



# ITT

Lowara

## FC-FCT Series

In-Line electric pumps single and twin  
equipped with high efficiency PLM motors

**50 Hz**



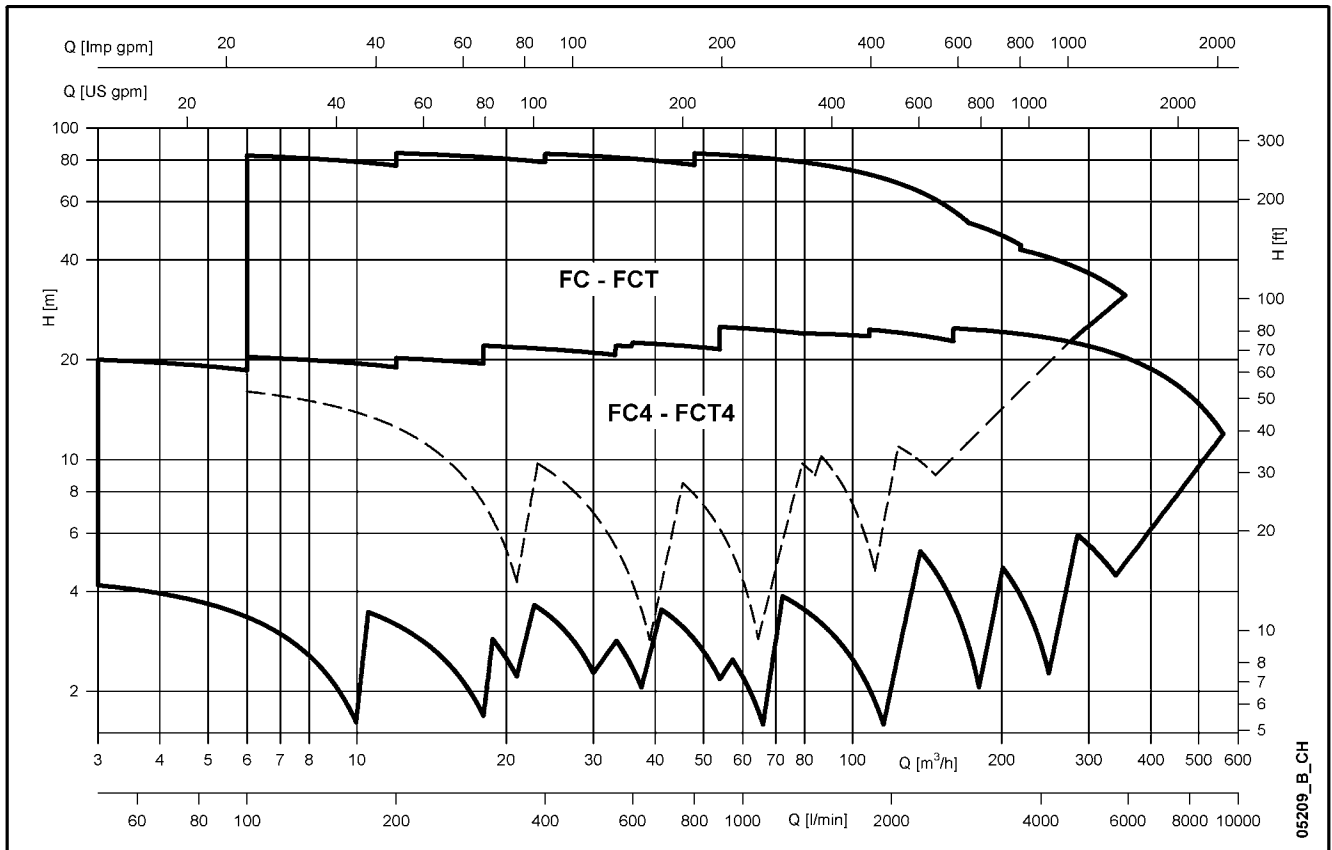
*Engineered for life*



# ITT

## Lowara

### FC-FCT SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz





### CONTENTS

|                                                                                  |            |
|----------------------------------------------------------------------------------|------------|
| FC Series Specifications .....                                                   | <b>5</b>   |
| FC Series Construction Characteristics .....                                     | <b>6</b>   |
| FCT Series Specifications .....                                                  | <b>7</b>   |
| FCT Series Construction Characteristics .....                                    | <b>8</b>   |
| List of Models and Table of Materials .....                                      | <b>10</b>  |
| Mechanical Seal .....                                                            | <b>18</b>  |
| List of Models .....                                                             | <b>19</b>  |
| Motors .....                                                                     | <b>20</b>  |
| Hydraulic Performance Range, FC Series 50 Hz, 2 Poles .....                      | <b>26</b>  |
| Hydraulic Performance Range, FC Series 50 Hz, 4 Poles .....                      | <b>28</b>  |
| Operating Characteristics, FC Series 50 Hz, 2 Poles .....                        | <b>32</b>  |
| Operating Characteristics, FC Series 50 Hz, 4 Poles .....                        | <b>42</b>  |
| Hydraulic Performance Range, FCT Series, Single Operation 50 Hz, 2 Poles .....   | <b>58</b>  |
| Hydraulic Performance Range, FCT Series, Parallel Operation 50 Hz, 2 Poles ..... | <b>60</b>  |
| Hydraulic Performance Range, FCT Series, Single Operation 50 Hz, 4 Poles .....   | <b>62</b>  |
| Hydraulic Performance Range, FCT Series, Parallel Operation 50 Hz, 4 Poles ..... | <b>64</b>  |
| Operating Characteristics, FCT Series, 50 Hz, 2 Poles .....                      | <b>68</b>  |
| Operating Characteristics, FCT Series, 50 Hz, 4 Poles .....                      | <b>78</b>  |
| FC Series Dimensions and Weights .....                                           | <b>93</b>  |
| FCT Series Dimensions and Weights .....                                          | <b>104</b> |
| Accessories .....                                                                | <b>114</b> |
| Technical Appendix .....                                                         | <b>119</b> |



**Lowara**

## In.Line Electric Pumps

## FC Series with high efficiency PLM motors



## MARKET SECTORS

CIVIL, INDUSTRIAL.

## APPLICATIONS

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

## SPECIFICATIONS

### PUMP

- **Delivery** up to 190 m<sup>3</sup>/h, 2-pole.  
330 m<sup>3</sup>/h, 4-pole.
- **Head** up to 89 m, 2-pole.  
35 m, 4-pole.
- **Temperature** of pumped liquid:  
-10°C to +130°C for "E" version,  
-20°C to +140°C for "S" version  
(depending on working pressure).
- **Maximum working pressure:**  
10 bar (PN 10) for the "E" version,  
16 bar (PN 16) for the "S" version  
up to 120°C, 13 bar from 120°C to  
140°C.
- **Impeller** made of AISI 316L  
stainless steel, **laser technology**  
welded, up to size 80-160.  
Cast iron impeller for bigger sizes.  
Bronze impeller available on request  
for FCT 80-200 and bigger, in both  
the "E" and "S" versions.
- **Wear rings** made of AISI 316L  
stainless steel, up to FC 100, on the  
impeller's front and rear wear plates,  
to ensure high performance and easy  
replacement.
- **Mechanical seal** according to  
EN12756 (ex DIN 24960), lubricated  
by internal recirculation of pumped  
liquid to seal housing (up to FC 100).  
Mechanical seal locking pin slot on  
models up to FC 100 (on request).
- Air valve on models up to FC 100.
- Counterflange kits available on  
request.

### MOTOR

- Three-phase asynchronous, squirrel  
cage rotor, enclosed construction,  
external ventilation.
- **IP55 protection.**
- **Class F insulation.**
- Performances according to  
EN 60034-1.
- Maximum ambient temperature:  
+40°C.
- Continuous duty.
- Condensate drain plugs on all  
LOWARA motors.
- **Standard voltage:**  
**Single-phase** version 220-240 V,  
50 Hz, with built-in automatic reset  
overload protection up to 1,5 kW.  
For higher powers the protection is  
be provided by the user.  
- **Three-phase** version 230/400 V  
50 Hz for powers up to 3 kW;  
400/690 V, 50 Hz for powers  
above 3 kW.  
Overload protection to be provided  
by the user.
- **The Lowara PLM surface  
motors have efficiency values  
that fall within the range  
normally referred to as  
efficiency class 1.**
- **Type of motor used:**  
**2-pole** Single-phase:  
Lowara SM (up to 1,5 kW)  
Lowara PLM (above 1,5 kW)  
Three-phase:  
Lowara SM (up to 2,2 kW)  
Lowara PLM (above 2,2 kW)  
**4-pole** Three-phase:  
Lowara SM (up to 0,75 kW)  
Lowara PLM (above 0,75 kW)

## CONSTRUCTION FEATURES

Single-impeller centrifugal pump with in-line suction and delivery flanges.

Flanges in compliance with EN 1092-2 (ex UNI 2236) and DIN 2532.

"Back pull-out" design (impeller, adapter and motor can be extracted without disconnecting the pump body from the pipes).

## FCE SERIES CHARACTERISTICS

Pump coupling: close-coupled by means of an adapter, with impeller keyed directly to the motor shaft extension.

Maximum operating pressure: 10 bar (PN 10).

Temperature of pumped liquid: -10°C to 130°C.

## FCS SERIES CHARACTERISTICS

Pump coupling: by adapter, with bracket and rigid coupling keyed to the shaft extension of standard motors.

Maximum operating pressure: 16 bar (PN 16) up to 120°C, 13 bar from 120°C to 140°C.

Temperature of pumped liquid: -20°C to 140°C.

## FC..H SERIES CHARACTERISTICS

Variable speed control, using the HIDROVAR® and HIDROVAR® Sensorless (on request), control system, is recommended for managing pump operation according to system conditions. This ensures energy savings, lower operating costs, greater comfort and environmental protection.

This option is available for both the FCE and FCS series, and includes the HIDROVAR® and HIDROVAR® Sensorless (on request) controller and sensors.

## ACCESSORIES ON REQUEST

Threaded steel or galvanized iron counterflanges.

Blind flange.

Pump support.

## OPTIONAL FEATURES

Different voltages and frequencies.

Different materials for the mechanical seal and pump body seal.

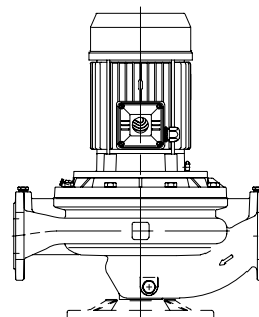
Support available for vertical mounting (where added).

## INSTALLATION

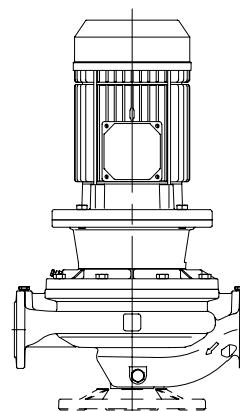
Installed in horizontal or vertical piping, in any position except with motor or terminal box facing downward.

Motor powers 5,5 kW and higher, for installations with motor shaft in the vertical position, the electric pump should be mounted on a base, the pump should rest on its feet or on the support foot (optional accessory). For installations with motor shaft in the horizontal position, use a support foot for the motor.

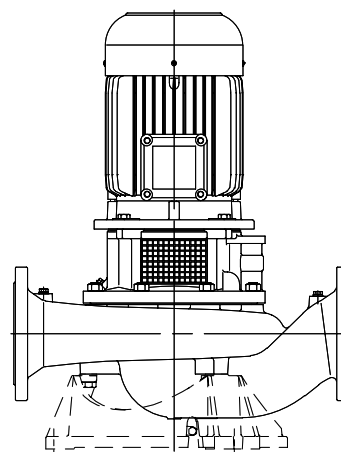
FCE 40-100  
FCE4 40-100



FCS 40-100  
FCS4 40-100



FCS4 125-150



04807\_C\_SC

## In-Line Twin Electric Pumps

## FCT Series with high efficiency PLM motors

### MARKET SECTORS

CIVIL, INDUSTRIAL.

### APPLICATIONS

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

### SPECIFICATIONS

#### PUMP

- **Delivery** with one pump running: up to 190 m<sup>3</sup>/h with 2-pole motor, up to 330 m<sup>3</sup>/h with 4-pole motor; with two pumps running: up to 350 m<sup>3</sup>/h with 2-pole motor, up to 610 m<sup>3</sup>/h with 4-pole motor.
- **Head** up to 89 m with 2-pole motor, up to 35 m with 4-pole motor.
- **Temperature** of pumped liquid: -10 to 130°C for the "E" version, -20 to 140°C for the "S" version (depending on working pressure).

- **Maximum working pressure:** 10 bar (PN 10) for the "E" version, 16 bar (PN 16) for the "S" version up to 120°C, 13 bar from 120°C to 140°C.
- **Impeller** made of AISI 316L stainless steel, **laser technology** welded, up to size 80-160. Cast iron impeller for bigger sizes. Bronze impeller available on request for FCT 80-200 and bigger, in both the "E" and "S" versions.
- **Wear rings** made of AISI 316L stainless steel, up to FCT 100, on the impeller's front and rear wear plates, to ensure high performance and easy replacement.
- **Mechanical seal** according to EN12756 (ex DIN 24960), lubricated by internal recirculation of pumped liquid to seal housing (up to FCT 100). Mechanical seal locking pin slot on models up to FCT 100 (on request).

- Air valve on models up to FCT 100.
- Counterflange kits available on request.

#### MOTOR

- Three-phase asynchronous, squirrel cage rotor, enclosed construction, external ventilation.
- IP55 **protection**.
- Class F **insulation**.
- Performances according to EN 60034-1.
- Maximum ambient temperature: +40°C.
- Continuous duty.
- Condensate drain plugs on all LOWARA motors.
- **Standard voltage:**
  - Single-phase** version 220-240 V, 50 Hz, with built-in automatic reset overload protection up to 1,5 kW. For higher powers the protection is provided by the user.
  - Three-phase** version 230/400 V 50 Hz for powers up to 3 kW; 400/690 V, 50 Hz for powers above 3 kW.
- Overload protection to be provided by the user.
- **The Lowara PLM surface motors have efficiency values that fall within the range normally referred to as efficiency class 1.**
- **Type of motor used:**
  - 2-pole** Single-phase: Lowara SM (up to 1,5 kW) Lowara PLM (above 1,5 kW)
  - Three-phase: Lowara SM (up to 2,2 kW) Lowara PLM (above 2,2 kW)
  - 4-pole** Three-phase: Lowara SM (up to 0,75 kW) Lowara PLM (above 0,75 kW)



## CONSTRUCTION FEATURES

Two single-impeller centrifugal pumps featuring in-line suction and delivery flanges, with automatic changeover valve. The two pumps can operate separately or in parallel.

Flanges in compliance with EN 1092-2 (ex UNI 2236) and DIN 2532.

"Back pull-out" design (impeller, adapter and motor can be extracted without disconnecting the pump body from the pipes).

## FCTE SERIES CHARACTERISTICS

Pump coupling: close-coupled by means of an adapter, with impeller keyed directly to the motor shaft extension.

Maximum operating pressure: 10 bar (PN 10).

Temperature of pumped liquid: -10°C to 130°C.

## FCTS SERIES CHARACTERISTICS

Pump coupling: by adapter, with bracket and rigid coupling keyed to the shaft extension of standard motors.

Maximum operating pressure: 16 bar (PN 16) up to 120°C, 13 bar from 120°C to 140°C.

Temperature of pumped liquid: -20°C to 140°C.

## FCT..H SERIES CHARACTERISTICS (ON REQUEST)

Variable speed control, using the HIDROVAR® and HIDROVAR® Sensorless (on request), control system, is recommended for managing pump operation according to system conditions. This ensures energy savings, lower operating costs, greater comfort and environmental protection.

This option is available for both the FCTE and FCTS series, and includes the HIDROVAR® and HIDROVAR® Sensorless controller and sensors.

## ACCESSORIES ON REQUEST

Threaded steel or galvanized iron counterflanges.

Blind flange.

Pump support.

## OPTIONAL FEATURES

Different voltages and frequencies.

Different materials for the mechanical seal and pump body seal.

Support available for vertical mounting.

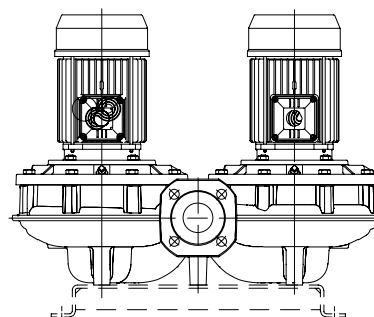
Version with frequency converter (variable speed).

## INSTALLATION

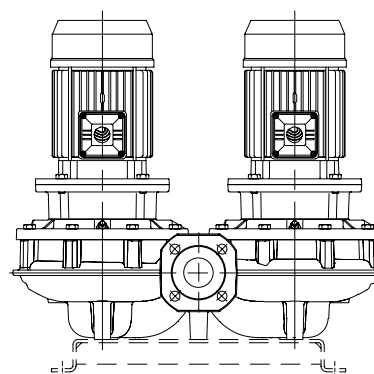
Can be installed on horizontal or vertical piping, in any position except with motor or terminal board facing downward.

With motor powers 5,5 kW and up, for installations with motor shaft in the vertical position, the electric pump should be mounted on a base, the pump should rest on its feet or on the support foot (optional accessory). For installations with motor shaft in the horizontal position, use a support for the motor.

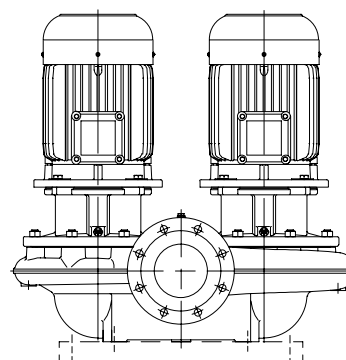
FCTE 40-100  
FCTE4 40-100



FCTS 40-100  
FCTS4 40-100

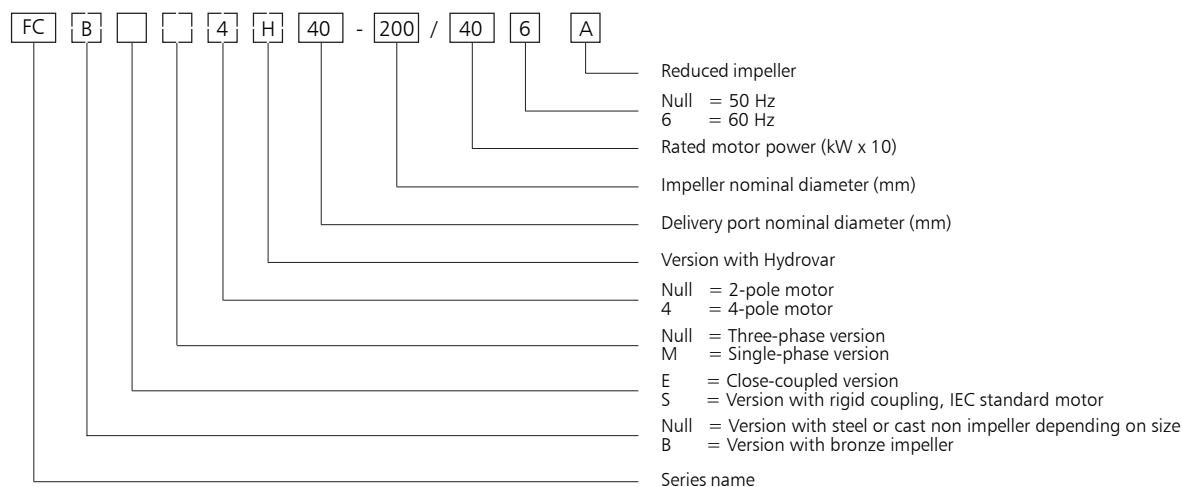


FCTS4 125-150

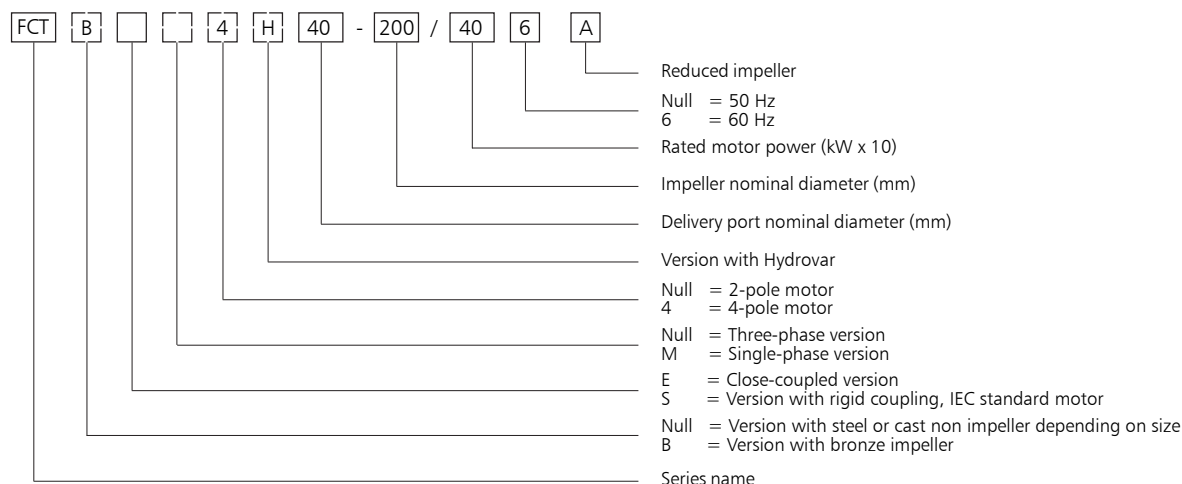


05207\_B\_SC

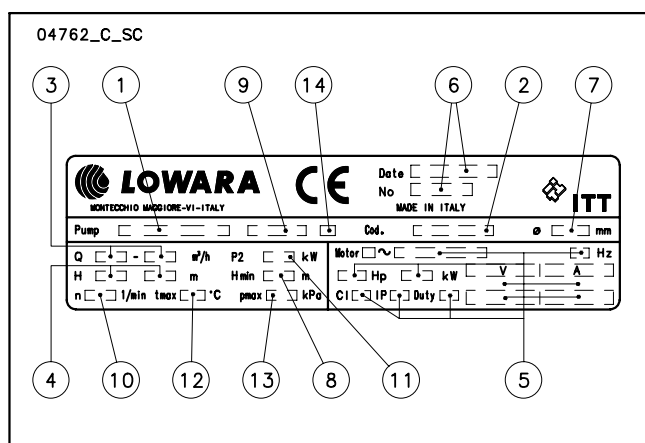
## FC SERIES IDENTIFICATION CODE



## FCT SERIES IDENTIFICATION CODE



## FC - FCT RATING PLATE



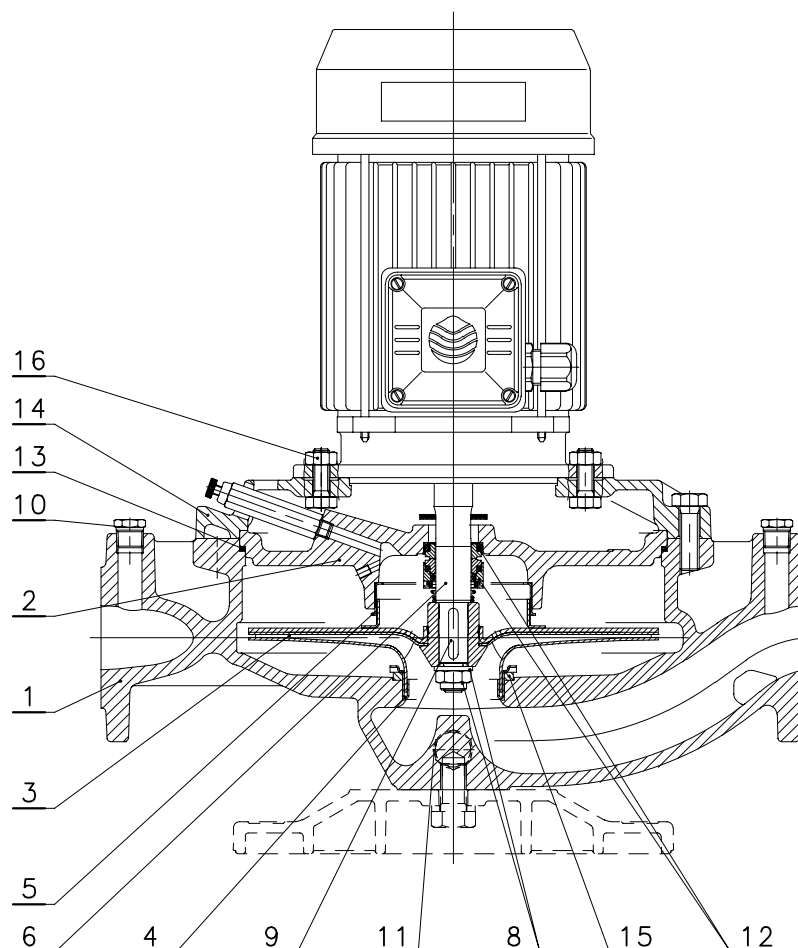
## LEGEND

- 1 - Electric pump type
- 2 - Code
- 3 - Delivery range
- 4 - Head range
- 5 - Motor characteristics
- 6 - Date of manufacture and serial number
- 7 - Impeller diameter
- 8 - Minimum head
- 9 - Mechanical seal type
- 10 - Speed
- 11 - Rated output
- 12 - Maximum operating temperature
- 13 - Maximum operating pressure
- 14 - Type of gaskets

## FCE-FCE4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

04806\_C\_DS



#### VERSIONS

| 2 POLES         | 4 POLES         |
|-----------------|-----------------|
| FCE 40-125/07   | FCE4 40-200/05  |
| FCE 40-125/11   | FCE4 40-200/07  |
| FCE 40-160/15   | FCE4 40-250/11  |
| FCE 40-160/22   | FCE4 40-250/15  |
| FCE 40-200/40A  | FCE4 50-160/05  |
| FCE 40-200/40   | FCE4 50-200/07  |
| FCE 40-200/55   | FCE4 50-200/11  |
| FCE 40-250/75   | FCE4 50-250/15  |
| FCE 40-250/110  | FCE4 50-250/22  |
| FCE 50-125/11   | FCE4 65-125/05  |
| FCE 50-125/15   | FCE4 65-160/07  |
| FCE 50-160/22   | FCE4 65-160/11  |
| FCE 50-160/30   | FCE4 65-200/15  |
| FCE 50-160/40   | FCE4 65-250/22  |
| FCE 50-200/55   | FCE4 65-250/30  |
| FCE 50-200/75   | FCE4 80-125/07  |
| FCE 50-250/92   | FCE4 80-125/11  |
| FCE 50-250/110  | FCE4 80-200/15  |
| FCE 50-250/150  | FCE4 80-200/22  |
| FCE 65-125/22   | FCE4 80-200/30  |
| FCE 65-125/30   | FCE4 80-250/40  |
| FCE 65-125/40   | FCE4 80-250/55  |
| FCE 65-160/55   | FCE4 100-160/15 |
| FCE 65-160/75   | FCE4 100-200/22 |
| FCE 65-200/92   | FCE4 100-200/30 |
| FCE 65-200/110  | FCE4 100-250/40 |
| FCE 65-250/150  | FCE4 100-250/55 |
| FCE 65-250/185  | FCE4 100-250/75 |
| FCE 65-250/220  |                 |
| FCE 80-125/30   |                 |
| FCE 80-125/40   |                 |
| FCE 80-125/55   |                 |
| FCE 80-160/75   |                 |
| FCE 80-200/110  |                 |
| FCE 80-200/150  |                 |
| FCE 80-200/185  |                 |
| FCE 80-200/220  |                 |
| FCE 100-160/110 |                 |
| FCE 100-200/185 |                 |
| FCE 100-200/220 |                 |

fc-fce-fce4-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       | Key                                  | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10      | Plugs and air valve                  | Nickel-plated brass                    | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11      | Gaskets for fill/drain plugs         | Aluminium                              | EN 573-AW-AI99,5 (AW1050A)          | -             |
| 12      | Mechanical seal                      | Carbon/Ceramic/EPDM (standard version) |                                     |               |
| 13      | Elastomers                           | EPDM (standard version)                |                                     |               |
| 14      | Adapter *                            | Aluminium                              | EN 1706-AC-AISI11Cu2 (Fe) (AC46100) | -             |
|         | Adapter                              | Cast iron                              | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 15      | Spacer ring                          | Painted steel                          |                                     |               |
| 16      | Pump body fastening bolts and screws | Galvanized steel                       |                                     |               |

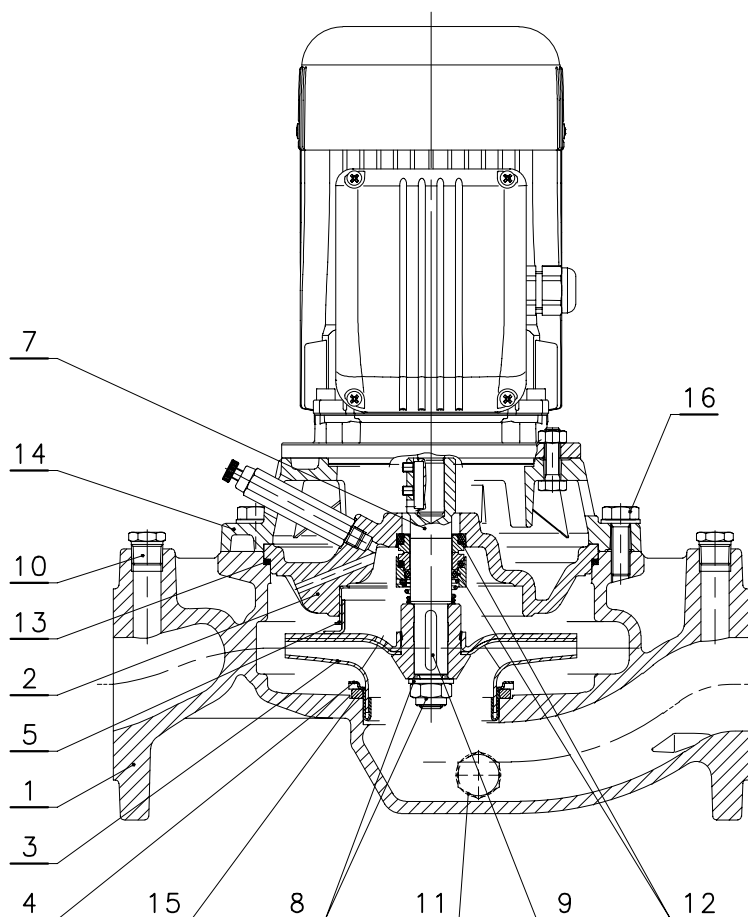
\* For 40/50-125 2/4 pole, 40/50-160 2/4 pole versions

fc\_fce-fce4-en\_a\_tm

## FCE4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

04806A\_B\_DS



#### VERSIONS 4 POLES

|                 |
|-----------------|
| FCE4 40-125/02A |
| FCE4 40-125/02  |
| FCE4 40-160/02  |
| FCE4 40-160/03  |
| FCE4 50-125/02  |
| FCE4 50-125/03  |
| FCE4 65-125/03  |

fc-fce4-en\_a\_mo

| REF.<br>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     |
| 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          | Key                                  | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10         | Plugs and air valve                  | Nickel-plated brass                    | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11         | Gaskets for fill/drain plugs         | Aluminium                              | EN 573-AW-AI99,5 (AW1050A)          | -             |
| 12         | Mechanical seal                      | Carbon/Ceramic/EPDM (standard version) |                                     |               |
| 13         | Elastomers                           | EPDM (standard version)                |                                     |               |
| 14         | Adapter *                            | Aluminium                              | EN 1706-AC-AISI11Cu2 (Fe) (AC46100) | -             |
|            | Adapter                              | Cast iron                              | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 15         | Spacer ring                          | Painted steel                          |                                     |               |
| 16         | Pump body fastening bolts and screws | Galvanizen steel                       |                                     |               |

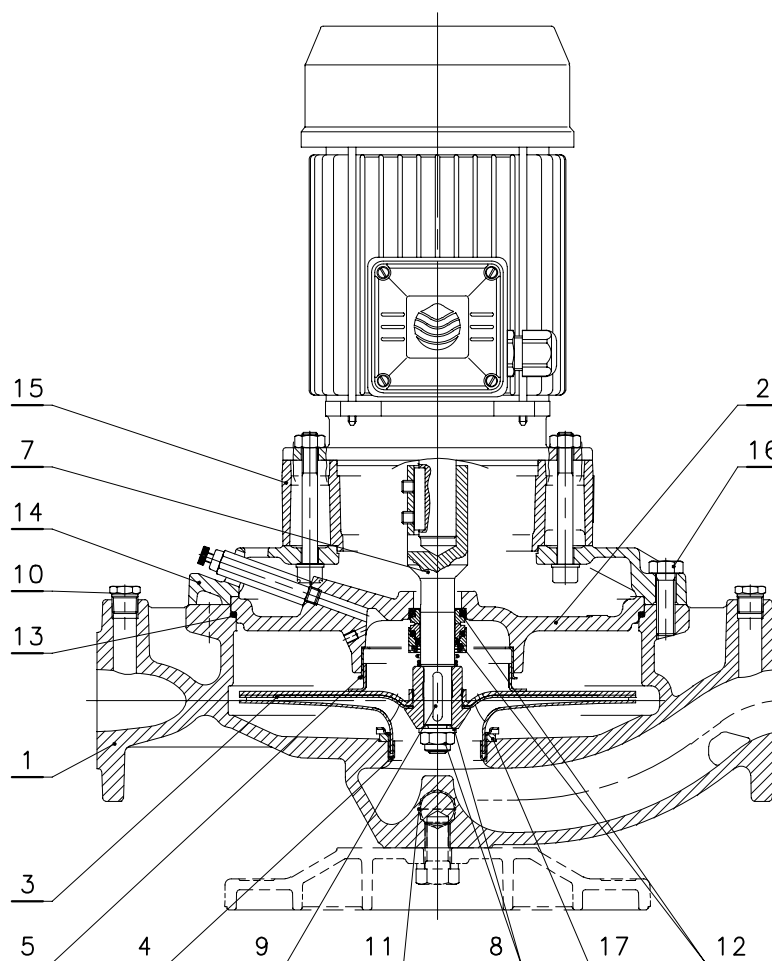
\* Per le versioni 40/50-125 2/4 poli, 40/50-160 2/4 poli

fc-fce4-en\_a\_tm

## FCS-FCS4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

04856\_C\_DS



| VERSIONS        |                 |
|-----------------|-----------------|
| 2 POLES         | 4 POLES         |
| FCS 40-125/07   | FCS4 40-200/05  |
| FCS 40-125/11   | FCS4 40-200/07  |
| FCS 40-160/15   | FCS4 40-250/11  |
| FCS 40-160/22   | FCS4 40-250/15  |
| FCS 40-200/30   | FCS4 50-200/07  |
| FCS 40-200/40   | FCS4 50-200/11  |
| FCS 40-200/55   | FCS4 50-250/15  |
| FCS 40-250/75   | FCS4 50-250/22  |
| FCS 40-250/110  | FCS4 65-160/07  |
| FCS 50-125/11   | FCS4 65-160/11  |
| FCS 50-125/15   | FCS4 65-200/15  |
| FCS 50-160/22   | FCS4 65-250/22  |
| FCS 50-160/30   | FCS4 65-250/30  |
| FCS 50-160/40   | FCS4 80-125/07  |
| FCS 50-200/55   | FCS4 80-125/11  |
| FCS 50-200/75   | FCS4 80-200/15  |
| FCS 50-250/110A | FCS4 80-200/22  |
| FCS 50-250/110  | FCS4 80-200/30  |
| FCS 50-250/150  | FCS4 80-250/40  |
| FCS 65-125/22   | FCS4 80-250/55  |
| FCS 65-125/30   | FCS4 100-160/15 |
| FCS 65-125/40   | FCS4 100-200/22 |
| FCS 65-160/55   | FCS4 100-200/30 |
| FCS 65-160/75   | FCS4 100-250/40 |
| FCS 65-200/110A | FCS4 100-250/55 |
| FCS 65-200/110  | FCS4 100-250/75 |
| FCS 65-250/150  |                 |
| FCS 65-250/185  |                 |
| FCS 65-250/220  |                 |
| FCS 80-125/30   |                 |
| FCS 80-125/40   |                 |
| FCS 80-125/55   |                 |
| FCS 80-160/75   |                 |
| FCS 80-200/110  |                 |
| FCS 80-200/150  |                 |
| FCS 80-200/185  |                 |
| FCS 80-200/220  |                 |
| FCS 100-160/110 |                 |
| FCS 100-200/185 |                 |
| FCS 100-200/220 |                 |

fc-fcs-fcs4-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       | Key                                  | Stainless steel                                | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10      | Plugs and air valve                  | Nickel-plated brass                            | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11      | Gaskets for fill/drain plugs         | Aluminium                                      | EN 573-AW-Al99,5 (AW1050A)          | -             |
| 12      | Mechanical seal                      | Carbon/Silicon carbide/EPDM (standard version) |                                     |               |
| 13      | Elastomers                           | EPDM (standard version)                        |                                     |               |
| 14      | Adapter *                            | Aluminium                                      | EN 1706-AC-AlSi11Cu2 (Fe) (AC46100) | -             |
|         | Adapter *                            | Cast iron                                      | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 15      | Motor adapter coupling               | Cast iron                                      | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 16      | Pump body fastening bolts and screws | Galvanized steel                               |                                     |               |
| 16      | Spacer ring                          | Painted steel                                  |                                     |               |

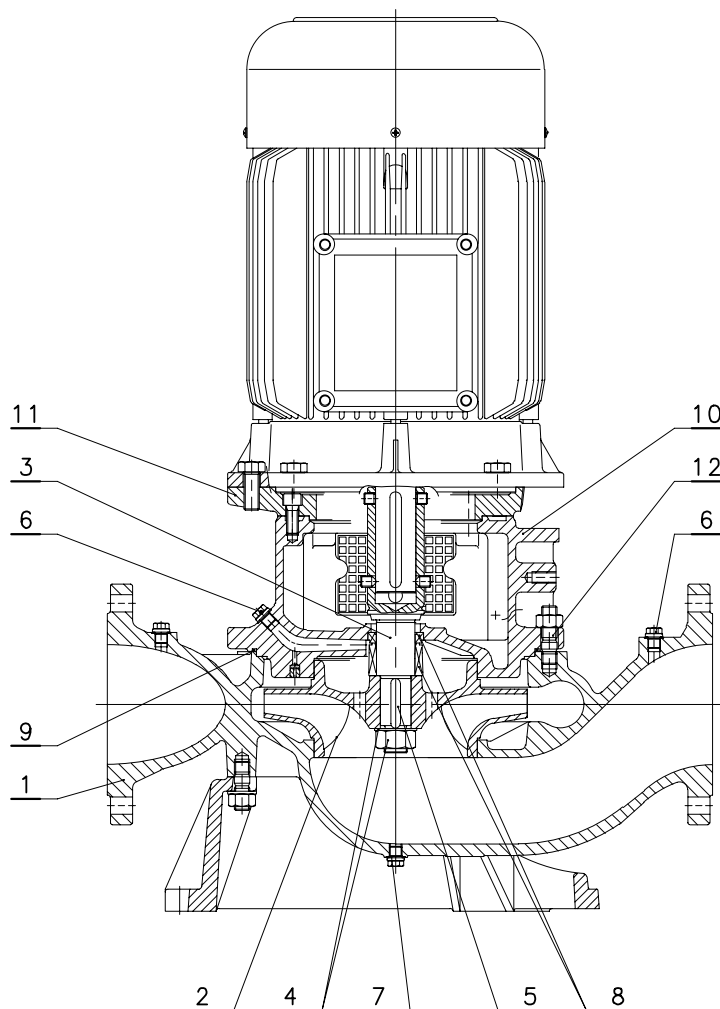
\* For 40/50-125 2/4 pole, 40/50-160 2/4 pole versions

fc\_fcs-fcs4- 40-100-en\_a\_tm

## FCS4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

04857\_B\_DS



#### VERSIONS 4 POLES

|                  |
|------------------|
| FCS4 125-160/30  |
| FCS4 125-200/40  |
| FCS4 125-200/55  |
| FCS4 125-250/75  |
| FCS4 125-250/110 |
| FCS4 125-315/150 |
| FCS4 125-315/185 |
| FCS4 125-315/220 |
| FCS4 150-200/55  |
| FCS4 150-200/75  |
| FCS4 150-250/110 |
| FCS4 150-250/150 |
| FCS4 150-250/185 |

lmr-fcs4-125-150-en\_a\_mo

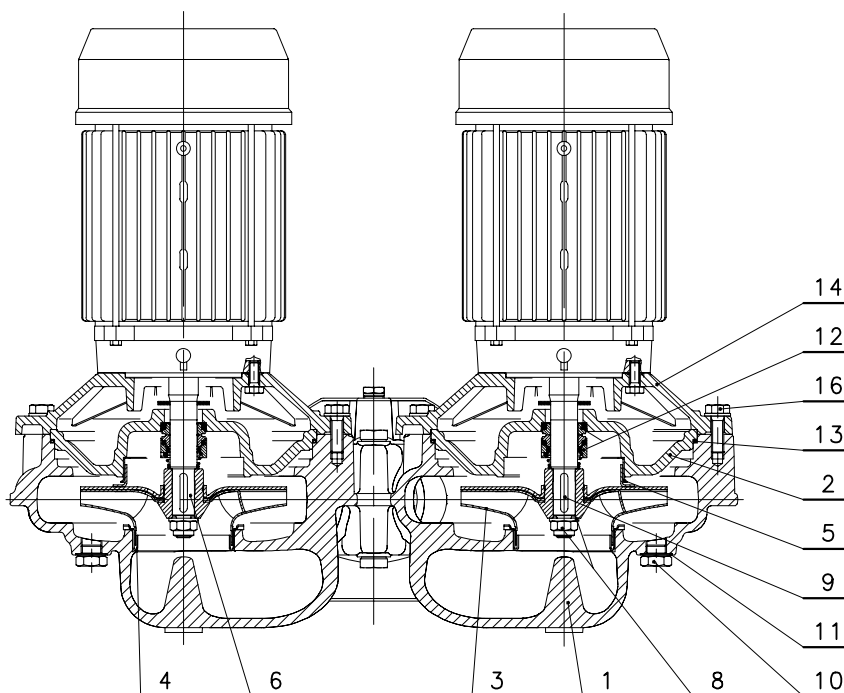
| REF.<br>N. | PART                                 | MATERIAL                                           | REFERENCE STANDARDS         |               |
|------------|--------------------------------------|----------------------------------------------------|-----------------------------|---------------|
|            |                                      |                                                    | EUROPE                      | USA           |
| 1          | Pump body                            | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 2          | Impeller                             | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
|            |                                      | Bronze                                             | EN 1982-CuSn10-C (CC480K)   | UNS C90700    |
| 3          | Rigid coupling                       | Stainless steel                                    | EN 10088-1-X20Cr13 (1.4021) | AISI 420      |
| 4          | Impeller lock nut and washer         | Steel                                              |                             |               |
| 5          | Key                                  | Steel                                              | EN 10083-1-C45E (1.1191)    | -             |
| 6          | Plugs and air valve                  | Steel                                              |                             |               |
| 7          | Gaskets for plugs                    | Asbestos-free synthetic fibre AFM34 ®              |                             |               |
| 8          | Mechanical seal                      | Silicon carbide / Carbon / EPDM (standard version) |                             |               |
| 9          | Elastomers                           | EPDM (standard version)                            |                             |               |
| 10         | Adapter                              | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 11         | Motor adapter coupling               | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 12         | Pump body fastening bolts and screws | Steel                                              |                             |               |

lmr\_fcs4 125-150-en\_a\_tm

## FCTE-FCTE4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

05202\_A\_DS



| VERSIONS         |                  |
|------------------|------------------|
| 2 POLES          | 4 POLES          |
| FCTE 40-125/07   | FCTE4 40-200/05  |
| FCTE 40-125/11   | FCTE4 40-200/07  |
| FCTE 40-160/15   | FCTE4 40-250/11  |
| FCTE 40-160/22   | FCTE4 40-250/15  |
| FCTE 40-200/40A  | FCTE4 50-160/05  |
| FCTE 40-200/40   | FCTE4 50-200/07  |
| FCTE 40-200/55   | FCTE4 50-200/11  |
| FCTE 40-250/75   | FCTE4 50-250/15  |
| FCTE 40-250/110  | FCTE4 50-250/22  |
| FCTE 50-125/11   | FCTE4 65-125/05  |
| FCTE 50-125/15   | FCTE4 65-160/07  |
| FCTE 50-160/22   | FCTE4 65-160/11  |
| FCTE 50-160/30   | FCTE4 65-200/15  |
| FCTE 50-160/40   | FCTE4 65-250/22  |
| FCTE 50-200/55   | FCTE4 65-250/30  |
| FCTE 50-200/75   | FCTE4 80-125/07  |
| FCTE 50-250/92   | FCTE4 80-125/11  |
| FCTE 50-250/110  | FCTE4 80-200/15  |
| FCTE 50-250/150  | FCTE4 80-200/22  |
| FCTE 65-125/22   | FCTE4 80-200/30  |
| FCTE 65-125/30   | FCTE4 80-250/40  |
| FCTE 65-125/40   | FCTE4 80-250/55  |
| FCTE 65-160/55   | FCTE4 100-160/15 |
| FCTE 65-160/75   | FCTE4 100-200/22 |
| FCTE 65-200/92   | FCTE4 100-200/30 |
| FCTE 65-200/110  | FCTE4 100-250/40 |
| FCTE 65-250/150  | FCTE4 100-250/55 |
| FCTE 65-250/185  | FCTE4 100-250/75 |
| FCTE 65-250/220  |                  |
| FCTE 80-125/30   |                  |
| FCTE 80-125/40   |                  |
| FCTE 80-125/55   |                  |
| FCTE 80-160/75   |                  |
| FCTE 80-200/110  |                  |
| FCTE 80-200/150  |                  |
| FCTE 80-200/185  |                  |
| FCTE 80-200/220  |                  |
| FCTE 100-160/110 |                  |
| FCTE 100-200/185 |                  |
| FCTE 100-200/220 |                  |

fct-fcte-fcte4-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-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       | Key                                  | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10      | Plugs and air valve                  | Ottone nichelato                       | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11      | Gaskets for fill/drain plugs         | Aluminium                              | EN 573-AW-AI99,5 (AW1050A)          | -             |
| 12      | Mechanical seal                      | Carbon/Ceramic/EPDM (standard version) |                                     |               |
| 13      | Elastomers                           | EPDM (standard version)                |                                     |               |
| 14      | Adapter *                            | Aluminum                               | 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                       |                                     |               |
|         | Changeover valve                     | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |

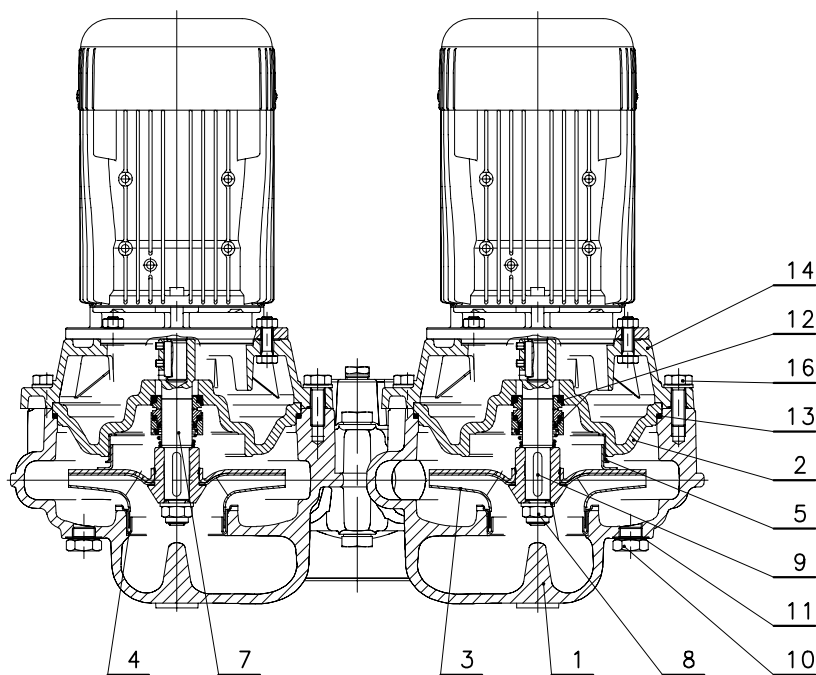
\* For 40/50-125 2/4 pole, 40/50-160 2/4 pole versions

fct\_fcte-fcte4-en\_b\_tm

## FCTE4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

05203\_A\_DS



#### VERSIONS 4 POLES

|                  |
|------------------|
| FCTE4 40-125/02A |
| FCTE4 40-125/02  |
| FCTE4 40-160/02  |
| FCTE4 40-160/03  |
| FCTE4 50-125/02  |
| FCTE4 50-125/03  |
| FCTE4 65-125/03  |

fct-fcte4\_a\_mo

| REF.<br>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-200 (JL1030)            | ASTM Class 25 |
| 3          | Impeller                             | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 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          | Key                                  | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10         | Plugs and air valve                  | Nickel-plated brass                    | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11         | Gaskets for fill/drain plugs         | Aluminium                              | EN 573-AW-Al99,5 (AW1050A)          | -             |
| 12         | Mechanical seal                      | Carbon/Ceramic/EPDM (standard version) |                                     |               |
| 13         | Elastomers                           | EPDM (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                       |                                     |               |
|            | Changeover valve                     | Stainless steel                        | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |

\* For 40/50-125 2/4 pole, 40/50-160 2/4 pole versions

fct\_fcte4-en\_b\_tm



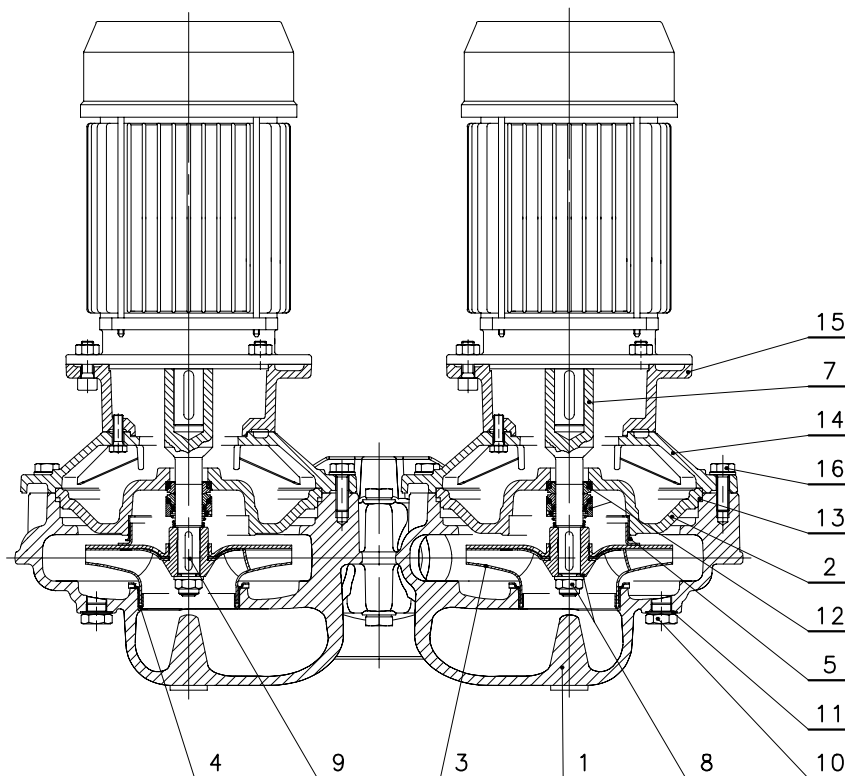
# ITT

# Lowara

## FCTS-FCTS4 SERIES

## LIST OF MODELS AND TABLE OF MATERIALS

05252\_A\_DS



### VERSIONS

| 2 POLES          | 4 POLES          |
|------------------|------------------|
| FCTS 40-125/07   | FCTS4 40-200/05  |
| FCTS 40-125/11   | FCTS4 40-200/07  |
| FCTS 40-160/15   | FCTS4 40-250/11  |
| FCTS 40-160/22   | FCTS4 40-250/15  |
| FCTS 40-200/30   | FCTS4 50-200/07  |
| FCTS 40-200/40   | FCTS4 50-200/11  |
| FCTS 40-200/55   | FCTS4 50-250/15  |
| FCTS 40-250/75   | FCTS4 50-250/22  |
| FCTS 40-250/110  | FCTS4 65-160/07  |
| FCTS 50-125/11   | FCTS4 65-160/11  |
| FCTS 50-125/15   | FCTS4 65-200/15  |
| FCTS 50-160/22   | FCTS4 65-250/22  |
| FCTS 50-160/30   | FCTS4 65-250/30  |
| FCTS 50-160/40   | FCTS4 80-125/07  |
| FCTS 50-200/55   | FCTS4 80-125/11  |
| FCTS 50-200/75   | FCTS4 80-200/15  |
| FCTS 50-250/110A | FCTS4 80-200/22  |
| FCTS 50-250/110  | FCTS4 80-200/30  |
| FCTS 50-250/150  | FCTS4 80-250/40  |
| FCTS 65-125/22   | FCTS4 80-250/55  |
| FCTS 65-125/30   | FCTS4 100-160/15 |
| FCTS 65-125/40   | FCTS4 100-200/22 |
| FCTS 65-160/55   | FCTS4 100-200/30 |
| FCTS 65-160/75   | FCTS4 100-250/40 |
| FCTS 65-200/110A | FCTS4 100-250/55 |
| FCTS 65-200/110  | FCTS4 100-250/75 |
| FCTS 65-250/150  |                  |
| FCTS 65-250/185  |                  |
| FCTS 65-250/220  |                  |
| FCTS 80-125/30   |                  |
| FCTS 80-125/40   |                  |
| FCTS 80-125/55   |                  |
| FCTS 80-160/75   |                  |
| FCTS 80-200/110  |                  |
| FCTS 80-200/150  |                  |
| FCTS 80-200/185  |                  |
| FCTS 80-200/220  |                  |
| FCTS 100-160/110 |                  |
| FCTS 100-200/185 |                  |
| FCTS 100-200/220 |                  |

fct-fcts-fcts4-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-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       | Key                                  | Stainless steel                                | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |
| 10      | Plugs and air valve                  | Nickel-plated brass                            | EN 12164-CuZn39Pb3 (CW614N)         | -             |
| 11      | Gaskets for fill/drain plugs         | Aluminium                                      | EN 573-AW-AI99,5 (AW1050A)          | -             |
| 12      | Mechanical seal                      | Carbon/Silicon carbide/EPDM (standard version) |                                     |               |
| 13      | Elastomers                           | EPDM (standard version)                        |                                     |               |
| 14      | Adapter *                            | Aluminium                                      | EN 1706-AC-AISI11Cu2 (Fe) (AC46100) | -             |
|         | Adapter                              | Cast iron                                      | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 15      | Motor adapter coupling               | Cast iron                                      | EN 1561-GJL-200 (JL1030)            | ASTM Class 25 |
| 16      | Pump body fastening bolts and screws | Galvanized steel                               |                                     |               |
|         | Changeover valve                     | Stainless steel                                | EN 10088-1-X2CrNiMo17-12-2 (1.4404) | AISI 316L     |

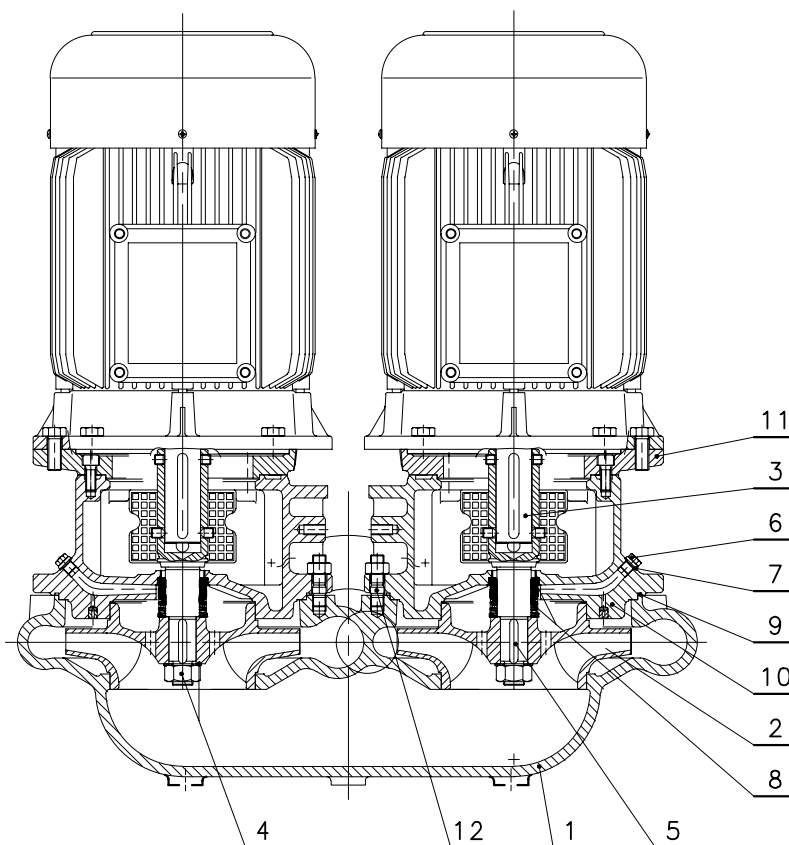
\* For 40/50-125 2/4 pole, 40/50-160 2/4 pole versions

fct\_fcts-fcts4- 40-100-en\_b\_tm

## FCTS4 SERIES

### LIST OF MODELS AND TABLE OF MATERIALS

05251\_A\_DS



#### VERSIONS 4 POLES

|                   |
|-------------------|
| FCTS4 125-160/30  |
| FCTS4 125-200/40  |
| FCTS4 125-200/55  |
| FCTS4 125-250/75  |
| FCTS4 125-250/110 |
| FCTS4 150-200/55  |
| FCTS4 150-200/75  |
| FCTS4 150-250/110 |
| FCTS4 150-250/150 |
| FCTS4 150-250/185 |

lmz-fcts4-125-150-en\_a\_mo

| REF.<br>N. | PART                                 | MATERIAL                                           | REFERENCE STANDARDS         |               |
|------------|--------------------------------------|----------------------------------------------------|-----------------------------|---------------|
|            |                                      |                                                    | EUROPE                      | USA           |
| 1          | Pump body                            | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 2          | Impeller                             | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
|            |                                      | Bronze                                             | EN 1982-CuSn10-C (CC480K)   | UNS C90700    |
| 3          | Rigid coupling                       | Stainless steel                                    | EN 10088-1-X20Cr13 (1.4021) | AISI 420      |
| 4          | Impeller lock nut and washer         | Steel                                              |                             |               |
| 5          | Key                                  | Steel                                              | EN 10083-1-C45E (1.1191)    | -             |
| 6          | Plugs and air valve                  | Steel                                              |                             |               |
| 7          | Gaskets for plugs                    | Asbestos-free synthetic fibre AFM34 ®              |                             |               |
| 8          | Mechanical seal                      | Silicon carbide / Carbon / EPDM (standard version) |                             |               |
| 9          | Elastomers                           | EPDM (standard version)                            |                             |               |
| 10         | Adapter                              | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 11         | Motor adapter coupling               | Cast iron                                          | EN 1561-GJL-250 (JL1040)    | ASTM Class 35 |
| 12         | Pump body fastening bolts and washer | Steel                                              |                             |               |
|            | Changeover valve                     | Steel                                              |                             |               |

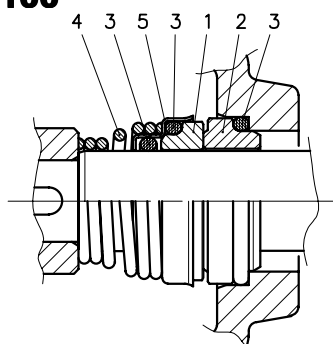
lmz\_fcts4 125-150-en\_b\_tm

## FC-FCT MECHANICAL SEAL, ACCORDING TO EN 12756

Mechanical seal mounting dimensions according to EN12756 (ex DIN 24960) and ISO 3069.

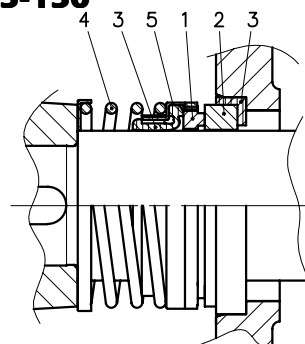
(A version with anti-rotation lockpin is available on request.)

### FC/FCT 40-100



04706B\_B\_DS

### FC/FCT 125-150



04706C\_B\_DS

## LIST OF MATERIALS

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

## FCE - FCTE SEAL TYPE

fc-fct\_ten-mec-en\_a\_tm

| TYPE                                | POSITION               |                     |                 |              |                       | TEMPERATURE<br>(°C) |
|-------------------------------------|------------------------|---------------------|-----------------|--------------|-----------------------|---------------------|
|                                     | 1<br>ROTATING ASSEMBLY | 2<br>FIXED ASSEMBLY | 3<br>ELASTOMERS | 4<br>SPRINGS | 5<br>OTHER COMPONENTS |                     |
| STANDARD MECHANICAL SEAL            |                        |                     |                 |              |                       |                     |
| V B E G G                           | V                      | B                   | E               | G            | G                     | -10 +130            |
| OTHER TYPES OF MECHANICAL SEAL      |                        |                     |                 |              |                       |                     |
| Q <sub>1</sub> B E G G              | Q <sub>1</sub>         | B                   | E               | G            | G                     | -10 +130            |
| Q <sub>1</sub> Q <sub>1</sub> E G G | Q <sub>1</sub>         | Q <sub>1</sub>      | E               | G            | G                     | -10 +130            |
| 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            |

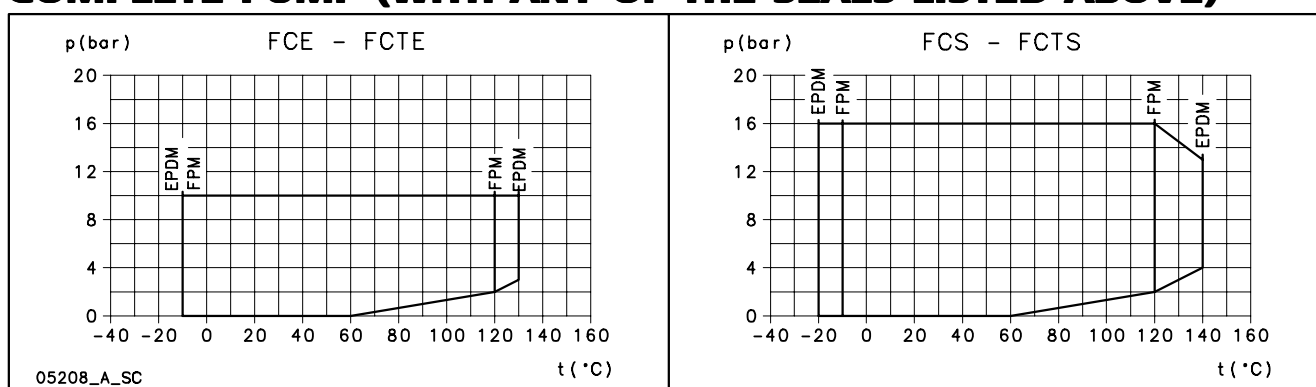
## FCS - FCTS SEAL TYPE

fcs-fcte\_tipi-ten-mec-en\_a\_tc

| TYPE                                | POSITION               |                     |                 |              |                       | TEMPERATURE<br>(°C) |
|-------------------------------------|------------------------|---------------------|-----------------|--------------|-----------------------|---------------------|
|                                     | 1<br>ROTATING ASSEMBLY | 2<br>FIXED ASSEMBLY | 3<br>ELASTOMERS | 4<br>SPRINGS | 5<br>OTHER COMPONENTS |                     |
| STANDARD MECHANICAL SEAL            |                        |                     |                 |              |                       |                     |
| Q <sub>1</sub> B E G G              | Q <sub>1</sub>         | B                   | E               | G            | G                     | -20 +140            |
| OTHER TYPES OF MECHANICAL SEAL      |                        |                     |                 |              |                       |                     |
| Q <sub>1</sub> Q <sub>1</sub> E G G | Q <sub>1</sub>         | Q <sub>1</sub>      | E               | G            | G                     | -20 +140            |
| 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)

fcs-fcts\_tipi-ten-mec-en\_a\_tc



**LIST OF FC SERIES MODELS 50 Hz**  
**FC - FCT (2 POLES)**

| SIZE        | kW   | VERSION       |             |             |
|-------------|------|---------------|-------------|-------------|
|             |      | FCEM<br>FCTEM | FCE<br>FCTE | FCS<br>FCTS |
| 40-125/07   | 0,75 | •             | •           | •           |
| 40-125/11   | 1,1  | •             | •           | •           |
| 40-160/15   | 1,5  | •             | •           | •           |
| 40-160/22   | 2,2  | •             | •           | •           |
| 40-200/30   | 3    | -             | -           | •           |
| 40-200/40A  | 4    | -             | •           | -           |
| 40-200/40   | 4    | -             | •           | •           |
| 40-200/55   | 5,5  | -             | •           | •           |
| 40-250/75   | 7,5  | -             | •           | •           |
| 40-250/110  | 11   | -             | •           | •           |
| 50-125/11   | 1,1  | •             | •           | •           |
| 50-125/15   | 1,5  | •             | •           | •           |
| 50-160/22   | 2,2  | •             | •           | •           |
| 50-160/30   | 3    | -             | •           | •           |
| 50-160/40   | 4    | -             | •           | •           |
| 50-200/55   | 5,5  | -             | •           | •           |
| 50-200/75   | 7,5  | -             | •           | •           |
| 50-250/92   | 9,2  | -             | •           | -           |
| 50-250/110A | 11   | -             | -           | •           |
| 50-250/110  | 11   | -             | •           | •           |
| 50-250/150  | 15   | -             | •           | •           |
| 65-125/22   | 2,2  | •             | •           | •           |
| 65-125/30   | 3    | -             | •           | •           |
| 65-125/40   | 4    | -             | •           | •           |
| 65-160/55   | 5,5  | -             | •           | •           |
| 65-160/75   | 7,5  | -             | •           | •           |
| 65-200/92   | 9,2  | -             | •           | -           |
| 65-200/110A | 11   | -             | -           | •           |
| 65-200/110  | 11   | -             | •           | •           |
| 65-250/150  | 15   | -             | •           | •           |
| 65-250/185  | 18,5 | -             | •           | •           |
| 65-250/220  | 22   | -             | •           | •           |
| 80-125/30   | 3    | -             | •           | •           |
| 80-125/40   | 4    | -             | •           | •           |
| 80-125/55   | 5,5  | -             | •           | •           |
| 80-160/75   | 7,5  | -             | •           | •           |
| 80-200/110  | 11   | -             | •           | •           |
| 80-200/150  | 15   | -             | •           | •           |
| 80-200/185  | 18,5 | -             | •           | •           |
| 80-200/220  | 22   | -             | •           | •           |
| 100-160/110 | 11   | -             | •           | •           |
| 100-200/185 | 18,5 | -             | •           | •           |
| 100-200/220 | 22   | -             | •           | •           |
|             |      |               |             |             |
|             |      |               |             |             |
|             |      |               |             |             |
|             |      |               |             |             |

• = Available

fc\_fce-fcs\_2p50-en\_b\_tem

**FC.4 - FCT.4 (4 POLES)**

| SIZE        | kW   | VERSION       |      |       |
|-------------|------|---------------|------|-------|
|             |      | FCE4<br>FCTE4 | FCS4 | FCTS4 |
| 40-125/02A  | 0,25 | •             | -    | -     |
| 40-125/02   | 0,25 | •             | -    | -     |
| 40-160/02   | 0,25 | •             | -    | -     |
| 40-160/03   | 0,37 | •             | -    | -     |
| 40-200/05   | 0,55 | •             | •    | •     |
| 40-200/07   | 0,75 | •             | •    | •     |
| 40-250/11   | 1,1  | •             | •    | •     |
| 40-250/15   | 1,5  | •             | •    | •     |
| 50-125/02   | 0,25 | •             | -    | -     |
| 50-125/03   | 0,37 | •             | -    | -     |
| 50-160/05   | 0,55 | •             | -    | -     |
| 50-200/07   | 0,75 | •             | •    | •     |
| 50-200/11   | 1,1  | •             | •    | •     |
| 50-250/15   | 1,5  | •             | •    | •     |
| 50-250/22   | 2,2  | •             | •    | •     |
| 65-125/03   | 0,37 | •             | -    | -     |
| 65-125/05   | 0,55 | •             | -    | -     |
| 65-160/07   | 0,75 | •             | •    | •     |
| 65-160/11   | 1,1  | •             | •    | •     |
| 65-200/15   | 1,5  | •             | •    | •     |
| 65-250/22   | 2,2  | •             | •    | •     |
| 65-250/30   | 3    | •             | •    | •     |
| 80-125/07   | 0,75 | •             | •    | •     |
| 80-125/11   | 1,1  | •             | •    | •     |
| 80-200/15   | 1,5  | •             | •    | •     |
| 80-200/22   | 2,2  | •             | •    | •     |
| 80-200/30   | 3    | •             | •    | •     |
| 80-250/40   | 4    | •             | •    | •     |
| 80-250/55   | 5,5  | •             | •    | •     |
| 100-160/15  | 1,5  | •             | •    | •     |
| 100-200/22  | 2,2  | •             | •    | •     |
| 100-200/30  | 3    | •             | •    | •     |
| 100-250/40  | 4    | •             | •    | •     |
| 100-250/55  | 5,5  | •             | •    | •     |
| 100-250/75  | 7,5  | •             | •    | •     |
| 125-160/30  | 3    | -             | •    | •     |
| 125-200/40  | 4    | -             | •    | •     |
| 125-200/55  | 5,5  | -             | •    | •     |
| 125-250/75  | 7,5  | -             | •    | •     |
| 125-250/110 | 11   | -             | •    | •     |
| 125-315/150 | 15   | -             | •    | -     |
| 125-315/185 | 18,5 | -             | •    | -     |
| 125-315/220 | 22   | -             | •    | -     |
| 150-200/55  | 5,5  | -             | •    | •     |
| 150-200/75  | 7,5  | -             | •    | •     |
| 150-250/110 | 11   | -             | •    | •     |
| 150-250/150 | 15   | -             | •    | •     |
| 150-250/185 | 18,5 | -             | •    | •     |

• = Available

fc\_fce4-fcs4\_4p50-en\_b\_tem

## MOTORS

Squirrel cage motor in short circuit (TEFC), enclosed construction with external ventilation. The standard supply features Lowara motors for powers up to 15 kW (included) in the 4-pole version, and up to 22 kW (included) in the 2-pole version. Other motor are used for higher powers.

**The Lowara PLM surface motors have efficiency values that fall within the range normally referred to as efficiency class 1.**

Cooling is ensured by a fan according to EN 60034-6.

The cable gland has standard passage dimensions according to EN 50262 (metric size).

The standard protection IP55, insulation class F.

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.

### • Type of motor used:

#### 2-Pole

Single-phase: Lowara SM (up to 1,5 kW).

Lowara PLM (above 1,5 kW).

Three-phase: Lowara SM (up to 2,2 kW).

Lowara PLM (above 2,2 kW).

#### 4-Pole

Three-phase: Lowara SM (up to 0,75 kW).

Lowara PLM (above 0,75 kW).

## FCE-FCTE SERIES SINGLE-PHASE 50 Hz, 2-POLE MOTORS

| MOTOR TYPE |            |                        | INPUT<br>CURRENT<br>In (A)<br>220-240 V | CAPACITOR |     | DATA FOR 230 V 50 Hz VOLTAGE |         |      |      |          |         |
|------------|------------|------------------------|-----------------------------------------|-----------|-----|------------------------------|---------|------|------|----------|---------|
| kW         | IEC SIZE * | CONSTRUCTION<br>DESIGN |                                         | μF        | V   | min <sup>-1</sup>            | Is / In | η %  | cosφ | Tn<br>Nm | Ts/Tn** |
| 0,75       | 90R        | B14                    | 5,02-5,39                               | 30        | 450 | 2875                         | 5,10    | 70,6 | 0,91 | 2,49     | 0,71    |
| 1,1        | 90R        | B14                    | 7,07-6,81                               | 30        | 450 | 2800                         | 3,80    | 73,8 | 0,95 | 3,75     | 0,47    |
| 1,5        | 90R        | B14                    | 9,32-8,63                               | 40        | 450 | 2780                         | 3,45    | 75,5 | 0,97 | 5,15     | 0,47    |
| 2,2        | 90         | B14                    | 12,7-11,8                               | 70        | 450 | 2835                         | 4,35    | 81,3 | 0,97 | 7,42     | 0,56    |

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

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

\*\* Ts/Tn = ratio between starting torque and nominal torque.

## FCE-FCTE SERIES THREE-PHASE 50 Hz, 2-POLE MOTORS

| MOTOR TYPE |            |                        | INPUT CURRENT<br>In (A) |                |                |                | DATA FOR 400 V 50 Hz VOLTAGE |         |      |      |          |         |
|------------|------------|------------------------|-------------------------|----------------|----------------|----------------|------------------------------|---------|------|------|----------|---------|
| kW         | IEC SIZE * | CONSTRUCTION<br>DESIGN | Δ<br>220-240 V          | Y<br>380-415 V | Δ<br>380-415 V | Y<br>660-690 V | min <sup>-1</sup>            | Is / In | η %  | cosφ | Tn<br>Nm | Ts/Tn** |
| 0,75       | 90R        | B14                    | 3,74                    | 2,16           | -              | -              | 2915                         | 8,23    | 77,7 | 0,65 | 2,45     | 5,20    |
| 1,1        | 90R        | B14                    | 4,52                    | 2,61           | -              | -              | 2875                         | 6,78    | 78,9 | 0,77 | 3,65     | 3,49    |
| 1,5        | 90R        | B14                    | 5,98                    | 3,45           | -              | -              | 2875                         | 7,04    | 80,1 | 0,78 | 4,98     | 3,83    |
| 2,2        | 90R        | B14                    | 8,71                    | 5,03           | -              | -              | 2860                         | 7,32    | 81,1 | 0,78 | 7,34     | 4,12    |
| 3          | 90         | B14                    | 10,8                    | 6,25           | -              | -              | 2880                         | 8,25    | 86,7 | 0,80 | 9,96     | 4,02    |
| 4          | 112R       | B14                    | -                       | -              | 7,71           | 4,45           | 2900                         | 9,51    | 89,1 | 0,84 | 13,2     | 3,93    |
| 5,5        | 112        | B14                    | -                       | -              | 10,4           | 6,00           | 2895                         | 10,3    | 89,0 | 0,86 | 18,2     | 4,47    |
| 7,5        | 132        | B14                    | -                       | -              | 13,9           | 8,03           | 2925                         | 9,52    | 89,9 | 0,87 | 24,5     | 3,24    |
| 9,2        | 132        | B14                    | -                       | -              | 16,7           | 9,6            | 2930                         | 10,1    | 91,6 | 0,87 | 30,0     | 3,10    |
| 11         | 132        | B14                    | -                       | -              | 20,2           | 11,7           | 2915                         | 9,49    | 91,2 | 0,86 | 36,0     | 3,57    |
| 15         | 160        | B14                    | -                       | -              | 26,2           | 15,1           | 2945                         | 8,23    | 92,3 | 0,89 | 48,6     | 2,37    |
| 18,5       | 160        | B14                    | -                       | -              | 33,4           | 19,3           | 2955                         | 9,25    | 93,1 | 0,86 | 59,8     | 2,62    |
| 22         | 160        | B14                    | -                       | -              | 37,9           | 21,9           | 2950                         | 9,37    | 93,1 | 0,90 | 71,2     | 2,68    |

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

fce-fcte-mott-2p50-en\_b\_te

\*\* Ts/Tn = ratio between starting torque and nominal torque.

## FCS-FCTS SERIES

### THREE-PHASE 50 Hz, 2-POLE MOTORS

| MOTOR TYPE |            |                     | INPUT CURRENT |             |             |             | DATA FOR 400 V 50 Hz VOLTAGE |         |      |      |       |         |
|------------|------------|---------------------|---------------|-------------|-------------|-------------|------------------------------|---------|------|------|-------|---------|
| kW         | IEC SIZE * | CONSTRUCTION DESIGN | In (A)        |             |             |             | min <sup>-1</sup>            | Is / In | η %  | cosφ | Tn Nm | Ts/Tn** |
|            |            |                     | Δ 220-240 V   | Y 380-415 V | Δ 380-415 V | Y 660-690 V |                              |         |      |      |       |         |
| 0,75       | 80R        | B5                  | 3,50          | 2,02        | -           | -           | 2855                         | 5,81    | 74,3 | 0,72 | 2,51  | 3,76    |
| 1,1        | 80         | B5                  | 4,52          | 2,61        | -           | -           | 2875                         | 6,78    | 78,9 | 0,77 | 3,65  | 3,49    |
| 1,5        | 90R        | B5                  | 5,98          | 3,45        | -           | -           | 2875                         | 7,04    | 80,1 | 0,78 | 4,98  | 3,83    |
| 2,2        | 90R        | B5                  | 8,71          | 5,03        | -           | -           | 2860                         | 7,32    | 81,1 | 0,78 | 7,34  | 4,12    |
| 3          | 100R       | B5                  | 10,8          | 6,25        | -           | -           | 2880                         | 8,25    | 86,7 | 0,80 | 10,0  | 4,02    |
| 4          | 112R       | B5                  | -             | -           | 7,71        | 4,45        | 2900                         | 9,51    | 89,1 | 0,84 | 13,2  | 3,93    |
| 5,5        | 132R       | B5                  | -             | -           | 10,4        | 6,00        | 2895                         | 10,3    | 89,0 | 0,86 | 18,2  | 4,47    |
| 7,5        | 132        | B5                  | -             | -           | 13,9        | 8,03        | 2925                         | 9,52    | 89,9 | 0,87 | 24,5  | 3,24    |
| 11         | 160R       | B5                  | -             | -           | 20,2        | 11,7        | 2915                         | 9,49    | 91,2 | 0,86 | 36,0  | 3,57    |
| 15         | 160        | B5                  | -             | -           | 26,2        | 15,1        | 2945                         | 8,23    | 92,3 | 0,89 | 48,6  | 2,37    |
| 18,5       | 160        | B5                  | -             | -           | 33,4        | 19,3        | 2955                         | 9,25    | 93,1 | 0,86 | 59,8  | 2,62    |
| 22         | 180R       | B5                  | -             | -           | 37,9        | 21,9        | 2950                         | 9,37    | 93,1 | 0,90 | 71,2  | 2,68    |

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

fcs-fcts-mott-2p50-en\_c\_te

\*\* Ts/Tn = ratio between starting torque and nominal torque.

## FCE4-FCTE4 SERIES

### THREE-PHASE 50 Hz, 4-POLE MOTORS

| MOTOR TYPE |            |                     | INPUT CURRENT |             |             |             | DATA FOR 400 V 50 Hz VOLTAGE |         |      |      |       |         |
|------------|------------|---------------------|---------------|-------------|-------------|-------------|------------------------------|---------|------|------|-------|---------|
| kW         | IEC SIZE * | CONSTRUCTION DESIGN | In (A)        |             |             |             | min <sup>-1</sup>            | Is / In | η %  | cosφ | Tn Nm | Ts/Tn** |
|            |            |                     | Δ 220-240 V   | Y 380-415 V | Δ 380-415 V | Y 660-690 V |                              |         |      |      |       |         |
| 0,25       | 71         | B5                  | 1,71          | 0,99        | -           | -           | 1390                         | 3,58    | 62,0 | 0,59 | 1,71  | 3,16    |
| 0,37       | 71         | B5                  | 2,53          | 1,46        | -           | -           | 1370                         | 3,39    | 61,4 | 0,60 | 2,57  | 3,40    |
| 0,55       | 90R        | B5-B14              | 3,03          | 1,75        | -           | -           | 1390                         | 3,95    | 68,2 | 0,67 | 3,77  | 2,45    |
| 0,75       | 90R        | B5                  | 4,04          | 2,33        | -           | -           | 1395                         | 4,06    | 70,1 | 0,66 | 5,13  | 2,73    |
| 1,1        | 90         | B5                  | 4,66          | 2,69        | -           | -           | 1445                         | 5,78    | 83,9 | 0,71 | 7,28  | 2,11    |
| 1,5        | 90         | B5                  | 6,46          | 3,73        | -           | -           | 1445                         | 6,84    | 85,3 | 0,68 | 9,88  | 2,84    |
| 2,2        | 100        | B5                  | 8,11          | 4,68        | -           | -           | 1450                         | 6,97    | 86,8 | 0,79 | 14,6  | 2,58    |
| 3          | 100        | B5                  | 11,8          | 6,81        | -           | -           | 1455                         | 7,53    | 87,6 | 0,73 | 19,7  | 3,12    |
| 4          | 112        | B5                  | -             | -           | 8,48        | 4,90        | 1450                         | 7,67    | 88,3 | 0,77 | 26,4  | 2,71    |
| 5,5        | 132        | B14                 | -             | -           | 11,3        | 6,52        | 1455                         | 7,13    | 89,5 | 0,79 | 36,0  | 2,88    |
| 7,5        | 132        | B14                 | -             | -           | 15,4        | 8,89        | 1455                         | 7,38    | 90,1 | 0,78 | 49,1  | 3,10    |

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

fce4-fcte4-mott-4p50-en\_b\_te

\*\* Ts/Tn = ratio between starting torque and nominal torque.

## FCS4-FCTS4 SERIES

### THREE-PHASE 50 Hz, 4-POLE MOTORS

| MOTOR TYPE |            |                     | INPUT CURRENT |             |             |             | DATA FOR 400 V 50 Hz VOLTAGE |         |      |      |       |         |
|------------|------------|---------------------|---------------|-------------|-------------|-------------|------------------------------|---------|------|------|-------|---------|
| kW         | IEC SIZE * | CONSTRUCTION DESIGN | In (A)        |             |             |             | min <sup>-1</sup>            | Is / In | η %  | cosφ | Tn Nm | Ts/Tn** |
|            |            |                     | Δ 220-240 V   | Y 380-415 V | Δ 380-415 V | Y 660-690 V |                              |         |      |      |       |         |
| 0,55       | 80         | B5                  | 3,03          | 1,75        | -           | -           | 1390                         | 3,95    | 68,2 | 0,67 | 3,77  | 2,45    |
| 0,75       | 80         | B5                  | 4,04          | 2,33        | -           | -           | 1395                         | 4,06    | 70,1 | 0,66 | 5,13  | 2,73    |
| 1,1        | 90         | B5                  | 4,66          | 2,69        | -           | -           | 1445                         | 5,78    | 83,9 | 0,71 | 7,28  | 2,11    |
| 1,5        | 90         | B5                  | 6,46          | 3,73        | -           | -           | 1445                         | 6,84    | 85,3 | 0,68 | 9,88  | 2,84    |
| 2,2        | 100        | B5                  | 8,11          | 4,68        | -           | -           | 1450                         | 6,97    | 86,8 | 0,79 | 14,6  | 2,58    |
| 3          | 100        | B5                  | 11,8          | 6,81        | -           | -           | 1455                         | 7,53    | 87,6 | 0,73 | 19,7  | 3,12    |
| 4          | 112        | B5                  | -             | -           | 8,48        | 4,90        | 1450                         | 7,67    | 88,3 | 0,77 | 26,4  | 2,71    |
| 5,5        | 132        | B5                  | -             | -           | 11,3        | 6,52        | 1455                         | 7,13    | 89,5 | 0,79 | 36,0  | 2,88    |
| 7,5        | 132        | B5                  | -             | -           | 15,4        | 8,89        | 1455                         | 7,38    | 90,1 | 0,78 | 49,1  | 3,10    |
| 11         | 160        | B5                  | -             | -           | 21,1        | 12,2        | 1465                         | 6,92    | 91,1 | 0,83 | 71,6  | 2,39    |
| 15         | 160        | B5                  | -             | -           | 30,7        | 17,7        | 1475                         | 8,05    | 92,0 | 0,77 | 97,2  | 2,93    |
| 18,5       | 180        | B5                  | -             | -           | 37,0        | 21,4        | 1465                         | 6,20    | 90,2 | 0,80 | 120   | 2,30    |
| 22         | 180        | B5                  | -             | -           | 42,0        | 24,2        | 1465                         | 6,30    | 90,8 | 0,83 | 143   | 2,40    |

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

fcs4-fcts4-mott-4p50-en\_c\_te

\*\* Ts/Tn = ratio between starting torque and nominal torque.

## MOTOR NOISE

The tables below show the mean sound pressure levels (Lp) measured at 1 meter's distance in a free field according to the A curve (ISO 1680 standard).

The noise values are measured with idling 50 Hz motor with a tolerance of 3 dB (A).

### FCE-FCS-FCTE-FCTS MOTORS 50 Hz 2-POLE

| POWER | MOTOR TYPE | NOISE     |
|-------|------------|-----------|
| kW    | IEC SIZE * | LpA<br>dB |
| 0,75  | 90R        | <70       |
| 1,1   | 90R        | <70       |
| 1,5   | 90R        | <70       |
| 2,2   | 90R        | <70       |
| 3     | 90         | <70       |
| 4     | 112R       | <70       |
| 5,5   | 112        | <70       |
| 7,5   | 112        | 71        |
| 9,2   | 132        | 73        |
| 11    | 132        | 73        |
| 15    | 160        | 71        |
| 18,5  | 160        | 73        |
| 22    | 160        | 70        |
|       |            |           |
|       |            |           |

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

### FCE4-FCS4-FCTE4-FCTS4 MOTORS 50 Hz 4-POLE

| POWER | MOTOR TYPE | NOISE     |
|-------|------------|-----------|
| kW    | IEC SIZE * | LpA<br>dB |
| 0,25  | 71         | <70       |
| 0,37  | 71         | <70       |
| 0,55  | 90R        | <70       |
| 0,75  | 90R        | <70       |
| 1,1   | 90         | <70       |
| 1,5   | 90         | <70       |
| 2,2   | 100        | <70       |
| 3     | 100        | <70       |
| 4     | 112        | <70       |
| 5,5   | 132        | <70       |
| 7,5   | 132        | <70       |
| 11    | 160        | <70       |
| 15    | 160        | <70       |
| 18,5  | 180        | <70       |
| 22    | 180        | <70       |

fce-fcs-fcte-fcts\_mott-en\_b\_tr

## **FCH-FCTH SERIES ELECTRIC PUMPS WITH HYDROVAR® AND HYDROVAR® SENSORLESS CONTROL SYSTEM**

We recommend the use of the FC-FCT series electric pumps combined with the HYDROVAR® and HYDROVAR® Sensorless devices.

HYDROVAR® and HYDROVAR® Sensorless are micro-processor controlled devices for pumping systems, designed to control pump operation according to system conditions and requirements.

This way the simple electric pump is transformed into a complete pumping system principally designed for air-conditioning and heating applications, adapting the differential pressure of the closed circuit to the requested load.

- **No special pumps or motors:**

HYDROVAR® is mounted directly onto a standard three-phase TEFC motor with class F insulation up to 22 kW power. (HYDROVAR® Sensorless up to 4 kW).

- HYDROVAR® Sensorless enables the control of an electric circulator pump by monitoring the power control, without requiring a differential pressure transmitter.

- **No separate control panels or converters:**  
HYDROVAR® and HYDROVAR® Sensorless, perform all the functions of a pump control panel, incorporating protections against overload, short circuit, high temperature, etc. The only external device required is a fuse on the power supply line. Will depend upon any local electrical installation regulations.

- **No by-pass lines or safety systems:**

With HYDROVAR® the pump switches off immediately when demand is zero or exceeds the maximum capacity of the pump. This way there is no need to install additional safety devices.

- **The pump's operation at the correct speed based on system requirements enables energy consumption to be substantially reduced.**



## GENERAL OPERATING PRINCIPLES OF THE HYDROVAR® SYSTEM

The basic function of the HYDROVAR® device is to control the pump to meet the system demands.

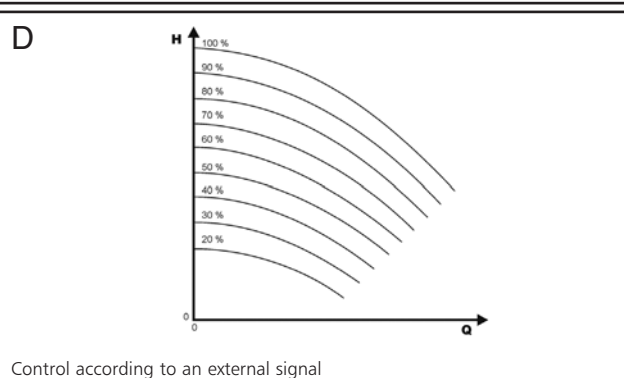
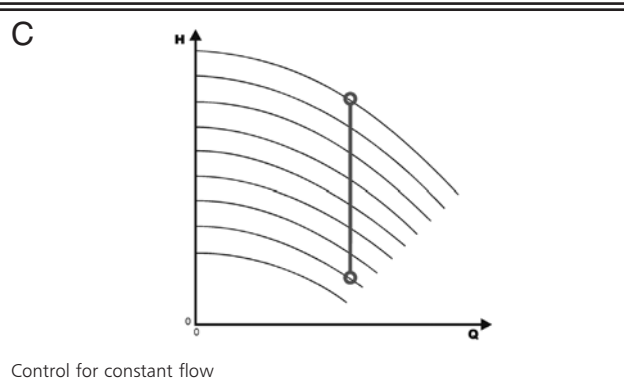
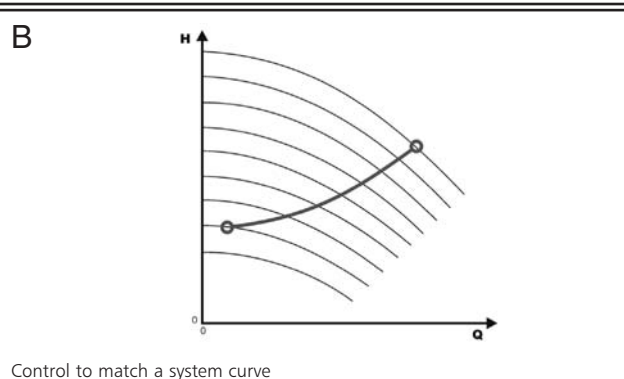
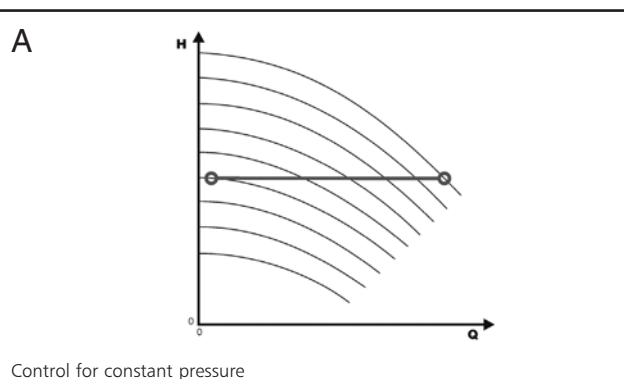
For the FC and FCT series electric pumps, typical operation consists in system regulation based on the characteristic curve (B).

### HYDROVAR® performs these functions by:

- 1) Measuring the system pressure or flow via a transmitter mounted on the pump's delivery side.
- 2) Calculating the motor speed to maintain the correct flow or pressure.
- 3) Sending out a signal to the pump to start the motor, increase speed, decrease speed or stop.
- 4) In the case of multiple pump installations, HYDROVAR® will automatically provide for the cyclic changeover of the pumps' starting sequence

In addition to these basic functions, HYDROVAR® can do things only by the most advanced computerised control systems, such as:

- Stop the pump(s) at zero demand.
- Stop the pump(s) in case of water failure on the suction side (protection against dry running).
- Stop the pump if the required delivery exceeds the pump's capacity (protection against cavitation caused by excessive demand), or automatically switch on the next pump in a multiple series.
- Protect the pump and motor from overvoltage, undervoltage, overload and earth fault.
- Vary the pump speed acceleration and deceleration time.
- Compensate for increased flow resistance at high flow rates.
- Conduct automatic test starts at set intervals.
- Monitor the converter and motor operating hours.
- Display all functions on an LCD in different languages (Italian, English, French, German, Spanish, Portuguese, Dutch).
- Send a signal to a remote control system which is proportional to the pressure and frequency.
- Communicate with another HYDROVAR or control system via an RS 485 interface.





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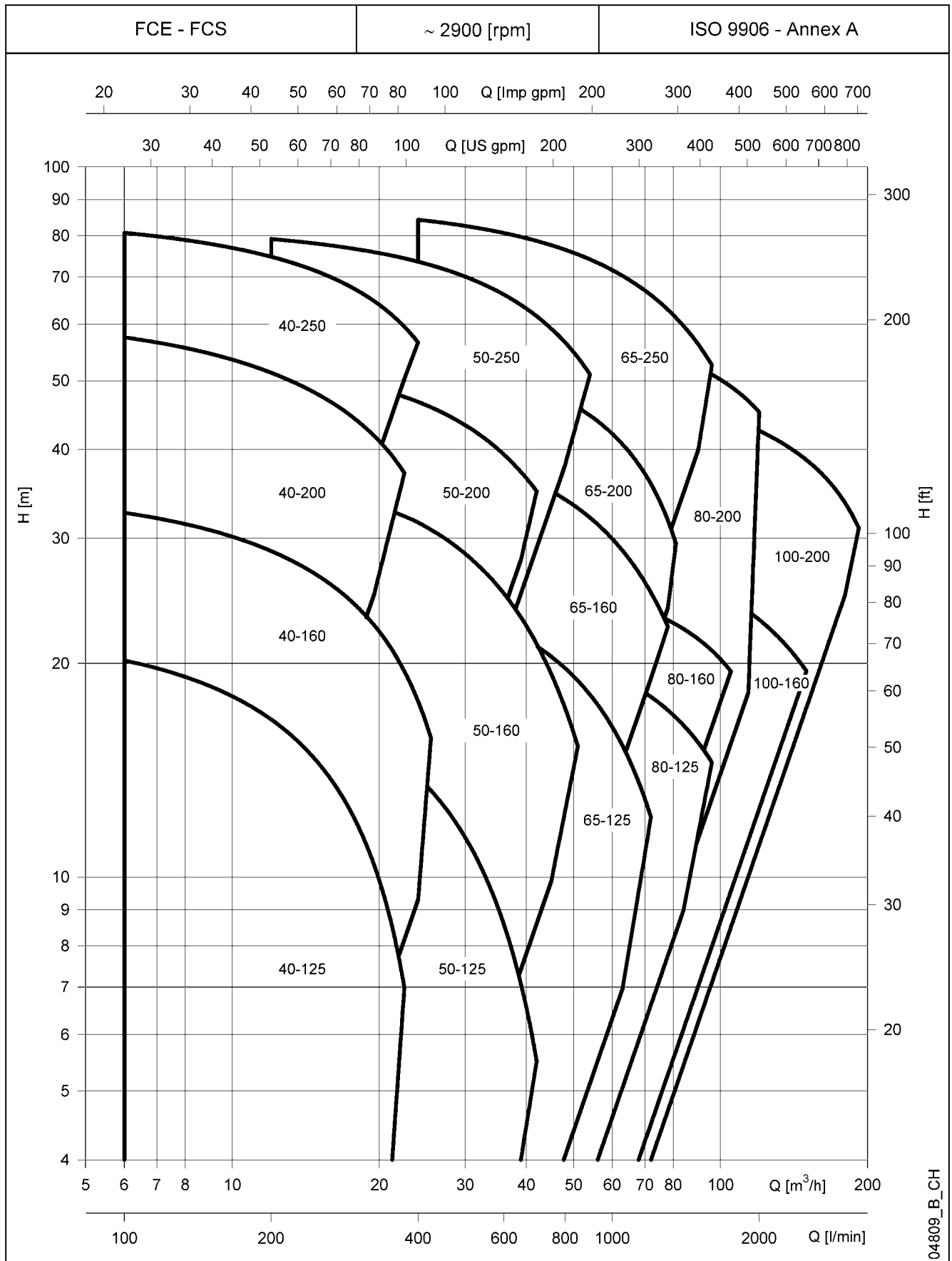


# ITT

## Lowara

### FCE-FCS 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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

**FCE-FCS SERIES**
**HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES**

| PUMP<br>TYPE | RATED<br>POWER |     | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|-----|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | kW             | HP  | l/min 0                               | 100  | 200  | 350  | 375  | 400  | 600  | 700  | 800  | 850  | 1000 | 1200 | 1300 | 1500 | 1600 | 1750 | 1950 | 2500 | 3000 |
|              |                |     | m³/h 0                                | 6    | 12   | 21   | 22,5 | 24   | 36   | 42   | 48   | 51   | 60   | 72   | 78   | 90   | 96   | 105  | 117  | 150  | 180  |
|              |                |     | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/07    | 0,75           | 1   | 17,1                                  | 15,1 | 11,8 | 3,6  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/11    | 1,1            | 1,5 | 22,6                                  | 20,2 | 16,7 | 8,8  | 7,0  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/15    | 1,5            | 2   | 27,3                                  | 24,7 | 20,9 | 13,1 | 11,3 | 9,3  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/22    | 2,2            | 3   | 35,3                                  | 32,6 | 28,8 | 21,1 | 19,5 | 17,7 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/*     | *              | *   | 42,5                                  | 38,9 | 34,0 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/40    | 4              | 5,5 | 51,0                                  | 46,9 | 41,7 | 30,6 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/55    | 5,5            | 7,5 | 62,0                                  | 57,6 | 51,3 | 39,6 | 37,1 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/75    | 7,5            | 10  | 75,4                                  | 71,1 | 65,0 | 52,9 | 50,3 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/110   | 11             | 15  | 85,2                                  | 80,8 | 74,8 | 62,3 | 59,6 | 56,6 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/11/A  | 1,1            | 1,5 | 15,3                                  |      | 13,5 | 11,1 | 10,6 | 10,1 | 5,4  |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/15/A  | 1,5            | 2   | 19,1                                  |      | 17,5 | 14,9 | 14,4 | 13,8 | 8,6  | 5,5  |      |      |      |      |      |      |      |      |      |      |      |
| 50-160/22    | 2,2            | 3   | 26,1                                  |      | 23,9 | 21,1 | 20,5 | 20,0 | 14,7 | 11,6 |      |      |      |      |      |      |      |      |      |      |      |
| 50-160/30    | 3              | 4   | 32,8                                  |      | 30,6 | 27,2 | 26,5 | 25,9 | 19,9 | 16,6 | 13,1 |      |      |      |      |      |      |      |      |      |      |
| 50-160/40    | 4              | 5,5 | 38,1                                  |      | 36,1 | 32,9 | 32,3 | 31,6 | 25,1 | 21,3 | 17,3 | 15,3 |      |      |      |      |      |      |      |      |      |
| 50-200/55    | 5,5            | 7,5 | 47,0                                  |      | 43,5 | 39,6 | 38,8 | 38,0 | 30,3 |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-200/75    | 7,5            | 10  | 56,0                                  |      | 52,0 | 48,2 | 47,5 | 46,7 | 39,4 | 34,9 |      |      |      |      |      |      |      |      |      |      |      |
| 50-250/**    | **             | **  | 63,2                                  |      | 59,4 | 55,3 | 54,5 | 53,8 | 46,7 | 42,6 | 38,0 |      |      |      |      |      |      |      |      |      |      |
| 50-250/110   | 11             | 15  | 69,4                                  |      | 65,3 | 61,3 | 60,6 | 59,8 | 53,2 | 49,4 | 45,0 | 42,5 |      |      |      |      |      |      |      |      |      |
| 50-250/150   | 15             | 20  | 83,0                                  |      | 79,2 | 75,1 | 74,4 | 73,6 | 66,1 | 61,6 | 56,6 | 53,9 |      |      |      |      |      |      |      |      |      |
| 65-125/22    | 2,2            | 3   | 18,8                                  |      |      |      |      | 16,4 | 14,3 | 13,0 | 11,4 | 10,6 | 7,9  |      |      |      |      |      |      |      |      |
| 65-125/30    | 3              | 4   | 22,9                                  |      |      |      |      | 20,3 | 18,1 | 16,7 | 15,2 | 14,3 | 11,6 |      |      |      |      |      |      |      |      |
| 65-125/40    | 4              | 5,5 | 26,6                                  |      |      |      |      | 24,4 | 22,4 | 21,1 | 19,7 | 18,9 | 16,3 | 12,1 |      |      |      |      |      |      |      |
| 65-160/55    | 5,5            | 7,5 | 35,1                                  |      |      |      |      | 32,5 | 30,1 | 28,7 | 27,1 | 26,3 | 23,5 | 19,1 |      |      |      |      |      |      |      |
| 65-160/75    | 7,5            | 10  | 42,4                                  |      |      |      |      | 40,0 | 37,4 | 35,8 | 34,0 | 33,1 | 29,9 | 25,2 | 22,5 |      |      |      |      |      |      |
| 65-200/**    | **             | **  | 53,0                                  |      |      |      |      | 47,6 | 44,1 | 42,2 | 40,1 | 39,0 | 35,2 | 28,4 | 24,0 |      |      |      |      |      |      |
| 65-200/110   | 11             | 15  | 61,0                                  |      |      |      |      | 55,2 | 51,3 | 49,3 | 47,1 | 45,9 | 42,1 | 35,8 | 31,8 |      |      |      |      |      |      |
| 65-250/150   | 15             | 20  | 70,0                                  |      |      |      |      | 66,3 | 63,0 | 61,1 | 58,9 | 57,8 | 54,2 | 48,9 | 46,1 | 40,0 |      |      |      |      |      |
| 65-250/185   | 18,5           | 25  | 80,0                                  |      |      |      |      | 75,2 | 71,8 | 69,9 | 67,7 | 66,6 | 63,0 | 57,6 | 54,6 | 47,9 |      |      |      |      |      |
| 65-250/220   | 22             | 30  | 89,0                                  |      |      |      |      | 84,3 | 80,7 | 78,7 | 76,5 | 75,3 | 71,6 | 66,0 | 63,0 | 56,3 | 52,6 |      |      |      |      |
| 80-125/30    | 3              | 4   | 15,5                                  |      |      |      |      |      | 14,5 | 14,1 | 13,6 | 13,3 | 12,3 | 10,7 | 9,9  |      |      |      |      |      |      |
| 80-125/40    | 4              | 5,5 | 19,0                                  |      |      |      |      |      | 18,0 | 17,6 | 17,0 | 16,8 | 15,8 | 14,2 | 13,3 | 11,5 |      |      |      |      |      |
| 80-125/55    | 5,5            | 7,5 | 23,0                                  |      |      |      |      |      | 21,5 | 21,0 | 20,5 | 20,2 | 19,3 | 18,0 | 17,2 | 15,5 | 14,5 |      |      |      |      |
| 80-160/75    | 7,5            | 10  | 28,0                                  |      |      |      |      |      | 26,5 | 26,1 | 25,6 | 25,4 | 24,7 | 23,6 | 23,0 | 21,6 | 20,8 | 19,5 |      |      |      |
| 80-200/110   | 11             | 15  | 41,0                                  |      |      |      |      |      | 37,0 | 36,2 | 35,2 | 34,7 | 33,2 | 30,7 | 29,3 | 26,2 | 24,5 | 21,5 |      |      |      |
| 80-200/150   | 15             | 20  | 49,4                                  |      |      |      |      |      | 46,3 | 45,6 | 44,8 | 44,3 | 43,0 | 41,0 | 39,9 | 37,5 | 36,2 | 33,9 | 30,5 |      |      |
| 80-200/185   | 18,5           | 25  | 56,9                                  |      |      |      |      |      | 53,4 | 52,6 | 51,7 | 51,2 | 49,8 | 47,9 | 46,9 | 44,7 | 43,5 | 41,4 | 38,1 |      |      |
| 80-200/220   | 22             | 30  | 65,2                                  |      |      |      |      |      | 61,3 | 60,4 | 59,5 | 59,0 | 57,6 | 55,5 | 54,5 | 52,2 | 51,0 | 49,1 | 46,0 |      |      |
| 100-160/110  | 11             | 15  | 29,0                                  |      |      |      |      |      |      |      |      |      | 28,0 | 27,3 | 26,9 | 25,9 | 25,4 | 24,6 | 23,4 | 19,5 |      |
| 100-200/185  | 18,5           | 25  | 45,0                                  |      |      |      |      |      |      |      |      |      |      | 39,5 | 38,8 | 37,5 | 36,8 | 35,9 | 34,5 | 30,4 |      |
| 100-200/220  | 22             | 30  | 53,0                                  |      |      |      |      |      |      |      |      |      |      | 48,0 | 47,3 | 46,0 | 45,3 | 44,3 | 42,9 | 38,7 |      |

\* FCE40-200/40A : 4 (kW) - 5.5 (HP)

FCS40-200/30 : 3 (kW) - 4 (HP)

fce-fcs-2p50-en\_d\_th

\*\* FCE50-250/92 : 9.2 (kW) - 12.5 (HP)

FCS50-250/110A : 11 (kW) - 15 (HP)

FCE65-200/92 : 9.2 (kW) - 12.5 (HP)

FCS65-200/110A : 11 (kW) - 15 (HP)

Performances according to ISO 9906 - Annex A

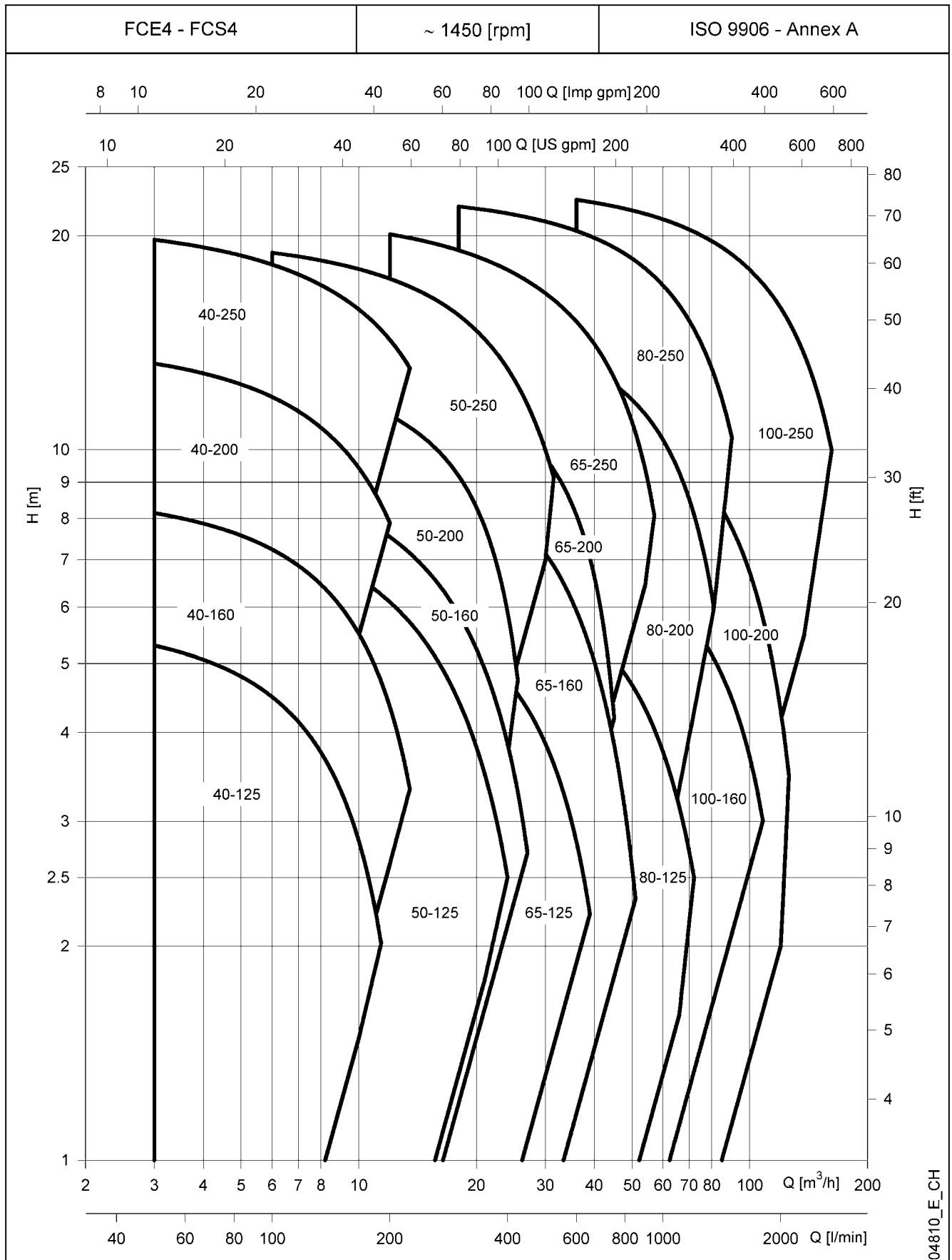


# ITT

## Lowara

### FCE4-FCS4 SERIES

### HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



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

**FCE4-FCS4 SERIES**
**HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES**

| PUMP<br>TYPE | RATED<br>POWER |      | Q = DELIVERY                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|------|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | kW             | HP   | l/min 0                              | 50   | 100  | 150  | 175  | 200  | 300  | 350  | 400  | 500  | 600  | 650  | 750  | 900  | 1100 | 1200 | 1500 | 1800 | 2000 | 2500 |
|              |                |      | m³/h 0                               | 3    | 6    | 9    | 10,5 | 12   | 18   | 21   | 24   | 30   | 36   | 39   | 45   | 54   | 66   | 72   | 90   | 108  | 120  | 150  |
|              |                |      | H =TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02A * | 0,25           | 0,33 | 4,7                                  | 4,1  | 3,3  | 2,0  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02 *  | 0,25           | 0,33 | 5,9                                  | 5,3  | 4,5  | 3,3  | 2,5  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/02 *  | 0,25           | 0,33 | 7,1                                  | 6,4  | 5,5  | 4,3  | 3,6  | 2,6  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/03 *  | 0,37           | 0,5  | 8,9                                  | 8,1  | 7,2  | 6,0  | 5,2  | 4,4  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/05    | 0,55           | 0,75 | 12,4                                 | 11,4 | 10,1 | 8,2  | 7,1  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/07    | 0,75           | 1    | 14,2                                 | 13,2 | 11,9 | 10,1 | 9,1  | 7,9  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/11    | 1,1            | 1,5  | 18,6                                 | 17,3 | 15,7 | 13,9 | 12,8 | 11,6 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/15    | 1,5            | 2    | 21,0                                 | 19,8 | 18,2 | 16,4 | 15,4 | 14,3 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/02 *  | 0,25           | 0,33 | 6,2                                  |      | 5,5  | 5,0  | 4,6  | 4,3  | 2,7  | 1,8  |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/03 *  | 0,37           | 0,5  | 8,0                                  |      | 7,4  | 6,8  | 6,5  | 6,1  | 4,4  | 3,5  | 2,5  |      |      |      |      |      |      |      |      |      |      |      |
| 50-160/05 *  | 0,55           | 0,75 | 9,4                                  |      | 8,8  | 8,2  | 7,9  | 7,5  | 5,9  | 4,9  | 3,9  |      |      |      |      |      |      |      |      |      |      |      |
| 50-200/07    | 0,75           | 1    | 11,4                                 |      | 10,5 | 9,9  | 9,5  | 9,1  | 7,1  | 5,6  | 3,7  |      |      |      |      |      |      |      |      |      |      |      |
| 50-200/11    | 1,1            | 1,5  | 13,6                                 |      | 12,6 | 12,0 | 11,6 | 11,2 | 9,2  | 7,8  | 5,9  |      |      |      |      |      |      |      |      |      |      |      |
| 50-250/15    | 1,5            | 2    | 17,0                                 |      | 15,9 | 15,2 | 14,8 | 14,4 | 12,5 | 11,4 | 10,1 | 7,0  |      |      |      |      |      |      |      |      |      |      |
| 50-250/22    | 2,2            | 3    | 20,2                                 |      | 18,9 | 18,2 | 17,8 | 17,4 | 15,5 | 14,3 | 13,0 | 10,0 |      |      |      |      |      |      |      |      |      |      |
| 65-125/03 *  | 0,37           | 0,5  | 5,6                                  |      |      |      |      | 4,9  | 4,3  | 3,9  | 3,5  | 2,6  |      |      |      |      |      |      |      |      |      |      |
| 65-125/05 *  | 0,55           | 0,75 | 6,7                                  |      |      |      |      | 5,9  | 5,4  | 5,1  | 4,7  | 3,9  | 2,8  | 2,2  |      |      |      |      |      |      |      |      |
| 65-160/07    | 0,75           | 1    | 8,6                                  |      |      |      |      | 7,8  | 7,2  | 6,8  | 6,4  | 5,4  | 4,3  | 3,7  | 2,4  |      |      |      |      |      |      |      |
| 65-160/11    | 1,1            | 1,5  | 10,4                                 |      |      |      |      | 9,7  | 9,0  | 8,6  | 8,2  | 7,2  | 5,9  | 5,3  | 3,8  |      |      |      |      |      |      |      |
| 65-200/15    | 1,5            | 2    | 14,7                                 |      |      |      |      | 13,2 | 12,1 | 11,6 | 11,0 | 9,7  | 8,1  | 7,0  | 4,2  |      |      |      |      |      |      |      |
| 65-250/22    | 2,2            | 3    | 19,0                                 |      |      |      |      | 17,6 | 16,6 | 16,0 | 15,4 | 14,1 | 12,7 | 11,9 | 10,1 | 6,5  |      |      |      |      |      |      |
| 65-250/30    | 3              | 4    | 21,4                                 |      |      |      |      | 20,1 | 19,1 | 18,5 | 17,9 | 16,6 | 15,2 | 14,4 | 12,6 | 9,4  |      |      |      |      |      |      |
| 80-125/07    | 0,75           | 1    | 5,6                                  |      |      |      |      |      | 5,2  | 5,1  | 5,0  | 4,6  | 4,3  | 4,1  | 3,6  | 2,8  | 1,6  |      |      |      |      |      |
| 80-125/11    | 1,1            | 1,5  | 6,8                                  |      |      |      |      |      | 6,4  | 6,3  | 6,2  | 6,0  | 5,7  | 5,5  | 5,1  | 4,3  | 3,1  | 2,5  |      |      |      |      |
| 80-200/15    | 1,5            | 2    | 10,5                                 |      |      |      |      |      | 9,6  | 9,4  | 9,2  | 8,7  | 8,1  | 7,8  | 7,1  | 5,8  | 3,3  |      |      |      |      |      |
| 80-200/22    | 2,2            | 3    | 13,7                                 |      |      |      |      |      | 12,7 | 12,5 | 12,3 | 11,9 | 11,3 | 11,0 | 10,3 | 9,0  | 6,8  | 5,4  |      |      |      |      |
| 80-200/30    | 3              | 4    | 15,8                                 |      |      |      |      |      | 14,7 | 14,5 | 14,3 | 13,8 | 13,3 | 13,0 | 12,4 | 11,2 | 9,3  | 8,1  |      |      |      |      |
| 80-250/40    | 4              | 5,5  | 19,9                                 |      |      |      |      |      | 18,7 | 18,5 | 18,2 | 17,7 | 17,0 | 16,7 | 15,9 | 14,6 | 12,5 | 11,2 |      |      |      |      |
| 80-250/55    | 5,5            | 7,5  | 23,2                                 |      |      |      |      |      | 22,0 | 21,8 | 21,5 | 21,0 | 20,3 | 20,0 | 19,3 | 18,0 | 16,0 | 14,8 | 10,4 |      |      |      |
| 100-160/15   | 1,5            | 2    | 7,8                                  |      |      |      |      |      |      |      |      | 7,4  | 7,2  | 7,1  | 6,9  | 6,5  | 6,0  | 5,6  | 4,5  | 3,0  |      |      |
| 100-200/22   | 2,2            | 3    | 10,5                                 |      |      |      |      |      |      |      |      |      | 9,3  | 9,2  | 8,9  | 8,3  | 7,5  | 7,1  | 5,4  | 3,5  | 2,0  |      |
| 100-200/30   | 3              | 4    | 12,8                                 |      |      |      |      |      |      |      |      |      | 11,5 | 11,4 | 11,1 | 10,6 | 9,8  | 9,3  | 7,8  | 5,8  | 4,3  |      |
| 100-250/40   | 4              | 5,5  | 17,0                                 |      |      |      |      |      |      |      |      |      | 15,5 | 15,3 | 14,9 | 14,3 | 13,4 | 12,9 | 11,2 | 9,2  | 7,8  |      |
| 100-250/55   | 5,5            | 7,5  | 20,5                                 |      |      |      |      |      |      |      |      |      | 19,0 | 18,8 | 18,4 | 17,8 | 17,0 | 16,5 | 14,9 | 13,1 | 11,8 | 8,0  |
| 100-250/75   | 7,5            | 10   | 24,0                                 |      |      |      |      |      |      |      |      |      | 22,5 | 22,3 | 22,0 | 21,5 | 20,7 | 20,3 | 18,8 | 17,1 | 15,8 | 11,9 |

\* FCE4 VERSION ONLY

fce4-fcs4-4p50-en\_f\_th

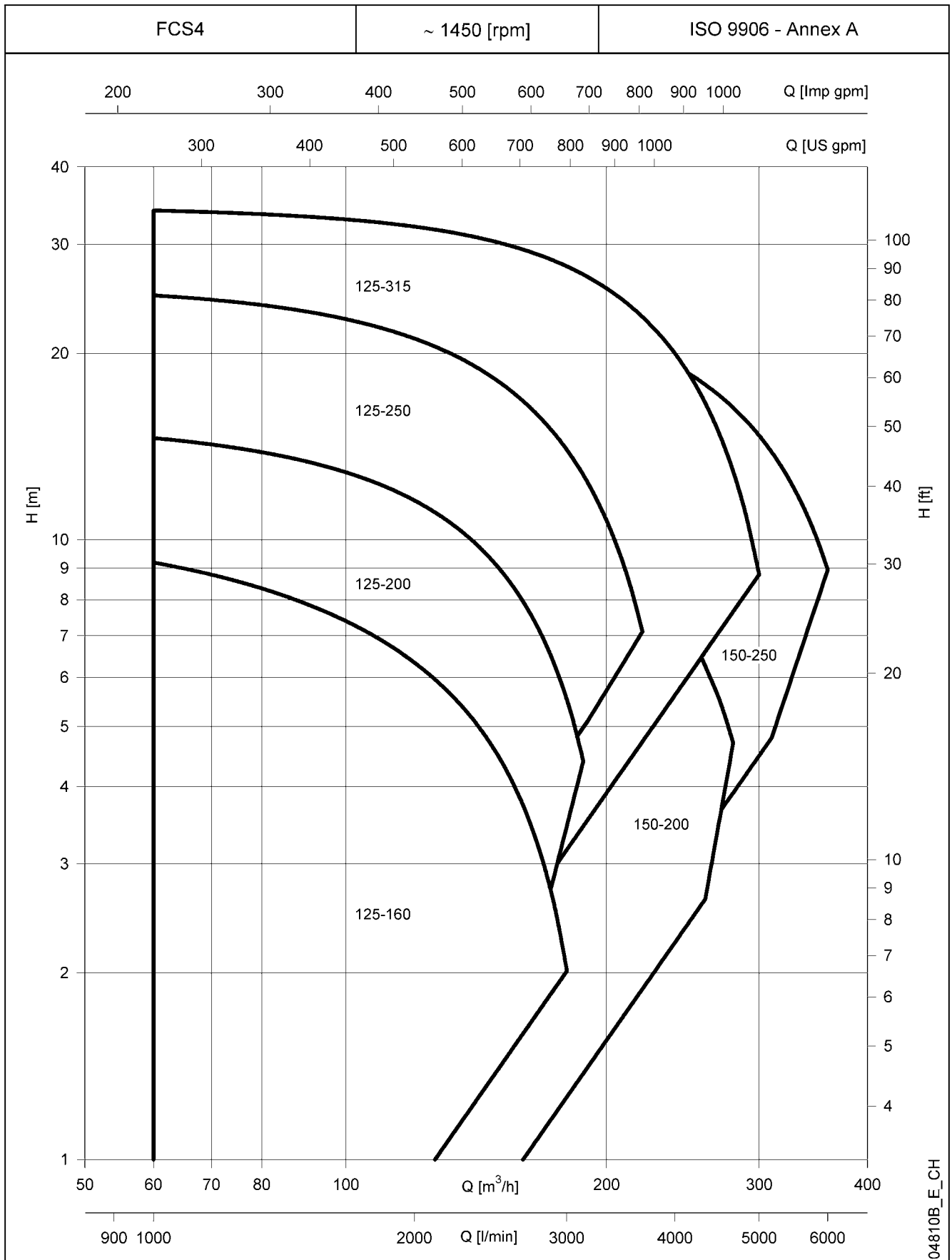
Performances according to ISO 9906 - Annex A



# ITT

## Lowara

### FCS4 SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 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

## FCS4 SERIES

### HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES

| PUMP<br>TYPE | RATED<br>POWER |     | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|-----|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              |                |     | l/min 0                               | 1000 | 1083 | 1167 | 1333 | 1500 | 1667 | 2000 | 2333 | 2667 | 3000 | 3333 | 3667 | 4167 | 4667 | 5000 | 5333 | 5500 |
|              | m³/h 0         | 60  | 65                                    | 70   | 80   | 90   | 100  | 120  | 140  | 160  | 180  | 200  | 220  | 250  | 280  | 300  | 320  | 330  |      |      |
|              | kW             | HP  | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 125-160/30   | 3              | 4   | 10,5                                  | 9,2  | 9,0  | 8,8  | 8,3  | 7,9  | 7,4  | 6,3  | 5,2  | 3,7  | 2,0  |      |      |      |      |      |      |      |
| 125-200/40   | 4              | 5,5 | 12,7                                  | 11,5 | 11,3 | 11,0 | 10,5 | 9,9  | 9,3  | 7,7  | 5,7  | 3,4  |      |      |      |      |      |      |      |      |
| 125-200/55   | 5,5            | 7,5 | 15,6                                  | 14,6 | 14,4 | 14,3 | 13,9 | 13,4 | 12,9 | 11,6 | 10,0 | 8,0  | 5,5  |      |      |      |      |      |      |      |
| 125-250/75   | 7,5            | 10  | 20,5                                  | 19,1 | 18,9 | 18,6 | 18,1 | 17,4 | 16,6 | 14,7 | 12,4 | 9,6  | 6,7  |      |      |      |      |      |      |      |
| 125-250/110  | 11             | 15  | 26,1                                  | 24,8 | 24,6 | 24,4 | 23,9 | 23,4 | 22,7 | 21,1 | 19,2 | 16,8 | 14,0 | 10,7 | 7,1  |      |      |      |      |      |
| 125-315/150  | 15             | 20  | 27,0                                  | 26,0 | 25,9 | 25,7 | 25,4 | 25,0 | 24,6 | 23,5 | 22,1 | 20,4 | 18,3 | 15,9 | 12,9 | 7,8  |      |      |      |      |
| 125-315/185  | 18,5           | 25  | 31,0                                  | 30,0 | 29,9 | 29,8 | 29,5 | 29,2 | 28,9 | 28,0 | 26,7 | 25,1 | 23,1 | 20,7 | 18,0 | 13,3 | 8,0  |      |      |      |
| 125-315/220  | 22             | 30  | 35,0                                  | 34,0 | 33,9 | 33,8 | 33,6 | 33,3 | 32,9 | 32,1 | 30,9 | 29,5 | 27,6 | 25,5 | 22,9 | 18,4 | 12,9 | 8,8  |      |      |
| 150-200/55   | 5,5            | 7,5 | 12,0                                  | 10,5 | 10,4 | 10,2 | 9,9  | 9,6  | 9,3  | 8,6  | 7,9  | 7,2  | 6,4  | 5,7  | 4,8  | 3,2  |      |      |      |      |
| 150-200/75   | 7,5            | 10  | 16,0                                  | 14,8 | 14,6 | 14,4 | 14,1 | 13,7 | 13,4 | 12,6 | 11,9 | 11,1 | 10,3 | 9,5  | 8,6  | 6,9  | 4,7  |      |      |      |
| 150-250/110  | 11             | 15  | 18,4                                  |      |      |      |      | 17,8 | 17,6 | 17,0 | 16,3 | 15,5 | 14,6 | 13,5 | 12,3 | 10,2 | 7,7  | 5,8  |      |      |
| 150-250/150  | 15             | 20  | 22,4                                  |      |      |      |      | 22,0 | 21,8 | 21,3 | 20,7 | 20,0 | 19,3 | 18,4 | 17,4 | 15,6 | 13,3 | 11,5 | 9,5  |      |
| 150-250/185  | 18,5           | 25  | 25,1                                  |      |      |      |      | 24,7 | 24,6 | 24,1 | 23,6 | 23,0 | 22,2 | 21,3 | 20,3 | 18,5 | 16,4 | 14,7 | 13,0 |      |

Performances according to ISO 9906 - Annex A

fcs4-4p50-en\_d\_th

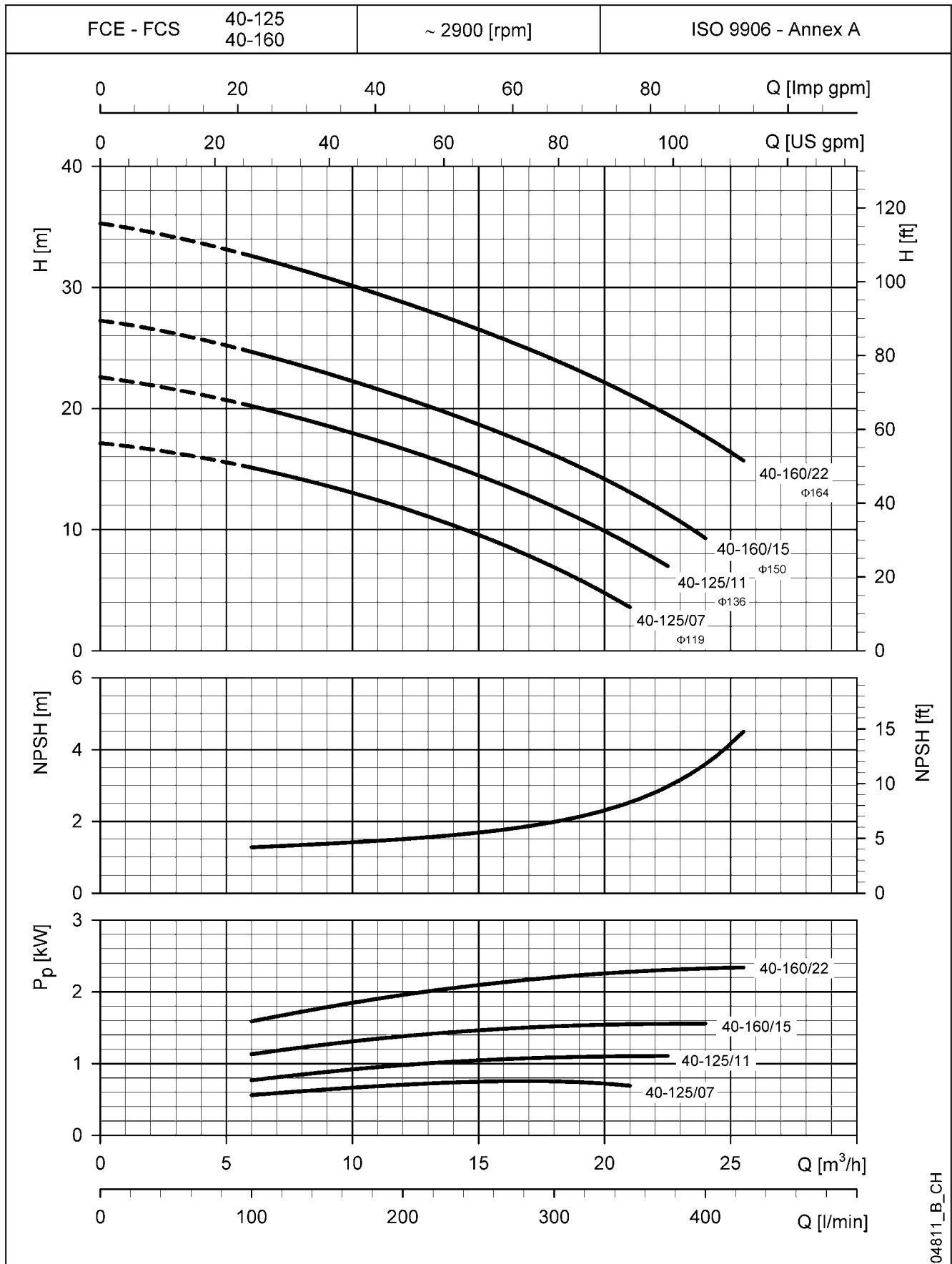


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04811\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

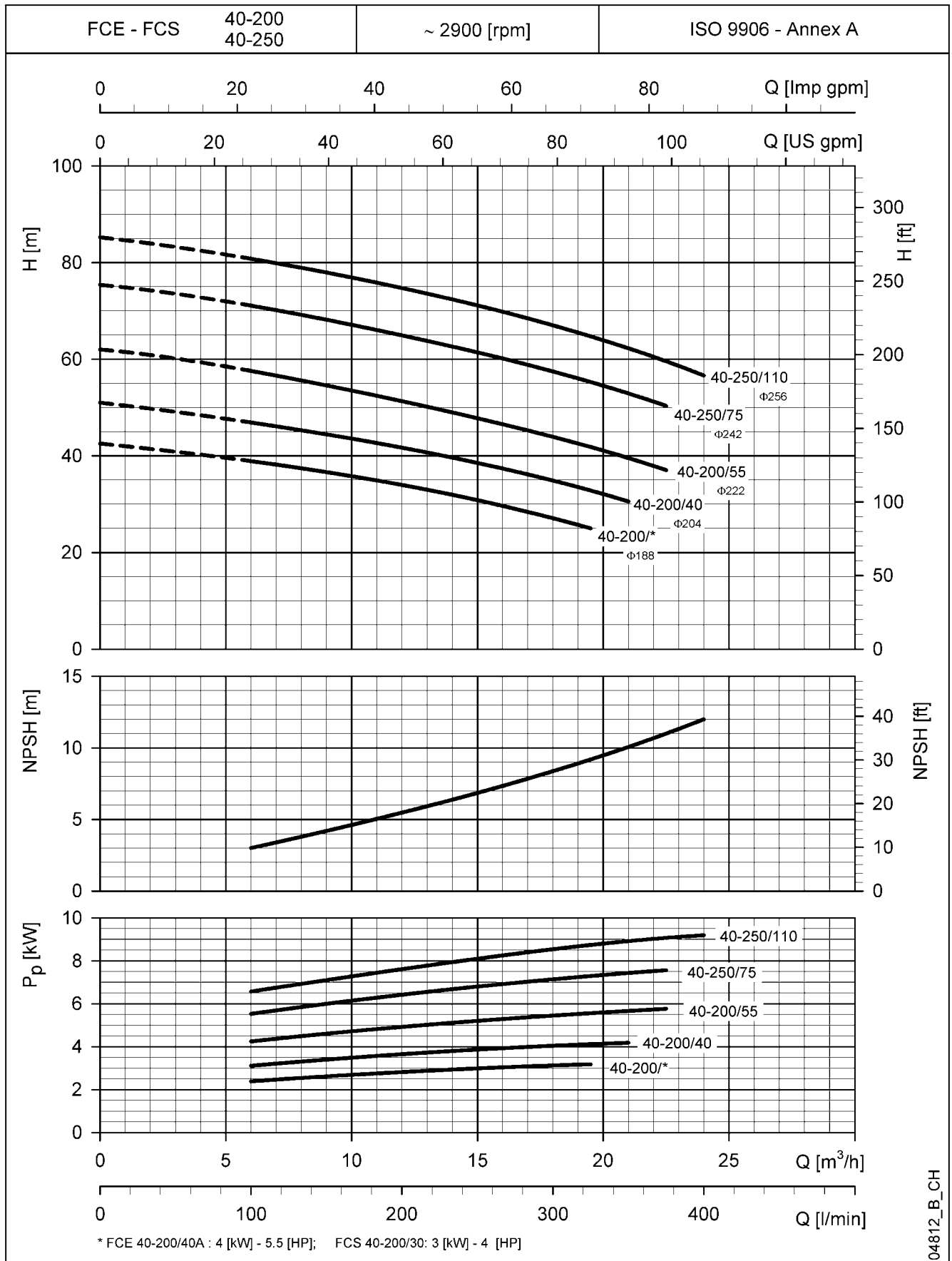


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

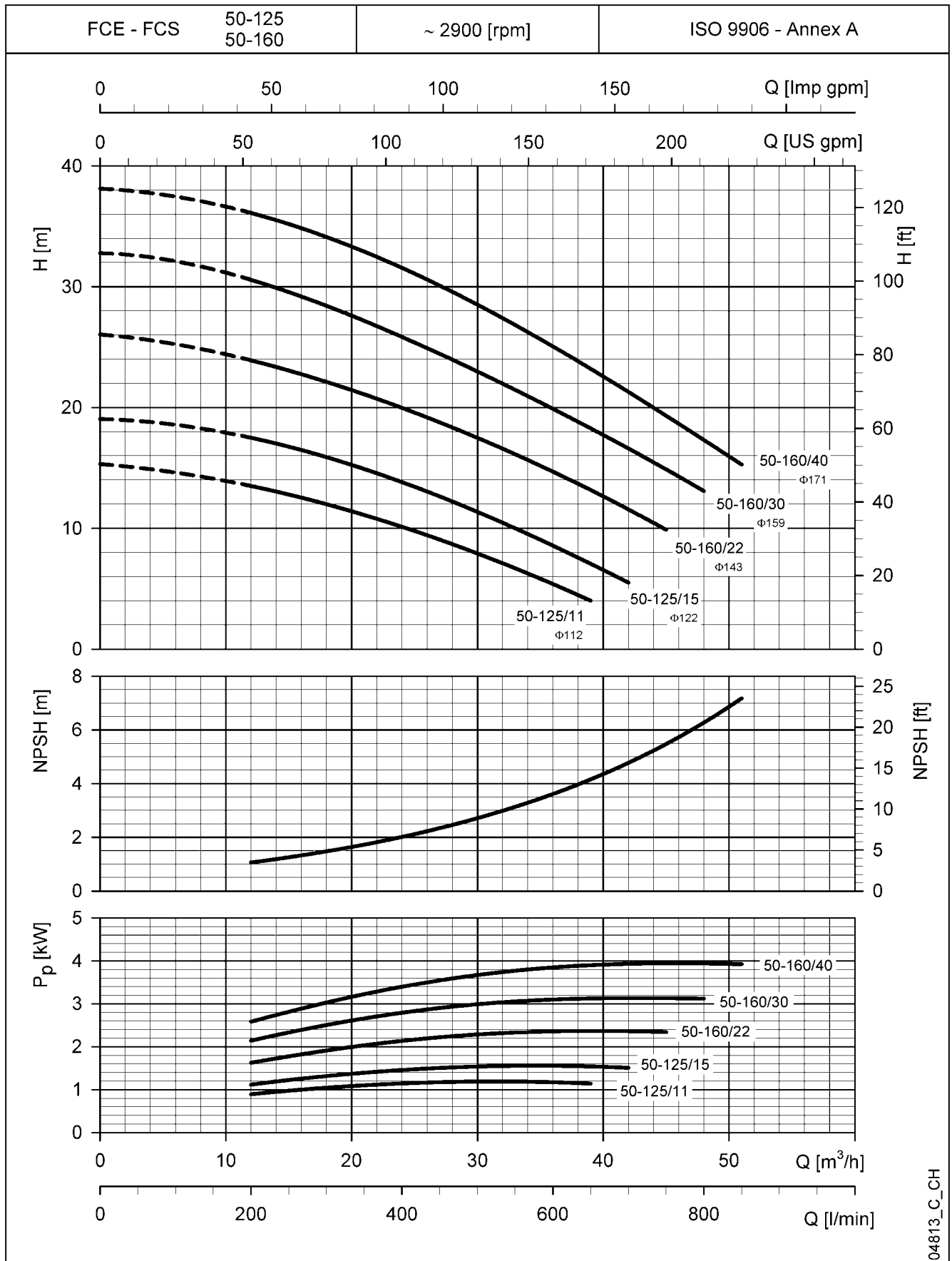


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



04813\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

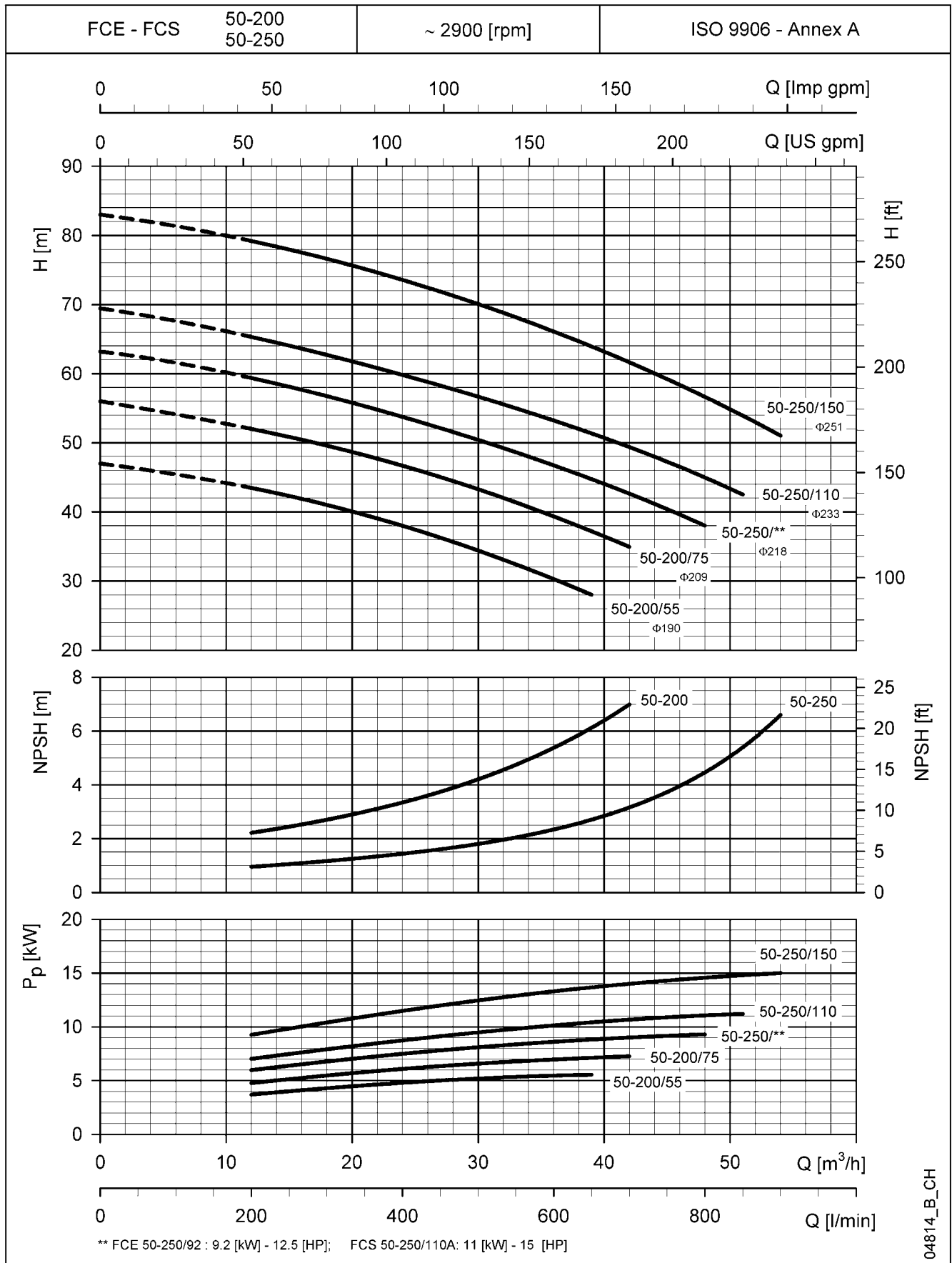


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

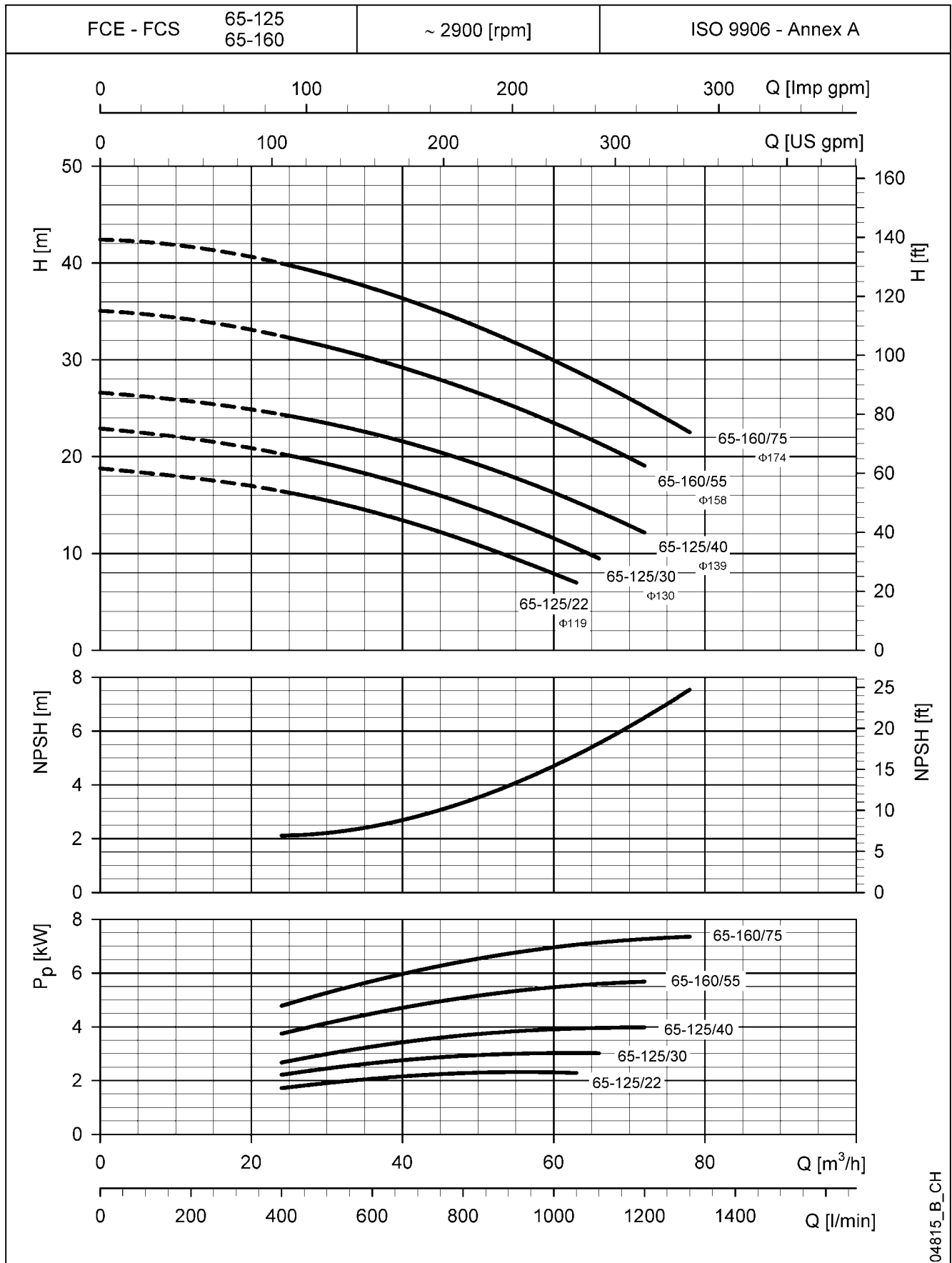


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

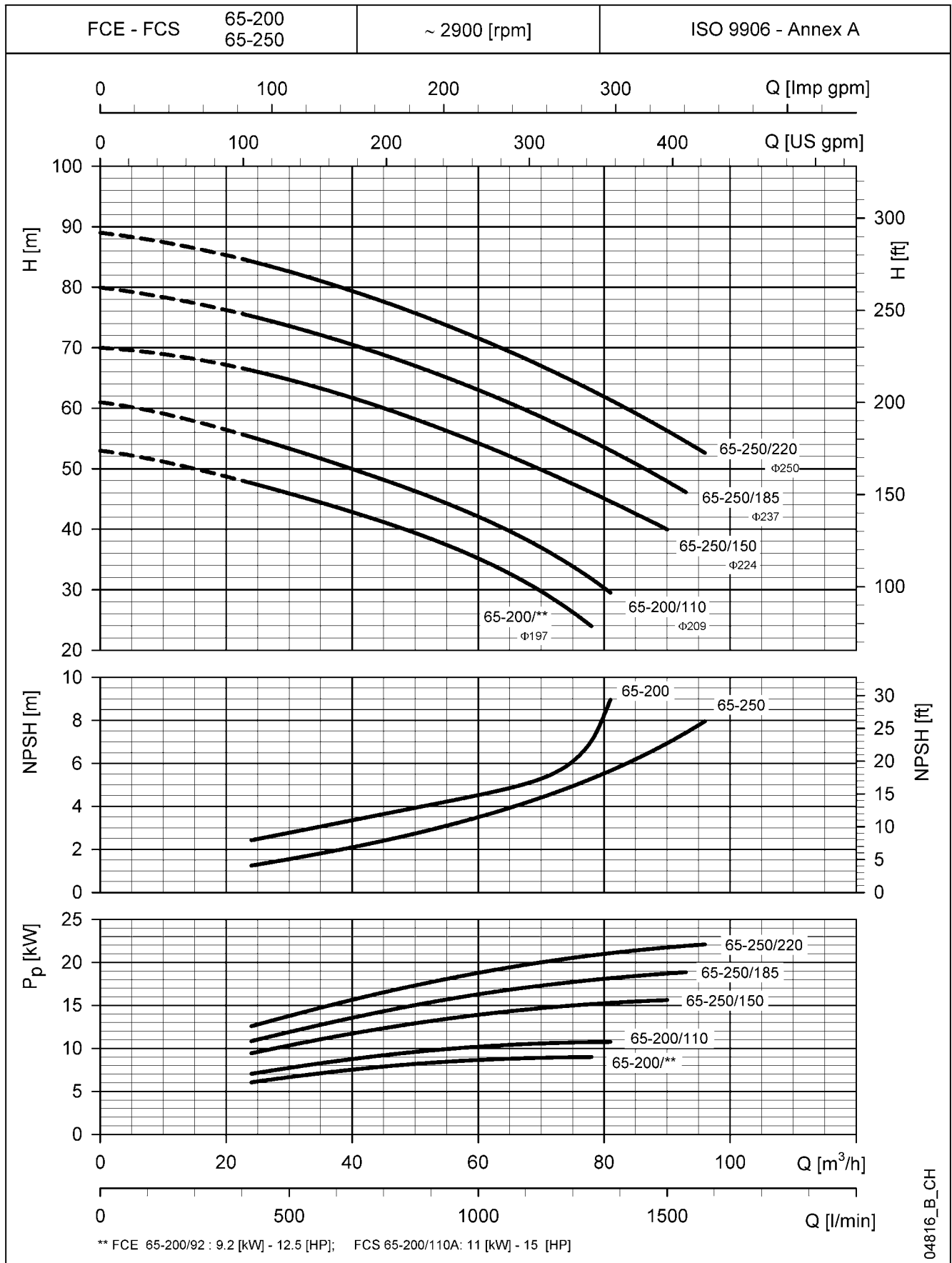


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

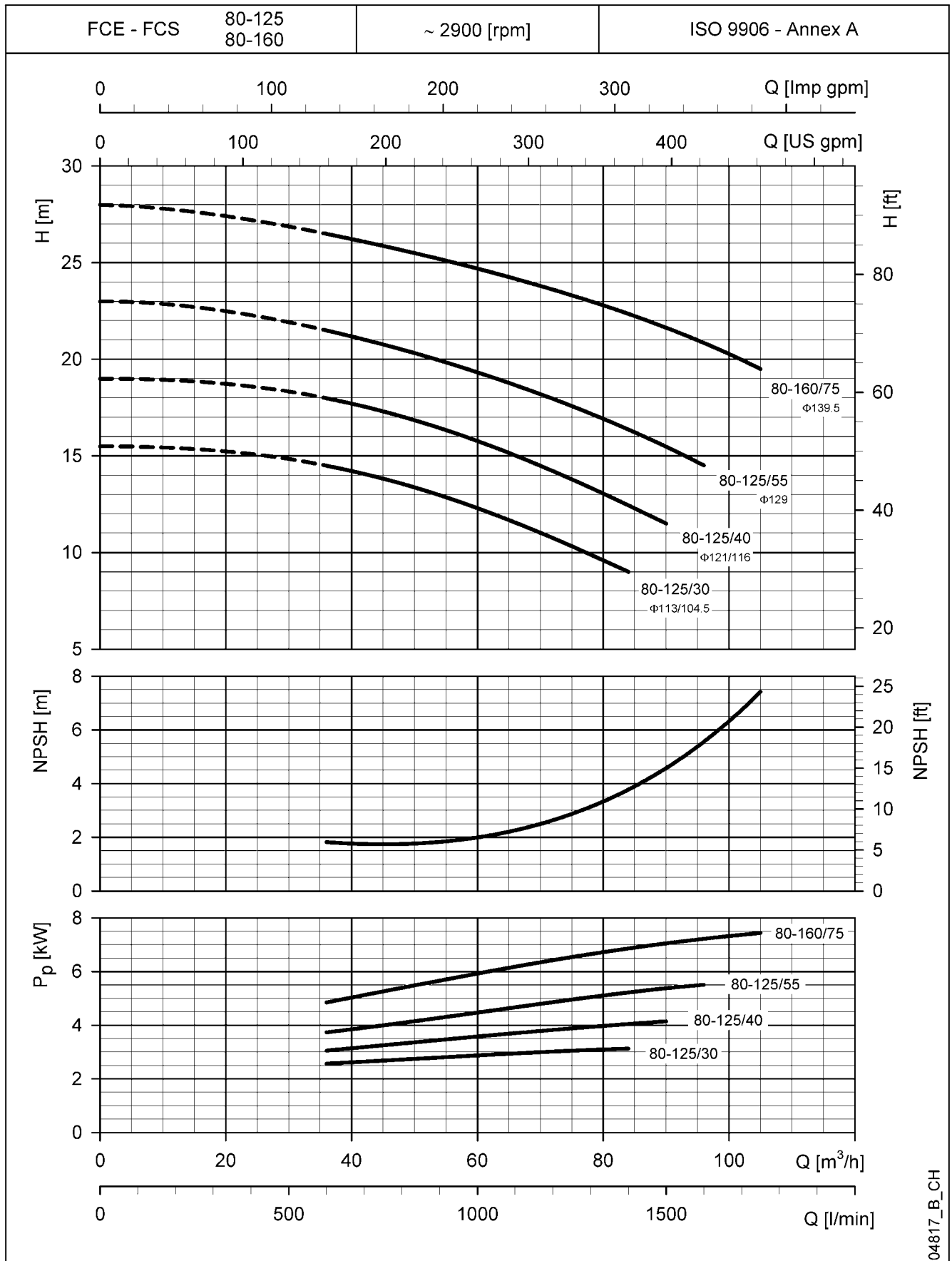


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

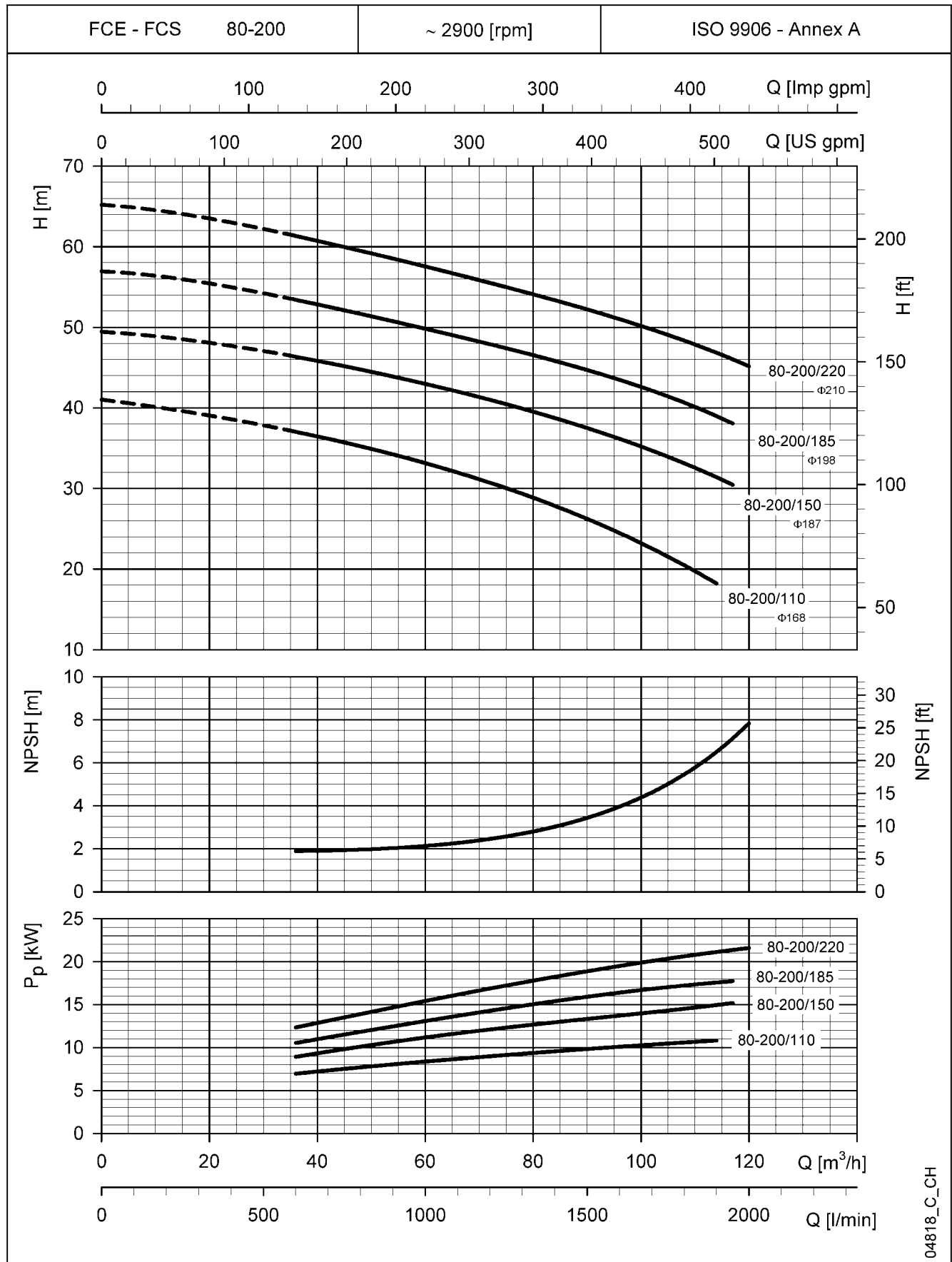


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

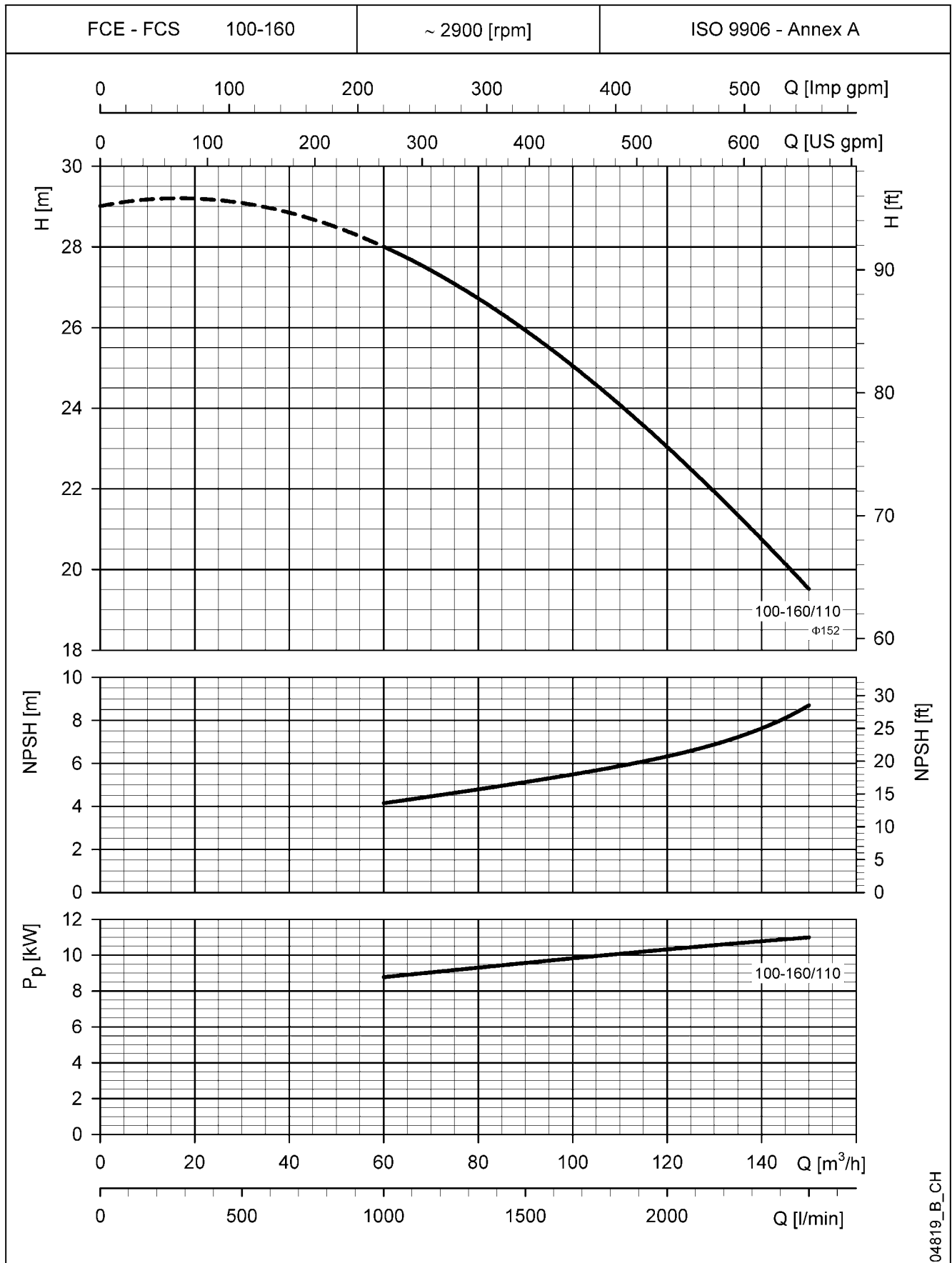


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

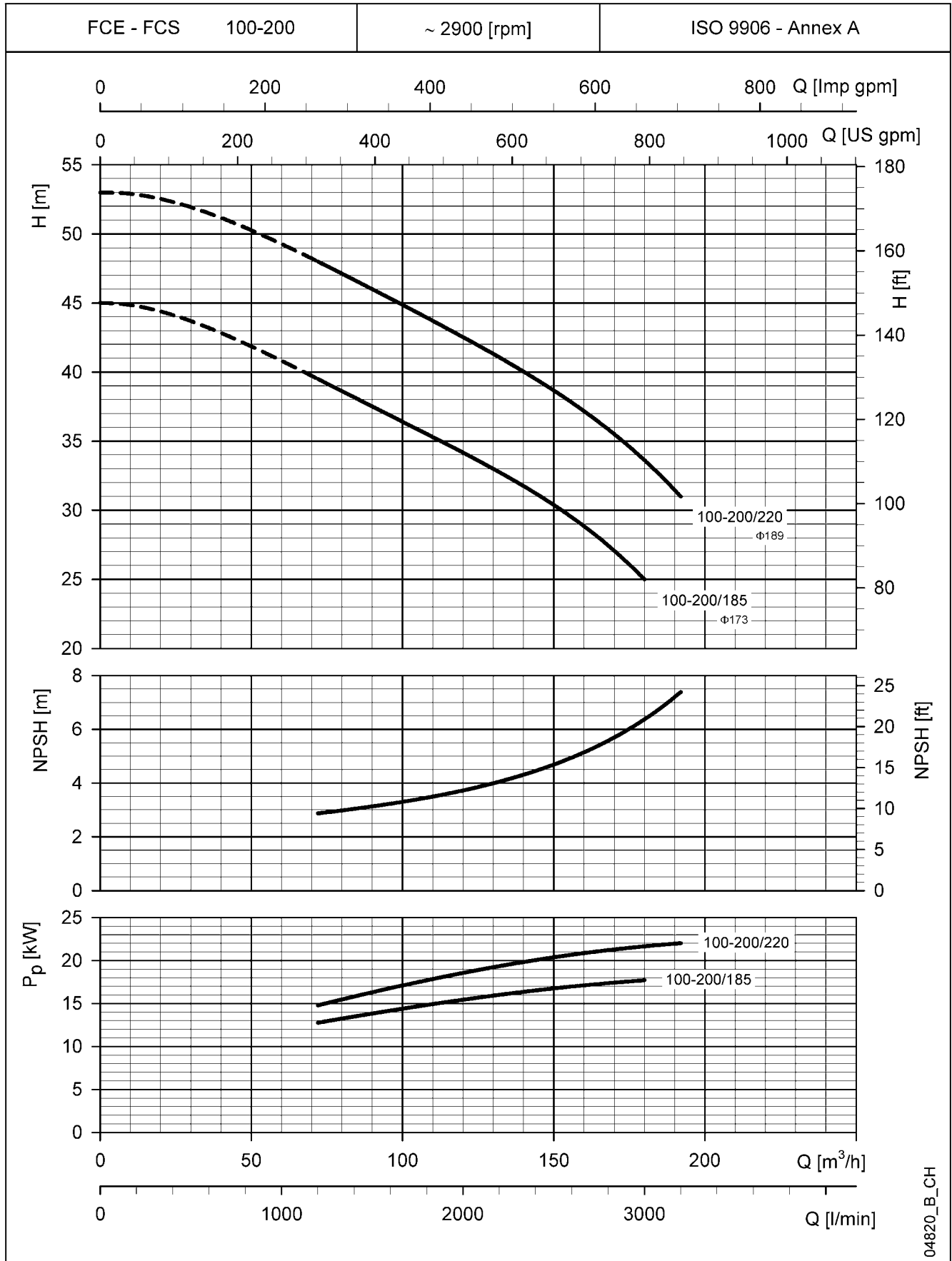


# ITT

## Lowara

### FCE-FCS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

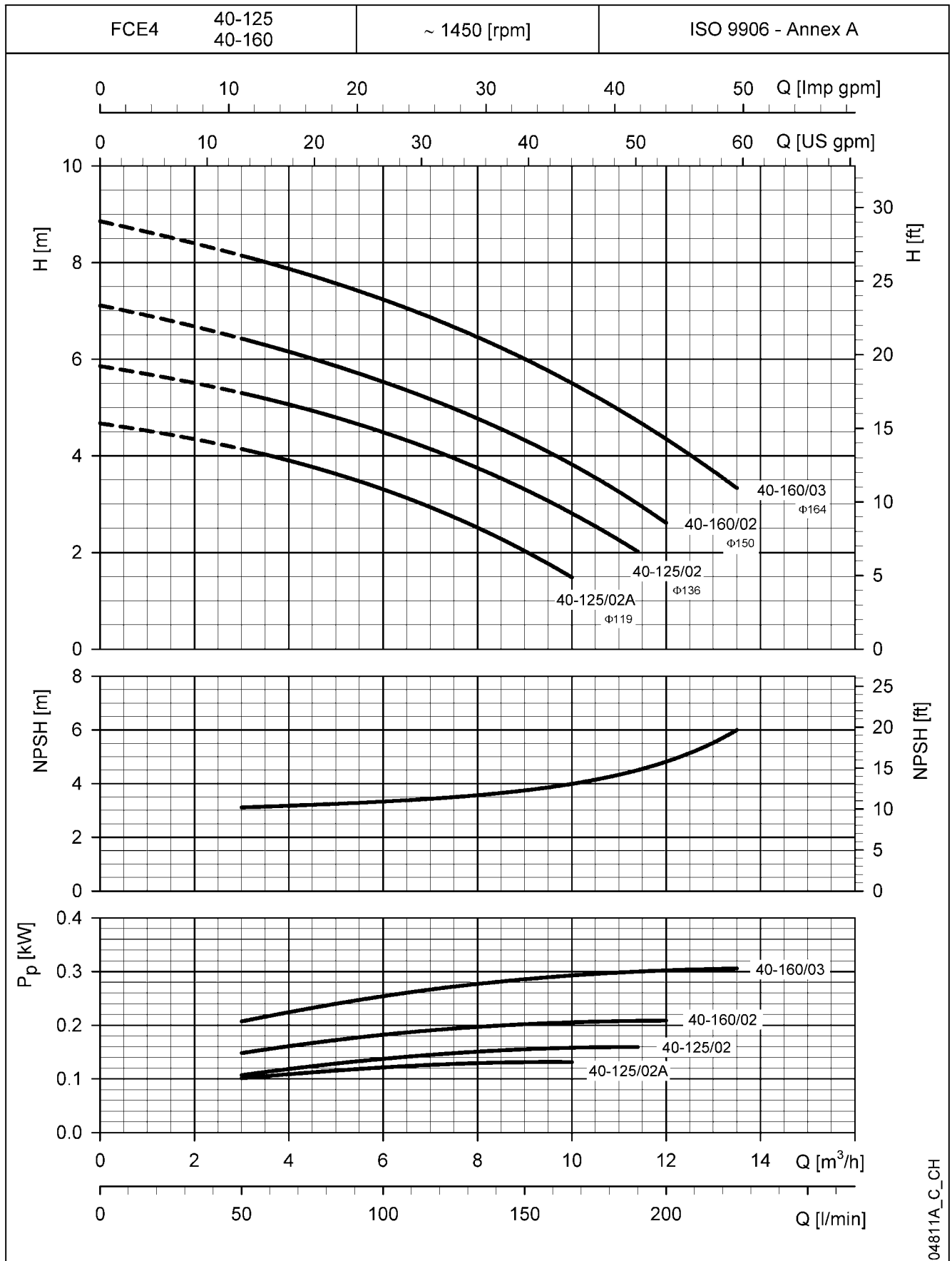


# ITT

## Lowara

### FCE4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

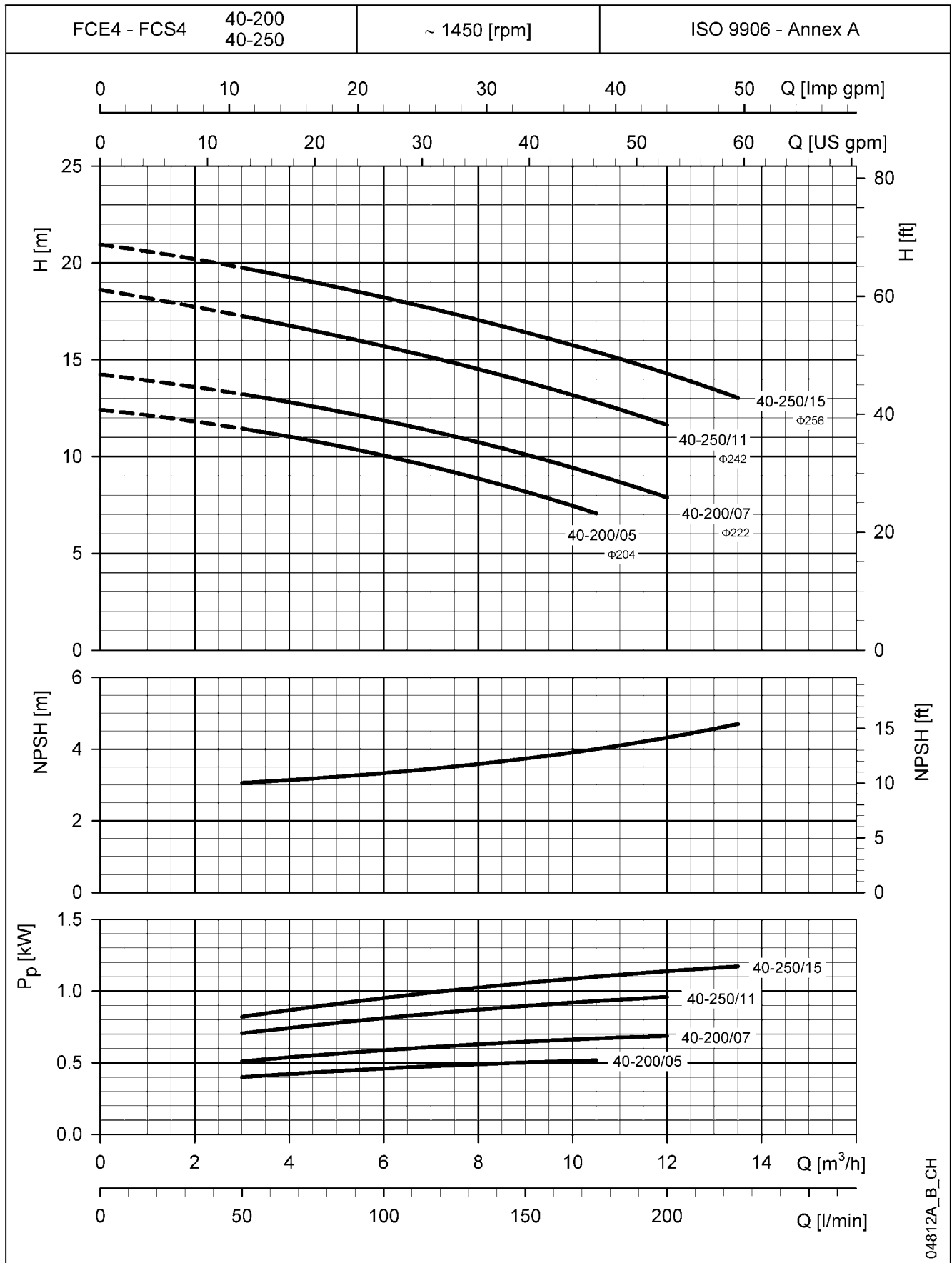


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

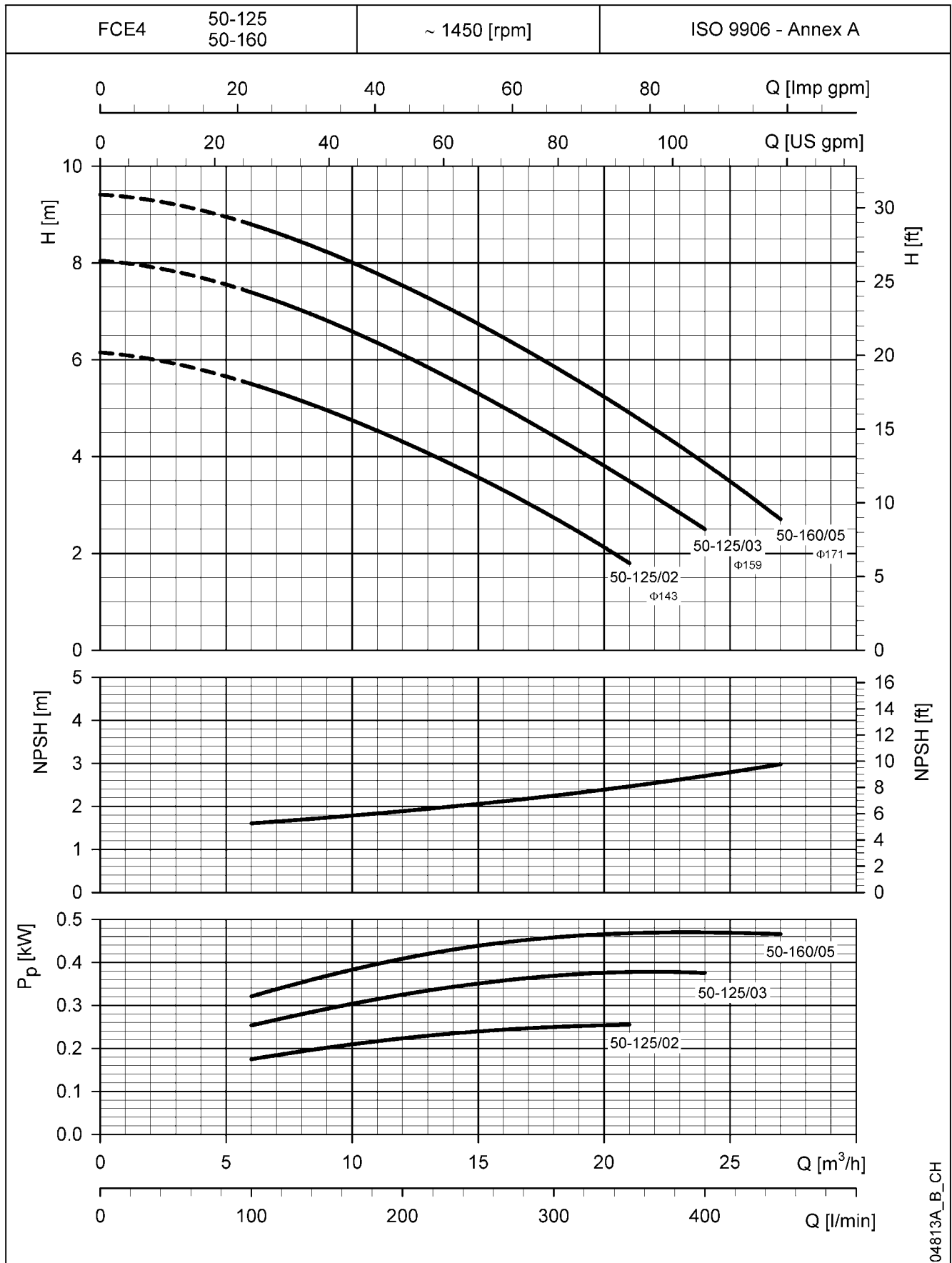


# ITT

## Lowara

### FCE4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

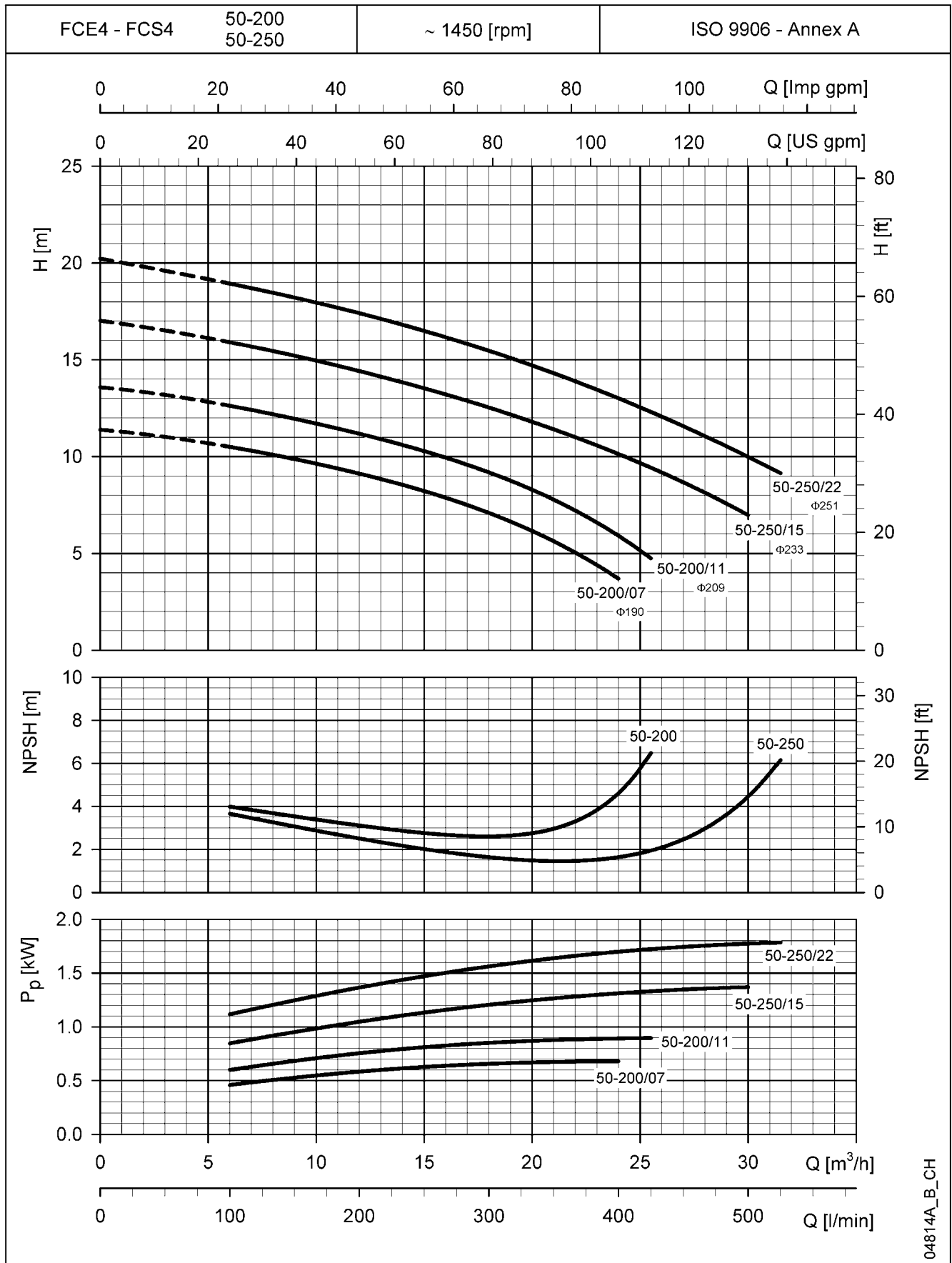


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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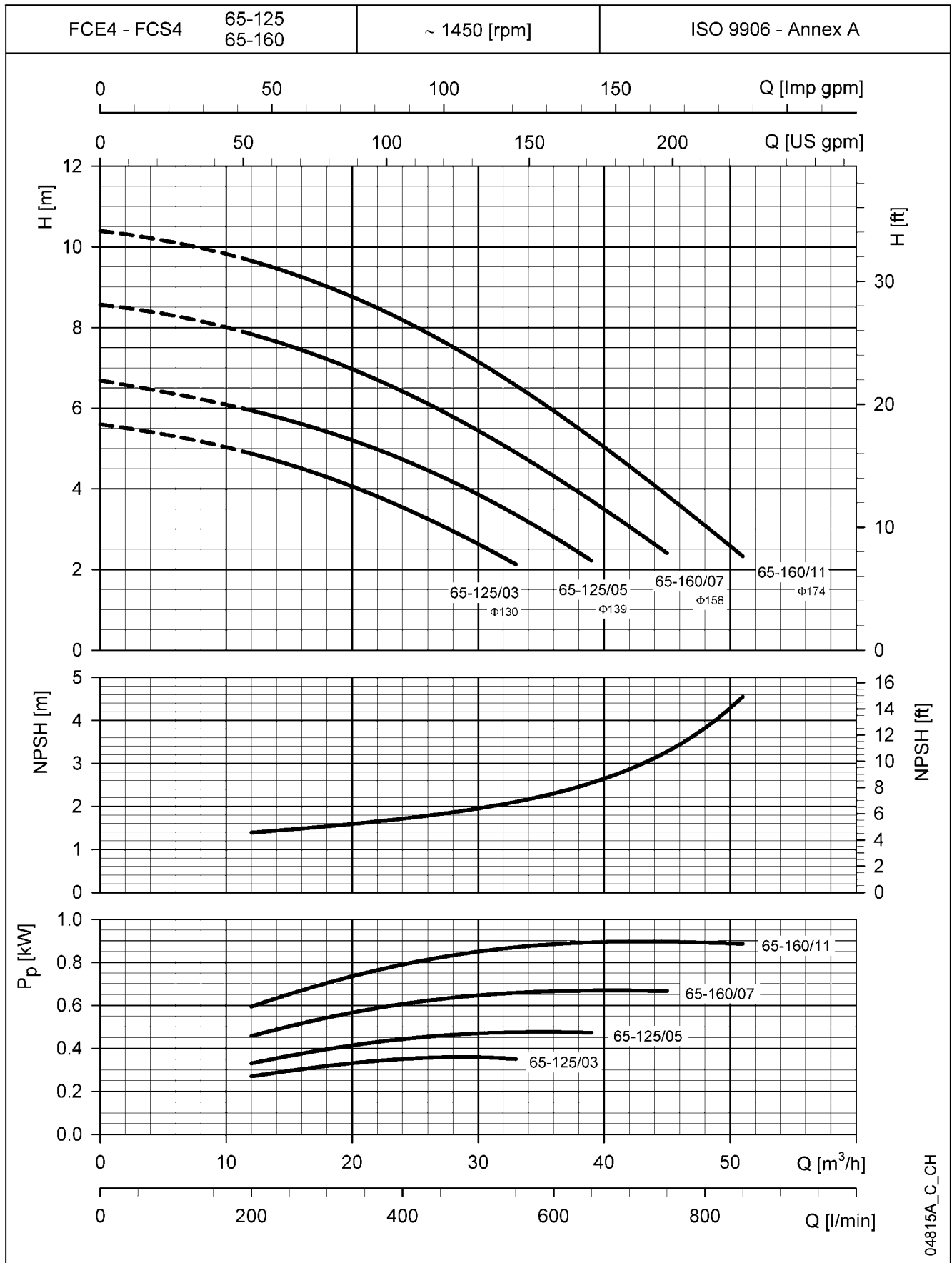


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

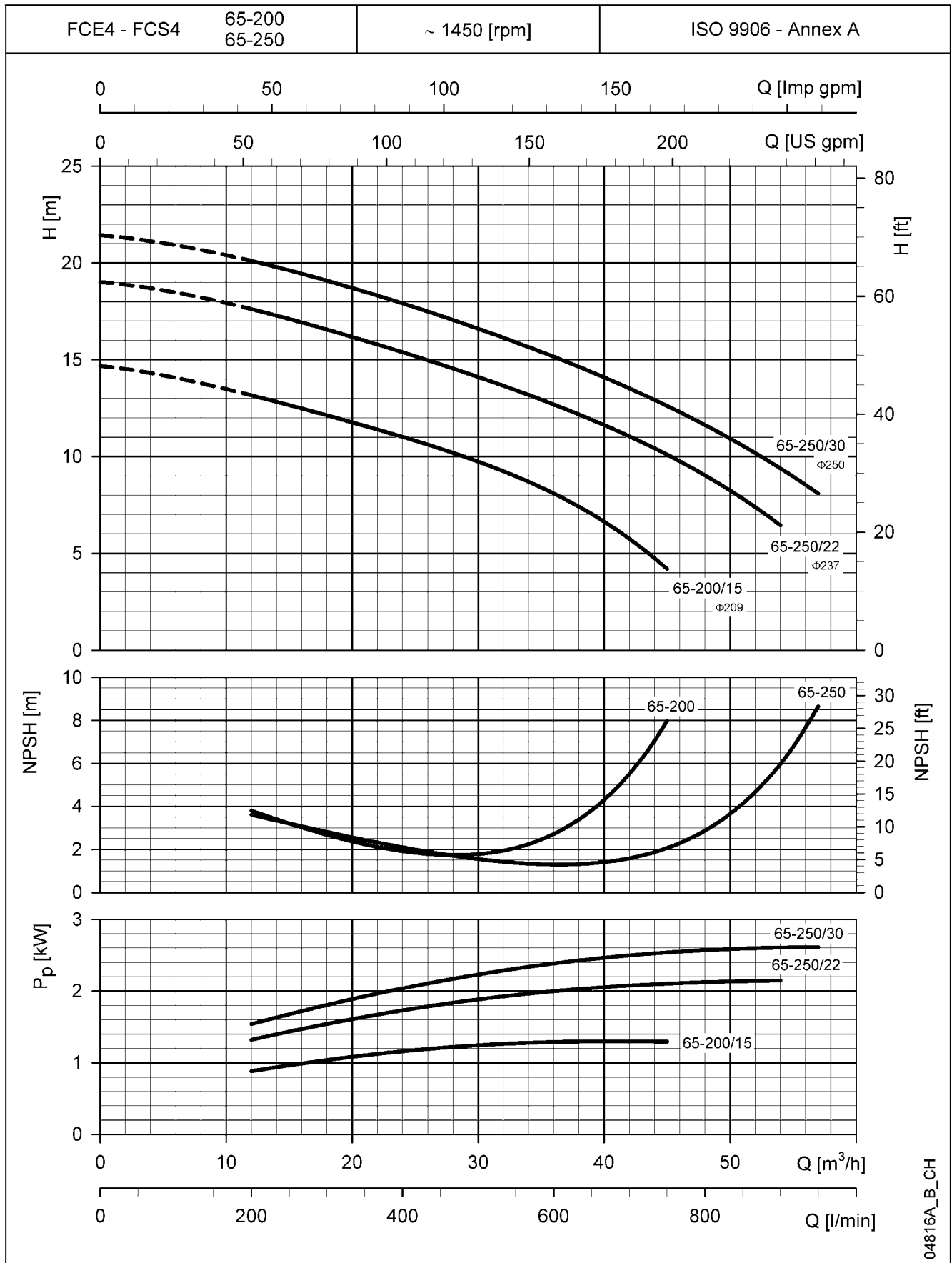


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

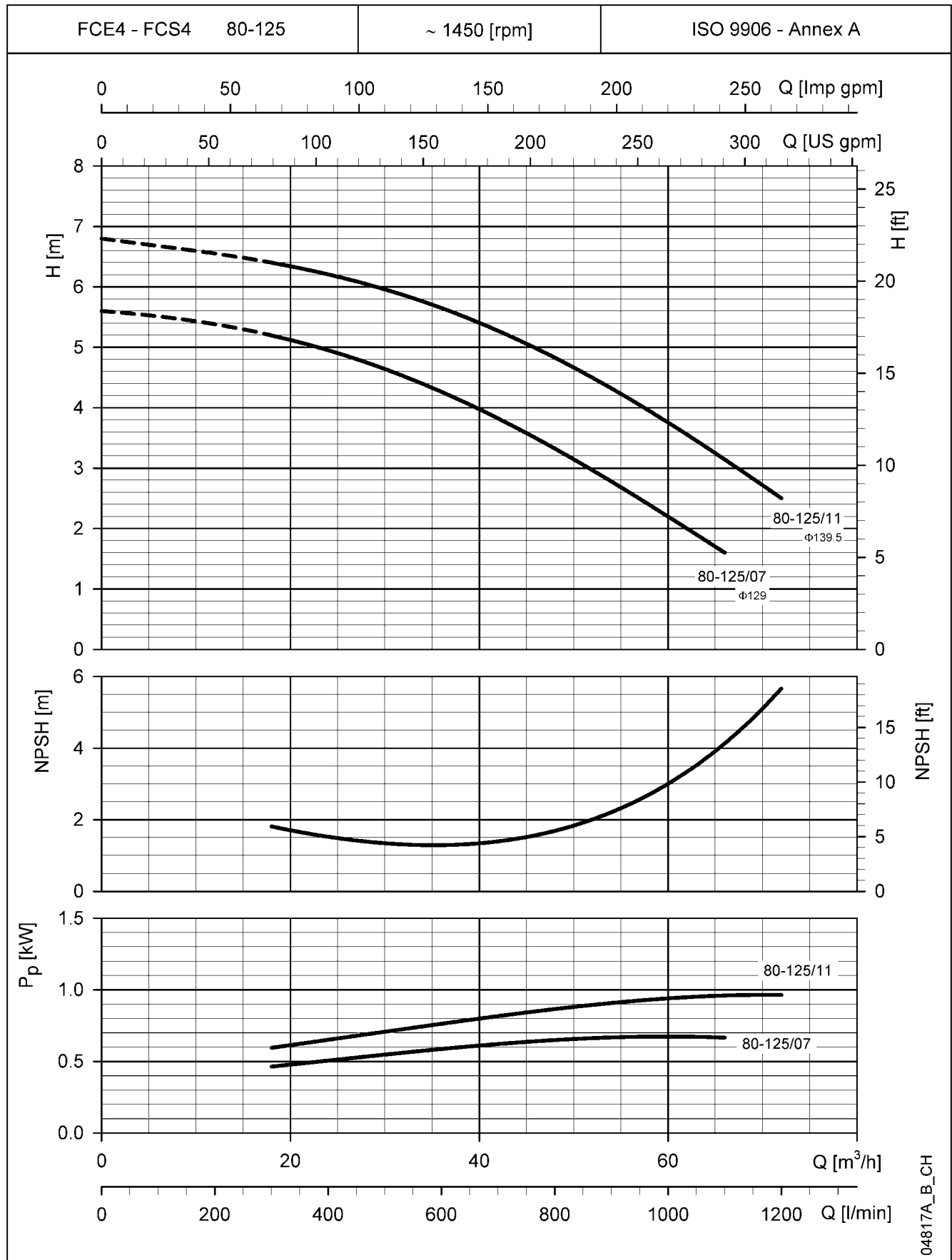


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

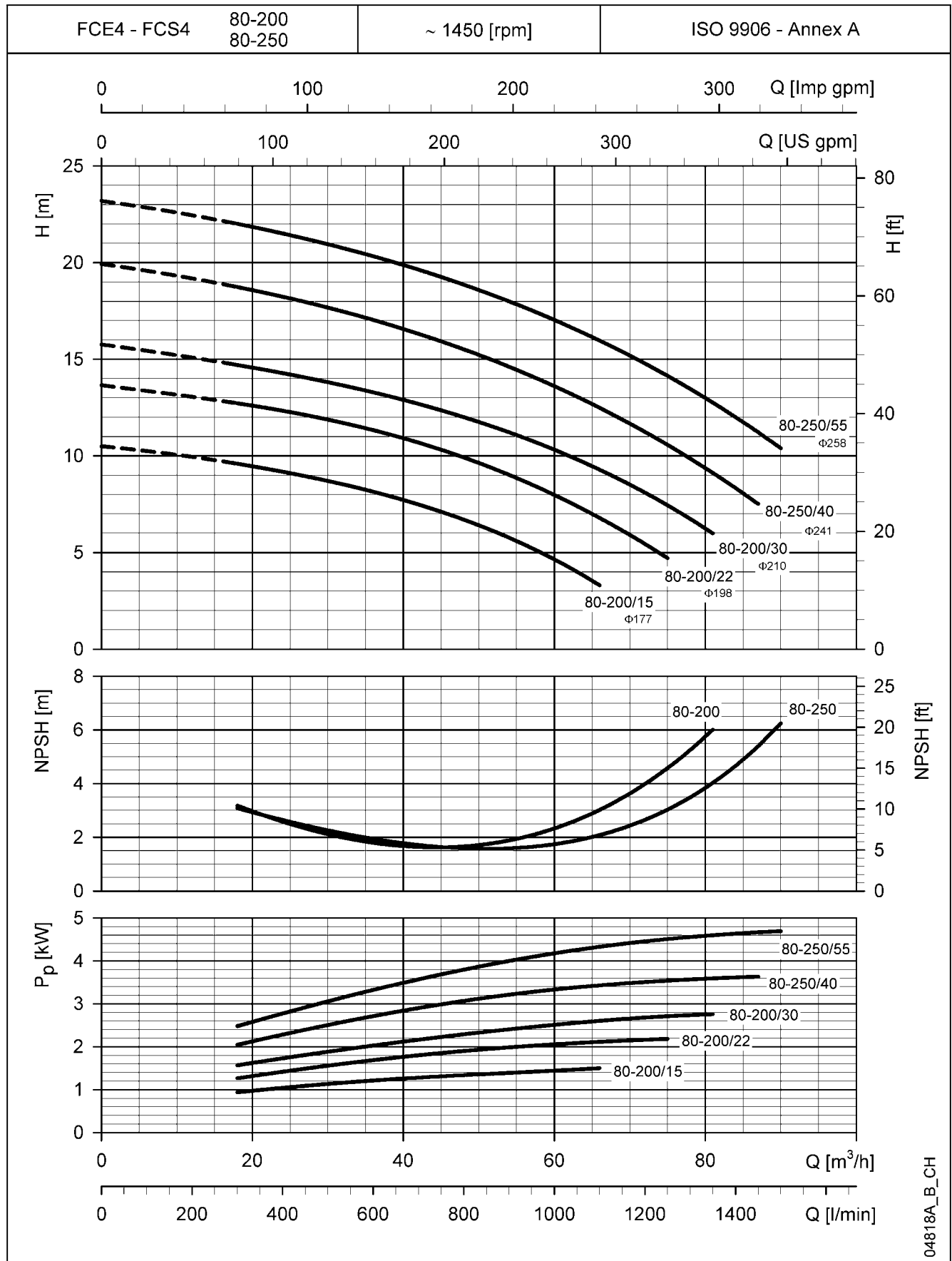


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

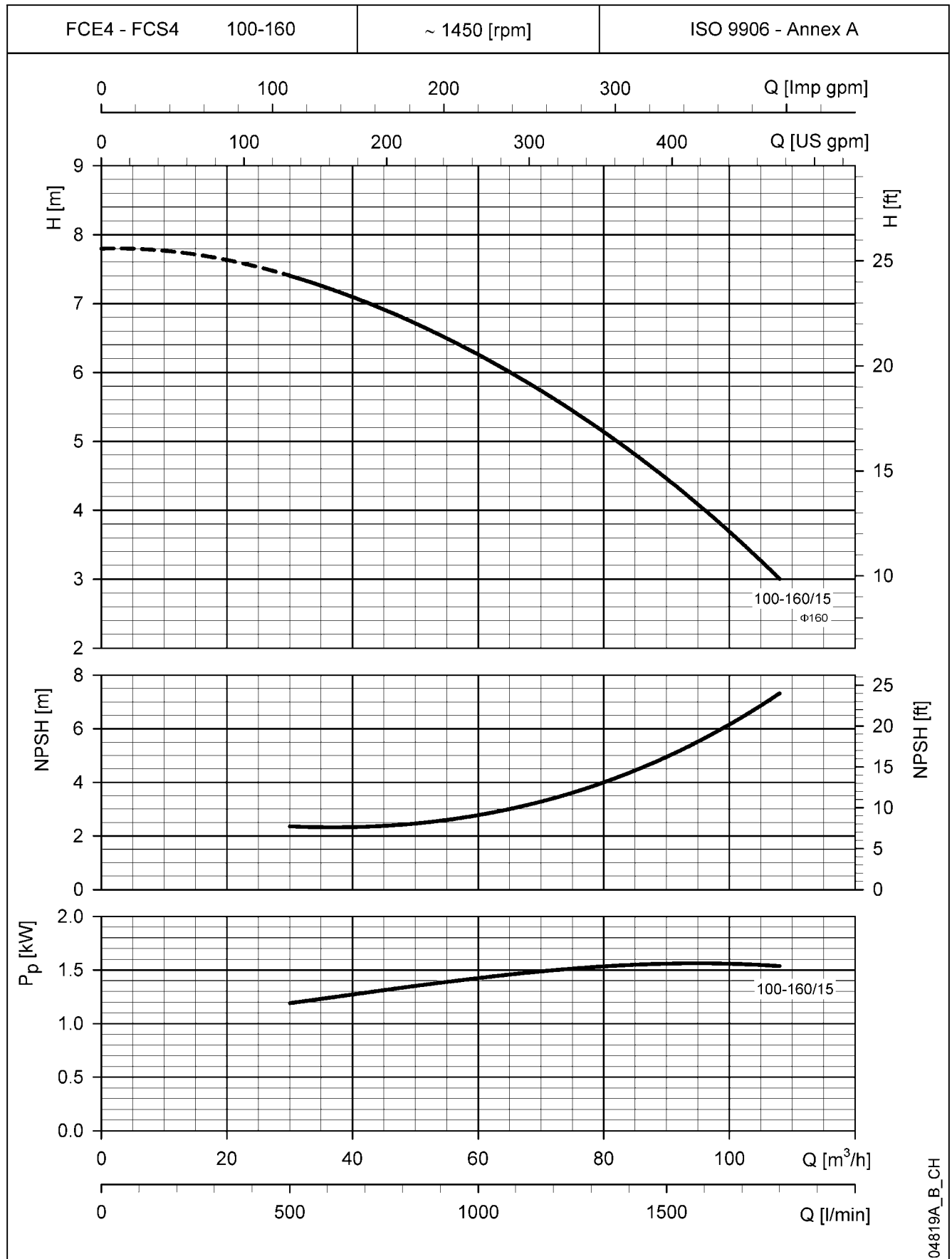


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

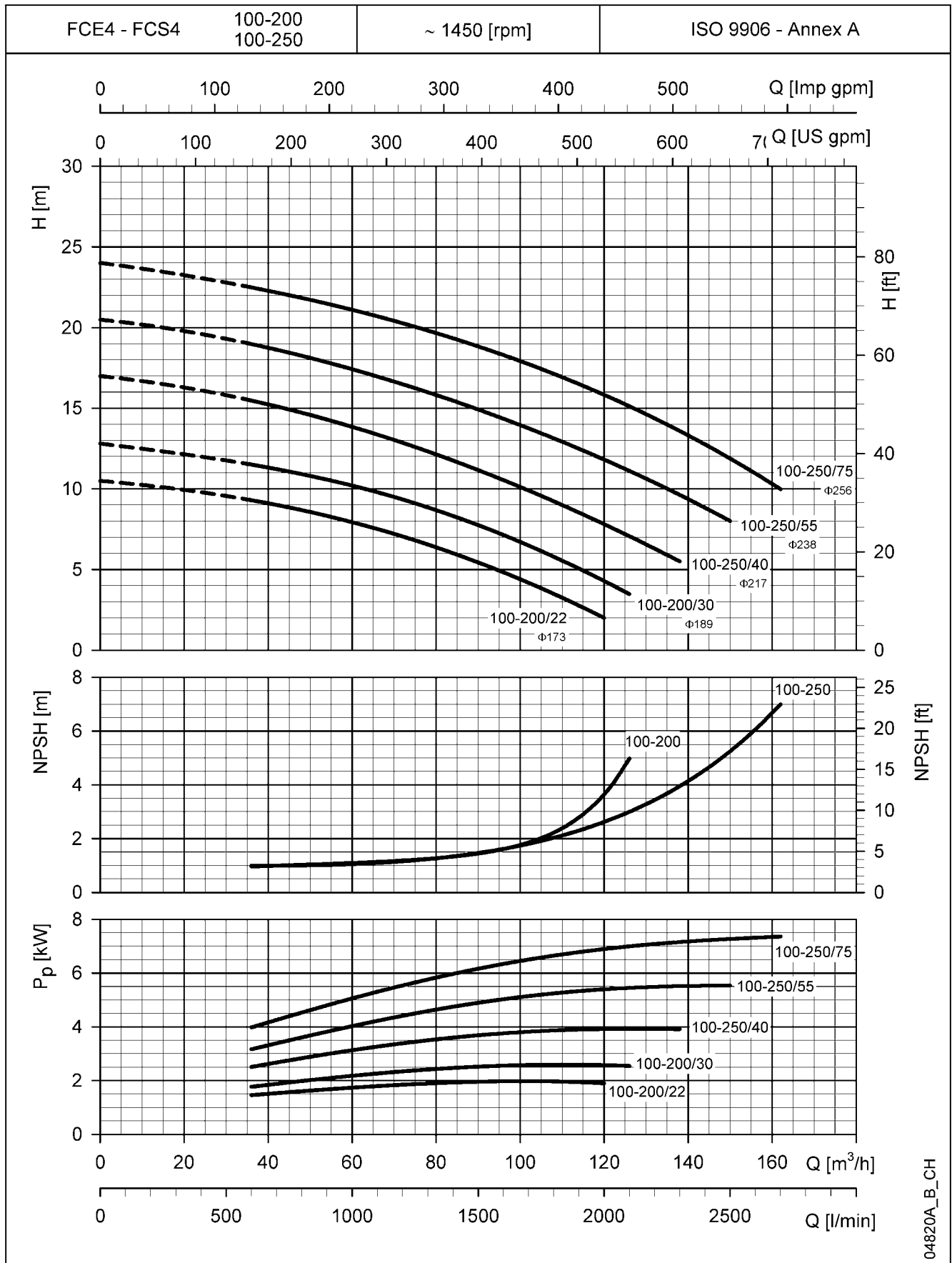


# ITT

## Lowara

### FCE4-FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



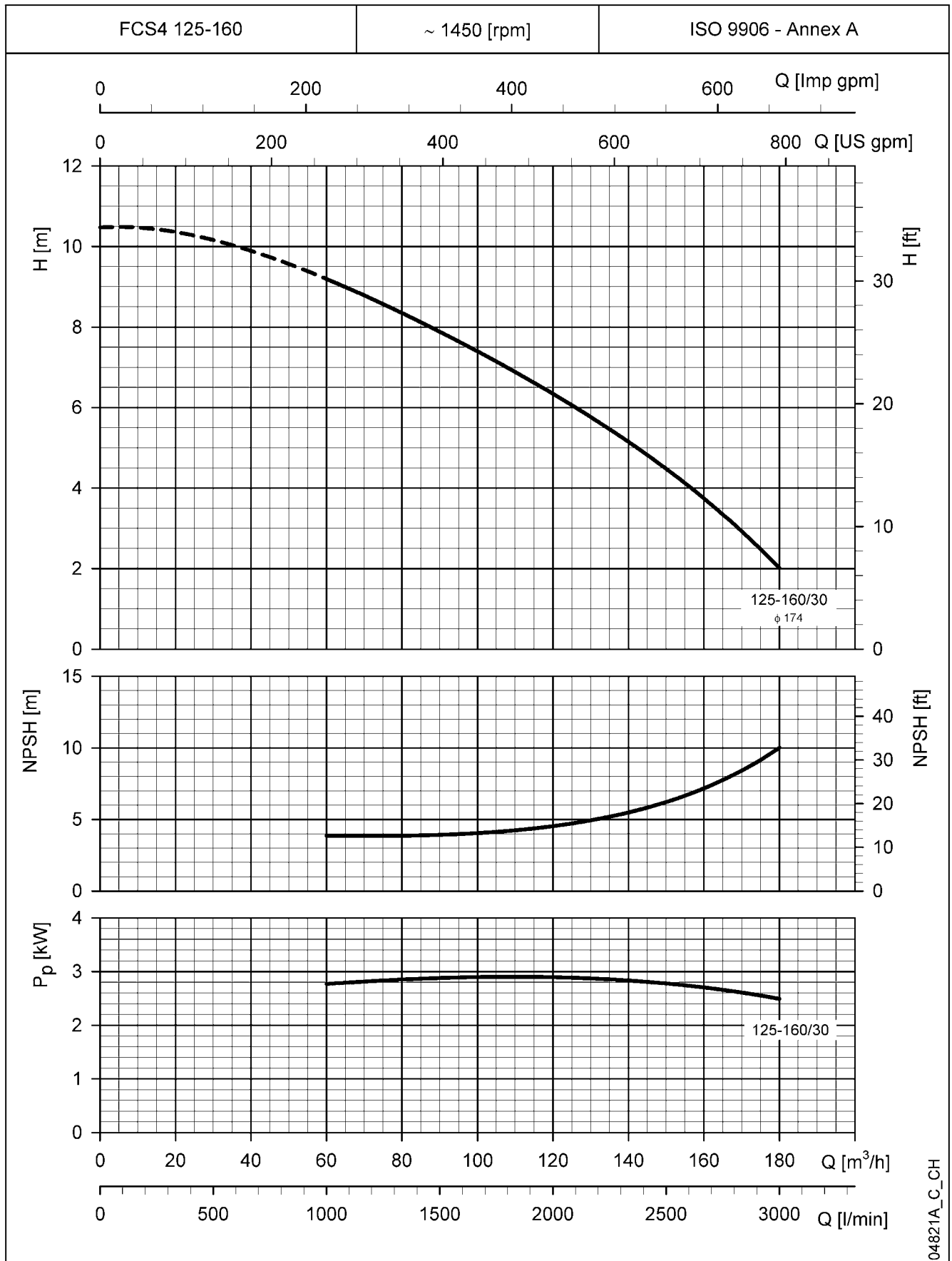
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These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

## Lowara

### FCS4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

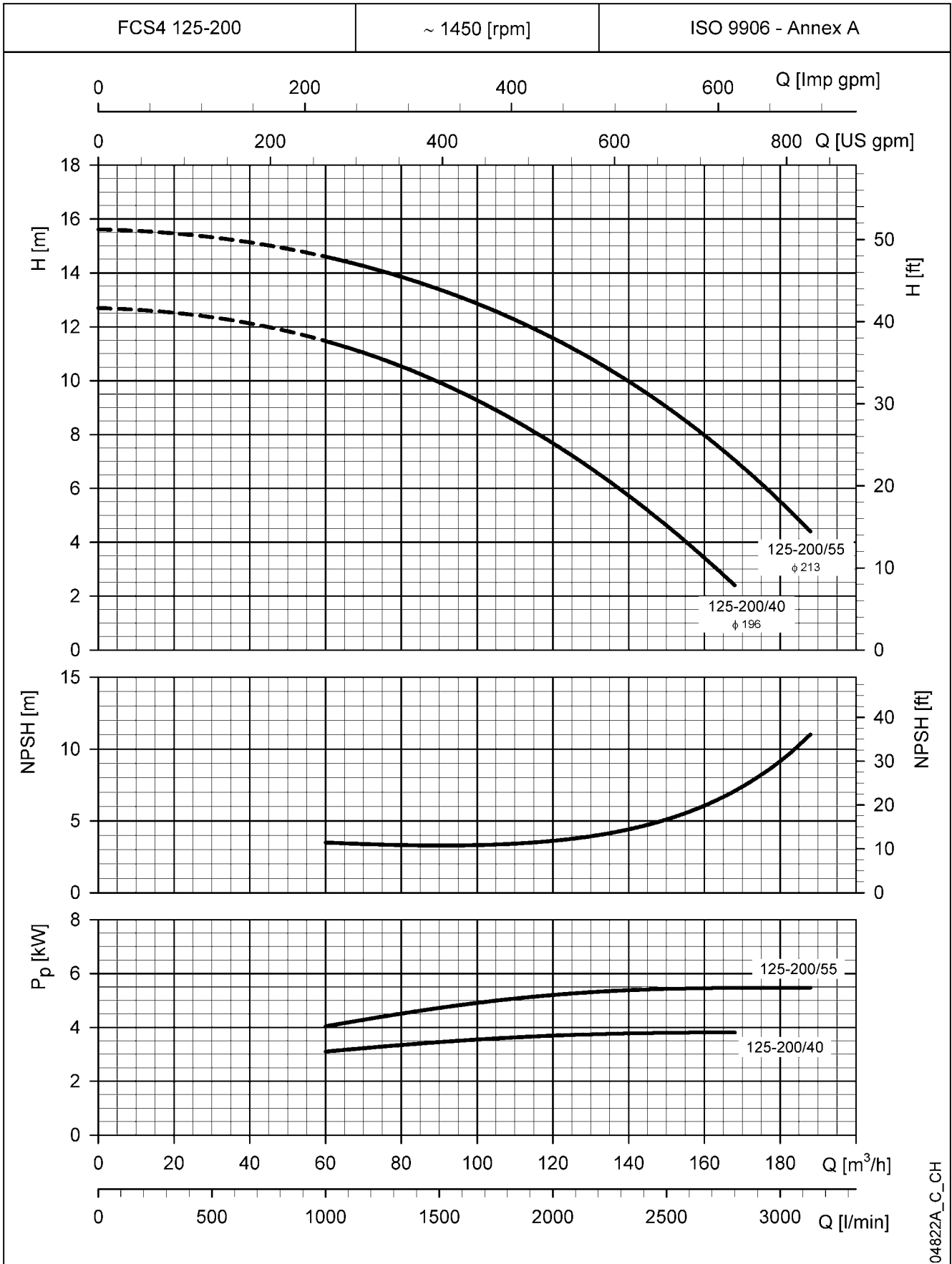


# ITT

## Lowara

### FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



04822A\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

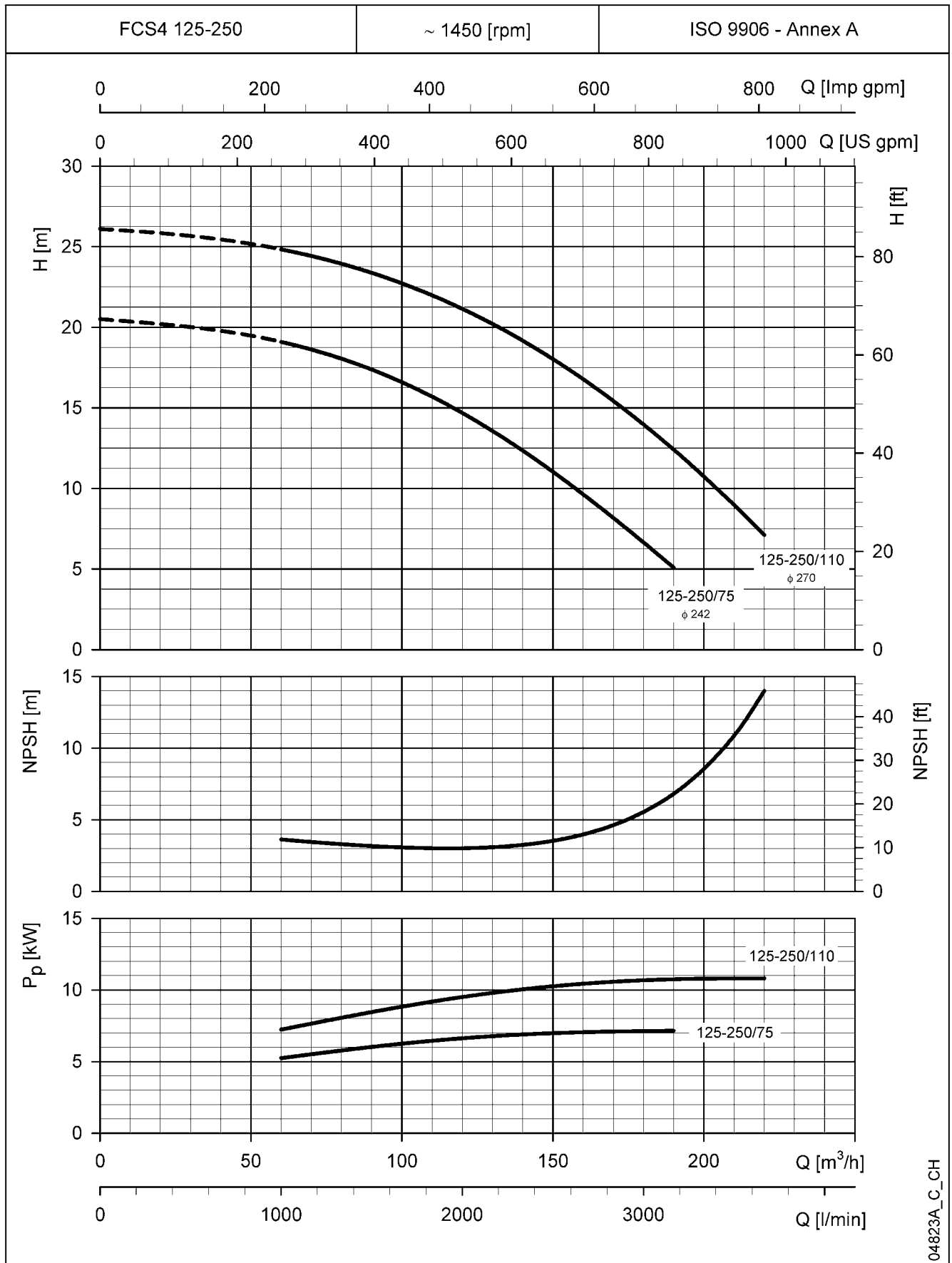


# ITT

## Lowara

### FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

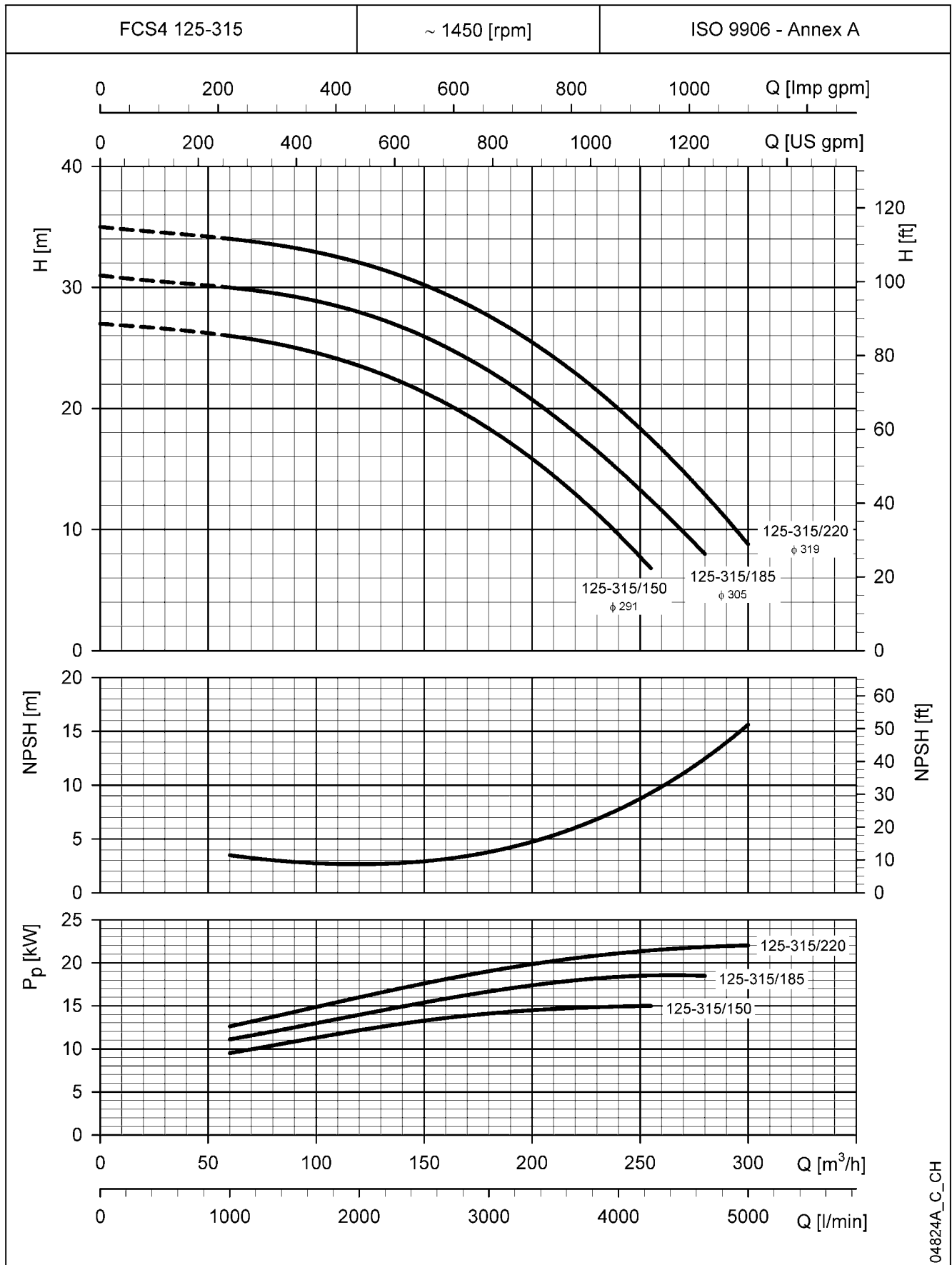


# ITT

## Lowara

### FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

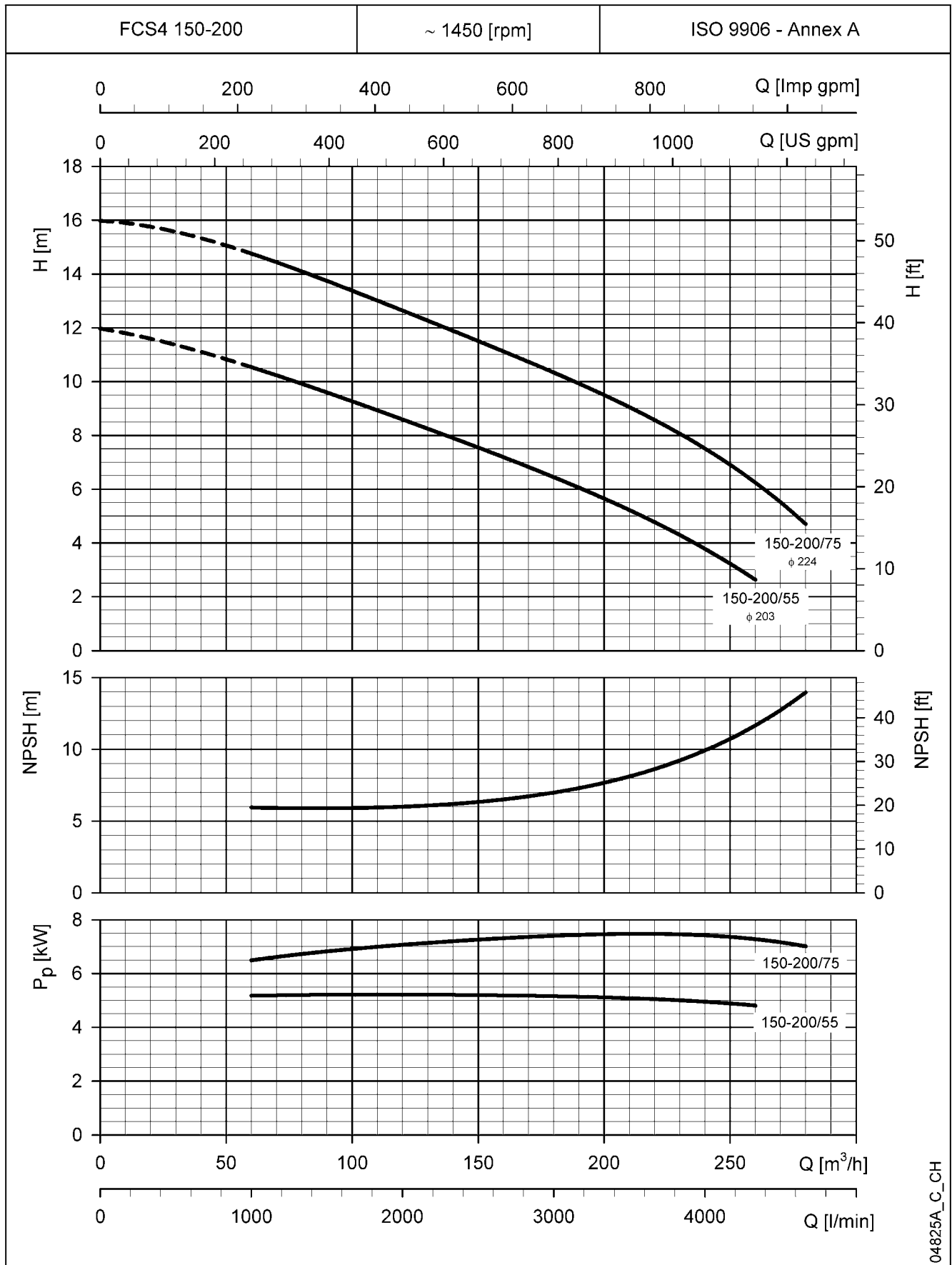


# ITT

## Lowara

### FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

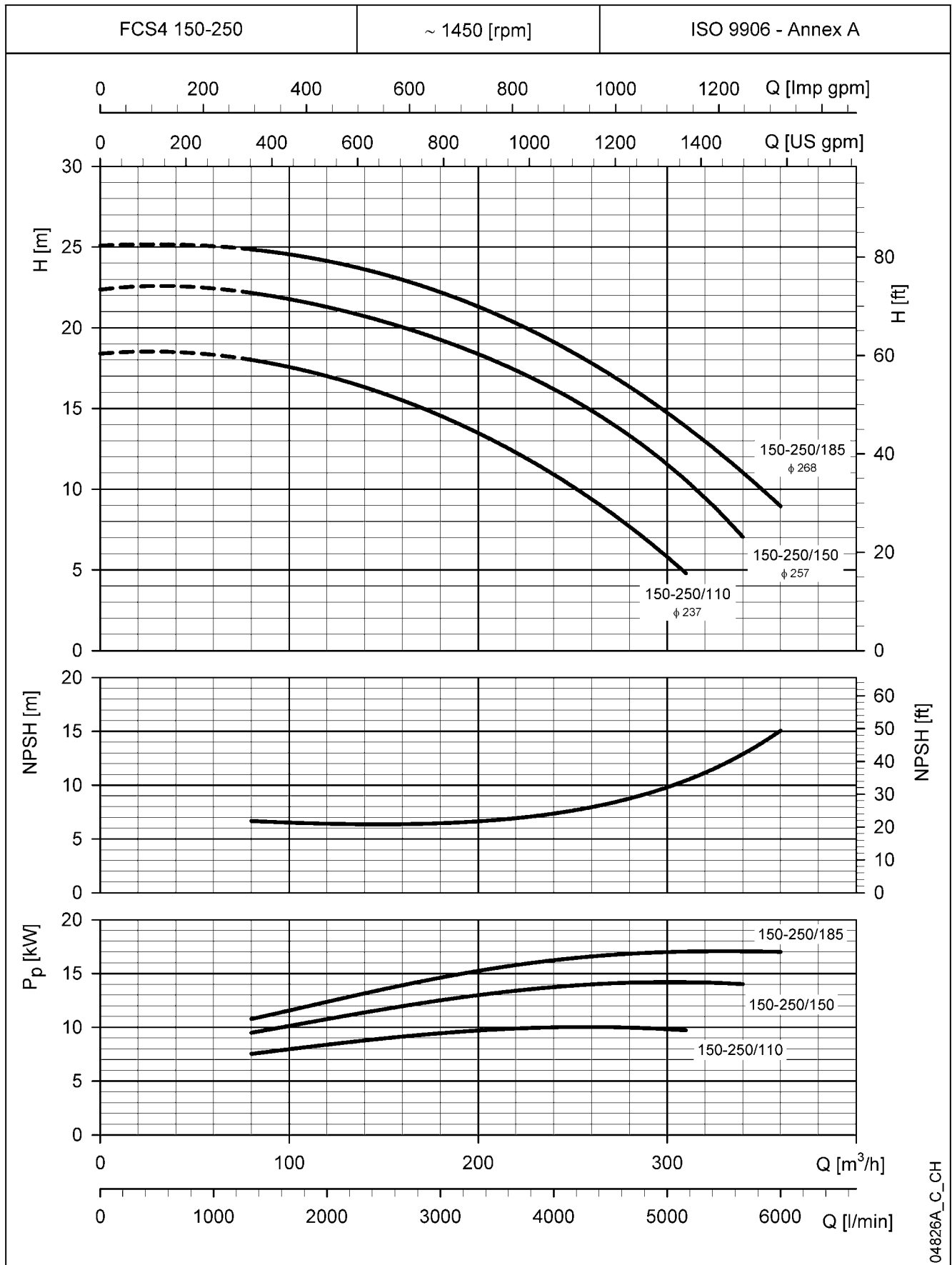


# ITT

## Lowara

### FCS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



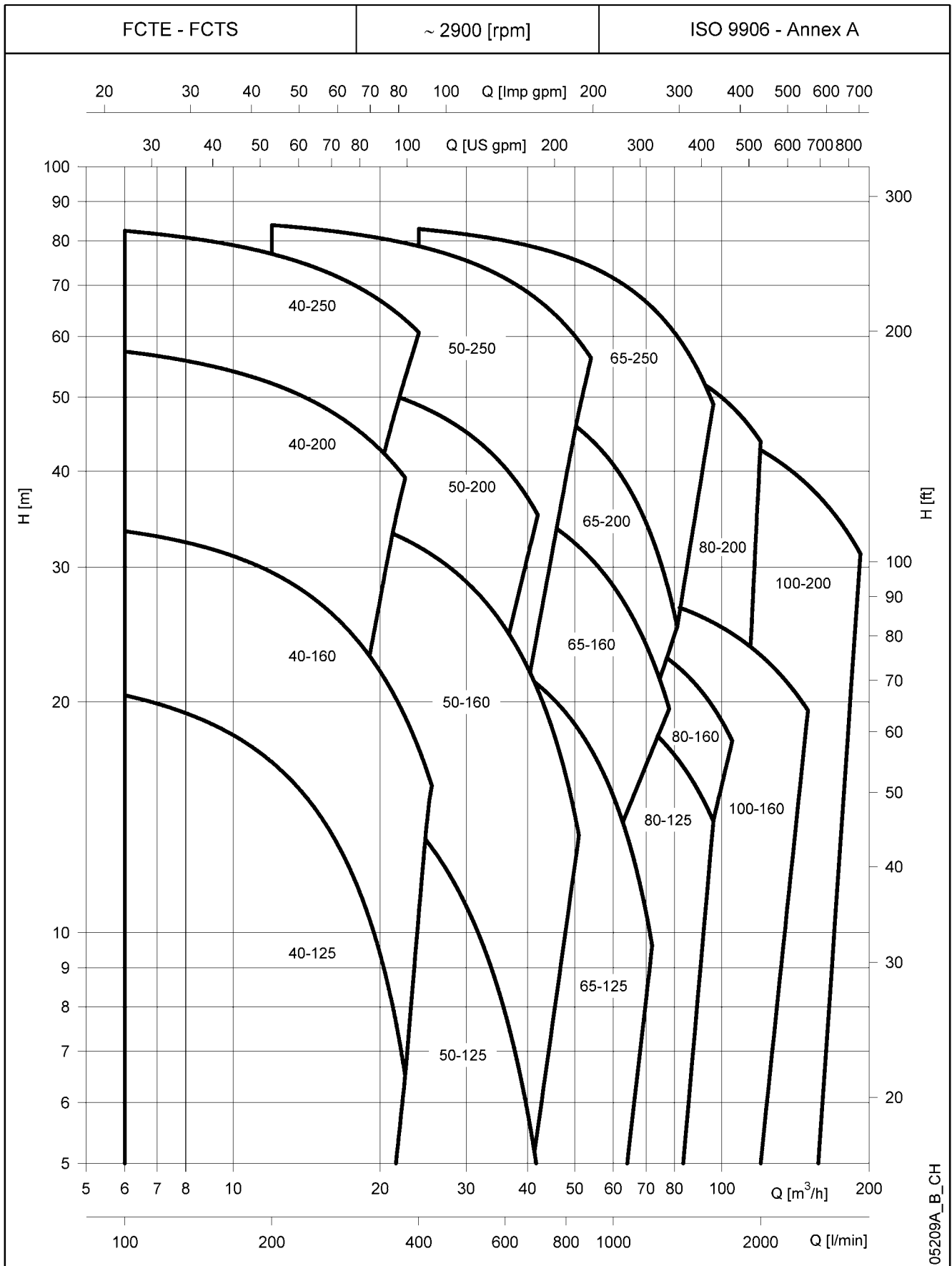
The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
These performances are valid for liquids with density  $\rho = 1,0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



# ITT

## Lowara

### FCTE-FCTS SERIES (SINGLE OPERATION) 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

## FCTE-FCTS SERIES (SINGLE OPERATION) HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES

| PUMP<br>TYPE | RATED<br>POWER |     | Q = DELIVERY                          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|-----|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | kW             | HP  | l/min 0                               | 100  | 200  | 300  | 350  | 400  | 600  | 700  | 900  | 1000 | 1200 | 1300 | 1400 | 1600 | 1750 | 2000 | 2500 | 3000 |
|              |                |     | m³/h 0                                | 6    | 12   | 18   | 21   | 24   | 36   | 42   | 54   | 60   | 72   | 78   | 84   | 96   | 105  | 120  | 150  | 180  |
|              |                |     | H = TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/07    | 0,75           | 1   | 17,9                                  | 16,0 | 12,5 | 7,4  | 4,3  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/11    | 1,1            | 1,5 | 22,6                                  | 20,4 | 16,7 | 11,5 | 8,3  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/15    | 1,5            | 2   | 28,2                                  | 26,0 | 22,3 | 17,2 | 14,1 | 10,6 |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/22    | 2,2            | 3   | 35,3                                  | 33,4 | 29,5 | 24,0 | 20,8 | 17,4 |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/ *    | *              | *   | 43,2                                  | 39,3 | 33,9 | 27,1 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/40    | 4              | 5,5 | 52,4                                  | 48,8 | 43,7 | 37,0 | 33,1 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/55    | 5,5            | 7,5 | 61,0                                  | 57,4 | 52,1 | 45,3 | 41,4 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/75    | 7,5            | 10  | 75,7                                  | 71,4 | 66,1 | 59,4 | 55,3 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/110   | 11             | 15  | 86,2                                  | 82,5 | 76,9 | 69,7 | 65,4 | 60,7 |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/11    | 1,1            | 1,5 | 14,4                                  |      | 13,2 | 11,6 | 10,5 | 9,4  | 4,2  |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/15    | 1,5            | 2   | 18,4                                  |      | 17,6 | 15,9 | 14,8 | 13,6 | 7,9  | 4,8  |      |      |      |      |      |      |      |      |      |      |
| 50-160/22    | 2,2            | 3   | 26,2                                  |      | 24,4 | 22,4 | 21,3 | 19,9 | 13,7 | 10,1 |      |      |      |      |      |      |      |      |      |      |
| 50-160/30    | 3              | 4   | 33,1                                  |      | 30,3 | 28,3 | 27,1 | 25,7 | 19,3 | 15,4 |      |      |      |      |      |      |      |      |      |      |
| 50-160/40    | 4              | 5,5 | 39,1                                  |      | 36,6 | 34,5 | 33,3 | 31,9 | 25,0 | 20,7 |      |      |      |      |      |      |      |      |      |      |
| 50-200/55    | 5,5            | 7,5 | 47,9                                  |      | 44,9 | 42,6 | 41,2 | 39,7 | 31,7 |      |      |      |      |      |      |      |      |      |      |      |
| 50-200/75    | 7,5            | 10  | 57,4                                  |      | 54,3 | 51,9 | 50,4 | 48,8 | 40,5 | 35,1 |      |      |      |      |      |      |      |      |      |      |
| 50-250/**    | **             | **  | 64,4                                  |      | 60,9 | 58,7 | 57,4 | 56,1 | 49,2 | 44,8 |      |      |      |      |      |      |      |      |      |      |
| 50-250/110   | 11             | 15  | 75,0                                  |      | 71,3 | 69,0 | 67,7 | 66,2 | 59,2 | 54,9 |      |      |      |      |      |      |      |      |      |      |
| 50-250/150   | 15             | 20  | 87,4                                  |      | 83,9 | 81,6 | 80,2 | 78,7 | 71,5 | 67,1 | 56,3 |      |      |      |      |      |      |      |      |      |
| 65-125/22    | 2,2            | 3   | 17,8                                  |      |      |      |      | 16,3 | 13,9 | 12,3 | 8,3  | 5,9  |      |      |      |      |      |      |      |      |
| 65-125/30    | 3              | 4   | 21,8                                  |      |      |      |      | 20,3 | 17,9 | 16,3 | 12,3 | 10,0 |      |      |      |      |      |      |      |      |
| 65-125/40    | 4              | 5,5 | 25,7                                  |      |      |      |      | 24,6 | 22,5 | 21,1 | 17,3 | 15,1 | 9,6  |      |      |      |      |      |      |      |
| 65-160/55    | 5,5            | 7,5 | 34,1                                  |      |      |      |      | 32,8 | 30,6 | 29,1 | 25,2 | 22,9 | 17,4 |      |      |      |      |      |      |      |
| 65-160/75    | 7,5            | 10  | 41,6                                  |      |      |      |      | 39,3 | 36,7 | 34,9 | 30,8 | 28,3 | 22,7 | 19,6 |      |      |      |      |      |      |
| 65-200/**    | **             | **  | 52,0                                  |      |      |      |      | 48,7 | 45,8 | 43,9 | 38,9 | 35,8 | 28,1 | 23,4 |      |      |      |      |      |      |
| 65-200/110   | 11             | 15  | 58,8                                  |      |      |      |      | 54,3 | 51,1 | 49,1 | 44,0 | 40,8 | 32,7 | 27,8 |      |      |      |      |      |      |
| 65-250/150   | 15             | 20  | 69,8                                  |      |      |      |      | 65,5 | 62,7 | 61,1 | 56,9 | 54,4 | 48,1 | 44,4 | 40,1 |      |      |      |      |      |
| 65-250/185   | 18,5           | 25  | 78,6                                  |      |      |      |      | 73,7 | 70,8 | 69,1 | 65,0 | 62,5 | 56,5 | 52,9 | 48,8 |      |      |      |      |      |
| 65-250/220   | 22             | 30  | 86,8                                  |      |      |      |      | 82,9 | 80,1 | 78,3 | 74,1 | 71,5 | 65,5 | 62,0 | 58,1 | 49,0 |      |      |      |      |
| 80-125/30    | 3              | 4   | 15,8                                  |      |      |      |      |      | 14,4 | 13,8 | 12,2 | 11,3 | 9,3  | 8,2  | 7,1  |      |      |      |      |      |
| 80-125/40    | 4              | 5,5 | 19,0                                  |      |      |      |      |      | 17,8 | 17,3 | 15,9 | 15,1 | 13,3 | 12,3 | 11,2 |      |      |      |      |      |
| 80-125/55    | 5,5            | 7,5 | 23,6                                  |      |      |      |      |      | 22,3 | 21,8 | 20,7 | 20,0 | 18,3 | 17,4 | 16,4 | 14,0 |      |      |      |      |
| 80-160/75    | 7,5            | 10  | 28,2                                  |      |      |      |      |      | 26,7 | 26,3 | 25,4 | 24,9 | 23,5 | 22,7 | 21,8 | 19,7 | 17,8 |      |      |      |
| 80-200/110   | 11             | 15  | 40,7                                  |      |      |      |      |      | 38,1 | 37,5 | 35,9 | 35,0 | 32,9 | 31,7 | 30,4 | 27,5 | 25,0 |      |      |      |
| 80-200/150   | 15             | 20  | 51,1                                  |      |      |      |      |      | 48,0 | 47,3 | 45,7 | 44,7 | 42,6 | 41,5 | 40,2 | 37,3 | 34,8 |      |      |      |
| 80-200/185   | 18,5           | 25  | 57,2                                  |      |      |      |      |      | 54,0 | 53,3 | 51,8 | 50,9 | 49,0 | 47,8 | 46,6 | 43,8 | 41,4 |      |      |      |
| 80-200/220   | 22             | 30  | 63,9                                  |      |      |      |      |      | 60,9 | 60,3 | 58,8 | 58,0 | 56,1 | 55,0 | 53,8 | 51,0 | 48,6 | 43,8 |      |      |
| 100-160/110  | 11             | 15  | 29,0                                  |      |      |      |      |      |      |      |      | 27,6 | 26,8 | 26,3 | 25,7 | 24,5 | 23,4 | 21,4 | 16,5 |      |
| 100-200/185  | 18,5           | 25  | 39,8                                  |      |      |      |      |      |      |      |      |      | 37,9 | 37,5 | 37,0 | 36,0 | 35,2 | 33,5 | 29,5 |      |
| 100-200/220  | 22             | 30  | 47,5                                  |      |      |      |      |      |      |      |      |      | 45,3 | 44,9 | 44,4 | 43,4 | 42,5 | 40,8 | 36,7 |      |

\* FCTE 40-200/40A : 4 [kW] - 5.5 [HP] , FCTS 40-200/30 : 3 [kW] - 4 [HP]

\*\* FCTE 50-250/92 : 9.2 [kW] - 12.5 [HP] , FCTS 50-250/110A : 11 [kW] - 15 [HP]

FCTE 65-200/92 : 9.2 [kW] - 12.5 [HP] , FCTS 65-200/110A : 11 [kW] - 15 [HP]

Performances according to ISO 9906 - Annex A.

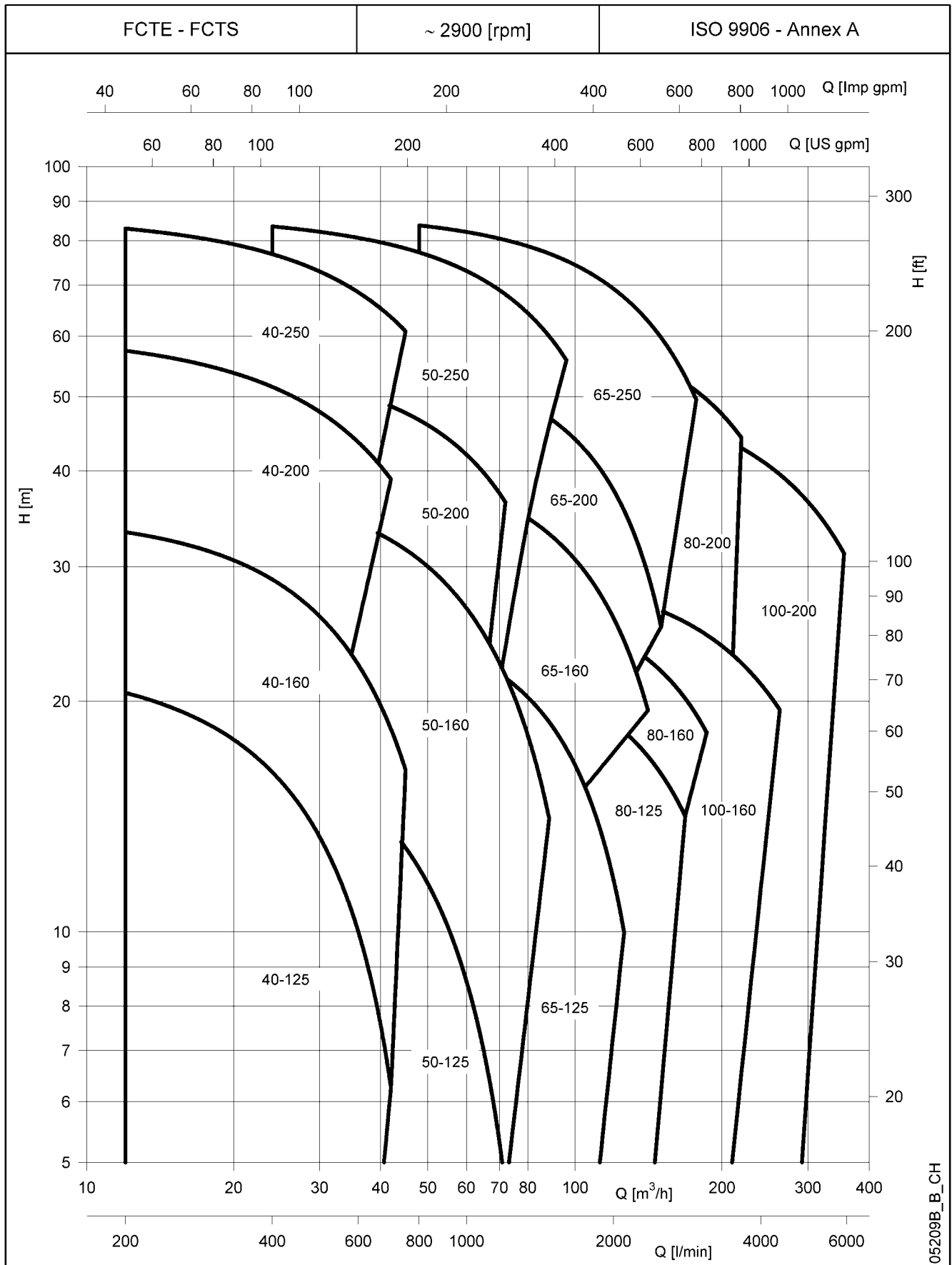
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# ITT

## Lowara

### FCTE-FCTS SERIES (PARALLEL OPERATION) 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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

# **FCTE-FCTS SERIES (PARALLEL OPERATION)** **HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 2 POLES**

| PUMP<br>TYPE                          | RATED     |           | Q = DELIVERY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------|-----------|-----------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                       | POWER     |           | l/min 0      | 200  | 400  | 600  | 700  | 800  | 1000 | 1200 | 1600 | 1800 | 2000 | 2200 | 2400 | 2800 | 3200 | 3500 | 4250 | 5550 |
|                                       | 2 x<br>kW | 2 x<br>HP | m³/h 0       | 12   | 24   | 36   | 42   | 48   | 60   | 72   | 96   | 108  | 120  | 132  | 144  | 168  | 192  | 210  | 255  | 333  |
| H = TOTAL HEAD METRES COLUMN OF WATER |           |           |              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/07                             | 0,75      | 1         | 17,9         | 15,9 | 11,7 | 5,6  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/11                             | 1,1       | 1,5       | 23,0         | 20,5 | 16,2 | 10,0 | 6,3  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/15                             | 1,5       | 2         | 28,4         | 26,0 | 21,6 | 15,4 | 11,7 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/22                             | 2,2       | 3         | 35,3         | 33,3 | 28,9 | 22,3 | 18,4 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/ *                             | *         | *         | 43,4         | 39,2 | 33,3 | 25,6 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/40                             | 4         | 5,5       | 52,5         | 48,5 | 42,8 | 35,3 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/55                             | 5,5       | 7,5       | 61,2         | 57,5 | 51,5 | 43,6 | 39,0 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/75                             | 7,5       | 10        | 75,1         | 69,5 | 62,8 | 54,6 | 49,9 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/110                            | 11        | 15        | 86,8         | 83,0 | 76,8 | 68,5 | 63,6 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/11                             | 1,1       | 1,5       | 14,2         |      | 12,7 | 10,6 | 9,3  | 7,8  | 4,4  |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/15                             | 1,5       | 2         | 18,4         |      | 17,1 | 15,0 | 13,6 | 12,1 | 8,6  | 4,6  |      |      |      |      |      |      |      |      |      |      |
| 50-160/22                             | 2,2       | 3         | 26,4         |      | 24,0 | 21,6 | 20,1 | 18,5 | 14,8 | 10,4 |      |      |      |      |      |      |      |      |      |      |
| 50-160/30                             | 3         | 4         | 33,3         |      | 30,1 | 27,5 | 26,0 | 24,3 | 20,4 | 15,8 |      |      |      |      |      |      |      |      |      |      |
| 50-160/40                             | 4         | 5,5       | 39,5         |      | 36,8 | 34,1 | 32,5 | 30,7 | 26,5 | 21,6 |      |      |      |      |      |      |      |      |      |      |
| 50-200/55                             | 5,5       | 7,5       | 47,6         |      | 44,2 | 41,4 | 39,6 | 37,7 | 33,2 |      |      |      |      |      |      |      |      |      |      |      |
| 50-200/75                             | 7,5       | 10        | 56,9         |      | 53,3 | 50,4 | 48,6 | 46,6 | 42,0 | 36,4 |      |      |      |      |      |      |      |      |      |      |
| 50-250/**                             | **        | **        | 64,6         |      | 61,0 | 58,3 | 56,7 | 54,8 | 50,6 | 45,6 |      |      |      |      |      |      |      |      |      |      |
| 50-250/110                            | 11        | 15        | 75,1         |      | 71,2 | 68,4 | 66,7 | 64,9 | 60,8 | 55,9 |      |      |      |      |      |      |      |      |      |      |
| 50-250/150                            | 15        | 20        | 87,3         |      | 83,5 | 80,7 | 79,0 | 77,2 | 73,0 | 68,1 | 55,9 |      |      |      |      |      |      |      |      |      |
| 65-125/22                             | 2,2       | 3         | 18,1         |      |      |      |      | 15,8 | 14,5 | 12,8 | 8,3  | 5,4  |      |      |      |      |      |      |      |      |
| 65-125/30                             | 3         | 4         | 22,1         |      |      |      |      | 19,8 | 18,4 | 16,8 | 12,4 | 9,6  |      |      |      |      |      |      |      |      |
| 65-125/40                             | 4         | 5,5       | 25,7         |      |      |      |      | 24,2 | 23,0 | 21,5 | 17,4 | 14,7 | 11,7 |      |      |      |      |      |      |      |
| 65-160/55                             | 5,5       | 7,5       | 34,0         |      |      |      |      | 32,4 | 31,1 | 29,4 | 25,1 | 22,4 | 19,4 |      |      |      |      |      |      |      |
| 65-160/75                             | 7,5       | 10        | 41,8         |      |      |      |      | 39,4 | 37,9 | 36,1 | 31,6 | 28,8 | 25,7 | 22,3 |      |      |      |      |      |      |
| 65-200/**                             | **        | **        | 52,0         |      |      |      |      | 48,5 | 46,9 | 44,9 | 39,7 | 36,3 | 32,5 | 28,0 |      |      |      |      |      |      |
| 65-200/110                            | 11        | 15        | 58,7         |      |      |      |      | 54,2 | 52,5 | 50,4 | 45,1 | 41,7 | 37,7 | 33,2 | 27,9 |      |      |      |      |      |
| 65-250/150                            | 15        | 20        | 69,6         |      |      |      |      | 65,7 | 64,2 | 62,4 | 57,8 | 54,9 | 51,7 | 48,0 | 43,8 |      |      |      |      |      |
| 65-250/185                            | 18,5      | 25        | 78,3         |      |      |      |      | 74,1 | 72,5 | 70,7 | 66,0 | 63,2 | 60,0 | 56,4 | 52,4 | 43,0 |      |      |      |      |
| 65-250/220                            | 22        | 30        | 87,3         |      |      |      |      | 83,8 | 82,1 | 80,2 | 75,3 | 72,4 | 69,2 | 65,7 | 61,8 | 53,2 |      |      |      |      |
| 80-125/30                             | 3         | 4         | 15,7         |      |      |      |      |      |      | 14,1 | 12,4 | 11,3 | 10,2 | 9,0  | 7,8  |      |      |      |      |      |
| 80-125/40                             | 4         | 5,5       | 18,9         |      |      |      |      |      |      | 17,7 | 16,2 | 15,2 | 14,2 | 13,1 | 11,9 |      |      |      |      |      |
| 80-125/55                             | 5,5       | 7,5       | 23,6         |      |      |      |      |      |      | 21,7 | 20,4 | 19,6 | 18,8 | 17,8 | 16,7 | 14,2 |      |      |      |      |
| 80-160/75                             | 7,5       | 10        | 28,4         |      |      |      |      |      |      | 26,8 | 25,7 | 25,0 | 24,3 | 23,4 | 22,4 | 20,2 |      |      |      |      |
| 80-200/110                            | 11        | 15        | 40,9         |      |      |      |      |      |      | 38,2 | 36,5 | 35,5 | 34,3 | 33,1 | 31,8 | 28,7 | 25,1 | 22,1 |      |      |
| 80-200/150                            | 15        | 20        | 50,4         |      |      |      |      |      |      | 47,4 | 45,7 | 44,7 | 43,6 | 42,4 | 41,1 | 38,0 | 34,5 | 31,5 |      |      |
| 80-200/185                            | 18,5      | 25        | 57,8         |      |      |      |      |      |      | 54,5 | 52,8 | 51,8 | 50,7 | 49,5 | 48,2 | 45,3 | 41,9 | 39,0 |      |      |
| 80-200/220                            | 22        | 30        | 63,6         |      |      |      |      |      |      | 61,3 | 59,7 | 58,7 | 57,6 | 56,4 | 55,1 | 52,1 | 48,7 | 45,8 |      |      |
| 100-160/110                           | 11        | 15        | 28,8         |      |      |      |      |      |      |      |      | 27,7 | 27,3 | 26,8 | 26,3 | 25,0 | 23,5 | 22,3 | 18,5 |      |
| 100-200/185                           | 18,5      | 25        | 39,7         |      |      |      |      |      |      |      |      |      |      | 37,8 | 37,4 | 36,4 | 35,2 | 34,1 | 31,0 | 23,4 |
| 100-200/220                           | 22        | 30        | 47,5         |      |      |      |      |      |      |      |      |      |      | 45,3 | 44,9 | 43,9 | 42,8 | 41,8 | 38,7 | 30,9 |

\* FCTE 40-200/40A : 4 [kW] - 5.5 [HP] , FCTS 40-200/30 : 3 [kW] - 4 [HP]

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\*\* FCTE 50-250/92 : 9.2 [kW] - 12.5 [HP] , FCTS 50-250/110A : 11 [kW] - 15 [HP]

FCTE 65-200/92 : 9.2 [kW] - 12.5 [HP] , FCTS 65-200/110A : 11 [kW] - 15 [HP]

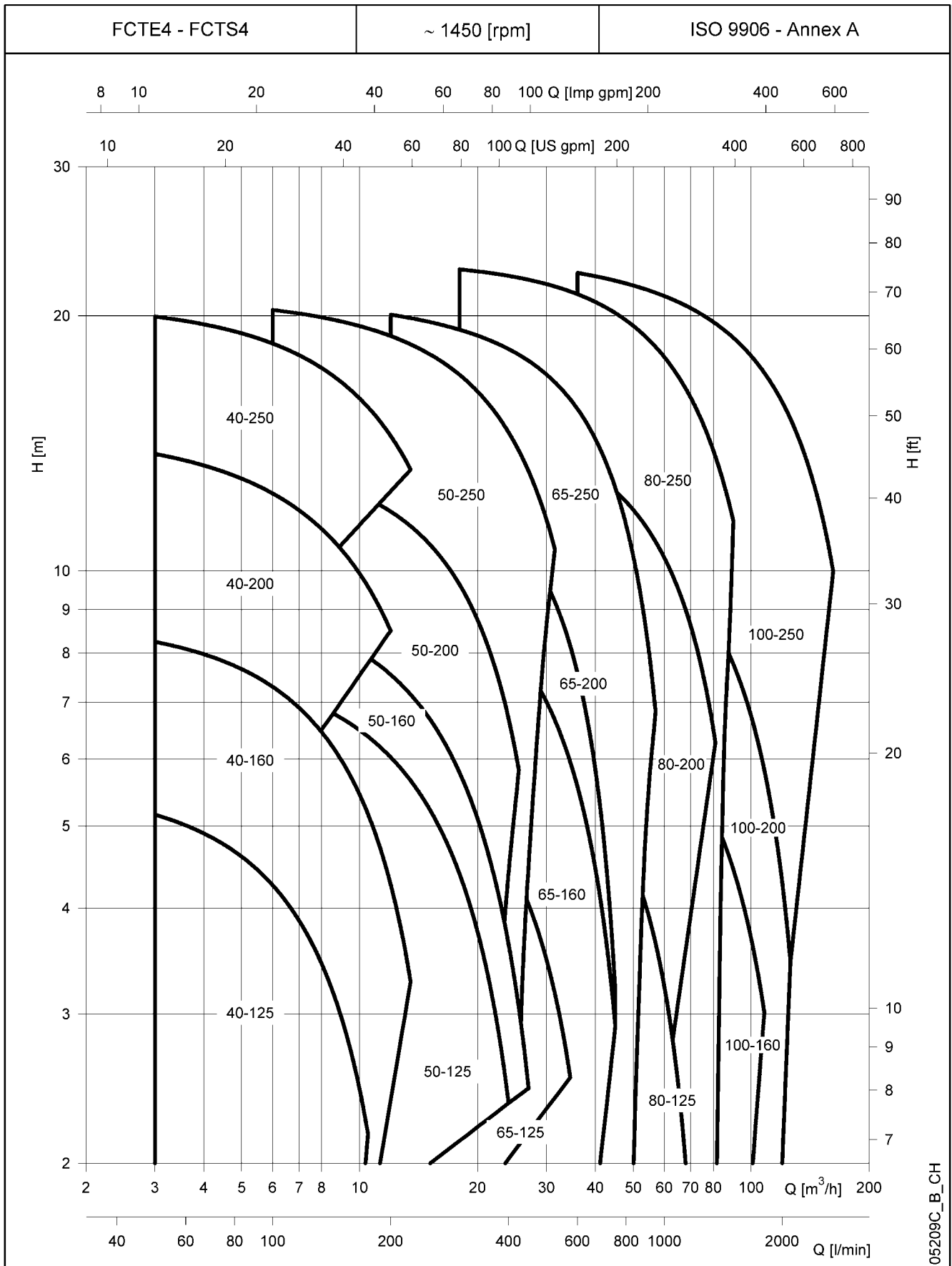
Performances according to ISO 9906 - Annex A.



# ITT

## Lowara

### FCTE4-FCTS4 SERIES (SINGLE OPERATION) HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



# **FCTE4-FCTS4 SERIES (SINGLE OPERATION)** **HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES**

| PUMP<br>TYPE                          | RATED<br>POWER |      | Q = DELIVERY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------|----------------|------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                       | kW             | HP   | l/min 0      | 50   | 100  | 150  | 175  | 200  | 300  | 400  | 500  | 600  | 700  | 900  | 1200 | 1400 | 1600 | 1750 | 2000 | 2500 |
|                                       |                |      | m³/h 0       | 3    | 6    | 9    | 10,5 | 12   | 18   | 24   | 30   | 36   | 42   | 54   | 72   | 84   | 96   | 105  | 120  | 150  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                |      |              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02A *                          | 0,25           | 0,33 | 4,6          | 4,2  | 3,3  | 2,1  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02 *                           | 0,25           | 0,33 | 5,7          | 5,2  | 4,3  | 3,0  | 2,2  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/02 *                           | 0,25           | 0,33 | 7,0          | 6,4  | 5,5  | 4,2  | 3,4  | 2,6  |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/03 *                           | 0,37           | 0,5  | 8,8          | 8,3  | 7,3  | 6,0  | 5,2  | 4,3  |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/05                             | 0,55           | 0,75 | 12,8         | 11,8 | 10,5 | 8,7  | 7,7  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/07                             | 0,75           | 1    | 14,5         | 13,6 | 12,2 | 10,3 | 9,3  | 8,1  |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/11                             | 1,1            | 1,5  | 18,5         | 17,6 | 16,2 | 14,4 | 13,3 | 12,2 |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/15                             | 1,5            | 2    | 20,9         | 20,0 | 18,6 | 16,7 | 15,6 | 14,4 |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/02 *                           | 0,25           | 0,33 | 6,3          |      | 5,7  | 5,2  | 4,9  | 4,6  | 3,0  |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/03 *                           | 0,37           | 0,5  | 7,9          |      | 7,3  | 6,8  | 6,4  | 6,0  | 4,3  | 2,4  |      |      |      |      |      |      |      |      |      |      |
| 50-160/05 *                           | 0,55           | 0,75 | 9,4          |      | 8,8  | 8,2  | 7,9  | 7,5  | 5,8  | 3,6  |      |      |      |      |      |      |      |      |      |      |
| 50-200/07                             | 0,75           | 1    | 11,7         |      | 10,7 | 10,0 | 9,6  | 9,2  | 7,1  | 4,2  |      |      |      |      |      |      |      |      |      |      |
| 50-200/11                             | 1,1            | 1,5  | 14,1         |      | 13,2 | 12,5 | 12,2 | 11,8 | 9,6  | 6,7  |      |      |      |      |      |      |      |      |      |      |
| 50-250/15                             | 1,5            | 2    | 18,1         |      | 17,0 | 16,3 | 16,0 | 15,6 | 13,7 | 11,3 | 8,1  |      |      |      |      |      |      |      |      |      |
| 50-250/22                             | 2,2            | 3    | 21,3         |      | 20,3 | 19,7 | 19,3 | 18,9 | 17,0 | 14,6 | 11,5 |      |      |      |      |      |      |      |      |      |
| 65-125/03 *                           | 0,37           | 0,5  | 5,6          |      |      |      |      | 4,9  | 4,3  | 3,4  | 2,3  |      |      |      |      |      |      |      |      |      |
| 65-125/05 *                           | 0,55           | 0,75 | 6,4          |      |      |      |      | 6,0  | 5,4  | 4,5  | 3,5  |      |      |      |      |      |      |      |      |      |
| 65-160/07                             | 0,75           | 1    | 8,4          |      |      |      |      | 8,0  | 7,3  | 6,3  | 5,2  | 3,8  | 2,3  |      |      |      |      |      |      |      |
| 65-160/11                             | 1,1            | 1,5  | 10,3         |      |      |      |      | 9,7  | 9,1  | 8,2  | 7,0  | 5,6  | 3,9  |      |      |      |      |      |      |      |
| 65-200/15                             | 1,5            | 2    | 14,3         |      |      |      |      | 13,2 | 12,3 | 11,2 | 9,7  | 7,6  | 4,8  |      |      |      |      |      |      |      |
| 65-250/22                             | 2,2            | 3    | 19,0         |      |      |      |      | 17,6 | 16,7 | 15,7 | 14,4 | 12,8 | 10,7 | 4,9  |      |      |      |      |      |      |
| 65-250/30                             | 3              | 4    | 21,4         |      |      |      |      | 20,1 | 19,3 | 18,3 | 17,1 | 15,5 | 13,6 | 8,5  |      |      |      |      |      |      |
| 80-125/07                             | 0,75           | 1    | 5,6          |      |      |      |      |      | 5,3  | 5,0  | 4,7  | 4,2  | 3,7  | 2,4  |      |      |      |      |      |      |
| 80-125/11                             | 1,1            | 1,5  | 7,0          |      |      |      |      |      | 6,6  | 6,3  | 6,0  | 5,7  | 5,2  | 4,0  |      |      |      |      |      |      |
| 80-200/15                             | 1,5            | 2    | 11,7         |      |      |      |      |      | 10,2 | 9,7  | 9,1  | 8,5  | 7,8  | 6,1  |      |      |      |      |      |      |
| 80-200/22                             | 2,2            | 3    | 14,7         |      |      |      |      |      | 13,3 | 12,8 | 12,2 | 11,5 | 10,8 | 9,2  | 6,3  |      |      |      |      |      |
| 80-200/30                             | 3              | 4    | 16,7         |      |      |      |      |      | 15,1 | 14,6 | 14,0 | 13,4 | 12,8 | 11,3 | 8,2  |      |      |      |      |      |
| 80-250/40                             | 4              | 5,5  | 19,6         |      |      |      |      |      | 19,1 | 18,6 | 18,1 | 17,4 | 16,7 | 14,8 | 11,2 | 8,2  |      |      |      |      |
| 80-250/55                             | 5,5            | 7,5  | 23,3         |      |      |      |      |      | 22,7 | 22,3 | 21,8 | 21,2 | 20,5 | 18,9 | 15,6 | 12,9 |      |      |      |      |
| 100-160/15                            | 1,5            | 2    | 7,9          |      |      |      |      |      |      |      | 7,6  | 7,4  | 7,1  | 6,4  | 5,0  | 4,0  | 2,9  | 2,1  |      |      |
| 100-200/22                            | 2,2            | 3    | 9,7          |      |      |      |      |      |      |      |      | 9,1  | 8,9  | 8,2  | 7,0  | 6,0  | 4,9  | 4,0  | 2,3  |      |
| 100-200/30                            | 3              | 4    | 11,6         |      |      |      |      |      |      |      |      | 10,9 | 10,7 | 10,0 | 8,8  | 7,8  | 6,6  | 5,6  | 3,8  |      |
| 100-250/40                            | 4              | 5,5  | 15,2         |      |      |      |      |      |      |      |      | 14,4 | 14,2 | 13,6 | 12,3 | 11,3 | 10,1 | 9,1  | 7,2  |      |
| 100-250/55                            | 5,5            | 7,5  | 18,7         |      |      |      |      |      |      |      |      | 17,8 | 17,6 | 17,0 | 15,7 | 14,8 | 13,6 | 12,7 | 10,9 | 6,7  |
| 100-250/75                            | 7,5            | 10   | 21,6         |      |      |      |      |      |      |      |      | 21,2 | 20,9 | 20,4 | 19,2 | 18,2 | 17,1 | 16,1 | 14,4 | 10,0 |

\* FCTE4 VERSION ONLY

fcte4-fcts4-4p50S-en\_e\_th

Performances according to ISO 9906 - Annex A.



# ITT

## Lowara

### FCTE4-FCTS4 SERIES (PARALLEL OPERATION) HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



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

# **FCTE4-FCTS4 SERIES (PARALLEL OPERATION)** **HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES**

| PUMP<br>TYPE                          | RATED<br>POWER |           | Q = DELIVERY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------------|----------------|-----------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                       | 2 x<br>kW      | 2 x<br>HP | l/min 0      | 100  | 200  | 300  | 350  | 400  | 600  | 700  | 900  | 1000 | 1100 | 1600 | 1800 | 2400 | 3000 | 3500 | 4000 | 4600 |
|                                       |                |           | m³/h 0       | 6    | 12   | 18   | 21   | 24   | 36   | 42   | 54   | 60   | 66   | 96   | 108  | 144  | 180  | 210  | 240  | 276  |
| H = TOTAL HEAD METRES COLUMN OF WATER |                |           |              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02A *                          | 0,25           | 0,33      | 4,6          | 4,1  | 3,2  | 1,7  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-125/02 *                           | 0,25           | 0,33      | 5,8          | 5,2  | 4,2  | 2,6  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/02 *                           | 0,25           | 0,33      | 7,0          | 6,4  | 5,4  | 3,8  | 2,9  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-160/03 *                           | 0,37           | 0,5       | 8,8          | 8,3  | 7,2  | 5,6  | 4,6  | 3,5  |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/05                             | 0,55           | 0,75      | 12,9         | 11,8 | 10,3 | 8,4  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-200/07                             | 0,75           | 1         | 14,8         | 13,6 | 12,1 | 10,2 | 9,0  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/11                             | 1,1            | 1,5       | 18,5         | 17,6 | 16,1 | 14,0 | 12,8 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 40-250/15                             | 1,5            | 2         | 21,1         | 20,0 | 18,5 | 16,4 | 15,2 | 13,9 |      |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/02 *                           | 0,25           | 0,33      | 6,3          |      | 5,6  | 5,0  | 4,6  | 4,2  | 2,2  |      |      |      |      |      |      |      |      |      |      |      |
| 50-125/03 *                           | 0,37           | 0,5       | 8,1          |      | 7,2  | 6,5  | 6,1  | 5,7  | 3,6  | 2,3  |      |      |      |      |      |      |      |      |      |      |
| 50-160/05 *                           | 0,55           | 0,75      | 9,6          |      | 8,8  | 8,1  | 7,7  | 7,2  | 5,0  | 3,6  |      |      |      |      |      |      |      |      |      |      |
| 50-200/07                             | 0,75           | 1         | 11,5         |      | 10,6 | 9,8  | 9,3  | 8,8  | 6,3  | 4,7  |      |      |      |      |      |      |      |      |      |      |
| 50-200/11                             | 1,1            | 1,5       | 14,0         |      | 13,0 | 12,3 | 11,8 | 11,3 | 8,7  | 7,1  |      |      |      |      |      |      |      |      |      |      |
| 50-250/15                             | 1,5            | 2         | 18,1         |      | 17,0 | 16,2 | 15,7 | 15,3 | 12,9 | 11,5 | 7,9  |      |      |      |      |      |      |      |      |      |
| 50-250/22                             | 2,2            | 3         | 21,3         |      | 20,2 | 19,4 | 19,0 | 18,5 | 16,0 | 14,6 | 11,0 |      |      |      |      |      |      |      |      |      |
| 65-125/03 *                           | 0,37           | 0,5       | 5,5          |      |      |      |      | 4,7  | 4,0  | 3,5  | 2,2  |      |      |      |      |      |      |      |      |      |
| 65-125/05 *                           | 0,55           | 0,75      | 6,3          |      |      |      |      | 5,9  | 5,2  | 4,7  | 3,4  | 2,7  |      |      |      |      |      |      |      |      |
| 65-160/07                             | 0,75           | 1         | 8,5          |      |      |      |      | 7,8  | 7,0  | 6,5  | 5,3  | 4,5  | 3,7  |      |      |      |      |      |      |      |
| 65-160/11                             | 1,1            | 1,5       | 10,2         |      |      |      |      | 9,7  | 8,9  | 8,3  | 7,0  | 6,2  | 5,4  |      |      |      |      |      |      |      |
| 65-200/15                             | 1,5            | 2         | 14,4         |      |      |      |      | 13,1 | 12,1 | 11,4 | 9,8  | 8,8  | 7,6  |      |      |      |      |      |      |      |
| 65-250/22                             | 2,2            | 3         | 19,3         |      |      |      |      | 17,7 | 16,6 | 16,1 | 14,6 | 13,8 | 12,8 | 5,9  |      |      |      |      |      |      |
| 65-250/30                             | 3              | 4         | 21,6         |      |      |      |      | 20,2 | 19,3 | 18,7 | 17,3 | 16,5 | 15,5 | 9,2  |      |      |      |      |      |      |
| 80-125/07                             | 0,75           | 1         | 5,7          |      |      |      |      |      | 5,2  | 5,0  | 4,6  | 4,4  | 4,1  | 2,4  |      |      |      |      |      |      |
| 80-125/11                             | 1,1            | 1,5       | 7,0          |      |      |      |      |      | 6,6  | 6,4  | 6,1  | 5,9  | 5,6  | 4,1  | 3,3  |      |      |      |      |      |
| 80-200/15                             | 1,5            | 2         | 11,5         |      |      |      |      |      | 10,1 | 9,8  | 9,2  | 8,9  | 8,6  | 6,5  | 5,5  |      |      |      |      |      |
| 80-200/22                             | 2,2            | 3         | 14,8         |      |      |      |      |      | 13,2 | 12,9 | 12,3 | 12,0 | 11,7 | 9,7  | 8,7  |      |      |      |      |      |
| 80-200/30                             | 3              | 4         | 16,7         |      |      |      |      |      | 15,7 | 15,4 | 14,9 | 14,6 | 14,2 | 12,0 | 10,9 | 6,8  |      |      |      |      |
| 80-250/40                             | 4              | 5,5       | 19,8         |      |      |      |      |      | 19,1 | 18,8 | 18,3 | 17,9 | 17,6 | 15,3 | 14,1 | 9,9  |      |      |      |      |
| 80-250/55                             | 5,5            | 7,5       | 23,2         |      |      |      |      |      | 22,6 | 22,4 | 21,9 | 21,6 | 21,3 | 19,2 | 18,2 | 14,3 |      |      |      |      |
| 100-160/15                            | 1,5            | 2         | 7,8          |      |      |      |      |      |      |      | 7,5  | 7,4  | 7,3  | 6,5  | 6,1  | 4,5  | 2,5  |      |      |      |
| 100-200/22                            | 2,2            | 3         | 9,7          |      |      |      |      |      |      |      |      |      | 9,1  | 8,3  | 7,9  | 6,4  | 4,5  | 2,6  |      |      |
| 100-200/30                            | 3              | 4         | 11,6         |      |      |      |      |      |      |      |      |      | 11,0 | 10,2 | 9,8  | 8,3  | 6,4  | 4,5  | 2,1  |      |
| 100-250/40                            | 4              | 5,5       | 15,1         |      |      |      |      |      |      |      |      |      | 14,4 | 13,7 | 13,3 | 11,8 | 9,9  | 7,9  | 5,5  |      |
| 100-250/55                            | 5,5            | 7,5       | 18,7         |      |      |      |      |      |      |      |      |      | 17,8 | 17,1 | 16,7 | 15,5 | 13,7 | 11,8 | 9,5  | 6,0  |
| 100-250/75                            | 7,5            | 10        | 21,6         |      |      |      |      |      |      |      |      |      | 21,1 | 20,4 | 20,1 | 18,8 | 17,1 | 15,3 | 13,1 | 9,9  |

\* FCTE4 VERSION ONLY

fcte4-fcts4-4p50P-en\_e\_th

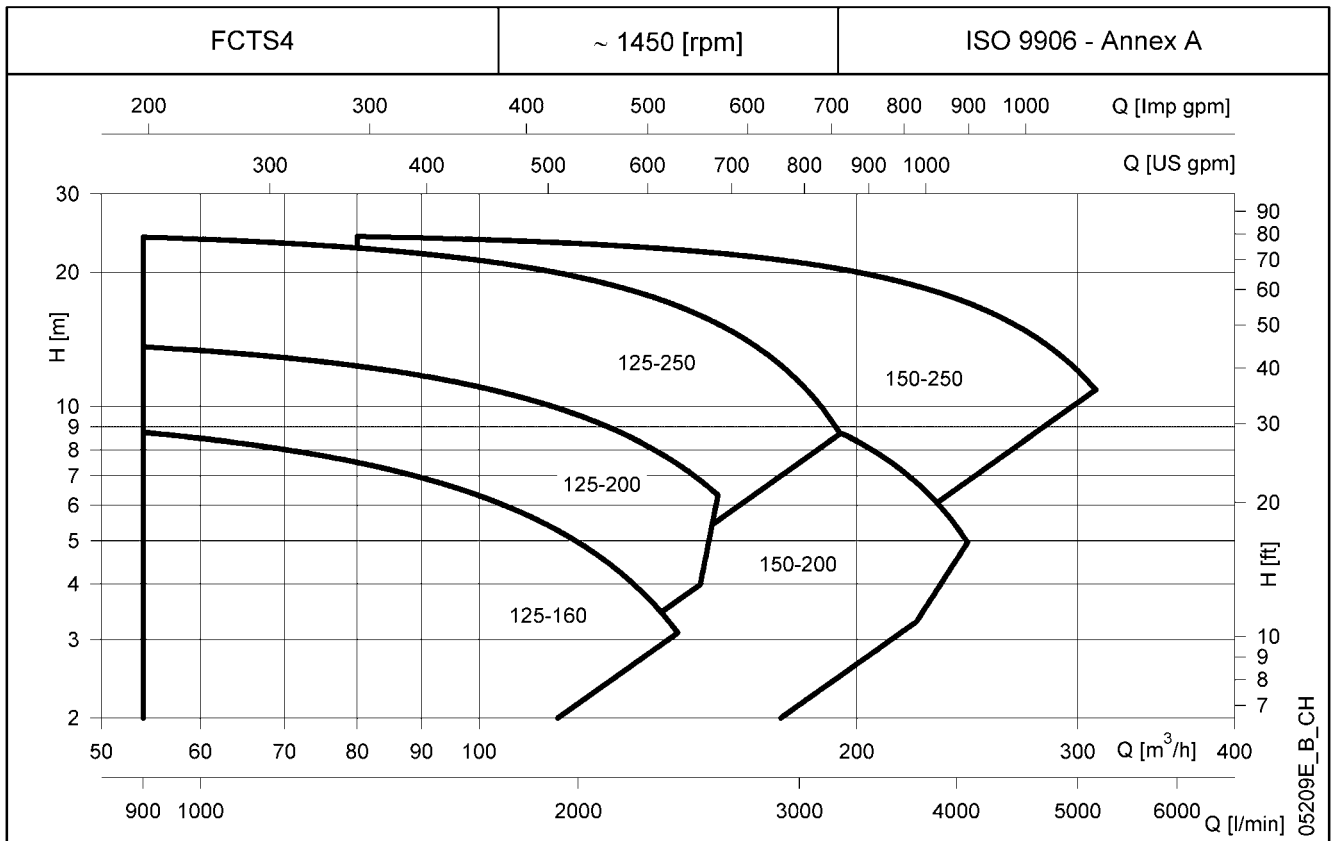
Performances according to ISO 9906 - Annex A.



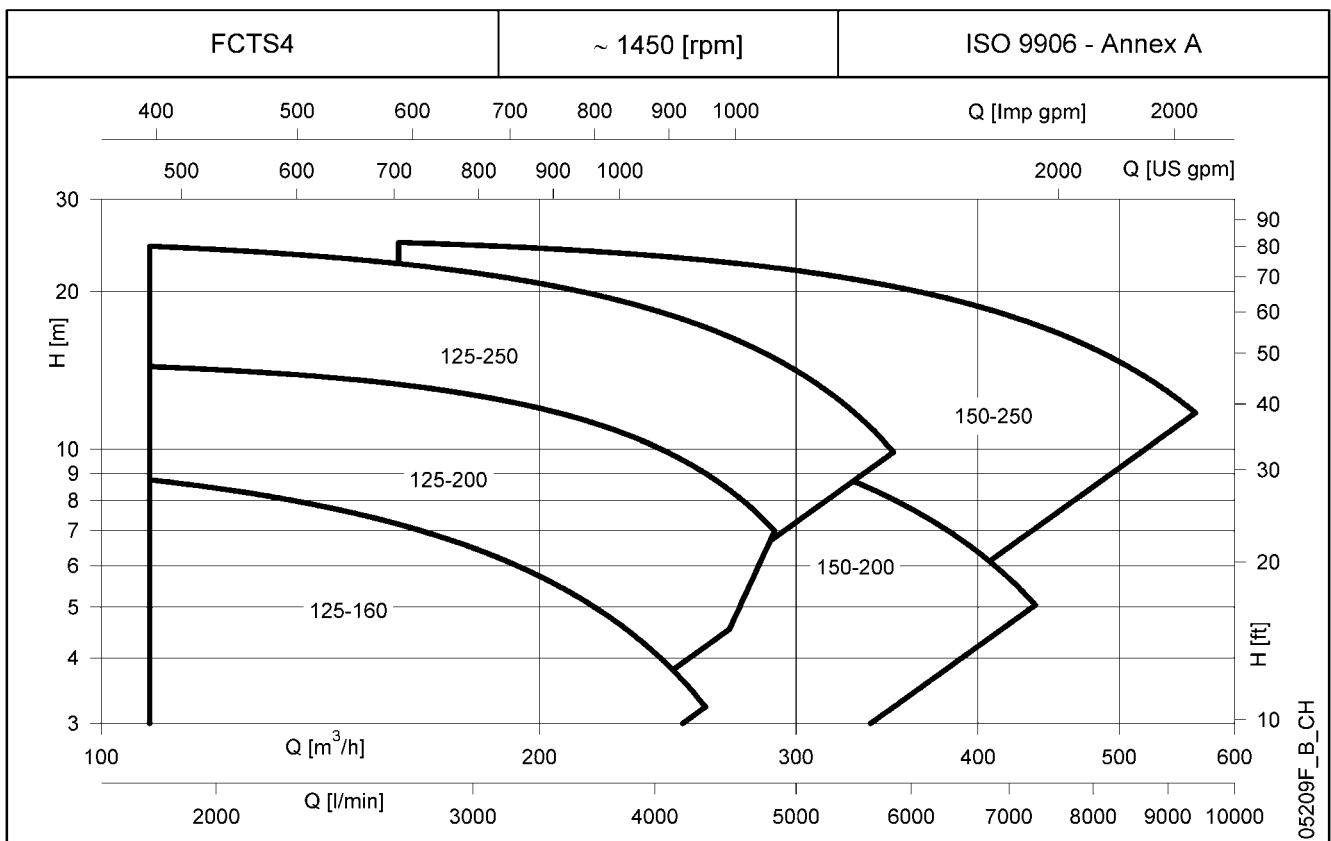
# ITT

## Lowara

### FCTS4 SERIES (SINGLE OPERATION) HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



### FCTS4 SERIES (PARALLEL OPERATION) HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



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

## FCTS4 SERIES (SINGLE OPERATION)

### HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES

| PUMP<br>TYPE | RATED<br>POWER |     | Q = DELIVERY                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|-----|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | kW             | HP  | l/min 0                              | 900  | 1100 | 1333 | 1583 | 1667 | 1833 | 1917 | 2000 | 2333 | 2500 | 3000 | 3167 | 3667 | 4083 | 4500 | 4733 | 5167 |
|              |                |     | m³/h 0                               | 54   | 66   | 80   | 95   | 100  | 110  | 115  | 120  | 140  | 150  | 180  | 190  | 220  | 245  | 270  | 284  | 310  |
|              |                |     | H =TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 125-160/30   | 3              | 4   | 10,1                                 | 8,7  | 8,2  | 7,5  | 6,6  | 6,3  | 5,7  | 5,3  | 5,0  | 3,4  |      |      |      |      |      |      |      |      |
| 125-200/40   | 4              | 5,5 | 12,4                                 | 10,9 | 10,4 | 9,6  | 8,6  | 8,3  | 7,5  | 7,1  | 6,7  | 5,0  | 4,0  |      |      |      |      |      |      |      |
| 125-200/55   | 5,5            | 7,5 | 15,0                                 | 13,6 | 13,1 | 12,3 | 11,4 | 11,1 | 10,3 | 10,0 | 9,6  | 7,8  | 6,8  |      |      |      |      |      |      |      |
| 125-250/75   | 7,5            | 10  | 19,9                                 | 18,5 | 17,9 | 17,0 | 15,8 | 15,4 | 14,5 | 14,0 | 13,4 | 11,1 | 9,7  |      |      |      |      |      |      |      |
| 125-250/110  | 11             | 15  | 25,5                                 | 24,0 | 23,5 | 22,7 | 21,7 | 21,3 | 20,5 | 20,0 | 19,5 | 17,3 | 16,0 | 11,3 | 9,5  |      |      |      |      |      |
| 150-200/55   | 5,5            | 7,5 | 11,8                                 |      |      | 9,6  | 9,1  | 9,0  | 8,6  | 8,5  | 8,3  | 7,5  | 7,1  | 5,7  | 5,2  | 3,5  |      |      |      |      |
| 150-200/75   | 7,5            | 10  | 15,4                                 |      |      | 13,3 | 12,9 | 12,8 | 12,5 | 12,3 | 12,1 | 11,4 | 11,0 | 9,5  | 9,0  | 7,0  | 5,0  |      |      |      |
| 150-250/110  | 11             | 15  | 18,0                                 |      |      | 17,0 | 16,7 | 16,6 | 16,3 | 16,1 | 16,0 | 15,2 | 14,8 | 13,1 | 12,5 | 10,2 |      |      |      |      |
| 150-250/150  | 15             | 20  | 22,1                                 |      |      | 21,3 | 21,0 | 20,8 | 20,5 | 20,4 | 20,2 | 19,4 | 19,0 | 17,5 | 17,0 | 15,0 | 13,2 | 11,1 | 9,8  |      |
| 150-250/185  | 18,5           | 25  | 25,1                                 |      |      | 24,1 | 23,8 | 23,7 | 23,5 | 23,3 | 23,2 | 22,6 | 22,3 | 21,1 | 20,6 | 18,9 | 17,1 | 15,0 | 13,7 |      |

Performances according to ISO 9906 - Annex A

lmz-fcts4-4p50S-en\_b\_th

## FCTS4 SERIES (PARALLEL OPERATION)

### HYDRAULIC PERFORMANCE TABLE AT 50 Hz, 4 POLES

| PUMP<br>TYPE | RATED<br>POWER |     | Q = DELIVERY                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------|----------------|-----|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|              | kW             | HP  | l/min 0                              | 1800 | 2200 | 2667 | 3000 | 3250 | 3500 | 3750 | 4000 | 4333 | 4833 | 5200 | 5667 | 6500 | 7333 | 7667 | 8333 | 9000 |
|              |                |     | m³/h 0                               | 108  | 132  | 160  | 180  | 195  | 210  | 225  | 240  | 260  | 290  | 312  | 340  | 390  | 440  | 460  | 500  | 540  |
|              |                |     | H =TOTAL HEAD METRES COLUMN OF WATER |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 125-160/30   | 3              | 4   | 10,2                                 | 8,8  | 8,1  | 7,2  | 6,5  | 5,9  | 5,3  | 4,7  | 4,1  | 3,2  |      |      |      |      |      |      |      |      |
| 125-200/40   | 4              | 5,5 | 12,7                                 | 11,2 | 10,6 | 9,7  | 9,0  | 8,4  | 7,8  | 7,1  | 6,3  | 5,2  |      |      |      |      |      |      |      |      |
| 125-200/55   | 5,5            | 7,5 | 15,1                                 | 14,4 | 14,0 | 13,3 | 12,7 | 12,2 | 11,6 | 10,9 | 10,1 | 9,0  | 7,0  |      |      |      |      |      |      |      |
| 125-250/75   | 7,5            | 10  | 20,3                                 | 17,8 | 17,2 | 16,4 | 15,6 | 15,0 | 14,2 | 13,4 | 12,4 | 10,9 | 8,2  |      |      |      |      |      |      |      |
| 125-250/110  | 11             | 15  | 25,6                                 | 24,4 | 23,7 | 22,6 | 21,7 | 21,0 | 20,2 | 19,3 | 18,4 | 17,1 | 14,9 | 13,2 | 10,8 |      |      |      |      |      |
| 150-200/55   | 5,5            | 7,5 | 11,6                                 |      |      |      | 8,6  | 8,2  | 7,9  | 7,5  | 7,1  | 6,6  | 5,8  | 5,2  | 4,5  |      |      |      |      |      |
| 150-200/75   | 7,5            | 10  | 15,4                                 |      |      |      | 12,7 | 12,4 | 12,0 | 11,6 | 11,2 | 10,7 | 9,9  | 9,2  | 8,3  | 6,7  |      |      |      |      |
| 150-250/110  | 11             | 15  | 18,7                                 |      |      |      | 17,2 | 16,9 | 16,6 | 16,3 | 16,0 | 15,5 | 14,7 | 14,0 | 13,1 | 11,2 | 9,0  | 8,0  |      |      |
| 150-250/150  | 15             | 20  | 22,7                                 |      |      |      | 21,5 | 21,3 | 21,0 | 20,7 | 20,4 | 20,0 | 19,2 | 18,6 | 17,7 | 15,9 | 13,8 | 12,9 | 10,9 |      |
| 150-250/185  | 18,5           | 25  | 25,4                                 |      |      |      | 24,5 | 24,3 | 24,0 | 23,7 | 23,4 | 23,0 | 22,2 | 21,6 | 20,8 | 19,1 | 17,2 | 16,4 | 14,7 |      |

Performances according to ISO 9906 - Annex A

lmz-fcts4-4p50P-en\_c\_th

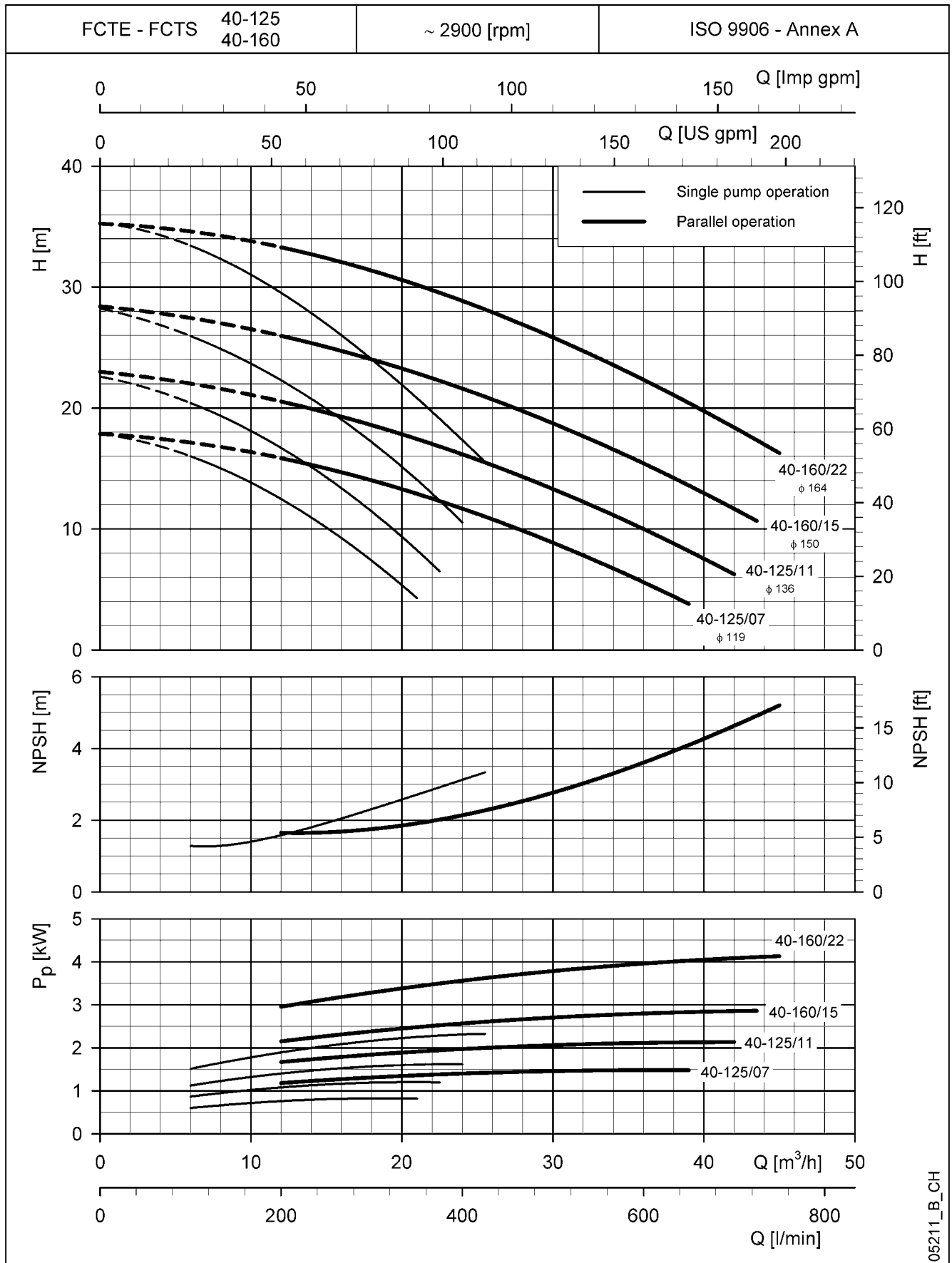


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

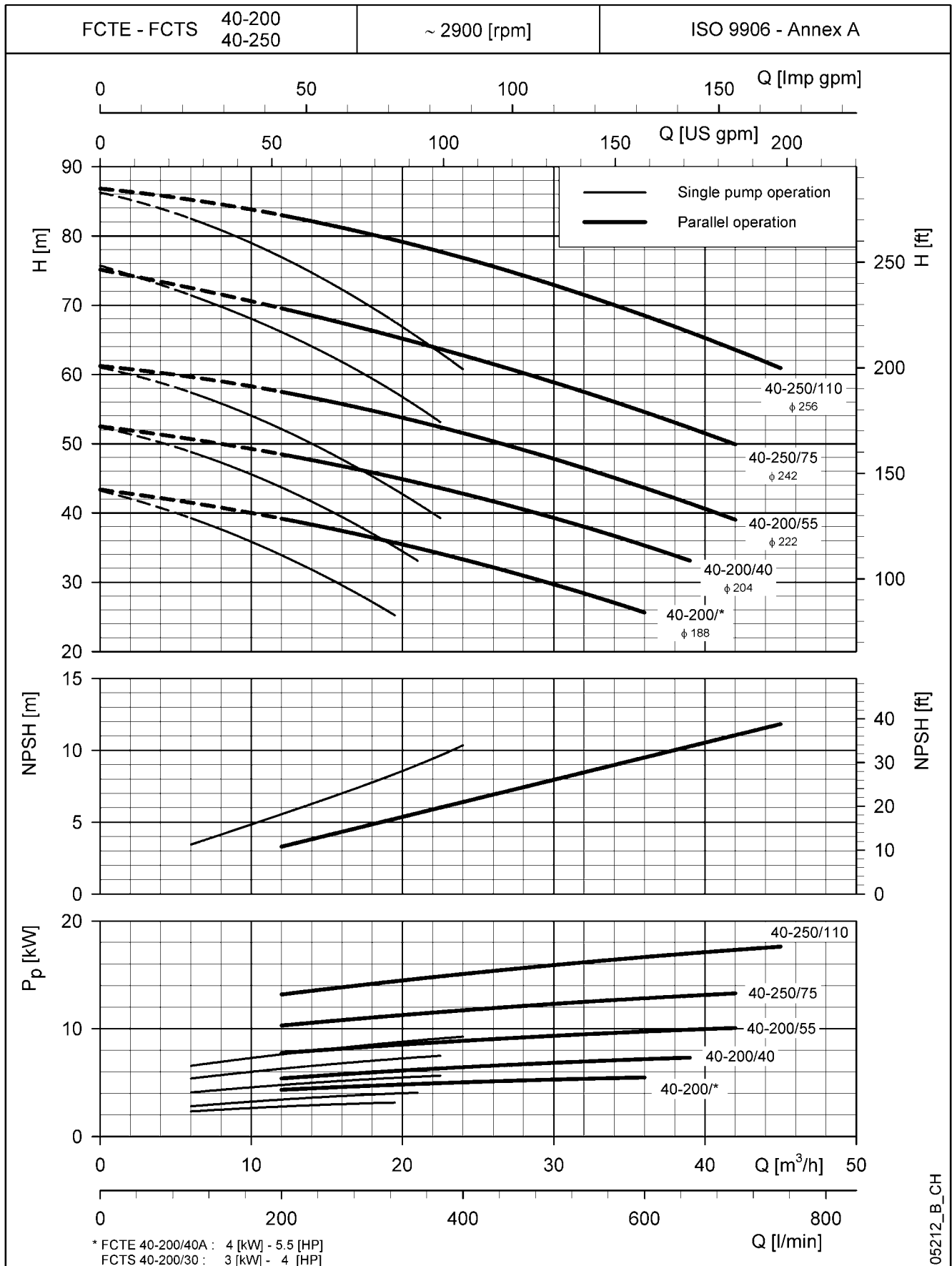


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

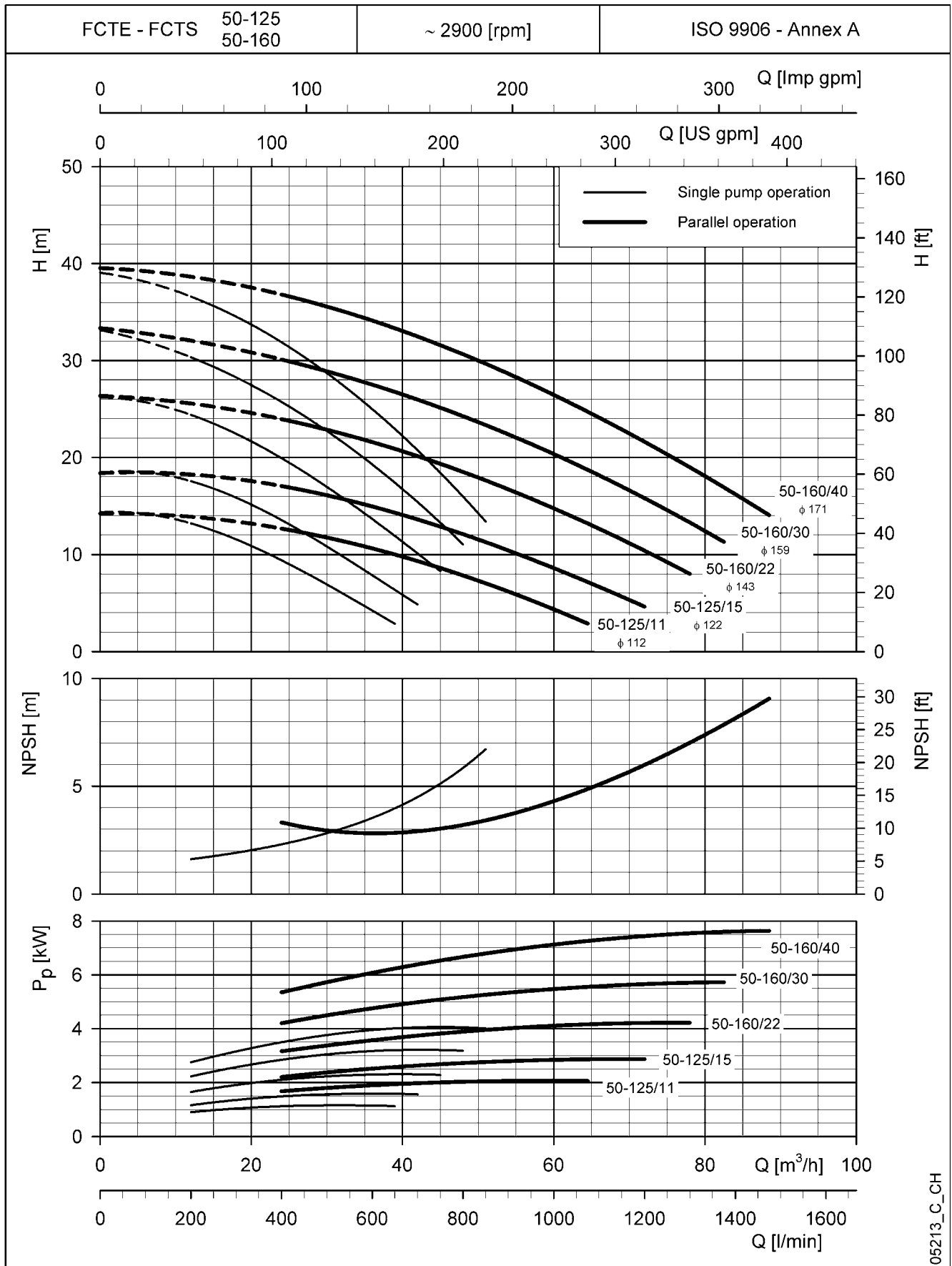


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

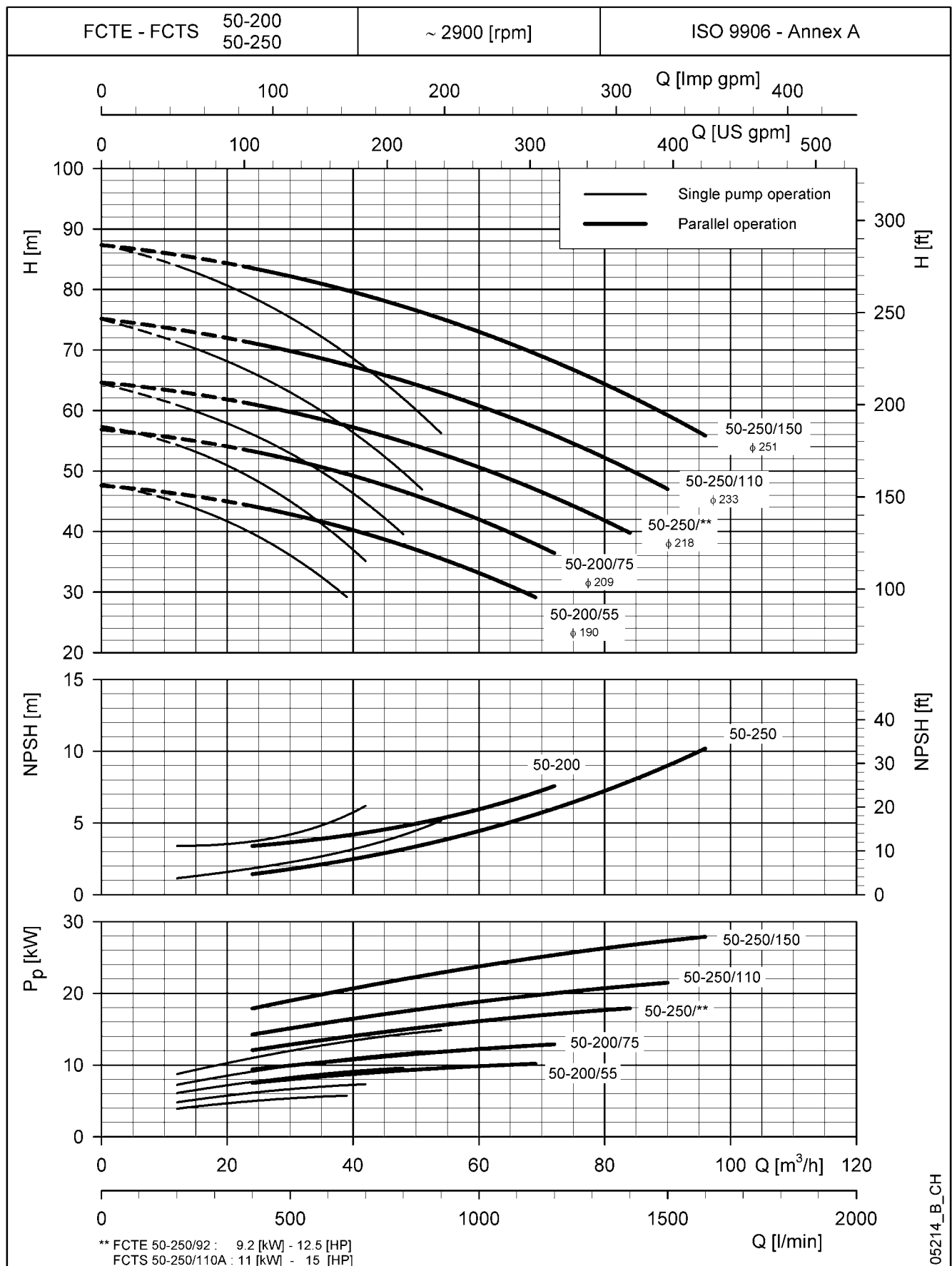


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

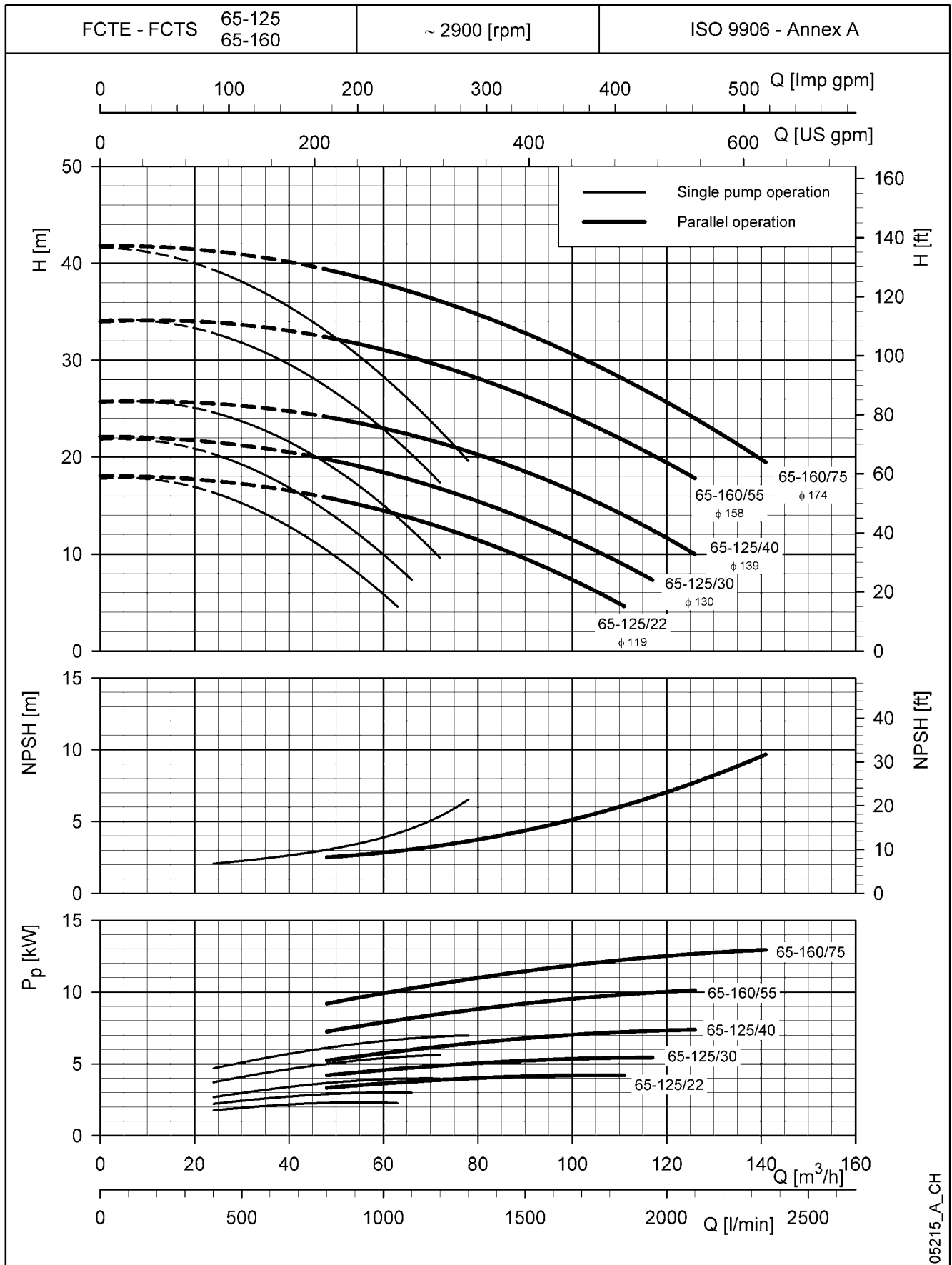


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



05215\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

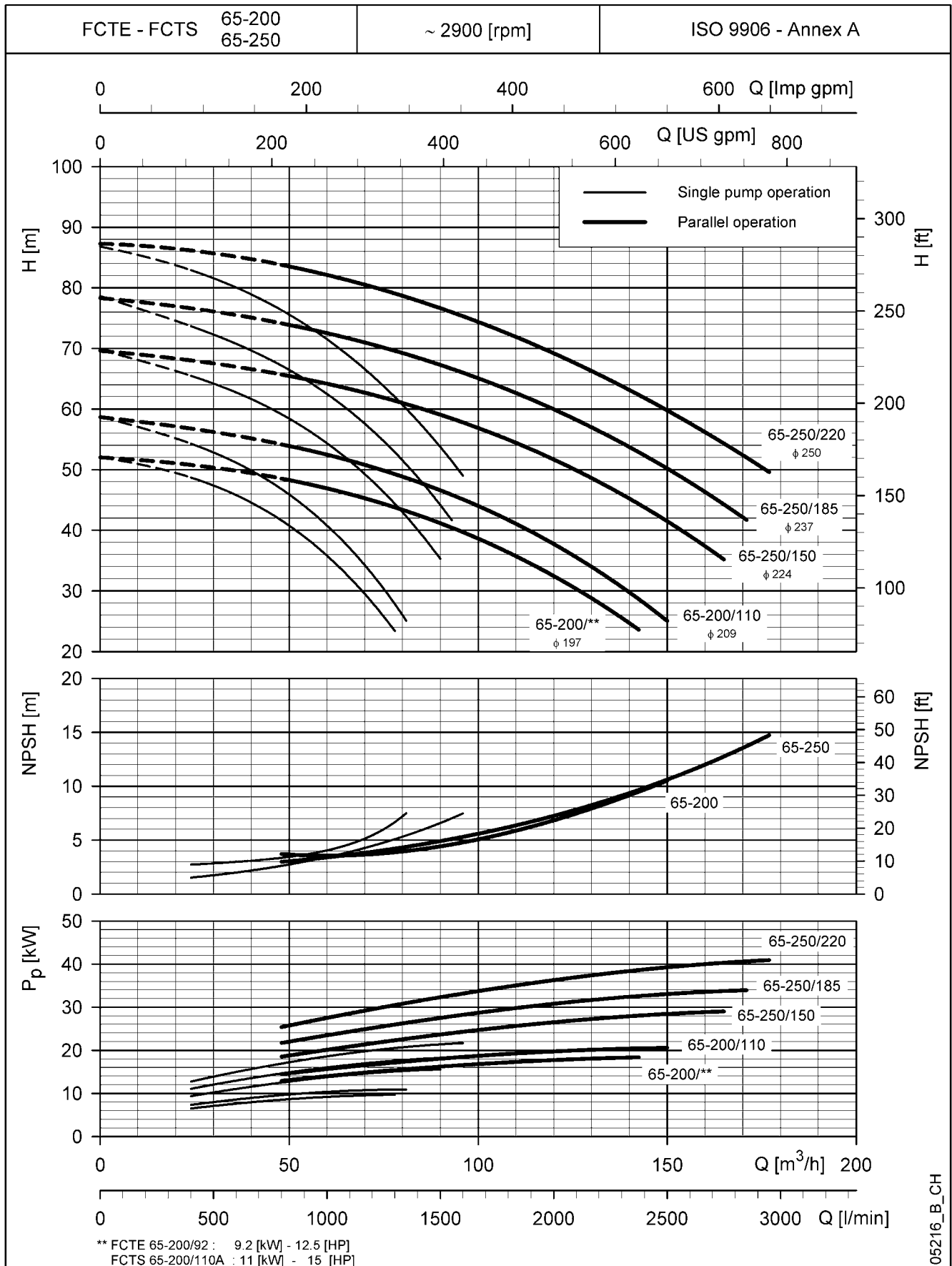


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



05216\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

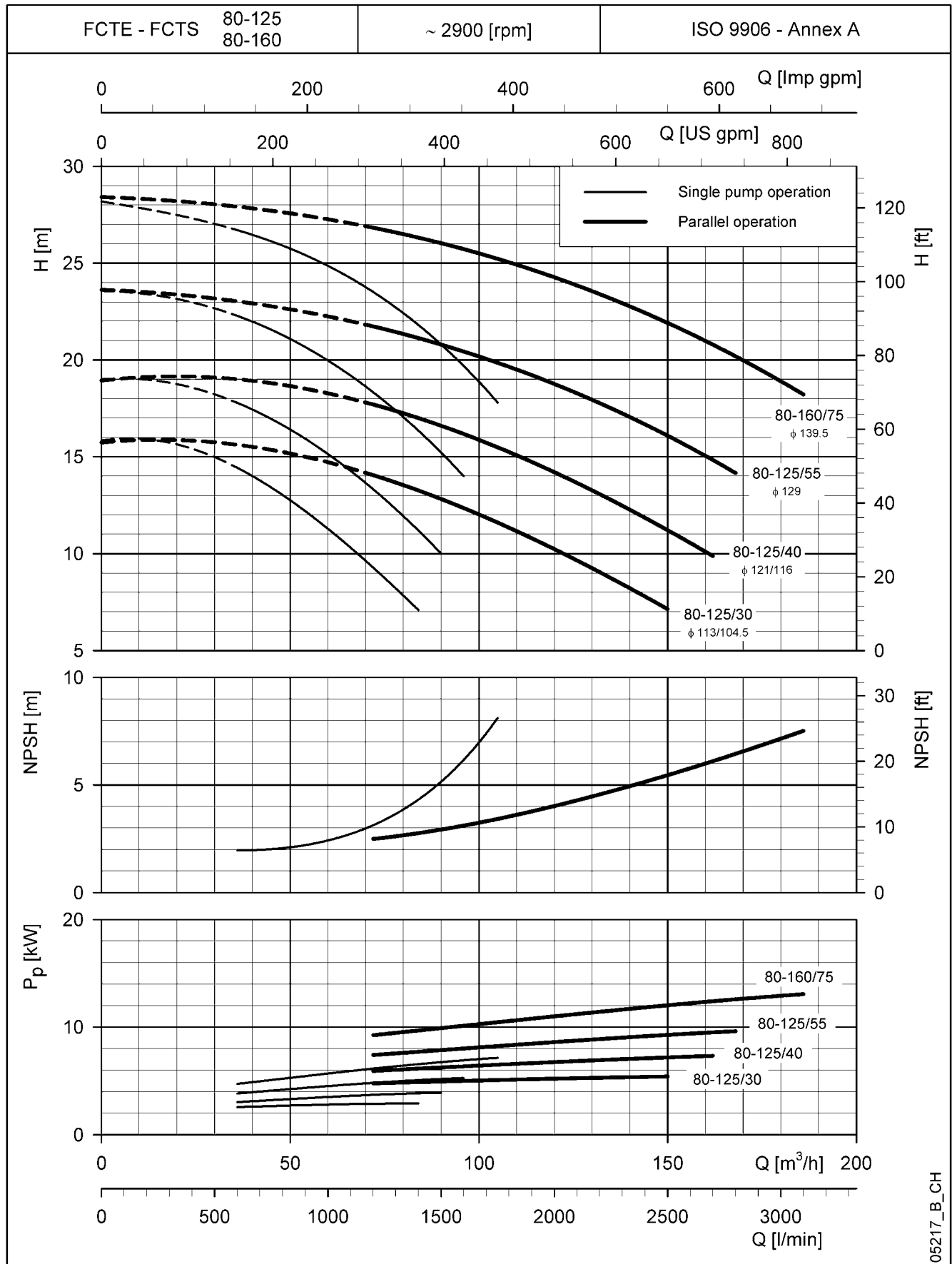


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

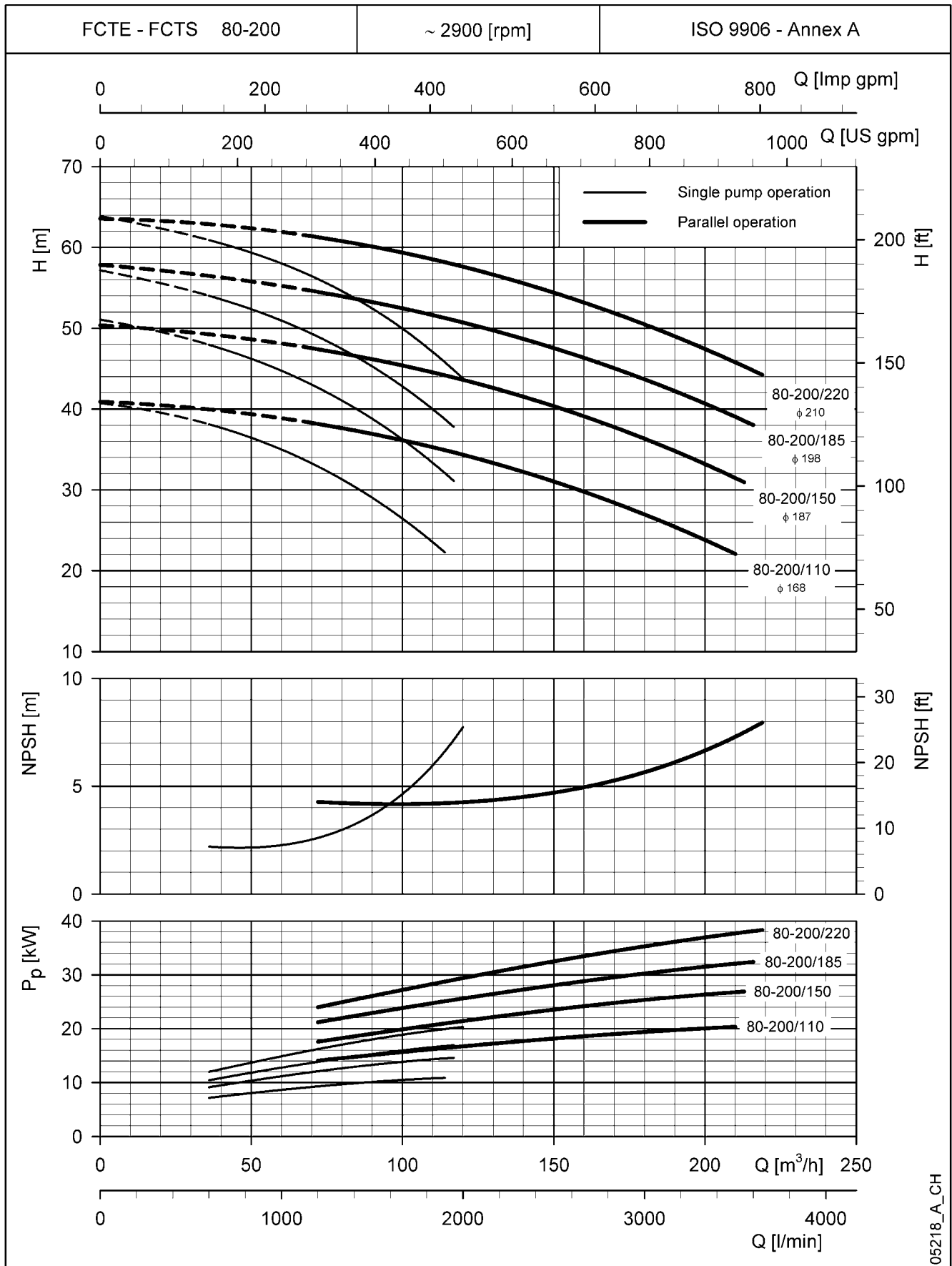


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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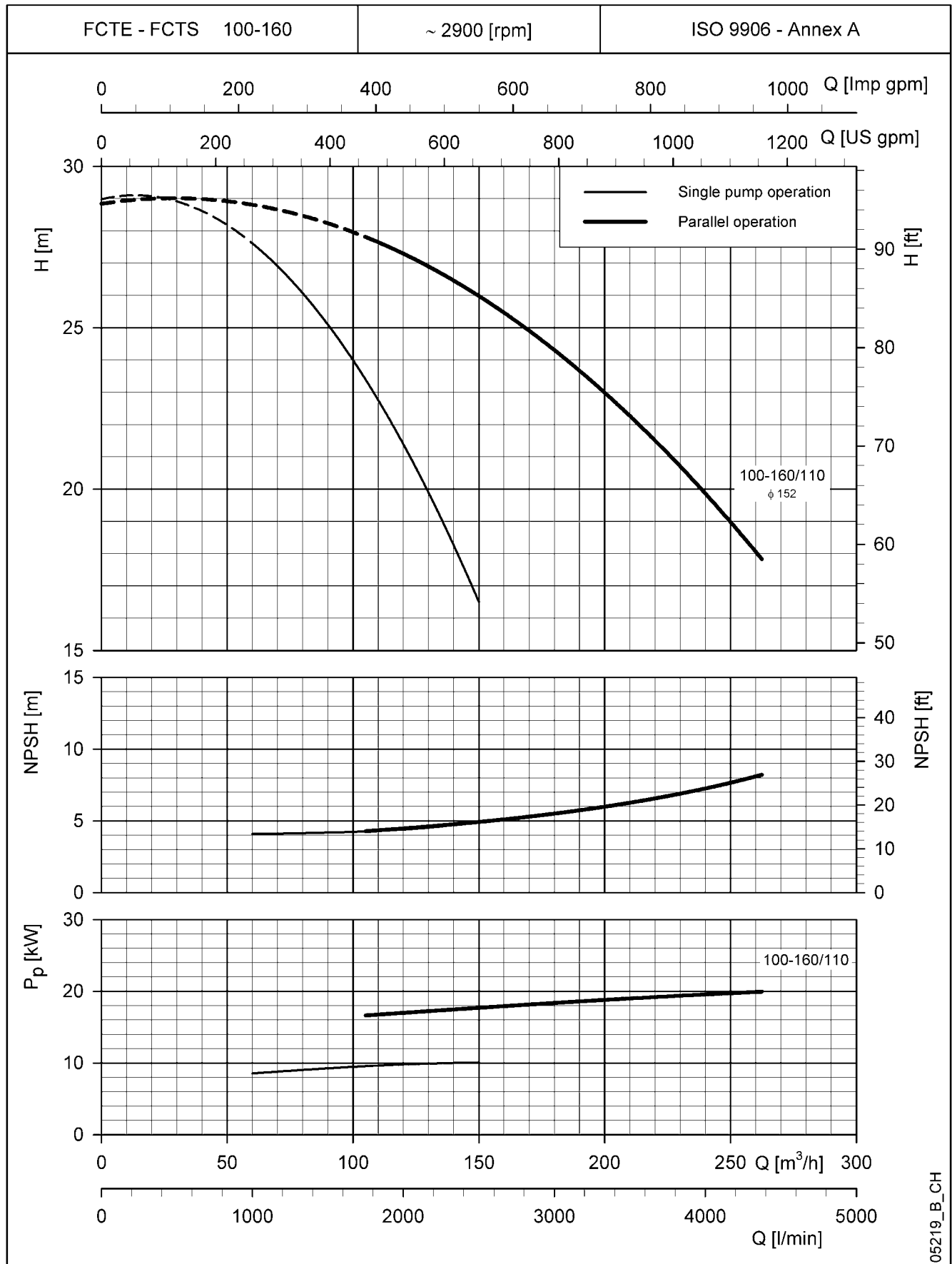


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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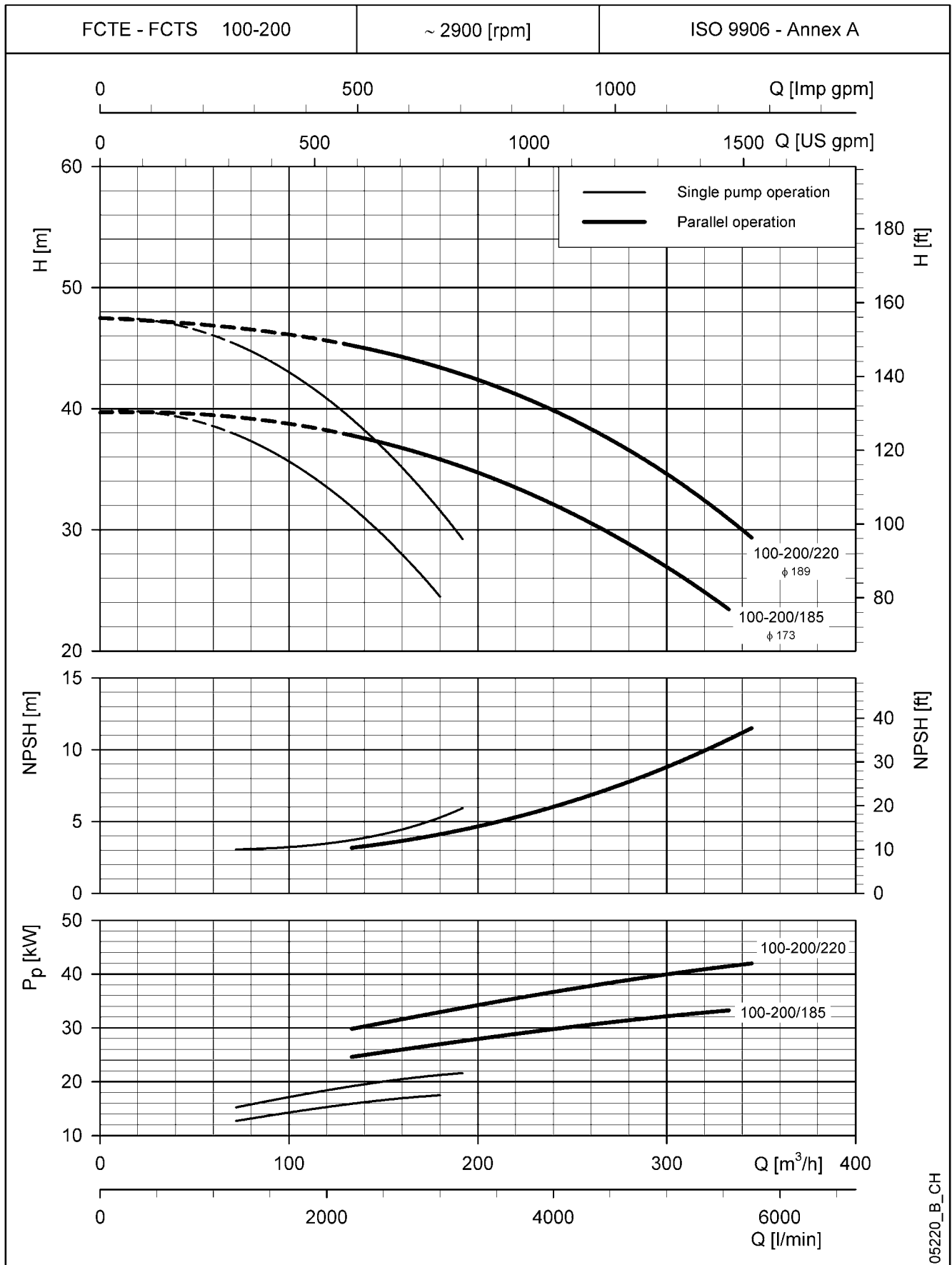


# ITT

## Lowara

### FCTE-FCTS SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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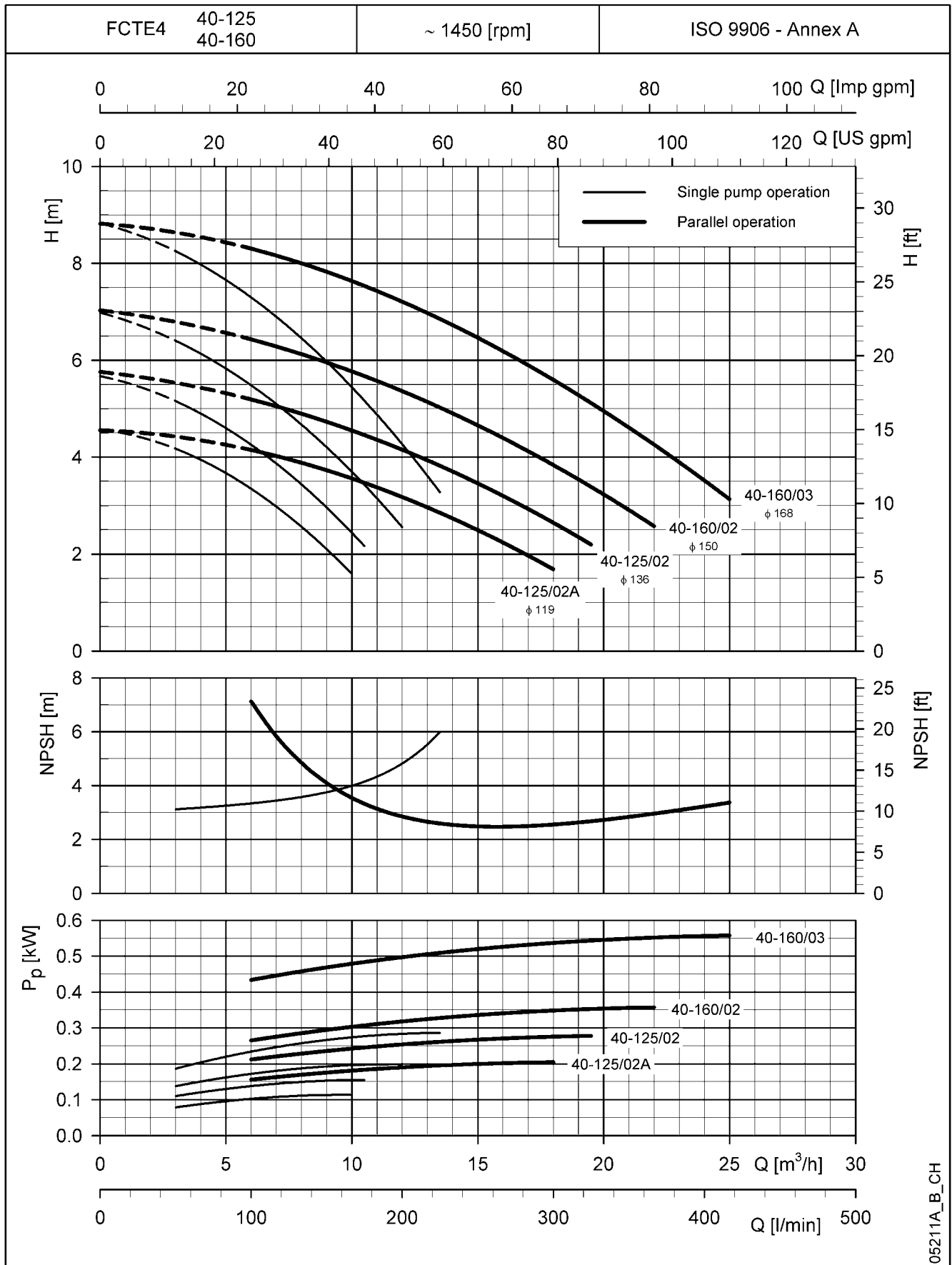


# ITT

## Lowara

### FCTE4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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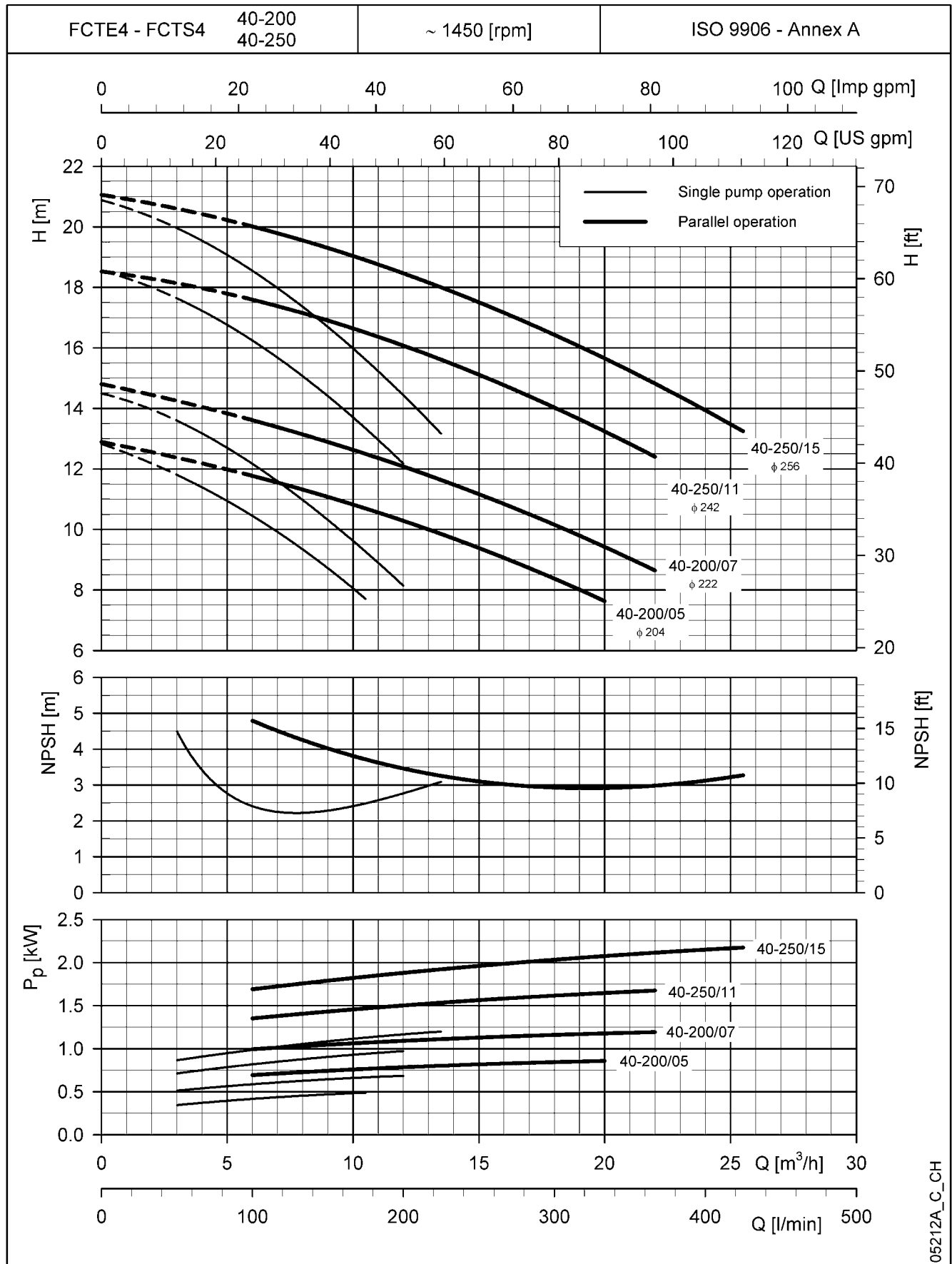


# ITT

## Lowara

### FCTE4-FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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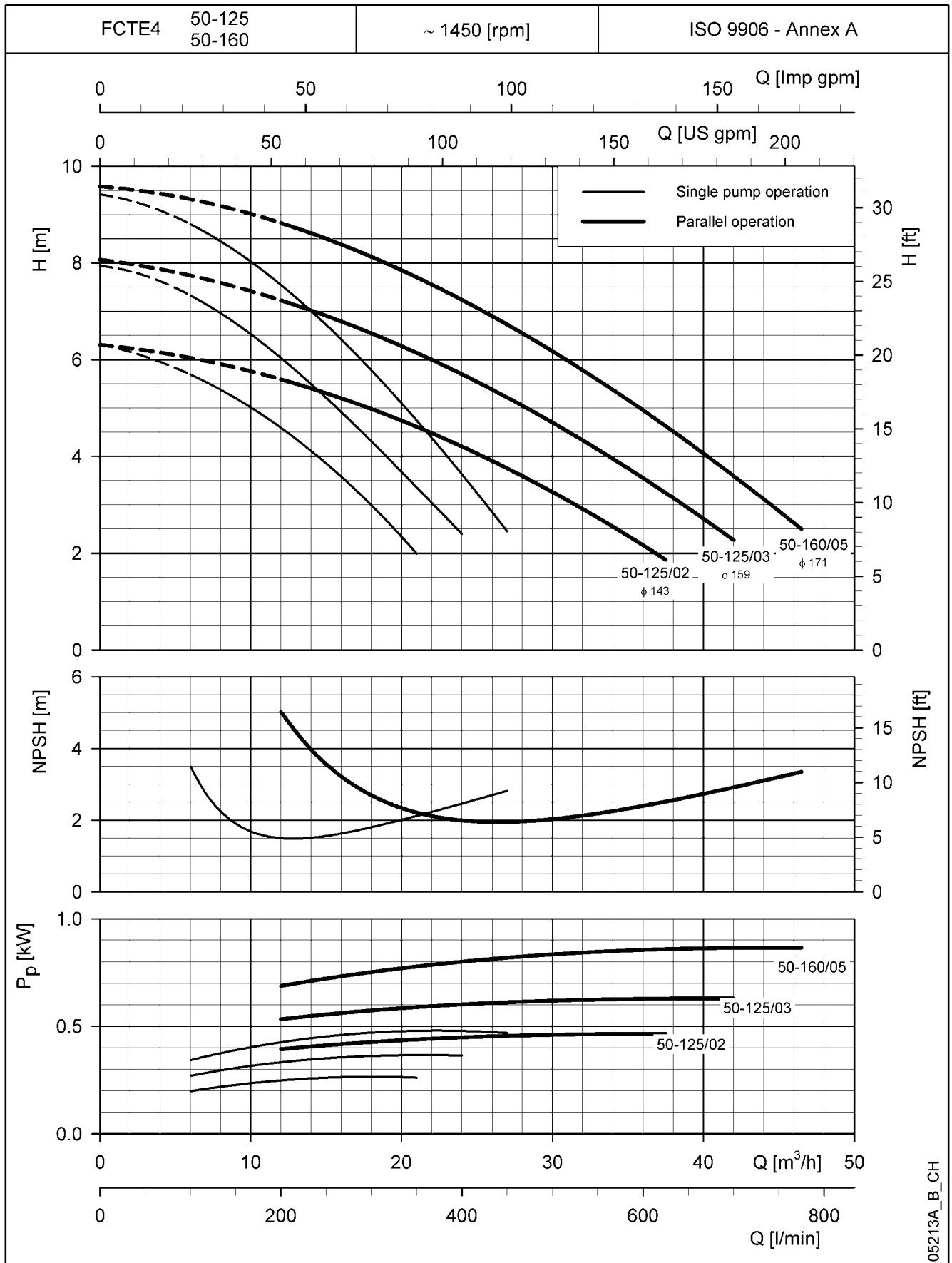


# ITT

## Lowara

### FCTE4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

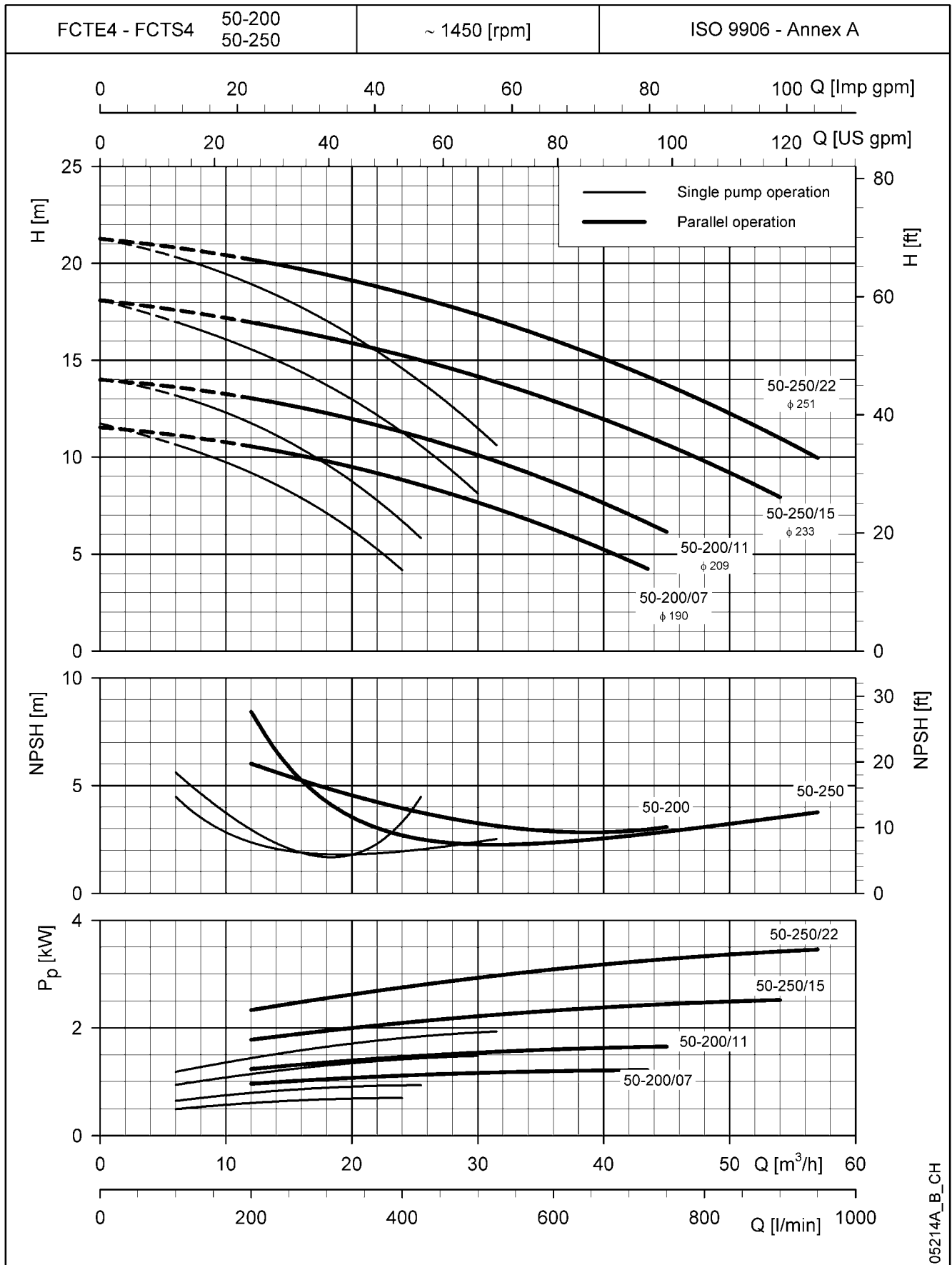


# ITT

## Lowara

### FCTE4-FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values; for practical use we suggest increasing these values by 0,5 m.  
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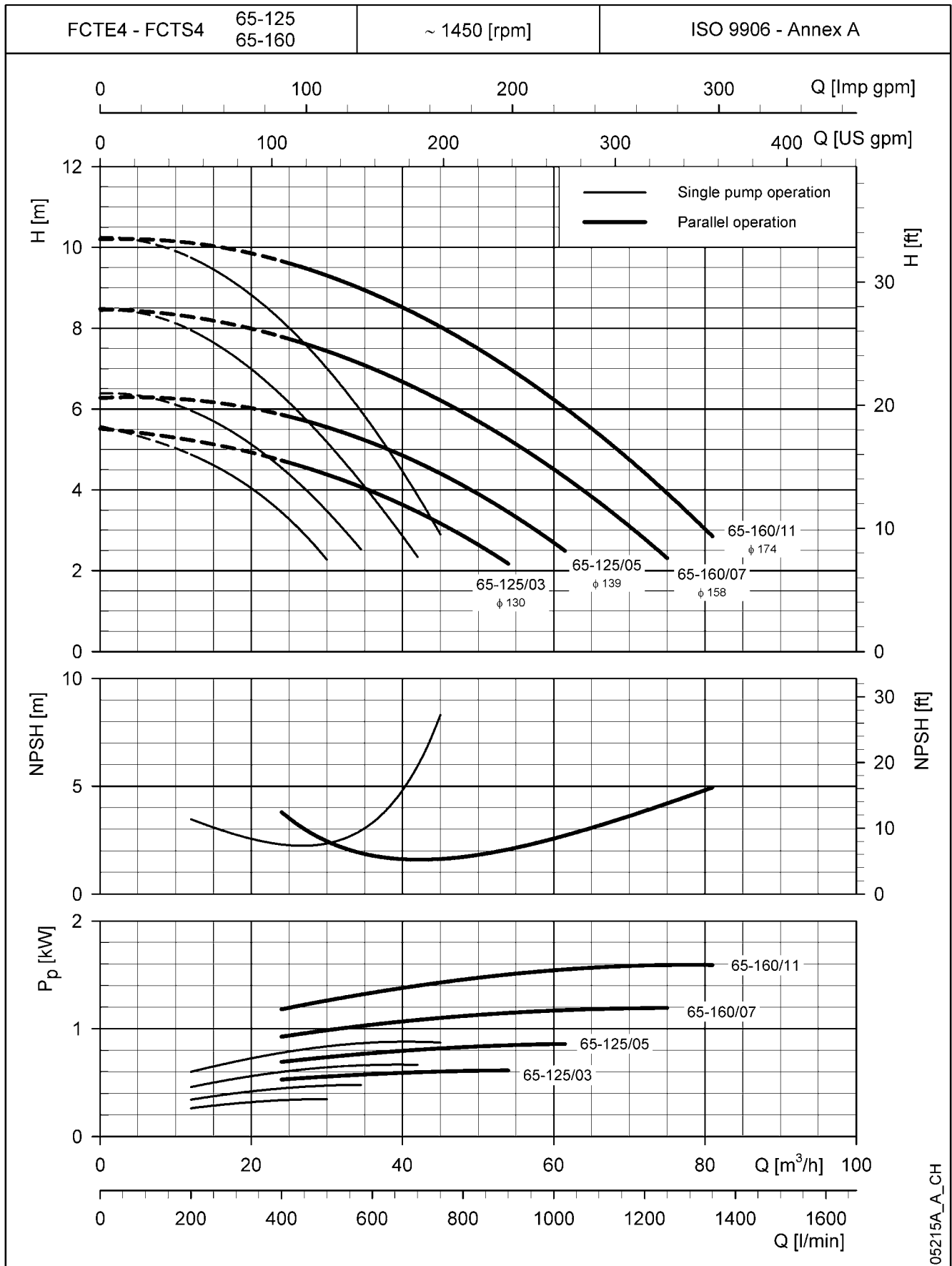


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### FCTE4-FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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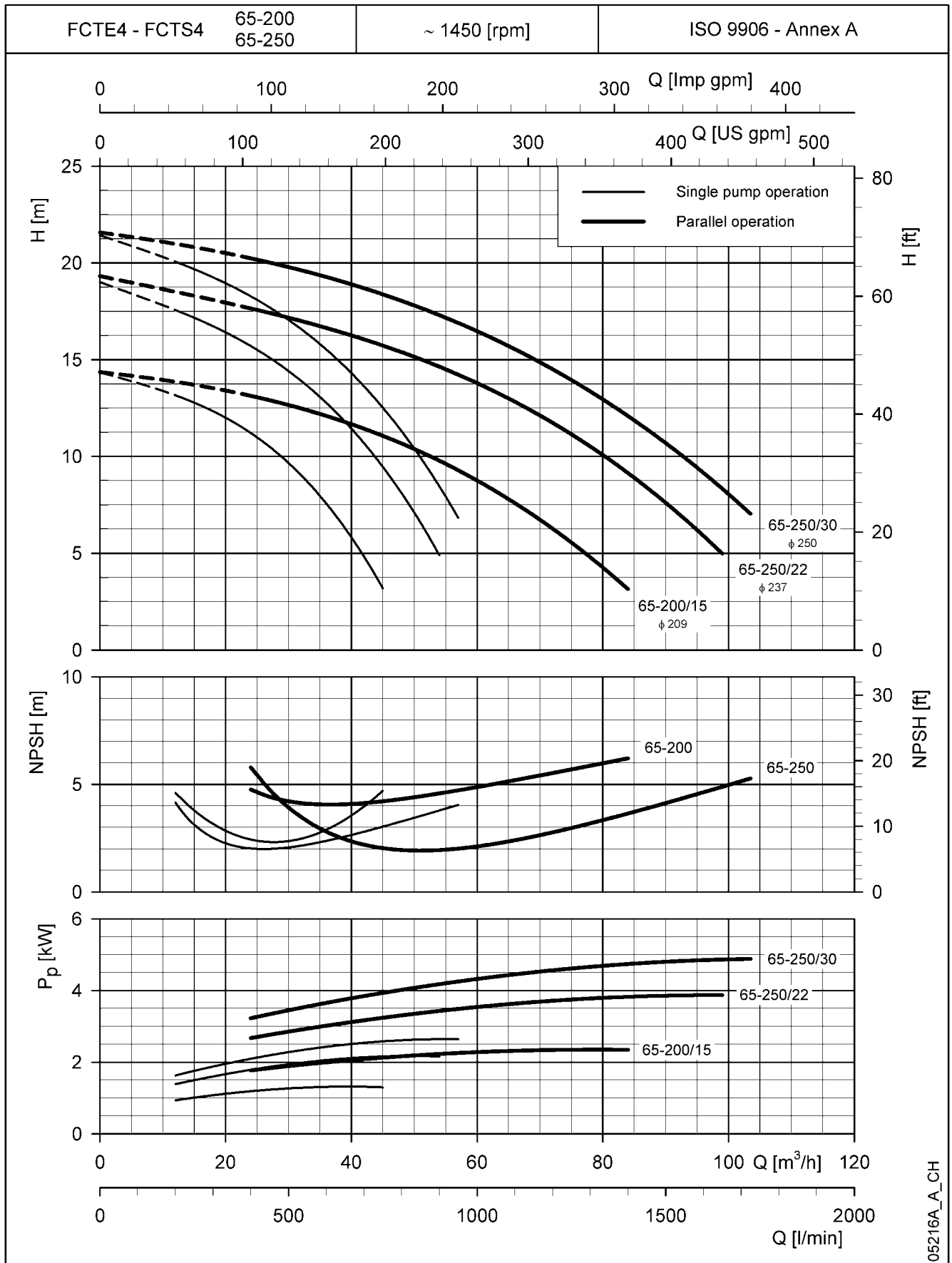


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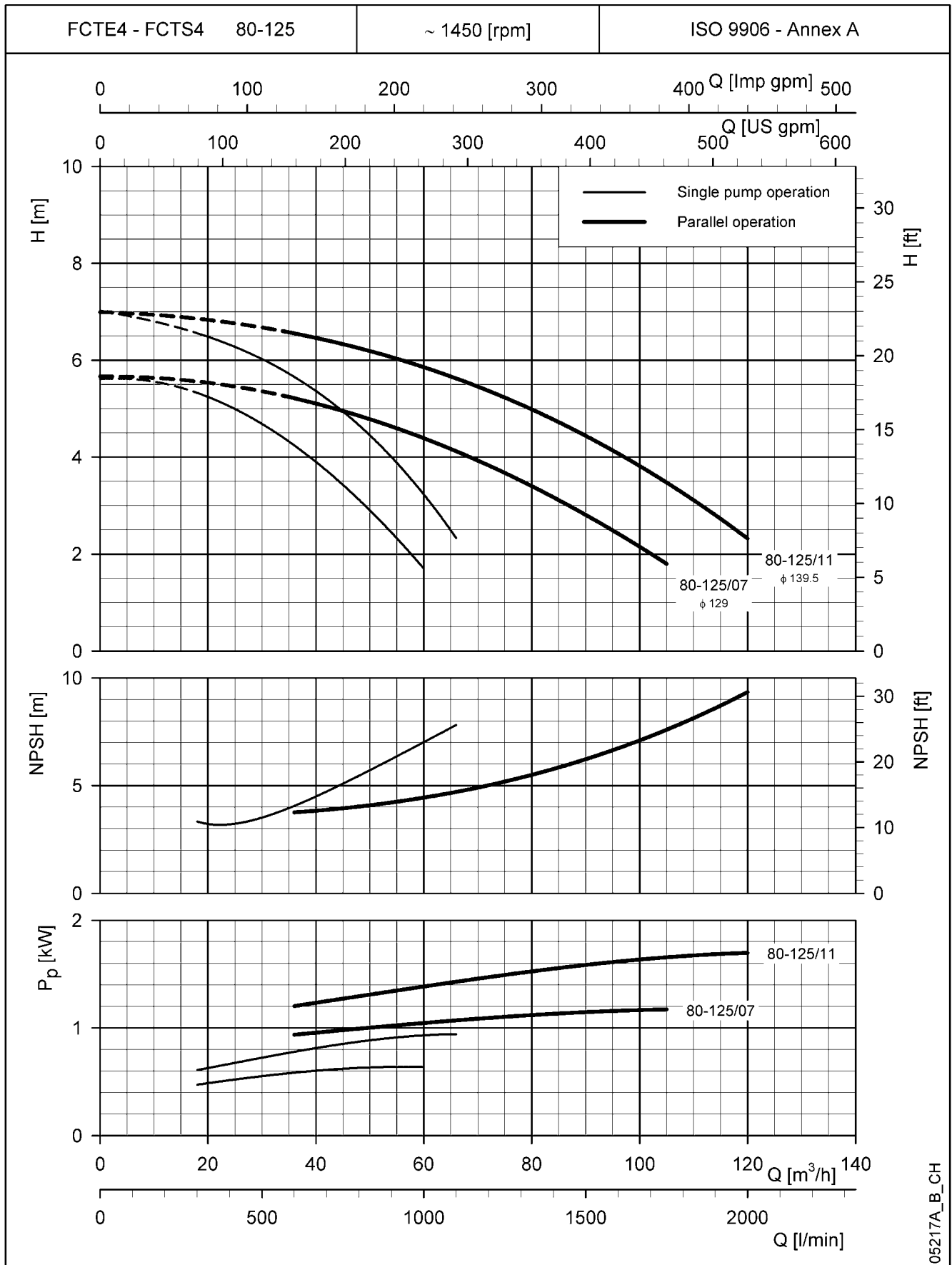


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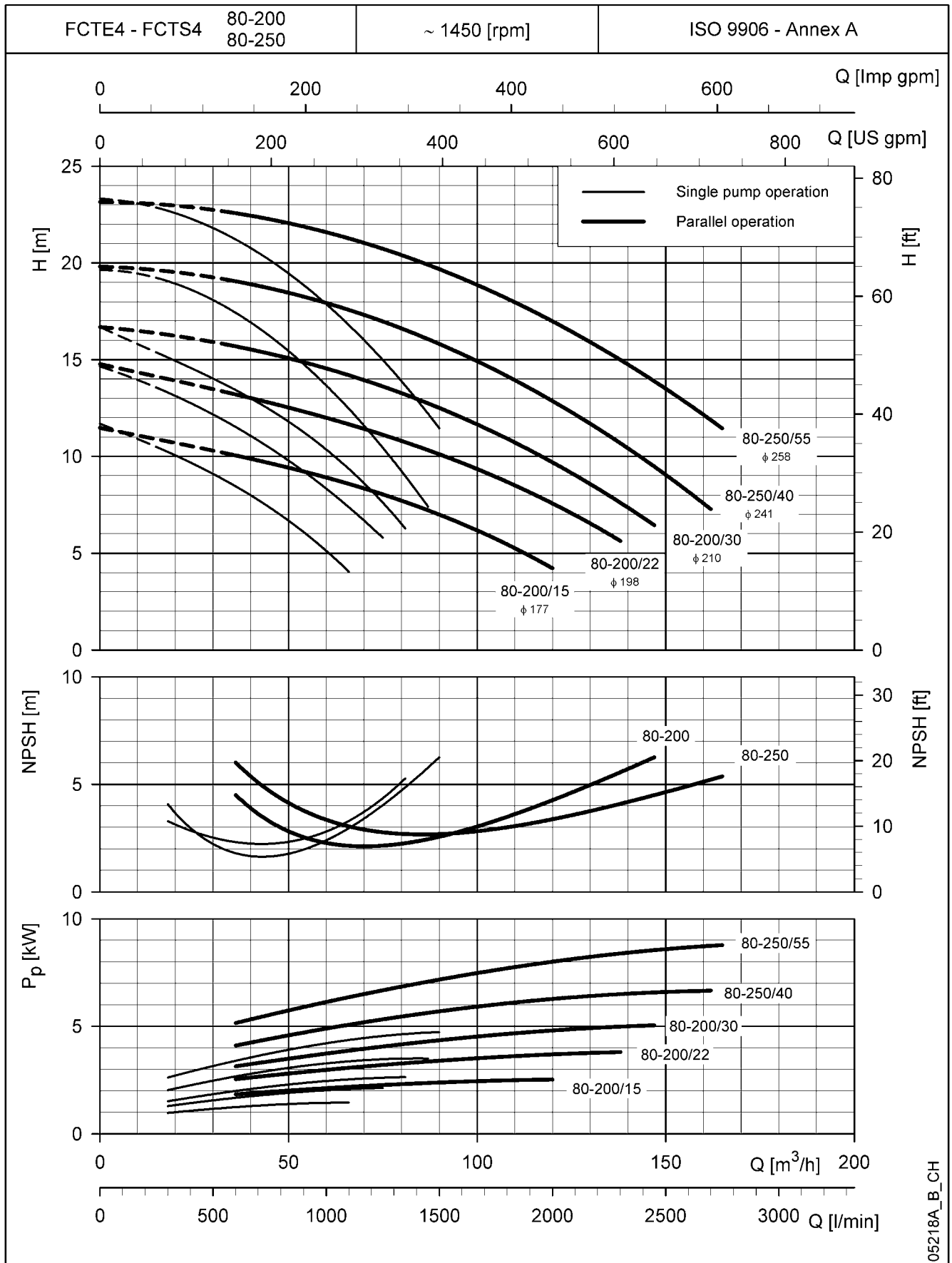


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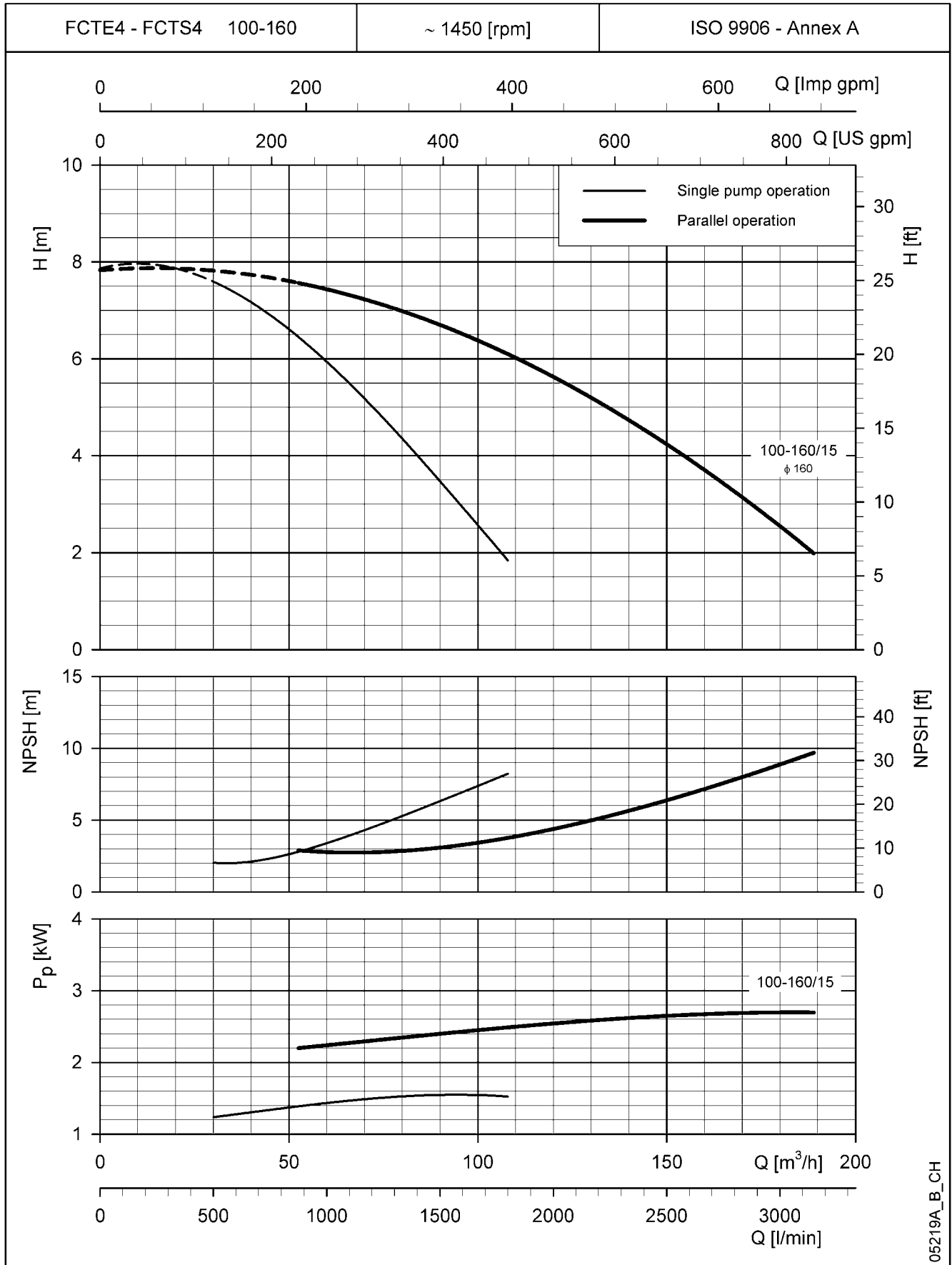


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### FCTE4-FCTS4 SERIES

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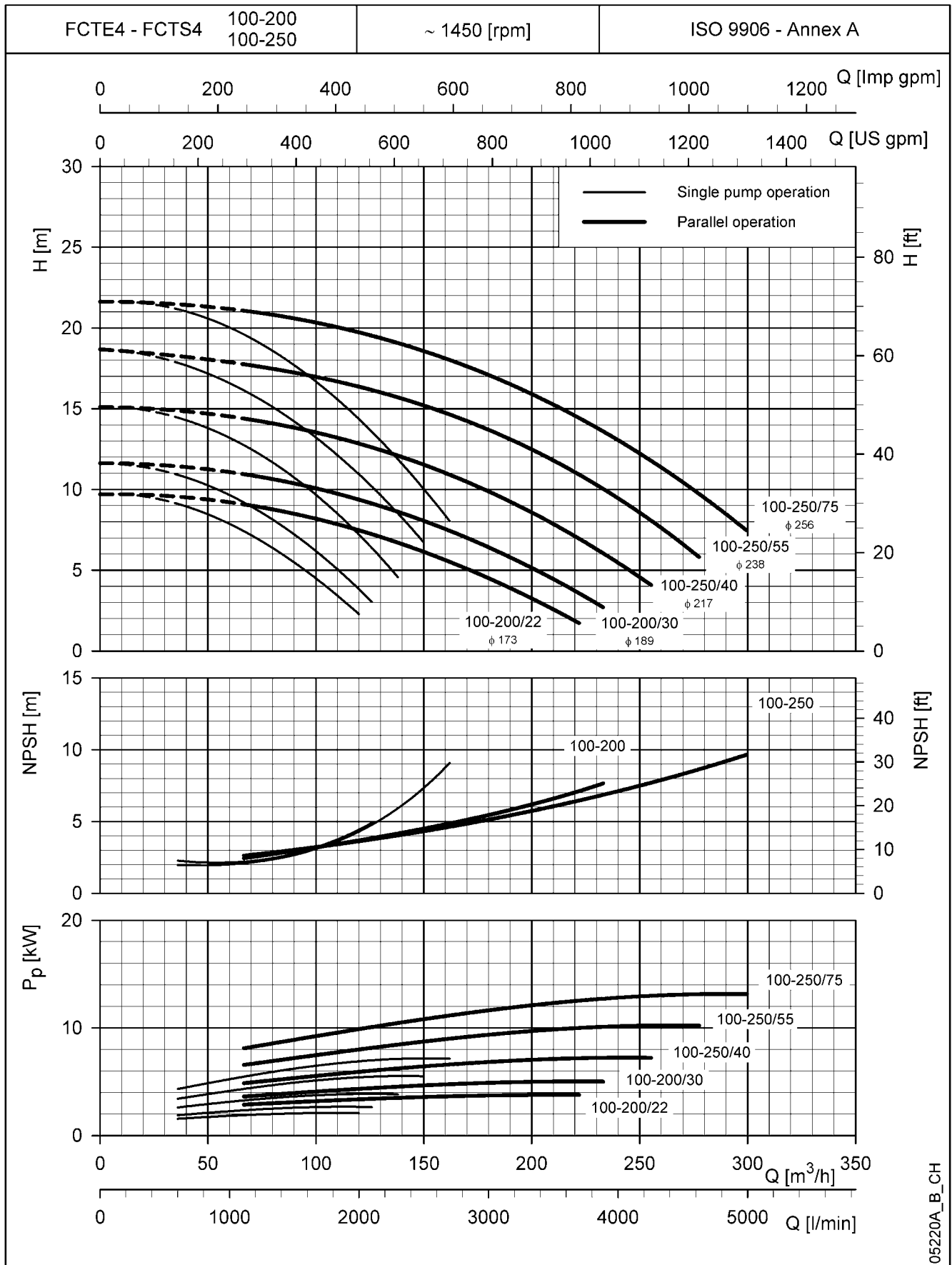


# ITT

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### FCTE4-FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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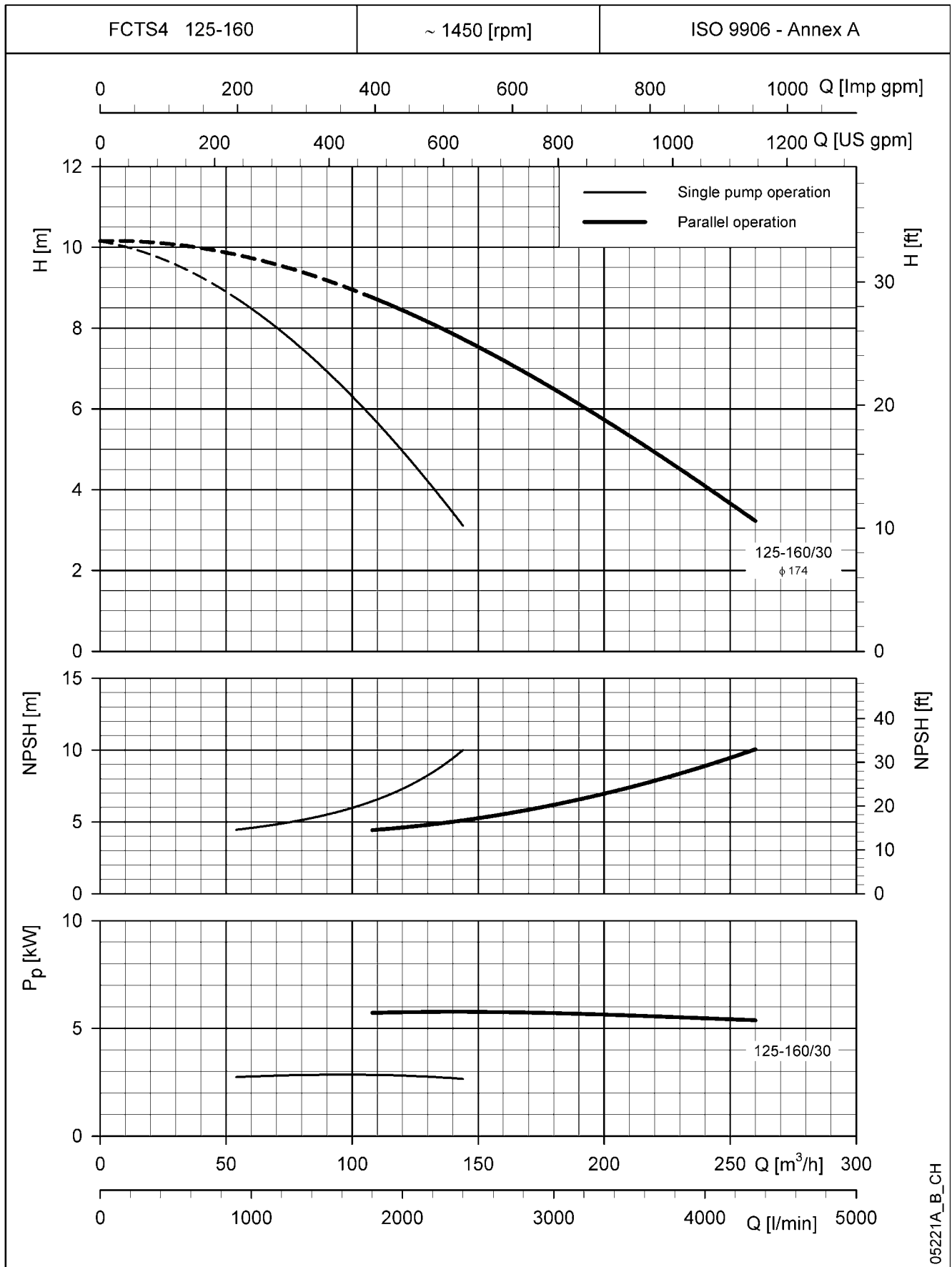


# ITT

## Lowara

### FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



05221A\_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  $\nu = 1 \text{ mm}^2/\text{sec}$ .

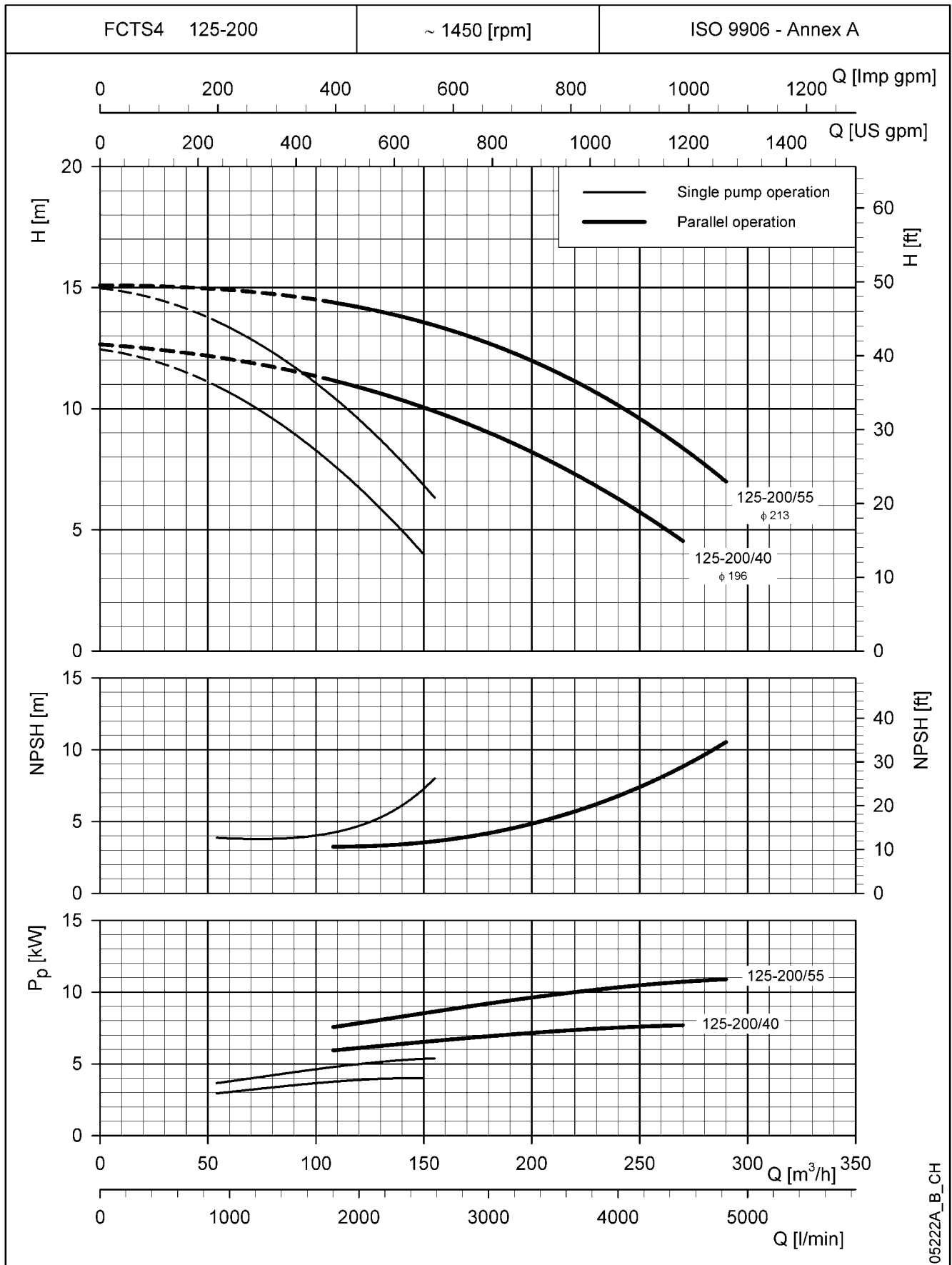


# ITT

## Lowara

### FCTS4 SERIES

### OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



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

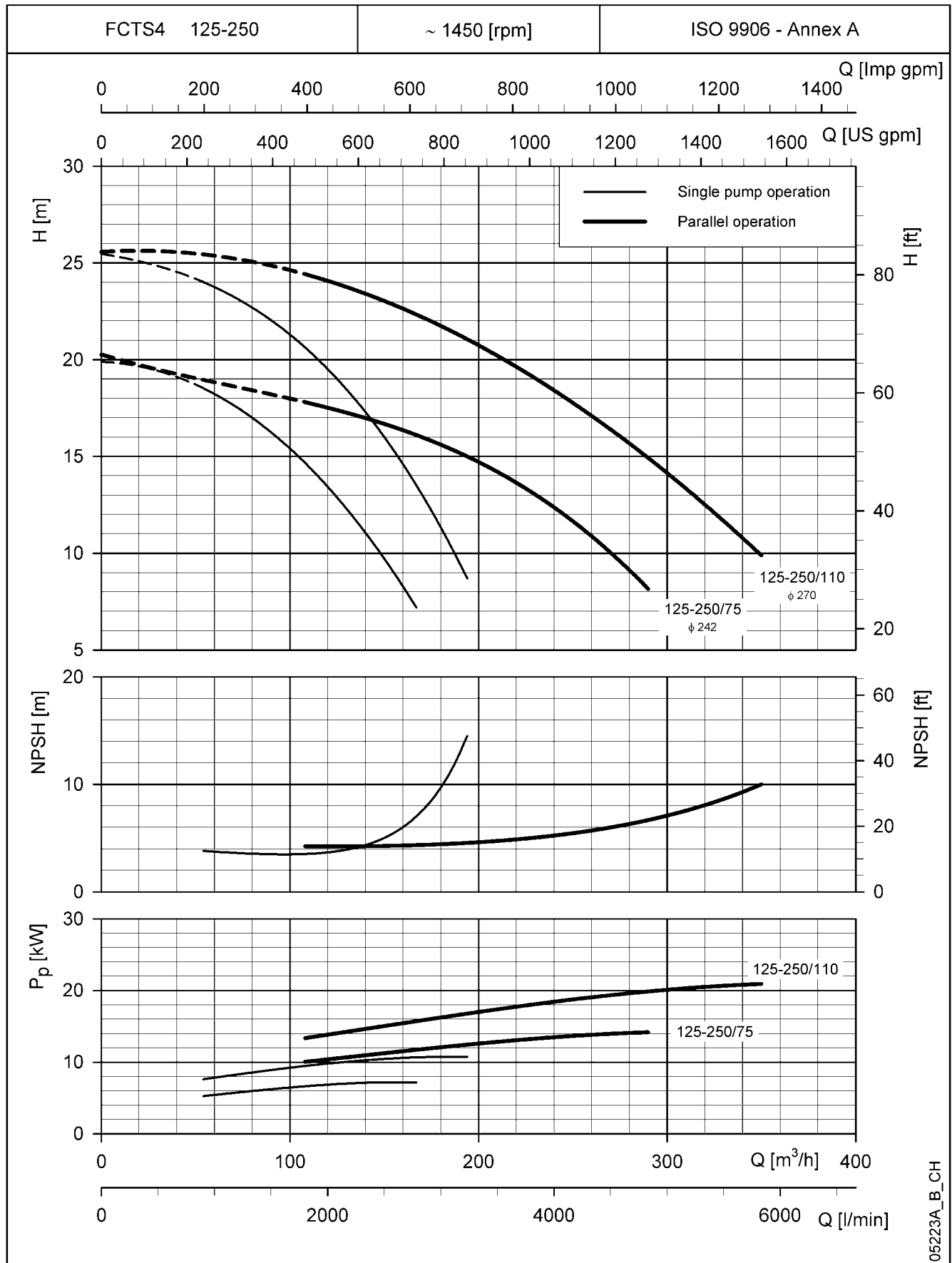


# ITT

## Lowara

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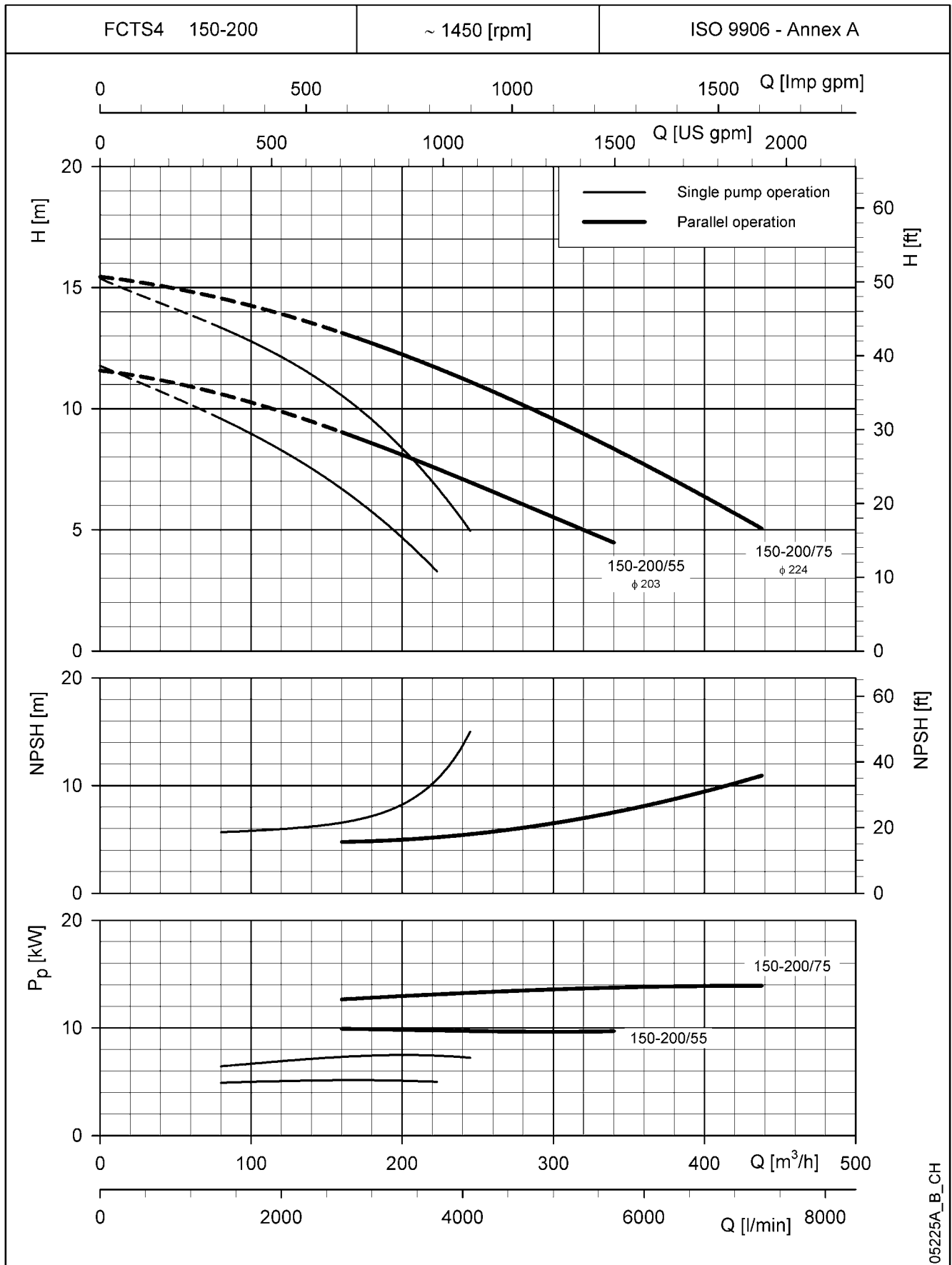


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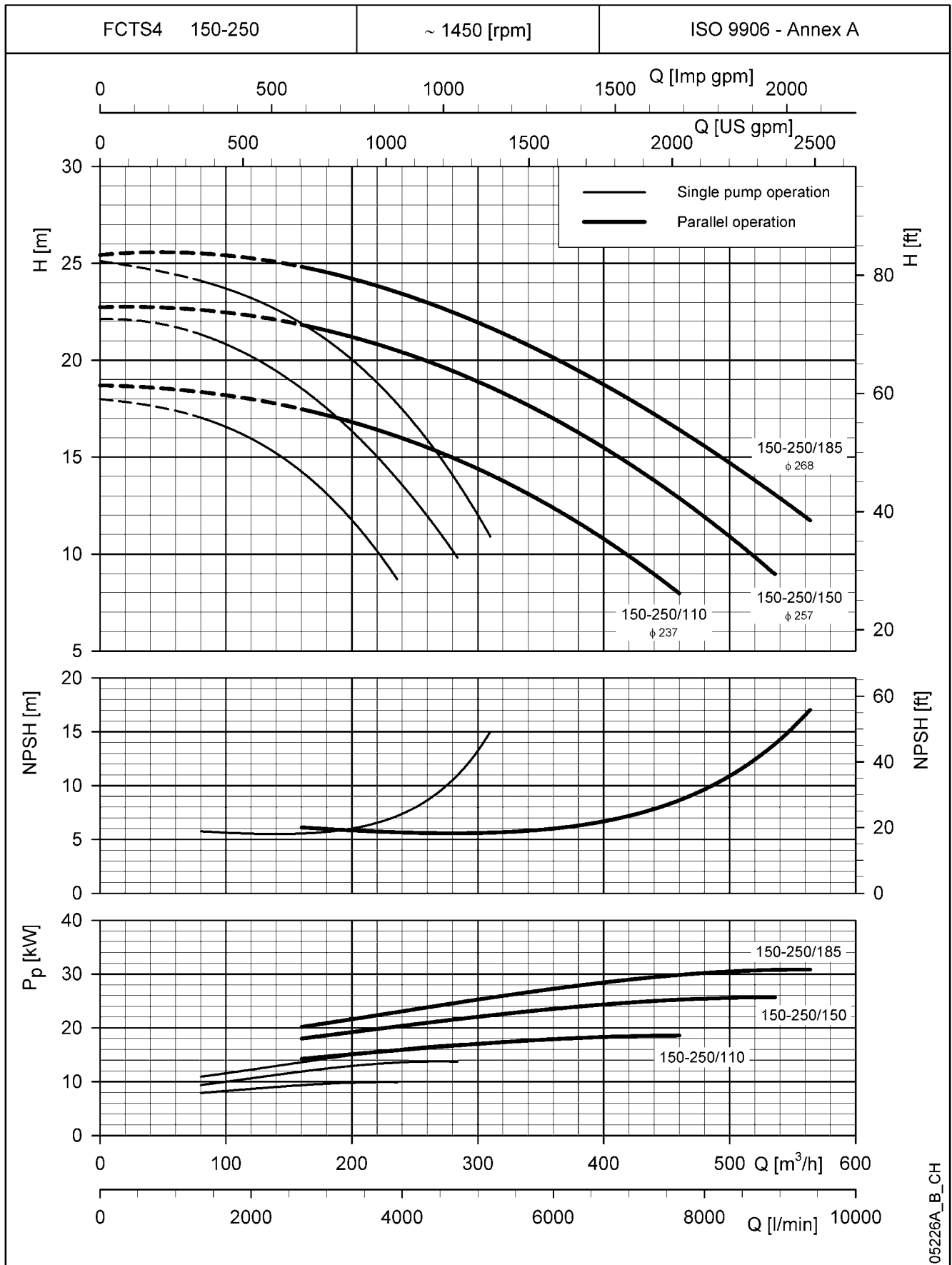


# ITT

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### FCTS4 SERIES

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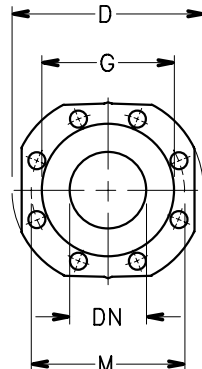
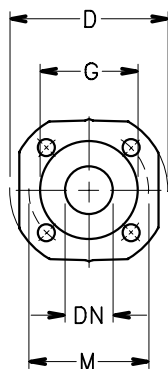
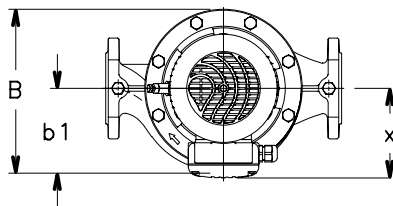
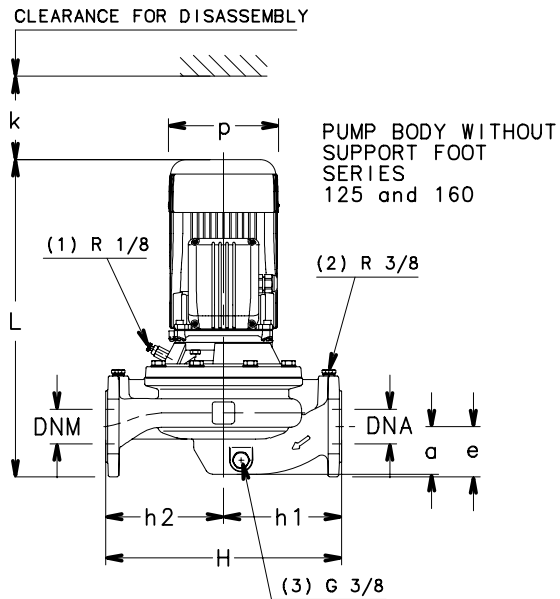
# **DIMENSIONS AND WEIGHTS**



# ITT

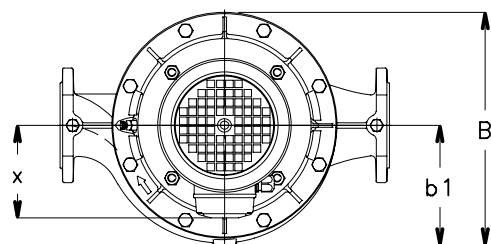
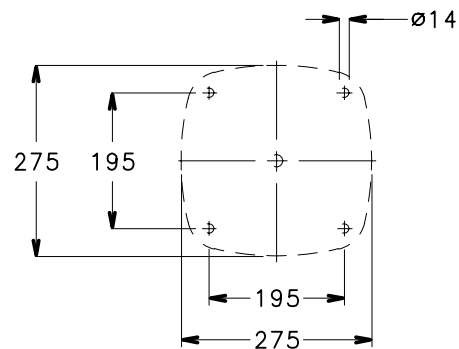
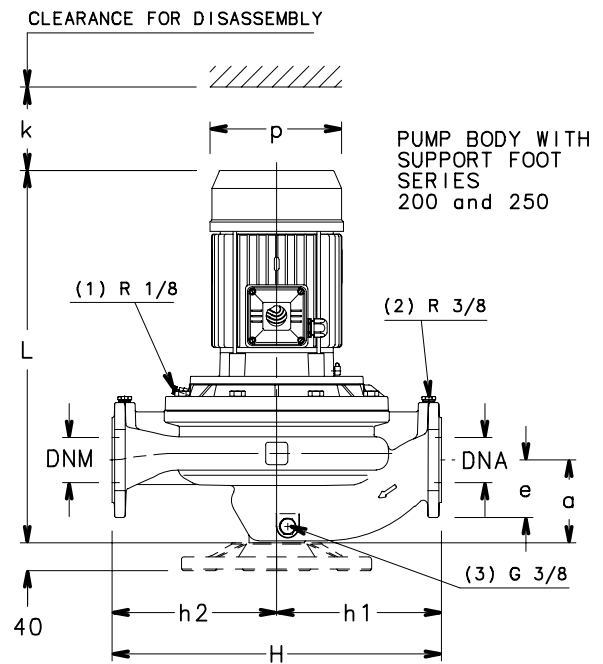
## Lowara

### FCE SERIES DIMENSIONS AND WEIGHTS



PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | Nº    | DIA. |                   |
| 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                |



- (1) R 1/8 AIR VALVE  
(2) R 3/8 PRESSURE GAUGE CONNECTOR  
(3) G 3/8 DRAIN

04804D-EN\_B\_DD

## FCE SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE       | DIMENSIONS (mm) |     |     |     |       |       |     |     |     |     | B   | H<br>max | L   | k   | WEIGHT<br>kg |
|-----------------|-----------------|-----|-----|-----|-------|-------|-----|-----|-----|-----|-----|----------|-----|-----|--------------|
|                 | DNA             | DNM | a   | e   | h1    | h2    | x   | b1  | p   |     |     |          |     |     |              |
| FCE 40-125/07   | 40              | 40  | 70  | 70  | 160   | 160   | 129 | 116 | 155 | 243 | 320 | 448      | 86  | 27  |              |
| FCE 40-125/11   | 40              | 40  | 70  | 70  | 160   | 160   | 129 | 116 | 155 | 243 | 320 | 448      | 86  | 28  |              |
| FCE 40-160/15   | 40              | 40  | 70  | 70  | 160   | 160   | 129 | 116 | 155 | 243 | 320 | 448      | 86  | 29  |              |
| FCE 40-160/22   | 40              | 40  | 70  | 70  | 160   | 160   | 129 | 116 | 155 | 243 | 320 | 448      | 86  | 30  |              |
| FCE 40-200/40A  | 40              | 40  | 95  | 65  | 220   | 220   | 154 | 163 | 197 | 325 | 440 | 514      | 98  | 72  |              |
| FCE 40-200/40   | 40              | 40  | 95  | 65  | 220   | 220   | 154 | 163 | 197 | 325 | 440 | 514      | 98  | 72  |              |
| FCE 40-200/55   | 40              | 40  | 95  | 65  | 220   | 220   | 168 | 163 | 214 | 325 | 440 | 548      | 98  | 73  |              |
| FCE 40-250/75   | 40              | 40  | 95  | 65  | 220   | 220   | 191 | 163 | 256 | 325 | 440 | 562      | 98  | 91  |              |
| FCE 40-250/110  | 40              | 40  | 95  | 65  | 220   | 220   | 191 | 163 | 256 | 354 | 440 | 600      | 98  | 92  |              |
| FCE 50-125/11   | 50              | 50  | 69  | 73  | 170   | 170   | 129 | 122 | 155 | 243 | 340 | 457      | 88  | 30  |              |
| FCE 50-125/15   | 50              | 50  | 69  | 73  | 170   | 170   | 129 | 122 | 155 | 243 | 340 | 457      | 88  | 33  |              |
| FCE 50-160/22   | 50              | 50  | 69  | 73  | 170   | 170   | 129 | 122 | 155 | 243 | 340 | 457      | 88  | 39  |              |
| FCE 50-160/30   | 50              | 50  | 69  | 73  | 170   | 170   | 134 | 122 | 174 | 236 | 340 | 492      | 88  | 46  |              |
| FCE 50-160/40   | 50              | 50  | 69  | 73  | 170   | 170   | 154 | 122 | 197 | 247 | 340 | 513      | 88  | 49  |              |
| FCE 50-200/55   | 50              | 50  | 110 | 73  | 220   | 220   | 168 | 163 | 214 | 326 | 440 | 577      | 100 | 56  |              |
| FCE 50-200/75   | 50              | 50  | 110 | 73  | 220   | 220   | 191 | 163 | 256 | 326 | 440 | 591      | 100 | 72  |              |
| FCE 50-250/92   | 50              | 50  | 110 | 73  | 220   | 220   | 191 | 163 | 256 | 354 | 440 | 629      | 100 | 101 |              |
| FCE 50-250/110  | 50              | 50  | 110 | 73  | 220   | 220   | 191 | 163 | 256 | 354 | 440 | 629      | 100 | 107 |              |
| FCE 50-250/150  | 50              | 50  | 110 | 73  | 220   | 220   | 240 | 163 | 313 | 395 | 440 | 718      | 100 | 115 |              |
| FCE 65-125/22   | 65              | 65  | 77  | 83  | 170   | 170   | 129 | 137 | 155 | 274 | 340 | 476      | 92  | 49  |              |
| FCE 65-125/30   | 65              | 65  | 77  | 83  | 170   | 170   | 134 | 137 | 174 | 274 | 340 | 511      | 92  | 57  |              |
| FCE 65-125/40   | 65              | 65  | 77  | 83  | 170   | 170   | 154 | 137 | 197 | 274 | 340 | 532      | 92  | 61  |              |
| FCE 65-160/55   | 65              | 65  | 77  | 83  | 170   | 170   | 168 | 137 | 214 | 288 | 340 | 566      | 92  | 69  |              |
| FCE 65-160/75   | 65              | 65  | 77  | 83  | 170   | 170   | 191 | 137 | 256 | 288 | 340 | 580      | 92  | 86  |              |
| FCE 65-200/92   | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 191 | 172 | 256 | 354 | 475 | 634      | 104 | 105 |              |
| FCE 65-200/110  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 191 | 172 | 256 | 354 | 475 | 634      | 104 | 112 |              |
| FCE 65-250/150  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 240 | 172 | 313 | 395 | 475 | 723      | 104 | 128 |              |
| FCE 65-250/185  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 240 | 172 | 313 | 395 | 475 | 723      | 104 | 138 |              |
| FCE 65-250/220  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 240 | 172 | 313 | 395 | 475 | 723      | 104 | 150 |              |
| FCE 80-125/30   | 80              | 80  | 90  | 90  | 175   | 185   | 134 | 148 | 174 | 287 | 360 | 545      | 102 | 64  |              |
| FCE 80-125/40   | 80              | 80  | 90  | 90  | 175   | 185   | 154 | 148 | 197 | 287 | 360 | 566      | 102 | 67  |              |
| FCE 80-125/55   | 80              | 80  | 90  | 90  | 175   | 185   | 191 | 148 | 214 | 290 | 360 | 600      | 102 | 69  |              |
| FCE 80-160/75   | 80              | 80  | 90  | 90  | 175   | 185   | 191 | 148 | 256 | 290 | 360 | 614      | 102 | 85  |              |
| FCE 80-200/110  | 80              | 80  | 130 | 90  | 250   | 250   | 191 | 184 | 256 | 354 | 500 | 661      | 112 | 120 |              |
| FCE 80-200/150  | 80              | 80  | 130 | 90  | 250   | 250   | 240 | 184 | 313 | 395 | 500 | 750      | 112 | 130 |              |
| FCE 80-200/185  | 80              | 80  | 130 | 90  | 250   | 250   | 240 | 184 | 313 | 395 | 500 | 750      | 112 | 140 |              |
| FCE 80-200/220  | 80              | 80  | 130 | 90  | 250   | 250   | 240 | 184 | 313 | 395 | 500 | 750      | 112 | 152 |              |
| FCE 100-160/110 | 100             | 100 | 105 | 105 | 225   | 225   | 191 | 172 | 256 | 330 | 450 | 677      | 117 | 127 |              |
| FCE 100-200/185 | 100             | 100 | 140 | 105 | 275   | 275   | 240 | 196 | 313 | 398 | 550 | 771      | 129 | 180 |              |
| FCE 100-200/220 | 100             | 100 | 140 | 105 | 275   | 275   | 240 | 196 | 313 | 398 | 550 | 771      | 129 | 192 |              |

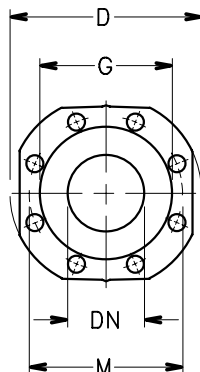
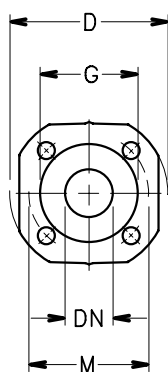
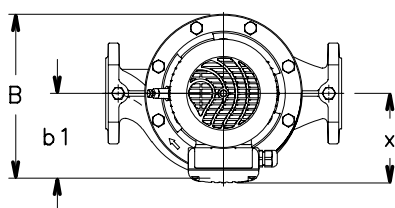
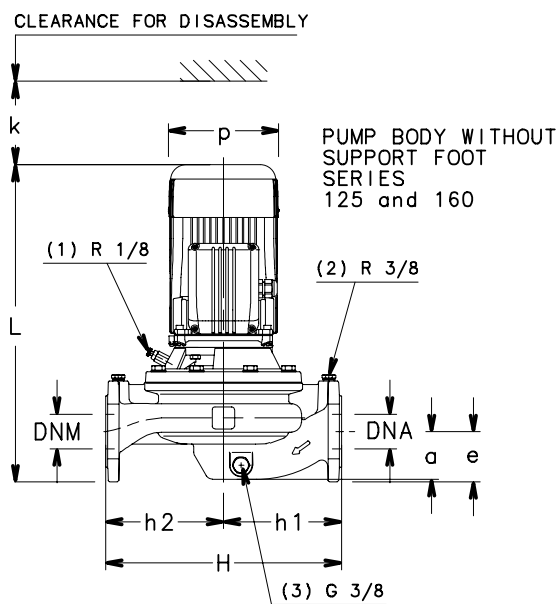
fc\_fce-2p50-en\_d\_td



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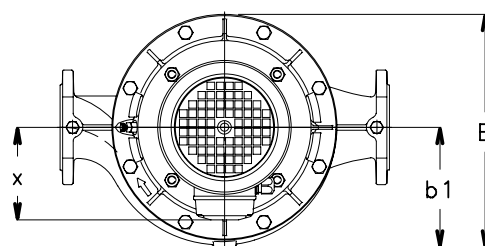
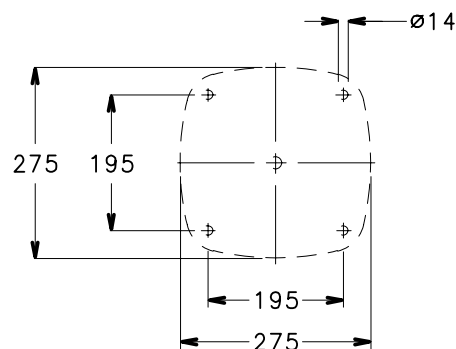
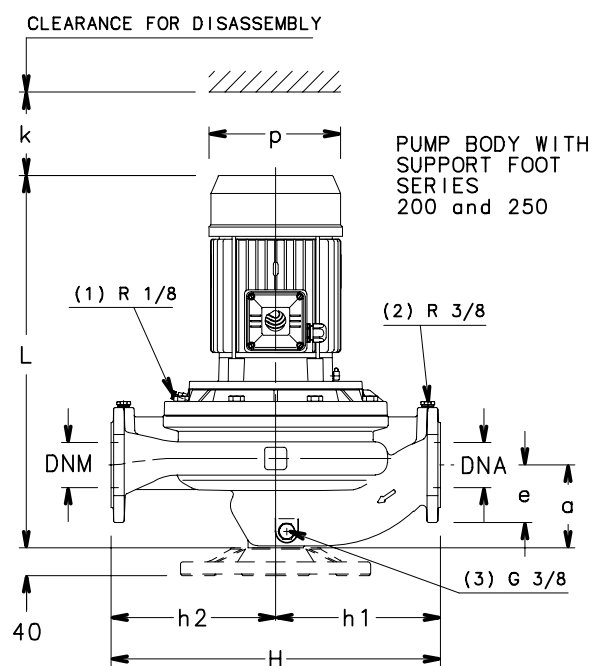
## Lowara

### FCE4 SERIES DIMENSIONS AND WEIGHTS



PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | Nº    | DIA. |                   |
| 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                |



- (1) R 1/8 AIR VALVE  
(2) R 3/8 PRESSURE GAUGE CONNECTOR  
(3) G 3/8 DRAIN

04804D-EN\_B\_DD

## FCE4 SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE       | DIMENSIONS (mm) |     |     |     |       |       |     |     |     |     |          |     |     | WEIGHT |
|-----------------|-----------------|-----|-----|-----|-------|-------|-----|-----|-----|-----|----------|-----|-----|--------|
|                 | DNA             | DNM | a   | e   | h1    | h2    | x   | b1  | p   | B   | H<br>max | L   | k   | kg     |
| FCE4 40-125/02A | 40              | 40  | 70  | 70  | 160   | 160   | 121 | 116 | 140 | 235 | 320      | 416 | 86  | 24     |
| FCE4 40-125/02A | 40              | 40  | 70  | 70  | 160   | 160   | 121 | 116 | 140 | 235 | 320      | 416 | 86  | 24     |
| FCE4 40-160/02  | 40              | 40  | 70  | 70  | 160   | 160   | 121 | 116 | 140 | 235 | 320      | 416 | 86  | 25     |
| FCE4 40-160/03  | 40              | 40  | 70  | 70  | 160   | 160   | 121 | 116 | 140 | 235 | 320      | 416 | 86  | 26     |
| FCE4 40-200/05  | 40              | 40  | 95  | 65  | 220   | 220   | 129 | 163 | 155 | 325 | 440      | 458 | 98  | 44     |
| FCE4 40-200/07  | 40              | 40  | 95  | 65  | 220   | 220   | 129 | 163 | 155 | 325 | 440      | 458 | 98  | 44     |
| FCE4 40-250/11  | 40              | 40  | 95  | 65  | 220   | 220   | 134 | 163 | 174 | 325 | 440      | 493 | 98  | 64     |
| FCE4 40-250/15  | 40              | 40  | 95  | 65  | 220   | 220   | 134 | 163 | 174 | 325 | 440      | 493 | 98  | 65     |
| FCE4 50-125/02  | 50              | 50  | 69  | 73  | 170   | 170   | 121 | 122 | 140 | 236 | 340      | 425 | 88  | 28     |
| FCE4 50-125/03  | 50              | 50  | 69  | 73  | 170   | 170   | 121 | 122 | 140 | 236 | 340      | 425 | 88  | 29     |
| FCE4 50-160/05  | 50              | 50  | 69  | 73  | 170   | 170   | 129 | 122 | 155 | 243 | 340      | 457 | 88  | 31     |
| FCE4 50-200/07  | 50              | 50  | 110 | 73  | 220   | 220   | 129 | 163 | 155 | 326 | 440      | 487 | 100 | 53     |
| FCE4 50-200/11  | 50              | 50  | 110 | 73  | 220   | 220   | 134 | 163 | 174 | 326 | 440      | 522 | 100 | 63     |
| FCE4 50-250/15  | 50              | 50  | 110 | 73  | 220   | 220   | 134 | 163 | 174 | 326 | 440      | 522 | 100 | 66     |
| FCE4 50-250/22  | 50              | 50  | 110 | 73  | 220   | 220   | 168 | 163 | 214 | 326 | 440      | 546 | 100 | 72     |
| FCE4 65-125/03  | 65              | 65  | 77  | 83  | 170   | 170   | 121 | 137 | 140 | 274 | 340      | 444 | 92  | 38     |
| FCE4 65-125/05  | 65              | 65  | 77  | 83  | 170   | 170   | 129 | 137 | 155 | 274 | 340      | 476 | 92  | 42     |
| FCE4 65-160/07  | 65              | 65  | 77  | 83  | 170   | 170   | 129 | 137 | 155 | 274 | 340      | 476 | 92  | 46     |
| FCE4 65-160/11  | 65              | 65  | 77  | 83  | 170   | 170   | 134 | 137 | 174 | 274 | 340      | 511 | 92  | 54     |
| FCE4 65-200/15  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 134 | 172 | 174 | 335 | 475      | 527 | 104 | 69     |
| FCE4 65-250/22  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 168 | 172 | 214 | 335 | 475      | 551 | 104 | 80     |
| FCE4 65-250/30  | 65              | 65  | 119 | 83  | 237,5 | 237,5 | 168 | 172 | 214 | 335 | 475      | 582 | 104 | 82     |
| FCE4 80-125/07  | 80              | 80  | 90  | 90  | 175   | 185   | 129 | 148 | 155 | 287 | 360      | 510 | 102 | 50     |
| FCE4 80-125/11  | 80              | 80  | 90  | 90  | 175   | 185   | 134 | 148 | 174 | 287 | 360      | 545 | 102 | 59     |
| FCE4 80-200/15  | 80              | 80  | 130 | 90  | 250   | 250   | 134 | 184 | 174 | 347 | 500      | 554 | 112 | 81     |
| FCE4 80-200/22  | 80              | 80  | 130 | 90  | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 578 | 112 | 87     |
| FCE4 80-200/30  | 80              | 80  | 130 | 90  | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 609 | 112 | 91     |
| FCE4 80-250/40  | 80              | 80  | 130 | 90  | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 654 | 112 | 117    |
| FCE4 80-250/55  | 80              | 80  | 130 | 90  | 250   | 250   | 191 | 184 | 256 | 354 | 500      | 661 | 112 | 125    |
| FCE4 100-160/15 | 100             | 100 | 105 | 105 | 225   | 225   | 134 | 172 | 174 | 311 | 450      | 570 | 117 | 74     |
| FCE4 100-200/22 | 100             | 100 | 140 | 105 | 275   | 275   | 168 | 196 | 214 | 362 | 550      | 599 | 129 | 99     |
| FCE4 100-200/30 | 100             | 100 | 140 | 105 | 225   | 275   | 168 | 196 | 214 | 362 | 550      | 630 | 129 | 101    |
| FCE4 100-250/40 | 100             | 100 | 140 | 105 | 275   | 275   | 168 | 196 | 214 | 362 | 550      | 675 | 129 | 125    |
| FCE4 100-250/55 | 100             | 100 | 140 | 105 | 275   | 275   | 191 | 196 | 256 | 362 | 550      | 682 | 129 | 131    |
| FCE4 100-250/75 | 100             | 100 | 140 | 105 | 275   | 275   | 191 | 196 | 256 | 362 | 550      | 682 | 129 | 141    |

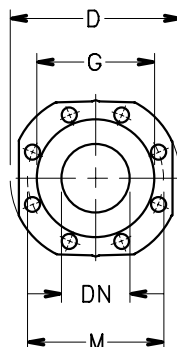
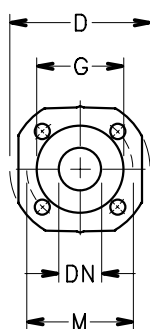
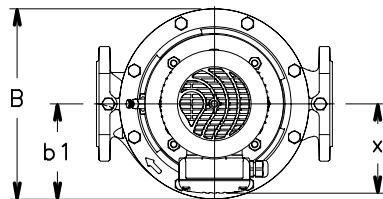
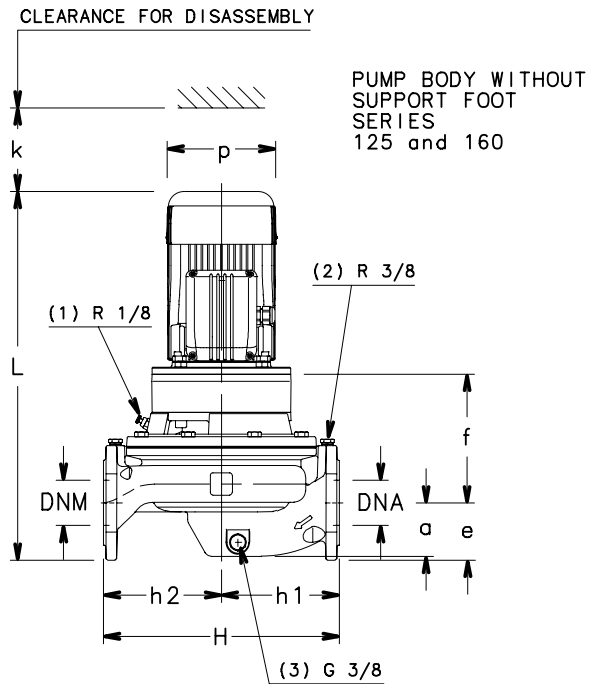
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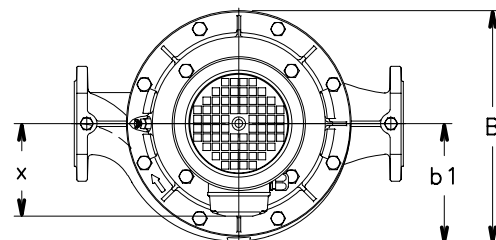
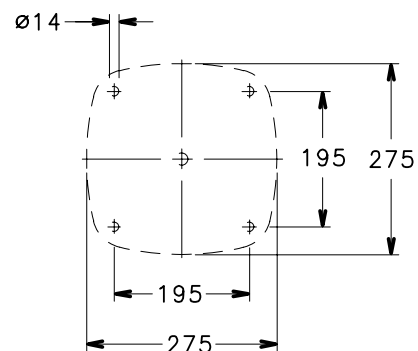
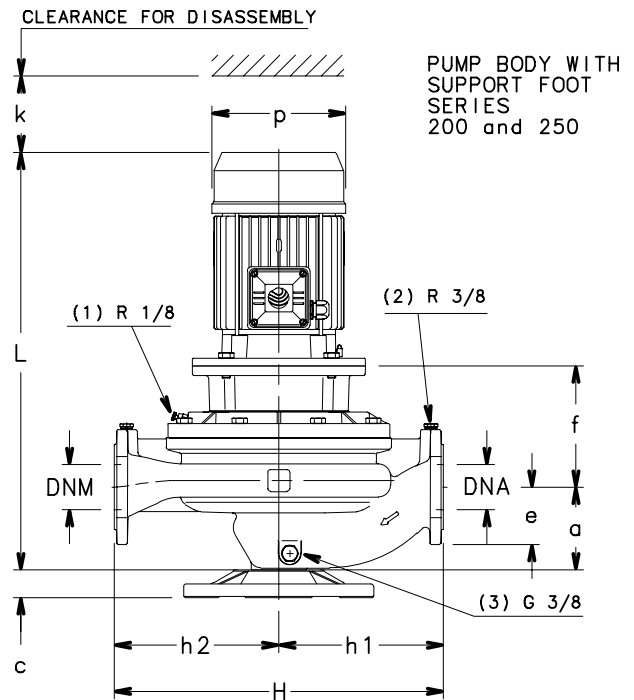
## Lowara

### FCS SERIES DIMENSIONS AND WEIGHTS



PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | N°    | DIA. |                   |
| 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                |



- (1) R 1/8 AIR VALVE  
(2) R 3/8 PRESSURE GAUGE CONNECTOR  
(3) G 3/8 DRAIN

04854D-EN\_B\_DD

## FCS SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE       | DIMENSIONS (mm) |     |     |     |     |       |       |     |     |     |     |          |     |     | WEIGHT<br>kg |
|-----------------|-----------------|-----|-----|-----|-----|-------|-------|-----|-----|-----|-----|----------|-----|-----|--------------|
|                 | DNA             | DNM | a   | e   | f   | h1    | h2    | x   | b1  | p   | B   | H<br>max | L   | k   |              |
| FCS 40-125/07   | 40              | 40  | 70  | 70  | 170 | 160   | 160   | 121 | 116 | 140 | 235 | 320      | 466 | 86  | 30           |
| FCS 40-125/11   | 40              | 40  | 70  | 70  | 170 | 160   | 160   | 129 | 116 | 155 | 243 | 320      | 503 | 86  | 31           |
| FCS 40-160/15   | 40              | 40  | 70  | 70  | 170 | 160   | 160   | 129 | 116 | 155 | 243 | 320      | 503 | 86  | 32           |
| FCS 40-160/22   | 40              | 40  | 70  | 70  | 170 | 160   | 160   | 129 | 116 | 155 | 243 | 320      | 503 | 86  | 34           |
| FCS 40-200/30   | 40              | 40  | 95  | 65  | 165 | 220   | 220   | 134 | 163 | 174 | 325 | 440      | 558 | 98  | 69           |
| FCS 40-200/40   | 40              | 40  | 95  | 65  | 165 | 220   | 220   | 154 | 163 | 197 | 325 | 440      | 579 | 98  | 75           |
| FCS 40-200/55   | 40              | 40  | 95  | 65  | 192 | 220   | 220   | 168 | 163 | 214 | 325 | 440      | 662 | 98  | 88           |
| FCS 40-250/75   | 40              | 40  | 95  | 65  | 192 | 220   | 220   | 191 | 163 | 256 | 325 | 440      | 654 | 98  | 106          |
| FCS 40-250/110  | 40              | 40  | 95  | 65  | 222 | 220   | 220   | 191 | 163 | 256 | 366 | 440      | 745 | 98  | 120          |
| FCS 50-125/11   | 50              | 50  | 69  | 73  | 176 | 170   | 170   | 129 | 122 | 155 | 243 | 340      | 512 | 88  | 35           |
| FCS 50-125/15   | 50              | 50  | 69  | 73  | 176 | 170   | 170   | 129 | 122 | 155 | 243 | 340      | 512 | 88  | 37           |
| FCS 50-160/22   | 50              | 50  | 69  | 73  | 176 | 170   | 170   | 129 | 122 | 155 | 243 | 340      | 512 | 88  | 45           |
| FCS 50-160/30   | 50              | 50  | 69  | 73  | 186 | 170   | 170   | 134 | 122 | 174 | 247 | 340      | 557 | 88  | 51           |
| FCE 50-160/40   | 50              | 50  | 69  | 73  | 186 | 170   | 170   | 154 | 122 | 197 | 258 | 340      | 578 | 88  | 58           |
| FCS50-200/55    | 50              | 50  | 110 | 73  | 206 | 220   | 220   | 168 | 163 | 214 | 326 | 440      | 691 | 100 | 91           |
| FCS 50-200/75   | 50              | 50  | 110 | 73  | 206 | 220   | 220   | 191 | 163 | 256 | 326 | 440      | 683 | 100 | 108          |
| FCS 50-250/110A | 50              | 50  | 110 | 73  | 236 | 220   | 220   | 191 | 163 | 256 | 366 | 440      | 774 | 100 | 115          |
| FCS 50-250/110  | 50              | 50  | 110 | 73  | 236 | 220   | 220   | 191 | 163 | 256 | 366 | 440      | 774 | 100 | 115          |
| FCS 50-250/150  | 50              | 50  | 110 | 73  | 236 | 220   | 220   | 240 | 163 | 313 | 407 | 440      | 840 | 100 | 125          |
| FCS 65-125/22   | 65              | 65  | 77  | 83  | 185 | 170   | 170   | 129 | 137 | 155 | 274 | 340      | 531 | 92  | 64           |
| FCS 65-125/30   | 65              | 65  | 77  | 83  | 195 | 170   | 170   | 134 | 137 | 174 | 274 | 340      | 576 | 92  | 62           |
| FCS 65-125/40   | 65              | 65  | 77  | 83  | 195 | 170   | 170   | 154 | 137 | 197 | 274 | 340      | 597 | 92  | 67           |
| FCS 65-160/55   | 65              | 65  | 77  | 83  | 222 | 170   | 170   | 168 | 137 | 214 | 301 | 340      | 680 | 92  | 80           |
| FCS 65-160/75   | 65              | 65  | 77  | 83  | 222 | 170   | 170   | 191 | 137 | 256 | 301 | 340      | 672 | 92  | 95           |
| FCS 65-200/110A | 65              | 65  | 119 | 83  | 232 | 237,5 | 237,5 | 191 | 172 | 256 | 366 | 475      | 779 | 104 | 133          |
| FCS 65-200/110  | 65              | 65  | 119 | 83  | 232 | 237,5 | 237,5 | 191 | 172 | 256 | 366 | 475      | 779 | 104 | 133          |
| FCS 65-250/150  | 65              | 65  | 119 | 83  | 232 | 237,5 | 237,5 | 240 | 172 | 313 | 407 | 475      | 845 | 104 | 134          |
| FCS 65-250/185  | 65              | 65  | 119 | 83  | 232 | 237,5 | 237,5 | 240 | 172 | 313 | 407 | 475      | 845 | 104 | 144          |
| FCE 65-250/220  | 65              | 65  | 119 | 83  | 232 | 237,5 | 237,5 | 240 | 172 | 313 | 407 | 475      | 845 | 104 | 154          |
| FCS 80-125/30   | 80              | 80  | 90  | 90  | 222 | 175   | 185   | 134 | 148 | 174 | 287 | 360      | 610 | 102 | 82           |
| FCS 80-125/40   | 80              | 80  | 90  | 90  | 222 | 175   | 185   | 154 | 148 | 197 | 287 | 360      | 631 | 102 | 83           |
| FCS 80-125/55   | 80              | 80  | 90  | 90  | 249 | 175   | 185   | 168 | 148 | 214 | 301 | 360      | 714 | 102 | 86           |
| FCS 80-160/75   | 80              | 80  | 90  | 90  | 249 | 175   | 185   | 191 | 148 | 256 | 301 | 360      | 706 | 102 | 102          |
| FCS 80-200/110  | 80              | 80  | 130 | 90  | 248 | 250   | 250   | 191 | 184 | 256 | 366 | 500      | 806 | 112 | 130          |
| FCS 80-200/150  | 80              | 80  | 130 | 90  | 248 | 250   | 250   | 240 | 184 | 313 | 407 | 500      | 872 | 112 | 140          |
| FCS 80-200/185  | 80              | 80  | 130 | 90  | 248 | 250   | 250   | 240 | 184 | 313 | 407 | 500      | 872 | 112 | 150          |
| FCS 80-200/220  | 80              | 80  | 130 | 90  | 248 | 250   | 250   | 240 | 184 | 313 | 407 | 500      | 872 | 112 | 162          |
| FCS 100-160/110 | 100             | 100 | 105 | 105 | 289 | 225   | 225   | 191 | 172 | 256 | 366 | 450      | 822 | 117 | 135          |
| FCS 100-200/185 | 100             | 100 | 140 | 105 | 259 | 275   | 275   | 240 | 196 | 313 | 407 | 550      | 893 | 129 | 190          |
| FCS 100-200/220 | 100             | 100 | 140 | 105 | 259 | 275   | 275   | 240 | 196 | 313 | 407 | 550      | 893 | 129 | 202          |

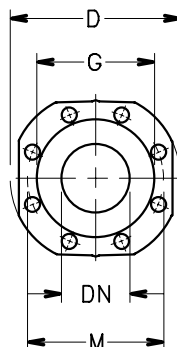
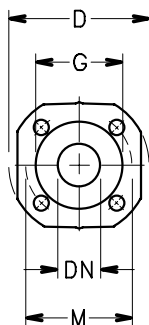
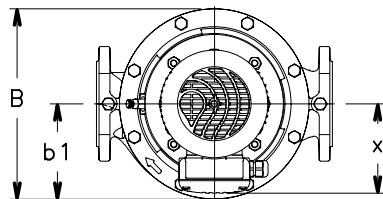
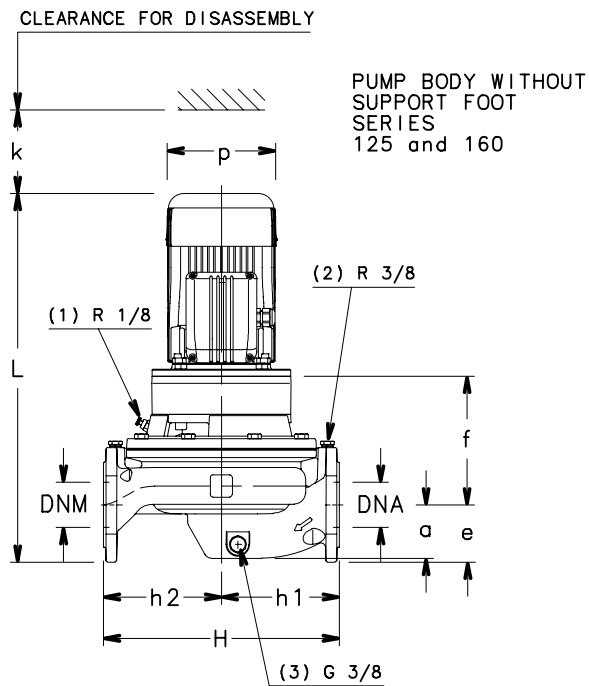
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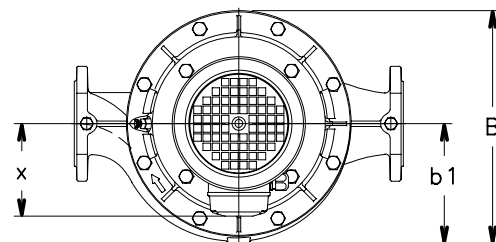
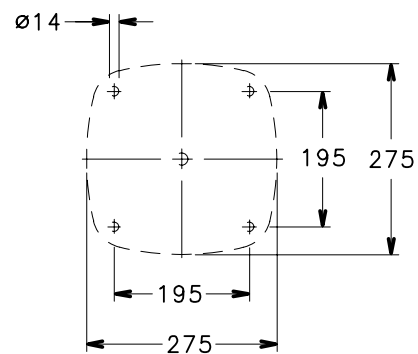
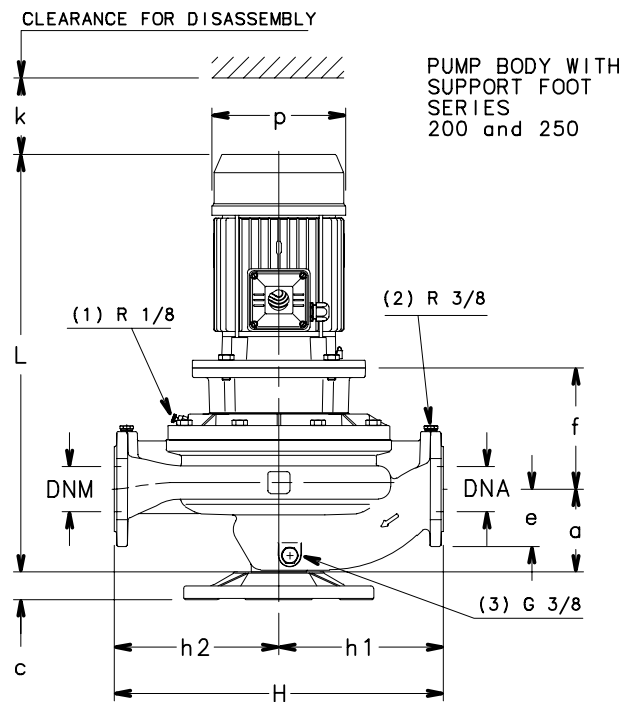
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### FCS4 SERIES DIMENSIONS AND WEIGHTS



PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | N°    | DIA. |                   |
| 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                |



- (1) R 1/8 AIR VALVE  
(2) R 3/8 PRESSURE GAUGE CONNECTOR  
(3) G 3/8 DRAIN

04854D-EN\_B\_DD

## FCS4 SERIES

### DIMENSIONS AND WEIGHTS

| PUMP TYPE       | DIMENSIONS (mm) |     |     |     |     |       |       |     |     |     |     |          |     |     | WEIGHT<br>kg |
|-----------------|-----------------|-----|-----|-----|-----|-------|-------|-----|-----|-----|-----|----------|-----|-----|--------------|
|                 | DNA             | DNM | a   | e   | f   | h1    | h2    | x   | b1  | p   | B   | H<br>max | L   | k   |              |
| FCS4 40-200/05  | 40              | 40  | 95  | 65  | 155 | 220   | 220   | 129 | 163 | 155 | 325 | 440      | 513 | 98  | 56           |
| FCS4 40-200/07  | 40              | 40  | 95  | 65  | 155 | 220   | 220   | 129 | 163 | 155 | 325 | 440      | 513 | 98  | 59           |
| FCS4 40-250/11  | 40              | 40  | 95  | 65  | 155 | 220   | 220   | 134 | 163 | 174 | 325 | 440      | 548 | 98  | 67           |
| FCS4 40-250/15  | 40              | 40  | 95  | 65  | 155 | 220   | 220   | 134 | 163 | 174 | 325 | 440      | 548 | 98  | 69           |
| FCS4 50-200/07  | 50              | 50  | 110 | 73  | 169 | 220   | 220   | 129 | 163 | 155 | 326 | 440      | 542 | 100 | 62           |
| FCS4 50-200/11  | 50              | 50  | 110 | 73  | 169 | 220   | 220   | 134 | 163 | 174 | 326 | 440      | 577 | 100 | 72           |
| FCS4 50-250/15  | 50              | 50  | 110 | 73  | 169 | 220   | 220   | 134 | 163 | 174 | 326 | 440      | 577 | 100 | 73           |
| FCS4 50-250/22  | 50              | 50  | 110 | 73  | 179 | 220   | 220   | 168 | 163 | 214 | 326 | 440      | 611 | 100 | 78           |
| FCS4 65-160/07  | 65              | 65  | 77  | 83  | 185 | 170   | 170   | 129 | 137 | 155 | 274 | 340      | 531 | 92  | 48           |
| FCS4 65-160/11  | 65              | 65  | 77  | 83  | 185 | 170   | 170   | 134 | 137 | 174 | 274 | 340      | 566 | 92  | 55           |
| FCS4 65-200/15  | 65              | 65  | 119 | 83  | 165 | 237,5 | 237,5 | 134 | 172 | 174 | 335 | 475      | 582 | 104 | 72           |
| FCS4 65-250/22  | 65              | 65  | 119 | 83  | 175 | 237,5 | 237,5 | 168 | 172 | 214 | 335 | 475      | 616 | 104 | 84           |
| FCS4 65-250/30  | 65              | 65  | 119 | 83  | 175 | 237,5 | 237,5 | 168 | 172 | 214 | 335 | 475      | 647 | 104 | 87           |
| FCS4 80-125/07  | 80              | 80  | 90  | 90  | 212 | 175   | 185   | 129 | 148 | 155 | 287 | 360      | 565 | 102 | 54           |
| FCS4 80-125/11  | 80              | 80  | 90  | 90  | 212 | 175   | 185   | 134 | 148 | 174 | 287 | 360      | 600 | 102 | 66           |
| FCS4 80-200/15  | 80              | 80  | 130 | 90  | 181 | 250   | 250   | 134 | 184 | 174 | 347 | 500      | 609 | 112 | 92           |
| FCS4 80-200/22  | 80              | 80  | 130 | 90  | 191 | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 643 | 112 | 95           |
| FCS4 80-200/30  | 80              | 80  | 130 | 90  | 191 | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 674 | 112 | 97           |
| FCS4 80-250/40  | 80              | 80  | 130 | 90  | 191 | 250   | 250   | 168 | 184 | 214 | 347 | 500      | 719 | 112 | 125          |
| FCS4 80-250/55  | 80              | 80  | 130 | 90  | 218 | 250   | 250   | 191 | 184 | 256 | 354 | 500      | 753 | 112 | 129          |
| FCS4 100-160/15 | 100             | 100 | 105 | 105 | 221 | 225   | 225   | 134 | 172 | 174 | 311 | 450      | 625 | 117 | 78           |
| FCS4 100-200/22 | 100             | 100 | 140 | 105 | 202 | 275   | 275   | 168 | 196 | 214 | 362 | 550      | 664 | 129 | 85           |
| FCS4 100-200/30 | 100             | 100 | 140 | 105 | 202 | 225   | 275   | 168 | 196 | 214 | 362 | 550      | 695 | 129 | 88           |
| FCS4 100-250/40 | 100             | 100 | 140 | 105 | 202 | 275   | 275   | 168 | 196 | 214 | 362 | 550      | 740 | 129 | 140          |
| FCS4 100-250/55 | 100             | 100 | 140 | 105 | 229 | 275   | 275   | 191 | 196 | 256 | 362 | 550      | 774 | 129 | 142          |
| FCS4 100-250/75 | 100             | 100 | 140 | 105 | 229 | 275   | 275   | 191 | 196 | 256 | 362 | 550      | 774 | 129 | 147          |

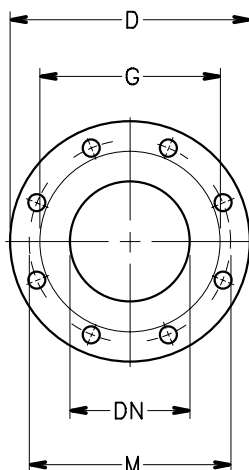
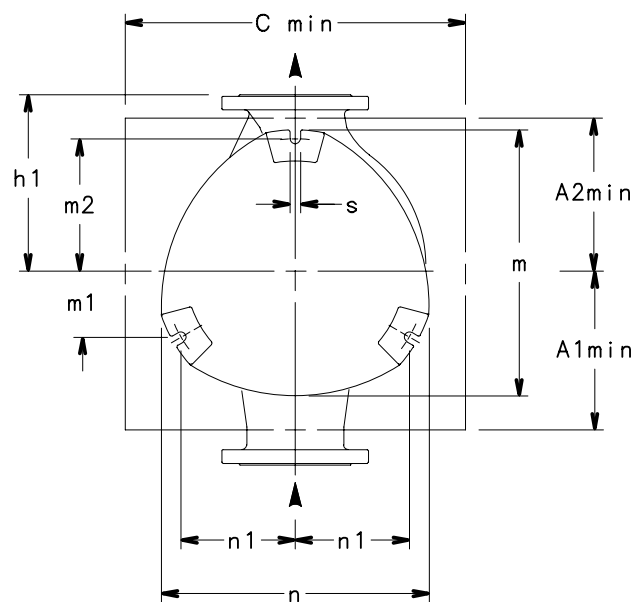
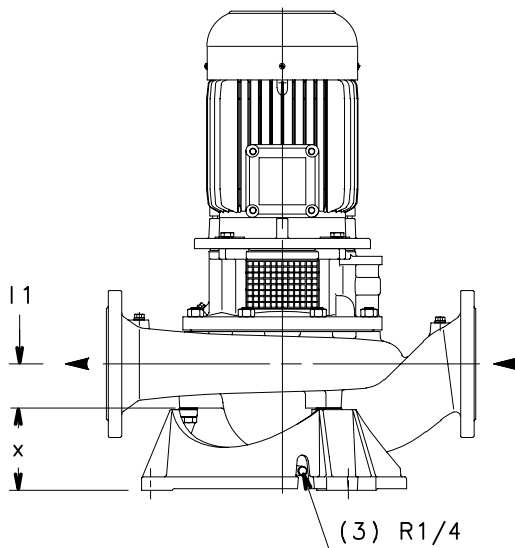
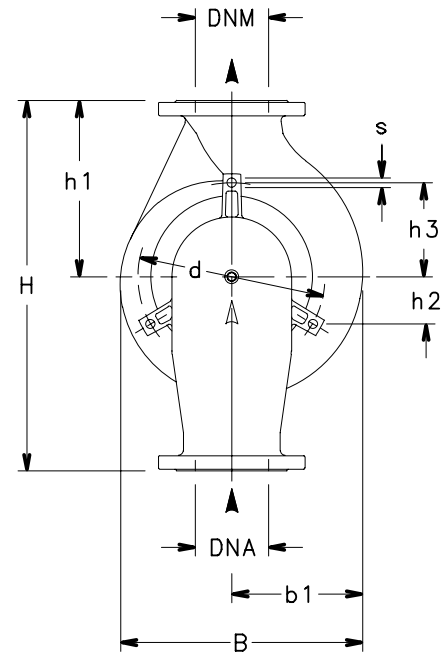
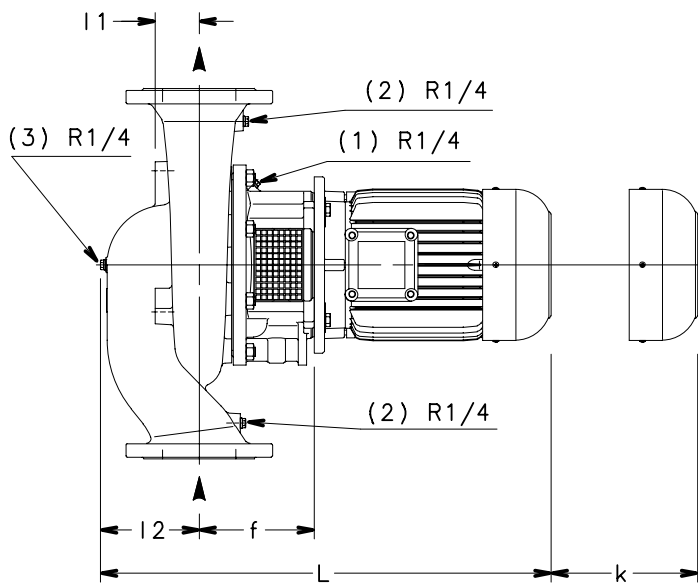
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## Lowara

### FCS4 (125÷150) SERIES DIMENSIONS AND WEIGHTS



- (1) R 1/4 AIR VALVE
- (2) R 1/4 PRESSURE GAUGE CONNECTOR
- (3) R 1/4 DRAIN

#### PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | Nº    | DIA. |                   |
| 125 | 250 | 210 | 188 | 8     | 18   | 26                |
| 150 | 285 | 240 | 212 | 8     | 23   | 26                |

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# ITT

# Lowara

## FCS4 (125÷150) SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE        | DIMENSIONS (mm) PUMP |     |     |     |     |     |    |     |     |     |     |          |      |     | WEIGHT<br>kg |
|------------------|----------------------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|----------|------|-----|--------------|
|                  | DNA                  | DNM | b1  | d   | f   | h1  | h2 | h3  | l1  | l2  | B   | H<br>max | L    | k   |              |
| FCS4 125-160/30  | 125                  | 125 | 234 | 274 | 196 | 315 | 68 | 137 | 85  | 161 | 418 | 630      | 710  | 143 | 132          |
| FCS4 125-200/40  | 125                  | 125 | 202 | 274 | 196 | 290 | 68 | 137 | 80  | 164 | 378 | 620      | 758  | 153 | 133          |
| FCS4 125-200/55  | 125                  | 125 | 202 | 274 | 196 | 290 | 68 | 137 | 80  | 164 | 378 | 620      | 765  | 153 | 154          |
| FCS4 125-250/75  | 125                  | 125 | 220 | 320 | 196 | 300 | 80 | 160 | 75  | 168 | 422 | 630      | 769  | 150 | 167          |
| FCS4 125-250/110 | 125                  | 125 | 220 | 320 | 226 | 300 | 80 | 160 | 75  | 168 | 422 | 630      | 888  | 150 | 231          |
| FCS4 125-315/150 | 125                  | 125 | 262 | 320 | 226 | 350 | 80 | 160 | 130 | 229 | 503 | 775      | 948  | 160 | 298          |
| FCS4 125-315/185 | 125                  | 125 | 262 | 320 | 226 | 350 | 80 | 160 | 130 | 229 | 503 | 775      | 993  | 160 | 270          |
| FCS4 125-315/220 | 125                  | 125 | 262 | 320 | 226 | 350 | 80 | 160 | 130 | 229 | 503 | 775      | 1068 | 160 | 292          |
| FCS4 150-200/55  | 150                  | 150 | 260 | 320 | 211 | 340 | 80 | 160 | 90  | 178 | 468 | 720      | 794  | 160 | 126          |
| FCS4 150-200/75  | 150                  | 150 | 260 | 320 | 211 | 340 | 80 | 160 | 90  | 178 | 468 | 720      | 794  | 160 | 177          |
| FCS4 150-250/110 | 150                  | 150 | 276 | 320 | 226 | 365 | 80 | 160 | 85  | 188 | 504 | 755      | 908  | 158 | 255          |
| FCS4 150-250/150 | 150                  | 150 | 276 | 320 | 226 | 365 | 80 | 160 | 85  | 188 | 504 | 755      | 908  | 158 | 268          |
| FCS4 150-250/185 | 150                  | 150 | 276 | 320 | 226 | 365 | 80 | 160 | 85  | 188 | 504 | 755      | 952  | 158 | 230          |

| PUMP TYPE        | DIMENSIONS (mm) SUPPORT FOOT |     |     |     |     |     |     |     |     |     |
|------------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                  | A1                           | A2  | C   | m   | m1  | m2  | n   | n1  | s   | x   |
| FCS4 125-160/30  | 230                          | 250 | 480 | 388 | 96  | 192 | 389 | 166 | M16 | 120 |
| FCS4 125-200/40  | 230                          | 250 | 480 | 388 | 96  | 192 | 389 | 166 | M16 | 120 |
| FCS4 125-200/55  | 230                          | 250 | 480 | 388 | 96  | 192 | 389 | 166 | M16 | 120 |
| FCS4 125-250/75  | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 125-250/110 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 125-315/150 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 125-315/185 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 125-315/220 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 150-200/55  | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 150-200/75  | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 150-250/110 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 150-250/150 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |
| FCS4 150-250/185 | 270                          | 300 | 580 | 453 | 112 | 225 | 457 | 195 | M16 | 140 |

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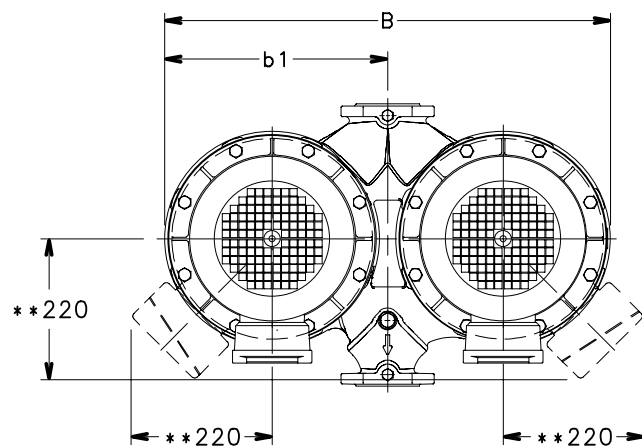
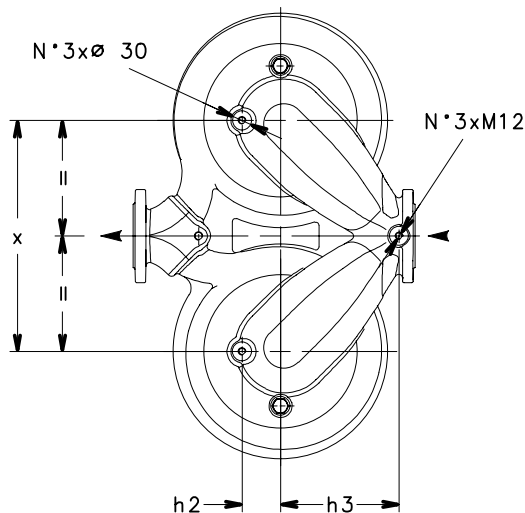
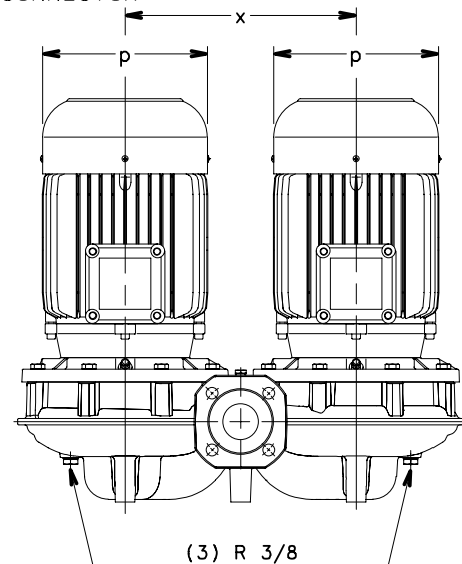
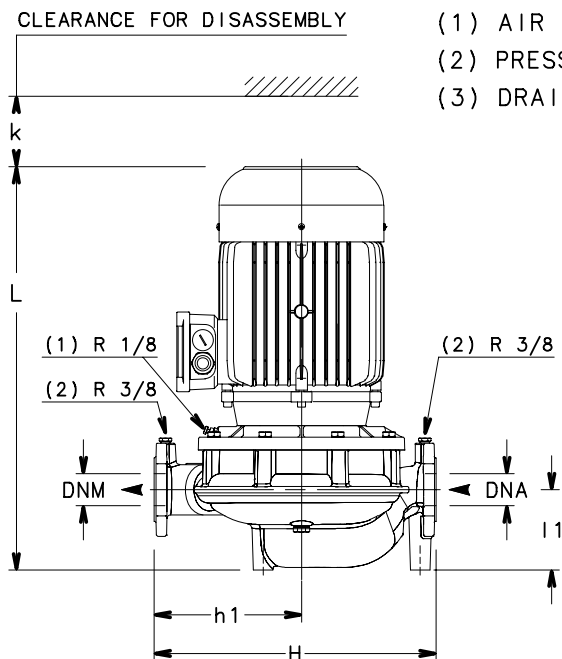


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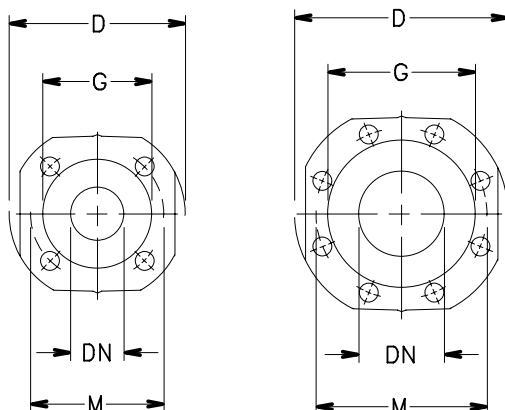
## Lowara

### FCTE SERIES DIMENSIONS AND WEIGHTS

CLEARANCE FOR DISASSEMBLY



\*\* ONLY FOR MODELS WITH  
15-18.5-22 kW MOTORS



#### PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | MAX.<br>THICKNESS |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | N°    | DIA. |                   |
| 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                |

05204-EN\_B\_DD

# **FCTE SERIES** **DIMENSIONS AND WEIGHTS**

| PUMP TYPE        | DIMENSIONS (mm) |     |     |     |    |     |     |     |     |     |     |     |     | WEIGHT |
|------------------|-----------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
|                  | DNA             | DNM | b1  | h1  | h2 | h3  | l1  | p   | x   | B   | H   | L   | k   | kg     |
| FCTE 40-125/07   | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 452 | 90  | 52     |
| FCTE 40-125/11   | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 452 | 90  | 54     |
| FCTE 40-160/15   | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 452 | 90  | 56     |
| FCTE 40-160/22   | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 452 | 90  | 58     |
| FCTE 40-200/40A  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 197 | 360 | 695 | 440 | 516 | 101 | 139    |
| FCTE 40-200/40   | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 197 | 360 | 695 | 440 | 516 | 101 | 139    |
| FCTE 40-200/55   | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 214 | 360 | 695 | 440 | 550 | 101 | 141    |
| FCTE 40-250/75   | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 256 | 360 | 695 | 440 | 564 | 101 | 177    |
| FCTE 40-250/110  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 256 | 360 | 695 | 440 | 602 | 101 | 179    |
| FCTE 50-125/11   | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 457 | 91  | 53     |
| FCTE 50-125/15   | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 457 | 91  | 59     |
| FCTE 50-160/22   | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 457 | 91  | 71     |
| FCTE 50-160/30   | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 174 | 260 | 500 | 340 | 491 | 91  | 85     |
| FCTE 50-160/40   | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 197 | 260 | 500 | 340 | 512 | 91  | 91     |
| FCTE 50-200/55   | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 214 | 360 | 695 | 440 | 578 | 110 | 108    |
| FCTE 50-200/75   | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 592 | 110 | 140    |
| FCTE 50-250/92   | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 630 | 110 | 198    |
| FCTE 50-250/110  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 630 | 110 | 210    |
| FCTE 50-250/150  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 313 | 360 | 695 | 440 | 719 | 110 | 226    |
| FCTE 65-125/22   | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 155 | 310 | 593 | 340 | 474 | 96  | 97     |
| FCTE 65-125/30   | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 174 | 310 | 593 | 340 | 509 | 96  | 113    |
| FCTE 65-125/40   | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 197 | 310 | 593 | 340 | 530 | 96  | 121    |
| FCTE 65-160/55   | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 214 | 310 | 593 | 340 | 564 | 96  | 137    |
| FCTE 65-160/75   | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 256 | 310 | 593 | 340 | 578 | 96  | 171    |
| FCTE 65-200/92   | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 256 | 360 | 695 | 475 | 635 | 109 | 202    |
| FCTE 65-200/110  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 256 | 360 | 695 | 475 | 635 | 109 | 216    |
| FCTE 65-250/150  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 724 | 109 | 248    |
| FCTE 65-250/185  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 724 | 109 | 252    |
| FCTE 65-250/220  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 724 | 109 | 272    |
| FCTE 80-125/30   | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 174 | 320 | 607 | 400 | 548 | 106 | 127    |
| FCTE 80-125/40   | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 197 | 320 | 607 | 400 | 569 | 106 | 133    |
| FCTE 80-125/55   | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 214 | 320 | 607 | 400 | 603 | 106 | 137    |
| FCTE 80-160/75   | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 256 | 320 | 607 | 400 | 617 | 106 | 169    |
| FCTE 80-200/110  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 256 | 380 | 722 | 500 | 662 | 112 | 231    |
| FCTE 80-200/150  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 751 | 112 | 251    |
| FCTE 80-200/185  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 751 | 112 | 271    |
| FCTE 80-200/220  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 751 | 112 | 295    |
| FCTE 100-160/110 | 100             | 100 | 340 | 270 | 72 | 150 | 175 | 256 | 360 | 670 | 500 | 681 | 118 | 252    |
| FCTE 100-200/185 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 313 | 410 | 798 | 550 | 774 | 128 | 363    |
| FCTE 100-200/220 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 313 | 410 | 798 | 550 | 774 | 128 | 387    |

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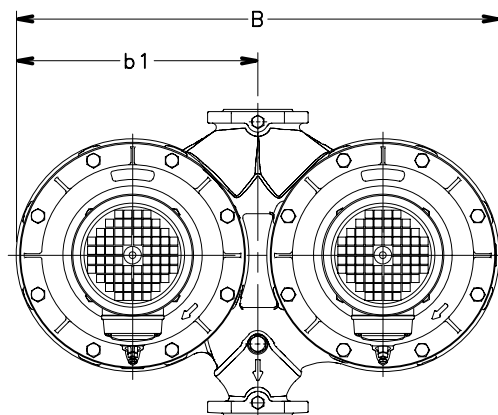
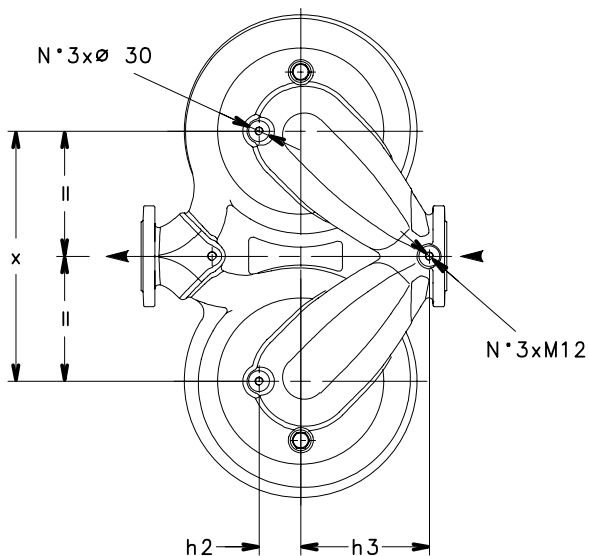
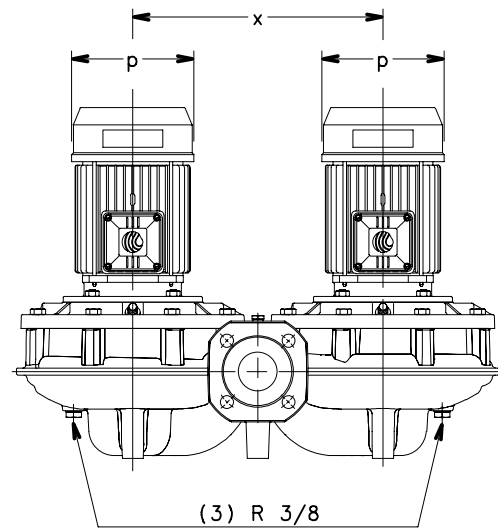
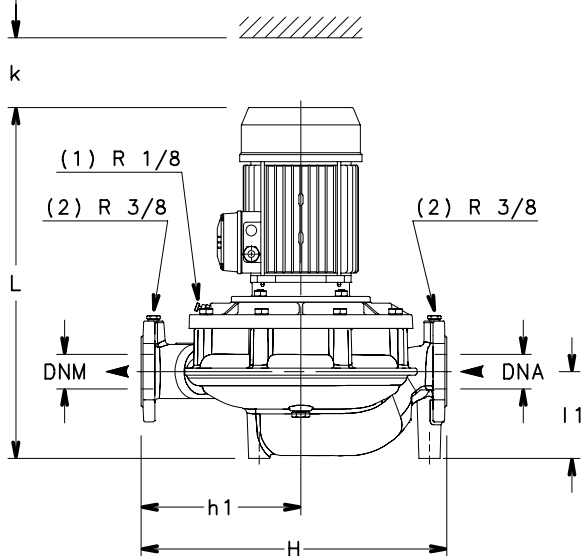


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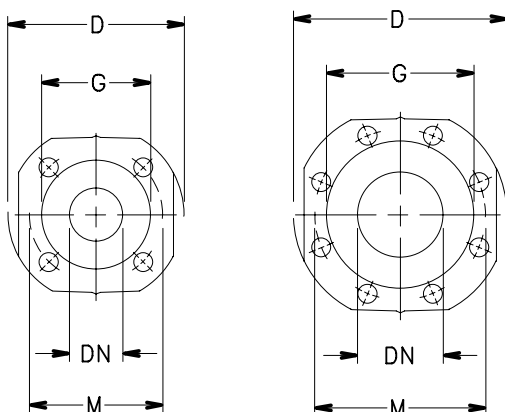
## Lowara

### FCTE4 SERIES DIMENSIONS AND WEIGHTS

CLEARANCE FOR DISASSEMBLY



- (1) AIR VALVE
- (2) PRESSURE GAUGE CONNECTOR
- (3) DRAIN



#### PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS |
|-----|-----|-----|-----|-------|------|-----------|
|     |     |     |     | N°    | DIA. | MAX.      |
| 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        |

05205-EN\_A\_DD

## FCTE4 SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE        | DIMENSIONS (mm) |     |     |     |    |     |     |     |     |     |     |     |     | WEIGHT |
|------------------|-----------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
|                  | DNA             | DNM | b1  | h1  | h2 | h3  | l1  | p   | x   | B   | H   | L   | k   |        |
| FCTE4 40-125/02A | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 140 | 250 | 490 | 320 | 420 | 90  | 46     |
| FCTE4 40-125/02  | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 140 | 250 | 490 | 320 | 420 | 90  | 46     |
| FCTE4 40-160/02  | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 140 | 250 | 490 | 320 | 420 | 90  | 48     |
| FCTE4 40-160/03  | 40              | 40  | 245 | 170 | 50 | 120 | 89  | 140 | 250 | 490 | 320 | 420 | 90  | 50     |
| FCTE4 40-200/05  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 155 | 360 | 695 | 440 | 460 | 101 | 83     |
| FCTE4 40-200/07  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 155 | 360 | 695 | 440 | 460 | 101 | 83     |
| FCTE4 40-250/11  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 174 | 360 | 695 | 440 | 495 | 101 | 123    |
| FCTE4 40-250/15  | 40              | 40  | 348 | 220 | 50 | 190 | 97  | 174 | 360 | 695 | 440 | 495 | 101 | 125    |
| FCTE4 50-125/02  | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 140 | 260 | 500 | 340 | 425 | 91  | 49     |
| FCTE4 50-125/03  | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 140 | 260 | 500 | 340 | 425 | 91  | 51     |
| FCTE4 50-160/05  | 50              | 50  | 250 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 457 | 91  | 53     |
| FCTE4 50-200/07  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 155 | 360 | 695 | 440 | 488 | 110 | 102    |
| FCTE4 50-200/11  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 174 | 360 | 695 | 440 | 523 | 110 | 122    |
| FCTE4 50-250/15  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 174 | 360 | 695 | 440 | 523 | 110 | 128    |
| FCTE4 50-250/22  | 50              | 50  | 348 | 230 | 60 | 185 | 125 | 214 | 360 | 695 | 440 | 547 | 110 | 140    |
| FCTE4 65-125/03  | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 140 | 310 | 593 | 340 | 442 | 96  | 75     |
| FCTE4 65-125/05  | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 155 | 310 | 593 | 340 | 474 | 96  | 83     |
| FCTE4 65-160/07  | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 155 | 310 | 593 | 340 | 474 | 96  | 91     |
| FCTE4 65-160/11  | 65              | 65  | 297 | 185 | 55 | 125 | 108 | 174 | 310 | 593 | 340 | 509 | 96  | 107    |
| FCTE4 65-200/15  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 174 | 360 | 695 | 475 | 528 | 109 | 130    |
| FCTE4 65-250/22  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 214 | 360 | 695 | 475 | 552 | 109 | 152    |
| FCTE4 65-250/30  | 65              | 65  | 348 | 260 | 59 | 185 | 130 | 214 | 360 | 695 | 475 | 583 | 109 | 156    |
| FCTE4 80-125/07  | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 155 | 320 | 607 | 400 | 513 | 106 | 98     |
| FCTE4 80-125/11  | 80              | 80  | 304 | 210 | 70 | 110 | 141 | 174 | 320 | 607 | 400 | 548 | 106 | 116    |
| FCTE4 80-200/15  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 174 | 380 | 722 | 500 | 555 | 112 | 153    |
| FCTE4 80-200/22  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500 | 579 | 112 | 165    |
| FCTE4 80-200/30  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500 | 610 | 112 | 173    |
| FCTE4 80-250/40  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500 | 655 | 112 | 225    |
| FCTE4 80-250/55  | 80              | 80  | 368 | 280 | 80 | 140 | 157 | 256 | 380 | 722 | 500 | 662 | 112 | 241    |
| FCTE4 100-160/15 | 100             | 100 | 340 | 270 | 72 | 150 | 175 | 174 | 360 | 670 | 500 | 574 | 118 | 146    |
| FCTE4 100-200/22 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550 | 602 | 128 | 201    |
| FCTE4 100-200/30 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550 | 633 | 128 | 205    |
| FCTE4 100-250/40 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550 | 678 | 128 | 253    |
| FCTE4 100-250/55 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 256 | 410 | 798 | 550 | 685 | 128 | 265    |
| FCTE4 100-250/75 | 100             | 100 | 408 | 310 | 80 | 150 | 180 | 256 | 410 | 798 | 550 | 685 | 128 | 285    |

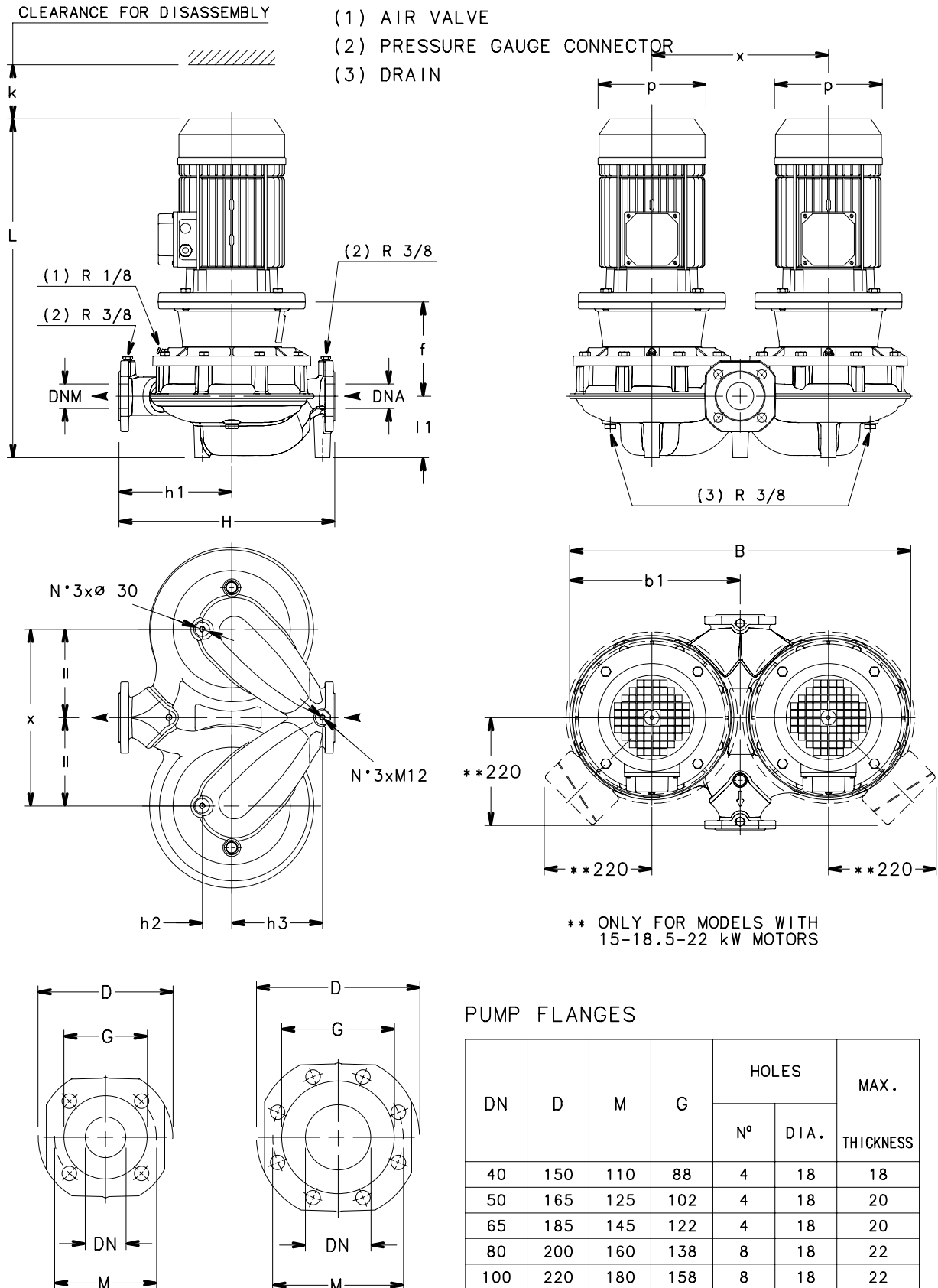
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# ITT

## Lowara

### FCTS SERIES DIMENSIONS AND WEIGHTS



05253-EN\_C\_DD

# **FCTS SERIES** **DIMENSIONS AND WEIGHTS**

| PUMP TYPE        | DIMENSIONS (mm) |     |     |     |     |    |     |     |     |     |     |     |     |     | WEIGHT<br>kg |
|------------------|-----------------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
|                  | DNA             | DNM | b1  | f   | h1  | h2 | h3  | l1  | p   | x   | B   | H   | L   | k   |              |
| FCTS 40-125/07   | 40              | 40  | 245 | 155 | 170 | 50 | 120 | 89  | 140 | 250 | 490 | 320 | 470 | 90  | 58           |
| FCTS 40-125/11   | 40              | 40  | 245 | 155 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 507 | 90  | 60           |
| FCTS 40-160/15   | 40              | 40  | 245 | 155 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 507 | 90  | 62           |
| FCTS 40-160/22   | 40              | 40  | 245 | 155 | 170 | 50 | 120 | 89  | 155 | 250 | 490 | 320 | 507 | 90  | 66           |
| FCTS 40-200/30   | 40              | 40  | 348 | 165 | 220 | 50 | 190 | 97  | 174 | 360 | 695 | 440 | 560 | 101 | 133          |
| FCTS 40-200/40   | 40              | 40  | 348 | 165 | 220 | 50 | 190 | 97  | 197 | 360 | 695 | 440 | 581 | 101 | 145          |
| FCTS 40-200/55   | 40              | 40  | 348 | 192 | 220 | 50 | 190 | 97  | 214 | 360 | 695 | 440 | 664 | 101 | 171          |
| FCTS 40-250/75   | 40              | 40  | 348 | 192 | 220 | 50 | 190 | 97  | 256 | 360 | 695 | 440 | 656 | 101 | 207          |
| FCTS 40-250/110  | 40              | 40  | 348 | 222 | 220 | 50 | 190 | 97  | 256 | 360 | 695 | 440 | 747 | 101 | 235          |
| FCTS 50-125/11   | 50              | 50  | 250 | 156 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 512 | 91  | 63           |
| FCTS 50-125/15   | 50              | 50  | 250 | 156 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 512 | 91  | 67           |
| FCTS 50-160/22   | 50              | 50  | 250 | 156 | 180 | 55 | 130 | 92  | 155 | 260 | 500 | 340 | 512 | 91  | 83           |
| FCTS 50-160/30   | 50              | 50  | 250 | 166 | 180 | 55 | 130 | 92  | 174 | 260 | 500 | 340 | 556 | 91  | 95           |
| FCTS 50-160/40   | 50              | 50  | 250 | 166 | 180 | 55 | 130 | 92  | 197 | 260 | 500 | 340 | 577 | 91  | 109          |
| FCTS 50-200/55   | 50              | 50  | 348 | 192 | 230 | 60 | 185 | 125 | 214 | 360 | 695 | 440 | 692 | 110 | 178          |
| FCTS 50-200/75   | 50              | 50  | 348 | 192 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 684 | 110 | 212          |
| FCTS 50-250/110A | 50              | 50  | 348 | 222 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 775 | 110 | 226          |
| FCTS 50-250/110  | 50              | 50  | 348 | 222 | 230 | 60 | 185 | 125 | 256 | 360 | 695 | 440 | 775 | 110 | 226          |
| FCTS 50-250/150  | 50              | 50  | 348 | 222 | 230 | 60 | 185 | 125 | 313 | 360 | 695 | 440 | 841 | 110 | 246          |
| FCTS 65-125/22   | 65              | 65  | 297 | 158 | 185 | 55 | 125 | 108 | 155 | 310 | 593 | 340 | 529 | 96  | 127          |
| FCTS 65-125/30   | 65              | 65  | 297 | 168 | 185 | 55 | 125 | 108 | 174 | 310 | 593 | 340 | 574 | 96  | 123          |
| FCTS 65-125/40   | 65              | 65  | 297 | 168 | 185 | 55 | 125 | 108 | 197 | 310 | 593 | 340 | 595 | 96  | 133          |
| FCTS 65-160/55   | 65              | 65  | 297 | 195 | 185 | 55 | 125 | 108 | 214 | 310 | 593 | 340 | 678 | 96  | 159          |
| FCTS 65-160/75   | 65              | 65  | 297 | 195 | 185 | 55 | 125 | 108 | 256 | 310 | 593 | 340 | 670 | 96  | 189          |
| FCTS 65-200/110A | 65              | 65  | 348 | 222 | 260 | 59 | 185 | 130 | 256 | 360 | 695 | 475 | 780 | 109 | 258          |
| FCTS 65-200/110  | 65              | 65  | 348 | 222 | 260 | 59 | 185 | 130 | 256 | 360 | 695 | 475 | 780 | 109 | 258          |
| FCTS 65-250/150  | 65              | 65  | 348 | 222 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 846 | 109 | 260          |
| FCTS 65-250/185  | 65              | 65  | 348 | 222 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 846 | 109 | 272          |
| FCTS 65-250/220  | 65              | 65  | 348 | 222 | 260 | 59 | 185 | 130 | 313 | 360 | 695 | 475 | 846 | 109 | 292          |
| FCTS 80-125/30   | 80              | 80  | 304 | 174 | 210 | 70 | 110 | 141 | 174 | 320 | 607 | 400 | 613 | 106 | 162          |
| FCTS 80-125/40   | 80              | 80  | 304 | 174 | 210 | 70 | 110 | 141 | 197 | 320 | 607 | 400 | 634 | 106 | 164          |
| FCTS 80-125/55   | 80              | 80  | 304 | 201 | 210 | 70 | 110 | 141 | 214 | 320 | 607 | 400 | 717 | 106 | 170          |
| FCTS 80-160/75   | 80              | 80  | 304 | 201 | 210 | 70 | 110 | 141 | 256 | 320 | 607 | 400 | 709 | 106 | 202          |
| FCTS 80-200/110  | 80              | 80  | 368 | 222 | 280 | 80 | 140 | 157 | 256 | 380 | 722 | 500 | 807 | 112 | 251          |
| FCTS 80-200/150  | 80              | 80  | 368 | 222 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 873 | 112 | 271          |
| FCTS 80-200/185  | 80              | 80  | 368 | 222 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 873 | 112 | 291          |
| FCTS 80-200/220  | 80              | 80  | 368 | 222 | 280 | 80 | 140 | 157 | 313 | 380 | 722 | 500 | 873 | 112 | 315          |
| FCTS 100-160/110 | 100             | 100 | 340 | 223 | 270 | 72 | 150 | 175 | 256 | 360 | 670 | 500 | 826 | 118 | 268          |
| FCTS 100-200/185 | 100             | 100 | 408 | 222 | 310 | 80 | 150 | 180 | 313 | 410 | 798 | 550 | 896 | 128 | 384          |
| FCTS 100-200/220 | 100             | 100 | 408 | 222 | 310 | 80 | 150 | 180 | 313 | 410 | 798 | 550 | 896 | 128 | 407          |

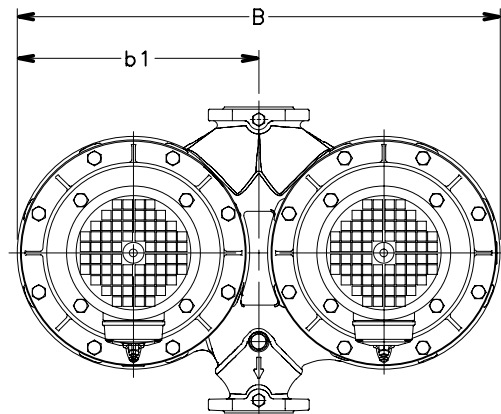
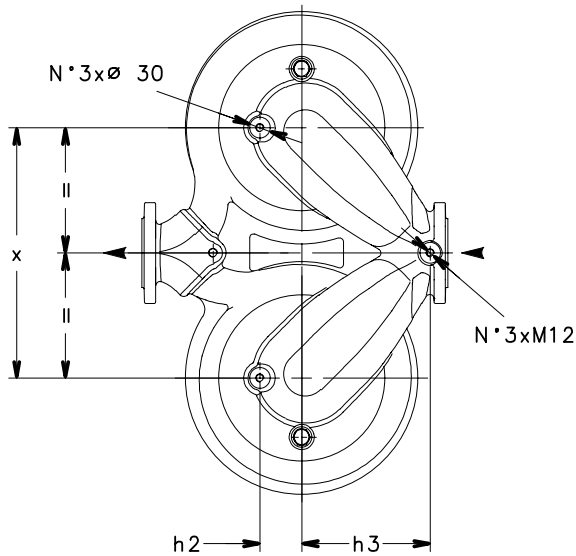
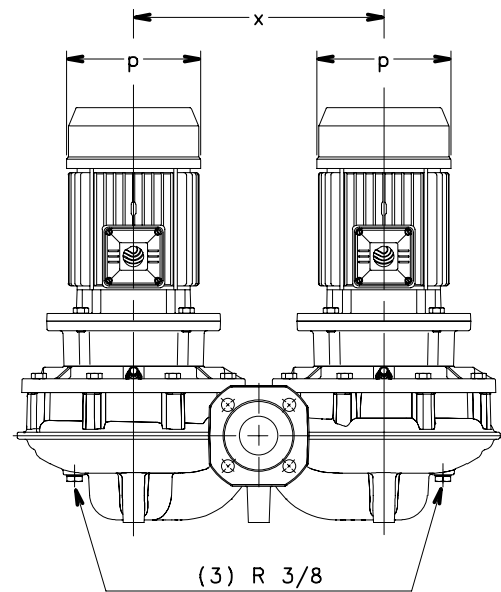
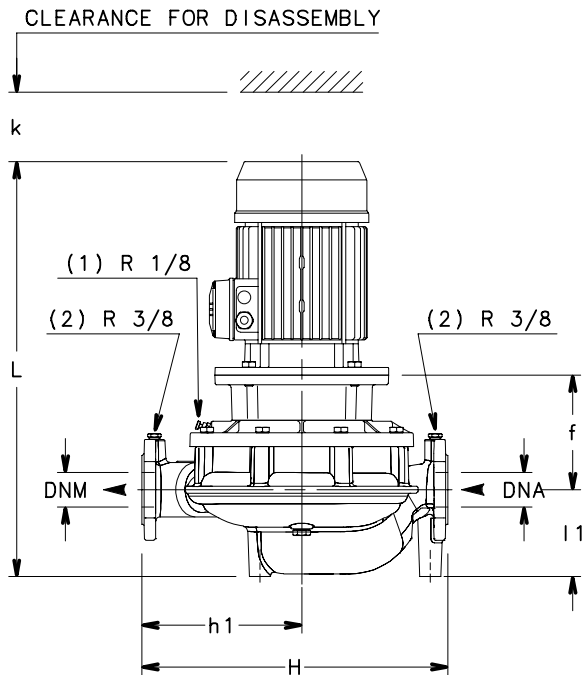
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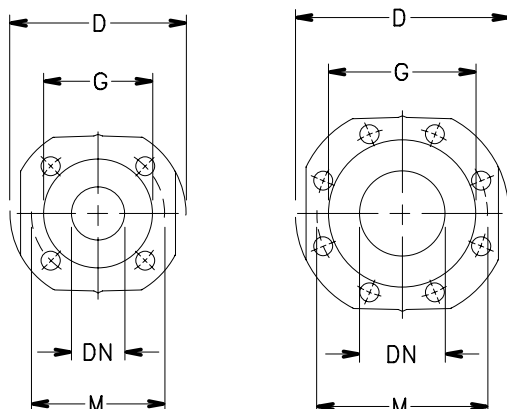
# ITT

## Lowara

### FCTS4 SERIES DIMENSIONS AND WEIGHTS



- (1) AIR VALVE
- (2) PRESSURE GAUGE CONNECTOR
- (3) DRAIN



#### PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS |
|-----|-----|-----|-----|-------|------|-----------|
|     |     |     |     | N°    | DIA. | MAX.      |
| 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        |

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**FCTS4 SERIES  
DIMENSIONS AND WEIGHTS**

| PUMP TYPE        | DIMENSIONS (mm) |     |     |     |     |    |     |     |     |     |     |          |     |     | WEIGHT<br>kg |
|------------------|-----------------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|----------|-----|-----|--------------|
|                  | DNA             | DNM | b1  | f   | h1  | h2 | h3  | l1  | p   | x   | B   | H<br>max | L   | k   |              |
| FCTS4 40-200/05  | 40              | 40  | 348 | 155 | 220 | 50 | 190 | 97  | 155 | 360 | 695 | 440      | 515 | 101 | 107          |
| FCTS4 40-200/07  | 40              | 40  | 348 | 155 | 220 | 50 | 190 | 97  | 155 | 360 | 695 | 440      | 515 | 101 | 113          |
| FCTS4 40-250/11  | 40              | 40  | 348 | 155 | 220 | 50 | 190 | 97  | 174 | 360 | 695 | 440      | 550 | 101 | 129          |
| FCTS4 40-250/15  | 40              | 40  | 348 | 155 | 220 | 50 | 190 | 97  | 174 | 360 | 695 | 440      | 550 | 101 | 133          |
| FCTS4 50-200/07  | 50              | 50  | 348 | 155 | 230 | 60 | 185 | 125 | 155 | 360 | 695 | 440      | 543 | 110 | 120          |
| FCTS4 50-200/11  | 50              | 50  | 348 | 155 | 230 | 60 | 185 | 125 | 174 | 360 | 695 | 440      | 578 | 110 | 140          |
| FCTS4 50-250/15  | 50              | 50  | 348 | 155 | 230 | 60 | 185 | 125 | 174 | 360 | 695 | 440      | 578 | 110 | 142          |
| FCTS4 50-250/22  | 50              | 50  | 348 | 165 | 230 | 60 | 185 | 125 | 214 | 360 | 695 | 440      | 612 | 110 | 152          |
| FCTS4 65-160/07  | 65              | 65  | 297 | 158 | 185 | 55 | 125 | 108 | 155 | 310 | 593 | 340      | 529 | 96  | 95           |
| FCTS4 65-160/11  | 65              | 65  | 297 | 158 | 185 | 55 | 125 | 108 | 174 | 310 | 593 | 340      | 564 | 96  | 109          |
| FCTS4 65-200/15  | 65              | 65  | 348 | 155 | 260 | 59 | 185 | 130 | 174 | 360 | 695 | 475      | 583 | 109 | 136          |
| FCTS4 65-250/22  | 65              | 65  | 348 | 165 | 260 | 59 | 185 | 130 | 214 | 360 | 695 | 475      | 617 | 109 | 160          |
| FCTS4 65-250/30  | 65              | 65  | 348 | 165 | 260 | 59 | 185 | 130 | 214 | 360 | 695 | 475      | 648 | 109 | 166          |
| FCTS4 80-125/07  | 80              | 80  | 304 | 164 | 210 | 70 | 110 | 141 | 155 | 320 | 607 | 400      | 568 | 106 | 106          |
| FCTS4 80-125/11  | 80              | 80  | 304 | 164 | 210 | 70 | 110 | 141 | 174 | 320 | 607 | 400      | 603 | 106 | 130          |
| FCTS4 80-200/15  | 80              | 80  | 368 | 155 | 280 | 80 | 140 | 157 | 174 | 380 | 722 | 500      | 610 | 112 | 175          |
| FCTS4 80-200/22  | 80              | 80  | 368 | 165 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500      | 644 | 112 | 181          |
| FCTS4 80-200/30  | 80              | 80  | 368 | 165 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500      | 675 | 112 | 185          |
| FCTS4 80-250/40  | 80              | 80  | 368 | 165 | 280 | 80 | 140 | 157 | 214 | 380 | 722 | 500      | 720 | 112 | 241          |
| FCTS4 80-250/55  | 80              | 80  | 368 | 192 | 280 | 80 | 140 | 157 | 256 | 380 | 722 | 500      | 754 | 112 | 249          |
| FCTS4 100-160/15 | 100             | 100 | 340 | 156 | 270 | 72 | 150 | 175 | 174 | 360 | 670 | 500      | 629 | 118 | 154          |
| FCTS4 100-200/22 | 100             | 100 | 408 | 165 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550      | 667 | 128 | 173          |
| FCTS4 100-200/30 | 100             | 100 | 408 | 165 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550      | 698 | 128 | 179          |
| FCTS4 100-250/40 | 100             | 100 | 408 | 165 | 310 | 80 | 150 | 180 | 214 | 410 | 798 | 550      | 743 | 128 | 283          |
| FCTS4 100-250/55 | 100             | 100 | 408 | 192 | 310 | 80 | 150 | 180 | 256 | 410 | 798 | 550      | 777 | 128 | 287          |
| FCTS4 100-250/75 | 100             | 100 | 408 | 192 | 310 | 80 | 150 | 180 | 256 | 410 | 798 | 550      | 777 | 128 | 297          |

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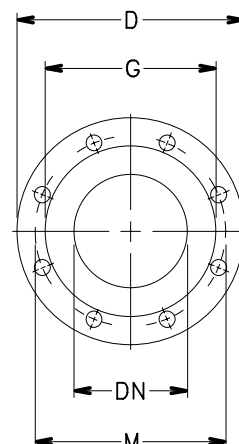
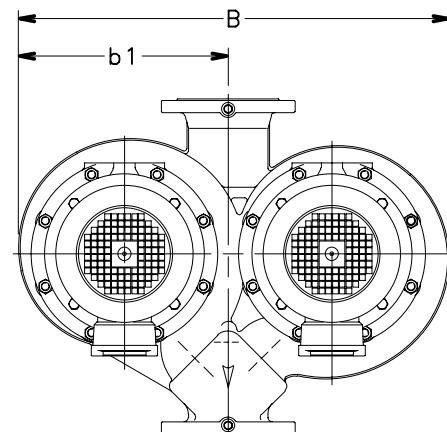
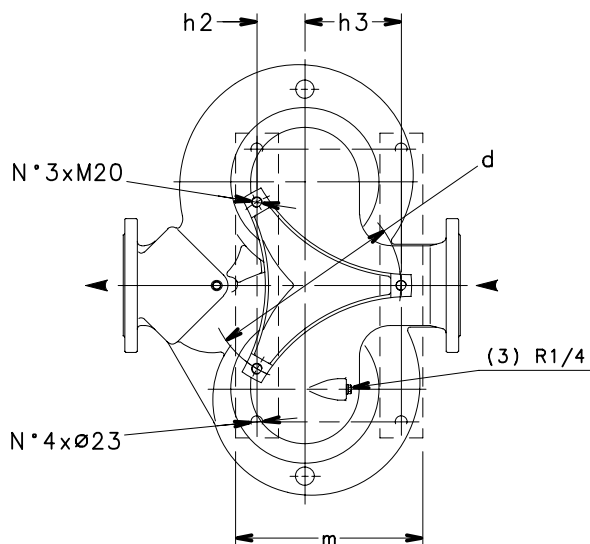
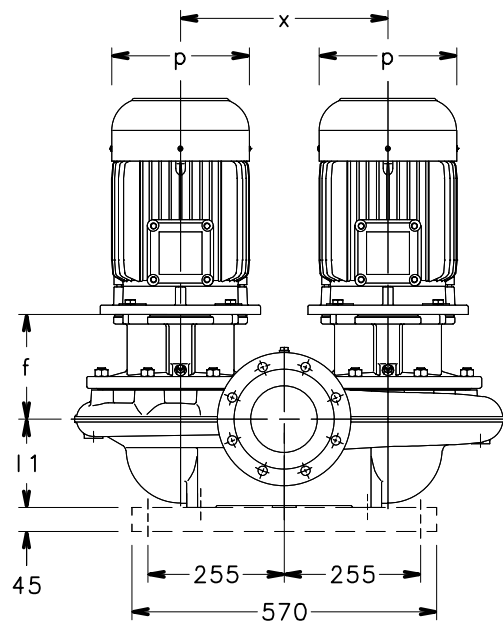
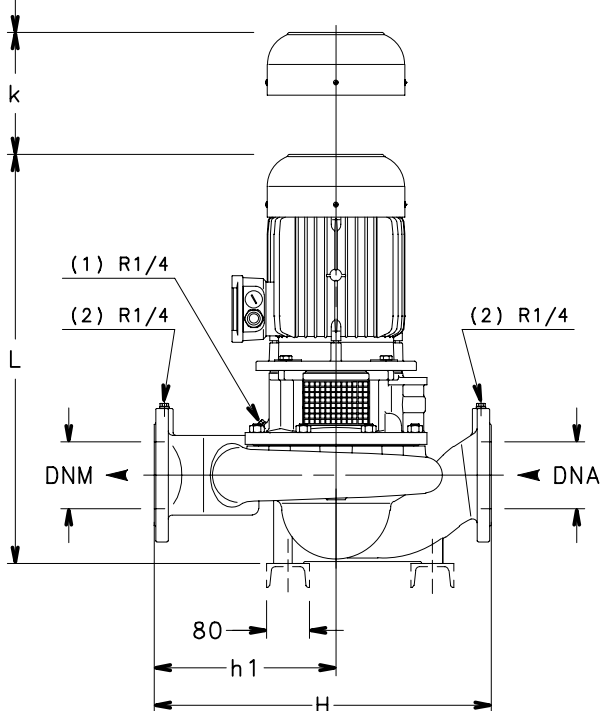


# ITT

Lowara

## FCTS4 (125÷150) SERIES DIMENSIONS AND WEIGHTS

CLEARANCE FOR DISASSEMBLY



(1) AIR VALVE

(2) PRESSURE GAUGE CONNECTOR

(3) DRAIN

PUMP FLANGES

| DN  | D   | M   | G   | HOLES |      | THICKNESS<br>MAX. |
|-----|-----|-----|-----|-------|------|-------------------|
|     |     |     |     | N°    | DIA. |                   |
| 125 | 250 | 210 | 188 | 8     | 18   | 26                |
| 150 | 285 | 240 | 212 | 8     | 23   | 26                |

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# ITT

## Lowara

### FCTS4 (125÷150) SERIES DIMENSIONS AND WEIGHTS

| PUMP TYPE         | PUMP DIMENSIONS (mm) |     |     |     |     |                |                |                |                |     |     |     |     |     |     |     | WEIGHT |
|-------------------|----------------------|-----|-----|-----|-----|----------------|----------------|----------------|----------------|-----|-----|-----|-----|-----|-----|-----|--------|
|                   | DNA                  | DNM | b1  | d   | f   | h <sub>1</sub> | h <sub>2</sub> | h <sub>3</sub> | l <sub>1</sub> | m   | p   | x   | B   | H   | L   | k   | kg     |
| FCTS4 125-160/30  | 125                  | 125 | 422 | 360 | 196 | 350            | 90             | 180            | 175            | 350 | 214 | 386 | 800 | 630 | 724 | 143 | 254    |
| FCTS4 125-200/40  | 125                  | 125 | 368 | 360 | 196 | 330            | 90             | 180            | 160            | 350 | 214 | 349 | 716 | 620 | 754 | 153 | 252    |
| FCTS4 125-200/55  | 125                  | 125 | 368 | 360 | 196 | 330            | 90             | 180            | 160            | 350 | 256 | 349 | 716 | 620 | 761 | 153 | 294    |
| FCTS4 125-250/75  | 125                  | 125 | 412 | 360 | 196 | 340            | 90             | 180            | 165            | 350 | 256 | 388 | 805 | 630 | 766 | 150 | 325    |
| FCTS4 125-250/110 | 125                  | 125 | 412 | 360 | 226 | 340            | 90             | 180            | 165            | 350 | 313 | 388 | 805 | 630 | 885 | 150 | 453    |
| FCTS4 150-200/55  | 150                  | 150 | 471 | 460 | 211 | 400            | 115            | 230            | 175            | 425 | 256 | 440 | 900 | 720 | 791 | 160 | 356    |
| FCTS4 150-200/75  | 150                  | 150 | 471 | 460 | 211 | 400            | 115            | 230            | 175            | 425 | 256 | 440 | 900 | 720 | 791 | 160 | 350    |
| FCTS4 150-250/110 | 150                  | 150 | 498 | 460 | 226 | 405            | 115            | 230            | 200            | 425 | 313 | 466 | 963 | 755 | 920 | 158 | 532    |
| FCTS4 150-250/150 | 150                  | 150 | 498 | 460 | 226 | 405            | 115            | 230            | 200            | 425 | 313 | 466 | 963 | 755 | 920 | 158 | 538    |
| FCTS4 150-250/185 | 150                  | 150 | 498 | 460 | 226 | 405            | 115            | 230            | 200            | 425 | 314 | 466 | 963 | 755 | 964 | 158 | 482    |

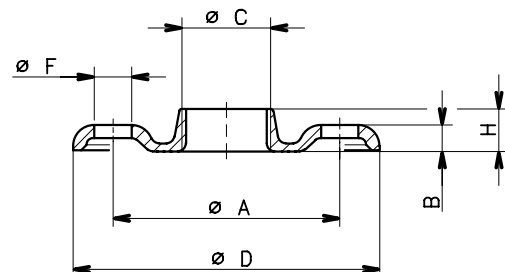
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# **ACCESSORIES**

**FC-FCT SERIES**
**ROUND THREADED COUNTERFLANGES ACCORDING TO EN 1092-1**

| DN  | ø C   | DIMENSIONS (mm) |    |     |    | HOLES |    | PN |
|-----|-------|-----------------|----|-----|----|-------|----|----|
|     |       | ø A             | B  | ø D | H  | ø F   | N° |    |
| 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 |

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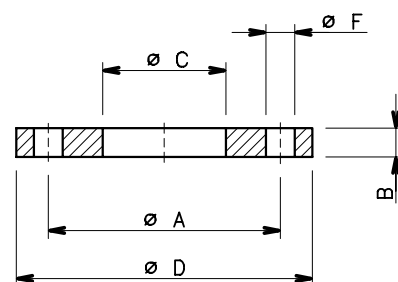


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**FC-FCT SERIES**
**ROUND WELD COUNTERFLANGES ACCORDING TO EN 1092-1**

| DN  | ø C   | DIMENSIONS (mm) |    |     | HOLES |    | PN |
|-----|-------|-----------------|----|-----|-------|----|----|
|     |       | ø A             | B  | ø D | ø F   | N° |    |
| 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 |

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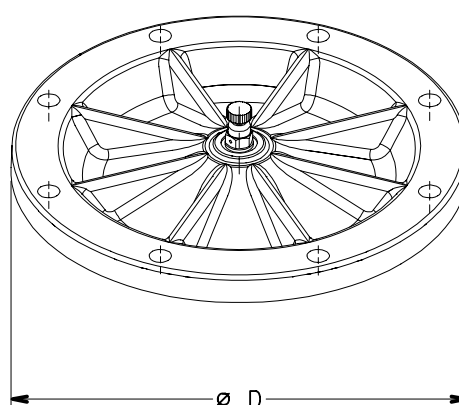


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**FCT SERIES**
**BLIND FLANGE KIT**

| FLANGE KIT              |           |     |
|-------------------------|-----------|-----|
| PUMP TYPE               | CODE      | ø D |
| FCT40-125 / FCT40-160   | 109393750 | 225 |
| FCT50-125 / FCT50-160   |           |     |
| FCT65-125 / FCT65-160   | 109393760 | 274 |
| FCT80-125 / FCT80-160   |           |     |
| FCT100-160              | 109393770 | 322 |
| FCT40-200 / FCT40-250   |           |     |
| FCT50-200 / FCT50-250   |           |     |
| FCT65-200 / FCT65-250   |           |     |
| FCT80-200 / FCT80-250   |           |     |
| FCT100-200 / FCT100-250 | 109393800 | 280 |
| FCT125-160 / FCT125-200 |           |     |
| FCT150-200              | 109393810 | 305 |
| FCT125-250 / FCT150-250 | 109393820 | 350 |

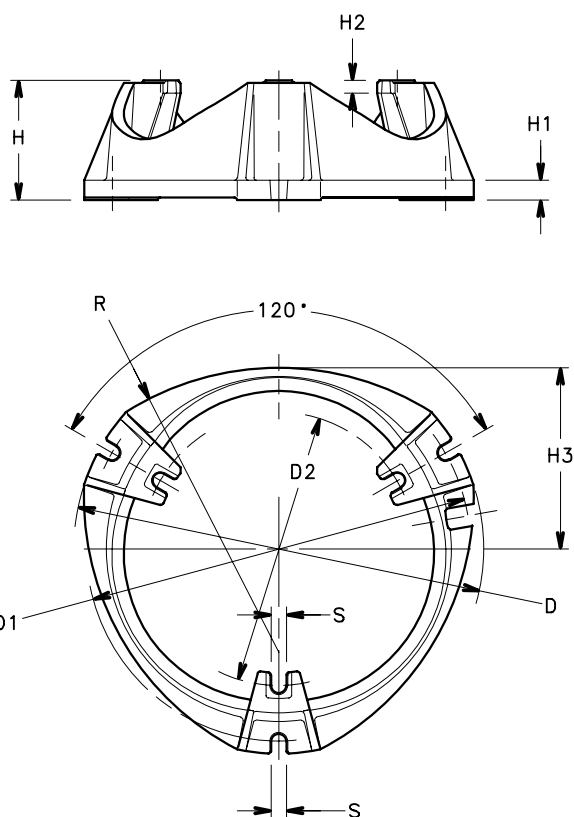
fct-flangia-cieca-en\_a\_td



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## FC SERIES MOUNTING BASE

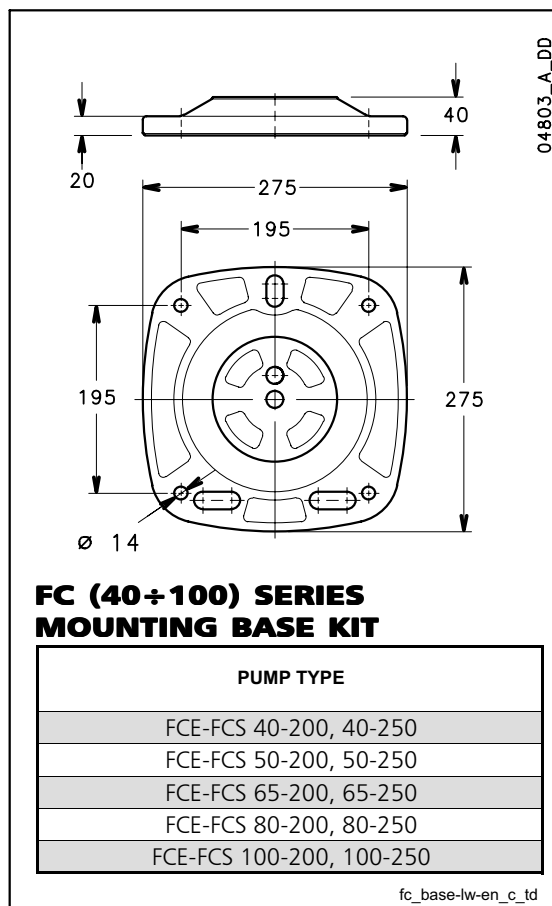
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### FC (125÷150) SERIES MOUNTING BASE KIT

| PUMP TYPE                               | DIMENSIONS (mm) |     |     |     |     |    |    |     |    |
|-----------------------------------------|-----------------|-----|-----|-----|-----|----|----|-----|----|
|                                         | R               | D   | D1  | D2  | H   | H1 | H2 | H3  | S  |
| FCS4 125-160, 125-200                   | 273             | 410 | 384 | 274 | 120 | 20 | 14 | 183 | 14 |
| FCS4 125-250, 125-315, 150-200, 150-250 | 333             | 480 | 450 | 320 | 140 | 23 | 15 | 212 | 18 |

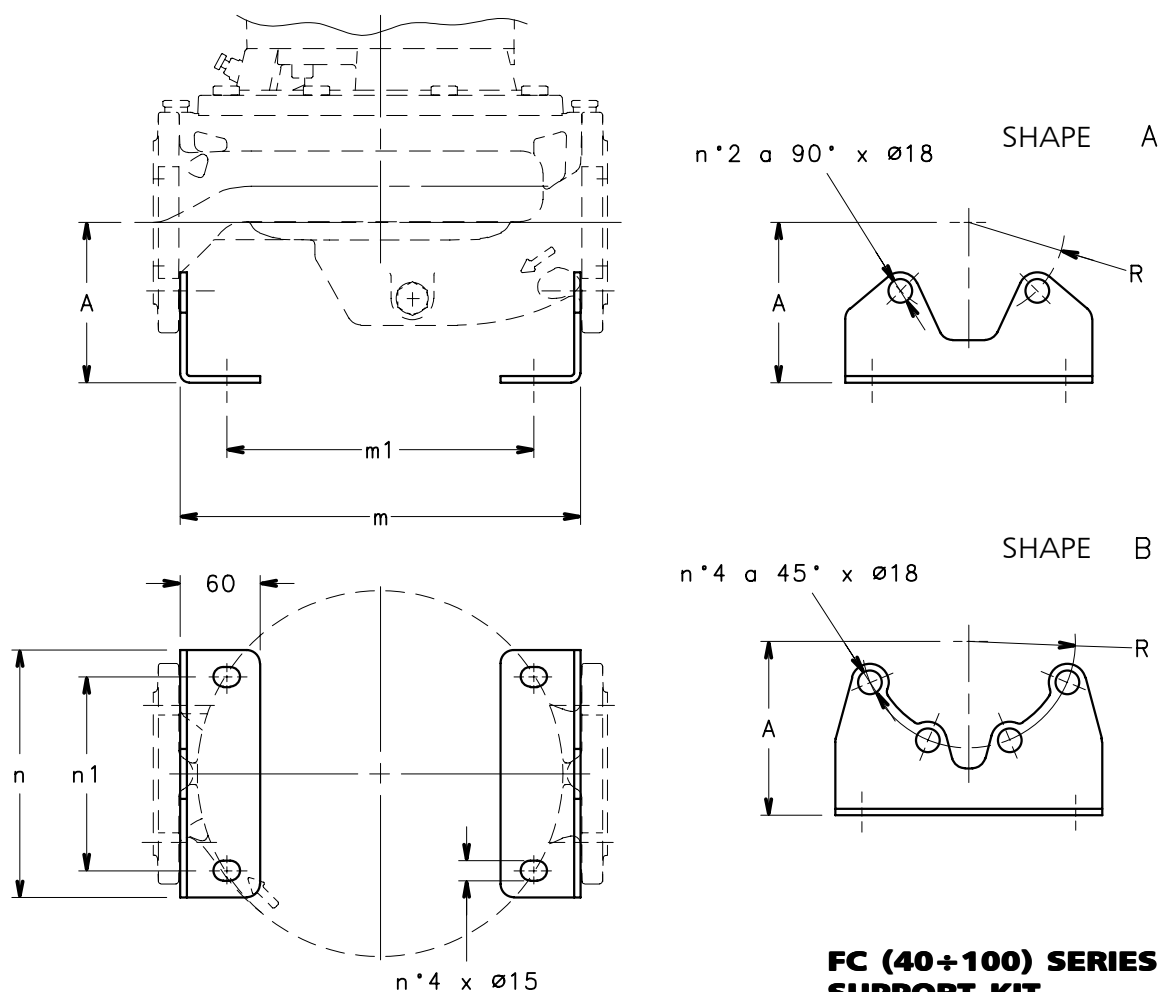
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### FC (40÷100) SERIES MOUNTING BASE KIT

| PUMP TYPE                |
|--------------------------|
| FCE-FCS 40-200, 40-250   |
| FCE-FCS 50-200, 50-250   |
| FCE-FCS 65-200, 65-250   |
| FCE-FCS 80-200, 80-250   |
| FCE-FCS 100-200, 100-250 |

fc\_base-lw-en\_c\_td

**FC SERIES  
BRACKETS**

**FC (40+100) SERIES  
SUPPORT KIT**

| PUMP TYPE               |                             | SHAPE | DIMENSIONS (mm) |     |     |     |     |
|-------------------------|-----------------------------|-------|-----------------|-----|-----|-----|-----|
|                         |                             |       | A               | m   | m1  | n   | n1  |
| FCE 40-125 / FCE 40-160 | FCE4 40-125 / FCE4 40-160   | A     | 100             | 284 | 210 | 150 | 110 |
| FCS 40-125 / FCS 40-160 |                             |       |                 |     |     |     |     |
| FCE 40-200 / FCE 40-250 | FCE4 40-200 / FCE4 40-250   | A     | 100             | 404 | 330 | 150 | 110 |
| FCS 40-200 / FCS 40-250 | FCS4 40-200 / FCS4 40-250   |       |                 |     |     |     |     |
| FCE 50-125 / FCE 50-160 | FCE4 50-125 / FCE4 50-160   | A     | 110             | 300 | 230 | 165 | 125 |
| FCS 50-125 / FCS 50-160 |                             |       |                 |     |     |     |     |
| FCE 50-200 / FCE 50-250 | FCE4 50-200 / FCE4 50-250   | A     | 110             | 400 | 330 | 165 | 125 |
| FCS 50-200 / FCS 50-250 | FCS4 50-200 / FCS4 50-250   |       |                 |     |     |     |     |
| FCE 65-125 / FCE 65-160 | FCE4 65-125 / FCE4 65-160   | A     | 120             | 300 | 230 | 185 | 145 |
| FCS 65-125 / FCS 65-160 | FCS4 65-160                 |       |                 |     |     |     |     |
| FCE 65-200 / FCE 65-250 | FCE4 65-200 / FCE4 65-250   | A     | 120             | 435 | 365 | 185 | 145 |
| FCS 65-200 / FCS 65-250 | FCS4 65-200 / FCS4 65-250   |       |                 |     |     |     |     |
| FCE 80-125 / FCE 80-160 | FCE4 80-125                 | B     | 130             | 316 | 250 | 200 | 160 |
| FCS 80-125 / FCS 80-160 | FCS4 80-125                 |       |                 |     |     |     |     |
| FCE 80-200              | FCE4 80-200 / FCE4 80-250   | B     | 130             | 456 | 390 | 200 | 160 |
| FCS 80-200              | FCS4 80-200 / FCS4 80-250   |       |                 |     |     |     |     |
| FCE 100-160             | FCE4 100-160                | B     | 140             | 402 | 330 | 220 | 180 |
| FCS 100-160             | FCS4 100-160                |       |                 |     |     |     |     |
| FCE 100-200             | FCE4 100-200 / FCE4 100-250 | B     | 140             | 502 | 430 | 220 | 180 |
| FCS 100-200             | FCS4 100-200 / FCS4 100-250 |       |                 |     |     |     |     |

fc\_staffe-en\_a\_td

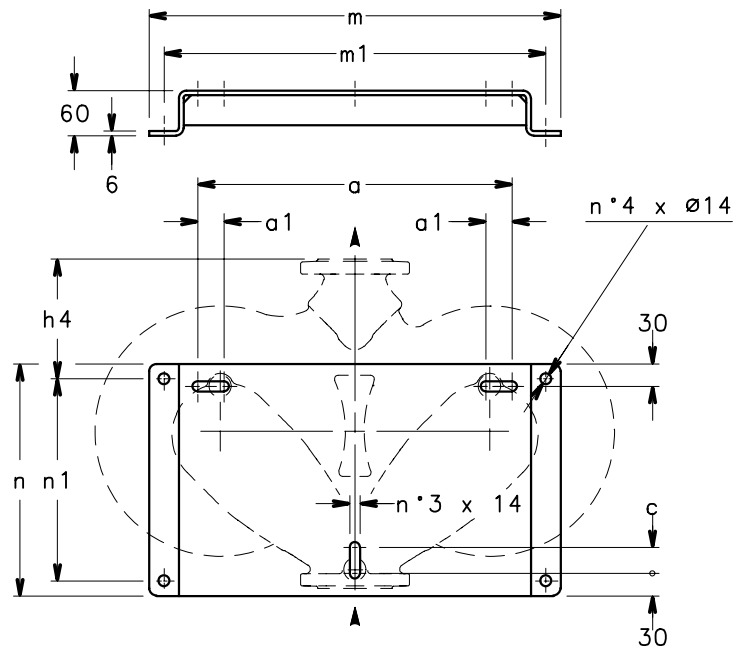
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# ITT

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## FCT (40÷100) SERIES MOUNTING BASE KIT

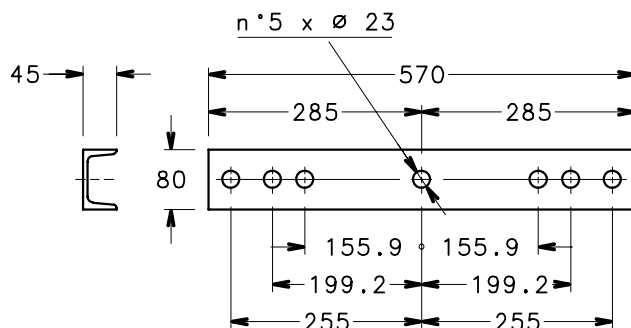


| PUMP<br>SIZE      | DIMENSIONS (mm) |    |    |     |     |     |     |     |
|-------------------|-----------------|----|----|-----|-----|-----|-----|-----|
|                   | a               | a1 | c  | h4  | m   | m1  | n   | n1  |
| 40-125 / 40-160   | 330             | 45 | 25 | 110 | 460 | 420 | 250 | 210 |
| 50-125 / 50-160   | 330             | 45 | 25 | 115 | 460 | 420 | 250 | 210 |
| 65-125 / 65-160   | 330             | 45 | 25 | 120 | 460 | 420 | 250 | 210 |
| 80-125 / 80-160   | 330             | 45 | 25 | 130 | 460 | 420 | 250 | 210 |
| 100-160           | 420             | 35 | 35 | 188 | 550 | 510 | 310 | 270 |
| 40-200 / 40-250   | 420             | 35 | 35 | 160 | 550 | 510 | 310 | 270 |
| 50-200 / 50-250   | 420             | 35 | 35 | 160 | 550 | 510 | 310 | 270 |
| 65-200 / 65-250   | 420             | 35 | 35 | 191 | 550 | 510 | 310 | 270 |
| 80-200 / 80-250   | 420             | 35 | 35 | 190 | 550 | 510 | 310 | 270 |
| 100-200 / 100-250 | 420             | 35 | 35 | 220 | 550 | 510 | 310 | 270 |

fct-piede-en\_a\_td

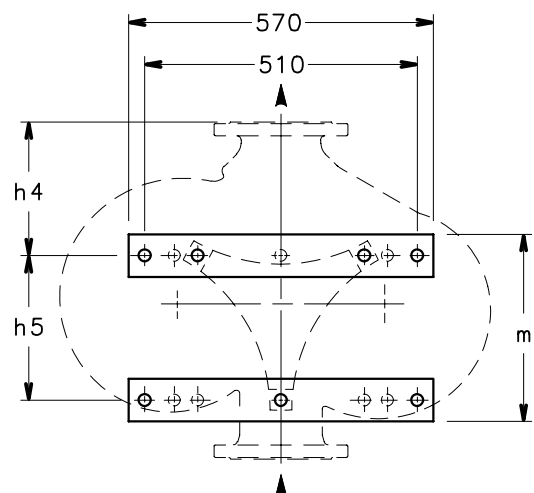
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## FCT (125÷150) SERIES MOUNTING BASE KIT



| PUMP<br>TYPE  | DIMENSIONS (mm) |     |     |
|---------------|-----------------|-----|-----|
|               | h4              | h5  | m   |
| FCTS4 125-160 | 260             | 270 | 350 |
| FCTS4 125-200 | 240             | 270 | 350 |
| FCTS4 125-250 | 250             | 270 | 350 |
| FCTS4 150-200 | 285             | 345 | 425 |
| FCTS4 150-250 | 290             | 345 | 425 |

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05261\_A\_DD

# **TECHNICAL APPENDIX**

**TYPICAL APPLICATIONS OF FC, FCT SERIES ELECTRIC PUMPS:***Heating, Ventilating &**Air Conditioning (HVAC):*

Condensate return

Air scrubbers

Water re-circulation

Cooling towers

Cooling systems

Temperature control

Chillers

Induction heating

Heat exchangers

Water heating

Booster packagers

*Graphics:*

Film washing

Cooling of presses

*Waste Management:*

Waste treatment

Pollution control

*Agriculture:*

Irrigation

Greenhouses

Cotton humidifiers

*Laundry:*

Commercial washing

## 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:

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

where:

- $h_p$**  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.
- $h_z$**  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.
- $h_f$**  is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.
- $h_{pv}$**  is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid.  $h_{pv}$  is the quotient between the  $P_v$  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 123-124 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 (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.



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

| t<br>°C | T<br>K | ps<br>bar | $\rho$<br>kg/dm <sup>3</sup> | t<br>°C | T<br>K | ps<br>bar | $\rho$<br>kg/dm <sup>3</sup> | t<br>°C | T<br>K | ps<br>bar | $\rho$<br>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                       |         |        |           |                              |

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## 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   |      |        | The hr values must be multiplied by:<br>0.71 for galvanized or painted steel pipes<br>0.54 for stainless steel or copper pipes<br>0.47 for PVC or PE pipes |      |       |      |     |     |     |     |     |     |
|                   |       | 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   | 8,85 | 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  | 1,02 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        | 59,5 | 20,1   | 8,26                                                                                                                                                       | 3,90 | 2,03  | 0,69 |     |     |     |     |     |     |
| 210               | 3500  | v                                 |      |       |      |        |        | 7,43 | 4,76   | 3,30                                                                                                                                                       | 2,43 | 1,86  | 1,19 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        | 79,1 | 26,7   | 11,0                                                                                                                                                       | 5,18 | 2,71  | 0,91 |     |     |     |     |     |     |
| 240               | 4000  | v                                 |      |       |      |        |        | 8,49 | 5,44   | 3,77                                                                                                                                                       | 2,77 | 2,12  | 1,36 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        | 101  | 34,2   | 14,1                                                                                                                                                       | 6,64 | 3,46  | 1,17 |     |     |     |     |     |     |
| 300               | 5000  | v                                 |      |       |      |        |        |      | 6,79   | 4,72                                                                                                                                                       | 3,47 | 2,65  | 1,70 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      | 51,6   | 21,2                                                                                                                                                       | 10,0 | 5,23  | 1,77 |     |     |     |     |     |     |
| 360               | 6000  | v                                 |      |       |      |        |        |      | 8,15   | 5,66                                                                                                                                                       | 4,16 | 3,18  | 2,04 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      | 72,3   | 29,8                                                                                                                                                       | 14,1 | 7,33  | 2,47 |     |     |     |     |     |     |
| 420               | 7000  | v                                 |      |       |      |        |        |      |        | 6,61                                                                                                                                                       | 4,85 | 3,72  | 2,38 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      |        | 39,6                                                                                                                                                       | 18,7 | 9,75  | 3,29 |     |     |     |     |     |     |
| 480               | 8000  | v                                 |      |       |      |        |        |      |        | 7,55                                                                                                                                                       | 5,55 | 4,25  | 2,72 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      |        | 50,7                                                                                                                                                       | 23,9 | 12,49 | 4,21 |     |     |     |     |     |     |
| 540               | 9000  | v                                 |      |       |      |        |        |      |        | 8,49                                                                                                                                                       | 6,24 | 4,78  | 3,06 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      |        | 63,0                                                                                                                                                       | 29,8 | 15,5  | 5,24 |     |     |     |     |     |     |
| 600               | 10000 | v                                 |      |       |      |        |        |      |        | 6,93                                                                                                                                                       | 5,31 | 4,40  | 3,40 |     |     |     |     |     |     |
|                   |       | hr                                |      |       |      |        |        |      |        | 36,2                                                                                                                                                       | 18,9 | 6,36  | 2,62 |     |     |     |     |     |     |

G-at-pct\_a\_th

hr = flow resistance for 100m of straight pipeline (m)

V = water speed (m/s)

**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<br>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<br>per minute<br>l/min | Cubic metres<br>per hour<br>m <sup>3</sup> /h | Cubic feet<br>per hour<br>ft <sup>3</sup> /h | Cubic feet<br>per minute<br>ft <sup>3</sup> /min | Imp. gal.<br>per minute<br>Imp. gal/min | US gal.<br>per minute<br>Us gal./min |
|-------------------------------|-----------------------------------------------|----------------------------------------------|--------------------------------------------------|-----------------------------------------|--------------------------------------|
| <b>1,0000</b>                 | 0,0600                                        | 2,1189                                       | 0,0353                                           | 0,2200                                  | 0,2640                               |
| 16,6667                       | <b>1,0000</b>                                 | 35,3147                                      | 0,5886                                           | 3,6660                                  | 4,4030                               |
| 0,4720                        | 0,0283                                        | <b>1,0000</b>                                | 0,0167                                           | 0,1040                                  | 0,1250                               |
| 28,3170                       | 1,6990                                        | 60,0000                                      | <b>1,0000</b>                                    | 6,2290                                  | 7,4800                               |
| 4,5460                        | 0,2728                                        | 9,6326                                       | 0,1605                                           | <b>1,0000</b>                           | 1,2010                               |
| 3,7850                        | 0,2271                                        | 8,0209                                       | 0,1337                                           | 0,8330                                  | <b>1,0000</b>                        |

## PRESSURE AND HEAD

| Newton per<br>square metre<br>N/m <sup>2</sup> | kilo Pascal<br>kPa | bar<br>bar         | Pound force per<br>square inch<br>psi | metre<br>of water<br>m H <sub>2</sub> O | millimetre di<br>mercury<br>mm Hg |
|------------------------------------------------|--------------------|--------------------|---------------------------------------|-----------------------------------------|-----------------------------------|
| <b>1,0000</b>                                  | 0,0010             | $1 \times 10^{-5}$ | $1,45 \times 10^{-4}$                 | $1,02 \times 10^{-4}$                   | 0,0075                            |
| 1000,0000                                      | <b>1,0000</b>      | 0,0100             | 0,1450                                | 0,1020                                  | 7,5000                            |
| $1 \times 10^5$                                | 100,0000           | <b>1,0000</b>      | 14,5000                               | 10,2000                                 | 750,1000                          |
| 6895,0000                                      | 6,8950             | 0,0690             | <b>1,0000</b>                         | 0,7030                                  | 51,7200                           |
| 9789,0000                                      | 9,7890             | 0,0980             | 1,4200                                | <b>1,0000</b>                           | 73,4200                           |
| 133,3000                                       | 0,1333             | 0,0013             | 0,0190                                | 0,0140                                  | <b>1,0000</b>                     |

## LENGHT

| millimetre<br>mm | centimetre<br>cm | metre<br>m    | inch<br>in    | foot<br>ft    | yard<br>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<br>m <sup>3</sup> | litre<br>litro | millilitre<br>ml | imp. gallon<br>imp. gal. | US gallon<br>US gal.   | cubic foot<br>ft <sup>3</sup> |
|-------------------------------|----------------|------------------|--------------------------|------------------------|-------------------------------|
| <b>1,0000</b>                 | 1000,0000      | $1 \times 10^6$  | 220,0000                 | 264,2000               | 35,3147                       |
| 0,0010                        | <b>1,0000</b>  | 1000,0000        | 0,2200                   | 0,2642                 | 0,0353                        |
| $1 \times 10^{-6}$            | 0,0010         | <b>1,0000</b>    | $2,2 \times 10^{-4}$     | $2,642 \times 10^{-4}$ | $3,53 \times 10^{-5}$         |
| 0,0045                        | 4,5460         | 4546,0000        | <b>1,0000</b>            | 1,2010                 | 0,1605                        |
| 0,0038                        | 3,7850         | 3785,0000        | 0,8327                   | <b>1,0000</b>          | 0,1337                        |
| 0,0283                        | 28,3170        | 28317,0000       | 6,2288                   | 7,4805                 | <b>1,0000</b>                 |

G-at\_pp-en\_a\_sc

[illegible]





# ITT

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