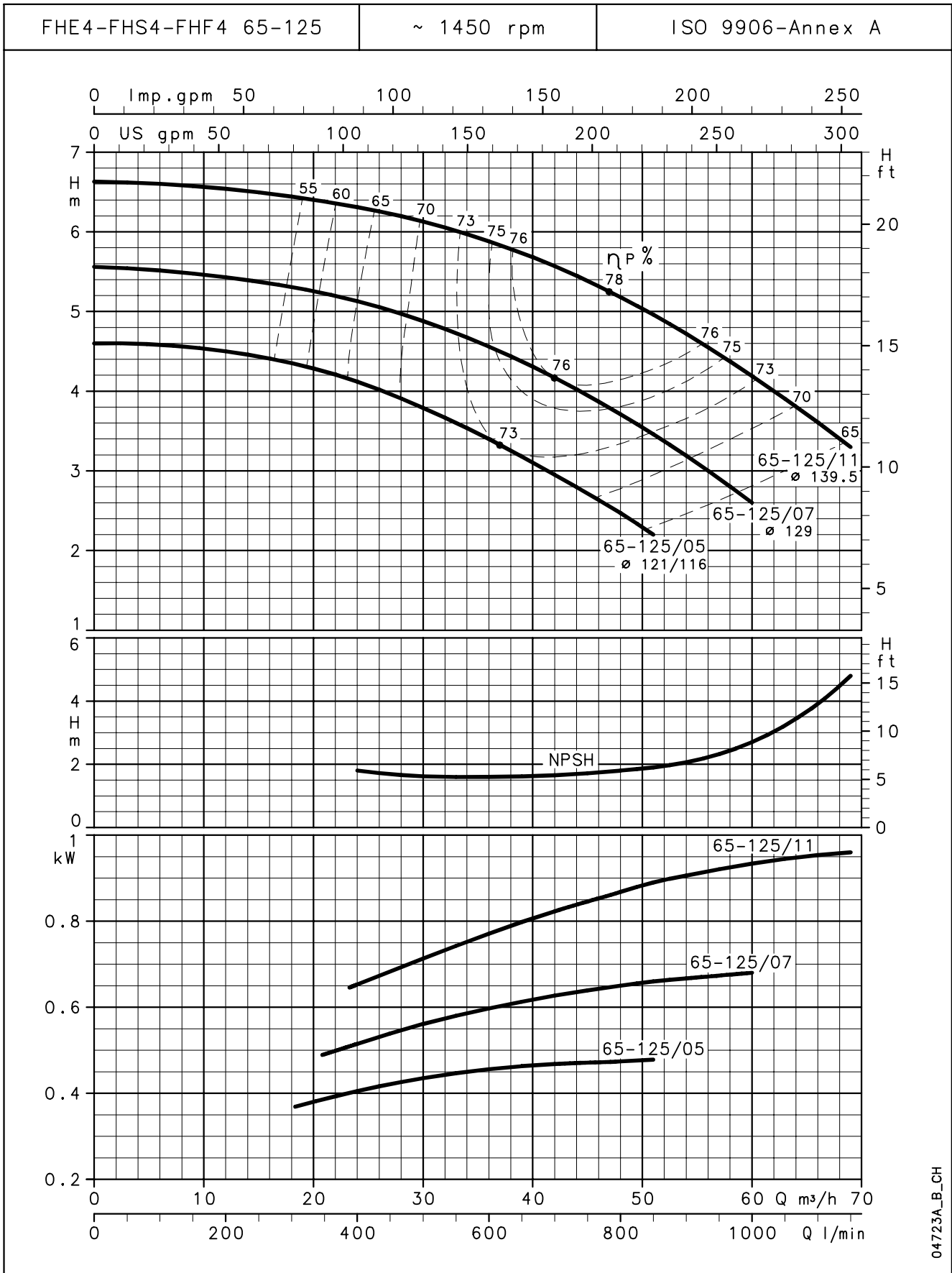
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04723A\_B\_CH

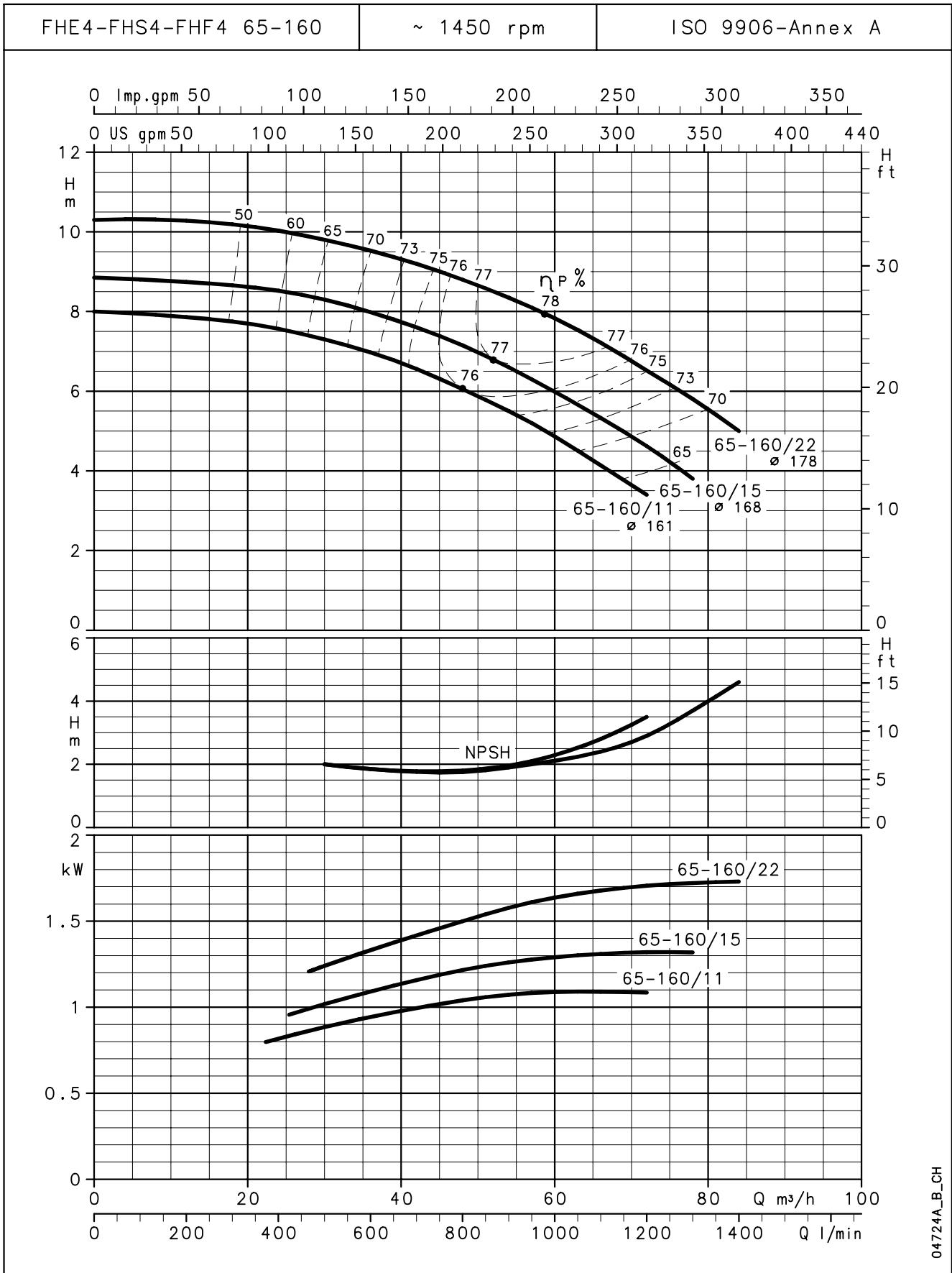
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04724A\_B\_CH

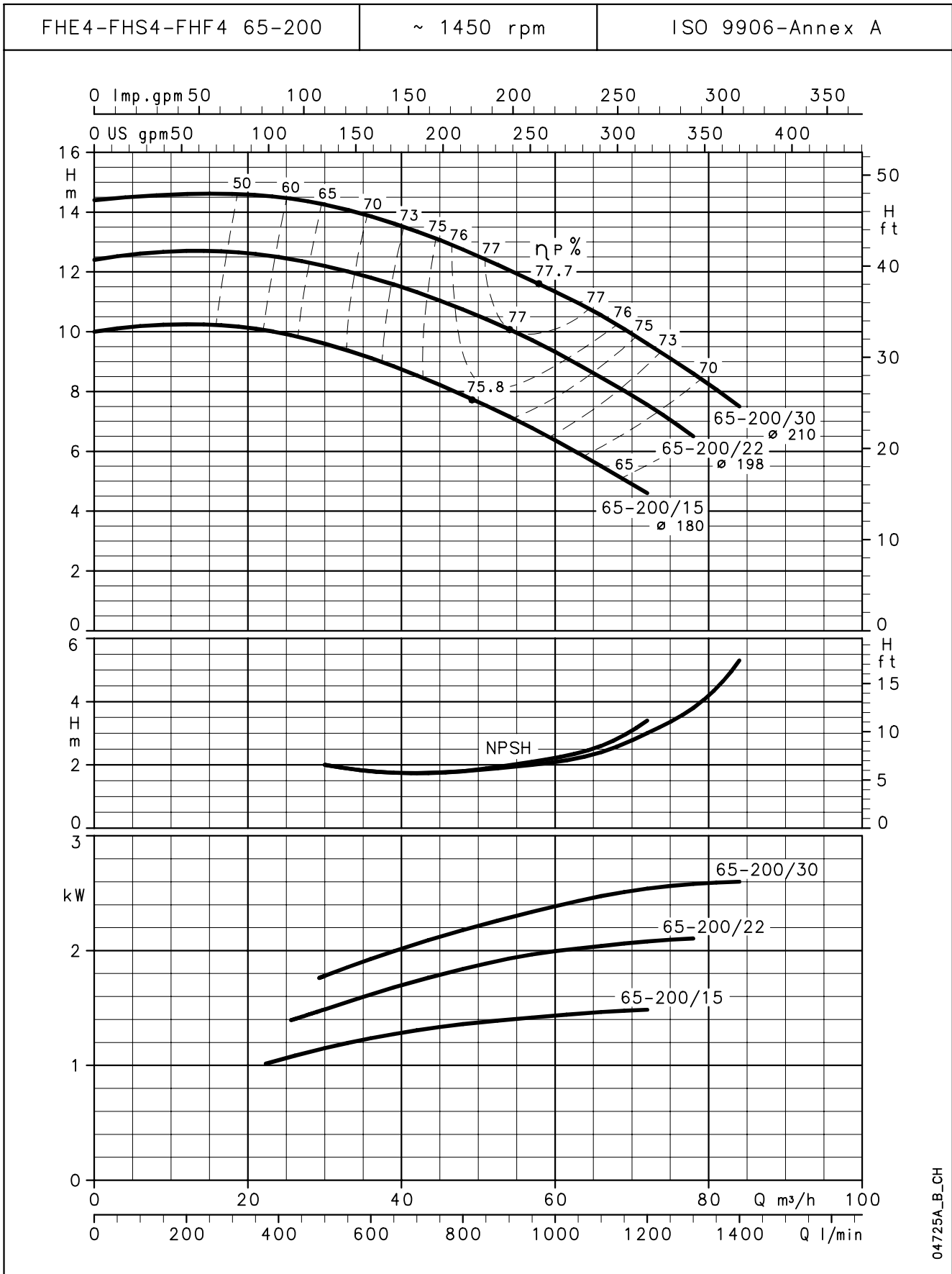
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

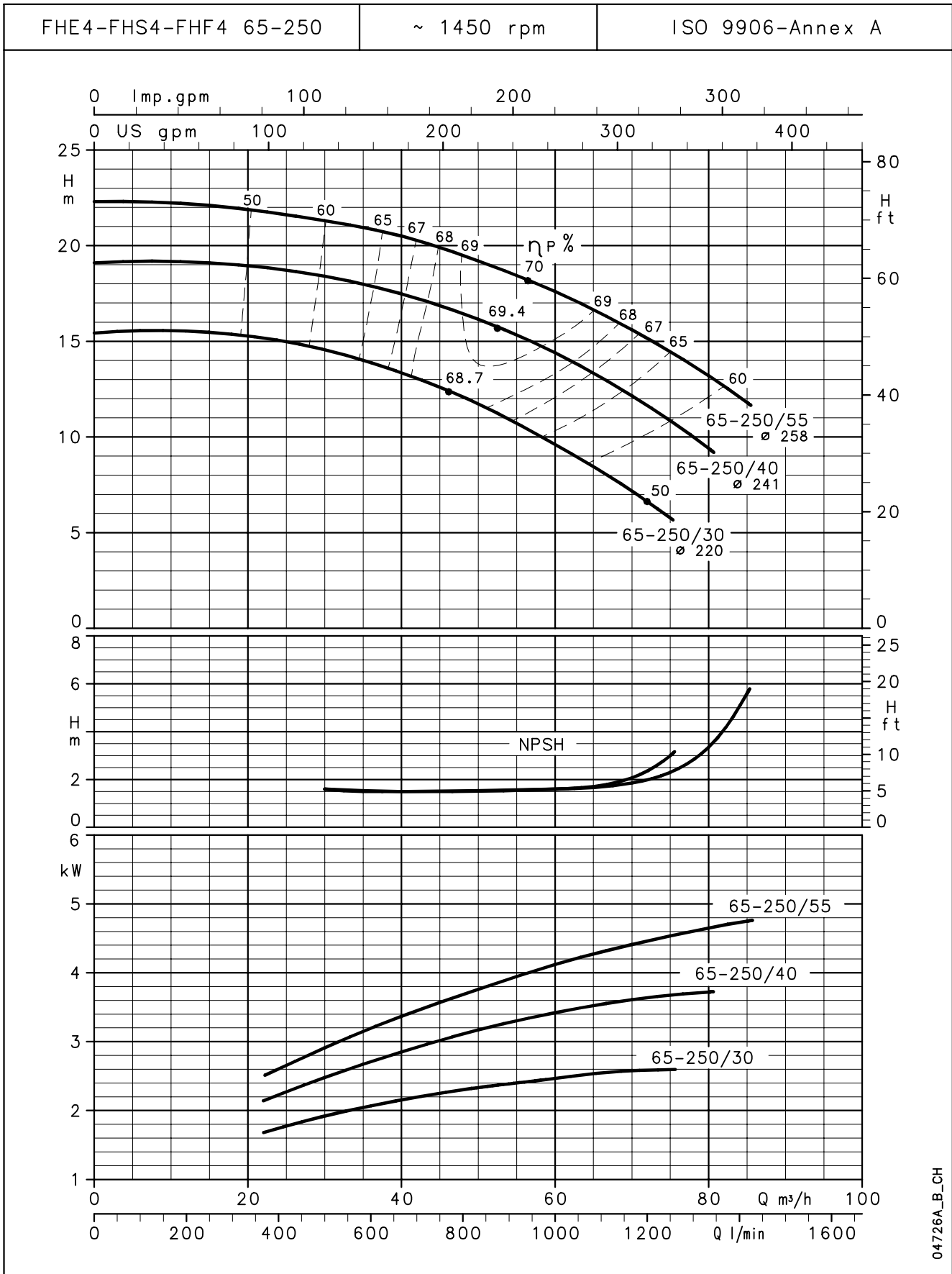


04725A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04726A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

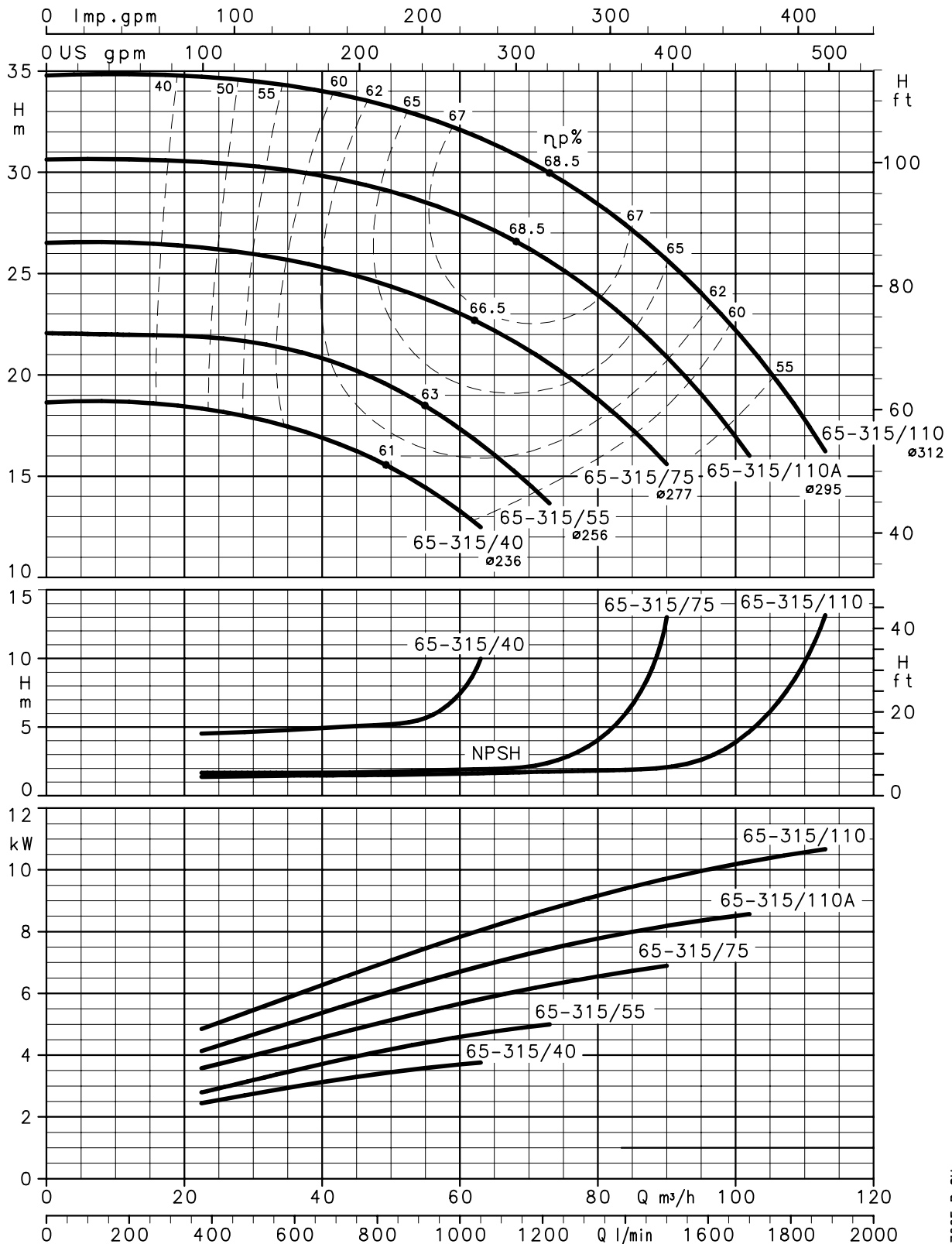
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 65-315

~ 1450 rpm

ISO 9906-Annex A



04726E\_B\_CH

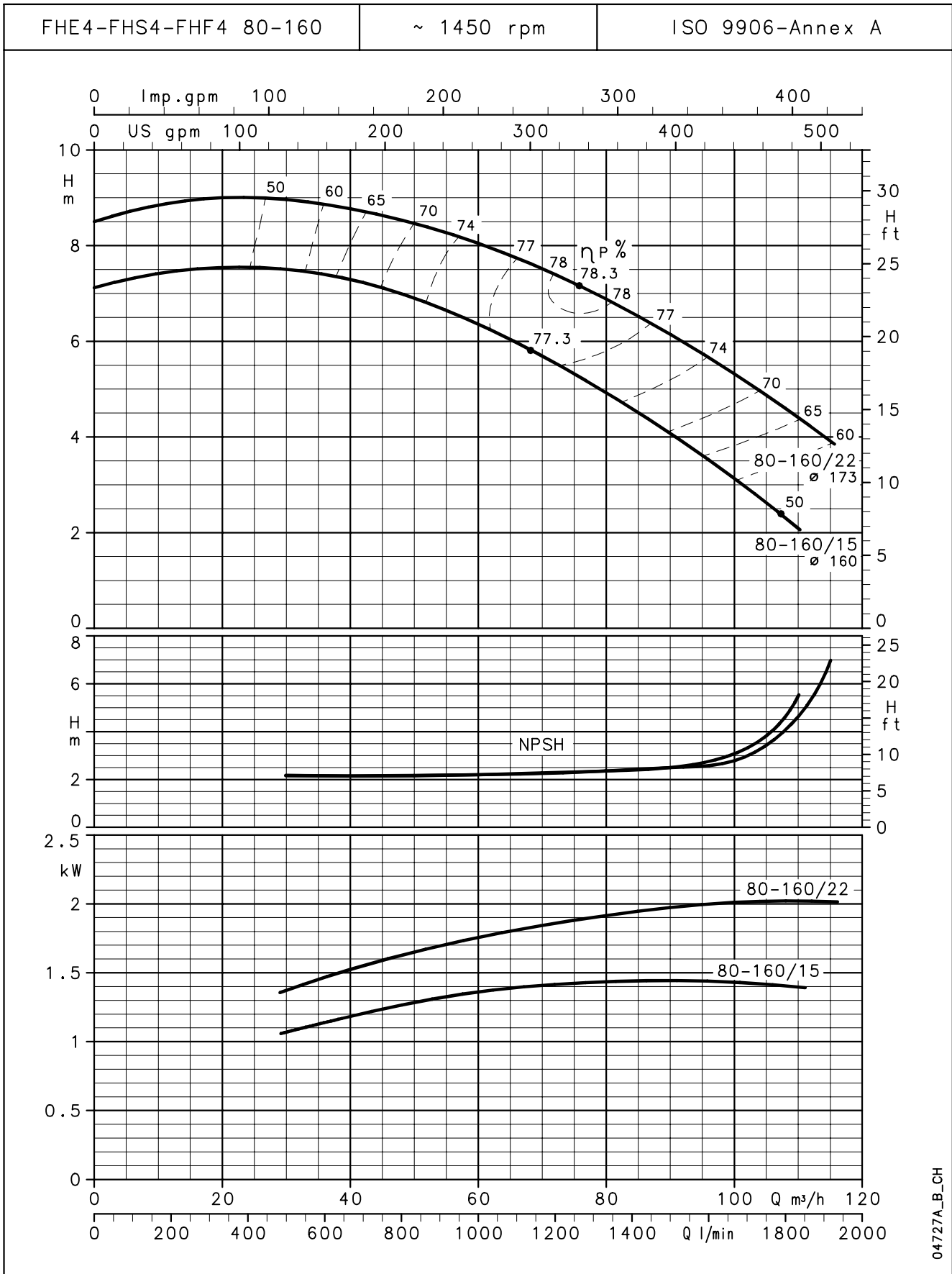
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04727A\_B\_CH

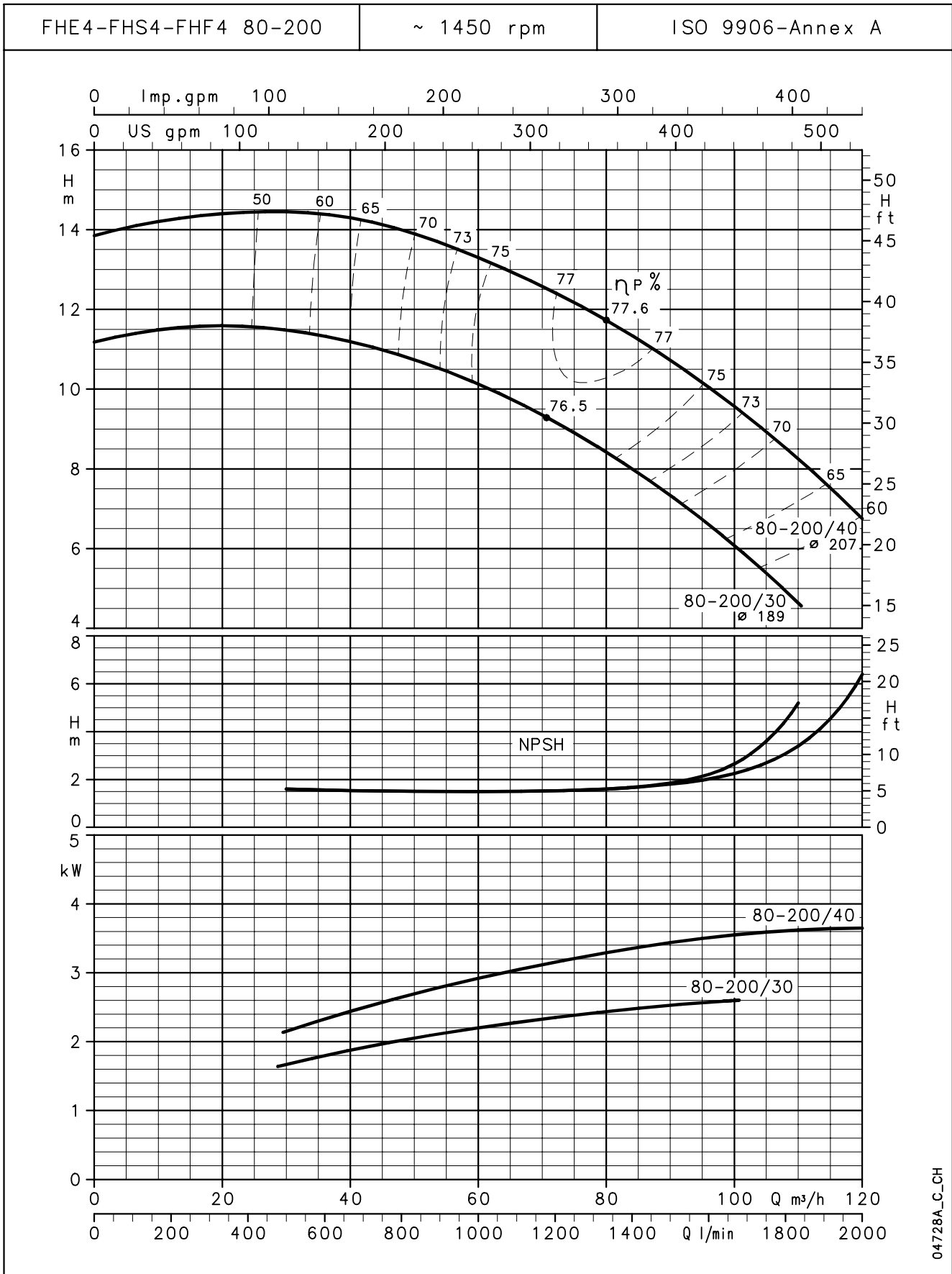
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04728A\_C-CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

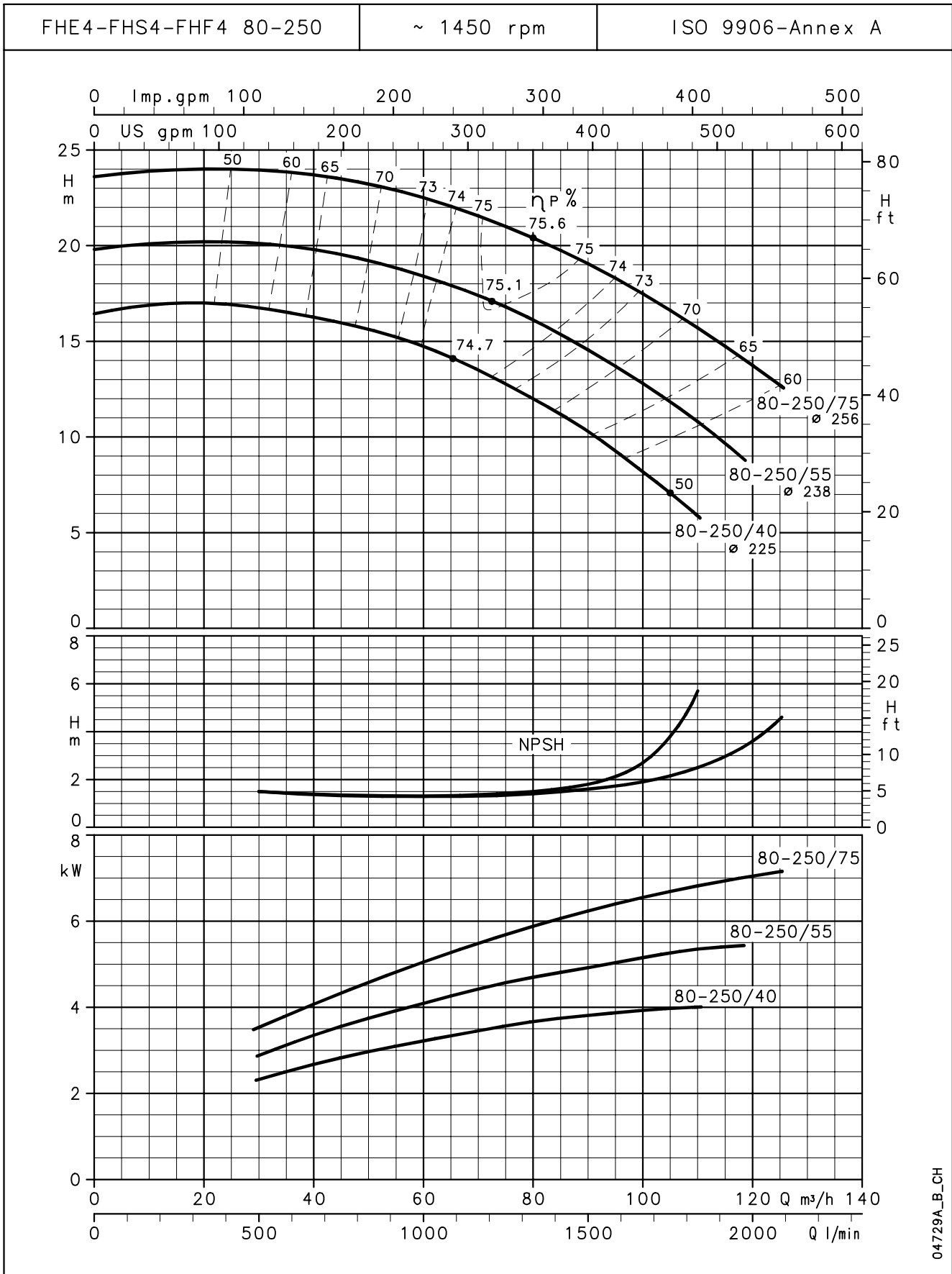




# ITT

# Lowara

## FHE4-FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04729A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

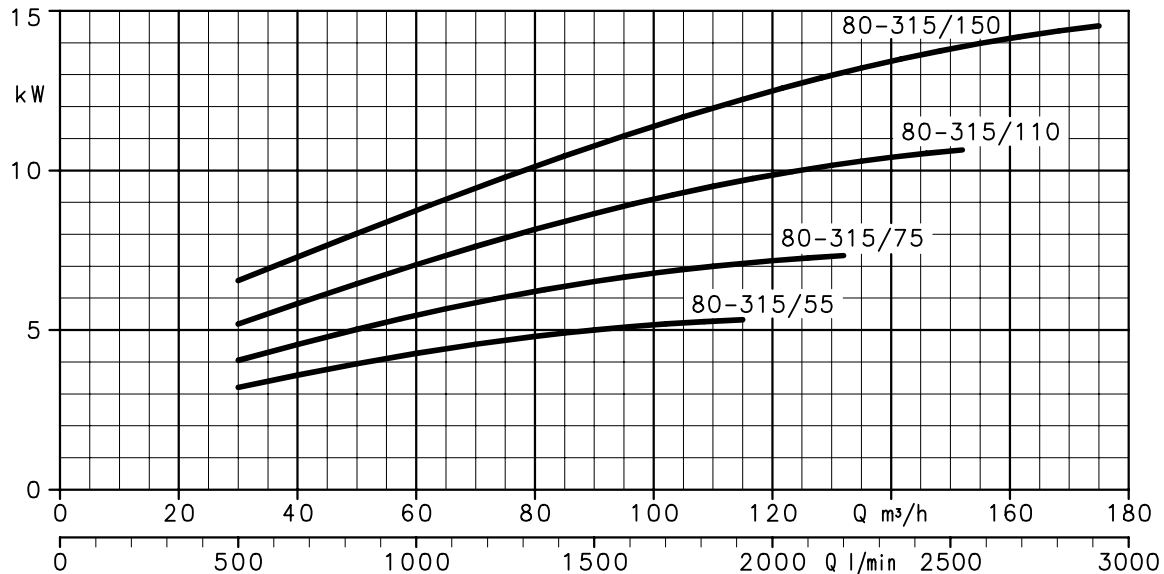
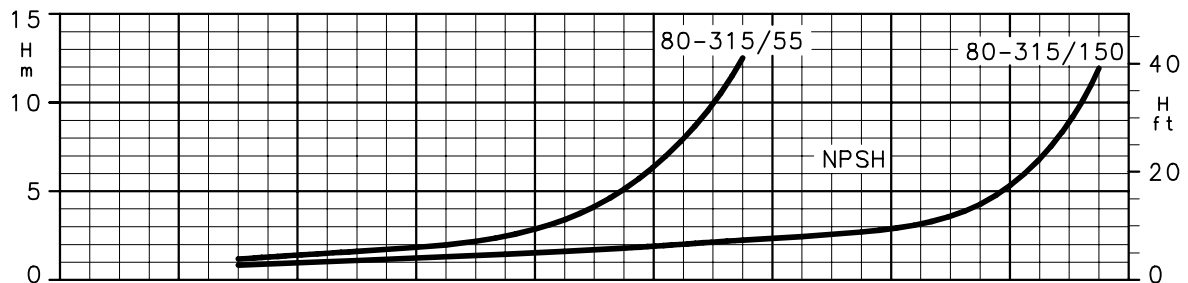
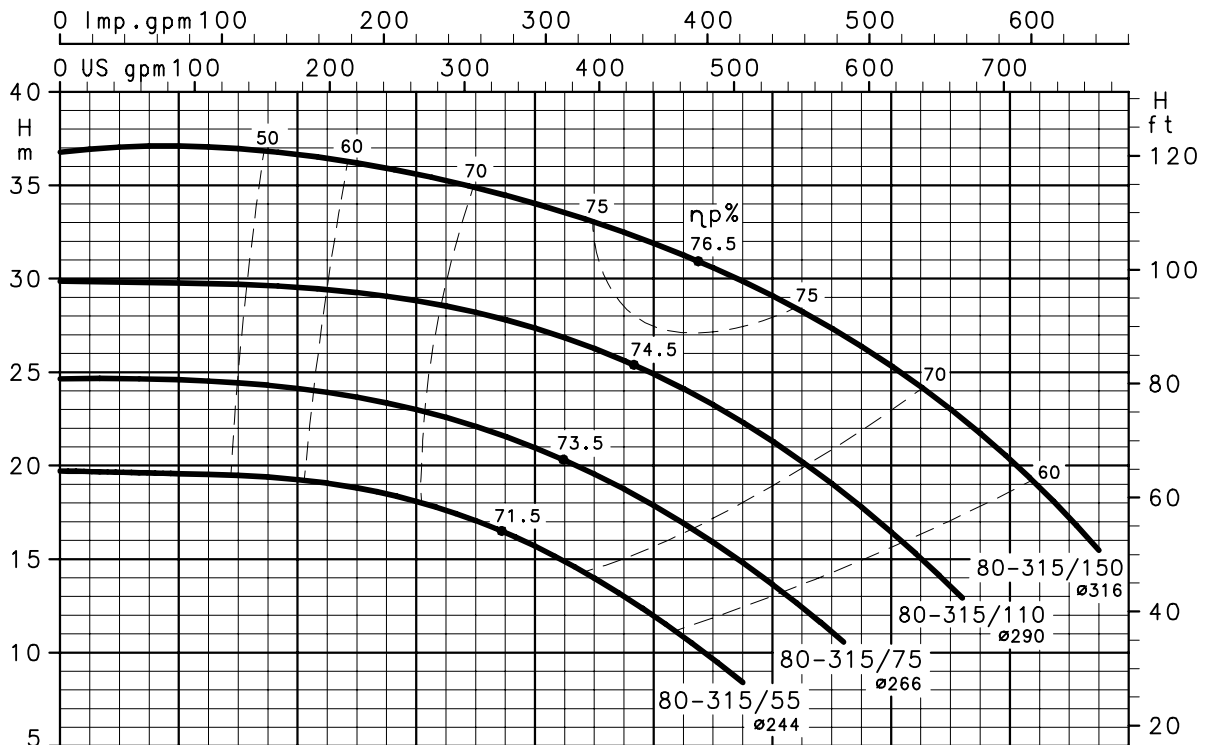
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 80-315

~ 1450 rpm

ISO 9906-Annex A



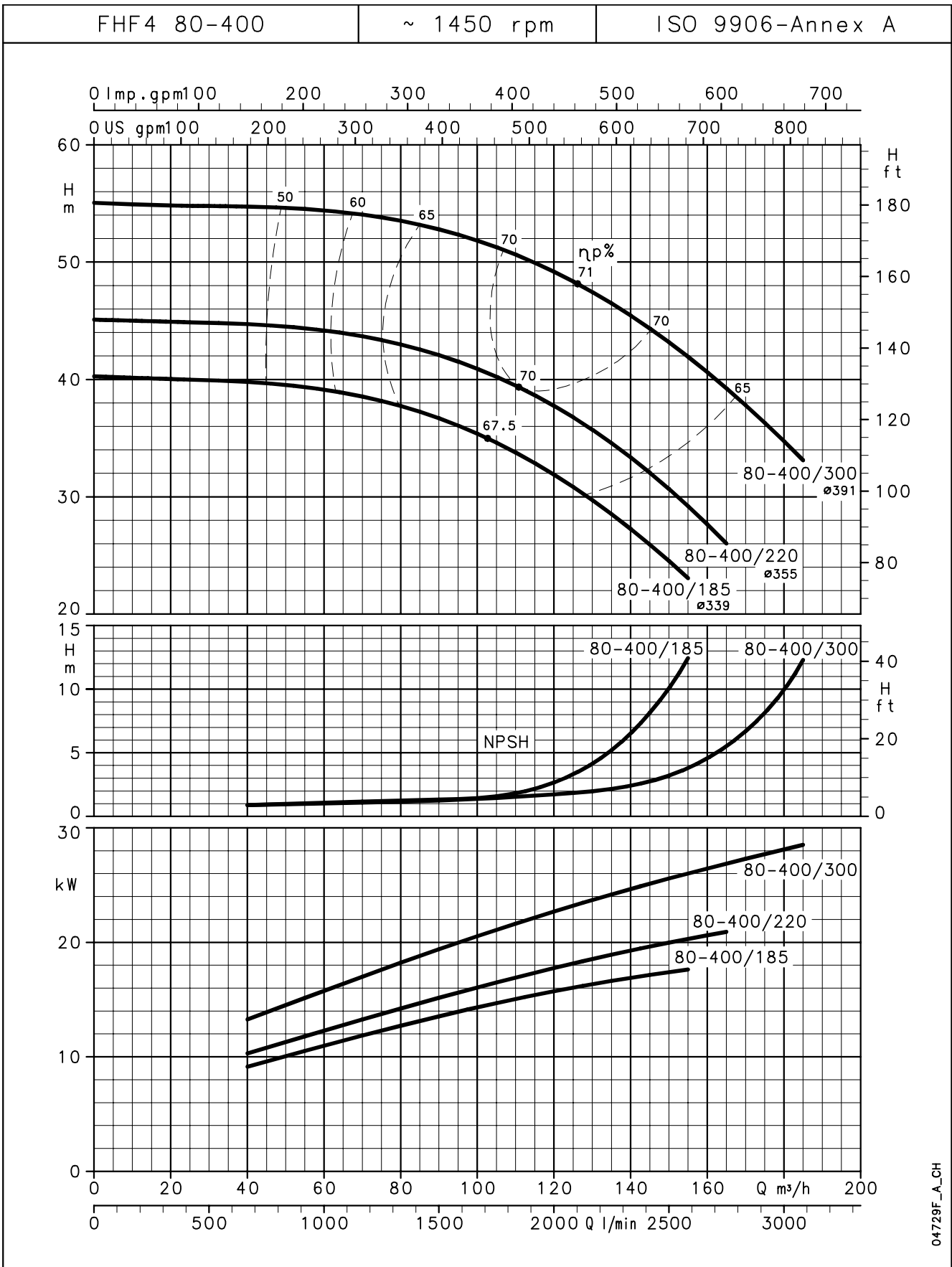
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04729F\_A\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

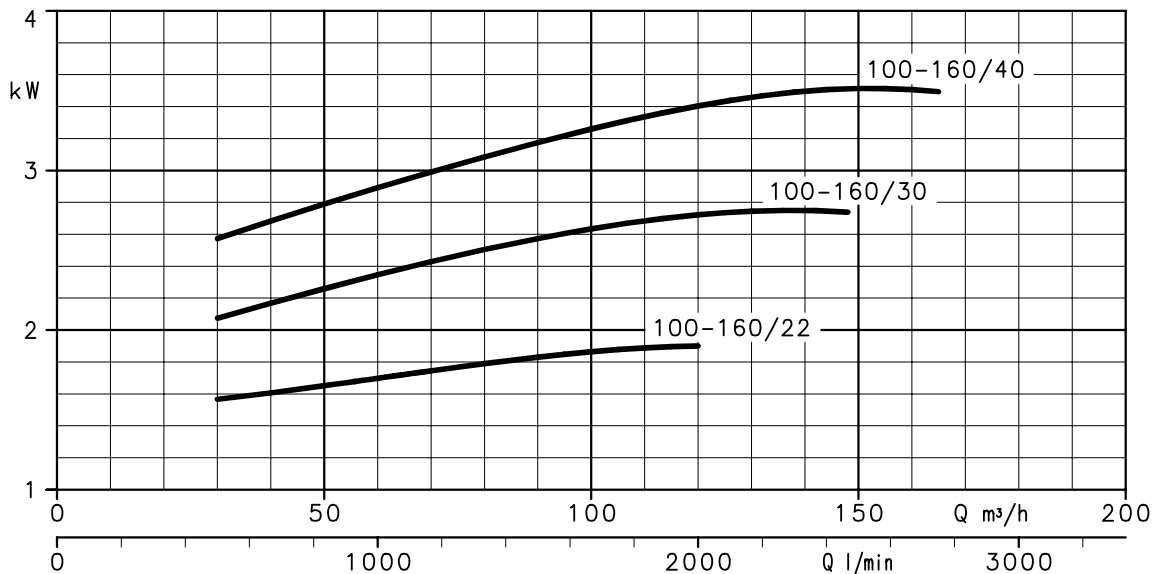
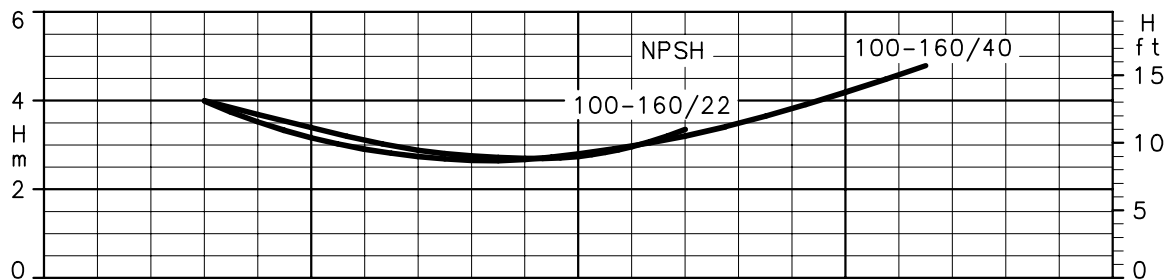
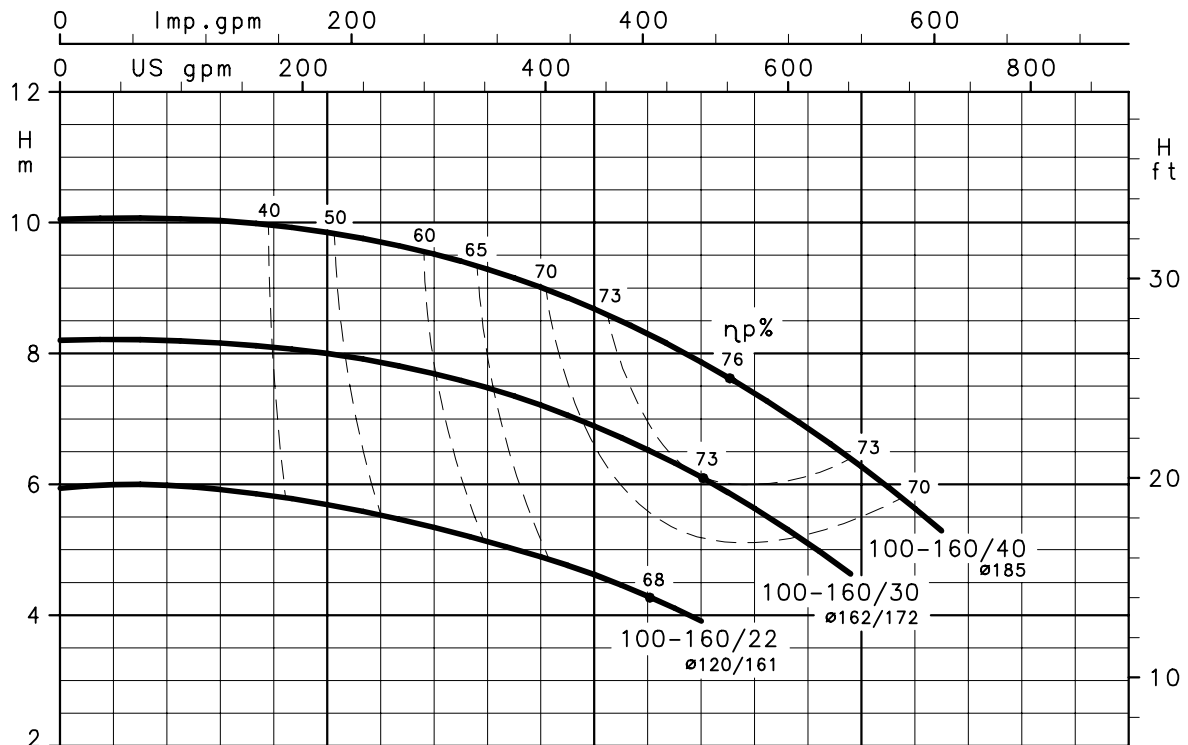
## FHS4-FHF4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 100-160

~ 1450 rpm

ISO 9906-Annex A



04737A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

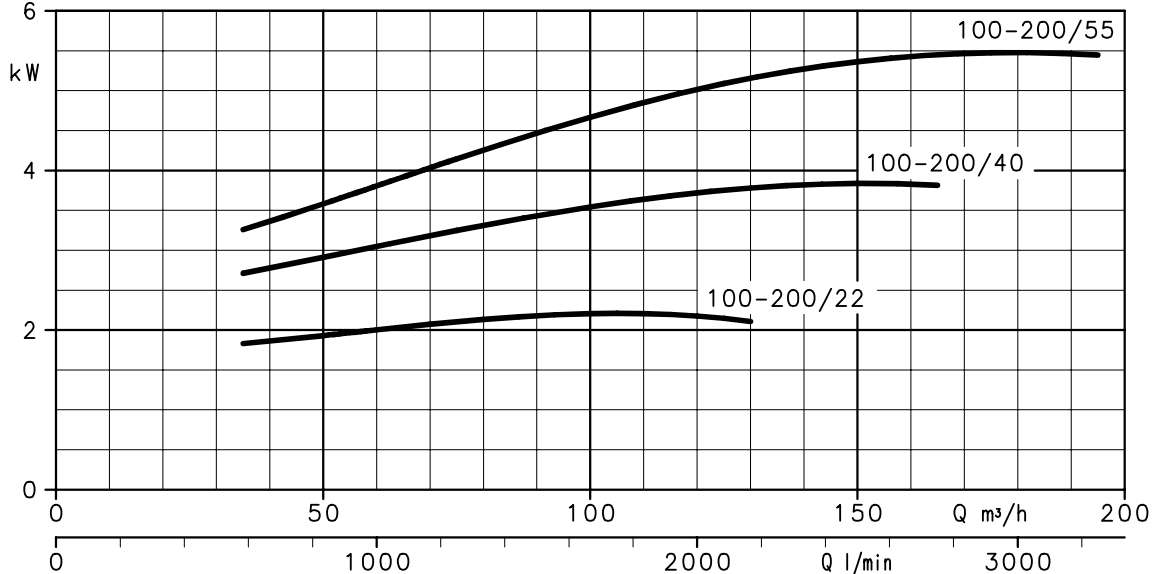
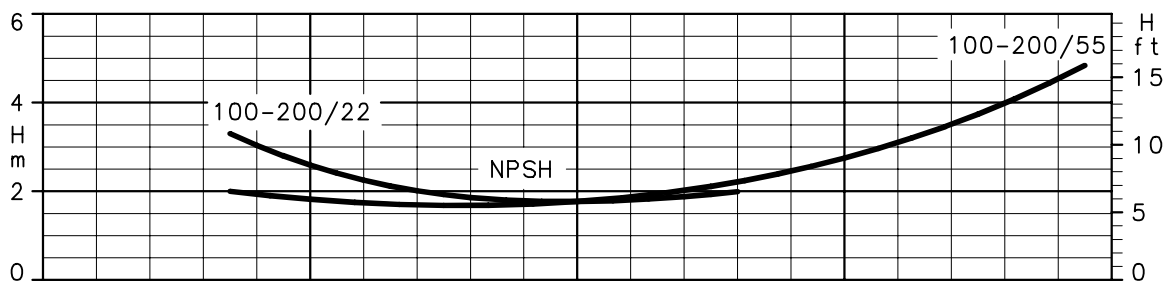
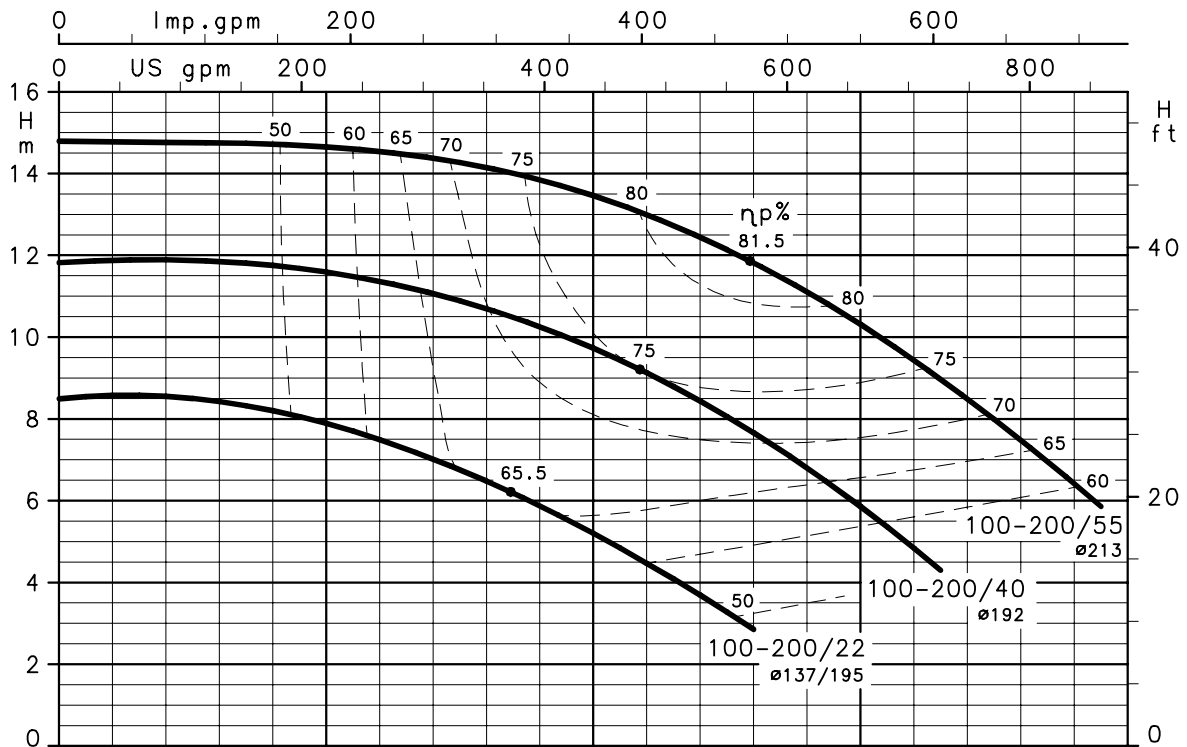
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 100-200

~ 1450 rpm

ISO 9906-Annex A



04738A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

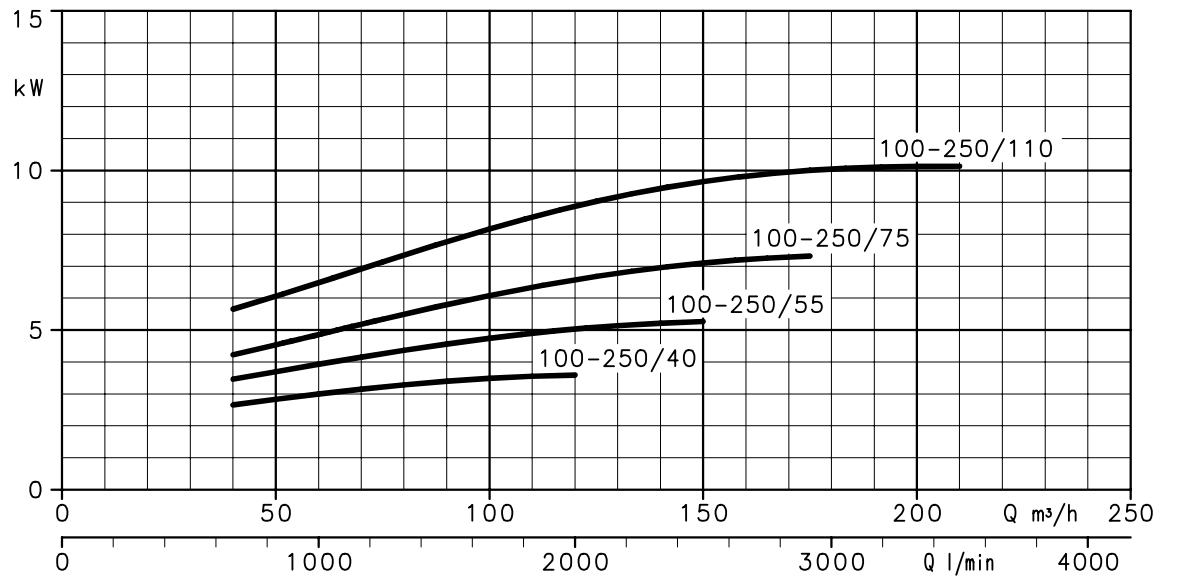
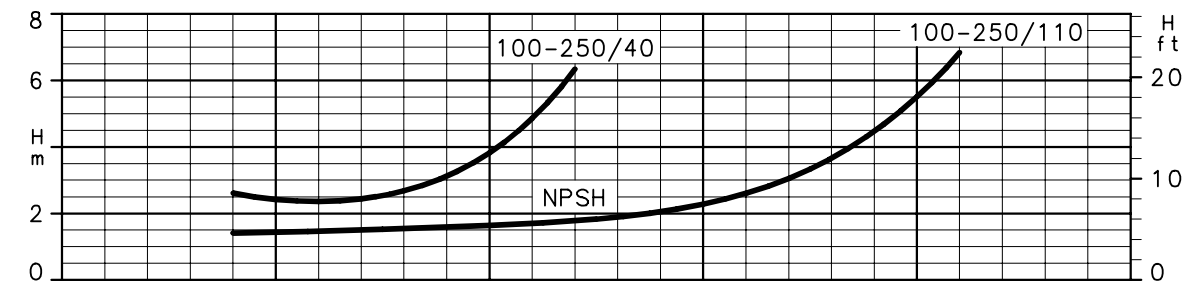
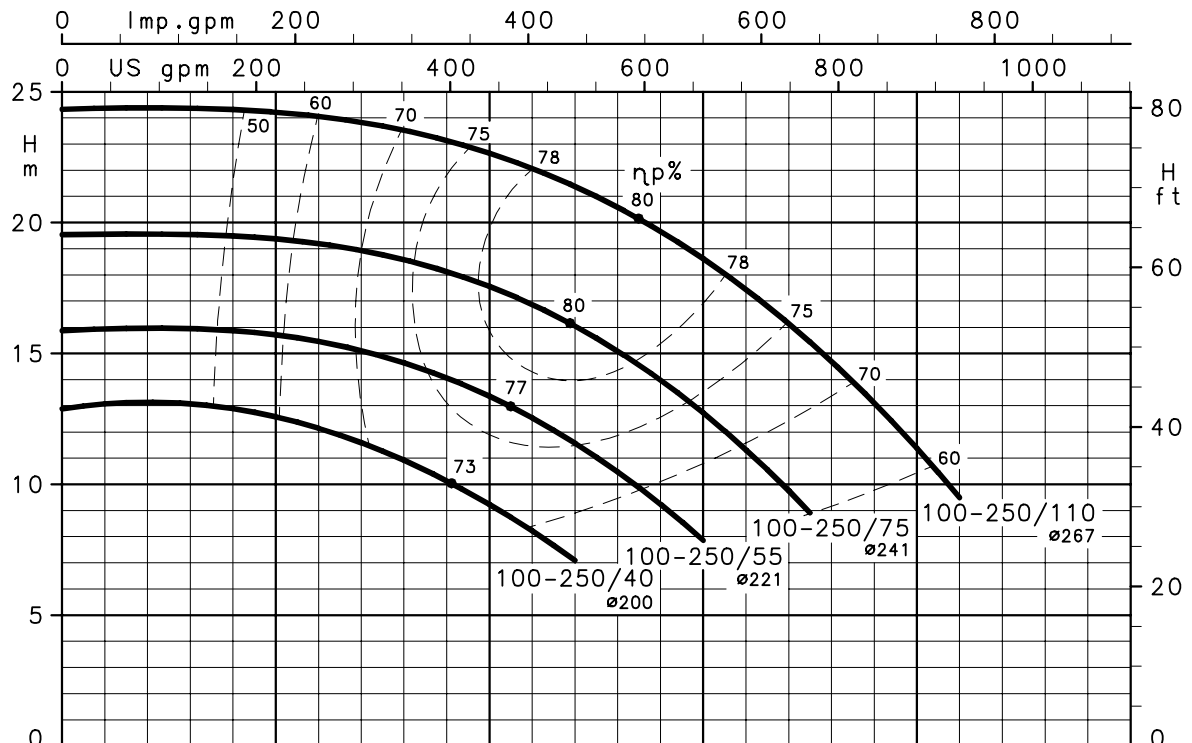
## FHS4-FHF4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 100-250

~ 1450 rpm

ISO 9906-Annex A



04739A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

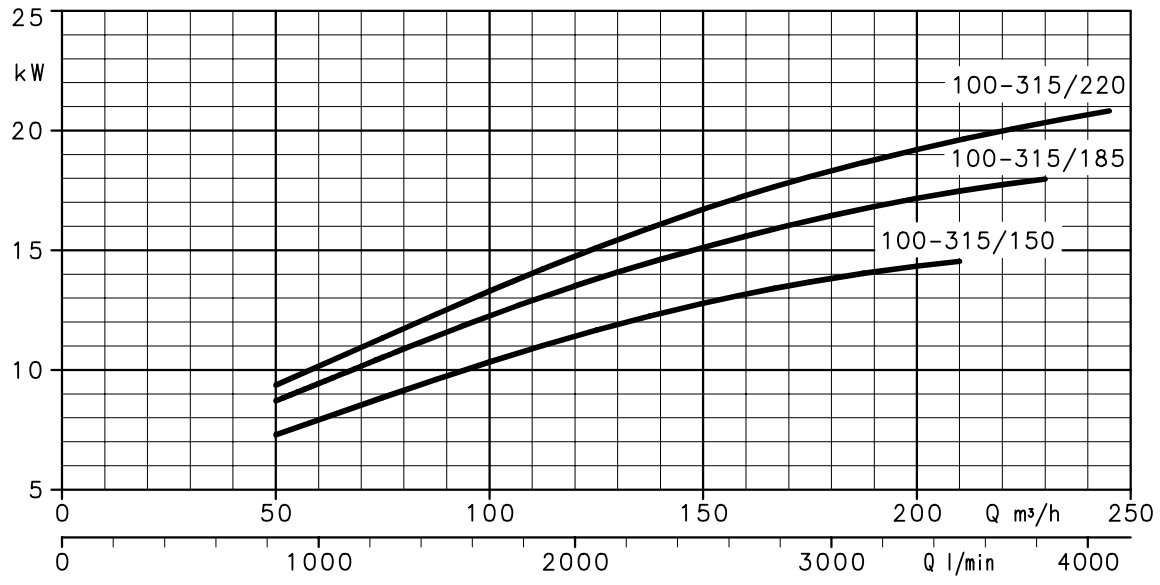
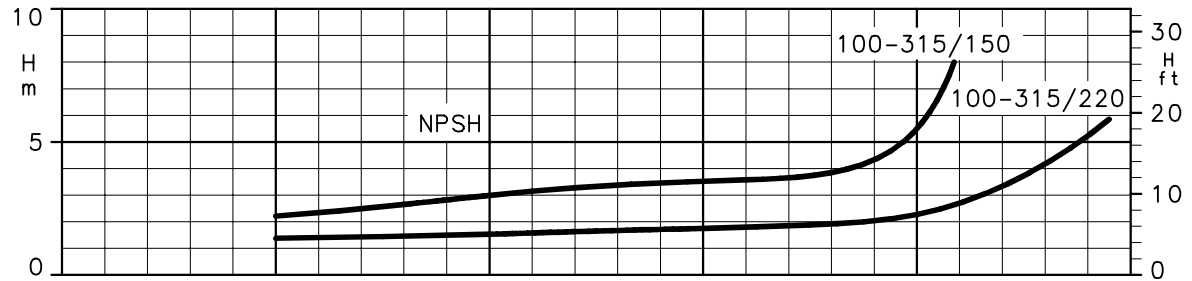
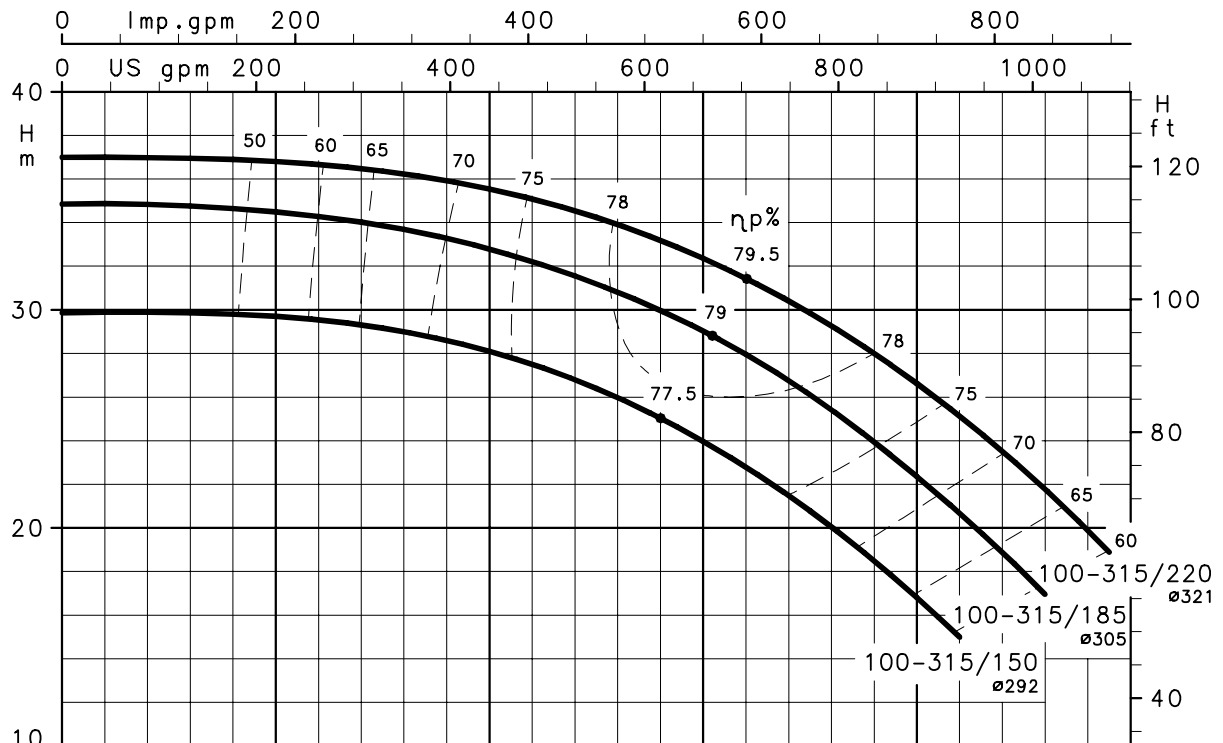
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 100-315

~ 1450 rpm

ISO 9906-Annex A



04740A\_B\_CH

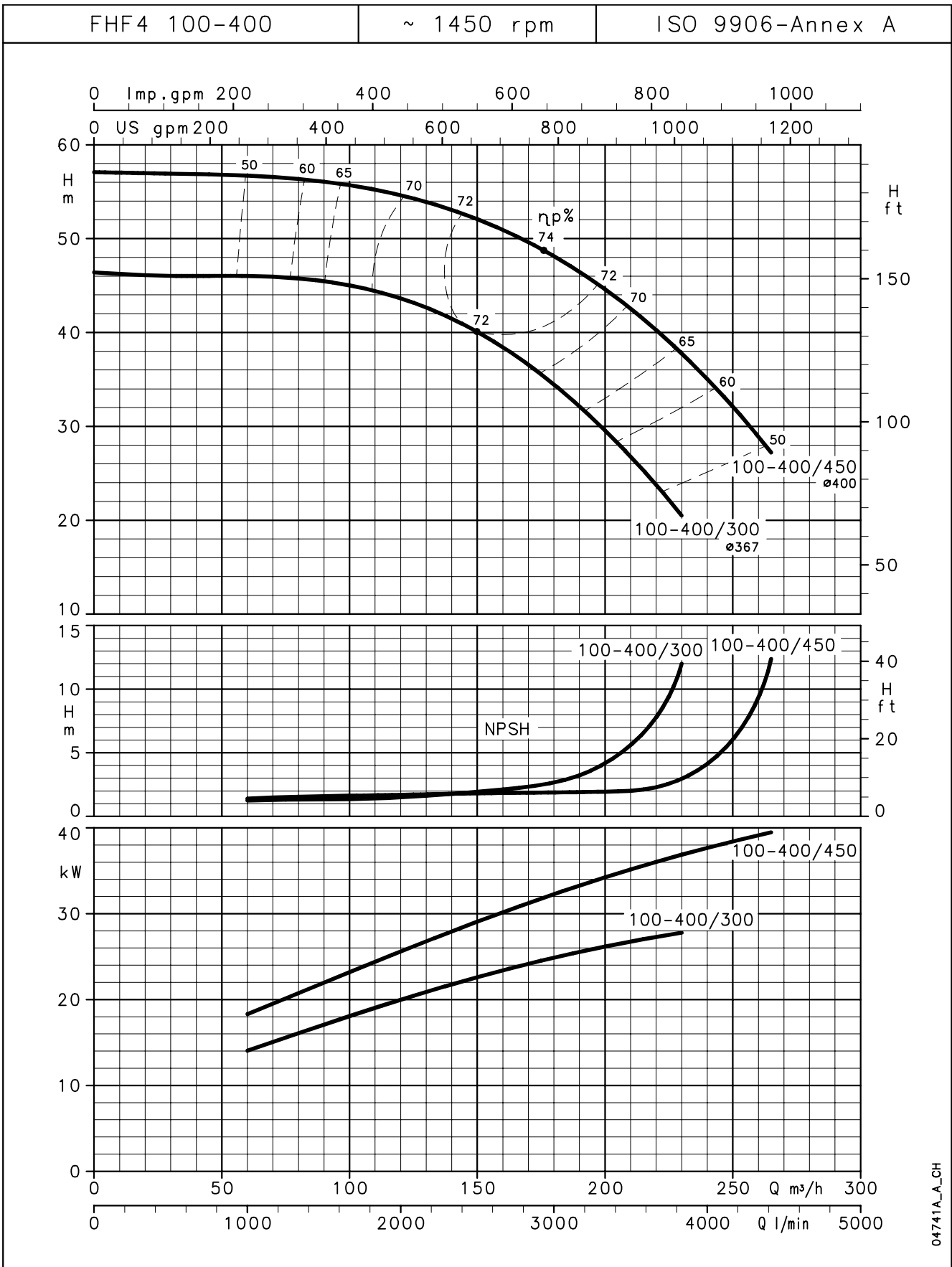
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04741A-CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .





# ITT

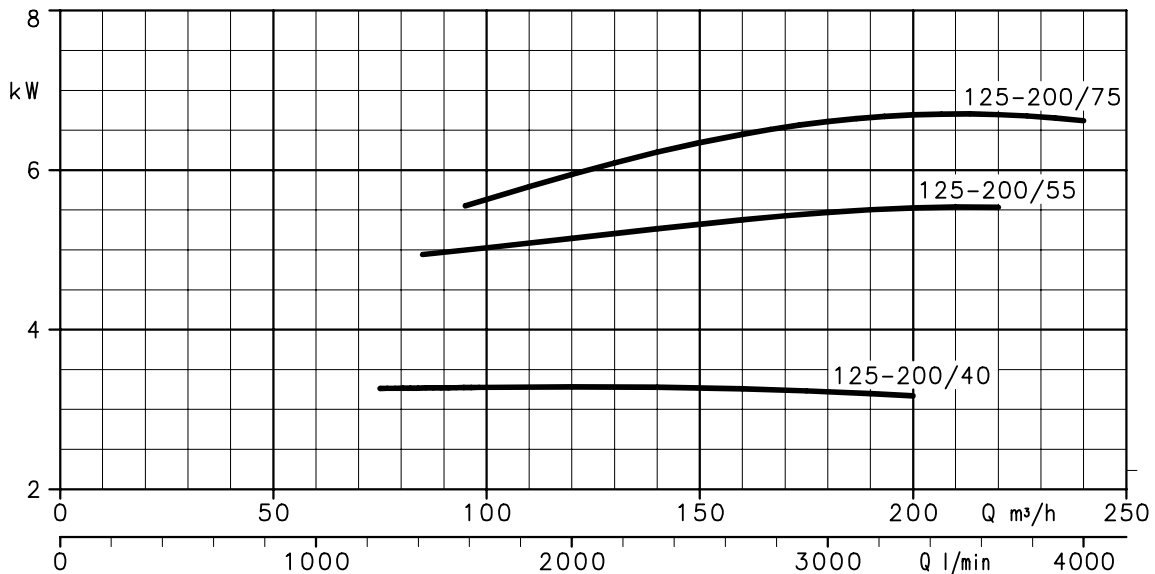
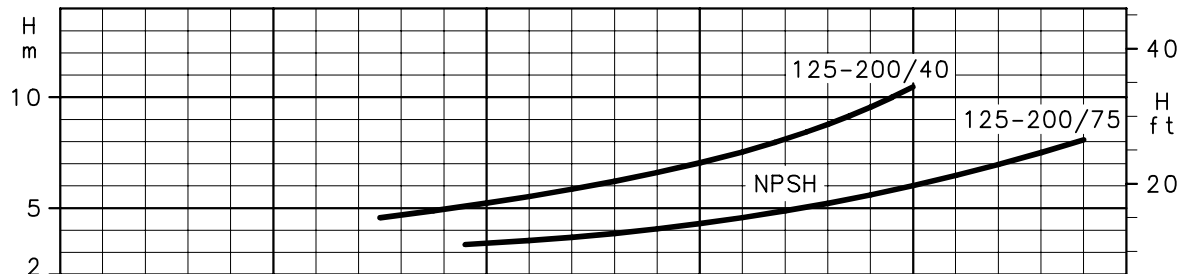
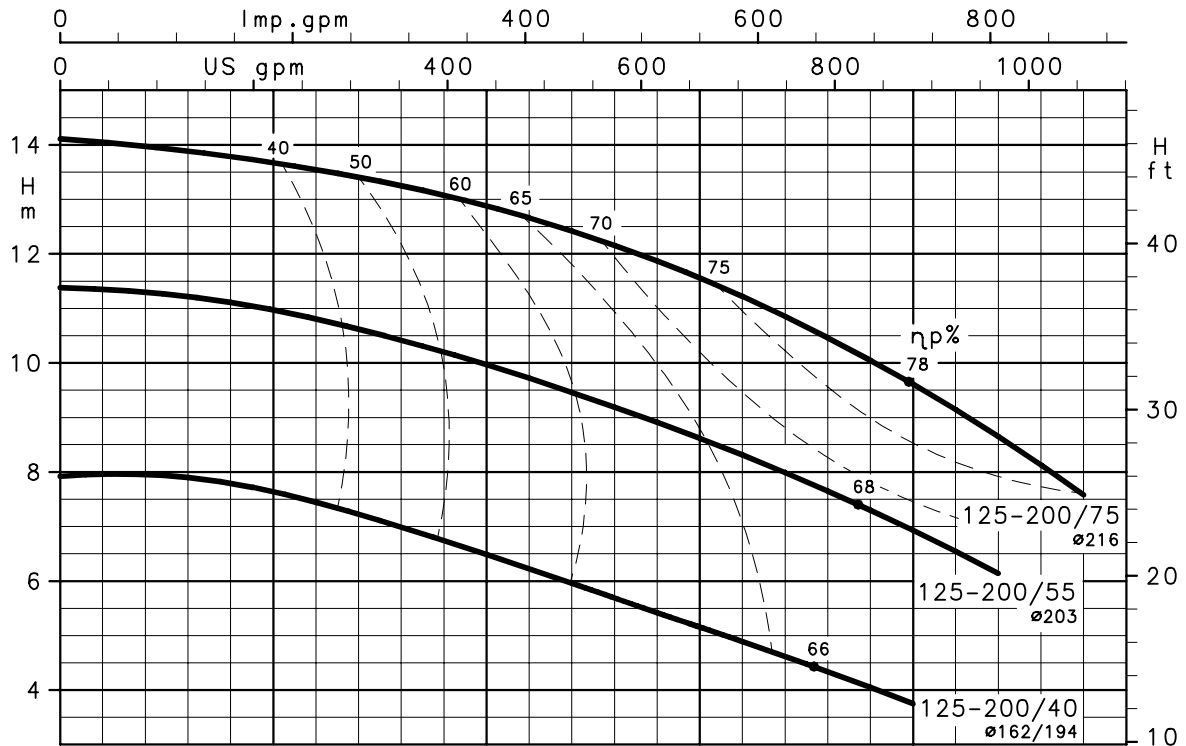
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 125-200

~ 1450 rpm

ISO 9906-Annex A



04742A\_C-CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m. These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

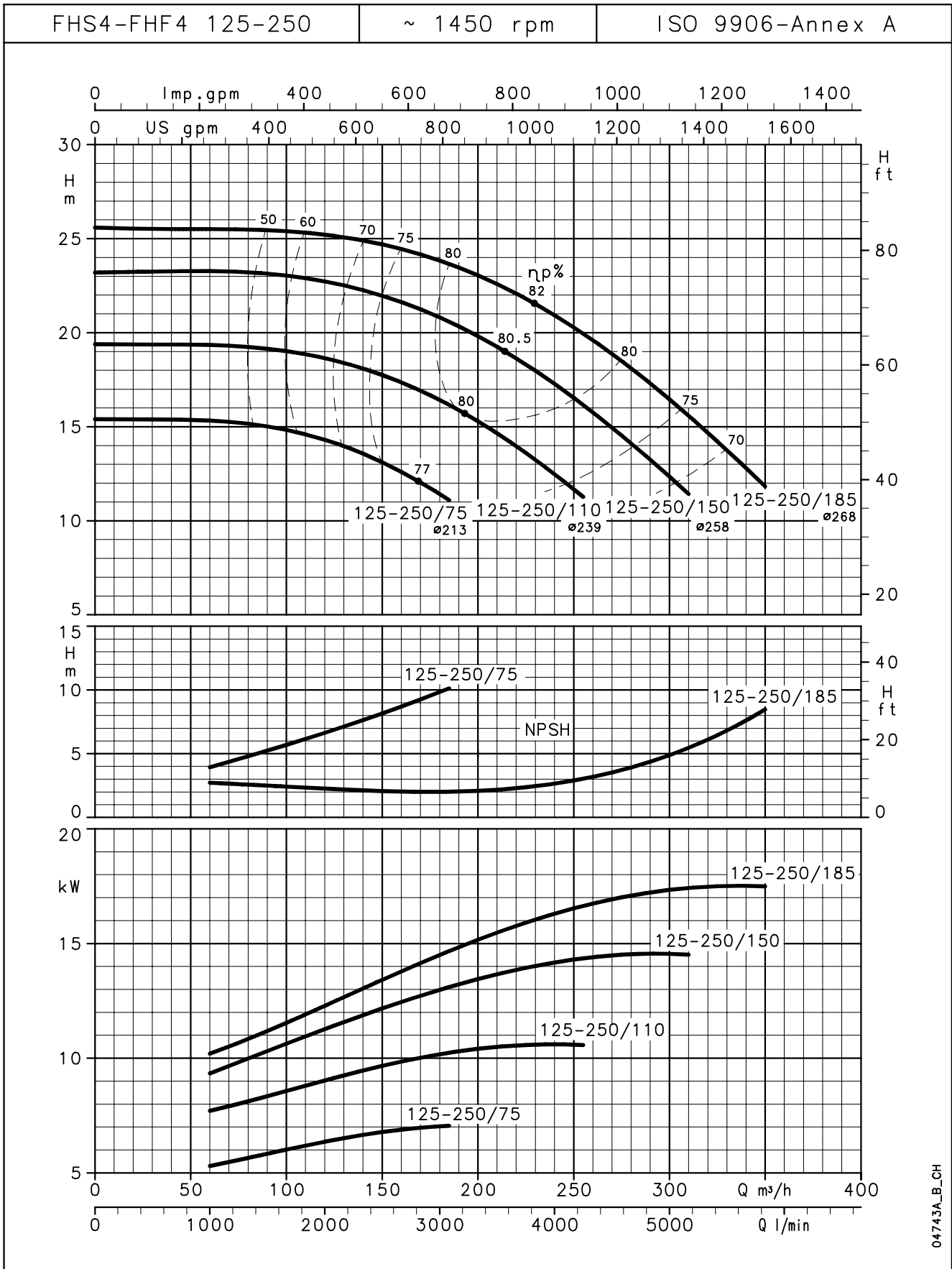


# ITT

# Lowara

## FHS4-FHF4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04743A\_B\_CH

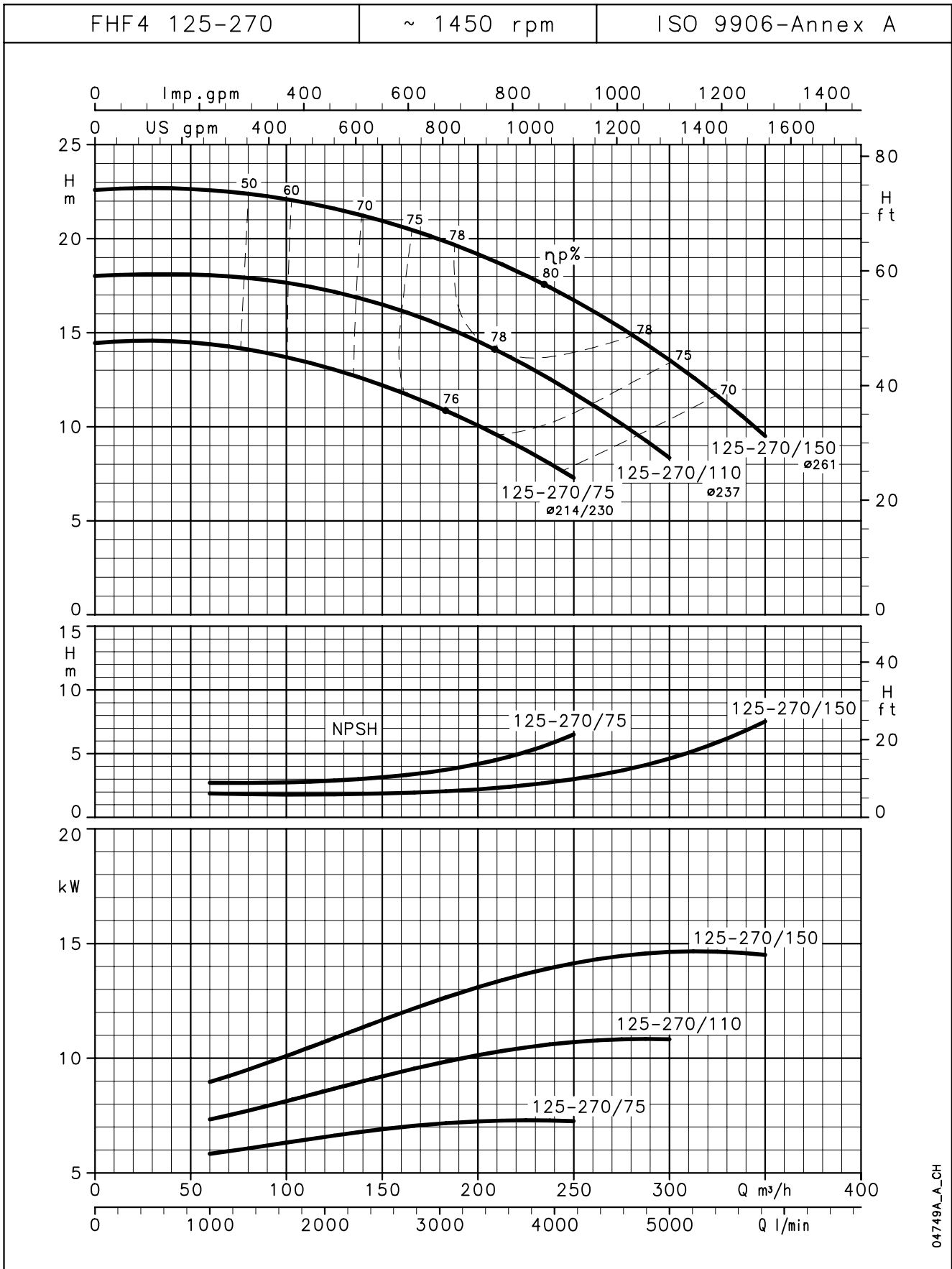
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04749A\_A\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

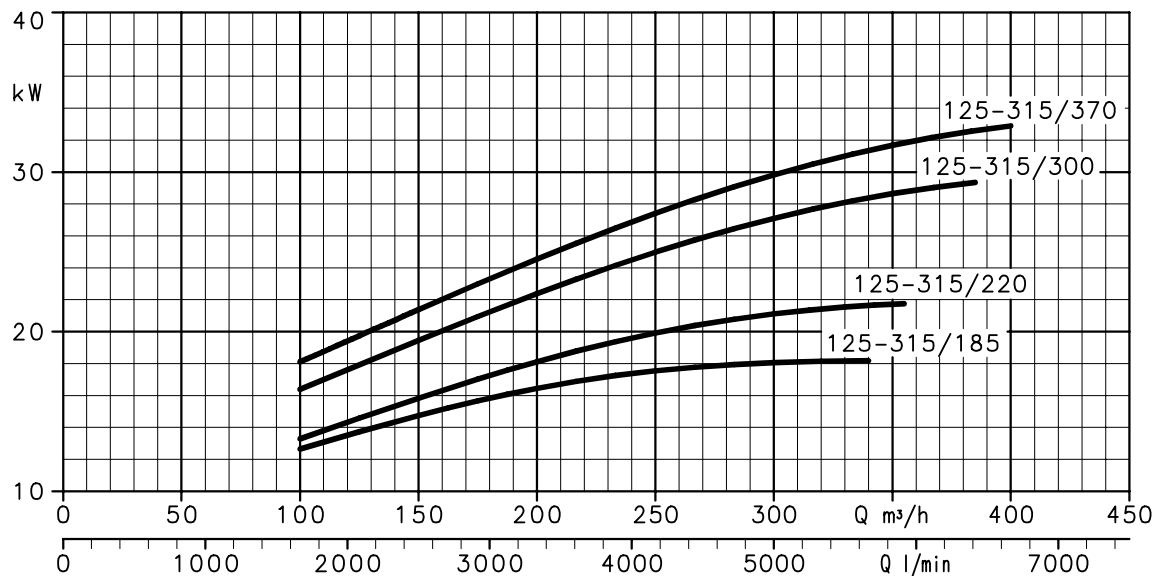
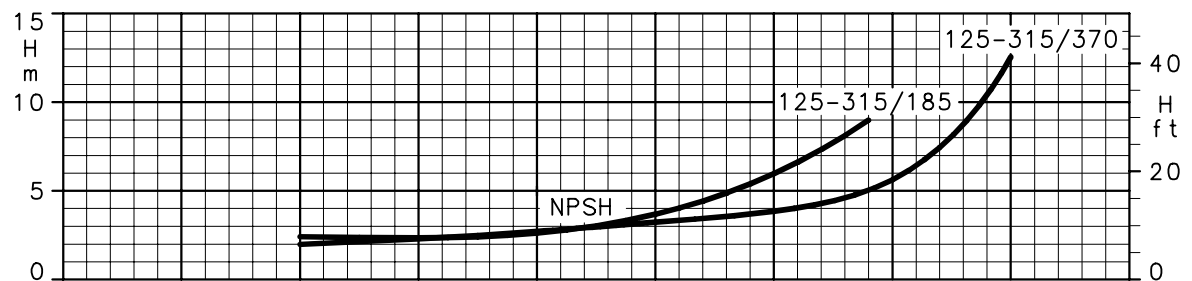
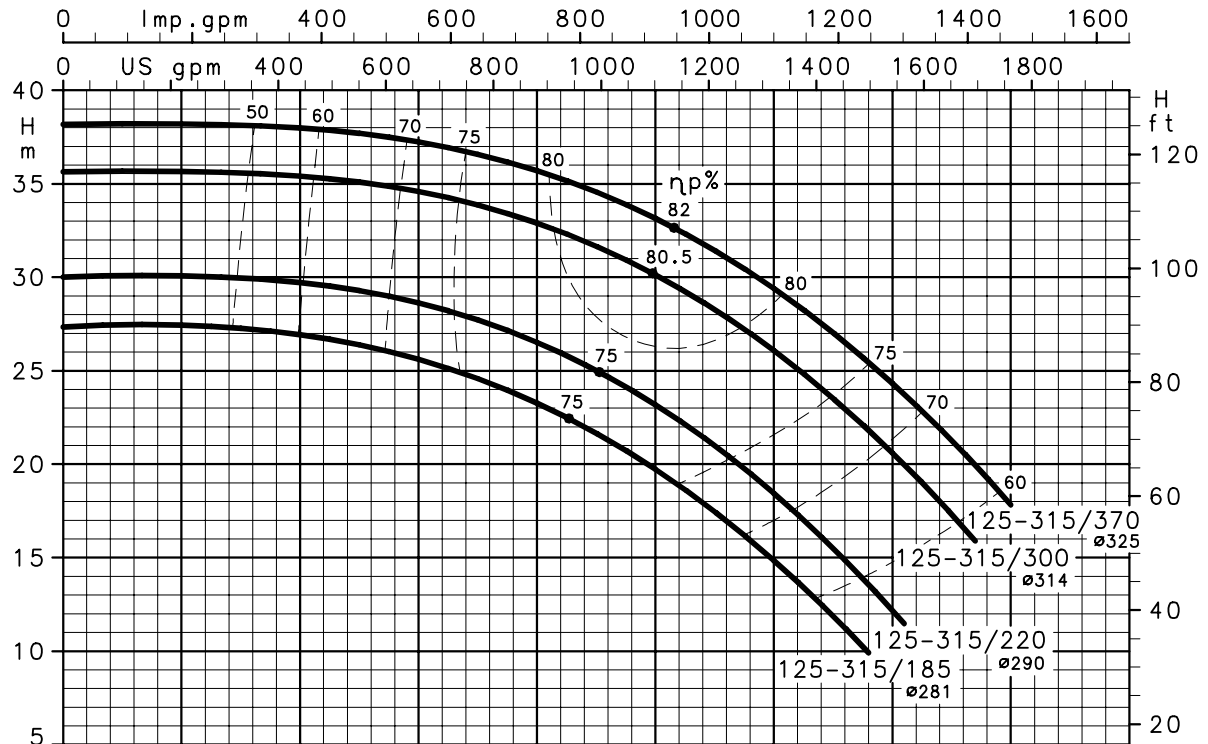
## FHS4-FHF4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 125-315

~ 1450 rpm

ISO 9906-Annex A

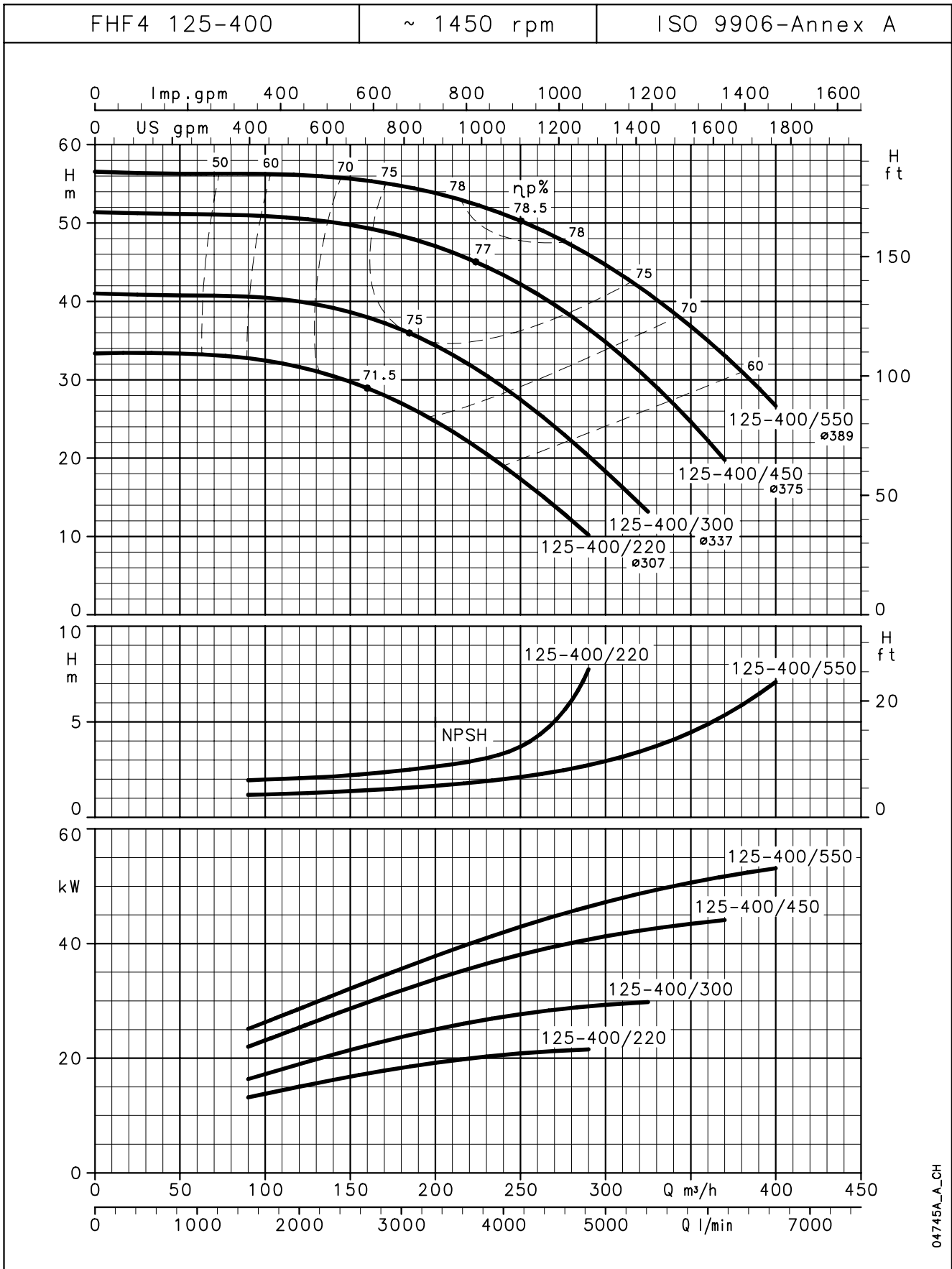


04744A\_B\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



## FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04745A\_A\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

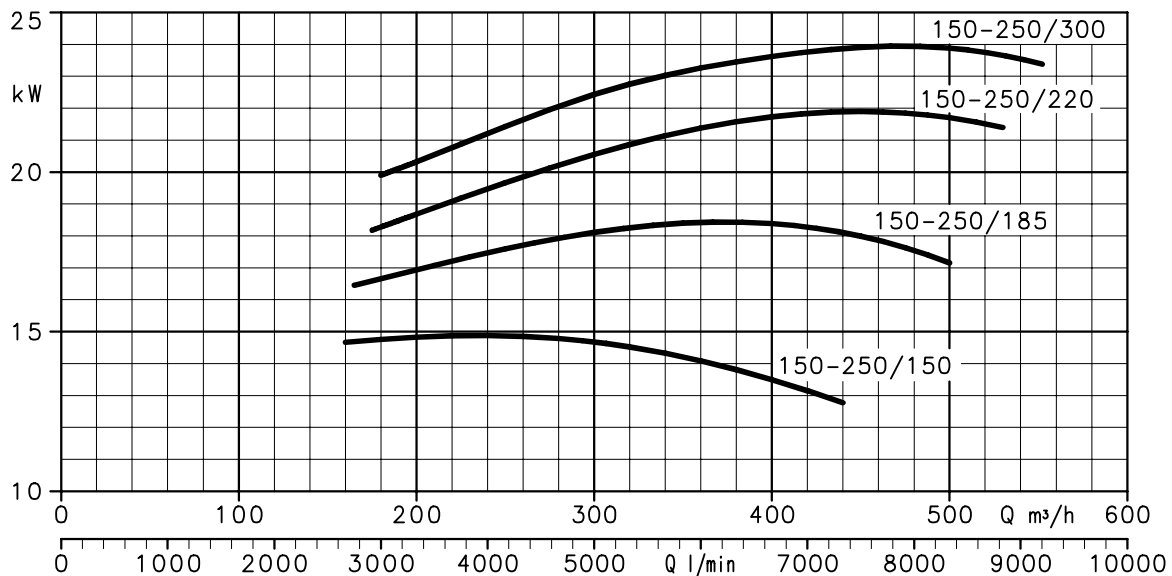
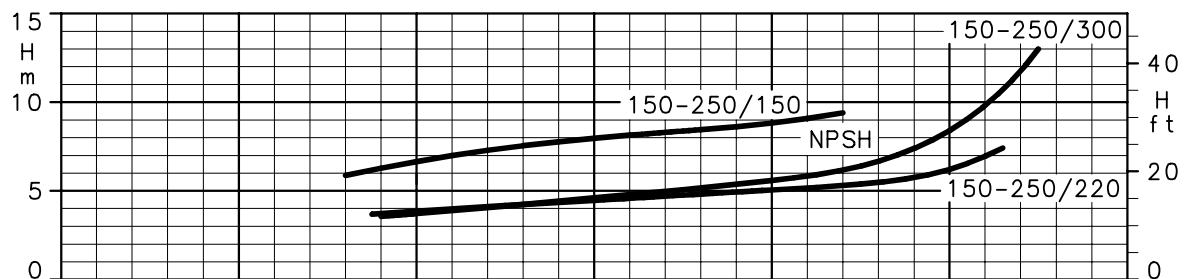
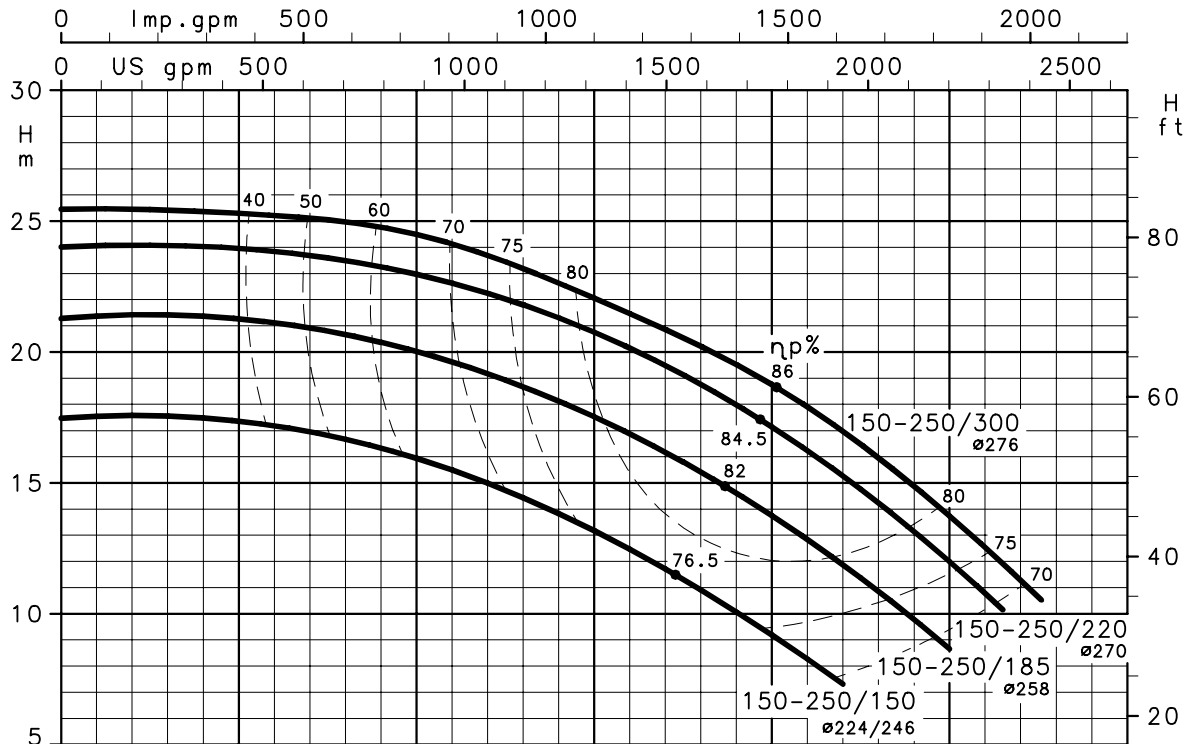
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 150-250

~ 1450 rpm

ISO 9906-Annex A



04746A\_C\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

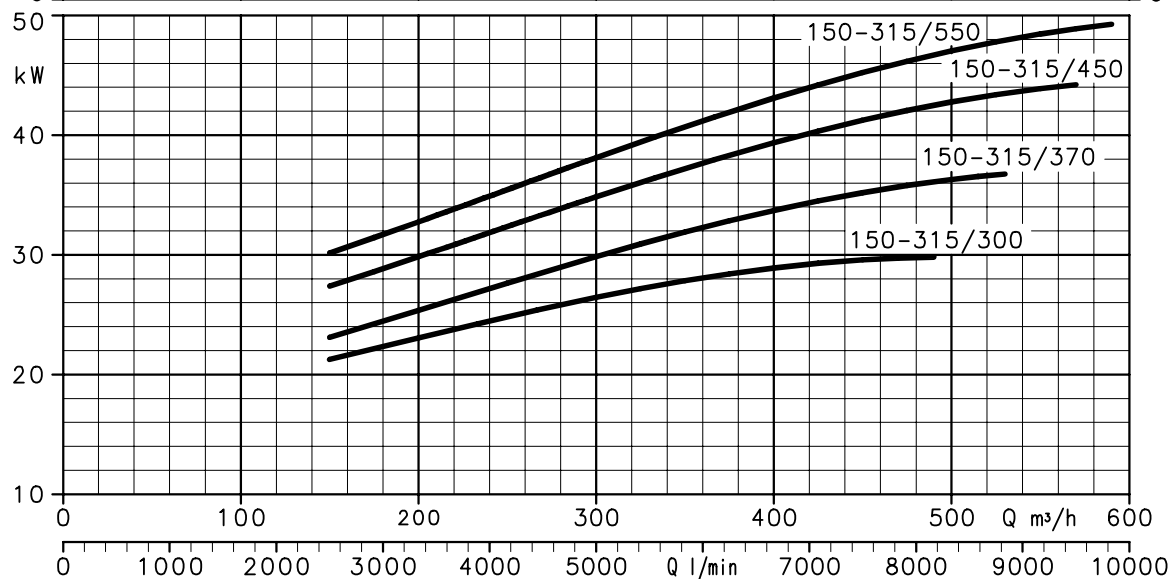
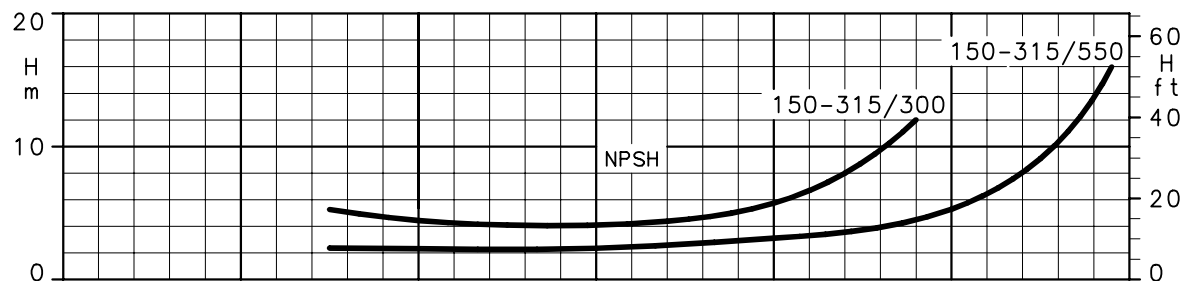
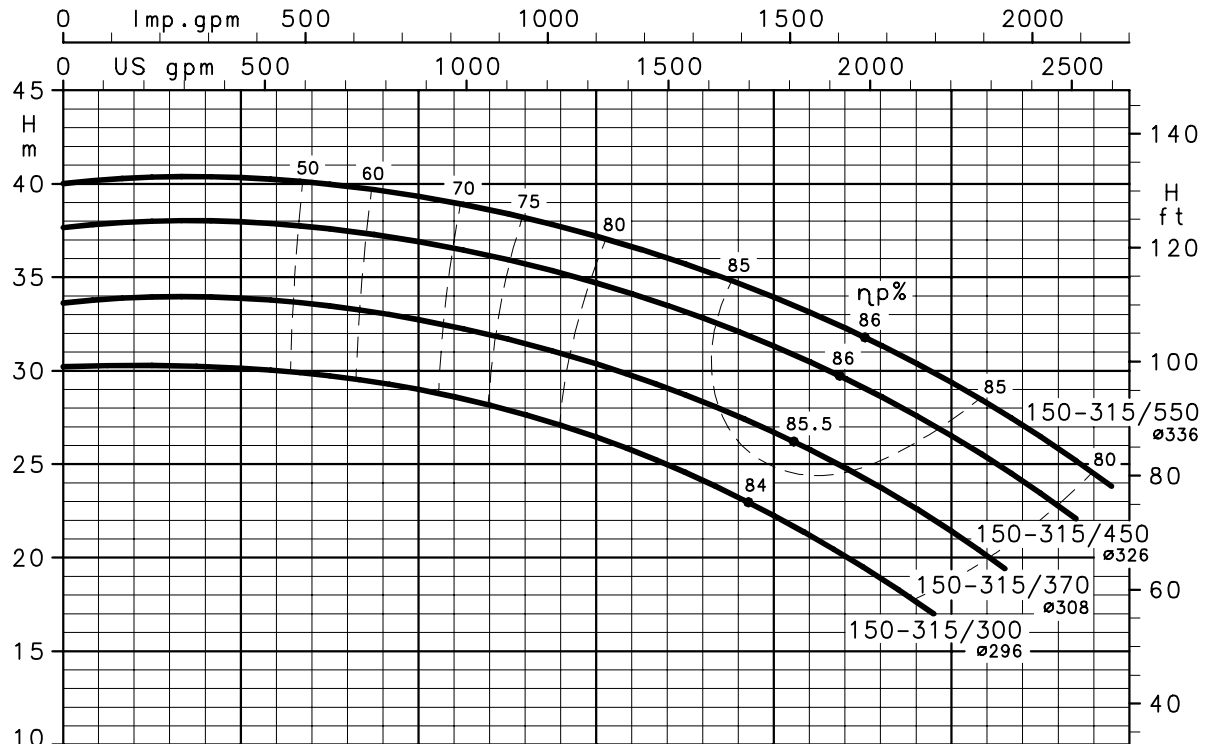
# Lowara

## FHS4-FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

FHS4-FHF4 150-315

~ 1450 rpm

ISO 9906-Annex A



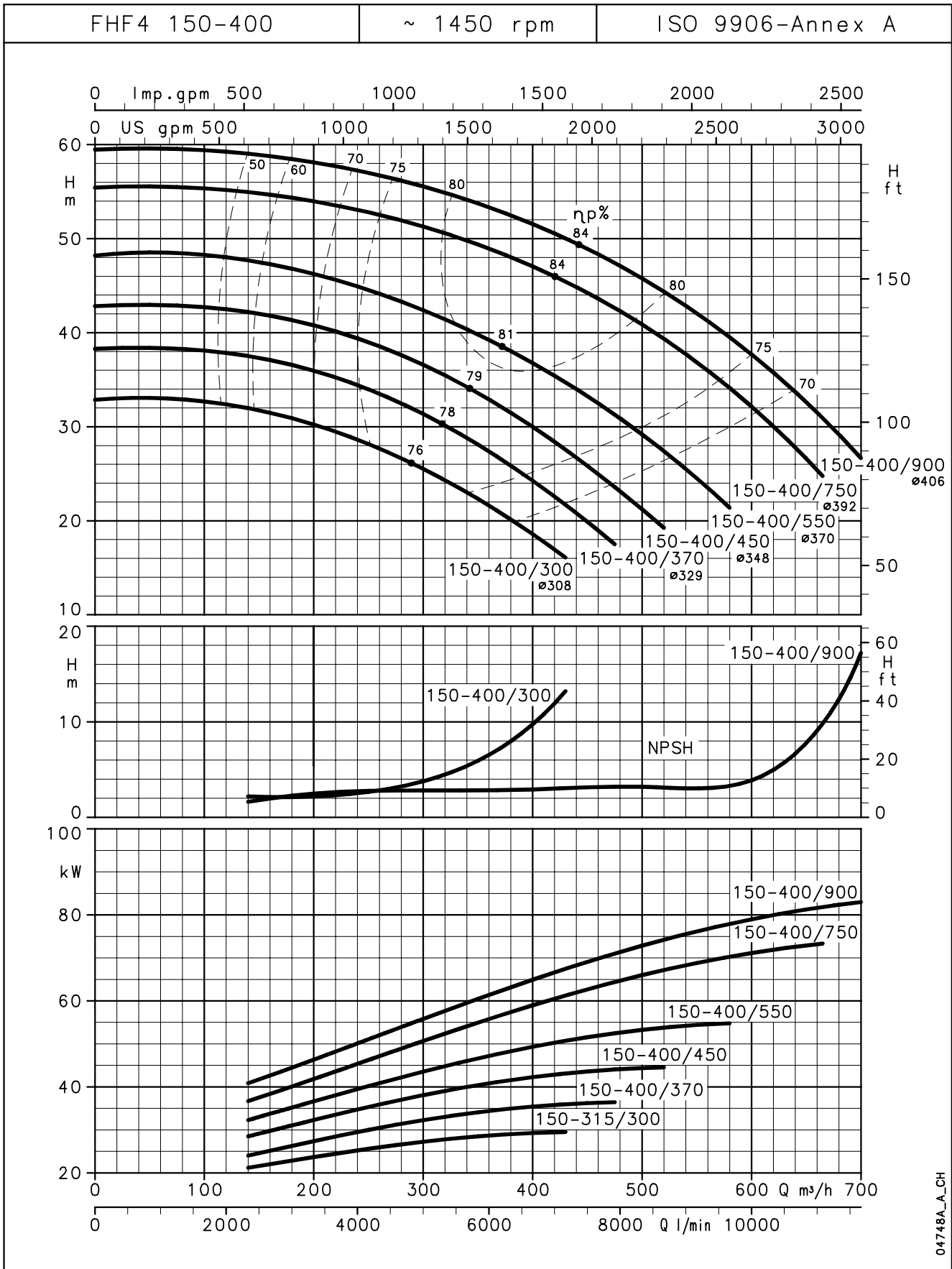
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
 These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

# Lowara

## FHF4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04748A\_A\_CH

The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .





**ITT**

Lowara

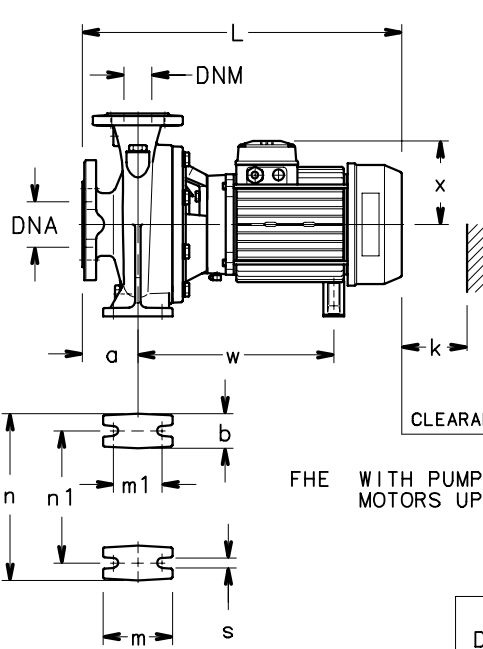
# **DIMENSIONS AND WEIGHTS**



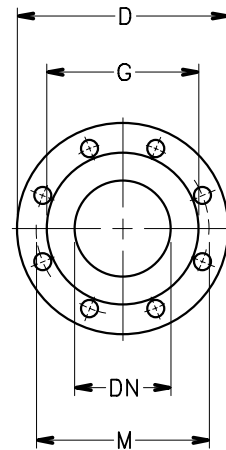
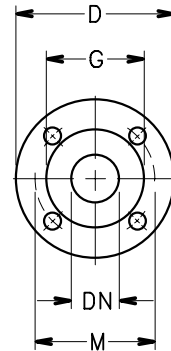
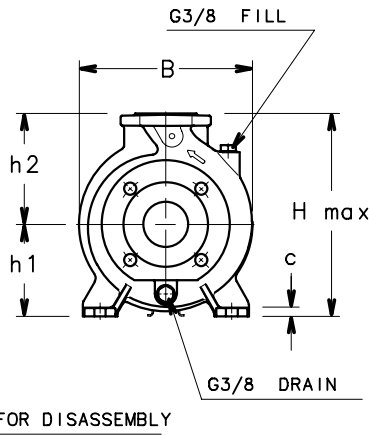
# ITT

# Lowara

## FHE SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

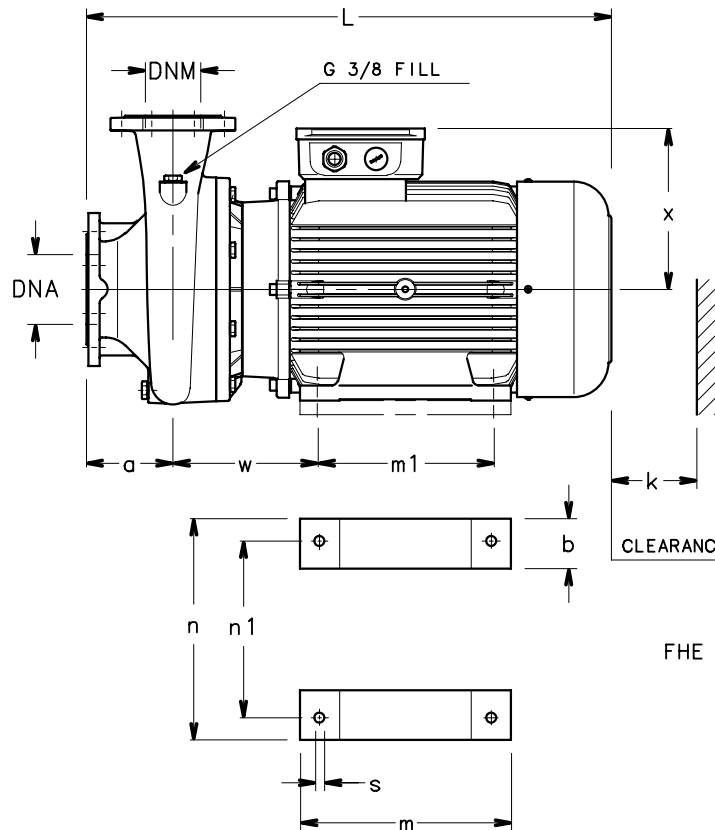


FHE WITH PUMP STAND  
MOTORS UP TO 11kW

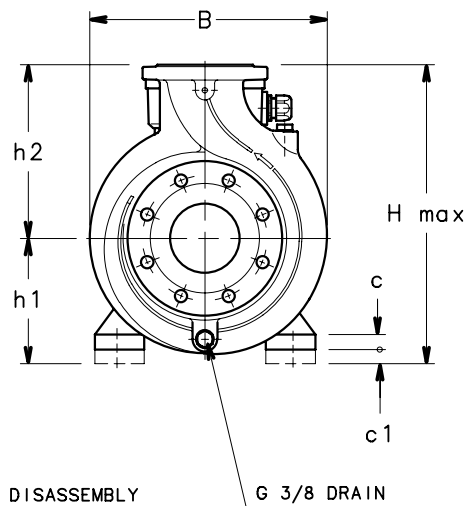


PUMP FLANGES

DN	D	M	G	HOLES		MAX THICKNESS
				N°	D I A.	
32	140	100	78	4	18	18
40	150	110	88	4	18	18
50	165	125	102	4	18	20
65	185	145	122	4	18	20
80	200	160	138	8	18	22
100	220	180	158	8	18	22



FHE WITH PUMP STAND  
MOTORS FROM 15 TO 22kW



04703D-EN\_C-DD

**FHE SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**

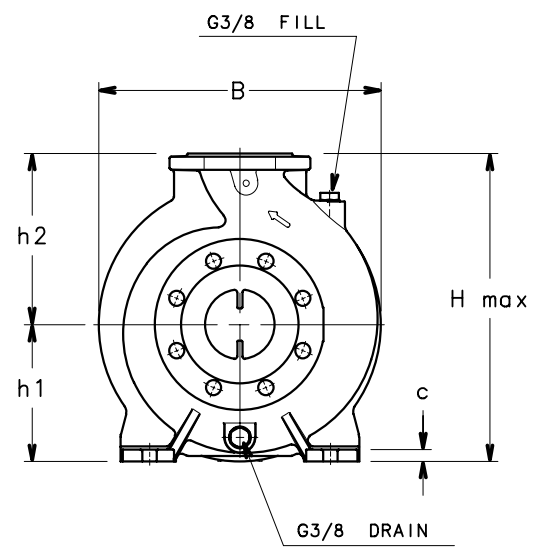
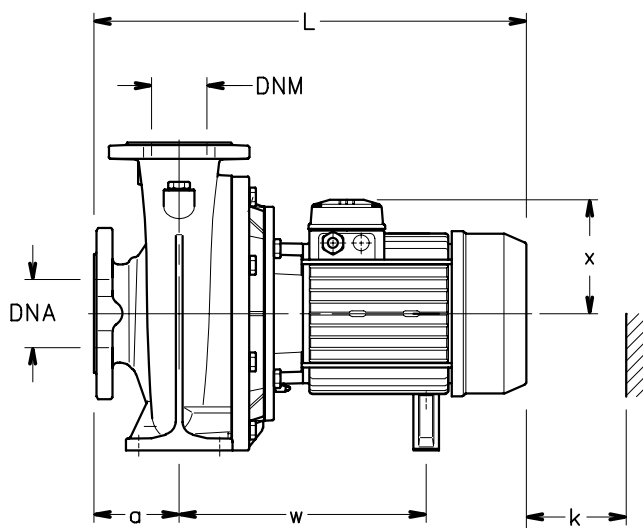
PUMP TYPE	DIMENSIONS (mm)															B	H max	L	k	WEIGHT kg
	PUMP						STAND													
	DNM	DNA	a	h2	w	x	b	c	c1	h1	m	m1	n	n1	s					
FHE 32-125/07	32	50	80	140	235	129	50	12	-	112	100	70	190	140	14	233	252	443	86	30
FHE 32-125/11	32	50	80	140	235	129	50	12	-	112	100	70	190	140	14	233	252	443	86	31
FHE 32-160/15	32	50	80	160	245	134	50	12	-	132	100	70	240	190	14	235	292	478	86	36
FHE 32-160/22	32	50	80	160	245	134	50	12	-	132	100	70	240	190	14	235	292	478	86	39
FHE 32-200/30	32	50	80	180	245	134	50	12	-	160	100	70	240	190	14	285	340	478	86	47
FHE 32-200/40	32	50	80	180	273	154	50	12	-	160	100	70	240	190	14	285	340	499	86	54
FHE 40-125/11	40	65	80	140	235	129	50	12	-	112	100	70	210	160	14	233	252	443	88	33
FHE 40-125/15	40	65	80	140	245	134	50	12	-	112	100	70	210	160	14	233	252	478	88	36
FHE 40-125/22	40	65	80	140	245	134	50	12	-	112	100	70	210	160	14	233	252	478	88	38
FHE 40-160/30	40	65	80	160	245	134	50	12	-	132	100	70	240	190	14	250	292	478	88	40
FHE 40-160/40	40	65	80	160	273	154	50	12	-	132	100	70	240	190	14	250	292	499	88	47
FHE 40-200/55	40	65	100	180	285	168	50	12	-	160	100	70	265	212	14	285	340	553	88	62
FHE 40-200/75	40	65	100	180	305	191	50	12	-	160	100	70	265	212	14	285	351	567	88	79
FHE 40-250/92	40	65	100	225	343	191	65	14	-	180	125	95	320	250	14	335	405	605	107	96
FHE 40-250/110	40	65	100	225	343	191	65	14	-	180	125	95	320	250	14	335	405	605	107	104
FHE 40-250/150	40	65	100	225	208	240	49	5	20	180	304	210	304	254	15	335	420	694	107	128
FHE 50-125/22	50	65	100	160	247	134	50	12	-	132	100	70	240	190	14	255	292	500	92	42
FHE 50-125/30	50	65	100	160	247	134	50	12	-	132	100	70	240	190	14	255	292	500	92	43
FHE 50-125/40	50	65	100	160	275	154	50	12	-	132	100	70	240	190	14	255	292	521	92	50
FHE 50-160/55	50	65	100	180	287	168	50	12	-	160	100	70	265	212	14	285	340	555	92	71
FHE 50-160/75	50	65	100	180	307	191	50	12	-	160	100	70	265	212	14	285	351	569	92	87
FHE 50-200/92	50	65	100	200	345	191	50	12	-	160	100	70	265	212	14	305	360	607	92	86
FHE 50-200/110	50	65	100	200	345	191	50	12	-	160	100	70	265	212	14	305	360	607	92	91
FHE 50-250/150	50	65	100	225	208	240	49	5	20	180	304	210	304	254	15	340	420	694	107	128
FHE 50-250/185	50	65	100	225	208	240	49	5	20	180	304	254	304	254	15	340	420	694	107	131
FHE 50-250/220	50	65	100	225	208	240	49	5	20	180	304	254	304	254	15	340	420	694	107	151
FHE 65-125/40	65	80	100	180	275	154	65	14	-	160	125	95	280	212	14	285	340	521	105	69
FHE 65-125/55	65	80	100	180	287	168	65	14	-	160	125	95	280	212	14	285	340	555	105	75
FHE 65-125/75	65	80	100	180	307	191	65	14	-	160	125	95	280	212	14	285	351	569	105	91
FHE 65-160/92	65	80	100	200	343	191	65	14	-	160	125	95	280	212	14	331	360	605	112	100
FHE 65-160/110	65	80	100	200	343	191	65	14	-	160	125	95	280	212	14	331	360	605	112	108
FHE 65-160/150	65	80	100	200	208	240	49	5	-	160	304	210	304	254	15	331	400	694	112	132
FHE 65-200/150	65	80	100	225	208	240	49	5	20	180	304	210	304	254	15	335	420	694	112	132
FHE 65-200/185	65	80	100	225	208	240	49	5	20	180	304	254	304	254	15	335	420	694	112	135
FHE 65-200/220	65	80	100	225	208	240	49	5	20	180	304	254	304	254	15	335	420	694	112	155
FHE 65-250/220	65	80	100	250	208	240	49	5	40	200	304	254	304	254	15	332	450	694	112	161
FHE 80-160/110	80	100	125	225	343	191	65	14	-	180	125	95	320	250	14	332	405	630	129	114
FHE 80-160/150	80	100	125	225	208	240	49	5	20	180	304	210	304	254	15	332	420	719	129	138
FHE 80-160/185	80	100	125	225	208	240	49	5	20	180	304	254	304	254	15	332	420	719	129	141
FHE 80-200/220	80	100	125	250	208	240	49	5	20	180	304	254	304	254	15	332	430	719	129	161



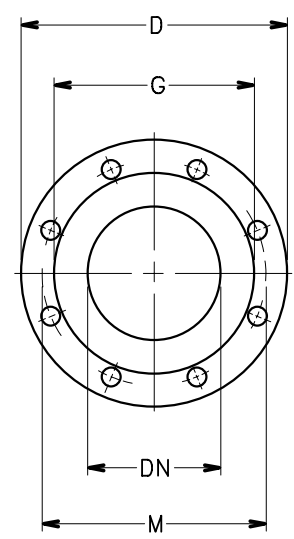
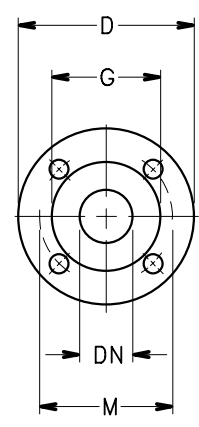
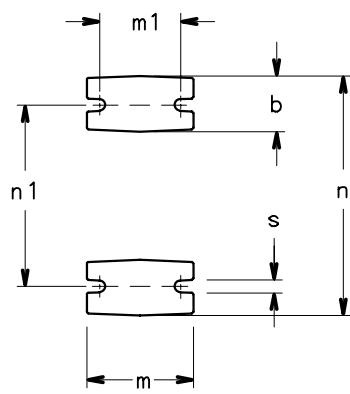
# ITT

# Lowara

## FHE4 SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



CLEARANCE FOR DISASSEMBLY



PUMP FLANGES

DN	D	M	G	HOLES		MAX. THICKNESS
				N°	DIA.	
32	140	100	78	4	18	18
40	150	110	88	4	18	18
50	165	125	102	4	18	20
65	185	145	122	4	18	20
80	200	160	138	8	18	22
100	220	180	158	8	18	22

04704D-EN\_B\_DD



# ITT

# Lowara

## FHE4 SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

PUMP TYPE	DIMENSIONS (mm)														B	H max	L	k	WEIGHT kg
	PUMP TYPE									STAND									
	DNM	DNA	a	h2	w	x	b	c	h1	m	m1	n	n1	s					
FHE4 32-125/02A	32	50	80	140	215	121	50	12	112	100	70	190	140	14	233	252	411	86	25
FHE4 32-125/02	32	50	80	140	215	121	50	12	112	100	70	190	140	14	233	252	411	86	25
FHE4 32-160/02	32	50	80	160	215	121	50	12	132	100	70	240	190	14	235	292	411	86	26
FHE4 32-160/03	32	50	80	160	215	121	50	12	132	100	70	240	190	14	235	292	411	86	26
FHE4 32-200/03	32	50	80	180	215	121	50	12	160	100	70	240	190	14	285	340	411	86	35
FHE4 32-200/05	32	50	80	180	235	129	50	12	160	100	70	240	190	14	285	340	443	86	38
FHE4 40-125/02A	40	65	80	140	215	121	50	12	112	100	70	210	160	14	233	252	411	88	25
FHE4 40-125/02	40	65	80	140	215	121	50	12	112	100	70	210	160	14	233	252	411	88	25
FHE4 40-125/03	40	65	80	140	215	121	50	12	112	100	70	210	160	14	233	252	411	88	25
FHE4 40-160/03	40	65	80	160	215	121	50	12	132	100	70	240	190	14	250	292	411	88	27
FHE4 40-160/05	40	65	80	160	235	129	50	12	132	100	70	240	190	14	250	292	443	88	29
FHE4 40-200/07	40	65	100	180	-	128	50	12	160	100	70	265	212	14	285	340	431	88	40
FHE4 40-200/11	40	65	100	180	245	134	50	12	160	100	70	265	212	14	285	340	498	88	48
FHE4 40-250/11	40	65	100	225	245	134	65	14	180	125	95	320	250	14	335	405	498	107	58
FHE4 40-250/15	40	65	100	225	245	134	65	14	180	125	95	320	250	14	335	405	498	107	61
FHE4 40-250/22	40	65	100	225	285	168	65	14	180	125	95	320	250	14	335	405	522	107	69
FHE4 50-125/03A	50	65	100	160	217	121	50	12	132	100	70	240	190	14	255	292	433	92	29
FHE4 50-125/03	50	65	100	160	217	121	50	12	132	100	70	240	190	14	255	292	433	92	29
FHE4 50-125/05	50	65	100	160	237	129	50	12	132	100	70	240	190	14	255	292	465	92	32
FHE4 50-160/07	50	65	100	180	-	128	50	12	160	100	70	265	212	14	285	340	433	92	43
FHE4 50-160/11	50	65	100	180	247	134	50	12	160	100	70	265	212	14	285	340	500	92	51
FHE4 50-200/11	50	65	100	200	247	134	50	12	160	100	70	265	212	14	305	360	500	92	51
FHE4 50-200/15	50	65	100	200	247	134	50	12	160	100	70	265	212	14	305	360	500	92	54
FHE4 50-250/22A	50	65	100	225	285	168	65	14	180	125	95	320	250	14	340	405	522	107	69
FHE4 50-250/22	50	65	100	225	285	168	65	14	180	125	95	320	250	14	340	405	522	107	69
FHE4 50-250/30	50	65	100	225	285	168	65	14	180	125	95	320	250	14	340	405	553	107	72
FHE4 65-125/05	65	80	100	180	237	129	65	14	160	125	95	280	212	14	285	340	465	105	46
FHE4 65-125/07	65	80	100	180	-	128	65	14	160	125	95	280	212	14	285	340	433	105	47
FHE4 65-125/11	65	80	100	180	247	134	65	14	160	125	95	280	212	14	285	340	500	105	55
FHE4 65-160/11	65	80	100	200	245	134	65	14	160	125	95	280	212	14	331	360	498	112	61
FHE4 65-160/15	65	80	100	200	245	134	65	14	160	125	95	280	212	14	331	360	498	112	65
FHE4 65-160/22	65	80	100	200	285	168	65	14	160	125	95	280	212	14	331	360	522	112	73
FHE4 65-200/15	65	80	100	225	245	134	65	14	180	125	95	320	250	14	335	405	498	112	65
FHE4 65-200/22	65	80	100	225	285	168	65	14	180	125	95	320	250	14	335	405	522	112	73
FHE4 65-200/30	65	80	100	225	285	168	65	14	180	125	95	320	250	14	335	405	553	112	75
FHE4 65-250/30	65	80	100	250	285	168	80	16	200	160	120	360	280	18	360	450	553	112	84
FHE4 65-250/40	65	80	100	250	315	168	80	16	200	160	120	360	280	18	360	450	598	112	125
FHE4 65-250/55	65	80	100	250	343	191	80	16	200	160	120	360	280	18	360	450	605	112	130
FHE4 80-160/15	80	100	125	225	245	134	65	14	180	125	95	320	250	14	332	405	523	129	70
FHE4 80-160/22	80	100	125	225	285	168	65	14	180	125	95	320	250	14	332	405	547	129	78
FHE4 80-200/30	80	100	125	250	285	168	65	14	180	125	95	345	280	14	345	430	578	129	89
FHE4 80-200/40	80	100	125	250	315	168	65	14	180	125	95	345	280	14	345	430	623	129	123
FHE4 80-250/40	80	100	125	280	315	168	80	16	200	160	120	400	315	18	400	480	623	129	120
FHE4 80-250/55	80	100	125	280	343	191	80	16	200	160	120	400	315	18	400	480	630	129	125
FHE4 80-250/75	80	100	125	280	343	191	80	16	200	160	120	400	315	18	400	480	630	129	129

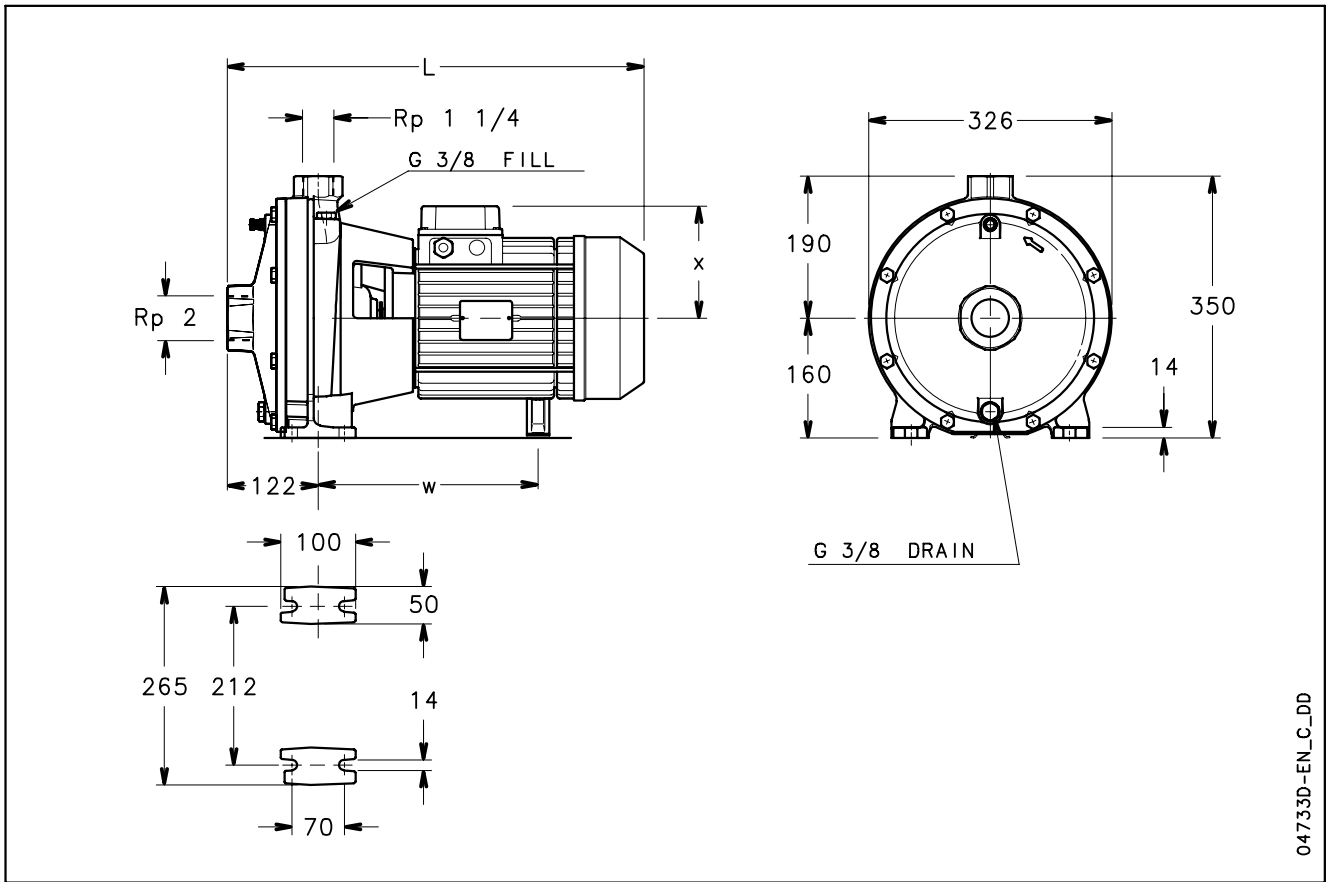
fh-fhe4-4p50-en\_d\_td



# ITT

# Lowara

## 2FHE SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



04733D-EN\_C\_DD

PUMP TYPE	DIMENSIONS (mm)			WEIGHT
	L	w	x	kg
2FHE 32-250/55	572	282	168	74
2FHE 32-250/75	607	323	191	90

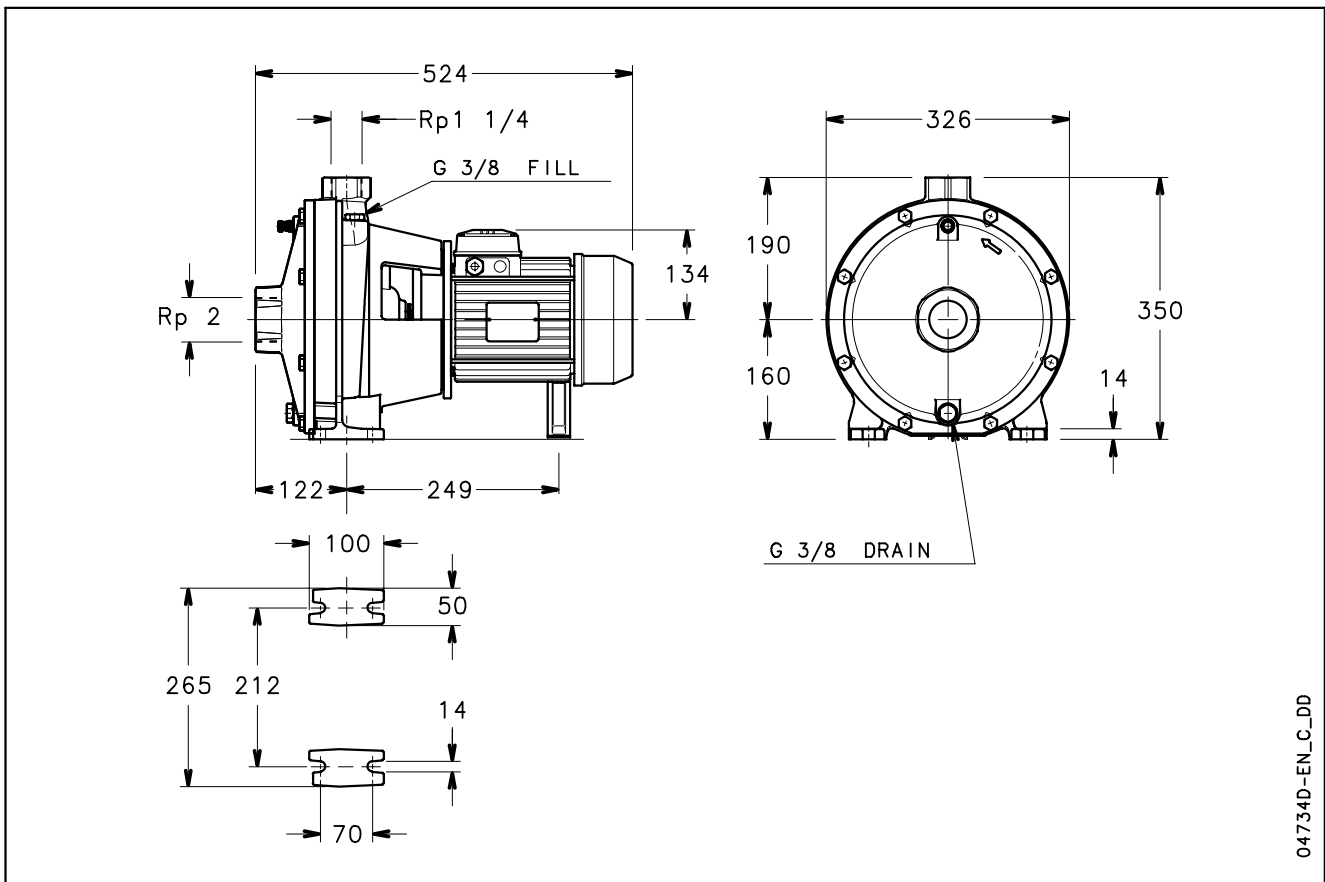
2fhe-2p50-en\_b\_td



# ITT

# Lowara

## 2FHE4 SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



04734D-EN\_C\_DD

PUMP TYPE	WEIGHT kg
2FHE4 32-250/07	53
2FHE4 32-250/11	55

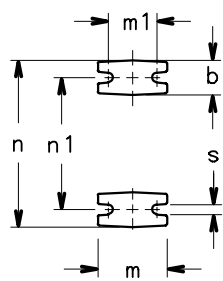
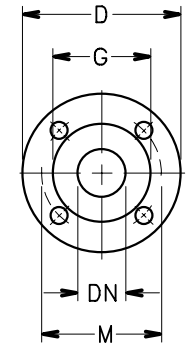
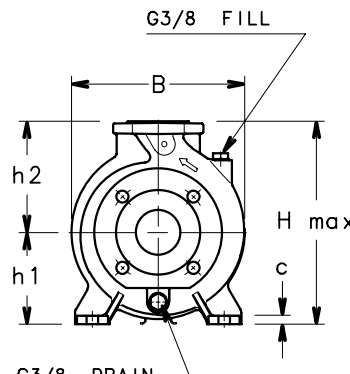
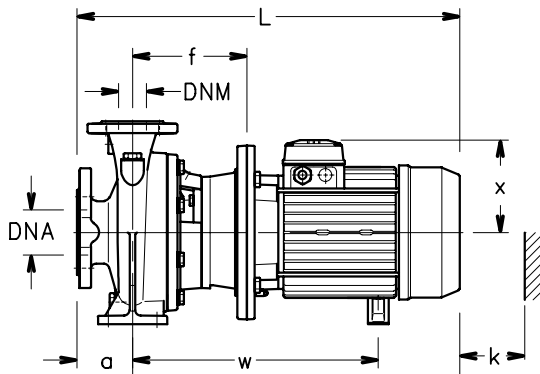
2fhe4-4p50-en\_b\_td



**ITT**

**Lowara**

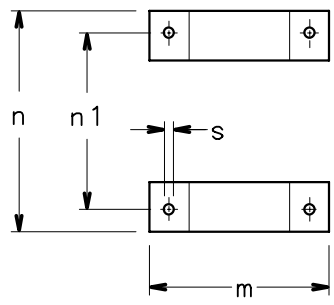
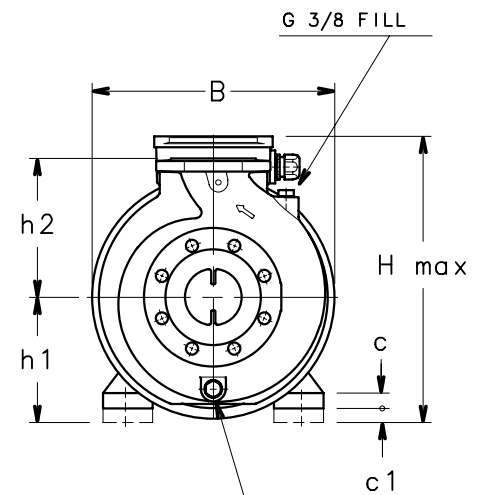
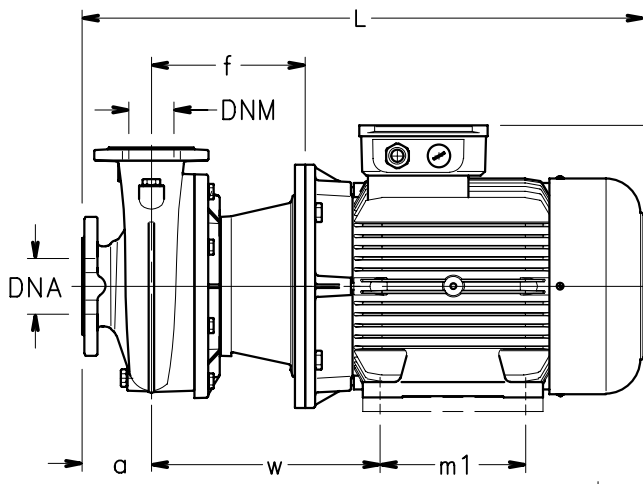
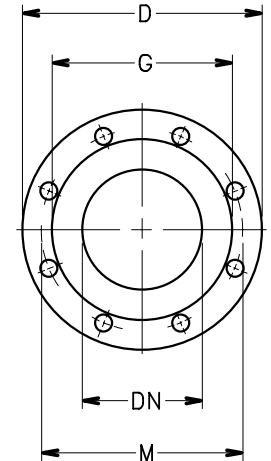
**FHS SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**



FHS WITH PUMP STAND  
MOTORS UP TO 7.5kW

PUMP FLANGES

DN	D	M	G	HOLES		MAX. THICKNESS
				N°	DIA.	
32	140	100	78	4	18	18
40	150	110	88	4	18	18
50	165	125	102	4	18	20
65	185	145	122	4	18	20
80	200	160	138	8	18	22
100	220	180	158	8	18	22



CLEARANCE FOR DISASSEMBLY

FHS WITH PUMP STAND  
MOTORS FROM 11 TO 55kW

04753D-EN\_C\_DD





**ITT**

**Lowara**

**FHS SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**

PUMP TYPE	DIMENSIONS (mm)																			B	H max	L	k	WEIGHT kg
	PUMP									STAND														
	DNM	DNA	a	f	h2	w	x	b	c	c1	h1	m	m1	n	n1	s								
FHS 32-125/07	32	50	80	155	140	290	129	50	12	-	112	100	70	190	140	14	233	252	498	86	35			
FHS 32-125/11	32	50	80	155	140	290	129	50	12	-	112	100	70	190	140	14	233	252	498	86	37			
FHS 32-160/15	32	50	80	155	160	300	134	50	12	-	132	100	70	240	190	14	235	292	533	86	40			
FHS 32-160/22	32	50	80	155	160	300	134	50	12	-	132	100	70	240	190	14	235	292	533	86	42			
FHS 32-200/30	32	50	80	165	180	310	134	50	12	-	160	100	70	240	190	14	285	340	543	86	55			
FHS 32-200/40	32	50	80	165	180	338	154	50	12	-	160	100	70	240	190	14	285	340	564	86	67			
FHS 40-125/11	40	65	80	155	140	290	129	50	12	-	112	100	70	210	160	14	233	252	498	88	37			
FHS 40-125/15	40	65	80	155	140	300	134	50	12	-	112	100	70	210	160	14	233	252	533	88	41			
FHS 40-125/22	40	65	80	155	140	300	134	50	12	-	112	100	70	210	160	14	233	252	533	88	44			
FHS 40-160/30	40	65	80	165	160	310	134	50	12	-	132	100	70	240	190	14	250	292	543	88	48			
FHS 40-160/40	40	65	80	165	160	338	154	50	12	-	132	100	70	240	190	14	250	292	564	88	60			
FHS 40-200/55	40	65	100	192	180	399	168	50	12	-	160	100	70	265	212	14	300	340	667	88	76			
FHS 40-200/75	40	65	100	192	180	397	191	50	12	-	160	100	70	265	212	14	300	351	659	88	92			
FHS 40-250/110A	40	65	100	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	816	107	124			
FHS 40-250/110	40	65	100	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	816	107	124			
FHS 40-250/150	40	65	100	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	816	107	138			
FHS 50-125/22	50	65	100	157	160	302	134	50	12	-	132	100	70	240	190	14	255	292	555	92	48			
FHS 50-125/30	50	65	100	167	160	312	134	50	12	-	132	100	70	240	190	14	255	292	565	92	52			
FHS 50-125/40	50	65	100	167	160	340	154	50	12	-	132	100	70	240	190	14	255	292	586	92	61			
FHS 50-160/55	50	65	100	194	180	401	168	50	12	-	160	100	70	265	212	14	300	340	669	92	79			
FHS 50-160/75	50	65	100	194	180	399	191	50	12	-	160	100	70	265	212	14	300	451	661	92	95			
FHS 50-200/110A	50	65	100	224	200	332	240	49	5	20	180	304	210	304	254	15	350	420	818	92	116			
FHS 50-200/110	50	65	100	224	200	332	240	49	5	20	180	304	210	304	254	15	350	420	818	92	116			
FHS 50-250/150	50	65	100	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	816	107	138			
FHS 50-250/185	50	65	100	222	225	330	240	49	5	20	180	304	254	304	254	15	350	420	816	107	141			
FHS 50-250/220	50	65	100	222	225	330	240	49	5	20	180	304	254	304	254	15	350	420	816	107	161			
FHS 65-125/40	65	80	100	167	180	340	154	65	14	-	160	125	95	280	212	14	285	340	586	105	75			
FHS 65-125/55	65	80	100	194	180	401	168	65	14	-	160	125	95	280	212	14	300	340	669	105	83			
FHS 65-125/75	65	80	100	194	180	399	191	65	14	-	160	125	95	280	212	14	300	451	661	105	99			
FHS 65-160/110A	65	80	100	222	200	330	240	49	5	20	180	304	210	304	254	15	350	420	816	112	128			
FHS 65-160/110	65	80	100	222	200	330	240	49	5	20	180	304	210	304	254	15	350	420	816	112	128			
FHS 65-160/150	65	80	100	222	200	330	240	49	5	20	180	304	210	304	254	15	350	420	816	112	142			
FHS 65-200/150	65	80	100	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	816	112	142			
FHS 65-200/185	65	80	100	222	225	330	240	49	5	20	180	304	254	304	254	15	350	420	816	112	145			
FHS 65-200/220	65	80	100	222	225	330	240	49	5	20	180	304	254	304	254	15	350	420	816	112	165			
FHS 65-250/220	65	80	100	222	250	330	240	49	5	40	200	304	254	304	254	15	350	450	816	112	159			
FHS 65-250/300	65	80	100	228	250	361	317	82	30	-	200	370	305	385	318	18	402	517	985	112	296			
FHS 65-250/370	65	80	100	228	250	361	317	82	30	-	200	370	305	385	318	18	402	517	985	112	325			
FHS 80-160/110	80	100	125	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	841	129	129			
FHS 80-160/150	80	100	125	222	225	330	240	49	5	20	180	304	210	304	254	15	350	420	841	129	143			
FHS 80-160/185	80	100	125	222	225	330	240	49	5	20	180	304	254	304	254	15	350	420	841	129	152			
FHS 80-200/220	80	100	125	222	250	330	240	49	5	20	180	304	254	304	254	15	350	430	841	129	165			
FHS 80-200/300	80	100	125	228	250	361	317	82	30	-	200	370	305	385	318	18	402	517	1010	129	295			
FHS 80-250/370	80	100	125	228	280	361	317	82	30	-	200	370	305	385	318	18	402	517	1010	129	320			
FHS 80-250/450	80	100	125	228	280	377	384	80	34	-	225	412	311	436	356	18	455	609	1099	129	424			
FHS 80-250/550	80	100	125	258	280	426	402	100	43	-	250	467	349	506	406	24	550	652	1208	129	499			

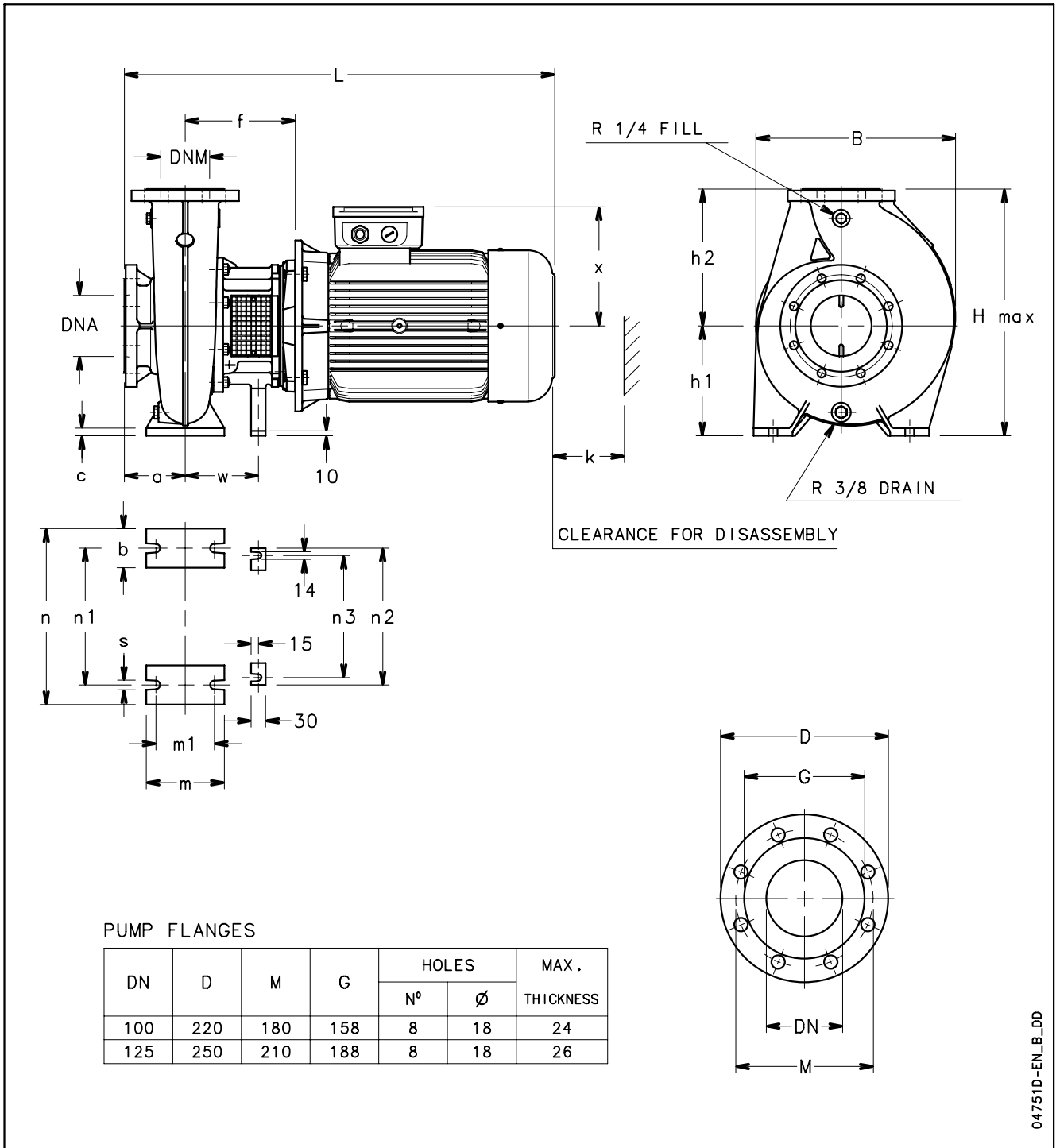
fh-fhs-2p50-en\_e\_td



# ITT

# Lowara

## FHS SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



04751D-EN\_B\_DD



**ITT**

**Lowara**

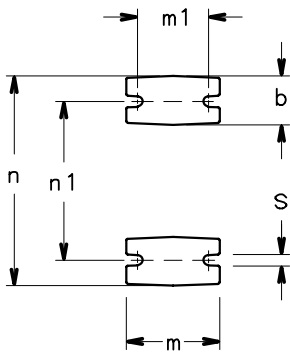
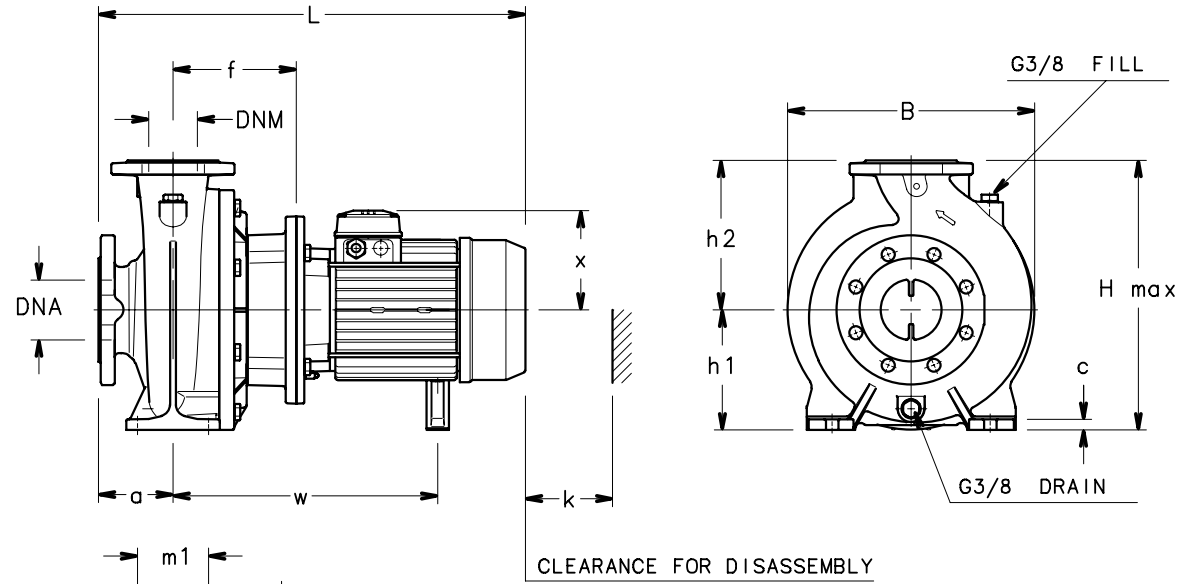
**FHS SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**

PUMP TYPE	DIMENSIONS (mm)																		WEIGHT			
	PUMP						STAND													B	H	L
	DNM	DNA	a	f	h2	w	x	b	c	h1	m	m1	n	n1	n2	n3	s	max				kg
FHS100-160/220	100	125	125	226	280	150	240	80	16	225	160	120	360	280	280	250	18	415	505	845	143	238
FHS100-160/300	100	125	125	231	280	185	317	80	16	225	160	120	360	280	210	180	18	415	542	1013	143	444
FHS100-200/300	100	125	125	231	280	185	317	80	18	200	160	120	360	280	210	180	18	385	517	1013	153	436
FHS100-200/370	100	125	125	231	280	185	317	80	18	200	160	120	360	280	210	180	18	385	517	1013	153	467

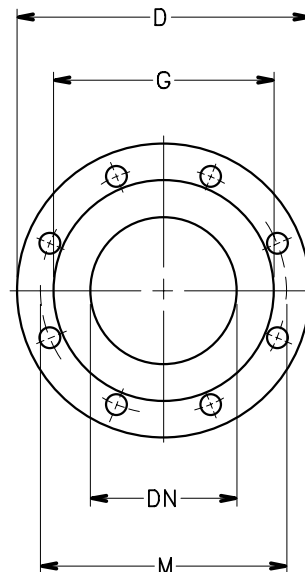
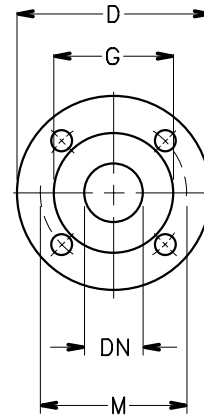
lm-fhs-2p50-en\_c\_td



## FHS4 SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



CLEARANCE FOR DISASSEMBLY



PUMP FLANGES

DN	D	M	G	HOLES		MAX. THICKNESS
				N°	DIA.	
32	140	100	78	4	18	18
40	150	110	88	4	18	18
50	165	125	102	4	18	20
65	185	145	122	4	18	20
80	200	160	138	8	18	22
100	220	180	158	8	18	22



# ITT

# Lowara

## FHS4 SERIES DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

PUMP TYPE	DIMENSIONS (mm)															B	H	L	k	WEIGHT kg
	DNM	DNA	PUMP					STAND					max							
			a	f	h2	w	x	b	c	h1	m	m1	n	n1	s					
FHS4 40-200/07	40	65	100	155	180	-	128	50	12	160	100	70	265	212	14	285	340	486	88	45
FHS4 40-200/11	40	65	100	155	180	300	134	50	12	160	100	70	265	212	14	285	340	550	88	53
FHS4 40-250/11	40	65	100	155	225	300	134	65	14	180	125	95	320	250	14	335	405	550	107	63
FHS4 40-250/15	40	65	100	155	225	300	134	65	14	180	125	95	320	250	14	335	405	550	107	66
FHS4 40-250/22	40	65	100	165	225	350	168	65	14	180	125	95	320	250	14	335	405	587	107	75
FHS4 50-160/07	50	65	100	157	180	-	128	50	12	160	100	70	265	212	14	285	340	488	92	48
FHS4 50-160/11	50	65	100	157	180	302	134	50	12	160	100	70	265	212	14	285	340	555	92	56
FHS4 50-200/11	50	65	100	157	200	302	134	50	12	160	100	70	265	212	14	305	360	555	92	56
FHS4 50-200/15	50	65	100	157	200	302	134	50	12	160	100	70	265	212	14	305	360	555	92	59
FHS4 50-250/22A	50	65	100	165	225	320	168	65	14	180	125	95	320	250	14	340	405	587	107	75
FHS4 50-250/22	50	65	100	165	225	320	168	65	14	180	125	95	320	250	14	340	405	587	107	75
FHS4 50-250/30	50	65	100	165	225	320	168	65	14	180	125	95	320	250	14	340	405	618	107	78
FHS4 65-125/05	65	80	100	157	180	292	129	65	14	160	125	95	280	212	14	285	340	520	105	51
FHS4 65-125/07	65	80	100	157	180	-	128	65	14	160	125	95	280	212	14	285	340	488	105	54
FHS4 65-125/11	65	80	100	157	180	302	134	65	14	160	125	95	280	212	14	285	340	555	105	60
FHS4 65-160/11	65	80	100	155	200	300	134	65	14	160	125	95	280	212	14	331	360	553	112	67
FHS4 65-160/15	65	80	100	155	200	300	134	65	14	160	125	95	280	212	14	331	360	553	112	70
FHS4 65-160/22	65	80	100	165	200	350	168	65	14	160	125	95	280	212	14	331	360	587	112	79
FHS4 65-200/15	65	80	100	155	225	300	134	65	14	180	125	95	320	250	14	335	405	553	112	70
FHS4 65-200/22	65	80	100	165	225	350	168	65	14	180	125	95	320	250	14	335	405	587	112	79
FHS4 65-200/30	65	80	100	165	225	350	168	65	14	180	125	95	320	250	14	335	405	618	112	82
FHS4 65-250/30	65	80	100	165	250	350	168	80	16	200	160	120	360	280	18	360	450	618	112	88
FHS4 65-250/40	65	80	100	165	250	380	168	80	16	200	160	120	360	280	18	360	450	663	112	121
FHS4 65-250/55	65	80	100	192	250	435	191	80	16	200	160	120	360	280	18	360	450	697	112	123
FHS4 80-160/15	80	100	125	155	225	300	134	65	14	180	125	95	320	250	14	332	405	578	129	77
FHS4 80-160/22	80	100	125	165	225	350	168	65	14	180	125	95	320	250	14	332	405	612	129	85
FHS4 80-200/30	80	100	125	165	250	350	168	65	14	180	125	95	345	280	14	345	430	643	129	91
FHS4 80-200/40	80	100	125	165	250	380	168	65	14	180	125	95	345	280	14	345	430	688	129	124
FHS4 80-250/40	80	100	125	165	280	380	168	80	16	200	160	120	400	315	18	400	480	688	129	130
FHS4 80-250/55	80	100	125	192	280	435	191	80	16	200	160	120	400	315	18	400	480	722	129	132
FHS4 80-250/75	80	100	125	192	280	435	191	80	16	200	160	120	400	315	18	400	480	722	129	137

NOTE: For models FHS4 65-315 and FHS4 80-315 consult the following pages.

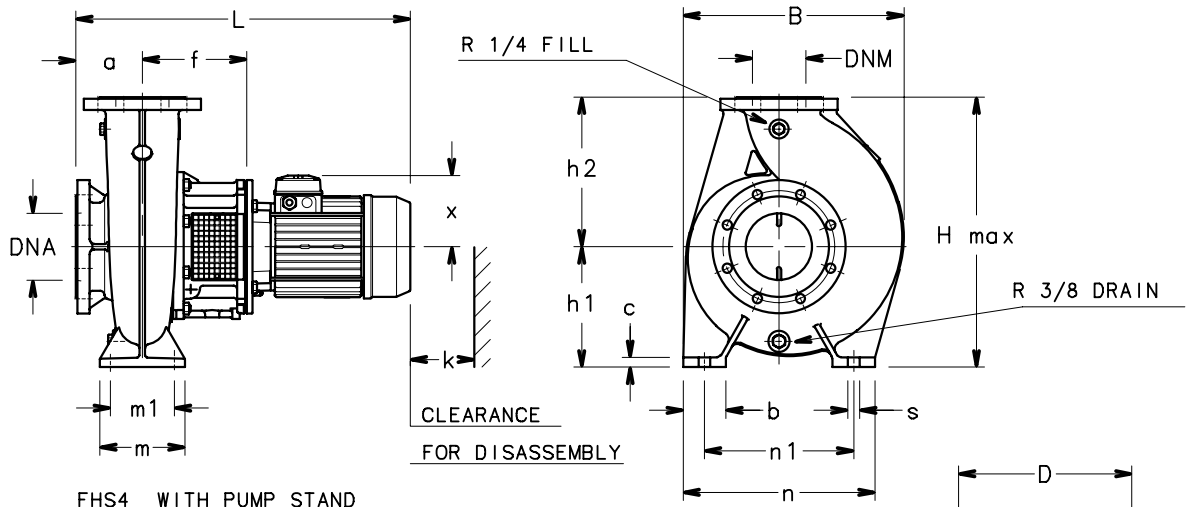
fh-fhs4-4p50-en\_d\_td



**ITT**

**Lowara**

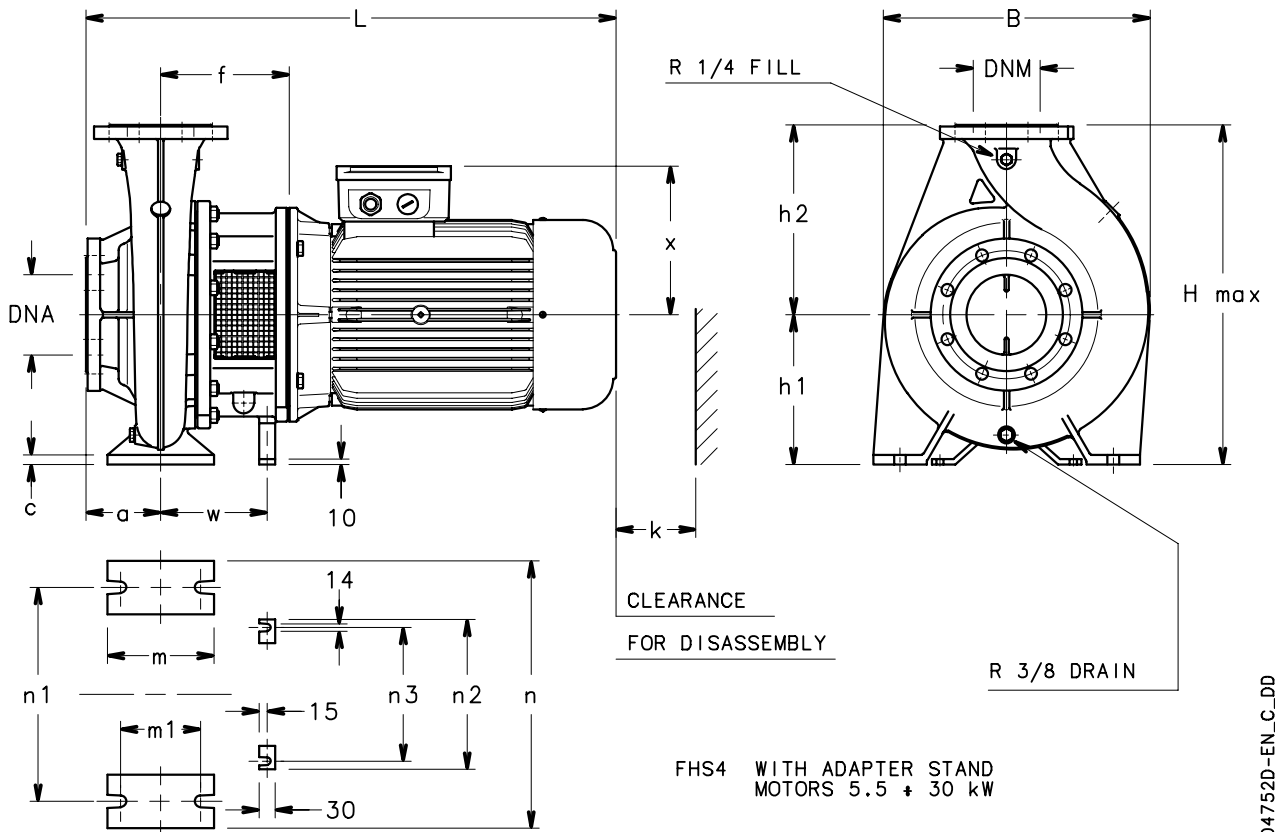
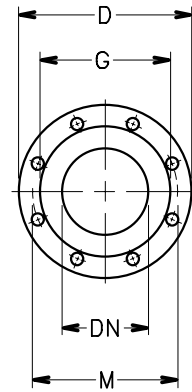
**FHS4 SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES**



FHS4 WITH PUMP STAND  
MOTORS 3 + 4 kW

PUMP FLANGES

DN	D	M	G	HOLES		MAX. THICKNESS
				Nº	DIA.	
65	185	145	122	4	18	20
80	200	160	138	8	18	22
100	220	180	158	8	18	24
125	250	210	188	8	18	26
150	285	240	212	8	22	26
200	340	295	268	8	22	26



FHS4 WITH ADAPTER STAND  
MOTORS 5.5 + 30 kW

04752D-EN\_C\_DD



**ITT**

**Lowara**

**FHS4 SERIES  
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES**

PUMP TYPE	DIMENSIONS (mm)																			B	H	L	k	WEIGHT kg
	PUMP								STAND															
	DNM	DNA	a	f	h2	w	x	b	c	h1	m	m1	n	n1	n2	n3	s	max						
FHS4 65-315/75	65	80	125	196	280	150	191	80	14	225	160	120	400	315	210	180	18	434	505	726	160	181		
FHS4 65-315/110	65	80	125	226	280	150	240	80	14	225	160	120	400	315	210	180	18	434	505	845	160	263		
FHS4 80-315/110	80	100	125	226	315	150	240	80	16	250	160	120	400	315	210	180	18	450	565	845	160	269		
FHS4 80-315/150	80	100	125	226	315	150	240	80	16	250	160	120	400	315	210	180	18	450	565	845	160	278		
FHS4 100-160/30	100	125	125	196	280	-	168	80	16	225	160	120	360	280	-	-	19	415	505	674	143	119		
FHS4 100-200/40	100	125	125	196	280	-	168	80	18	200	160	120	360	280	-	-	19	385	480	719	153	126		
FHS4 100-200/55	100	125	125	196	280	150	191	80	18	200	160	120	360	280	210	180	18	385	480	726	153	150		
FHS4 100-250/75	100	125	140	196	280	150	191	80	16	225	160	120	400	315	210	180	18	425	505	741	150	184		
FHS4 100-250/110	100	125	140	226	280	150	240	80	16	225	160	120	400	315	210	180	18	425	505	860	150	266		
FHS4 100-315/150	100	125	140	226	315	150	240	80	16	250	160	120	400	315	210	180	18	486	565	860	160	287		
FHS4 100-315/185	100	125	140	226	315	150	279	80	16	250	160	120	400	315	210	180	18	486	565	920	160	346		
FHS4 100-315/220	100	125	140	226	315	150	279	80	16	250	160	120	400	315	210	180	18	486	565	958	160	356		
FHS4 125-200/55	125	150	140	211	315	165	191	80	16	250	160	120	400	315	280	250	18	469	565	756	160	181		
FHS4 125-200/75	125	150	140	211	315	165	191	80	16	250	160	120	400	315	280	250	18	469	565	756	160	186		
FHS4 125-250/110	125	150	140	226	355	150	240	80	16	250	160	120	400	315	280	250	18	493	605	860	158	268		
FHS4 125-250/150	125	150	140	226	355	150	240	80	16	250	160	120	400	315	280	250	18	493	605	860	158	277		
FHS4 125-250/185	125	150	140	226	355	150	279	80	16	250	160	120	400	315	280	250	18	493	605	920	158	337		
FHS4 125-315/220	125	150	140	241	355	200	279	100	18	280	200	150	500	400	280	250	22	520	635	973	171	408		
FHS4 125-315/300	125	150	140	241	355	200	317	100	18	280	200	150	500	400	280	250	22	520	635	1038	171	505		
FHS4 150-250/150	150	200	160	246	375	200	240	100	18	280	200	150	500	400	280	250	22	550	655	900	181	340		
FHS4 150-250/185	150	200	160	246	375	200	279	100	18	280	200	150	500	400	280	250	22	550	655	960	181	399		
FHS4 150-250/220	150	200	160	246	375	200	279	100	18	280	200	150	500	400	280	250	22	550	655	998	181	409		
FHS4 150-250/300	150	200	160	246	375	200	317	100	18	280	200	150	500	400	280	250	22	550	655	1063	181	506		
FHS4 150-315/300	150	200	160	241	400	200	317	100	18	280	200	150	550	450	280	250	22	587	680	1058	186	524		

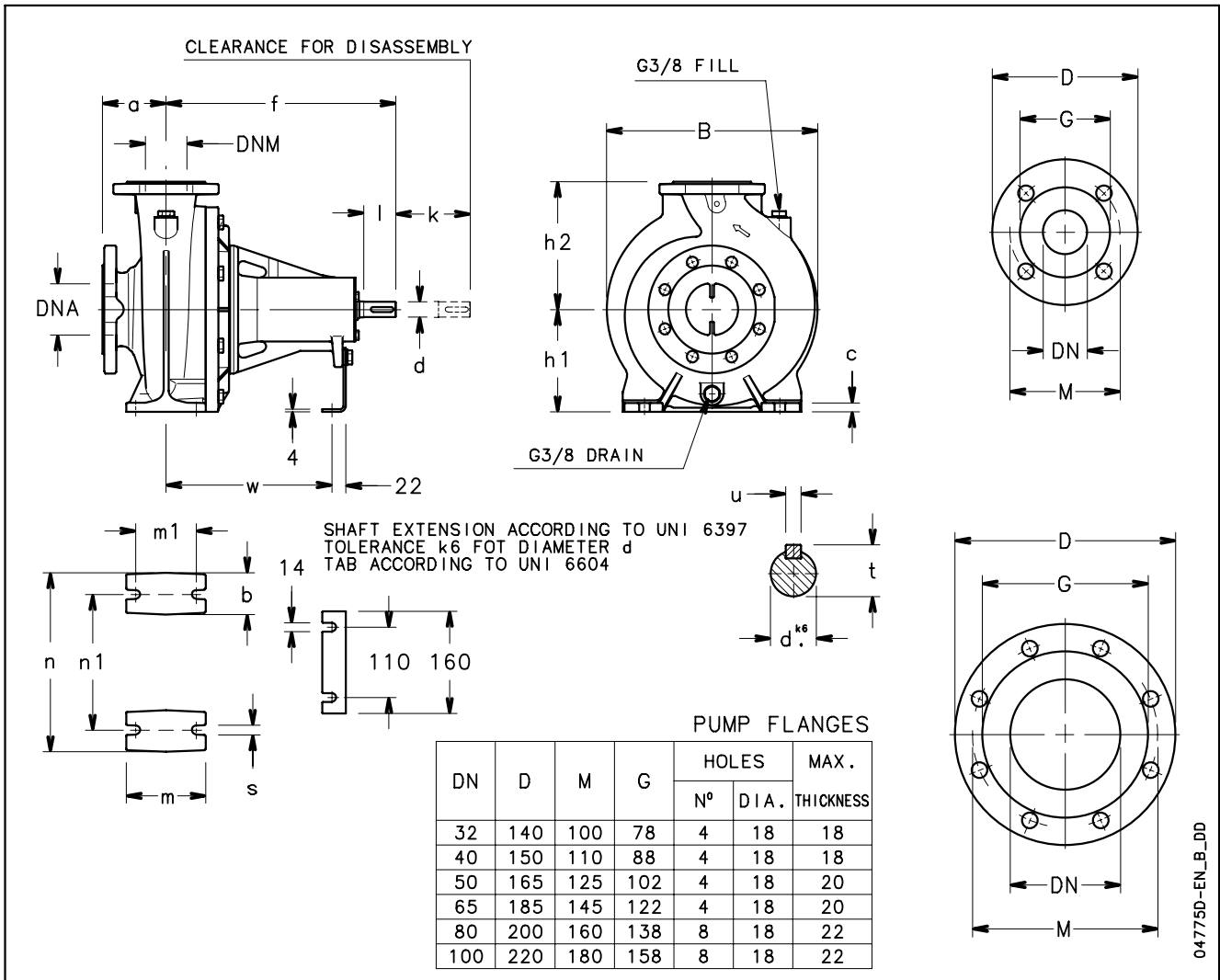
lm-fhs4-4p50-en\_d\_td



# ITT

# Lowara

## FHF SERIES BARE SHAFT DIMENSIONS AND WEIGHTS AT 50 Hz



PUMP TYPE	DIMENSIONS (mm)																			B	k	WEIGHT kg
	PUMP					STAND					SHAFT											
	DNM	DNA	a	f	h1	h2	b	c	m	m1	n	n1	s	w	d	l	t	u				
FHF 32-125	32	50	80	360	112	140	50	12	100	70	190	140	14	260	24	50	27	8	233	86	27	
FHF 32-160	32	50	80	360	132	160	50	12	100	70	240	190	14	260	24	50	27	8	235	86	30	
FHF 32-200	32	50	80	360	160	180	50	12	100	70	240	190	14	260	24	50	27	8	285	86	34	
FHF 40-125	40	65	80	360	112	140	50	12	100	70	210	160	14	260	24	50	27	8	233	88	27	
FHF 40-160	40	65	80	360	132	160	50	12	100	70	240	190	14	260	24	50	27	8	250	88	29	
FHF 40-200	40	65	100	360	160	180	50	12	100	70	265	212	14	260	24	50	27	8	285	88	37	
FHF 40-250	40	65	100	360	180	225	65	14	125	95	320	250	14	260	24	50	27	8	335	100	57	
FHF 50-125	50	65	100	360	132	160	50	12	100	70	240	190	14	260	24	50	27	8	255	92	31	
FHF 50-160	50	65	100	360	160	180	50	12	100	70	265	212	14	260	24	50	27	8	285	92	39	
FHF 50-200	50	65	100	360	160	200	50	12	100	70	265	212	14	260	24	50	27	8	305	92	43	
FHF 50-250	50	65	100	360	180	225	65	14	125	95	320	250	14	260	24	50	27	8	340	100	57	
FHF 65-125	65	80	100	360	160	180	65	14	125	95	280	212	14	260	24	50	27	8	285	100	33	
FHF 65-160	65	80	100	360	160	200	65	14	125	95	280	212	14	260	24	50	27	8	331	100	55	
FHF 65-200	65	80	100	360	180	225	65	14	125	95	320	250	14	260	24	50	27	8	335	112	61	
FHF 65-250	65	80	100	470	200	250	80	16	160	120	360	280	18	340	32	80	35	10	360	112	78	
FHF 80-160	80	100	125	360	180	225	65	14	125	95	320	250	14	260	24	50	27	8	332	129	73	
FHF 80-200	80	100	125	470	180	250	65	14	125	95	345	280	14	340	32	80	35	10	345	129	80	
FHF 80-250	80	100	125	470	200	280	80	16	160	120	400	315	18	340	32	80	35	10	400	129	89	

NOTE: For model 65-315 consult table on following page.

fh-fhf\_c\_td

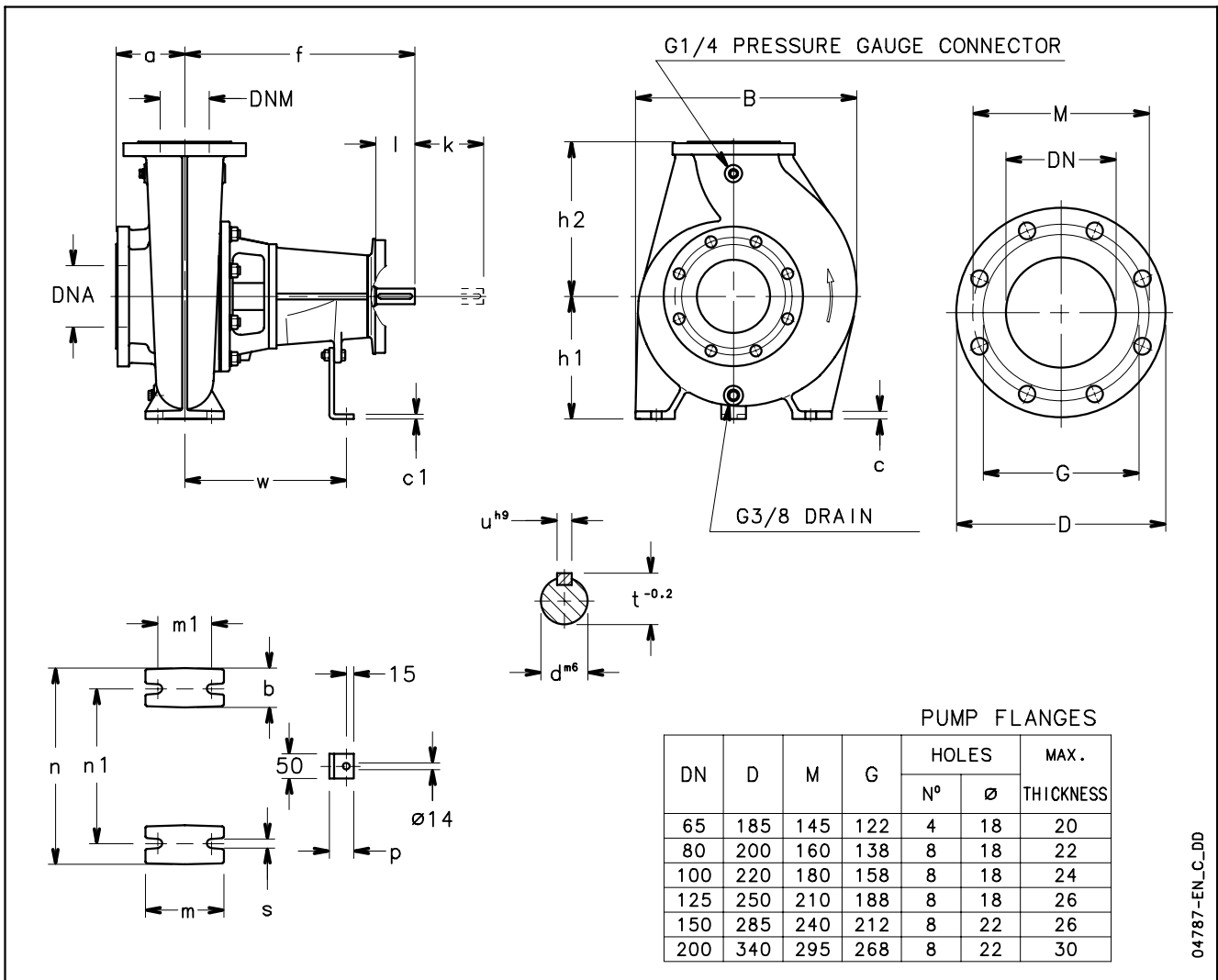




# ITT

# Lowara

## FHF SERIES BARE SHAFT DIMENSIONS AND WEIGHTS AT 50 Hz



04787-EN\_C\_DD

PUMP TYPE	DIMENSIONS (mm)																								WEIGHT kg
	PUMP								STAND								SHAFT								
	DNM	DNA	a	f	h1	h2	k	B	b	c	c1	m	m1	n	n1	s	p	w	d	l	t	u			
FHF 65-315	65	80	125	470	225	280	140	434	80	14	5	160	120	400	315	18	39	330	32	80	35	10	100		
FHF 80-315	80	100	125	470	250	315	140	451	80	16	5	160	120	400	315	18	39	330	32	80	35	10	116		
FHF 80-400	80	100	125	530	280	355	140	486	80	20	6	160	120	435	355	18	41	360	42	110	45	12	153		
FHF 100-160	100	125	125	470	225	280	140	415	80	16	5	160	120	360	280	18	39	330	32	80	35	10	67		
FHF 100-200	100	125	125	470	200	280	140	385	80	18	5	160	120	360	280	18	39	330	32	80	35	10	79		
FHF 100-250	100	125	140	470	225	280	140	425	80	18	5	160	120	400	315	18	39	330	32	80	35	10	94		
FHF 100-315	100	125	140	470	250	315	140	472	80	18	5	160	120	400	315	18	39	330	32	80	35	10	118		
FHF 100-400	100	125	140	530	280	355	140	529	100	20	6	200	150	500	400	22	41	360	42	110	45	12	162		
FHF 125-200	125	150	140	530	250	315	140	463	80	18	6	160	120	400	315	18	41	360	42	110	45	12	113		
FHF 125-250	125	150	140	470	250	355	140	474	80	18	5	160	120	400	315	18	39	330	32	80	35	10	115		
FHF 125-270	125	150	140	530	250	355	140	474	80	18	6	160	120	400	315	18	41	360	42	110	45	12	132		
FHF 125-315	125	150	140	530	280	355	140	520	100	20	6	200	150	500	400	22	41	360	42	110	45	12	143		
FHF 125-400	125	150	140	530	315	400	140	550	100	20	6	200	150	500	400	22	41	360	42	110	45	12	173		
FHF 150-250	150	200	160	535	280	375	140	550	100	20	6	200	150	500	400	22	41	360	42	110	45	12	147		
FHF 150-315	150	200	160	530	280	400	140	587	100	20	6	200	150	550	450	22	41	360	42	110	45	12	166		
FHF 150-400	150	200	160	530	315	450	140	603	100	20	6	200	150	550	450	22	41	360	42	110	45	12	195		

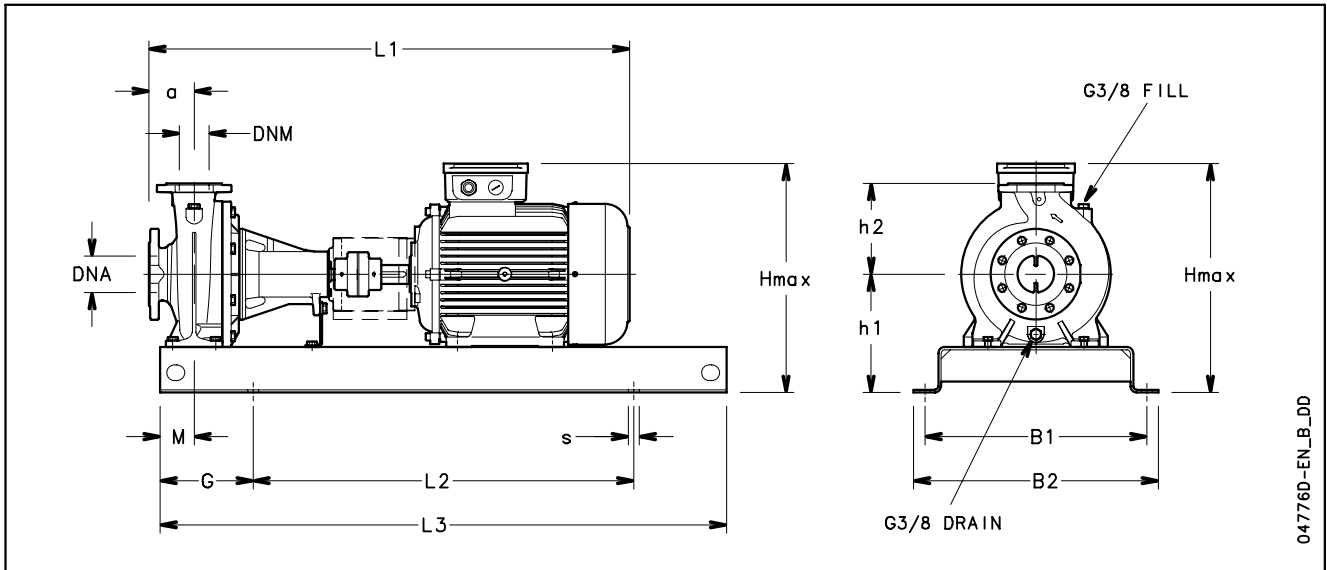
I-fhf\_b\_td



# ITT

# Lowara

## FHF SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES





# ITT

# Lowara

## FHF SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

PUMP TYPE	DIMENSIONS (mm)													s FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax			
FHF 32-125/07	32	50	80	320	360	746	540	800	130	60	212	140	352	M16	70	A2
FHF 32-125/11	32	50	80	320	360	746	540	800	130	60	212	140	352	M16	72	A2
FHF 32-160/15	32	50	80	350	390	791	600	900	150	60	232	160	392	M16	80	A3
FHF 32-160/22	32	50	80	350	390	791	600	900	150	60	232	160	392	M16	82	A3
FHF 32-200/30	32	50	80	350	390	822	600	900	150	60	260	180	440	M16	97	B1
FHF 32-200/40	32	50	80	350	390	825	600	900	150	60	260	180	440	M16	99	B1
FHF 40-125/11	40	65	80	350	390	746	600	900	150	60	212	140	352	M16	75	A2
FHF 40-125/15	40	65	80	350	390	791	600	900	150	60	212	140	352	M16	83	A3
FHF 40-125/22	40	65	80	350	390	791	600	900	150	60	212	140	352	M16	86	A3
FHF 40-160/30	40	65	80	350	390	822	600	900	150	60	232	160	392	M16	96	B1
FHF 40-160/40	40	65	80	350	390	825	600	900	150	60	232	160	400	M16	100	B1
FHF 40-200/55	40	65	100	400	450	910	660	1000	170	60	260	180	451	M20	127	C1
FHF 40-200/75	40	65	100	400	450	910	660	1000	170	60	260	180	451	M20	132	C1
FHF 40-250/110A	40	65	100	490	540	1067	840	1250	205	75	280	225	520	M20	183	C2
FHF 40-250/110	40	65	100	490	540	1067	840	1250	205	75	280	225	520	M20	183	C2
FHF 40-250/150	40	65	100	490	540	1067	840	1250	205	75	280	225	520	M20	193	C2
FHF 50-125/22	50	65	100	350	390	811	600	900	150	60	232	160	392	M16	94	A3
FHF 50-125/30	50	65	100	350	390	842	600	900	150	60	232	160	392	M16	97	B1
FHF 50-125/40	50	65	100	350	390	845	600	900	150	60	232	160	400	M16	100	B1
FHF 50-160/55	50	65	100	400	450	910	660	1000	170	60	260	180	451	M20	126	C1
FHF 50-160/75	50	65	100	400	450	910	660	1000	170	60	260	180	451	M20	130	C1
FHF 50-200/110A	50	65	100	440	490	1067	740	1120	190	60	260	200	500	M20	178	C2
FHF 50-200/110	50	65	100	440	490	1067	740	1120	190	60	260	200	500	M20	178	C2
FHF 50-250/150	50	65	100	490	540	1067	840	1250	205	75	280	225	520	M20	184	C2
FHF 50-250/185	50	65	100	490	540	1067	840	1250	205	75	280	225	520	M20	195	C2
FHF 50-250/220	50	65	100	490	540	1127	840	1250	205	75	280	225	559	M20	285	D1
FHF 65-125/40	65	80	100	350	390	845	600	900	150	75	260	180	440	M16	138	B1
FHF 65-125/55	65	80	100	400	450	910	660	1000	170	75	260	180	451	M20	156	C1
FHF 65-125/75	65	80	100	400	450	910	660	1000	170	75	260	180	451	M20	160	C1
FHF 65-160/110A	65	80	100	490	540	1067	840	1250	205	75	260	200	500	M20	169	C2
FHF 65-160/110	65	80	100	490	540	1067	840	1250	205	75	260	200	500	M20	169	C2
FHF 65-160/150	65	80	100	490	540	1067	840	1250	205	75	260	200	500	M20	185	C2
FHF 65-200/150	65	80	100	490	540	1067	840	1250	205	75	280	225	520	M20	192	C2
FHF 65-200/185	65	80	100	490	540	1067	840	1250	205	75	280	225	520	M20	200	C2
FHF 65-200/220	65	80	100	490	540	1127	840	1250	205	75	280	225	559	M20	281	D1
FHF 65-250/220	65	80	100	490	540	1237	840	1250	205	90	310	250	589	M20	289	D2
FHF 65-250/300	65	80	100	550	610	1340	940	1400	230	90	310	250	627	M24	396	E1
FHF 65-250/370	65	80	100	550	610	1340	940	1400	230	90	310	250	627	M24	422	E1
FHF 80-160/110	80	100	125	490	540	1092	840	1250	205	75	280	225	520	M20	207	C2
FHF 80-160/150	80	100	125	490	540	1092	840	1250	205	75	280	225	520	M20	217	C2
FHF 80-160/185	80	100	125	490	540	1092	840	1250	205	75	280	225	520	M20	228	C2
FHF 80-200/220	80	100	125	490	540	1262	840	1250	205	75	280	250	559	M20	311	D2
FHF 80-200/300	80	100	125	550	610	1365	940	1400	230	75	310	250	627	M24	381	E1
FHF 80-250/370	80	100	125	550	610	1365	940	1400	230	90	310	280	627	M24	412	E1
FHF 80-250/450	80	100	125	550	610	1454	940	1400	230	90	365	280	749	M24	511	E1
FHF 80-250/550	80	100	125	600	660	1563	1060	1600	270	90	390	280	792	M24	588	F1

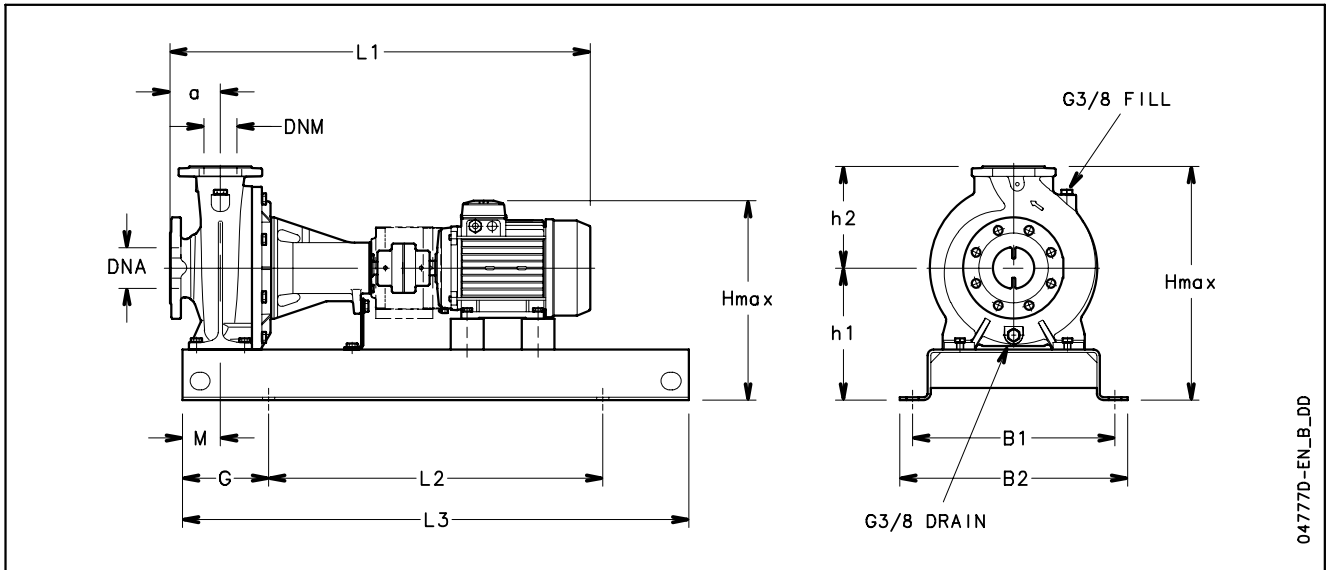
fh-fhf-2p50-en\_L\_td



# ITT

# Lowara

## FHF4 SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES





ITT

Lowara

**FHF4 SERIES MOUNTED ON BASE  
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES**

PUMP TYPE	DIMENSIONS (mm)													S FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	PUMP				STAND									
			a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax			
FHF4 32-125/02A	32	50	80	320	360	704	540	800	130	60	212	140	352	M16	74	A1
FHF4 32-125/02	32	50	80	320	360	704	540	800	130	60	212	140	352	M16	74	A1
FHF4 32-160/02	32	50	80	320	360	704	540	800	130	60	232	160	392	M16	76	A1
FHF4 32-160/03	32	50	80	320	360	704	540	800	130	60	232	160	392	M16	78	A1
FHFE4 32-200/03	32	50	80	320	360	704	540	800	130	60	260	180	440	M16	80	A1
FHF4 32-200/05	32	50	80	320	360	746	540	800	130	60	260	180	440	M16	82	A2
FHF4 40-125/02A	40	65	80	320	360	704	540	800	130	60	212	140	352	M16	61	A1
FHF4 40-125/02	40	65	80	320	360	704	540	800	130	60	212	140	352	M16	61	A1
FHF4 40-125/03	40	65	80	320	360	704	540	800	130	60	212	140	352	M16	64	A1
FHF4 40-160/03	40	65	80	320	360	704	540	800	130	60	232	160	392	M16	65	A1
FHF4 40-160/05	40	65	80	320	360	746	540	800	130	60	232	160	392	M16	66	A2
FHF4 40-200/07	40	65	100	350	390	734	600	900	150	60	260	180	440	M16	74	A2
FHF4 40-200/11	40	65	100	350	390	811	600	900	150	60	260	180	440	M16	82	A3
FHF4 40-250/11	40	65	100	400	450	811	660	1000	170	75	280	225	505	M20	109	A3
FHF4 40-250/15	40	65	100	400	450	811	660	1000	170	75	280	225	505	M20	112	A3
FHF4 40-250/22	40	65	100	400	450	888	660	1000	170	75	280	225	505	M20	135	B1
FHF4 50-125/03A	50	65	100	320	360	724	540	800	130	60	232	160	392	M16	64	A1
FHF4 50-125/03	50	65	100	320	360	724	540	800	130	60	232	160	392	M16	64	A1
FHF4 50-125/05	50	65	100	320	360	766	540	800	130	60	232	160	392	M16	66	A2
FHF4 50-160/07	50	65	100	350	390	734	600	900	150	60	260	180	440	M16	74	A2
FHF4 50-160/11	50	65	100	350	390	811	600	900	150	60	260	180	440	M16	82	A3
FHF4 50-200/11	50	65	100	350	390	811	600	900	150	60	260	200	460	M16	93	A3
FHF4 50-200/15	50	65	100	350	390	811	600	900	150	60	260	200	460	M16	96	A3
FHF4 50-250/22A	50	65	100	400	450	888	660	1000	170	75	280	225	505	M20	137	B1
FHF4 50-250/22	50	65	100	400	450	888	660	1000	170	75	280	225	505	M20	137	B1
FHF4 50-250/30	50	65	100	400	450	888	660	1000	170	75	280	225	505	M20	141	B1
FHF4 65-125/05	65	80	100	350	390	766	600	900	150	75	260	180	440	M16	90	A2
FHF4 65-125/07	65	80	100	350	390	734	600	900	150	75	260	180	440	M16	92	A2
FHF4 65-125/11	65	80	100	350	390	811	600	900	150	75	260	180	440	M16	101	A3
FHF4 65-160/11	65	80	100	400	450	811	660	1000	170	75	260	200	460	M20	106	A3
FHF4 65-160/15	65	80	100	400	450	811	660	1000	170	75	260	200	460	M20	116	A3
FHF4 65-160/22	65	80	100	400	450	888	660	1000	170	75	260	200	460	M20	135	B1
FHF4 65-200/15	65	80	100	400	450	811	660	1000	170	75	280	225	505	M20	118	A3
FHF4 65-200/22	65	80	100	440	490	888	740	1120	190	75	280	225	505	M20	139	B1
FHF4 65-200/30	65	80	100	440	490	888	740	1120	190	75	280	225	505	M20	142	B1
FHF4 65-250/30	65	80	100	440	490	998	740	1120	190	90	310	250	550	M20	166	C3
FHF4 65-250/40	65	80	100	440	490	1031	740	1120	190	90	310	250	550	M20	182	C3
FHF4 65-250/55	65	80	100	440	490	1058	740	1120	190	90	310	250	550	M20	199	C4
FHF4 80-160/15	80	100	125	400	450	836	660	1000	170	75	280	225	505	M20	136	A3
FHF4 80-160/22	80	100	125	440	490	913	740	1120	190	75	280	225	505	M20	152	B1
FHF4 80-200/30	80	100	125	440	490	1023	740	1120	190	75	280	250	530	M20	171	C3
FHF4 80-200/40	80	100	125	440	490	1056	740	1120	190	75	280	250	530	M20	179	C3
FHF4 80-250/40	80	100	125	490	540	1056	840	1250	205	90	310	280	580	M20	185	C3
FHF4 80-250/55	80	100	125	490	540	1083	840	1250	205	90	310	280	580	M20	199	C4
FHF4 80-250/75	80	100	125	490	540	1083	840	1250	205	90	310	280	580	M20	206	C4

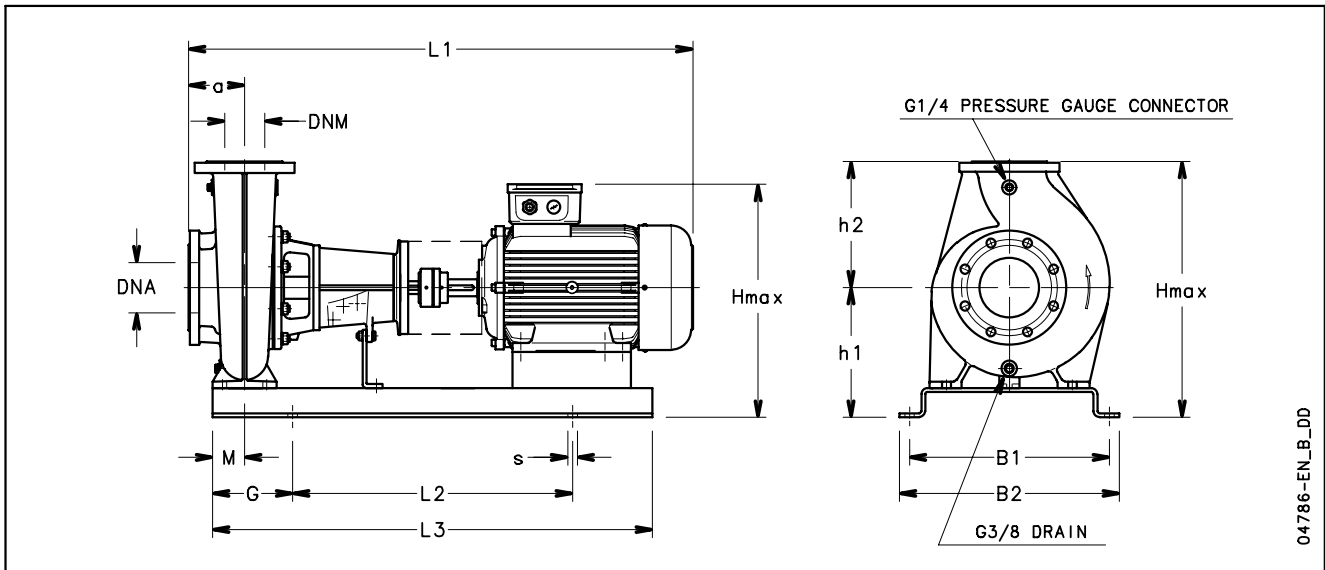
fh-fhf4-4p50-en\_f\_td



ITT

Lowara

**FHF-FHF4 SERIES MOUNTED ON BASE  
DIMENSIONS AND WEIGHTS AT 50 Hz**



**FHF SERIES MOUNTED ON BASE  
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES**

PUMP TYPE	DIMENSIONS (mm)													s FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax			
FHF 100-160/185	100	125	125	500	550	1203	700	1100	200	90	298	280	578	M20	239	C5
FHF 100-160/220	100	125	125	500	550	1263	830	1270	220	90	298	280	578	M20	294	D2
FHF 100-160/300	100	125	125	500	550	1366	830	1270	220	90	298	280	615	M20	356	E1
FHF 100-200/185	100	125	125	500	550	1203	700	1100	200	90	273	280	553	M20	246	C5
FHF 100-200/300	100	125	125	500	550	1366	830	1270	220	90	273	280	590	M20	361	E1
FHF 100-200/370	100	125	125	500	550	1366	830	1270	220	90	273	280	590	M20	390	E1
FHF 100-200/450	100	125	125	610	670	1455	940	1450	240	90	318	280	702	M24	540	E1
FHF 100-250/300	100	125	140	500	550	1381	830	1270	200	90	298	280	615	M20	383	E1
FHF 100-250/450	100	125	140	500	550	1470	830	1270	220	90	298	280	682	M20	506	E1
FHF 100-250/550	100	125	140	610	670	1579	940	1450	240	90	343	280	745	M24	615	F1
FHF 100-250/750	100	125	140	680	740	1685	1050	1570	260	90	373	280	845	M24	856	G1
FHF 100-250/900	100	125	140	680	740	1685	1050	1570	260	90	373	280	845	M24	879	G1
FHF 125-200/300	125	150	140	500	550	1441	830	1270	220	90	323	315	640	M20	408	E2
FHF 125-200/450	125	150	140	610	670	1530	940	1450	240	90	343	315	727	M24	577	E2
FHF 125-200/550	125	150	140	610	670	1639	940	1450	240	90	343	315	745	M24	625	F2
FHF 125-270/750	125	150	140	700	750	1745	600+600	1600	200	90	423	355	895	M20	945	G2
FHF 125-270/900	125	150	140	700	750	1745	600+600	1600	200	90	423	355	895	M20	968	G2
FHF 125-270/1100	125	150	140	820	870	1918	600+600	1600	200	90	478	355	1008	M20	1214	G2
FHF 125-270/1320	125	150	140	820	870	1918	600+600	1600	200	90	478	355	1008	M20	1276	G2

I-fhf-2p50-en\_f\_td



# ITT

# Lowara

## FHF4 SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

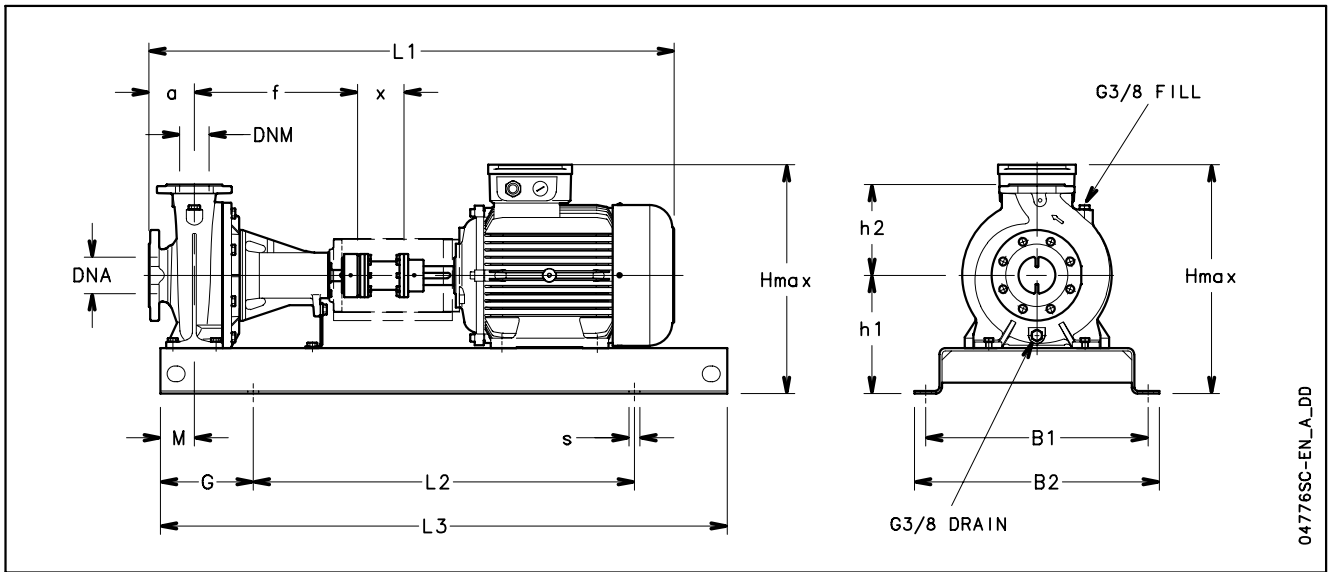
PUMP TYPE	DIMENSIONS (mm)														S FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax				
FHF4 65-315/40	65	80	125	500	550	1057	660	1020	180	90	298	280	578	M20	208	C3	
FHF4 65-315/55	65	80	125	500	550	1084	660	1020	180	90	298	280	578	M20	217	C4	
FHF4 65-315/75	65	80	125	500	550	1084	660	1020	180	90	298	280	578	M20	224	C4	
FHF4 65-315/110A	65	80	125	500	550	1203	700	1100	200	90	298	280	578	M20	286	C5	
FHF4 65-315/110	65	80	125	500	550	1203	700	1100	200	90	298	280	578	M20	286	C5	
FHF4 80-315/55	80	100	125	390	430	1084	600	920	160	90	303	315	618	M16	219	C4	
FHF4 80-315/75	80	100	125	500	550	1084	660	1020	180	90	323	315	638	M20	242	C4	
FHF4 80-315/110	80	100	125	500	550	1203	700	1100	200	90	323	315	638	M20	307	C5	
FHF4 80-315/150	80	100	125	500	550	1203	700	1100	200	90	323	315	638	M20	310	C5	
FHF4 80-400/185	80	100	125	500	550	1323	830	1270	220	90	353	355	708	M20	391	D3	
FHF4 80-400/220	80	100	125	500	550	1361	830	1270	220	90	353	355	708	M20	413	D3	
FHF4 80-400/300	80	100	125	500	550	1426	830	1270	220	90	353	355	708	M20	450	E2	
FHF4 100-160/22	100	125	125	500	550	1024	660	1020	180	90	298	280	578	M20	160	C3	
FHF4 100-160/30	100	125	125	500	550	1024	660	1020	180	90	298	280	578	M20	163	C3	
FHF4 100-160/40	100	125	125	500	550	1057	660	1020	180	90	298	280	578	M20	175	C3	
FHF4 100-200/22	100	125	125	390	430	1024	600	920	160	90	253	280	533	M16	153	C3	
FHF4 100-200/40	100	125	125	500	550	1057	660	1020	180	90	273	280	553	M20	184	C3	
FHF4 100-200/55	100	125	125	500	550	1084	660	1020	180	90	273	280	553	M20	194	C4	
FHF4 100-250/40	100	125	140	500	550	1072	660	1020	180	90	298	280	578	M20	202	C3	
FHF4 100-250/55	100	125	140	500	550	1099	660	1020	180	90	298	280	578	M20	211	C4	
FHF4 100-250/75	100	125	140	500	550	1099	700	1100	200	90	298	280	578	M20	218	C4	
FHF4 100-250/110	100	125	140	500	550	1218	700	1100	200	90	298	280	578	M20	280	C5	
FHF4 100-315/150	100	125	140	500	550	1218	700	1100	200	90	323	315	638	M20	312	C5	
FHF4 100-315/185	100	125	140	500	550	1278	700	1100	200	90	323	315	638	M20	349	D2	
FHF4 100-315/220	100	125	140	500	550	1316	830	1270	220	90	323	315	638	M20	372	D2	
FHF4 100-400/300	100	125	140	610	670	1441	940	1420	240	110	373	355	728	M24	502	E2	
FHF4 100-400/450	100	125	140	610	670	1560	940	1420	240	110	373	355	757	M24	644	F2	
FHF4 125-200/40	125	150	140	500	550	1132	660	1020	180	90	323	315	638	M20	223	C6	
FHF4 125-200/55	125	150	140	500	550	1159	700	1100	200	90	323	315	638	M20	235	C7	
FHF4 125-200/75	125	150	140	500	550	1159	700	1100	200	90	323	315	638	M20	242	C7	
FHF4 125-250/75	125	150	140	500	550	1099	660	1020	180	90	323	355	678	M20	241	C4	
FHF4 125-250/110	125	150	140	500	550	1218	700	1100	200	90	323	355	678	M20	306	C5	
FHF4 125-250/150	125	150	140	500	550	1218	700	1100	200	90	323	355	678	M20	309	C5	
FHF4 125-250/185	125	150	140	500	550	1278	700	1100	200	90	323	355	678	M20	342	D2	
FHF4 125-270/75	125	150	140	500	550	1159	700	1100	200	90	323	355	678	M20	261	C7	
FHF4 125-270/110	125	150	140	500	550	1278	830	1270	220	90	323	355	678	M20	328	C8	
FHF4 125-270/150	125	150	140	500	550	1278	830	1270	220	90	323	355	678	M20	331	C8	
FHF4 125-315/185	125	150	140	610	670	1338	940	1420	240	110	373	355	728	M24	424	D3	
FHF4 125-315/220	125	150	140	610	670	1376	940	1420	240	110	373	355	728	M24	446	D3	
FHF4 125-315/300	125	150	140	610	670	1441	940	1420	240	110	373	355	728	M24	483	E2	
FHF4 125-315/370	125	150	140	610	670	1560	940	1420	240	110	373	355	757	M24	604	F2	
FHF4 125-400/220	125	150	140	500	550	1376	830	1270	220	110	388	400	788	M20	440	D3	
FHF4 125-400/300	125	150	140	500	550	1441	830	1270	220	110	388	400	788	M20	479	E2	
FHF4 125-400/450	125	150	140	610	670	1560	940	1420	240	110	408	400	808	M24	668	F2	
FHF4 125-400/550	125	150	140	610	670	1639	940	1420	240	110	408	400	810	M24	742	G2	
FHF4 150-250/150	150	200	160	610	670	1303	940	1420	240	110	373	375	748	M24	395	C8	
FHF4 150-250/185	150	200	160	610	670	1363	940	1420	240	110	373	375	748	M24	428	D3	
FHF4 150-250/220	150	200	160	610	670	1401	940	1420	240	110	373	375	748	M24	450	D3	
FHF4 150-250/300	150	200	160	610	670	1466	940	1420	240	110	373	375	748	M24	487	E2	
FHF4 150-315/300	150	200	160	610	670	1461	940	1420	240	110	373	400	773	M24	506	E2	
FHF4 150-315/370	150	200	160	610	670	1580	940	1420	240	110	373	400	773	M24	627	F2	
FHF4 150-315/450	150	200	160	610	670	1580	940	1420	240	110	373	400	773	M24	648	F2	
FHF4 150-315/550	150	200	160	610	670	1659	940	1420	240	110	373	400	775	M24	711	G2	
FHF4 150-400/300	150	200	160	610	670	1461	940	1420	240	110	408	450	858	M24	543	E2	
FHF4 150-400/370	150	200	160	610	670	1580	940	1420	240	110	408	450	858	M24	669	F2	
FHF4 150-400/450	150	200	160	610	670	1580	940	1420	240	110	408	450	858	M24	690	F2	
FHF4 150-400/550	150	200	160	680	740	1659	1050	1570	260	110	408	450	858	M24	780	G2	
FHF4 150-400/750	150	200	160	680	740	1765	1050	1570	260	110	408	450	880	M24	976	H1	
FHF4 150-400/900	150	200	160	680	740	1765	1050	1570	260	110	408	450	880	M24	1016	H1	



# ITT

# Lowara

## FHF SC SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



04776SC-EN\_A\_DD





# ITT

# Lowara

## FHF SC SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

PUMP TYPE	DIMENSIONS (mm)															S FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax	f	x			
FHF 32-125/07 SC	32	50	80	320	360	845	540	800	130	60	212	140	352	360	100	M16	72	A2S
FHF 32-125/11 SC	32	50	80	320	360	845	540	800	130	60	212	140	352	360	100	M16	74	A2S
FHF 32-160/15 SC	32	50	80	350	390	889	600	900	150	60	232	160	392	360	100	M16	82	A3S
FHF 32-160/22 SC	32	50	80	350	390	889	600	900	150	60	232	160	392	360	100	M16	84	A3S
FHF 32-200/30 SC	32	50	80	350	390	920	600	900	150	60	260	180	440	360	100	M16	99	B1S
FHF 32-200/40 SC	32	50	80	350	390	923	600	900	150	60	260	180	440	360	100	M16	101	B1S
FHF 40-125/11 SC	40	65	80	350	390	845	600	900	150	60	212	140	352	360	100	M16	77	A2S
FHF 40-125/15 SC	40	65	80	350	390	889	600	900	150	60	212	140	352	360	100	M16	85	A3S
FHF 40-125/22 SC	40	65	80	350	390	889	600	900	150	60	212	140	352	360	100	M16	88	A3S
FHF 40-160/30 SC	40	65	80	350	390	920	600	900	150	60	232	160	392	360	100	M16	98	B1S
FHF 40-160/40 SC	40	65	80	350	390	923	600	900	150	60	232	160	400	360	100	M16	102	B1S
FHF 40-200/55 SC	40	65	100	400	450	1007	660	1000	170	60	260	180	451	360	100	M20	129	C1S
FHF 40-200/75 SC	40	65	100	400	450	1007	660	1000	170	60	260	180	451	360	100	M20	134	C1S
FHF 40-250/110A SC	40	65	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	185	C2S
FHF 40-250/110 SC	40	65	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	185	C2S
FHF 40-250/150 SC	40	65	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	195	C2S
FHF 50-125/22 SC	50	65	100	350	390	909	600	900	150	60	232	160	392	360	100	M16	96	A3S
FHF 50-125/30 SC	50	65	100	350	390	940	600	900	150	60	232	160	392	360	100	M16	99	B1S
FHF 50-125/40 SC	50	65	100	350	390	943	600	900	150	60	232	160	400	360	100	M16	102	B1S
FHF 50-160/55 SC	50	65	100	400	450	1007	660	1000	170	60	260	180	451	360	100	M20	128	C1S
FHF 50-160/75 SC	50	65	100	400	450	1007	660	1000	170	60	260	180	451	360	100	M20	132	C1S
FHF 50-200/110A SC	50	65	100	440	490	1164	740	1120	190	60	260	200	500	360	100	M20	180	C2S
FHF 50-200/110 SC	50	65	100	440	490	1164	740	1120	190	60	260	200	500	360	100	M20	180	C2S
FHF 50-250/150 SC	50	65	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	186	C2S
FHF 50-250/185 SC	50	65	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	197	C2S
FHF 50-250/220 SC	50	65	100	490	540	1224	840	1250	205	75	280	225	559	360	100	M20	287	D1S
FHF 65-125/40 SC	65	80	100	350	390	943	600	900	150	75	260	180	440	360	100	M16	140	B1S
FHF 65-125/55 SC	65	80	100	400	450	1007	660	1000	170	75	260	180	451	360	100	M20	158	C1S
FHF 65-125/75 SC	65	80	100	400	450	1007	660	1000	170	75	260	180	451	360	100	M20	162	C1S
FHF 65-160/110A SC	65	80	100	490	540	1164	840	1250	205	75	260	200	500	360	100	M20	171	C2S
FHF 65-160/110 SC	65	80	100	490	540	1164	840	1250	205	75	260	200	500	360	100	M20	171	C2S
FHF 65-160/150 SC	65	80	100	490	540	1164	840	1250	205	75	260	200	500	360	100	M20	187	C2S
FHF 65-200/150 SC	65	80	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	194	C2S
FHF 65-200/185 SC	65	80	100	490	540	1164	840	1250	205	75	280	225	520	360	100	M20	202	C2S
FHF 65-200/220 SC	65	80	100	490	540	1224	840	1250	205	75	280	225	559	360	100	M20	283	D1S
FHF 65-250/220 SC	65	80	100	490	540	1334	840	1250	205	90	310	250	589	470	100	M20	291	D2S
FHF 65-250/300 SC	65	80	100	550	610	1477	940	1400	230	90	310	250	627	470	140	M24	399	E1S
FHF 65-250/370 SC	65	80	100	550	610	1477	940	1400	230	90	310	250	627	470	140	M24	425	E1S
FHF 80-160/110 SC	80	100	125	490	540	1189	840	1250	205	75	280	225	520	360	100	M20	209	C2S
FHF 80-160/150 SC	80	100	125	490	540	1189	840	1250	205	75	280	225	520	360	100	M20	219	C2S
FHF 80-160/185 SC	80	100	125	490	540	1189	840	1250	205	75	280	225	520	360	100	M20	230	C2S
FHF 80-200/220 SC	80	100	125	490	540	1359	840	1250	205	75	280	250	559	470	100	M20	313	D2S
FHF 80-200/300 SC	80	100	125	550	610	1502	940	1400	230	75	310	250	627	470	140	M24	384	E1S
FHF 80-250/370 SC	80	100	125	550	610	1502	940	1400	230	90	310	280	627	470	140	M24	415	E1S
FHF 80-250/450 SC	80	100	125	550	610	1591	940	1400	230	90	365	280	749	470	140	M24	514	E1S
FHF 80-250/550 SC	80	100	125	600	660	1700	1060	1600	270	90	390	280	792	470	140	M24	593	F1S

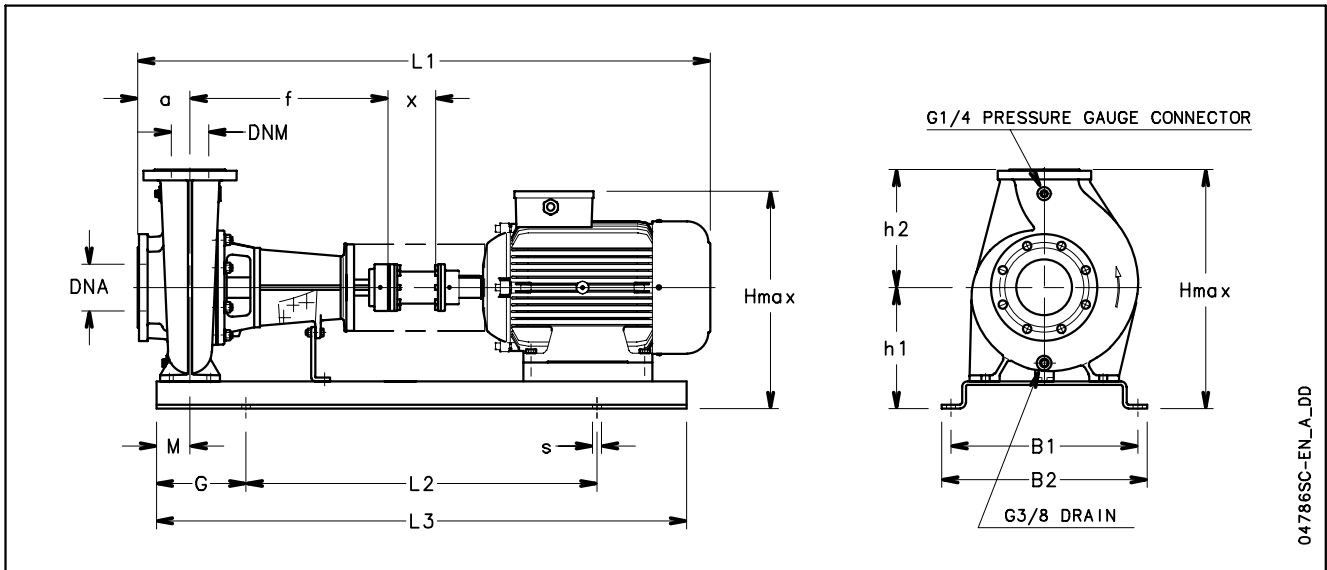
fh-fhf-sc-2p50-en\_d\_td



# ITT

# Lowara

## FHF SC SERIES MOUNTED ON BASE DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



PUMP TYPE	DIMENSIONS (mm)																s FOR SCREWS	WEIGHT kg	COUPLING TYPE
	DNM	DNA	a	B1	B2	L1	L2	L3	G	M	h1	h2	Hmax	f	x				
FHF 100-160/185 SC	100	125	125	500	550	1383	700	1270	200	90	298	280	578	470	140	M20	261	C9S	
FHF 100-160/220 SC	100	125	125	500	550	1399	830	1270	220	90	298	280	578	470	140	M20	367	D4S	
FHF 100-160/300 SC	100	125	125	500	550	1502	830	1400	220	90	298	280	615	470	140	M20	480	E1S	
FHF 100-200/185 SC	100	125	125	500	550	1383	700	1270	200	90	273	280	553	470	140	M20	268	C9S	
FHF 100-200/300 SC	100	125	125	500	550	1502	830	1400	220	90	273	280	590	470	140	M20	485	E1S	
FHF 100-200/370 SC	100	125	125	500	550	1502	830	1400	220	90	273	280	590	470	140	M20	516	E1S	
FHF 100-200/450 SC	100	125	125	610	670	1591	940	1450	240	90	318	280	702	470	140	M24	672	E1S	
FHF 100-250/300 SC	100	125	140	500	550	1517	830	1400	220	90	298	280	615	470	140	M20	507	E1S	
FHF 100-250/450 SC	100	125	140	500	550	1606	830	1400	220	90	298	280	682	470	140	M20	640	E1S	
FHF 100-250/550 SC	100	125	140	610	670	1715	940	1450	240	90	343	280	745	470	140	M24	816	G0S	
FHF 100-250/750 SC	100	125	140	680	740	1821	1050	1570	260	90	373	280	845	470	140	M24	1072	G1S	
FHF 100-250/900 SC	100	125	140	680	740	1821	1050	1570	260	90	373	280	845	470	140	M24	1122	G1S	
FHF 125-200/300 SC	125	150	140	500	550	1577	830	1400	220	90	323	315	640	530	140	M20	532	E3S	
FHF 125-200/450 SC	125	150	140	610	670	1666	940	1450	240	90	343	315	727	530	140	M24	808	E3S	
FHF 125-200/550 SC	125	150	140	610	670	1775	940	1450	240	90	343	315	745	530	140	M24	821	F2S	
FHF 125-270/750 SC	125	150	140	700	750	1962	600+600	1700	200	90	423	355	895	530	140	M20	1163	G2S	
FHF 125-270/900 SC	125	150	140	700	750	1962	600+600	1700	200	90	423	355	895	530	140	M20	1213	G2S	
FHF 125-270/1100 SC	125	150	140	820	870	2132	600+600	1700	200	90	478	355	1008	530	140	M20	1208	G2S	
FHF 125-270/1320 SC	125	150	140	820	870	2132	600+600	1700	200	90	478	355	1008	530	140	M20	1312	H0S	

I-fhf-sc-2p50-en\_d\_td



**ITT**

**Lowara**

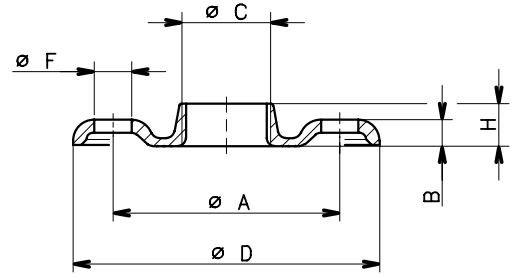
# **ACCESSORIES**



## DIMENSIONS OF ROUND THREADED COUNTERFLANGES ACCORDING TO EN 1092-1

DN	ø C	DIMENSIONS (mm)				HOLES		
		ø A	B	ø D	H	ø F	N°	PN
32	Rp 1¼	100	13	140	16	18	4	16
40	Rp 1½	110	14	150	19	18	4	16
50	Rp 2	125	16	165	24	18	4	16
65	Rp 2½	145	16	185	23	18	4	16
80	Rp 3	160	17	200	27	18	8	16
100	Rp 4	180	18	220	31	18	8	16

fh-ctf-tonde-f-en\_a\_td

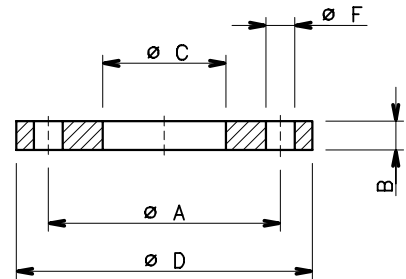


04430\_B\_DD

## DIMENSIONS OF ROUND WELD-ON COUNTERFLANGES ACCORDING TO EN 1092-1

DN	ø C	DIMENSIONS (mm)			HOLES		
		ø A	B	ø D	ø F	N°	PN
65	77	145	18	185	18	4	16
80	90	160	20	200	18	8	16
100	115,5	180	22	220	18	8	16
125	141,5	210	22	250	18	8	16
150	170,5	240	24	285	22	8	16
200	221,5	295	24	340	22	8	10

fh-ctf-tonde-s-en\_a\_td

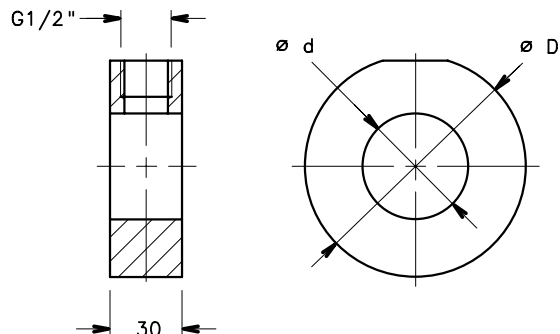


04431\_A\_DD

## AISI 304 FLANGE WITH PRESSURE GAUGE CONNECTOR

DESIGNATION	DIMENSIONS (mm)	
	d	D
25	29	70
32	36	82
40	44	92
50	54	107
65	69	127
80	85	142
100	105	162

fh-fla-manom-en\_a\_td



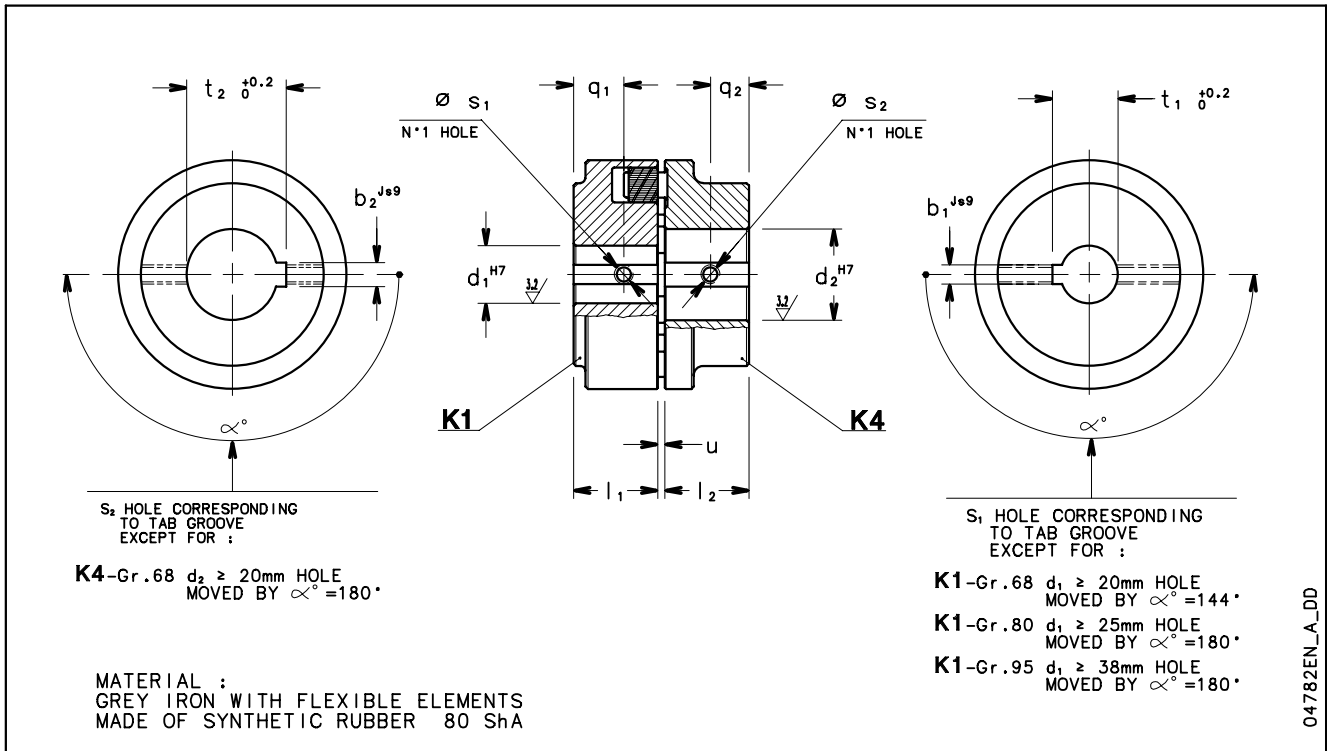
04781\_A\_DD



# ITT

# Lowara

## FLEXIBLE COUPLING DIMENSIONS



REF.	DENOMINATION	DIMENSIONS (mm)												
		K1						K4						
		PUMP-SIDE HALF COUPLING						MOTOR-SIDE HALF COUPLING						
SIZE x $d_1$ x $d_2$	$d_1^{H7}$	$l_1$	$b_1^{js9}$	$t_1^{+0.2}$	$s_1$	$q_1$	$u$	$d_2^{H7}$	$l_2$	$b_2^{js9}$	$t_2^{+0.2}$	$s_2$	$q_2$	
A1	B 68 x 24 x 14	24	20	8	27,3	M6	10	2 ÷ 4	14	20	5	16,3	M6	8
A2	B 68 x 24 x 19	24	20	8	27,3	M6	10	2 ÷ 4	19	20	6	21,8	M6	8
A3	B 68 x 24 x 24	24	20	8	27,3	M6	10	2 ÷ 4	24	20	8	27,3	M6	8
B1	B 80 x 24 x 28	24	30	8	27,3	M6	19	2 ÷ 4	28	30	8	31,3	M6	12
C1	B 95 x 24 x 38	24	35	8	27,3	M6	20	2 ÷ 4	38	35	10	41,3	M6	15
C2	B 95 x 24 x 42	24	35	8	27,3	M6	20	2 ÷ 4	42	35	12	45,3	M6	15
C3	B 95 x 32 x 28	32	35	10	35,3	M6	20	2 ÷ 4	28	35	8	31,3	M6	15
C4	B 95 x 32 x 38	32	35	10	35,3	M6	20	2 ÷ 4	38	35	10	41,3	M6	15
C5	B 95 x 32 x 42	32	35	10	35,3	M6	20	2 ÷ 4	42	35	12	45,3	M6	15
C6	B 95 x 42 x 28	42	35	12	45,3	M6	20	2 ÷ 4	28	35	8	31,3	M6	15
C7	B 95 x 42 x 38	42	35	12	45,3	M6	20	2 ÷ 4	38	35	10	41,3	M6	15
C8	B 95 x 42 x 42	42	35	12	45,3	M6	20	2 ÷ 4	42	35	12	45,3	M6	15
D1	B 110 x 24 x 48	24	40	8	27,3	M6	22	2 ÷ 4	48	40	14	51,8	M6	18
D2	B 110 x 32 x 48	32	40	10	35,3	M6	22	2 ÷ 4	48	40	14	51,8	M6	18
D3	B 110 x 42 x 48	42	40	12	45,3	M6	22	2 ÷ 4	48	40	14	51,8	M6	18
E1	B 125 x 32 x 55	32	50	10	35,3	M8	30	2 ÷ 4	55	50	16	59,3	M8	20
E2	B 125 x 42 x 55	42	50	12	45,3	M8	30	2 ÷ 4	55	50	16	59,3	M8	20
F1	B 140 x 32 x 60	32	55	10	35,3	M8	13	2 ÷ 4	60	55	18	64,4	M8	22
F2	B 140 x 42 x 60	42	55	12	45,3	M8	13	2 ÷ 4	60	55	18	64,4	M8	22
G1	B 160 x 32 x 65	32	60	10	35,3	M10	13	2 ÷ 6	65	60	18	69,4	M10	25
G2	B 160 x 42 x 65	42	60	12	45,3	M10	13	2 ÷ 6	65	60	18	69,4	M10	25
H1	B 180 x 42 x 75	42	70	12	45,3	M12	16	2 ÷ 6	75	70	20	79,9	M12	32

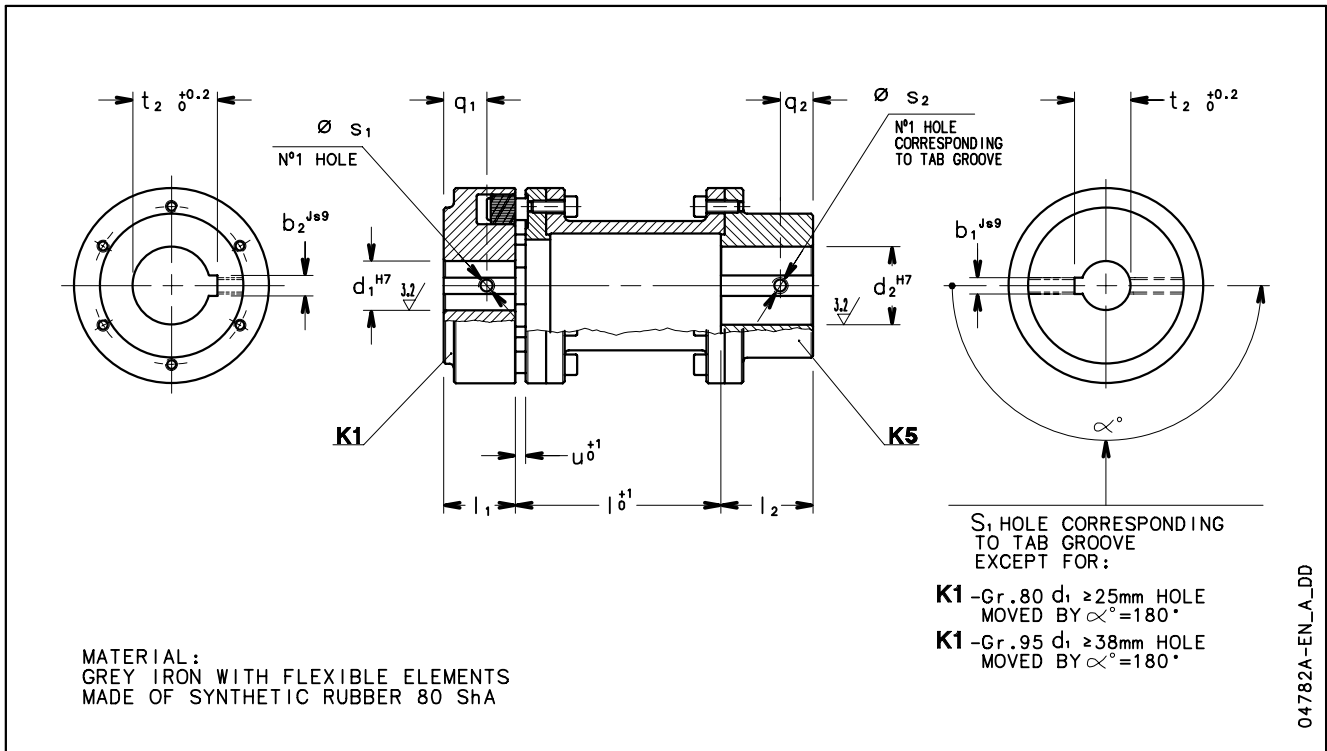
giunto-elastico-en\_b\_td



# ITT

# Lowara

## SPACER COUPLING DIMENSIONS

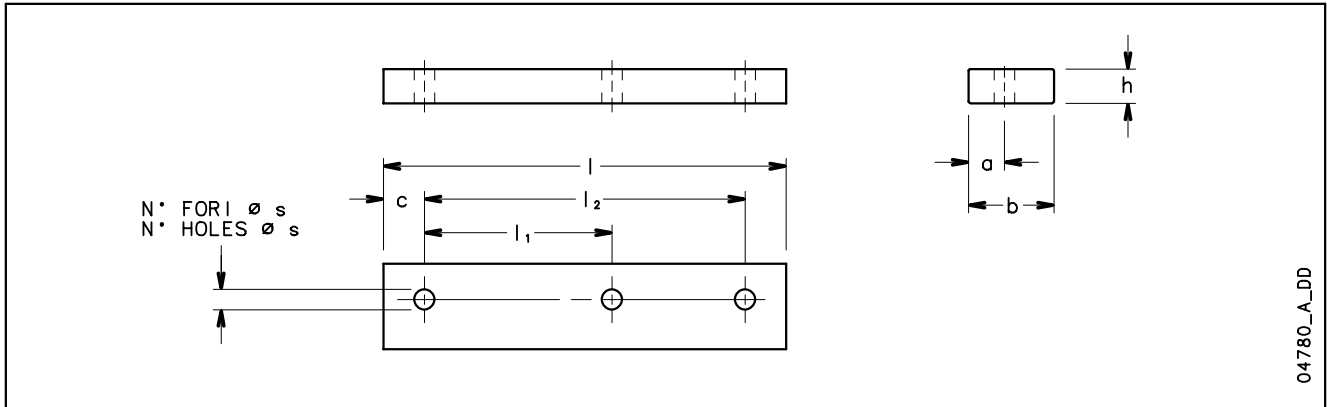


REF.	DENOMINATION	DIMENSIONS (mm)													
		K1							K5						
		PUMP-SIDE HALF COUPLING							MOTOR-SIDE HALF COUPLING						
SIZE x l x d <sub>1</sub> x d <sub>2</sub>	$l_0^{+1}$	$d_1^{H7}$	$l_1$	$b_1^{js9}$	$t_1^{+0.2}$	$s_1$	$q_1$	$u$	$d_2^{H7}$	$l_2$	$b_2^{js9}$	$t_2^{+0.2}$	$s_2$	$q_2$	
A2S	H 80-100 x 24 x 19	100	24	30	8	27,3	M6	19	5	19	45	6	21,8	M6	15
A3S	H 80-100 x 24 x 24	100	24	30	8	27,3	M6	19	5	24	45	8	27,3	M6	15
B1S	H 80-100 x 24 x 28	100	24	30	8	27,3	M6	19	5	28	45	8	31,3	M6	15
C1S	H 95-100 x 24 x 38	100	24	35	8	27,3	M6	20	5	38	45	10	41,3	M6	20
C2S	H 95-100 x 24 x 42	100	24	35	8	27,3	M6	20	5	42	45	12	45,3	M6	20
C3S	H 95-100 x 32 x 28	100	32	35	10	35,3	M6	20	5	28	45	8	31,3	M6	20
C4S	H 95-100 x 32 x 38	100	32	35	10	35,3	M6	20	5	38	45	10	41,3	M6	20
C9S	H 95-140 x 32 x 42	140	32	35	10	35,3	M6	20	5	42	45	12	45,3	M6	20
D1S	H 110-100 x 24 x 48	100	24	40	8	27,3	M6	22	5	48	50	14	51,8	M6	25
D2S	H 110-100 x 32 x 48	100	32	40	10	35,3	M6	22	5	48	50	14	51,8	M6	25
D4S	H 110-140 x 32 x 48	140	32	40	10	35,3	M6	22	5	48	50	14	51,8	M6	25
E0S	H 125-100 x 24 x 55	100	24	50	8	27,3	M8	30	5	55	50	16	59,3	M8	25
E1S	H 125-140 x 32 x 55	140	32	50	10	35,3	M8	30	5	55	50	16	59,3	M8	25
E3S	H 125-140 x 42 x 55	140	42	50	12	45,3	M8	30	5	55	50	16	59,3	M8	25
F1S	H 140-140 x 32 x 60	140	32	55	10	35,3	M8	13	5	60	65	18	64,4	M8	30
F2S	H 140-140 x 42 x 60	140	42	55	12	45,3	M8	13	5	60	65	18	64,4	M8	30
G0S	H 160-140 x 32 x 60	140	32	60	10	35,3	M10	13	6	60	70	18	64,4	M10	35
G1S	H 160-140 x 32 x 65	140	32	60	10	35,3	M10	13	6	65	70	18	69,4	M10	35
G2S	H 160-140 x 42 x 65	140	42	60	12	45,3	M10	13	6	65	70	18	69,4	M10	35
H0S	H 180-140 x 42 x 65	140	42	70	12	45,3	M12	16	6	65	80	18	69,4	M12	40

giunto-elastico-con-sp-en\_c\_td



## MOTOR SHIM FOR FHF 32 ÷ 80 VERSIONS



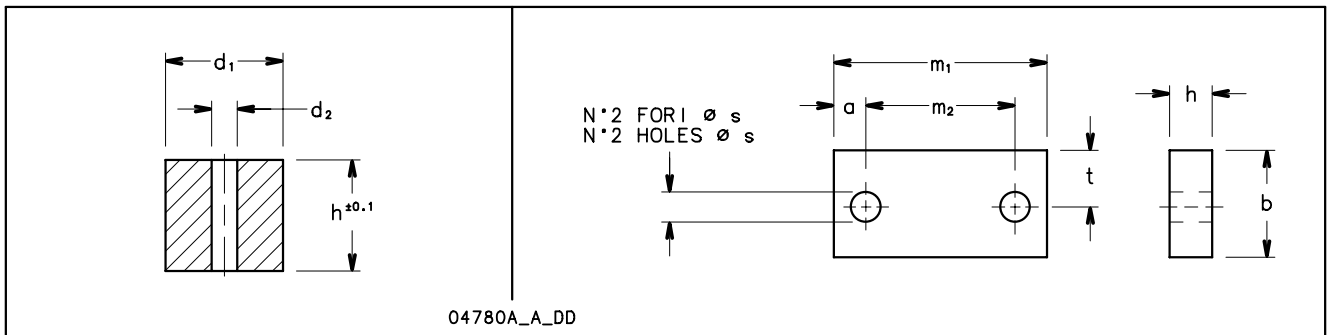
04780\_A\_DD

DENOMINATION					DIMENSIONS (mm)				HOLES	
b	x	h	x	l	a	l <sub>1</sub>	l <sub>2</sub>	c	N°	ø s
35	12	125		125	17	100	-	12,5	2	10
35	20	125		125	17	100	-	12,5	2	10
40	8	180		180	17	140	-	20	2	14
40	10	155		155	20	100	125	15	3	10
40	12	155		155	20	100	125	15	3	10
40	12	180		180	17	140	-	20	2	14
40	20	180		180	17	140	-	20	2	14
40	30	155		155	20	100	125	15	3	10
40	40	180		180	17	140	-	20	2	14
50	8	226		226	21	140	178	24	3	14
50	20	226		226	21	140	178	24	3	14
50	20	334		334	20	241	279	35	3	14
50	20	304		304	25	210	254	25	3	16
80	30	360		360	26,5	-	311	24,5	2	18
90	30	406		406	30	-	349	28,5	2	22

sp-piatti-mot-fhf-en\_b\_td

### CYLINDRICAL THICKNESS OF MOTORE

### PUMP THICKNESS



04780A\_A\_DD

DIMENSIONS (mm)			
DENOMINATION			d <sub>2</sub>
d <sub>1</sub>	x	h	d <sub>2</sub>
45		41	10
45		61	10
45		89	10
55		52	12
55		70	12
55		80	12
55		90	12
55		100	12
65		60	16
65		68	16
65		78	16
65		80	16
65		88	16
65		98	16

sp-tondi-mot-fhf-en\_a\_td

DIMENSIONS (mm)							
DENOMINATION			a	m <sub>2</sub>	ø s	t	
b	x	h	x	m <sub>1</sub>	ø s	t	
40	10	160		25	110	14	16,5
40	20	160		25	110	14	16,5
40	25	160		25	110	14	16,5
40	30	160		25	110	14	16,5
70	20	125		15	95	14	37,5
80	10	160		20	120	18	42,5
80	25	160		20	120	18	42,5
80	30	160		20	120	18	42,5

sp-pompa-fhf-en\_a\_td



**ITT**

**Lowara**

# **TECHNICAL APPENDIX**



## NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height  $h_z$  at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (\text{NPSH}_r + 0.5) + h_f + h_{pv} \quad \textcircled{1}$$

where:

**h<sub>p</sub>** is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid;  $h_p$  is the quotient between the barometric pressure and the specific weight of the liquid.

**h<sub>z</sub>** is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.;  $h_z$  is negative when the liquid level is lower than the pump axis.

**h<sub>f</sub>** is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.

**h<sub>pv</sub>** is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid.  $h_{pv}$  is the quotient between the Pv vapour pressure and the liquid's specific weight.

**0,5** is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

<b>Water temperature (°C)</b>	20	40	60	80	90	110	120
<b>Suction loss (m)</b>	0,2	0,7	2,0	5,0	7,4	15,4	21,5

<b>Elevation above sea level (m)</b>	500	1000	1500	2000	2500	3000
<b>Suction loss (m)</b>	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables at pages 131-132 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Make the following calculation:

Liquid: water at ~15°C  $\gamma = 1 \text{ kg/dm}^3$

Flow rate required: 30 m<sup>3</sup>/h

Head for required delivery: 43 m.

Suction lift: 3,5 m.

The selection is an FHE 40-200/75 pump whose NPSH required value is, at 30 m<sup>3</sup>/h, di 2,5 m.

For water at 15 °C

$$h_p = P_a / \gamma = 10,33\text{m}, h_{pv} = P_v / \gamma = 0,174\text{m} (0,01701 \text{ bar})$$

The  $H_f$  flow resistance in the suction line with foot valves is ~ 1,2 m.

By substituting the parameters in formula  $\textcircled{1}$  with the numeric values above, we have:

$$10,33 + (-3,5) \geq (2,5 + 0,5) + 1,2 + 0,17$$

from which we have: 6,8 > 4,4

The relation is therefore verified.



# ITT

# Lowara

## TECHNICAL APPENDIX VAPOUR PRESSURE PS VAPOUR PRESSURE AND $\rho$ DENSITY OF WATER TABLE

t °C	T K	ps bar	$\rho$ kg/dm <sup>3</sup>	t °C	T K	ps bar	$\rho$ kg/dm <sup>3</sup>	t °C	T K	ps bar	$\rho$ kg/dm <sup>3</sup>
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	443,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

G-at\_nps\_h\_a\_sc



**ITT**

**Lowara**

**TABLE OF FLOW RESISTANCE IN 100 m OF STRAIGHT CAST IRON PIPELINE (HAZEN-WILLIAMS FORMULA C=100)**

FLOW RATE		NOMINAL DIAMETER in mm and INCHES																	
m <sup>3</sup> /h	l/min	15	20	25	32	40	50	65	80	100	125	150	175	200	250	300	350	400	
		1/2"	3/4"	1"	1 1/4"	1 1/2"	2	2 1/2"	3"	4"	5"	6"	7"	8"	10"	12"	14"	16"	
0,6	10	v	0,94	0,53	0,34	0,21	0,13												
		hr	16	3,94	1,33	0,40	0,13												
0,9	15	v	1,42	0,80	0,51	0,31	0,20												
		hr	33,9	8,35	2,82	0,85	0,29												
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17											
		hr	57,7	14,21	4,79	1,44	0,49	0,16											
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21											
		hr	87,2	21,5	7,24	2,18	0,73	0,25											
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25											
		hr	122	30,1	10,1	3,05	1,03	0,35											
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30											
		hr	162	40,0	13,5	4,06	1,37	0,46											
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20										
		hr		51,2	17,3	5,19	1,75	0,59	0,16										
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25										
		hr		77,4	26,1	7,85	2,65	0,89	0,25										
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30										
		hr		108	36,6	11,0	3,71	1,25	0,35										
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35										
		hr		144	48,7	14,6	4,93	1,66	0,46										
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40										
		hr		185	62,3	18,7	6,32	2,13	0,59										
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30									
		hr			77,5	23,3	7,85	2,65	0,74	0,27									
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33									
		hr			94,1	28,3	9,54	3,22	0,90	0,33									
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41									
		hr			142	42,8	14,4	4,86	1,36	0,49									
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32								
		hr				59,9	20,2	6,82	1,90	0,69	0,23								
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37								
		hr				79,7	26,9	9,07	2,53	0,92	0,31								
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42								
		hr				102	34,4	11,6	3,23	1,18	0,40								
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34							
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20							
18	300	v					3,98	2,55	1,51	1,00	0,64	0,41							
		hr					72,8	24,6	6,85	2,49	0,84	0,28							
24	400	v					5,31	3,40	2,01	1,33	0,85	0,54	0,38						
		hr					124	41,8	11,66	4,24	1,43	0,48	0,20						
30	500	v					6,63	4,25	2,51	1,66	1,06	0,68	0,47						
		hr					187	63,2	17,6	6,41	2,16	0,73	0,30						
36	600	v					5,10	3,02	1,99	1,27	0,82	0,57	0,42						
		hr					88,6	24,7	8,98	3,03	1,02	0,42	0,20						
42	700	v					5,94	3,52	2,32	1,49	0,95	0,66	0,49						
		hr					118	32,8	11,9	4,03	1,36	0,56	0,26						
48	800	v					6,79	4,02	2,65	1,70	1,09	0,75	0,55						
		hr					151	42,0	15,3	5,16	1,74	0,72	0,34						
54	900	v					7,64	4,52	2,99	1,91	1,22	0,85	0,62						
		hr					188	52,3	19,0	6,41	2,16	0,89	0,42						
60	1000	v					5,03	3,32	2,12	1,36	0,94	0,69	0,53						
		hr					63,5	23,1	7,79	2,63	1,08	0,51	0,27						
75	1250	v					6,28	4,15	2,65	1,70	1,18	0,87	0,66						
		hr					96,0	34,9	11,8	3,97	1,63	0,77	0,40						
90	1500	v					7,54	4,98	3,18	2,04	1,42	1,04	0,80						
		hr					134	48,9	16,5	5,57	2,29	1,08	0,56						
105	1750	v					8,79	5,81	3,72	2,38	1,65	1,21	0,93						
		hr					179	65,1	21,9	7,40	3,05	1,44	0,75						
120	2000	v					6,63	4,25	2,72	1,89	1,39	1,06	0,68						
		hr					83,3	28,1	9,48	3,90	1,84	0,96	0,32						
150	2500	v					8,29	5,31	3,40	2,36	1,73	1,33	0,85						
		hr					126	42,5	14,3	5,89	2,78	1,45	0,49						
180	3000	v							6,37	4,08	2,83	2,08	1,59						
		hr							59,5	20,1	8,26	3,90	2,03						
210	3500	v							7,43	4,76	3,30	2,43	1,86						
		hr							79,1	26,7	11,0	5,18	2,71						
240	4000	v							8,49	5,44	3,77	2,77	2,12						
		hr							101	34,2	14,1	6,64	3,46						
300	5000	v								6,79	4,72	3,47	2,65						
		hr								51,6	21,2	10,0	5,23						
360	6000	v								8,15	5,66	4,16	3,18						
		hr								72,3	29,8	14,1	7,33						
420	7000	v									6,61	4,85	3,72						
		hr									39,6	18,7	9,75						
480	8000	v									7,55	5,55	4,25						
		hr									50,7	23,9	12,49						
540	9000	v									8,49	6,24	4,78						
		hr									63,0	29,8	15,5						
600	10000	v										6,93	5,31						
		hr										36,2	18,9						

The hr values must be multiplied by:  
 0.71 for galvanized or painted steel pipes  
 0.54 for stainless steel or copper pipes  
 0.47 for PVC or PE pipes

hr = flow resistance for 100m of straight pipeline (m)  
 V = water speed (m/s)

G-at-pct\_a\_th

**FLOW RESISTANCE**
**TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES**

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

G-a-pcv\_a\_th

The table is valid for the Hazen Williams coefficient  $C = 100$  (cast iron pipework). For steel pipework, multiply the values by 1.41. For stainless steel, copper and coated cast iron pipework, multiply the values by 1.85.

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by the manufacturers.

**VOLUMETRIC CAPACITY**

Litres per minute l/min	Cubic metres per hour m <sup>3</sup> /h	Cubic feet per hour ft <sup>3</sup> /h	Cubic feet per minute ft <sup>3</sup> /min	Imp. gal. per minute Imp. gal./min	US gal. per minute Us gal./min
<b>1,000</b>	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	<b>1,0000</b>	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	<b>1,0000</b>	0,0167	0,1038	<b>0,1247</b>
28,3168	1,6990	60,0000	<b>1,0000</b>	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	<b>1,0000</b>	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	<b>1,0000</b>

**PRESSURE AND HEAD**

Newton per square metre N/m <sup>2</sup>	kilo Pascal kPa	bar bar	Pound force per square inch psi	metre of water m H <sub>2</sub> O	millimetre of mercury mm Hg
<b>1,0000</b>	0,0010	1 x 10 <sup>-5</sup>	1.45 x 10 <sup>-4</sup>	1.02 x 10 <sup>-4</sup>	0,0075
1000,0000	<b>1,0000</b>	0,0100	0,1450	0,1020	7,5006
1 x 10 <sup>5</sup>	100,0000	<b>1,0000</b>	14,5038	10,1972	750,0638
6894,7570	6,8948	0,0689	<b>1,0000</b>	0,7031	51,7151
9806,6500	9,8067	0,0981	1,4223	<b>1,0000</b>	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	<b>1,0000</b>

**LENGHT**

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
<b>1,0000</b>	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	<b>1,0000</b>	0,0100	0,3937	0,0328	0,0109
1000,0000	100,0000	<b>1,0000</b>	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	<b>1,0000</b>	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	<b>1,0000</b>	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	<b>1,0000</b>

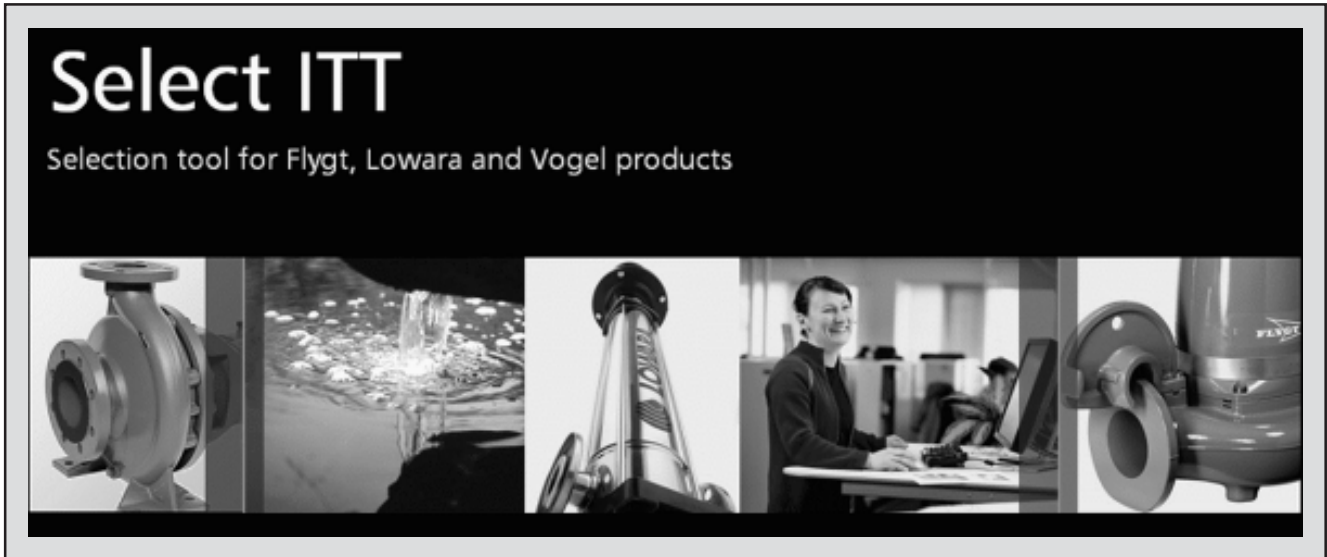
**VOLUME**

cubic metre m <sup>3</sup>	litre litro	millilitre ml	imp. Gallon imp. gal.	US gallon US gal.	cubic foot ft <sup>3</sup>
<b>1,0000</b>	1000,0000	1 x 10 <sup>6</sup>	219,9694	264,1720	35,3147
0,0010	<b>1,0000</b>	1000,0000	0,2200	0,2642	0,0353
1 x 10 <sup>-6</sup>	0,0010	<b>1,0000</b>	2.2 x 10 <sup>-4</sup>	2.642 x 10 <sup>-4</sup>	3.53 x 10 <sup>-5</sup>
0,0045	4,5461	4546,0870	<b>1,0000</b>	1,2009	0,1605
0,0038	3,7854	3785,4120	0,8327	<b>1,0000</b>	0,1337
0,0283	28,3168	28316,8466	6,2288	7,4805	<b>1,0000</b>

G-at\_pp-en\_a\_sc

## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Select ITT



Select ITT is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

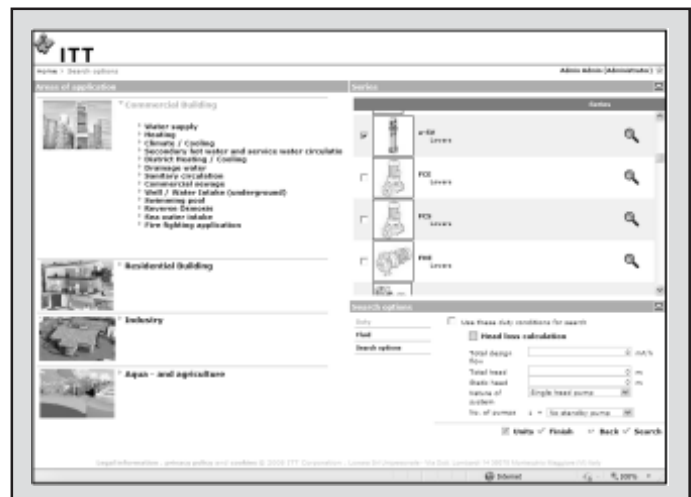
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Select ITT gives a detailed output:

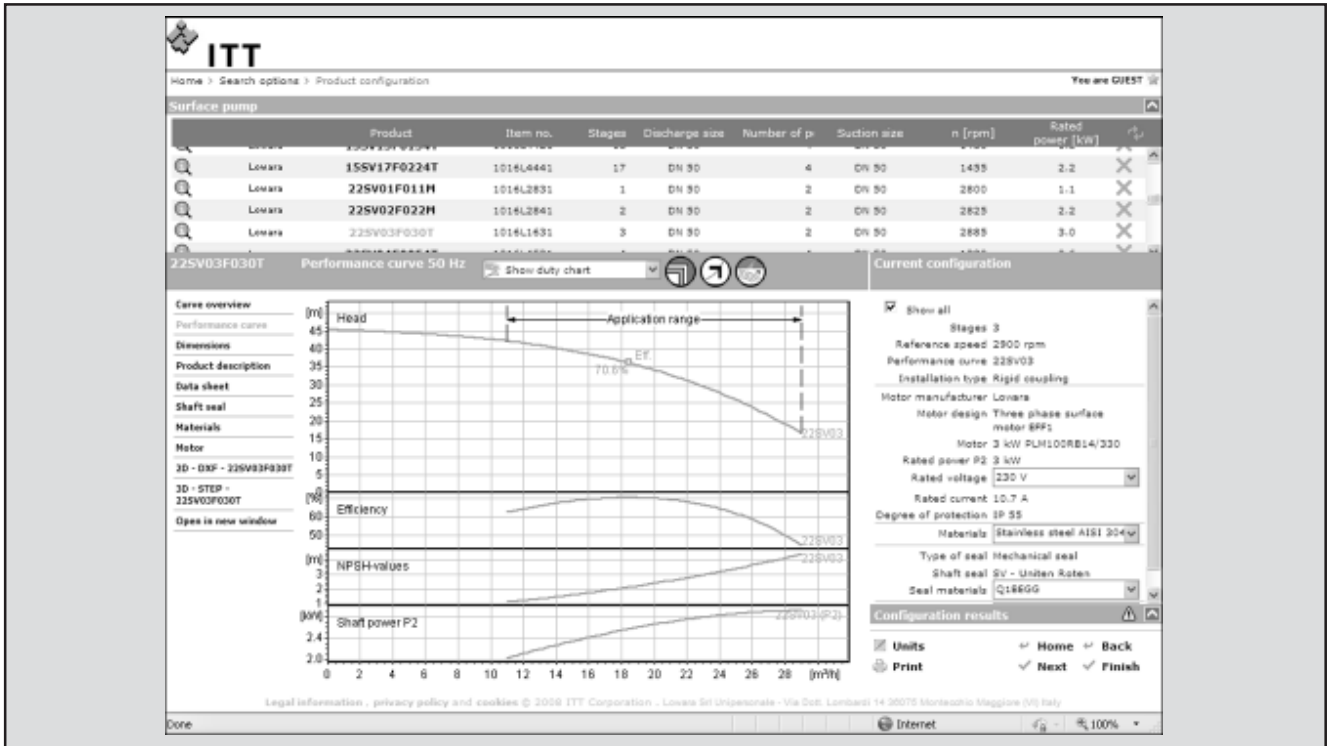
- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



*The search by application guides users not familiar with the product range to the right choice.*

## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Select ITT



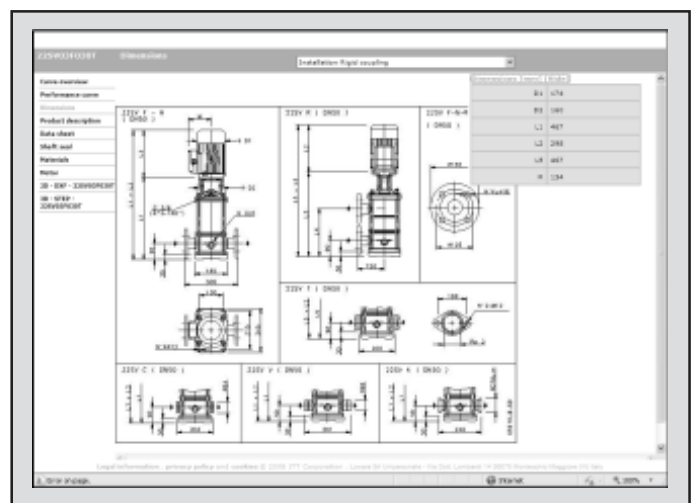
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Select ITT is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Select ITT users

Every user has a My Select ITT space, where all projects are saved.

For more information about Select ITT, contact ITT or visit [www.selectitt.com](http://www.selectitt.com) to register for Select ITT online.



Dimensional drawings appear on the screen and can be downloaded in dxf format.

ITT-Lowara ([www.lowara.com](http://www.lowara.com)), headquarters of "Residential and Commercial Water - EMEA" part of the ITT Corporation and located in Montecchio Maggiore, Vicenza - Italy, is a leading manufacturer of hydraulic pumps and water handling and control systems. It has 1.616 employees in Europe, 671 operating in Italy. In 2010 its consolidated sales totalled about 306 million €, or over 404 million \$.

ITT Corporation is a high-technology engineering and manufacturing company operating on all seven continents in three vital markets: water and fluids management, global defense and security, and motion and flow control. With a heritage of innovation, ITT partners with its customers to deliver extraordinary solutions that create more livable environments, provide protection and safety and connect our world. Headquartered in White Plains, N.Y., the company generated 2010 revenue of \$11.0 billion.

**ITT RESIDENTIAL AND COMMERCIAL WATER DIVISION - EMEA****Headquarters**

**LOWARA S.r.l. Unipersonale**  
**Via Dott. Lombardi, 14**  
**36075 Montecchio Maggiore**  
**Vicenza - Italy**  
**Tel. (+39) 0444 707111**  
**Fax (+39) 0444 492166**  
**e-mail: [lowara.mkt@itt.com](mailto:lowara.mkt@itt.com)**  
**<http://www.lowara.com>**

**AUSTRIA**  
**ITT AUSTRIA GmbH**  
A-2000 STOCKERAU  
Ernst Vogel-Straße 2  
Tel. (+43) 02266 604  
Fax (+43) 02266 65311  
e-mail: [info.ittaustria@itt.com](mailto:info.ittaustria@itt.com)  
<http://www.ittaustria.com>

**FRANCE**  
**ITT FRANCE**  
Parc de l'île  
29 rue du Port  
92022 Nanterre Cedex  
Tel. (+33) 02 47 88 17 17  
Fax (+33) 02 47 88 17 00  
e-mail: [lowarafr.info@itt.com](mailto:lowarafr.info@itt.com)  
<http://www.lowara.fr>

**GERMANY**  
**ITT LOWARA DEUTSCHLAND GmbH**  
Biebigheimer Straße 12  
D-63762 Grobostheim  
Tel. (+49) 0 60 26 9 43 - 0  
Fax (+49) 0 60 26 9 43 - 2 10  
e-mail: [info.lowarade@itt.com](mailto:info.lowarade@itt.com)  
<http://www.lowara.de>

**IRELAND**  
**ITT IRELAND**  
50 Broomhill Close  
Airton Road  
Tallaght  
DUBLIN 24  
Tel. (+353) 01 4524444  
Fax (+353) 01 4524795  
e-mail: [lowara.ireland@itt.com](mailto:lowara.ireland@itt.com) -  
<http://www.lowara.ie>

**NEDERLAND**  
**LOWARA NEDERLAND B.V.**  
Zandweistraat 22  
4181 CG Waardenburg  
Tel. (+31) 0418 65 50 60  
Fax (+31) 0418 65 50 61  
e-mail: [sales.nl@itt.com](mailto:sales.nl@itt.com)  
<http://www.lowara.nl>

**POLAND**  
**LOWARA VOGEL POLSKA Sp. z o.o.**  
PL 57-100 Strzelin  
ul. Kazimierza Wielkiego 5  
Tel. (+48) 071 769 3900 - Fax (+48) 071 769 3909  
e-mail: [info.lowarapl@itt.com](mailto:info.lowarapl@itt.com) -  
<http://www.lowara-voegel.pl>

**PORTUGAL**  
**ITT PORTUGAL, Lda**  
Praceta da Castanheira, 38  
4475-019 Barca  
Tel. (+351) 22 9478550  
Fax (+351) 22 9478570  
e-mail: [info.pt@itt.com](mailto:info.pt@itt.com)  
<http://www.itt.pt>

**RUSSIA**  
**LOWARA RUSSIA**  
Kalanchevskaya st. 11 b.2, off. 334  
107078 Moscow  
Tel. (+7) 495 631 55 15  
Fax (+7) 495 631 59 72  
[info.lowararu@itt.com](mailto:info.lowararu@itt.com) - [www.lowara.ru](http://www.lowara.ru)

**UK**  
**LOWARA UK LTD.**  
Millwey Rise, Industrial Estate  
Axminster - Devon EX13 5HU UK  
Tel. (+44) 01297 630200  
Fax (+44) 01297 630270  
e-mail: [lowaraukenquiries@itt.com](mailto:lowaraukenquiries@itt.com)  
<http://www.lowara.co.uk>

For additional addresses, please visit  
[www.lowara.com](http://www.lowara.com)

cod. 191002411 W 06/11

*Lowara reserves the right to make modifications  
without prior notice.*