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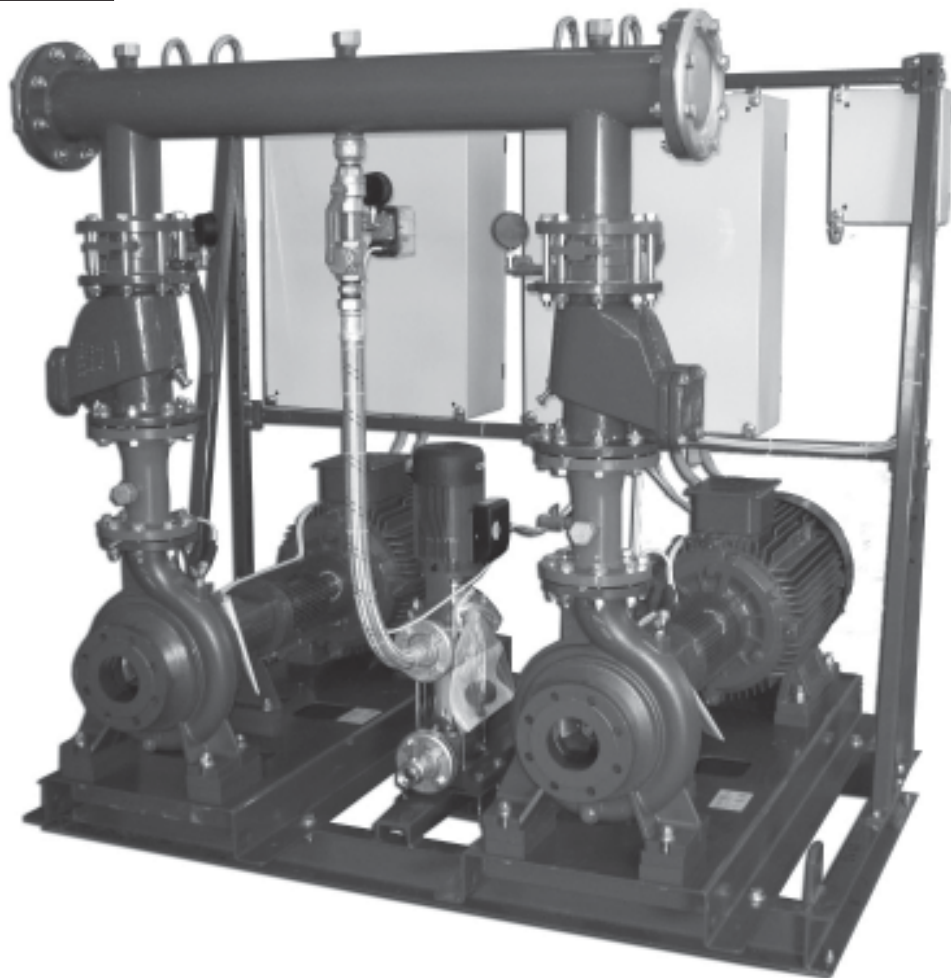
Lowara

GEN Series

Fire-fighting booster sets EN 12845

Horizontal Centrifugal electric pumps FHF and SHF series
equipped with high efficiency PLM motors

50 Hz



Engineered for life



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GEN SERIES OF BOOSTER SETS

GENERAL INTRODUCTION – PRODUCT DESCRIPTION

The GEN booster sets are built in conformity with EN12845 for automatic sprinkler systems and with UNI10779 for hydrant systems.

In accordance with the above standards, all the main components of the booster set are factory connected and assembled.

The configuration of the booster set depends on the number of pumps installed and on the type of electric motor or diesel engine, consistently with the type of supply chosen for the fire-fighting system from among those described in the standard. The water supply can be single, superior, duplicated or combined. Two main service pumps, one backing up the other, are normally installed for fire-fighting systems. The choice of electric motors or diesel engines depends on the level of reliability required from the system. In practice, fire-fighting booster sets have one electric service pump and one diesel service pump.

Point 10.2 of EN 12845 states that for superior or duplicate water supplies, and if more than one pump is installed, no more than one service pump can be driven by the electric motor.

This concept means that mixed assemblies, comprising electric or diesel pumps, have to be installed.

This does not mean that it is not possible to have two electric pumps, one backing up the other, if the ascertained fire risk is low (single supplies) or if a diesel generator is already incorporated in the system.

The Lowara GEN series of booster sets are therefore configured according to system requirements and initial considerations. They are also factory tested and comprise the following:

- One or two horizontal or vertical service pumps with the same hydraulic performance level, driven by an electric motor.
- Two horizontal service pumps with the same hydraulic performance level, driven by an electric motor and a diesel engine.
- A horizontal service pump driven by a diesel engine.

The booster set is built and completed with the following main components:

- A Lowara SV series jockey electric pump (if required), controlled by an electric panel in the automatic mode. The jockey pump is automatically started and stopped by its pressure switch in order to restore supply pressure. This prevents the service pumps from starting and activating the main alarms.
- A control panel for each service pump.
- Two pressure switches for each service pump (if the first fails, the second repeats permission for the pump to start).
- On the discharge side of each service pump there is a on-off valve, a check valve and a tap for connection to the priming circuit for suction lift installations. Moreover, if the service pump works with a closed discharge line, a water recirculation tap has been applied to the pump body in order to prevent the pump from overheating.
- Discharge manifold connected to each service pump, fitted with a weld-on flange for connection to the system.
- Single base containing all the booster set components within a compact structure and ready for installation.

To complete the pump station as requested by the standard, the GEN series of booster sets are fitted with the following accessories :

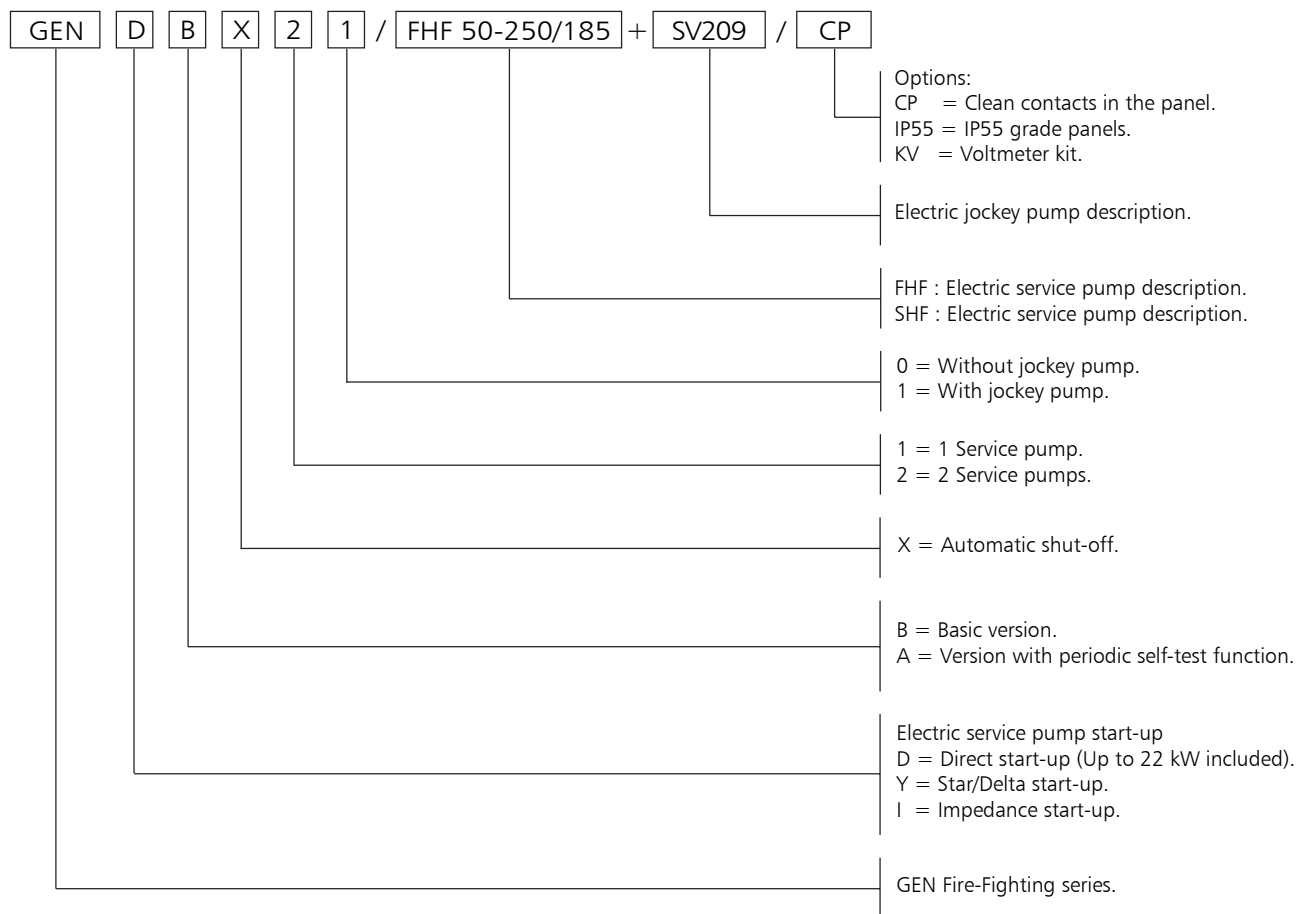
- Suction side kit.
- Flow meter.
- Alarm panel.
- If diesel engine pump is installed, set of spare parts for diesel engines.
- Priming tank with accessories (for suction lift installations).
- 24L diaphragm tanks.



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IDENTIFICATION CODES



REFERENCE STANDARDS

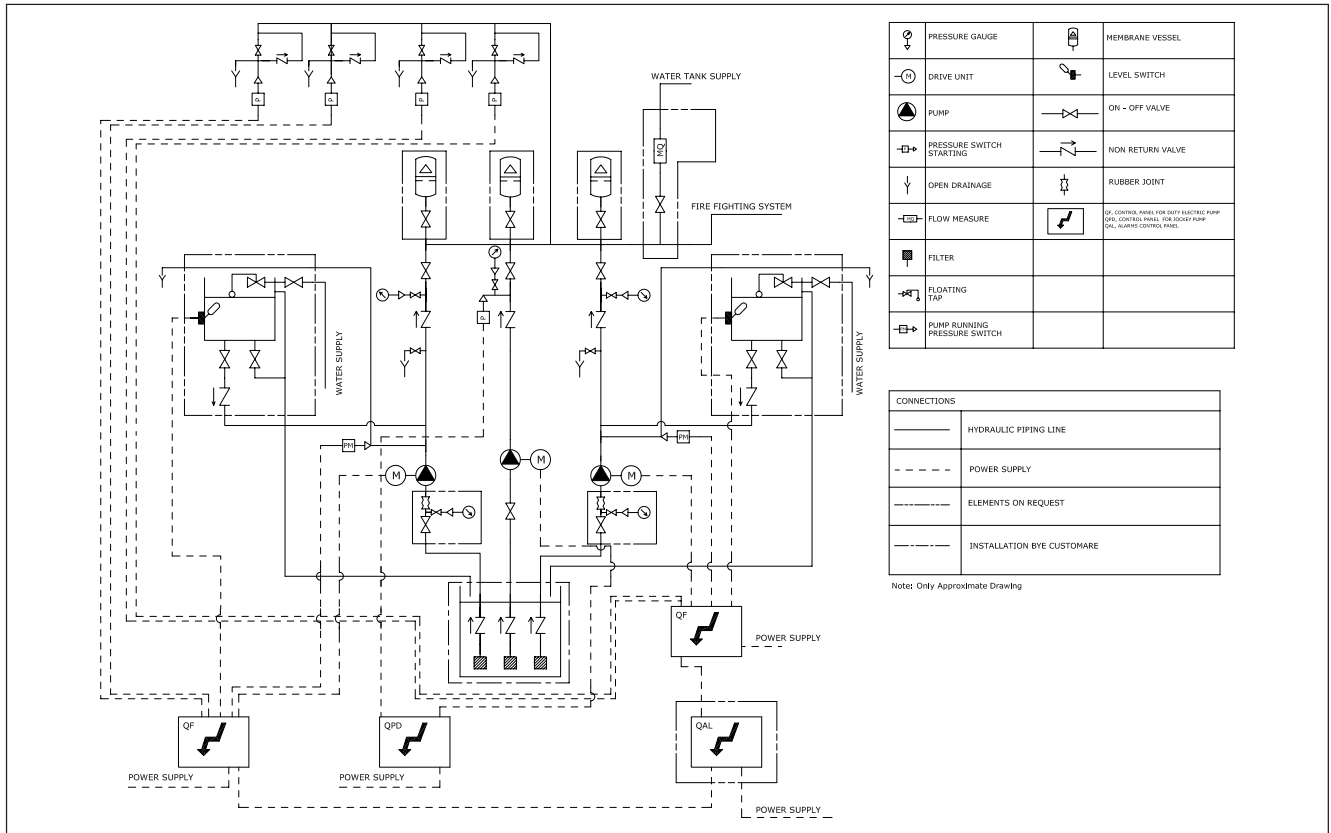
- The Lowara fire-fighting booster sets are EC certified in conformity with the following directives:
 - Machine Directive 98/37/EC.
 - Low Voltage Directive 2006/95/CE.
 - Electromagnetic Compatibility Directive 89/336/EEC and subsequent modifications.
- The electric pump performance is declared to be in accordance with the following standard:
ISO 9906-A Rotodynamic pumps – hydraulic performance tests and acceptance criteria.
- The fire-fighting booster sets conform to the European fire-fighting Standard EN 12845-2009.
The automatic shut-off versions also conform to the UNI 10779 Italian Standard for hydrant systems.



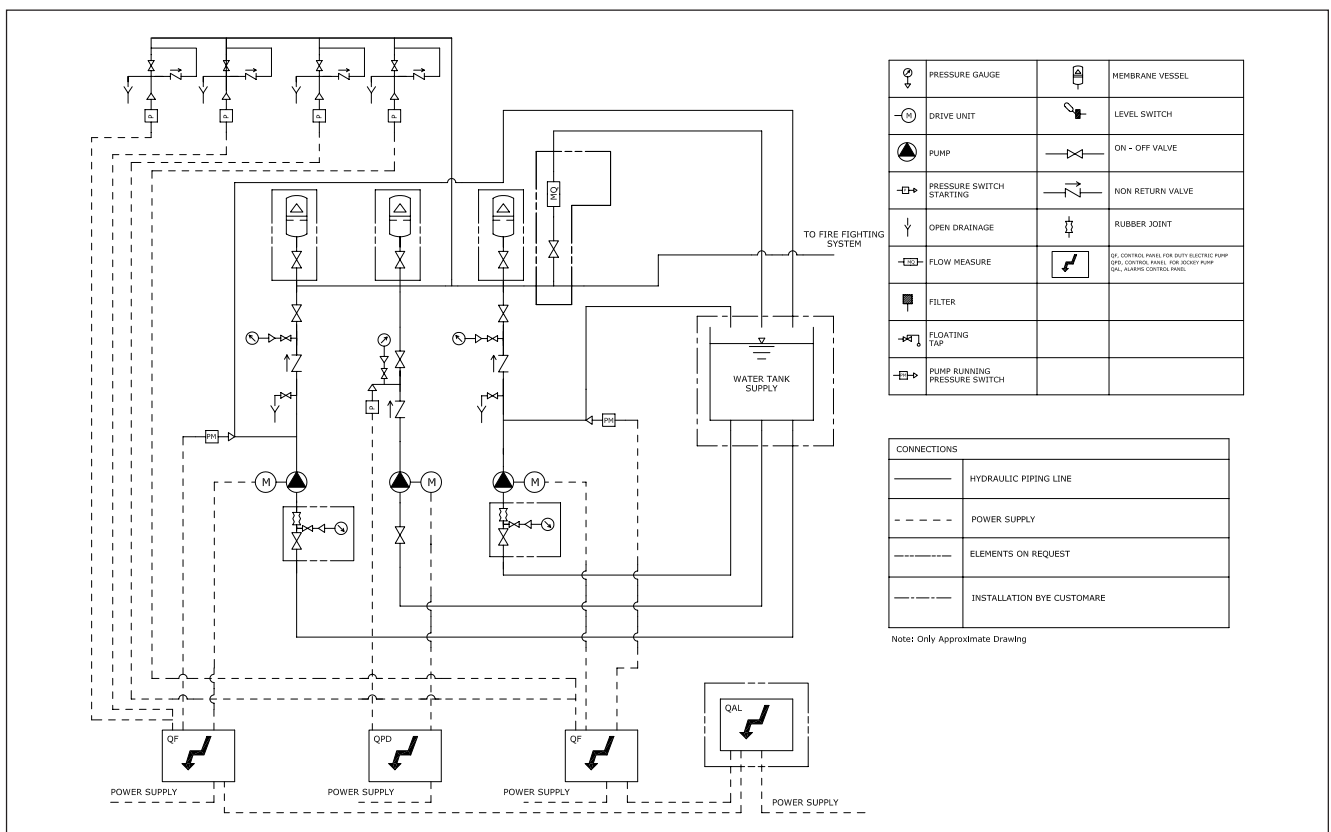
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GEN SERIES OF BOOSTER SETS FUNCTIONAL DIAGRAM FOR POSITIVE SUCTION HEAD INSTALLATIONS



GEN SERIES OF BOOSTER SETS FUNCTIONAL DIAGRAM FOR SUCTION LIFT INSTALLATIONS

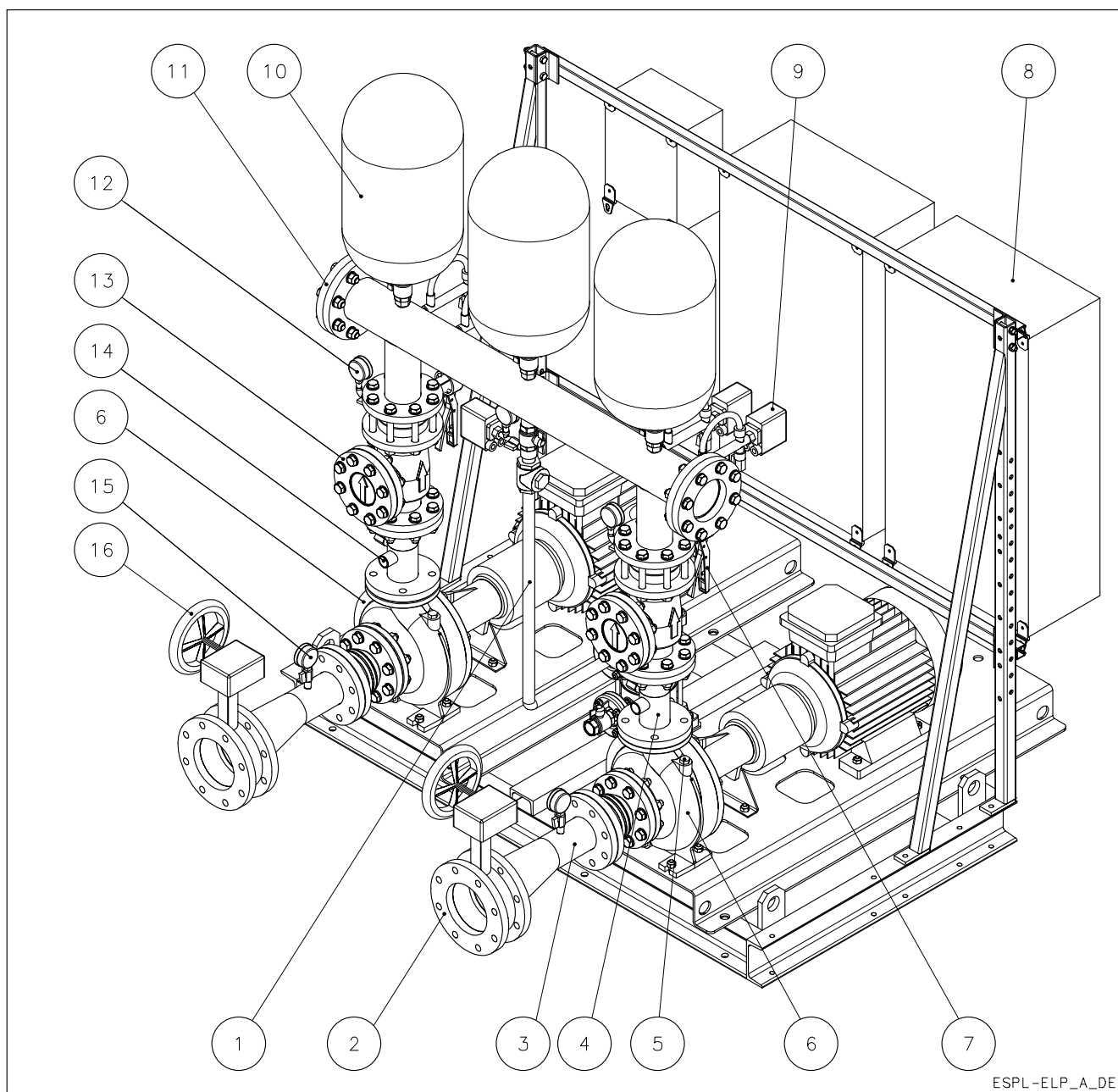




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GEN SERIES OF BOOSTER SETS MECHANICAL CONFIGURATION



ESPL-ELP_A_DE

REF.	DESCRIPTION
1	jockey pump discharge line
2	pump suction line
3	eccentric divergent
4	divergent on discharge line
5	recirculation circuit tap
6	electric service pump
7	on-off valve on discharge line
8	control panels

REF.	DESCRIPTION
9	service pump starter (2x)
10	diaphragm tanks
11	discharge manifold
12	pressure gauge
13	inspectable check valve
14	priming circuit tap
15	vacuum pressure gauge
16	on-off valve on suction line

gen21-comp-en_a_tp

CHARACTERISTICS OF THE PUMPS USED IN THE GEN SERIES OF BOOSTER SETS

SV2, 4, 8 ELECTRIC PUMPS (JOCKEY PUMP)

- Multistage centrifugal vertical electric pumps. All metal parts in contact with pumped liquid are made of stainless steel.
- Version F: round flanges, in-line discharge and suction ports, AISI 304 (Standard version).
- Version N: round flanges, in-line discharge and suction ports, AISI 316 (Available on request).
- Reduced axial thrusts enable the use of off-the-shelf **standard motors. The performance levels of Lowara PLM surface motors lie within what is usually referred to as efficiency class 1.**
- Mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069.
- Easy maintenance. No special tools required for assembly or disassembly.
- For other characteristics, consult the relative dedicated technical catalogue.

FHF32, 40, 50, 65, 80, 100, 125 PUMP SERIES

- Single impeller cast iron horizontal centrifugal pump and shaft made of AISI 316L stainless steel. End suction and radial discharge ports.
- Impeller: made of AISI 316L stainless steel laser technology welded, for sizes 32, 40, 50, 65-125, or cast iron for sizes 65-160, 65-200, 65-250, 80, 100, 125.
- Hydraulic sizes and nominal diameter DN of suction and discharge ports according to EN 733 (ex DIN 24255).
- Flanges according to EN 1092-2 (ex UNI 2236) and DIN 2532.
- Motor: motor/pump coupling with bracket, support, flexible coupling with spacer coupling and aligning and anchoring base. **The performance levels of Lowara PLM surface motors lie within what is usually referred to as efficiency class 1.**
Performance levels according to EN 60034-1.
- **"Back pull out"** design, impeller, adaptor and motor can be extracted without disconnecting the pump body from the pipes.
- For other characteristics, consult the relative dedicated technical catalogue.

SHF32, 40, 50, 65, 80 PUMP SERIES

- Single impeller horizontal centrifugal pump with pump body and shaft made of AISI 316L stainless steel. End suction and radial discharge ports.
- Closed impeller made of AISI 316L stainless steel laser technology welded (for sizes 25, 32, 40, 50, 65-160/75 and 65-160/110A) or AISI CF8M cast stainless steel.
- Hydraulic sizes and nominal diameter DN of suction and discharge ports according to EN 733 (ex DIN 24255).
- Flanges according to EN 1092-1 (ex UNI 2236) and DIN 2532.
- Motor: motor/pump coupling with bracket, support, flexible coupling with spacer coupling and aligning and anchoring base. **The performance levels of Lowara PLM surface motors lie within what is usually referred to as efficiency class 1.**
Performance levels according to EN 60034-1.
- **"Back pull out"** design, impeller, adaptor and motor can be extracted without disconnecting the pump body from the pipes.
- For other characteristics, consult the relative dedicated technical catalogue.

MAIN COMPONENTS

FIRE-FIGHTING SETS WITH HORIZONTAL ELECTRIC PUMPS

- On/off valves on the delivery side of each pump, ball valves with lever handle for diameters up to and including 1" 1/2 butterfly valve with lever handle from DN50 to DN100 diameter, butterfly valve with handwheel and reduction manual gear for DN125 diameter and above. Device for monitoring ON/OFF status included. Electrical connections by customer.
(Lockable kit available on request).
- Recirculation device for each service pump.
The re-circulation device allows a minimum capacity in order to prevent the pump overheating when working with closed delivery. It includes the activation pressure switch for the alarms of the pumps running, the test valve for checking the seal of the check valves, the couplings for any connecting pipes to the priming tank in the case of suction lift installation. The connection of each re-circulation to the suction tank or the priming tank is to be seen to by the person installing the equipment.
- Pressure gauge on the delivery side of each service pump between check valve and on/off valve.
- Inspectable check valve on the discharge side of each pump. Threaded coupling for diameters up to 1"1/2 included, flanged coupling for larger sizes.
- Painted iron delivery manifold (PN 16) and threaded stubs with relative caps for connecting any 24 litre membrane tanks. Blind and welding zinc-plated flanges.
- Two start-up pressure switches for every service pump.
For the electric service pumps, start-up takes place through the pressure switch, but it must be manually stopped using the key-operated selector switch on the panel (excluding the version with automatic shut-off). For the electric jockey pump, if present, both start-up and stopping are determined by the pressure switch.
- Start-up pressure switch circuit for the service pump, including connecting pipes for the delivery manifold, recirculation circuit.
This circuit includes on/off valve, a non-return valve, a discharge valve and various pipe fittings. The configuration of the circuit allows the pressure switch to intervene also when the relative on/off valve is closed.
- Various pipe fittings (copper, zinc-plated steel).
- Base made of bent sheet or structural iron with epoxy powder painting RAL 5010.
- Control panel frame made of structural iron with epoxy powder painting RAL 5010.
- Electric panel for each electric service pump.
Starting: Direct (DOL) up to and including 22 kW, star/triangle from 30 kW up.

A panel mounting bracket kit for floor mounting and a jockey pump kit can be supplied on request.

The control panels for the electric pumps up to 55 kW power supply are fixed on bracket. For higher powers, the control panels for electric pump service are floor mounted, instead the jockey electric pump panel is wall mounted fixed.

SUCTION KIT

The set is supplied with its suction side free from components.

On request, for the SUCTION side of the individual service pump, TWO versions are available according to the system's installation type:

• POSITIVE SUCTION HEAD and SUCTION LIFT KIT

Kit suitable for positive suction head or suction lift installation.

The suction side of the individual pump includes:

- Anti-vibration joint to attach to the pump inlet.
- Eccentric cone or flanged stub pipe.
- Vacuum pressure gauge.
- On/off butterfly valve with lever handle for diameters up to DN100, butterfly valve with handwheel and reduction manual gear for DN125 and higher. Device for monitoring ON/OFF status included.
- Electrical connections by customer.
(Valve lock kit available on request).
- Weld-on flange.

Conforming to the requirements of the EN 12845 Standard (chapter 10.5 and chapter 10.6).

These requirements are connected with the type of installation and the measurement of the piping sections. (see tables on pages 124-127).

OTHER VERSIONS

As well as the basic GENDB versions (direct start-up), GENYB (star triangle start-up), GENIB (impedance start-up), the following versions are also available:

• GEN..A

With periodic self-test function.

There is a self-test circuit including a weekly clock on the electric panel of each electric service pump. For the time and date pre-set, the pump is started up and kept functioning for 1 minute. During this interval the check circuit checks that the pressure in the re-circulation circuit closes the pressure switch contact of the pump which is running. In the case of irregularities, the relative auxiliary self-test alarm relay available for remote signalling is activated and memorised.

The EN12845 Standard does not provide for the presence of a self-test circuit but asks for periodic checks to be carried out by the user, hence the periodic self-test function cannot substitute the above checks.

• GEN..X (For fire hydrant systems, UNI 10779)

With automatic shut-off.

There is an automatic shut-off circuit on the electric panel of each electric service pump.

In certain situations, it allows automatic shut-off once the system pressure has been kept at higher values than the start-up values for at least twenty minutes.

The self-test and automatic shut-off versions are available for each type of GEND.., GENY.., GENI.. start-up and in combination between them (See identification codes page).

ACCESSORIES AVAILABLE ON REQUEST

- Protection against dry running for the electric jockey pump in one of the following versions:
 - Float switch, in case of suction lift.
 - Probes kit in case of suction lift (needs optional probe module in the electric jockey pump).
 - Minimum pressure switch, in case of positive suction head.
- Electric panel for remote status and alarm monitoring of one or two Lowara pumps installed in GEN fire-fighting booster sets, according to EN12845.

In the electric service pump mode, the following conditions are visualised: Motor powered, pump start-up request, pump running, failure to start.

In the diesel engine service pump mode, the following conditions are visualised: switch in non-automatic position, diesel engine fails to start after 6 attempts, pump running, controller failure.

Additionally: minimum suction tank or fuel level, minimum priming tank level, on-off valve on suction and discharge side not fully open.

All the above conditions, required by EN12845, are visualised with signal LED's and buzzers.

A buzzer alarm reset button and LED tester button are included.

The control unit is also fitted out to signal the following general alarms, if present:

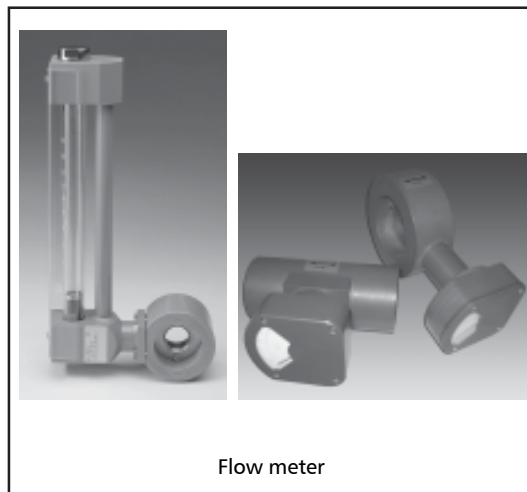
- General alarm for incorrect electrical connection in the exchange contacts of: flow meter circuit valve, discharge pump, jockey pump status.
- Fault in electrical connection in the exchange contact relative to panel 1 (electric pump/diesel engine pump).
- Fault in electrical connection in the exchange contact relative to panel 2 (electric pump/diesel engine pump).
- Jockey pump overload; - Jockey pump running; - Discharge pump overload;
- Battery low; - No communication with ModBus system.

All the above conditions are visualised with signal LED's and on the display. The customer may decide to enable the buzzer. Further information available on page 144.

- Circuit for test flow of the service pumps. Includes the direct reading flow meter (sized according to the capacity of the service pump) according to the type of flow meter, connecting piping and straight piping upline from the instrument, on/off ball valve for diameters up to and including 2" butterfly valve with lever handle from DN65 to DN100 diameter, butterfly valve with handwheel and reduction manual gear for DN125 diameter and above. ON/OFF status monitoring included.
New model of flow meter (P6) for diameters up to and including DN80.
- Diaphragm tank with relative ball valve, in the same number as that of the pumps present, for dampening any pressure oscillations in the system. 24 litre model with maximum pressure 8.10 or 16 bar according to the maximum head of the pumps.
- Priming tank for each service pump, in the case of suction lift installation.
- Accessories for the priming tank such as float switch tap, level indicator, valves, automatic air discharger on each service pump, in the case of suction lift installation.



QAL12845 Panel



Flow meter

All the main characteristics of the priming tanks, the flow meters and the available membrane tanks are shown in the accessories section.

SPECIAL EQUIPMENT ON REQUEST**(Contact the Sales and technical Assistance Service)**

Sets for pumping sea water with electric pumps, valves, manifold and AISI 316 piping or compatible alloys.

Non-standard supply power sets.

Sets with separate electric jockey pump supplied as a kit.

Sets with different electric jockey pump from the standard one.

Sets installed inside prefabricated boxes for outdoor use.

Notes

The set is supplied without a suction manifold in accordance with the EN12845 Standard (points 10.6.2.2 and 10.6.2.3) which provides for independent suction for each pump.

Please see the EN12845 Standard on fixed systems and fire extinguishing – Automatic sprinkler systems – Design, installation and maintenance? - for sizing the suction piping, define whether the installation is to be considered suction lift or positive suction head for the use limits.

The Standard ask that, whenever possible, the pumps are installed with positive suction head, otherwise priming tanks must be provided with suitable automatic devices for signalling and reintegration.

The EN12845 Standard states that the water pressure should not exceed 12 bar (point 8.2.1). In some applications it is possible to have pressures of over 12 bar (point 8.2.2).

In this case, pump sets with higher pressures than those within the regulatory limit are used.

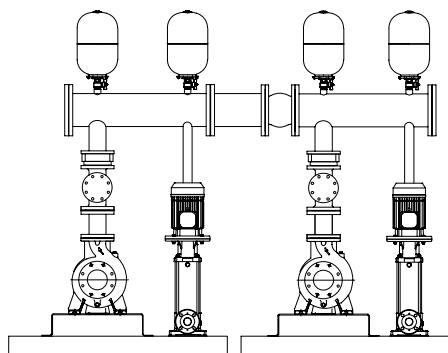
The catalogue also shows booster sets with pump closing head up to 150 metres suitable for such installations.



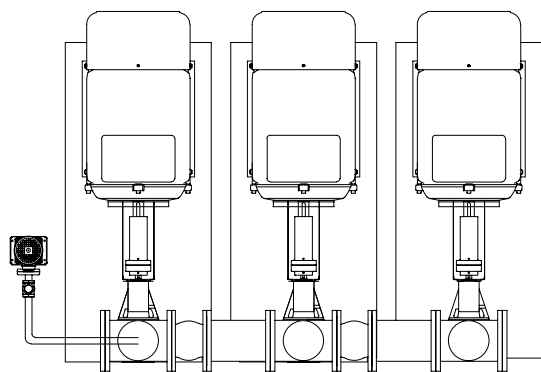
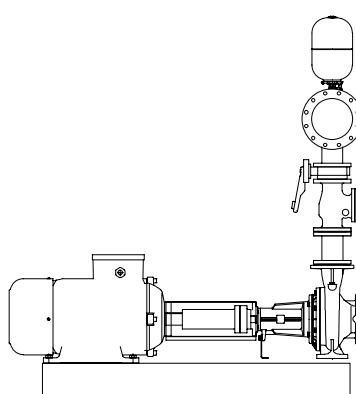
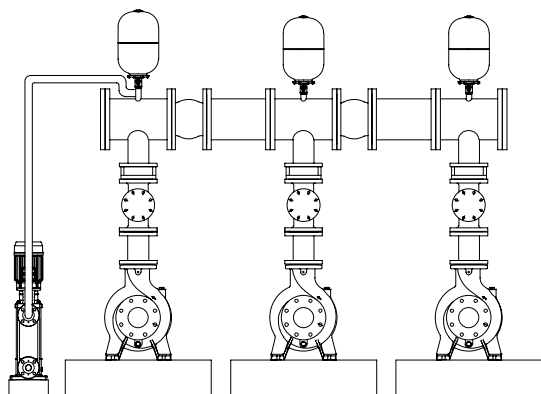
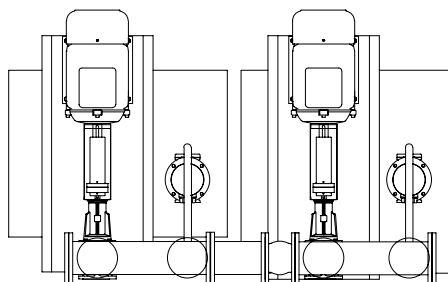
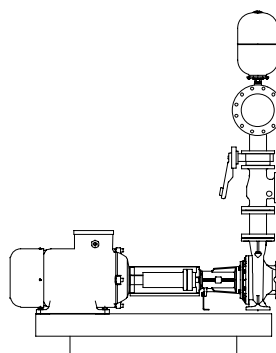
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SPECIAL EQUIPMENT ON REQUEST



GENYAX22



GENYAX31

GEN-SPEC-EL_A_SC

COMMAND PANEL FOR THE ELECTRIC SERVICE PUMP

Painted metal casing (IP 54) complete with:

- General door-locking switch.
- Analogical ammeter.
- "MAN – AUT – 0" selector with extractable key only in automatic position.
- Keyboard for indicating electric voltage presence, correct phase sequence (three phase power supply), start-up request, pump functioning and no start-up, through LED lamps, lamp test button and starting and stopping buttons, according to the provisions of EN12845 paragraph 10.8.6.

Inside:

- 12/24V transformer for auxiliary circuits and electronic board.
- Fuse holder and fuses for power and auxiliary circuits.
- Line contact maker (direct start-up up to 22 kW included), line and star/triangle contact makers (star-triangle start-up), line contact makers and reactance switching (impedance start-up).
- Star/triangle exchanger timer or reactance switching.
- Relay for signalling no phase.
- Auxiliary relays.
- Current transformer.
- Terminal boards.
- Clean contacts (max. 24V, 1A) for activating acoustic/visual alarms for no phase, pump on demand, pump running and start failure.
- Cable glands (excluding the versions to be fixed to the floor).
- Wiring diagram.
- On request digital trasmission card via RS485 serial by ModBus comunication protocol.



COMMAND PANEL FOR THE ELECTRIC JOCKEY PUMP

Painted metal casing (IP 55) complete with:

- General door-locking switch.
- Visual indicators for line, running, thermal shutdown.
- Manual – automatic selector – excluded.

Inside:

- Transformer for 24V auxiliary circuits.
- Fuse holder and fuses for power and auxiliary circuits.
- Line contact maker.
- Overload cut-out switch.
- Pump shut-off timer (0 ÷ 90 s).
- Terminal boards.
- Cable glands.
- Wiring diagram.

Suitable for connecting to a float switch or a minimum pressure switch for preventing dry running. An optional level control module (supplied on request) allows the connection of probes with the possibility of regulating the sensitivity according to the hardness of the water.



OPTIONS AVAILABLE ON REQUEST

CP alternative

Series of clean contacts for checking the status of the electric service pump panel, as well as the contacts already provided for signalling alarms:

- No phase
- Motor running
- Selector position MAN-AUT-0
- No start-up
- Start-up request

Series of clean contacts for checking the status of the electric jockey pump:

- Pump running
- Thermal shutdown (overload)
- No water

KV alternative

Control panel for the electric service pump with analogical voltmeter and with phase switch.

IP55 alternative

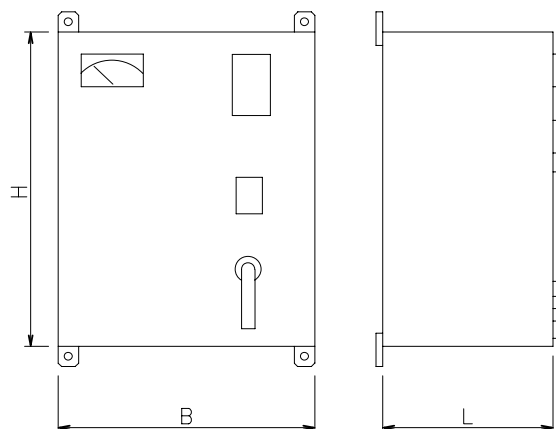
Electric service pump panel with extra IP55 protection.

The set is supplied already assembled, calibrated and factory tested. The set is supplied complete with an instruction manual, pump manuals and wiring diagrams for the panels.

For the sets including floor panels, the electric panels are sent together with the set in a separate pack and supplied with 5-metre long connecting cables (longer lengths available on request). The fitter is responsible for preparing the routes and installing the cables.

COMMAND PANEL DIMENSIONS

SERVICE PUMP PANEL



POWER (kW)	PROTECTION CLASS	B	L	H
from 0,7 to 7,5	IP54	350	160	500
from 9,2 to 22	IP54	400	200	600
from 30 to 37	IP54	500	200	700
from 45 to 55	IP54	600	250	800
from 75 to 90	IP54	600	300	1500
from 110 to 160	IP54	800	400	1700

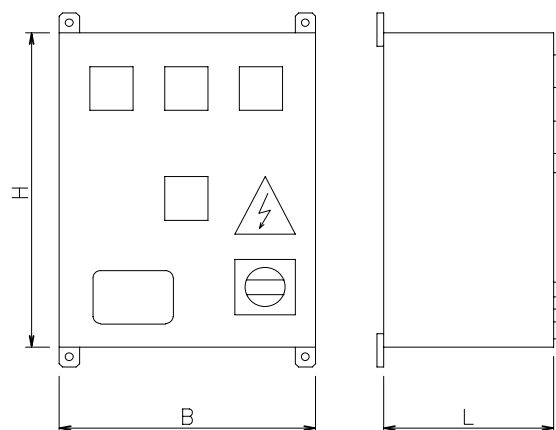
IP55: same dimensions as standard panels IP54

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Power over 55 kW: floor cupboard

QE-ELP_B_DD

JOCKEY PUMP PANEL



PROTECTION CLASS	B	L	H
IP54	250	160	300

IP55: same dimensions as standard panels IP54

qe-pil-en_b_td

QE-PIL_A_DD

* The control panels are included in the supply.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION

Criteria for choosing fire-fighting sets

The correct choice of a fire-fighting set must consider various factors, including the correct sizing of the performance levels required for the system, local regulations and legislation, and especially the installation conditions relative to the installation site and whether a suction lift or a positive suction head is involved.

Choosing the type of water supply

The type of water supply and, therefore, the type of booster set to select depends on the type of system involved and is chosen according to the risk analysis performed by the designer.

There is no written rule for identifying the correct number of pumps to install.

GEN booster sets are normally designed so that every service pump can satisfy the following requirements:

100% of rated capacity with one or two pumps installed (one in service and the other in reserve).

If three pumps are installed, the capacity of the pump will be 50% of the total rated capacity and the third service pump will be considered as a reserve. In these cases, when superior or duplicated water supplies are involved, only one pump must be driven by an electric motor. This type of configuration is available on request.

Suction conditions of the booster set

The type of installation, suction lift or positive suction head, tends to affect (negatively or positively) the hydraulic performance of the pump. Remembering that EN12845 recommends against using suction lift installations, the following condition given by EN12845 must be satisfied in order to use the pump curve correctly:

$$NPSHd \geq NPSHr + 1 \text{ [m]}$$

Where: NPSHd is defined available.

NPSHr is defined requested from the pump.

As the suction check condition must be made at the max. requested flow, there can be different performance levels always respecting the NPSHd condition.

To select the booster set, consult the dedicated sections. Choice and selection. Hydraulic performance levels. Suction lift or positive suction head installation.

Performance levels of booster sets: using the tables

The tables showing the hydraulic performance levels of booster sets indicate the flow values according to the risk class for precalculated systems followed by the respective pressure value. This value does not refer to pump performance but is net of the pressure drop on the pump discharge line, to the discharge manifold flange.

This field is shown in grey and the selection must be made here, where performance levels comply with the reference standard which considers the following conditions:

- Maximum water speed in the service pump discharge piping 6 m/sec.
- $NPSHd \geq NPSHr + 1$ at the maximum flow required.
- Max. difference in level of water considered 3,2 m (for positive suction head).
- Suction pressure drops due to valves, piping, suction kit 1,5 m (limit value).

The reference suction conditions are the severest and most extreme that can occur.

The values taken in the fields that are not in grey indicate booster set performance levels in areas outside the limits of the standard and must not be used to choose the set.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION

Method of selecting a fire-fighting booster set

Referring to EN 12845, after identifying the risk classes of the activity to protect and performing the precalculation method, the flow and head values required for the fire-fighting system can be obtained.

This data is used as follows:

1. Configuration of the booster set, choice of the number of service pumps and relative type of motor/engine (two pumps, one electric and the other driven by a diesel engine).
2. Installation conditions (e.g.. positive suction head), see performance levels for positive suction head installation.
3. Determination of service flow e.g.: 1100 l/min risk class OH3.

TYPE FHF..		PUMP	RATED POWER	RISK CLASS												
				OH2n						OH3n						
				Q = DELIVERY												
ELECTRIC PUMP			kW	l/min 0	600	700	725	850	1000	1100	1200	1300	1350	1400	1500	1600
				m3/h 0	36	42	44	51	60	66	72	78	81	84	90	96
H = TOTAL HEAD METRES COLUMN OF WATER																

4. Determining the head – e.g.: 35 m.

TYPE FHF..		RATED POWER	RISK CLASS												
			OH2n						OH3n						
			Q = DELIVERY												
ELECTRIC PUMP	PUMP	kW	l/min 0	600	700	725	850	1000	1100	1200	1300	1350	1400	1500	1600
			m3/h 0	36	42	44	51	60	66	72	78	81	84	90	96
H = TOTAL HEAD METRES COLUMN OF WATER															
50-125/22	50-125/D119	1 x 2,2	16,8	13,7	12,3	11,8	9,5	6,2	3,7	0,9					
50-125/30	50-125/D130	1 x 3	19,9	17,5	16,1	15,8	13,6	10,5	8,0	5,3	2,3				
50-125/40	50-125/D139	1 x 4	24,3	21,8	20,6	20,2	18,3	15,3	13,1	10,5	7,7	6,2	4,6		
50-160/55	50-160/D158	1 x 5,5	31,8	29,3	27,7	27,3	24,8	21,1	18,2	15,0	11,4	9,5	7,6		
50-160/75	50-160/D174	1 x 7,5	39,8	36,6	35,2	34,8	32,5	29,1	26,5	23,5	20,2	18,5	16,7	12,7	
50-200/110A	50-200/D197	1 x 11	50,6	45,6	43,4	42,8	39,5	34,8	31,2	27,3	23,1	20,9	18,6		
50-200/110	50-200/D209	1 x 11	58,0	52,6	50,5	49,9	46,7	42,1	38,6	34,7	30,4	28,1	25,7	20,7	

As can be seen, the required flow value enters the operating area in accordance with the standard, and the value of the corresponding head enters the field in grey.

From the example shown above, we can identify the **booster set** that satisfies the request. The model is pump 50-200/110 providing a head of 38,6 m.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - POSITIVE SUCTION HEAD INSTALLATION

EN12845 recommends always installing pumps in suction lift conditions, where possible. If this is not possible, the pumps can be installed in positive suction head conditions according to the following rules:

- The height of the minimum water level at the pump axis must not be greater than 3,2 m.
- A foot valve must be installed in the lowest point of the suction piping.
- If more than one pump is installed, the suction piping must not be interconnected.

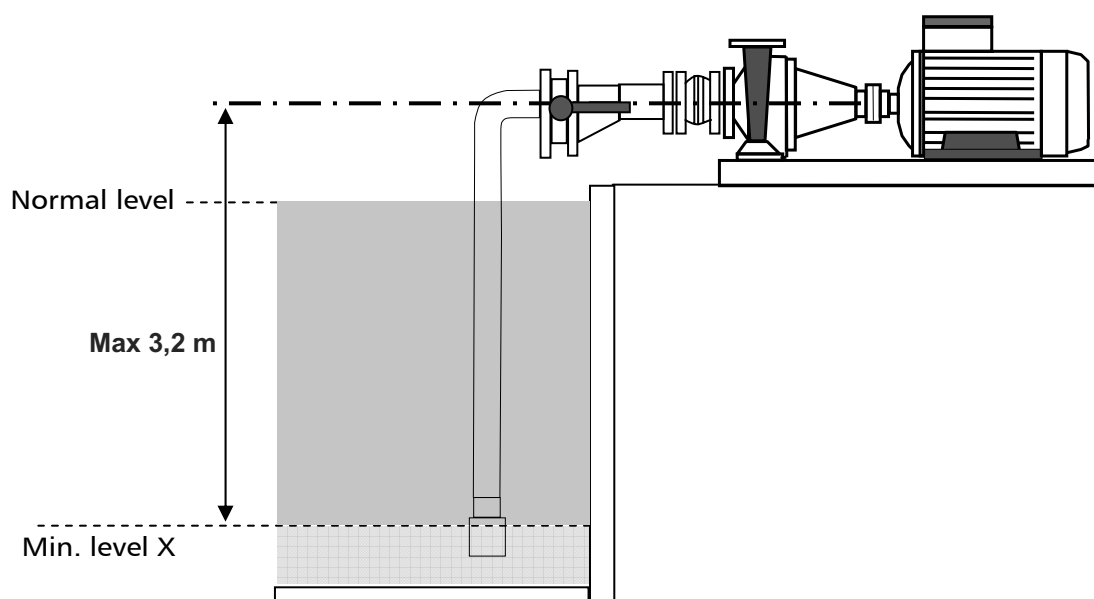


Fig. 1 positive suction head installation diagram

In accordance with EN 12845 (10.6.2.1), the suction piping, including all the valves and unions, must be designed to ensure that the NPSH available at the pump inlet exceeds the required NPSH by at least 1 m at the maximum required flow rate.

$$\text{NPSHd} \geq \text{NPSHr} + 1$$

When selecting the type of pump to use for the boosters sets, the installation conditions must be considered as these determine different pump performance levels.

An example of how to choose and check of the installation conditions is shown below:

considering the precalculation method, a suitable risk class for the system is identified, e.g.: OH3. For this risk class, the rated flow is 1100 l/min (Q_n), while the maximum requested flow is 1350 l/min (Q_m). Being in a positive suction head condition, the most difficult situation is considered, i.e.: the maximum difference in water level of 3,2 m, as indicated in the standard.

Being aware of the rated flow 1100 l/min and the pressure required for the system (e.g.: 35 m), the pump is selected according to the tables on page 44-45, making sure the performance rating lies inside the area shown in grey. The pump that satisfies the required work point is FHF50-200/110.



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GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - POSITIVE SUCTION HEAD INSTALLATION

At this point, the installation conditions (positive suction head) must be checked at the **maximum required flow**.

The following values are replaced in the known relation, $NPSH_d \geq NPSH_r + 1$:

$NPSH_r$ can be deduced from the table on page 45 which in this case is 4,6 m at the maximum requested flow. After replacing the value, the following will be true (water temperature around 15°C):

$$NPSH_d = 10,33 + (-3,2) - \Sigma H_{ct}$$

Where

10,33 atmospheric pressure

3,2 geodetic difference in level

ΣH_{ct} suction pressure drop ((valves, pipes, elbows..))

The value of ΣH_{ct} considers the pressure drops of the suction kit, inclusive of vibration-proof joint, reduction cone and on-off valve (H_c), as well as the pressure drops relative to all the suction piping, foot valve, elbows, elbows, etc...

The value of H_c at the maximum required flow of the selected pump can be found in the diagram on page 81. This value is 0,16 m.

After entering it in the formula, we will have:

$$\Sigma H_{ct} = 0,16 + X$$

Where X is the pressure drop relative to all the suction piping

Hence

$NPSH_d \geq NPSH_r + 1$. After replacing this, we will have:

$$10,33 + (-3,2) - \Sigma H_{ct} = 4,6 + 1$$

$$10,33 + (-3,2) - 0,16 - X = 4,6 + 1 \text{ which gives}$$

$$X = 1,37 \text{ m}$$

Maximum value of total drops to consider on the inlet piping in order to respect the conditions of the standard. Of course, this case was deliberately put in the worst suction conditions. The designer must check and set the values in an attempt to optimise suction conditions.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - POSITIVE SUCTION HEAD INSTALLATION

Checking performance of the set at rated flow.

The performance of the booster set must now be checked in the installation conditions of the example used up until now.

Work point: Q_n : 1100 l/min $H = 35$ m
The selected pump is FHF50-200/110

Starting from the usual relation given by the standard, we will have:

$$NPSH_d \geq NPSH_r + 1$$

$$NPSH_d = 10,33 + (-3,2) - \sum H_{ct}$$

$NPSH_r$ can be deduced from the table on page 45 which in this case is 2,9 m **at the rated flow**.

The value of $\sum H_{ct}$ considers the pressure drops of the suction kit, inclusive of vibration-proof joint, reduction cone and on-off valve (H_c), as well as the pressure drops relative to all the suction piping, foot valve, elbows, elbows, etc...

The value of H_c at the rated required flow of the selected pump can be found in the diagram on page 81. This value is 0,12 m.

After entering it in the formula, we will have:

$$\sum H_{ct} = 0,12 + X$$

Where X is the pressure drop relative to all the suction piping

Hence

$NPSH_d \geq NPSH_r + 1$. After replacing this, we will have:

$$10,33 + (-3,2) - \sum H_{ct} = 2,9 + 1$$

$$10,33 + (-3,2) - 0,12 - X = 2,9 + 1 \text{ which gives}$$

$$X = 3,11 \text{ m}$$

Value of the total drops to consider on the suction piping

Taking the pressure value of the selected set, the value corresponds to 38,6 m at the rated flow.

Therefore, the verification of the pressure values in the above suction conditions becomes:

$$H = 38,6 - 0,12 - 3,11 = \mathbf{35,4 \text{ m} > 35 \text{ m}}$$
 which is the pressure required for the system

The result satisfies the performance required for the system in the installation conditions of the example.



GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - SUCTION LIFT INSTALLATION

Suction lift installation

EN12845 recommends always installing pumps in suction lift conditions, where possible, according to the following rules:

- At least two thirds of the effective capacity of the suction tank must be above the level of the pump axis.
- The pump axis must not be more than 2 m above the minimum water level in the suction tank.

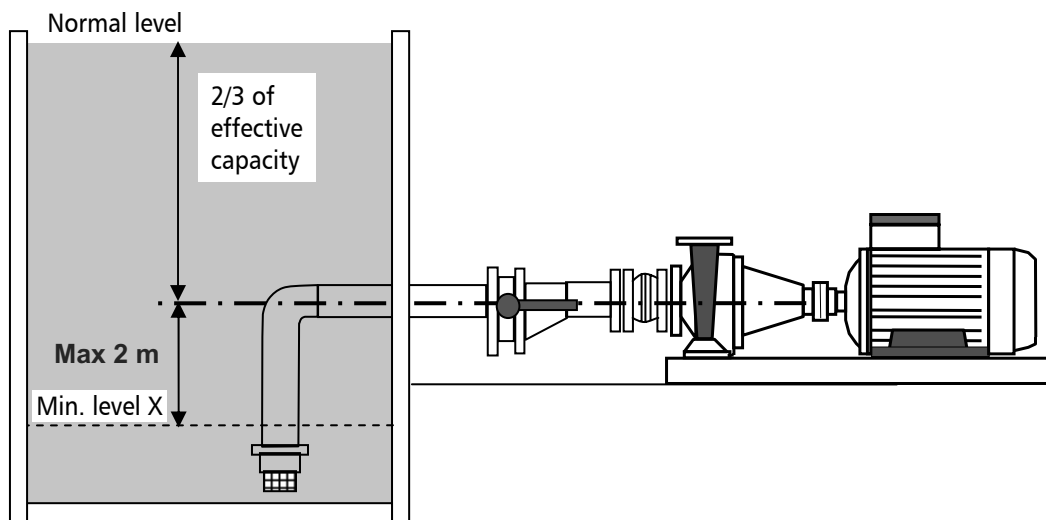


Fig. 2 suction lift installation diagram

In accordance with EN 12845 (10.6.2.1), the suction piping, including all the valves and unions, must be designed to ensure that the NPSH available at the pump inlet exceeds the required NPSH by at least 1 m at the maximum required flow rate.

$$\text{NPSHd} \geq \text{NPSHr} + 1$$

When selecting the type of pump to use for the boosters sets, the installation conditions must be considered as these determine different pump performance levels.

An example of how to choose and check of the installation conditions is shown below:

considering the precalculation method, a suitable risk class for the system is identified, e.g.: OH3. For this risk class, the rated flow is 1100 l/min (Q_n), while the maximum requested flow is 1350 l/min (Q_m). Being in the suction lift condition, a neutral situation is used in order to consider the water level on the same horizontal plane as the pump, without benefiting from any positive suction head.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - SUCTION LIFT INSTALLATION

Being aware of the rated flow 1100 l/min and the pressure required for the system (e.g.: 35 m), the pump is selected according to the tables on page 44-45, making sure the performance rating lies inside the area shown in grey. The pump that satisfies the required work point is FHF50-200/110.

At this point, the installation conditions (suction lift) must be checked at the maximum required flow.

The following values are replaced in the known relation, $NPSH_d \geq NPSH_r + 1$:

$NPSH_r$ can be deduced from the table on page 45 which in this case is 4,6 m at the maximum requested flow.

After replacing the value, the following will be true (water temperature around 15°C):

$$NPSH_d = 10,33 + (0) - \Sigma H_{ct}$$

Where

10,33 atmospheric pressure

0 geodetic difference in level

ΣH_{ct} suction pressure drop (valves, pipes, elbows...)

The value of ΣH_{ct} considers the pressure drops of the suction kit, inclusive of vibration-proof joint, reduction cone and on-off valve (H_c), as well as the pressure drops relative to all the suction piping, foot valve, elbows, etc...

The value of H_c at the maximum required flow of the selected pump can be found in the diagram on page 87.

This value is 0,32 m.

After entering it in the formula, we will have:

$$\Sigma H_{ct} = 0,32 + X$$

Where X is the pressure drop relative to all the suction piping

Hence

$NPSH_d \geq NPSH_r + 1$. After replacing this, we will have:

$$10,33 + (0) - \Sigma H_{ct} = 4,6 + 1$$

$$10,33 + (0) - 0,32 - X = 4,6 + 1 \text{ which gives}$$

$$X = 4,41 \text{ m}$$

Maximum value of total drops to consider on the inlet piping in order to respect the conditions of the standard.

Of course, the case in point was deliberately tested in neutral suction conditions that neither benefit nor optimise suction.

The designer must check and set the values in an attempt to make suction conditions as efficient as possible.

GEN SERIES OF BOOSTER SETS CHOICE AND SELECTION - SUCTION LIFT INSTALLATION

Checking performance of the selected set at rated flow.

The performance of the booster set must now be checked in the installation conditions of the example used up until now.

Work point: Q_n 1100 l/min $H = 35$ m
The selected pump is FHF50-200/110

Starting from the usual relation given by the standard, we will have:

$$NPSH_d \geq NPSH_r + 1$$

$$NPSH_d = 10,33 + (0) - \Sigma H_{ct}$$

$NPSH_r$ can be deduced from the table on page 45 which in this case is 2,9 m **at the rated flow**.

The value of ΣH_{ct} considers the pressure drops of the suction kit, inclusive of vibration-proof joint, reduction cone and on-off valve (H_c), as well as the pressure drops relative to all the suction piping, foot valve, elbows, elbows, etc...

The value of H_c at the rated required flow of the selected pump can be found in the diagram on page 87. This value is 0,22 m.

After entering it in the formula, we will have:

$$\Sigma H_{ct} = 0,22 + X$$

Where X is the pressure drop relative to all the suction piping

Hence

$NPSH_d \geq NPSH_r + 1$. After replacing this, we will have:

$$10,33 + (0) - \Sigma H_{ct} = 2,9 + 1$$

$$10,33 + (0) - 0,22 - X = 2,9 + 1 \text{ which gives}$$

$$X = 6,21 \text{ m}$$

Value of the total drops to consider on the suction piping

Taking the pressure value of the selected set, the value corresponds to 38,6 m at the rated flow.

Therefore, the verification of the pressure values in the above suction conditions becomes:

$$H = 38,6 - 0,22 - 6,21 = \mathbf{32,17 \text{ m} < 35 \text{ m}}$$
 which is the pressure required for the system.

The value obtained, doesn't satisfy the performance necessary for the system, but as is evident, we have used deliberately a neutral installation condition that it doesn't give benefits to the suction. It results that installed the pump with positive suction of 3 m, we will have a pressure value of 35,17 m that it satisfied the relation.

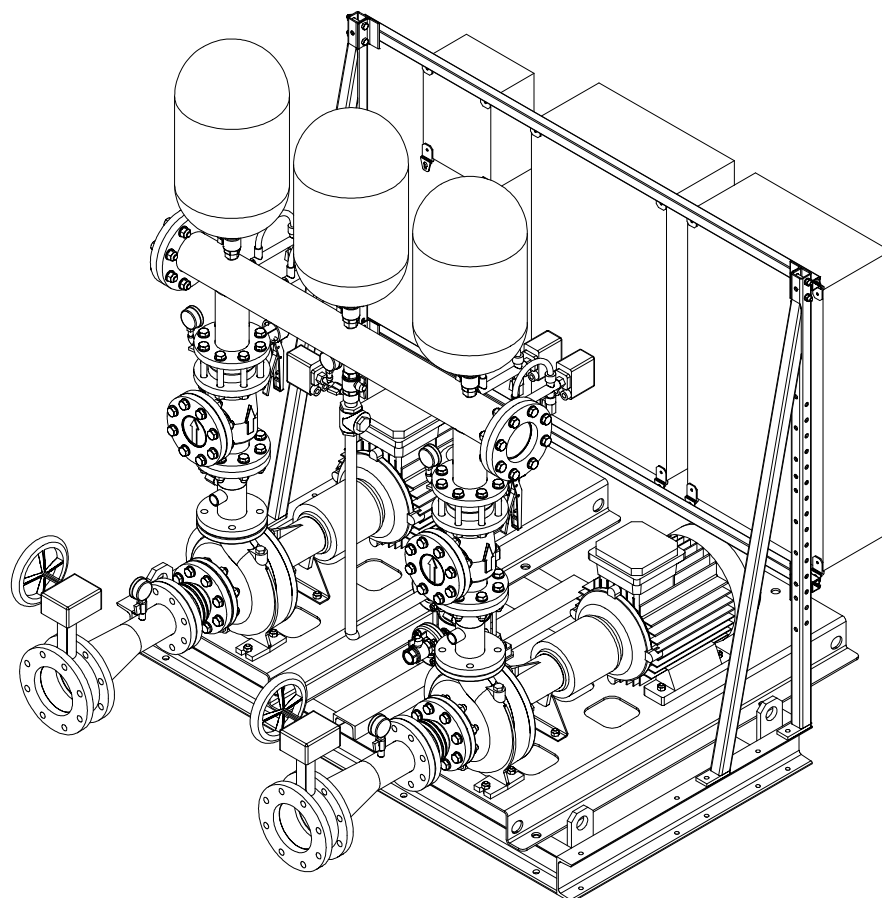


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GEN../FHF Series

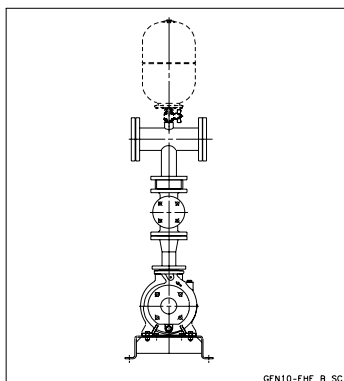
Fire-fighting booster sets EN 12845
Horizontal Centrifugal electric pumps FHF series
equipped with high efficiency PLM motors

50 Hz





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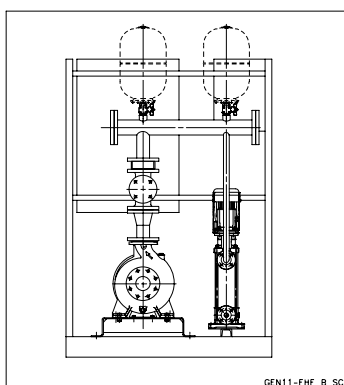
RANGE

GEN./FHF RANGE

- The range of EN 12845 series fire-fighting booster sets includes models with 1 or 2 electric service pumps and some with jockey pumps for adapting to the specific requirements of each application.

GEN10 SERIES

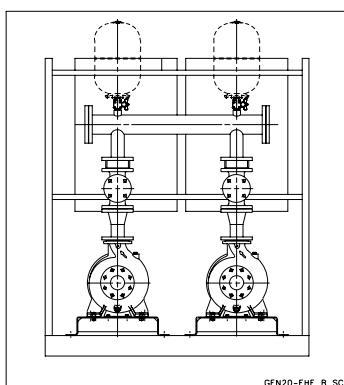
- Fire-fighting sets with a centrifugal service pump horizontal axis and body made of cast iron in the FHF series.

Head up to 100 m.
Flow up to 650 m³/h.


GEN11 SERIES

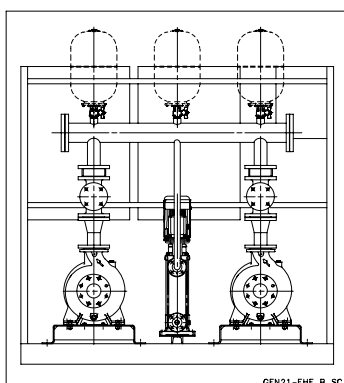
- Fire-fighting sets with a centrifugal service pump horizontal axis and body made of cast iron in the FHF series and jockey pump.

Head up to 100 m.
Flow up to 650 m³/h.


GEN20 SERIES

- Fire-fighting sets with two centrifugal service pump horizontal axis and body made of cast iron in the FHF series.

Head up to 100 m.
Flow up to 1300 m³/h.


GEN21 SERIES

- Fire-fighting sets with two centrifugal service pump horizontal axis and body made of cast iron in the FHF series and jockey pump.

Head up to 100 m.
Flow up to 1300 m³/h.



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GEN../FHF BOOSTER SETS SERIES

HYDRAULIC PERFORMANCE TABLE AT 50 Hz (JOCKEY PUMP)

PUMP TYPE	NOMINAL POWER		Q = DELIVERY									
			l/min 0	20	30	40	50	60	70	100	120	133
	kW	HP	m³/h 0	1,2	1,8	2,4	3	3,6	4,2	6	7,2	8
			H = TOTAL HEAD METRES COLUMN OF WATER									
SV2 04	0,55	0,75	42,5	37,5	34,0	30,5	26,0	20,5	15,0			
SV2 06	0,75	1	64,0	56,0	51,0	45,5	38,5	31,0	22,0			
SV2 09	1,1	1,5	96,0	84,0	76,5	68,5	58,0	46,5	32,5			
SV2 12	1,5	2	128,0	112,0	102,0	91,0	77,0	62,0	44,0			
SV2 14	2,2	3	150,0	131,0	119,0	106,0	90,0	73,0	52,0			
SV2 15	2,2	3	160,2	140,3	128,2	114,0	97,4	78,2	55,9			
SV4 07	1,1	1,5	70,0			59,5	56,0	53,0	51,0	37,0	26,0	18,0
SV4 09	1,5	2	90,0			76,5	73,0	68,5	65,5	47,0	33,5	23,0
SV4 13	2,2	3	131,0			111,0	105,0	99,0	95,0	68,0	48,0	34,0

Performance in accordance with the ISO 9906 - Annex A Standard.

EN12845_pp_sv2-4-2p50-en_b_th

PUMP TYPE	NOMINAL POWER		Q = DELIVERY							
			l/min 0	100	120	133	150	167	200	233
	kW	HP	m³/h 0	6	7,2	8	9	10	12	14
			H = TOTAL HEAD METRES COLUMN OF WATER							
SV8 05	2,2	3	68	62	60	57,5	55	51	43	33
SV8 06	3	4	82	74,5	71	69	66	61,5	52	40
SV8 07	4	5,5	95,9	87	88	80	76	71	60	46,2
SV8 09	4	5,5	123	112	107	104	97,5	92	78	60

Performance in accordance with the ISO 9906 - Annex A Standard.

EN12845_pp_sv8-2p50-en_a_th

GEN../FHF 32-80 BOOSTER SETS SERIES **SERVICE PUMP – JOCKEY PUMP COMBINATIONS**

SERVICE PUMP		JOCKEY PUMP												
ELECTRIC PUMP	TYPE FHF..	SV2 04	SV2 06	SV2 09	SV2 12	SV2 14	SV2 15	SV4 07	SV4 09	SV4 13	SV8 05	SV8 06	SV8 07	SV8 09
	PUMP													
32-125/07	32-125/D119		•											
32-125/11	32-125/D136		•											
32-160/15	32-160/D150		•											
32-160/22	32-160/D164		•											
32-200/30	32-200/D188		•											
32-200/40	32-200/D204			•										
40-125/11	40-125/D112		•											
40-125/15	40-125/D122		•											
40-125/22	40-125/D143		•											
40-160/30	40-160/D159		•											
40-160/40	40-160/D171		•											
40-200/55	40-200/D190		•											
40-200/75	40-200/D209			•										
40-250/110A	40-250/D218			•										
40-250/110	40-250/D233			•										
40-250/150	40-250/D251			•										
50-125/22	50-125/D119		•											
50-125/30	50-125/D130		•											
50-125/40	50-125/D139		•											
50-160/55	50-160/D158		•											
50-160/75	50-160/D174		•											
50-200/110A	50-200/D197			•										
50-200/110	50-200/D209			•										
50-250/150	50-250/D224			•										
50-250/185	50-250/D237			•										
50-250/220	50-250/D250			•										
65-125/40	65-125/D121		•											
65-125/55	65-125/D129		•											
65-125/75	65-125/D140		•											
65-160/110A	65-160/D161		•											
65-160/110	65-160/D168		•											
65-160/150	65-160/D178		•											
65-200/150	65-200/D187		•											
65-200/185	65-200/D198			•										
65-200/220	65-200/D210			•										
65-250/220	65-250/D220			•										
65-250/300	65-250/D241			•										
65-250/370	65-250/D258				•									
80-160/150	80-160/D163							•						
80-160/185	80-160/D173							•						
80-200/220	80-200/D189							•						
80-200/300	80-200/D207								•					
80-250/370	80-250/D225								•					
80-250/450	80-250/D238								•					
80-250/550	80-250/D256									•				

12845-FHF32-80_ap-en_a_tc



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GEN../FHF 100-125 BOOSTER SETS SERIES SERVICE PUMP – JOCKEY PUMP COMBINATIONS

SERVICE PUMP		JOCKEY PUMP												
ELECTRIC PUMP	TYPE FHF..	SV2 04	SV2 06	SV2 09	SV2 12	SV2 14	SV2 15	SV4 07	SV4 09	SV4 13	SV8 05	SV8 06	SV8 07	SV8 09
	PUMP													
100-160/185	100-160/D150							•						
100-160/220	100-160/D165							•						
100-160/300	100-160/D185							•						
100-200/185	100-200/D168							•						
100-200/300	100-200/D192							•						
100-200/370	100-200/D203							•						
100-200/450	100-200/D213								•					
100-250/300	100-250/D200							•						
100-250/450	100-250/D221								•					
100-250/550	100-250/D235								•					
100-250/750	100-250/D254									•				
100-250/900	100-250/D267									•				
125-200/300	125-200/D180										•			
125-200/450	125-200/D206										•			
125-200/550	125-200/D216											•		
125-270/750	125-270/D224											•		
125-270/900	125-270/D237												•	
125-270/1100	125-270/D253												•	
125-270/1320	125-270/D266													•

12845-FHF100-125_ap-en_a_tc

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 32 BOOSTER SETS SERIES

TYPE FHF..	PUMP	RATED POWER kW	RISK CLASS												
			LHn												
			Q = DELIVERY												
			l/min 0	100	150	200	225	250	275	300	375	400	425	450	500
ELECTRIC PUMP			m ³ /h 0	6	9	12	14	15	17	18	23	24	26	27	30
H = TOTAL HEAD METRES COLUMN OF WATER															
32-125/07	32-125/D119	1 x 0,75	16,9	15,6	14,1	12,1	10,9	9,6	8,1	6,6					
32-125/11	32-125/D136	1 x 1,1	21,9	20,5	19,1	17,2	16,1	14,9	13,5	12,1	7,1	5,2			
32-160/15	32-160/D150	1 x 1,5	27,3	25,6	24,0	21,8	20,5	19,0	17,4	15,6	9,5	7,2			
32-160/22	32-160/D164	1 x 2,2	34,7	33,1	31,5	29,3	27,9	26,5	24,9	23,2	17,3	15,0	12,7	10,2	
32-200/30	32-200/D188	1 x 3	44,2	41,3	39,3	36,8	35,3	33,7	32,0	30,1	23,4	20,8	18,0	15,0	
32-200/40	32-200/D204	1 x 4	54,4	51,7	49,5	46,8	45,2	43,5	41,7	39,7	33,2	30,8	28,2	25,6	20,0

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf32-2p50-en_a_th

LHn = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 32 BOOSTER SETS SERIES

TYPE FHF..	PUMP	RATED POWER kW	RISK CLASS												
			LHn												
			Q = DELIVERY												
			l/min 0	100	150	200	225	250	275	300	375	400	425	450	500
ELECTRIC PUMP			m ³ /h 0	6	9	12	14	15	17	18	23	24	26	27	30
H = TOTAL HEAD METRES COLUMN OF WATER															
32-125/07	32-125/D119	1 x 0,75	16,9	15,6	14,1	12,1	10,9	9,6	8,1	6,6					
32-125/11	32-125/D136	1 x 1,1	21,9	20,5	19,1	17,2	16,1	14,9	13,5	12,1	7,1	5,2			
32-160/15	32-160/D150	1 x 1,5	27,3	25,6	24,0	21,8	20,5	19,0	17,4	15,6	9,5	7,2			
32-160/22	32-160/D164	1 x 2,2	34,7	33,1	31,5	29,3	27,9	26,5	24,9	23,2	17,3	15,0	12,7	10,2	
32-200/30	32-200/D188	1 x 3	44,2	41,3	39,3	36,8	35,3	33,7	32,0	30,1	23,4	20,8	18,0	15,0	
32-200/40	32-200/D204	1 x 4	54,4	51,7	49,5	46,8	45,2	43,5	41,7	39,7	33,2	30,8	28,2	25,6	20,0

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf32-2p50-en_a_th

LHn = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

NPSH REQUIRED FOR PUMP SERIES FHF 32

TYPE FHF..	PUMP	RATED POWER kW	RISK CLASS												
			LHn												
			Q = DELIVERY												
			l/min 0	100	150	200	225	250	275	300	350	375	400	450	500
ELECTRIC PUMP			m ³ /h 0	6	9	12	14	15	17	18	21	23	24	27	30
NPSHr [METRES COLUMN OF WATER]															
32-125/07	32-125/D119	1 x 0,75			1,6	1,6	1,7	1,8	2,0	2,2					
32-125/11	32-125/D136	1 x 1,1			1,6	1,6	1,7	1,8	2,0	2,2	2,9	3,4	4,0		
32-160/15	32-160/D150	1 x 1,5			2,2	2,4	2,5	2,7	2,8	3,0	3,6	3,9	4,4		
32-160/22	32-160/D164	1 x 2,2			2,2	2,4	2,5	2,7	2,8	3,0	3,6	3,9	4,4	5,9	
32-200/30	32-200/D188	1 x 3			2,7	2,9	3,1	3,3	3,5	3,8	4,3	4,6	4,9	5,5	
32-200/40	32-200/D204	1 x 4			2,7	2,9	3,1	3,3	3,5	3,8	4,3	4,6	4,9	5,5	6,2

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf32-2p50_NPSHr-en_a_th

LHn = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Check that NPSHd ≥ NPSHr+1m is satisfied

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 40 BOOSTER SETS SERIES

TYPE FHF..		RATED POWER	RISK CLASS												
			OHn												
			Q = DELIVERY												
			l/min 0	300	350	375	540	600	700	725	750	800	900	1000	1100
ELECTRIC PUMP	PUMP	kW	m3/h 0	18	21	23	32	36	42	44	45	48	54	60	66
H = TOTAL HEAD METRES COLUMN OF WATER															
40-125/11	40-125/D112	1 x 1,1	13,9	11,3	10,0	9,3	3,4	0,7							
40-125/15	40-125/D122	1 x 1,5	18,0	15,3	14,0	13,3	7,4	4,7							
40-125/22	40-125/D143	1 x 2,2	25,3	21,8	20,5	19,8	14,0	11,4	6,4	5,0	3,6	0,6			
40-160/30	40-160/D159	1 x 3	31,6	28,1	26,8	26,0	19,5	16,5	10,8	9,2	7,6				
40-160/40	40-160/D171	1 x 4	38,3	35,1	33,7	32,9	26,5	23,6	18,1	16,5	15,0	11,7			
40-200/55	40-200/D190	1 x 5,5	46,4	42,7	41,2	40,4	33,1	29,7	23,3	21,5	19,6				
40-200/75	40-200/D209	1 x 7,5	57,5	53,1	51,6	50,7	43,8	40,7	34,8	33,2	31,5	28,0			
40-250/110A	40-250/D218	1 x 11	63,6	57,8	56,2	55,2	47,8	44,5	38,2	36,5	34,8	31,1			
40-250/110	40-250/D233	1 x 11	71,7	66,0	64,3	63,4	55,7	52,3	45,8	44,0	42,1	38,3			
40-250/150	40-250/D251	1 x 15	85,0	78,6	76,9	76,0	68,4	65,0	58,6	56,8	55,0	51,1	42,6		

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf40-2p50-en_a_th

OHn = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 40 BOOSTER SETS SERIES

TYPE FHF..		RATED POWER	RISK CLASS												
			OHn												
			Q = DELIVERY												
			l/min 0	300	350	375	540	600	700	725	750	800	900	1000	1100
ELECTRIC PUMP	PUMP	kW	m3/h 0	18	21	23	32	36	42	44	45	48	54	60	66
H = TOTAL HEAD METRES COLUMN OF WATER															
40-125/11	40-125/D112	1 x 1,1	13,9	11,3	10,0	9,3	3,4	0,7							
40-125/15	40-125/D122	1 x 1,5	18,0	15,3	14,0	13,3	7,4	4,7							
40-125/22	40-125/D143	1 x 2,2	25,3	21,8	20,5	19,8	14,0	11,4	6,4	5,0	3,6	0,6			
40-160/30	40-160/D159	1 x 3	31,6	28,1	26,8	26,0	19,5	16,5	10,8	9,2	7,6				
40-160/40	40-160/D171	1 x 4	38,3	35,1	33,7	32,9	26,5	23,6	18,1	16,5	15,0	11,7			
40-200/55	40-200/D190	1 x 5,5	46,4	42,7	41,2	40,4	33,1	29,7	23,3	21,5	19,6				
40-200/75	40-200/D209	1 x 7,5	57,5	53,1	51,6	50,7	43,8	40,7	34,8	33,2	31,5	28,0			
40-250/110A	40-250/D218	1 x 11	63,6	57,8	56,2	55,2	47,8	44,5	38,2	36,5	34,8	31,1			
40-250/110	40-250/D233	1 x 11	71,7	66,0	64,3	63,4	55,7	52,3	45,8	44,0	42,1	38,3			
40-250/150	40-250/D251	1 x 15	85,0	78,6	76,9	76,0	68,4	65,0	58,6	56,8	55,0	51,1	42,6		

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf40-2p50-en_a_th

OHn = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES FHF 40

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS														
			OH1n	OH1n	Q = DELIVERY												
					l/min 0	300	350	375	540	600	700	725	750	800	900	1000	1100
					m³/h 0	18	21	23	32	36	42	44	45	48	54	60	66
NPSHr [METRES COLUMN OF WATER]																	
40-125/11	40-125/D112	1 x 1,1		1,8	1,9	1,9	2,4	2,7									
40-125/15	40-125/D122	1 x 1,5		1,8	1,9	1,9	2,4	2,7	3,7								
40-125/22	40-125/D143	1 x 2,2		1,8	1,9	1,9	2,4	2,7	3,7	4,1	4,6	6,3					
40-160/30	40-160/D159	1 x 3		1,9	1,9	1,9	2,4	2,9	4,1	4,5	5,0						
40-160/40	40-160/D171	1 x 4		1,9	1,9	1,9	2,4	2,9	4,1	4,5	5,0	6,2					
40-200/55	40-200/D190	1 x 5,5		2,0	2,1	2,2	2,9	3,4	4,5	4,9	5,3						
40-200/75	40-200/D209	1 x 7,5		2,0	2,1	2,2	2,9	3,4	4,5	4,9	5,3	6,3					
40-250/110A	40-250/D218	1 x 11		1,0	1,1	1,2	1,6	1,7	2,1	2,2	2,3	2,6					
40-250/110	40-250/D233	1 x 11		1,0	1,1	1,2	1,6	1,7	2,1	2,2	2,3	2,6					
40-250/150	40-250/D251	1 x 15		1,0	1,1	1,2	1,6	1,7	2,1	2,2	2,3	2,6	3,5				

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf40-2p50_NPSHr-en_a_th

OHn, OHm = class of risk value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 50 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH _{2n}			OH _{3n}									
			Q = DELIVERY												
			l/min 0	600	700	725	850	1000	1100	1200	1300	1350	1400	1500	1600
PUMP			m3/h 0	36	42	44	51	60	66	72	78	81	84	90	96
H = TOTAL HEAD METRES COLUMN OF WATER															
50-125/22	50-125/D119	1 x 2,2	16,8	13,7	12,3	11,8	9,5	6,2	3,7	0,9					
50-125/30	50-125/D130	1 x 3	19,9	17,5	16,1	15,8	13,6	10,5	8,0	5,3	2,3				
50-125/40	50-125/D139	1 x 4	24,3	21,8	20,6	20,2	18,3	15,3	13,1	10,5	7,7	6,2	4,6		
50-160/55	50-160/D158	1 x 5,5	31,8	29,3	27,7	27,3	24,8	21,1	18,2	15,0	11,4	9,5	7,6		
50-160/75	50-160/D174	1 x 7,5	39,8	36,6	35,2	34,8	32,5	29,1	26,5	23,5	20,2	18,5	16,7	12,7	
50-200/110A	50-200/D197	1 x 11	50,6	45,6	43,4	42,8	39,5	34,8	31,2	27,3	23,1	20,9	18,6		
50-200/110	50-200/D209	1 x 11	58,0	52,6	50,5	49,9	46,7	42,1	38,6	34,7	30,4	28,1	25,7	20,7	
50-250/150	50-250/D224	1 x 15	68,1	62,8	60,9	60,4	57,3	52,6	48,8	44,4	39,4	36,7	33,8		
50-250/185	50-250/D237	1 x 18,5	76,5	71,7	70,0	69,5	66,6	62,3	58,8	54,7	50,0	47,4	44,7	38,6	
50-250/220	50-250/D250	1 x 22	86,0	81,2	79,5	79,0	76,1	71,7	68,1	64,0	59,4	56,8	54,1	48,1	41,4

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf50-2p50-en_a_th

OH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 50 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH _{2n}			OH _{3n}									
			Q = DELIVERY												
			l/min 0	600	700	725	850	1000	1100	1200	1300	1350	1400	1500	1600
PUMP			m3/h 0	36	42	44	51	60	66	72	78	81	84	90	96
H = TOTAL HEAD METRES COLUMN OF WATER															
50-125/22	50-125/D119	1 x 2,2	16,8	13,7	12,3	11,8	9,5	6,2	3,7	0,9					
50-125/30	50-125/D130	1 x 3	19,9	17,5	16,1	15,8	13,6	10,5	8,0	5,3	2,3				
50-125/40	50-125/D139	1 x 4	24,3	21,8	20,6	20,2	18,3	15,3	13,1	10,5	7,7	6,2	4,6		
50-160/55	50-160/D158	1 x 5,5	31,8	29,3	27,7	27,3	24,8	21,1	18,2	15,0	11,4	9,5	7,6		
50-160/75	50-160/D174	1 x 7,5	39,8	36,6	35,2	34,8	32,5	29,1	26,5	23,5	20,2	18,5	16,7	12,7	
50-200/110A	50-200/D197	1 x 11	50,6	45,6	43,4	42,8	39,5	34,8	31,2	27,3	23,1	20,9	18,6		
50-200/110	50-200/D209	1 x 11	58,0	52,6	50,5	49,9	46,7	42,1	38,6	34,7	30,4	28,1	25,7	20,7	
50-250/150	50-250/D224	1 x 15	68,1	62,8	60,9	60,4	57,3	52,6	48,8	44,4	39,4	36,7	33,8		
50-250/185	50-250/D237	1 x 18,5	76,5	71,7	70,0	69,5	66,6	62,3	58,8	54,7	50,0	47,4	44,7	38,6	
50-250/220	50-250/D250	1 x 22	86,0	81,3	79,5	79,0	76,1	71,7	68,2	64,1	59,5	56,9	54,2	48,2	41,6

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf50-2p50-en_a_th

OH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES FHF 50

TYPE FHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS												
				OH2n				OH2m		OH3n		OH3m				
				Q = DELIVERY												
				l/min 0	600	700	725	850	1000	1100	1200	1300	1350	1400	1500	1600
				m³/h 0	36	42	44	51	60	66	72	78	81	84	90	96
				NPSHr [METRES COLUMN OF WATER]												
50-125/22	50-125/D119	1 x 2,2		2,1	2,3	2,3	2,6	3,1	3,5	3,9						
50-125/30	50-125/D130	1 x 3		2,1	2,3	2,3	2,6	3,1	3,5	3,9	4,4					
50-125/40	50-125/D139	1 x 4		2,1	2,3	2,3	2,6	3,1	3,5	3,9	4,4	4,7	5,0			
50-160/55	50-160/D158	1 x 5,5		1,9	2,1	2,2	2,5	2,9	3,2	3,6	4,2	4,6	5,1			
50-160/75	50-160/D174	1 x 7,5		1,9	2,1	2,2	2,5	2,9	3,2	3,6	4,2	4,6	5,1	6,5		
50-200/110A	50-200/D197	1 x 11		1,8	1,9	2,0	2,2	2,6	2,9	3,4	4,1	4,6	5,1			
50-200/110	50-200/D209	1 x 11		1,8	1,9	2,0	2,2	2,6	2,9	3,4	4,1	4,6	5,1	6,7		
50-250/150	50-250/D224	1 x 15		1,5	1,7	1,7	2,0	2,4	2,7	3,1	3,6	3,9	4,2			
50-250/185	50-250/D237	1 x 18,5		1,5	1,7	1,7	2,0	2,4	2,7	3,1	3,6	3,9	4,2	5,1		
50-250/220	50-250/D250	1 x 22		1,5	1,7	1,7	2,0	2,4	2,7	3,1	3,6	3,9	4,2	5,1	6,4	

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf50-2p50_NPSHr-en_a_th

OH_n, OH_m = class of risk value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that NPSH_d ≥ NPSH_r+1m is satisfied at the maximum requested capacity

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 65 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH3n						OH4n						
			Q = DELIVERY												
			l/min 0	800	900	1000	1100	1200	1350	1400	1500	1800	2000	2100	2300
			m3/h 0	48	54	60	66	72	81	84	90	108	120	126	138
H = TOTAL HEAD METRES COLUMN OF WATER															
65-125/40	65-125/D121	1 x 4	19,1	15,6	14,6	13,5	12,3	10,9	8,7	7,9	6,2				
65-125/55	65-125/D129	1 x 5,5	22,7	19,6	18,8	17,8	16,7	15,5	13,5	12,7	11,2	5,7			
65-125/75	65-125/D140	1 x 7,5	27,1	24,3	23,5	22,7	21,7	20,7	18,9	18,2	16,8	12,0	8,1		
65-160/110A	65-160/D161	1 x 11	32,7		29,2	28,3	27,2	26,0	23,9	23,2	21,6	15,9	11,5	9,0	
65-160/110	65-160/D168	1 x 11	35,9		32,5	31,5	30,5	29,4	27,4	26,7	25,2	19,8	15,6	13,3	
65-160/150	65-160/D178	1 x 15	41,9		38,9	38,1	37,1	36,1	34,2	33,6	32,2	27,2	23,2	21,1	16,3
65-200/150	65-200/D187	1 x 15	45,2		43,4	42,3	41,1	39,7	37,3	36,4	34,6	28,4	23,8	21,3	
65-200/185	65-200/D198	1 x 18,5	51,6		50,2	49,2	48,2	47,0	44,9	44,1	42,4	36,5	31,8	29,2	
65-200/220	65-200/D210	1 x 22	59,1		57,2	56,3	55,3	54,2	52,1	51,4	49,8	44,1	39,6	37,1	31,6
65-250/220	65-250/D220	1 x 22	62,8		60,6	59,4	58,0	56,4	53,5	52,5	50,2	42,1	35,7	32,1	
65-250/300	65-250/D241	1 x 30	76,4		75,0	73,9	72,6	71,1	68,5	67,5	65,4	57,8	51,6	48,2	40,6
65-250/370	65-250/D258	1 x 37	90,8		89,9	89,0	88,0	86,7	84,5	83,7	81,8	74,8	68,8	65,4	57,7

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf65-2p50-en_a_th

OH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 65 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH3n						OH4n						
			Q = DELIVERY												
			l/min 0	800	900	1000	1100	1200	1350	1400	1500	1800	2000	2100	2300
PUMP	PUMP		m3/h 0	48	54	60	66	72	81	84	90	108	120	126	138
H = TOTAL HEAD METRES COLUMN OF WATER															
65-125/40	65-125/D121	1 x 4	19,1	15,6	14,6	13,5	12,3	10,9	8,7	7,9	6,2				
65-125/55	65-125/D129	1 x 5,5	22,7	19,6	18,8	17,8	16,7	15,5	13,5	12,7	11,2	5,7			
65-125/75	65-125/D140	1 x 7,5	27,1	24,3	23,5	22,7	21,7	20,7	18,9	18,2	16,8	12,0	8,1		
65-160/110A	65-160/D161	1 x 11	32,7		29,2	28,3	27,2	26,0	23,9	23,2	21,6	15,9	11,5	9,0	
65-160/110	65-160/D168	1 x 11	35,9		32,5	31,5	30,5	29,4	27,4	26,7	25,2	19,8	15,6	13,3	
65-160/150	65-160/D178	1 x 15	41,9		38,9	38,1	37,1	36,1	34,2	33,6	32,2	27,2	23,2	21,1	16,3
65-200/150	65-200/D187	1 x 15	45,2		43,4	42,3	41,1	39,7	37,3	36,4	34,6	28,4	23,8	21,3	
65-200/185	65-200/D198	1 x 18,5	51,6		50,2	49,2	48,2	47,0	44,9	44,1	42,4	36,5	31,8	29,2	
65-200/220	65-200/D210	1 x 22	59,1		57,2	56,3	55,3	54,2	52,1	51,4	49,8	44,1	39,6	37,1	31,6
65-250/220	65-250/D220	1 x 22	62,8		60,6	59,4	58,0	56,4	53,5	52,5	50,2	42,1	35,7	32,1	
65-250/300	65-250/D241	1 x 30	76,4		75,0	73,9	72,6	71,1	68,5	67,5	65,4	57,8	51,6	48,2	40,6
65-250/370	65-250/D258	1 x 37	90,8		89,9	89,0	88,0	86,7	84,5	83,7	81,8	74,8	68,8	65,4	57,7

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf65-2p50-en_a_th

OH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES FHF 65

TYPE FHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS												
				OH3n				OH3m				OH4n		OH4m		
				Q = DELIVERY												
				l/min 0	800	900	1000	1100	1200	1350	1400	1500	1800	2000	2100	2300
				m³/h 0	48	54	60	66	72	81	84	90	108	120	126	138
				NPSHr [METRES COLUMN OF WATER]												
65-125/40	65-125/D121	1 x 4		1,0	1,2	1,3	1,6	1,9	2,4	2,6	3,1					
65-125/55	65-125/D129	1 x 5,5		1,0	1,2	1,3	1,6	1,9	2,4	2,6	3,1	5,1				
65-125/75	65-125/D140	1 x 7,5		1,0	1,2	1,3	1,6	1,9	2,4	2,6	3,1	5,1	7,0			
65-160/110A	65-160/D161	1 x 11			2,4	2,4	2,5	2,6	2,9	2,9	3,2	4,2	5,3	6,0		
65-160/110	65-160/D168	1 x 11			2,3	2,4	2,5	2,7	2,8	2,9	3,1	3,7	4,4	4,9		
65-160/150	65-160/D178	1 x 15			2,3	2,4	2,5	2,7	2,8	2,9	3,1	3,7	4,4	4,9	6,6	
65-200/150	65-200/D187	1 x 15			1,8	1,9	2,0	2,1	2,3	2,4	2,6	3,4	4,5	5,3		
65-200/185	65-200/D198	1 x 18,5			1,8	1,9	2,0	2,1	2,3	2,4	2,6	3,4	4,3	4,9		
65-200/220	65-200/D210	1 x 22			1,8	1,9	2,0	2,1	2,3	2,4	2,6	3,4	4,3	4,9	6,6	
65-250/220	65-250/D220	1 x 22			1,7	2,0	2,2	2,5	2,9	3,1	3,4	4,3	5,0	5,4		
65-250/300	65-250/D241	1 x 30			1,7	2,0	2,2	2,5	2,9	3,1	3,4	4,3	5,0	5,4	6,2	
65-250/370	65-250/D258	1 x 37			1,7	2,0	2,2	2,5	2,9	3,1	3,4	4,3	5,0	5,4	6,2	

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf65-2p50_NPSHr-en_a_th

OH_n, OH_m = class of risk value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that NPSH_d ≥ NPSH_r+1m is satisfied at the maximum requested capacity

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 80 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH4n						HH1n						
			Q = DELIVERY												
			l/min 0	1500	1650	1800	2050	2100	2200	2300	2600	3216	3500	3600	3650
PUMP			m3/h 0	90	99	108	123	126	132	138	156	193	210	216	219
H = TOTAL HEAD METRES COLUMN OF WATER															
80-160/150	80-160/D163	1 x 15	32,9	30,2	29,1	27,8	25,4	24,9	23,8	22,7	18,8	9,4	4,4		
80-160/185	80-160/D173	1 x 18,5	39,0	35,6	34,5	33,4	31,2	30,7	29,7	28,6	25,1	16,2	11,3	9,5	8,5
80-200/220	80-200/D189	1 x 22	48,0	44,7	43,4	41,8	39,0	38,3	37,0	35,6	30,9	19,2	12,8		
80-200/300	80-200/D207	1 x 30	59,9	56,9	55,8	54,4	51,9	51,3	50,1	48,9	44,7	34,2	28,5	26,4	25,3
80-250/370	80-250/D225	1 x 37	70,8	67,3	65,8	63,9	60,4	59,6	57,9	56,1	50,1	34,7	26,1		
80-250/450	80-250/D238	1 x 45	80,0	78,0	76,5	74,8	71,5	70,8	69,2	67,6	62,0	47,5	39,6	36,5	
80-250/550	80-250/D256	1 x 55	88,9	89,9	88,8	87,5	84,8	84,2	82,9	81,5	76,7	64,0	56,7	54,0	52,6

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf80-2p50-en_a_th

OH_n, HH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1, Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 80 BOOSTER SETS SERIES

TYPE FHF..		RATED POWER	RISK CLASS												
			OH4n						HH1n						
			Q = DELIVERY												
			l/min 0	1500	1650	1800	2050	2100	2200	2300	2600	3216	3500	3600	3650
ELECTRIC PUMP	PUMP	kW	m3/h 0	90	99	108	123	126	132	138	156	193	210	216	219
H = TOTAL HEAD METRES COLUMN OF WATER															
80-160/150	80-160/D163	1 x 15	32,9	30,2	29,1	27,8	25,4	24,9	23,8	22,7	18,8	9,4	4,4		
80-160/185	80-160/D173	1 x 18,5	39,0	35,6	34,5	33,4	31,2	30,7	29,7	28,6	25,1	16,2	11,3	9,5	8,5
80-200/220	80-200/D189	1 x 22	48,0	44,7	43,4	41,8	39,0	38,3	37,0	35,6	30,9	19,2	12,8		
80-200/300	80-200/D207	1 x 30	59,9	56,9	55,8	54,4	51,9	51,3	50,1	48,9	44,7	34,2	28,5	26,4	25,3
80-250/370	80-250/D225	1 x 37	70,8	67,3	65,8	63,9	60,4	59,6	57,9	56,1	50,1	34,7	26,1		
80-250/450	80-250/D238	1 x 45	80,0	78,0	76,5	74,8	71,5	70,8	69,2	67,6	62,0	47,5	39,6	36,5	
80-250/550	80-250/D256	1 x 55	88,9	89,9	88,8	87,5	84,8	84,2	82,9	81,5	76,7	64,0	56,7	54,0	52,6

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf80-2p50-en_a_th

OH_n, HH_n = class of risk value referred to the required rated capacity (Tab.6 para 7.3.1, Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES FHF 80

TYPE FHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS													
				OH4n		OH4m		HH1n		HH1m							
				Q = DELIVERY													
			l/min 0	1500	1650	1800	2050	2100	2200	2300	2600	3216	3500	3600	3650		
			m³/h 0	90	99	108	123	126	132	138	156	193	210	216	219		
			NPSHr [METRES COLUMN OF WATER]														
80-160/150	80-160/D163	1 x 15		3,7	3,8	3,9	4,0	4,1	4,2	4,2	4,5	5,4	6,2				
80-160/185	80-160/D173	1 x 18,5		3,7	3,8	3,9	4,0	4,1	4,2	4,2	4,5	5,4	6,2	6,5	6,8		
80-200/220	80-200/D189	1 x 22		2,8	3,0	3,1	3,3	3,4	3,5	3,6	3,9	5,1	6,3				
80-200/300	80-200/D207	1 x 30		2,8	3,0	3,1	3,3	3,4	3,5	3,6	3,9	5,1	6,3	6,9	7,3		
80-250/370	80-250/D225	1 x 37		3,0	3,1	3,3	3,6	3,6	3,8	3,9	4,4	6,0	7,4				
80-250/450	80-250/D238	1 x 45		2,4	2,6	2,7	3,0	3,1	3,2	3,3	3,8	4,9	5,5	5,7			
80-250/550	80-250/D256	1 x 55		2,4	2,6	2,7	3,0	3,1	3,2	3,3	3,8	4,9	5,5	5,7	5,8		

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf80-2p50_NPSHr-en_a_th

OH_n, OH_m, HH_n, HH_m = class of risk value referred to the required rated and maximum capacity (Tab.6 para 7.3.1, Tab.7 para 7.3.2 EN12845)

Check that NPSH_d ≥ NPSH_r+1m is satisfied at the maximum requested capacity



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HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 100 BOOSTER SETS SERIES

TYPE FHF..		RATED POWER	RISK CLASS																		
							HH1n	HH2n	HH3n					HH4n							
			Q = DELIVERY																		
			l/min 0	1333	1500	1667	2300	2900	3050	3216	3800	4066	4266	4333	5000	5166	5316	5500	6000		
ELECTRIC PUMP	PUMP	kW	m3/h 0	80	90	100	138	174	183	193	228	244	256	260	300	310	319	330	360		
H = TOTAL HEAD METRES COLUMN OF WATER																					
100-160/185	100-160/D150	1 x 18,5	26,7	26,0	25,6	25,2	22,9	19,9	19,0	18,0	13,9	11,8	10,2	9,6	3,5	1,8					
100-160/220	100-160/D165	1 x 22	33,0	32,2	31,7	31,2	28,7	25,3	24,4	23,3	18,8	16,6	14,8	14,2	7,6	5,9	4,2	2,2			
100-160/300	100-160/D185	1 x 30	42,3	41,2	40,8	40,3	37,8	34,6	33,6	32,5	28,2	26,0	24,2	23,6	16,9	15,1	13,5	11,4	5,3		
100-200/185	100-200/D168	1 x 18,5	36,3		33,5	32,7	28,6	23,5	22,0	20,3	13,5	10,1	7,4	6,4							
100-200/300	100-200/D192	1 x 30	49,0		47,5	46,9	43,7	39,5	38,3	36,8	31,0	28,0	25,5	24,7	15,5	12,9					
100-200/370	100-200/D203	1 x 37	56,0		54,6	54,0	51,0	46,9	45,8	44,4	38,7	35,8	33,4	32,6	23,7	21,2	18,9	16,0			
100-200/450	100-200/D213	1 x 45	61,0		60,0	59,5	57,1	53,6	52,6	51,4	46,3	43,7	41,5	40,7	32,3	29,9	27,7	24,8			
100-250/300	100-250/D200	1 x 30	54,6			52,1	47,7	41,8	40,0	37,9	29,3	24,8	21,2	19,9	5,9						
100-250/450	100-250/D221	1 x 45	68,8			66,9	63,5	58,7	57,2	55,4	48,1	44,2	41,0	39,9	27,2	23,6	20,3	15,9			
100-250/550	100-250/D235	1 x 55	78,5			76,9	74,0	69,8	68,5	66,9	60,2	56,6	53,6	52,6	40,6	37,2	34,0	29,8			
TYPE FHF..		RATED POWER	RISK CLASS																		
							HH4n					HH5n					HH6n				
			Q = DELIVERY																		
			l/min 0	1667	2500	3800	4150	4550	4700	4800	5000	5316	5500	6000	6366	6416	6500	6716	6750		
ELECTRIC PUMP	PUMP	kW	m3/h 0	100	150	228	249	273	282	288	300	319	330	360	382	385	390	403	405		
H = TOTAL HEAD METRES COLUMN OF WATER																					
100-250/750	100-250/D254	1 x 75	91,7	90,5	86,9	75,9	71,7	66,1	63,7	62,1	58,7	52,9	49,3	38,3	29,3	28,0					
100-250/900	100-250/D267	1 x 90	102,9	101,6	98,2	87,5	83,4	77,9	75,6	74,0	70,7	64,9	61,3	50,5	41,5	40,2	38,0	32,0	31,1		

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf100-2p50-en_a_th

HHn = class of risk value referred to the required rated capacity (Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 100 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS																			
								HH1n	HH2n	HH3n					HH4n								
				Q = DELIVERY																			
				l/min 0	1333	1500	1667	2300	2900	3050	3216	3800	4066	4266	4333	5000	5166	5316	5500	6000			
			m3/h 0	80	90	100	138	174	183	193	228	244	256	260	300	310	319	330	360				
H = TOTAL HEAD METRES COLUMN OF WATER																							
100-160/185	100-160/D150	1 x 18,5	26,7	26,8	26,6	26,4	25,0	23,1	22,6	21,9	19,3	18,0	16,9	16,6	12,6	11,5							
100-160/220	100-160/D165	1 x 22	33,0	33,0	32,7	32,4	30,8	28,6	28,0	27,2	24,3	22,8	21,6	21,1	16,8	15,6	14,5	13,1					
100-160/300	100-160/D185	1 x 30	42,3	42,0	41,8	41,5	39,9	37,8	37,2	36,5	33,6	32,1	30,9	30,5	26,1	24,9	23,7	22,3	18,2				
100-200/185	100-200/D168	1 x 18,5	36,3		34,5	33,9	30,7	26,7	25,6	24,2	18,9	16,2	14,1	13,4									
100-200/300	100-200/D192	1 x 30	49,0		48,5	48,1	45,8	42,8	41,9	40,8	36,4	34,1	32,3	31,6	24,6								
100-200/370	100-200/D203	1 x 37	56,0		55,5	55,2	53,1	50,2	49,3	48,3	44,1	41,9	40,2	39,6	32,8	30,9	29,2	26,9					
100-200/450	100-200/D213	1 x 45	61,0		61,0	60,7	59,2	56,9	56,2	55,3	51,7	49,8	48,2	47,7	41,4	39,6	37,9	35,8					
100-250/300	100-250/D200	1 x 30	54,6			53,3	49,8	45,0	43,5	41,8	34,7	30,9	27,9	26,8	15,0								
100-250/450	100-250/D221	1 x 45	68,8			68,1	65,6	61,9	60,8	59,4	53,5	50,4	47,7	46,8	36,3	33,4	30,5	26,9					
100-250/550	100-250/D235	1 x 55	78,5			78,1	76,2	73,0	72,0	70,8	65,6	62,8	60,4	59,5	49,7	46,9	44,2	40,7					

TYPE FHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS																						
								HH4n					HH5n					HH6n								
				Q = DELIVERY																						
				l/min 0	1667	2500	3800	4150	4550	4700	4800	5000	5316	5500	6000	6366	6416	6500	6716	6750						
			m3/h 0	100	150	228	249	282	288	300	319	330	360	382	385	390	403	405								
H = TOTAL HEAD METRES COLUMN OF WATER																										
100-250/750	100-250/D254	1 x 75	91,7	91,7	89,4	81,3	78,1	73,7	71,8	70,6	67,9	63,2	60,2	51,3	43,8	42,8										
100-250/900	100-250/D267	1 x 90	102,9	102,8	100,6	92,9	89,8	85,5	83,7	82,5	79,8	75,2	72,3	63,4	56,0	54,9	53,1	48,1	47,3							

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf100-2p50-en_a_th

HHn = class of risk value referred to the required rated capacity (Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES FHF 100

TYPE FHF..		RATED POWER kW	RISK CLASS																
			HH1n		HH2n		HH3n		HH1m		HH4n		HH2m		HH3m		HH4m		
Q = DELIVERY																			
l/min 0	1333	1500	1667	2300	2900	3050	3216	3800	4066	4266	4333	5000	5166	5316	5500	6000			
m3/h 0	80	90	100	138	174	183	193	228	244	256	260	300	310	319	330	360			
NPSHr [METRES COLUMN OF WATER]																			
100-160/185	100-160/D150	1 x 18,5		6,3	6,4	6,6	7,3	8,0	8,2	8,4	9,2	9,5	9,8	9,9	11,0	11,4			
100-160/220	100-160/D165	1 x 22		5,0	5,2	5,4	6,2	6,9	7,0	7,2	7,9	8,3	8,5	8,6	9,6	9,9	10,3	10,7	
100-160/300	100-160/D185	1 x 30		5,0	5,2	5,4	6,2	6,9	7,0	7,2	7,9	8,3	8,5	8,6	9,6	9,9	10,3	10,7	12,8
100-200/185	100-200/D168	1 x 18,5			4,2	4,2	4,6	5,6	6,0	6,5	9,2	11,1	12,8	13,5					
100-200/300	100-200/D192	1 x 30			3,1	3,1	3,3	3,5	3,6	3,7	4,2	4,6	4,9	5,1	7,0	7,7			
100-200/370	100-200/D203	1 x 37			3,1	3,1	3,3	3,5	3,6	3,7	4,2	4,6	4,9	5,1	7,0	7,7	8,4	9,5	
100-200/450	100-200/D213	1 x 45			3,1	3,1	3,3	3,5	3,6	3,7	4,2	4,6	4,9	5,1	7,0	7,7	8,4	9,5	
100-250/300	100-250/D200	1 x 30				4,7	5,0	5,3	5,4	5,4	5,7	5,8	5,9	6,0	6,3				
100-250/450	100-250/D221	1 x 45				4,6	4,7	4,7	4,8	4,8	4,8	4,9	4,9	4,9	5,1	5,2	5,2	5,3	
100-250/550	100-250/D235	1 x 55				4,6	4,7	4,7	4,8	4,8	4,8	4,9	4,9	4,9	5,1	5,2	5,2	5,3	
TYPE FHF..		RATED POWER kW	RISK CLASS																
			HH4n		HH5n		HH6n		HH4m		HH5m		HH6m						
Q = DELIVERY																			
l/min 0	1667	2500	3800	4150	4550	4700	4800	5000	5316	5500	6000	6366	6416	6500	6716	6750			
m3/h 0	100	150	228	249	273	282	288	300	319	330	360	382	385	390	403	405			
NPSHr [METRES COLUMN OF WATER]																			
100-250/750	100-250/D254	1 x 75		4,6	4,7	4,8	4,9	5,0	5,0	5,0	5,1	5,2	5,3	5,8	6,6	6,7			
100-250/900	100-250/D267	1 x 90		4,6	4,7	4,8	4,9	5,0	5,0	5,0	5,1	5,2	5,3	5,8	6,6	6,7	6,9	7,8	7,9

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf100-2p50_NPSHr-en_a_th

HHn, HHm = class of risk value referred to the required rated and maximum capacity (Tab.7 para 7.3.2 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity



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HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../FHF 125 BOOSTER SETS SERIES

TYPE FHF..		RATED POWER	RISK CLASS																				
								Q = DELIVERY															
			l/min Q	2000	2500	4800	4850	5700	6000	6400	6716	6783	7500	7983	8400	8667	8966	9333	9583	10000	10333	10833	
ELECTRIC PUMP	PUMP	kW	m3/h Q	120	150	288	291	342	360	384	403	407	450	479	504	520	538	560	575	600	620	650	
H = TOTAL HEAD METRES COLUMN OF WATER																							
125-200/300	125-200/D180	1 x 30	32,8	29,8	28,4	19,8	19,6	15,8	14,4	12,6	11,2	10,9	7,6										
125-200/450	125-200/D206	1 x 45	47,2	44,8	43,5	34,8	34,6	30,3	28,6	26,4	24,5	24,1	19,7	16,6	13,9	12,1							
125-200/550	125-200/D216	1 x 55	57,4	55,1	54,0	45,6	45,4	41,0	39,3	36,8	34,8	34,3	29,3	25,6	22,3	20,0	17,4	14,1					
125-270/750	125-270/D224	1 x 75	65,1		63,7	56,0	55,8	51,5	49,8	47,3	45,3	44,8	39,8	36,1	32,7	30,5	27,9	24,6	22,3				
125-270/900	125-270/D237	1 x 90	75,3		73,6	67,0	66,8	62,8	61,1	58,8	56,8	56,3	51,2	47,4	43,8	41,4	38,5	34,8	32,2	27,5			
125-270/1100	125-270/D253	1 x 110	88,2		85,4	79,2	79,0	75,1	73,5	71,2	69,2	68,8	63,5	59,5	55,7	53,0	49,9	45,8	42,8	37,6	33,1		
125-270/1320	125-270/D266	1 x 132	97,5		94,8	88,6	88,4	84,7	83,2	81,1	79,2	78,8	74,0	70,3	66,8	64,5	61,7	58,0	55,4	50,7	46,8	40,5	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-fhf125-2p50-en_a_th

HHn = class of risk value referred to the required rated capacity (Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../FHF 125 BOOSTER SETS SERIES

TYPE FHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS																			
								Q = DELIVERY														
			l/min	0	2000	2500	4800	4850	5700	6000	6400	6716	6783	7500	7983	8400	8667	8966	9333	9583	10000	10333
m3/h	0	120	150	288	291	342	360	384	403	407	450	479	504	520	538	560	575	600	620	650		
H = TOTAL HEAD METRES COLUMN OF WATER																						
125-200/300	125-200/D180	1 x 30	32,8	30,3	29,1	22,2	22,0	19,1	18,0	16,6	15,6	15,3	13,0									
125-200/450	125-200/D206	1 x 45	47,2	45,3	44,2	37,1	37,0	33,5	32,2	30,4	28,9	28,6	25,2	22,7	20,6	19,2						
125-200/550	125-200/D216	1 x 55	57,4	55,6	54,7	48,0	47,8	44,2	42,8	40,8	39,2	38,8	34,7	31,7	29,0	27,1	25,0	22,3				
125-270/750	125-270/D224	1 x 75	65,1		64,4	58,4	58,2	54,7	53,3	51,3	49,7	49,3	45,2	42,2	39,5	37,6	35,5	32,8	30,9			
125-270/900	125-270/D237	1 x 90	75,3		74,4	69,3	69,2	66,0	64,7	62,8	61,2	60,8	56,6	53,5	50,5	48,5	46,1	43,0	40,8	36,9		
125-270/1100	125-270/D253	1 x 110	88,2		86,2	81,5	81,4	78,4	77,1	75,2	73,6	73,2	68,9	65,6	62,4	60,1	57,5	54,0	51,5	47,0	43,1	
125-270/1320	125-270/D266	1 x 132	97,5		95,5	90,9	90,8	88,0	86,8	85,1	83,6	83,3	79,4	76,4	73,5	71,6	69,3	66,2	64,0	60,1	56,8	51,4

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-fhf125-2p50-en_a_th

HHn = class of risk value referred to the required rated capacity (Tab.7 para 7.3.2 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

NPSH REQUIRED FOR PUMP SERIES FHF 125

TYPE		RATED	RISK CLASS																				
			Q = DELIVERY																				
FHF..		POWER	l/min	0	2000	2500	4800	4850	5700	6000	6400	6716	6783	7500	7983	8400	8667	8966	9333	9583	10000	10333	10833
ELECTRIC PUMP	PUMP	KW	m³/h	0	120	150	288	291	342	360	384	403	407	450	479	504	520	538	560	575	600	620	650
NPSHr [METRES COLUMN OF WATER]																							
125-200/300	125-200/D180	1 x 30			6,5	6,8	8,5	8,5	9,1	9,3	9,6	9,9	9,9	10,4									
125-200/450	125-200/D206	1 x 45			6,1	6,2	7,1	7,1	7,6	7,7	8,0	8,3	8,3	8,9	9,5	10,0	10,4						
125-200/550	125-200/D216	1 x 55			6,1	6,2	7,1	7,1	7,6	7,7	8,0	8,3	8,3	8,9	9,5	10,0	10,4	10,8	11,5				
125-270/750	125-270/D224	1 x 75				7,8	8,3	8,3	8,5	8,6	8,7	8,8	8,9	9,3	9,7	10,1	10,5	11,1	11,9	12,7			
125-270/900	125-270/D237	1 x 90				6,0	6,9	6,9	7,2	7,3	7,5	7,7	7,7	8,1	8,4	8,8	9,0	9,4	9,9	10,4	11,4		
125-270/1100	125-270/D253	1 x 110				6,0	6,9	6,9	7,2	7,3	7,5	7,7	7,7	8,1	8,4	8,8	9,0	9,4	9,9	10,4	11,4	12,5	
125-270/1320	125-270/D266	1 x 132				6,0	6,9	6,9	7,2	7,3	7,5	7,7	7,7	8,1	8,4	8,8	9,0	9,4	9,9	10,4	11,4	12,5	14,8

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-fhf125-2p50_NPSHr-en_a_th

HHn, HHm = class of risk value referred to the required rated and maximum capacity (Tab.7 para 7.3.2 EN12845)

Check that NPSHd ≥ NPSHr+1m is satisfied at the maximum requested capacity



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GEN../FHF 32-80 BOOSTER SETS ELECTRICAL DATA TABLE AT 50 Hz

ELECTRIC SERVICE PUMP 3 X 400 V				ELECTRIC JOCKEY PUMP 3 X 400 V			CURRENT ABSORBED SET 3 X 400V			
TYPE FHF..		NOMINAL POWER		TYPE	Pn kW	In A	GEN..10 A	GEN..11 A	GEN..20 A	GEN..21 A
ELECTRIC PUMP	PUMP	Pn kW	In A							
32-125/07	32-125/D119	0,75	2,15	SV206	0,75	2,02	2,15	4,17	4,30	6,32
32-125/11	32-125/D136	1,1	2,61	SV206	0,75	2,02	2,61	4,63	5,22	7,24
32-160/15	32-160/D150	1,5	3,02	SV206	0,75	2,02	3,02	5,04	6,04	8,06
32-160/22	32-160/D164	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
32-200/30	32-200/D188	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
32-200/40	32-200/D204	4	7,59	SV209	1,1	2,61	7,59	10,20	15,18	17,79
40-125/11	40-125/D112	1,1	2,61	SV206	0,75	2,02	2,61	4,63	5,22	7,24
40-125/15	40-125/D122	1,5	3,02	SV206	0,75	2,02	3,02	5,04	6,04	8,06
40-125/22	40-125/D143	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
40-160/30	40-160/D159	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
40-160/40	40-160/D171	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
40-200/55	40-200/D190	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
40-200/75	40-200/D209	7,5	13,90	SV209	1,1	2,61	13,90	16,51	27,80	30,41
40-250/110A	40-250/D218	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
40-250/110	40-250/D233	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
40-250/150	40-250/D251	15	26,20	SV209	1,1	2,61	26,20	28,81	52,40	55,01
50-125/22	50-125/D119	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
50-125/30	50-125/D130	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
50-125/40	50-125/D139	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
50-160/55	50-160/D158	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
50-160/75	50-160/D174	7,5	13,90	SV206	0,75	2,02	13,90	15,92	27,80	29,82
50-200/110A	50-200/D197	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
50-200/110	50-200/D209	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
50-250/150	50-250/D224	15	26,20	SV209	1,1	2,61	26,20	28,81	52,40	55,01
50-250/185	50-250/D237	18,5	33,40	SV209	1,1	2,61	33,40	36,01	66,80	69,41
50-250/220	50-250/D250	22	41,70	SV209	1,1	2,61	41,70	44,31	83,40	86,01
65-125/40	65-125/D121	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
65-125/55	65-125/D129	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
65-125/75	65-125/D140	7,5	13,90	SV206	0,75	2,02	13,90	15,92	27,80	29,82
65-160/110A	65-160/D161	11	19,80	SV206	0,75	2,02	19,80	21,82	39,60	41,62
65-160/110	65-160/D168	11	19,80	SV206	0,75	2,02	19,80	21,82	39,60	41,62
65-160/150	65-160/D178	15	26,20	SV206	0,75	2,02	26,20	28,22	52,40	54,42
65-200/150	65-200/D187	15	26,20	SV206	0,75	2,02	26,20	28,22	52,40	54,42
65-200/185	65-200/D198	18,5	33,40	SV209	1,1	2,61	33,40	36,01	66,80	69,41
65-200/220	65-200/D210	22	41,70	SV209	1,1	2,61	41,70	44,31	83,40	86,01
65-250/220	65-250/D220	22	41,70	SV209	1,1	2,61	41,70	44,31	83,40	86,01
65-250/300	65-250/D241	30	54,00	SV209	1,1	2,61	54,00	56,61	108,00	110,61
65-250/370	65-250/D258	37	65,00	SV212	1,5	3,45	65,00	68,45	130,00	133,45
80-160/150	80-160/D163	15	26,20	SV407	1,1	2,61	26,20	28,81	52,40	55,01
80-160/185	80-160/D173	18,5	33,40	SV407	1,1	2,61	33,40	36,01	66,80	69,41
80-200/220	80-200/D189	22	41,70	SV407	1,1	2,61	41,70	44,31	83,40	86,01
80-200/300	80-200/D207	30	54,00	SV409	1,5	3,45	54,00	57,45	108,00	111,45
80-250/370	80-250/D225	37	65,00	SV409	1,5	3,45	65,00	68,45	130,00	133,45
80-250/450	80-250/D238	45	80,00	SV409	1,5	3,45	80,00	83,45	160,00	163,45
80-250/550	80-250/D256	55	99,00	SV413	2,2	5,03	99,00	104,03	198,00	203,03

The current indicated is the maximum current absorbed by the electric pumps.

ENELP-FHF32-80_2p50-en_b_te



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GEN../FHF 100-125 BOOSTER SETS ELECTRICAL DATA TABLE AT 50 Hz

ELECTRIC SERVICE PUMP 3 X 400 V				ELECTRIC JOCKEY PUMP 3 X 400 V			CURRENT ABSORBED SET 3 X 400V			
ELECTRIC PUMP	TYPE FHF.. PUMP	P _n kW	I _n A	TYPE	P _n kW	I _n A	GEN..10 A	GEN..11 A	GEN..20 A	GEN..21 A
100-160/185	100-160/D150	18,5	33,40	SV407	1,1	2,61	33,40	36,01	66,80	69,41
100-160/220	100-160/D165	22	41,70	SV407	1,1	2,61	41,70	44,31	83,40	86,01
100-160/300	100-160/D185	30	54,00	SV407	1,1	2,61	54,00	56,61	108,00	110,61
100-200/185	100-200/D168	18,5	33,40	SV407	1,1	2,61	33,40	36,01	66,80	69,41
100-200/300	100-200/D192	30	54,00	SV407	1,1	2,61	54,00	56,61	108,00	110,61
100-200/370	100-200/D203	37	65,00	SV407	1,1	2,61	65,00	67,61	130,00	132,61
100-200/450	100-200/D213	45	80,00	SV409	1,5	3,45	80,00	83,45	160,00	163,45
100-250/300	100-250/D200	30	54,00	SV407	1,1	2,61	54,00	56,61	108,00	110,61
100-250/450	100-250/D221	45	80,00	SV409	1,5	3,45	80,00	83,45	160,00	163,45
100-250/550	100-250/D235	55	99,00	SV409	1,5	3,45	99,00	102,45	198,00	201,45
100-250/750	100-250/D254	75	133,00	SV413	2,2	5,03	133,00	138,03	266,00	271,03
100-250/900	100-250/D267	90	157,00	SV413	2,2	5,03	157,00	162,03	314,00	319,03
125-200/300	125-200/D180	30	54,00	SV805	2,2	5,03	54,00	59,03	108,00	113,03
125-200/450	125-200/D206	45	80,00	SV805	2,2	5,03	80,00	85,03	160,00	165,03
125-200/550	125-200/D216	55	99,00	SV806	3	6,01	99,00	105,01	198,00	204,01
125-270/750	125-270/D224	75	133,00	SV806	3	6,01	133,00	139,01	266,00	272,01
125-270/900	125-270/D237	90	157,00	SV807	4	8,02	157,00	165,02	314,00	322,02
125-270/1100	125-270/D253	110	196,00	SV807	4	8,02	196,00	204,02	392,00	400,02
125-270/1320	125-270/D266	132	235,00	SV809	4	8,02	235,00	243,02	470,00	478,02

The current indicated is the maximum current absorbed by the electric pumps.

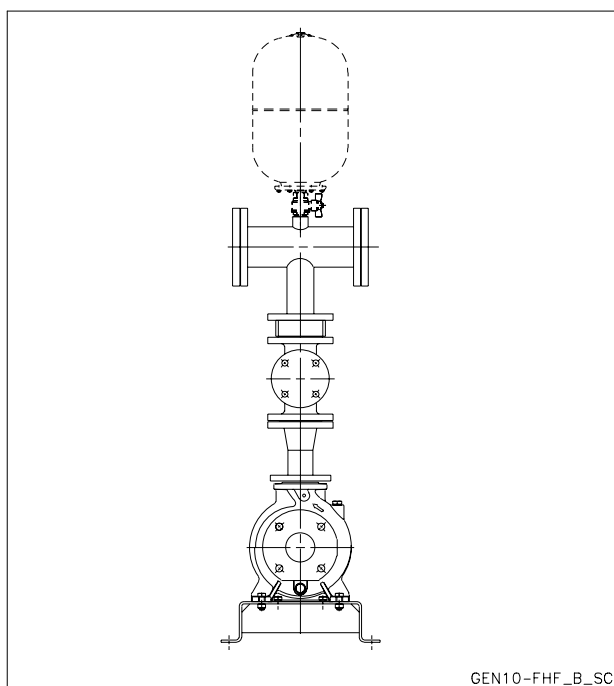
ENELP-FHF100-125_2p50-en_b_te

**Fire-fighting
booster sets
EN 12845**
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
Automatic Sprinkler systems.

**GEN..10/FHF
Series**

SPECIFICATIONS

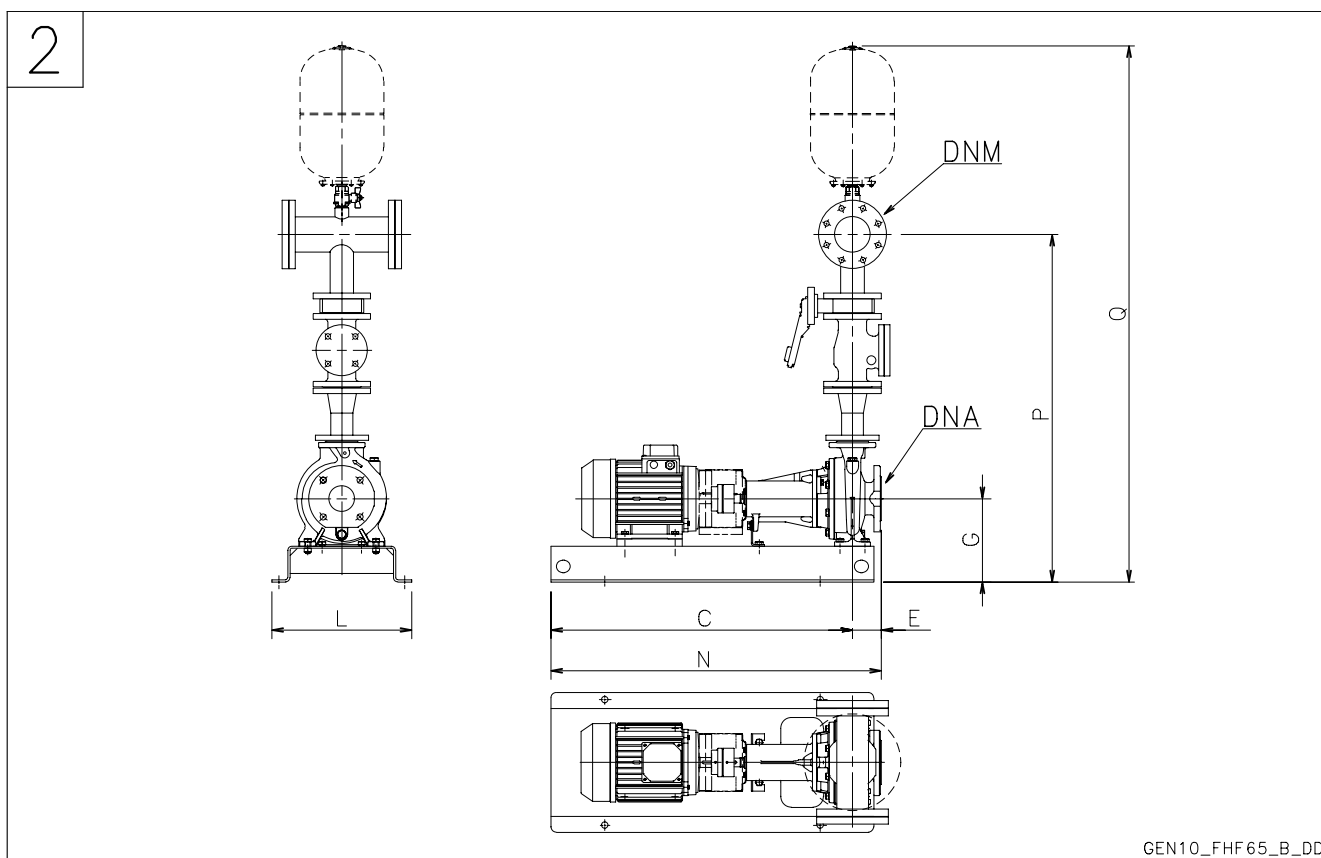
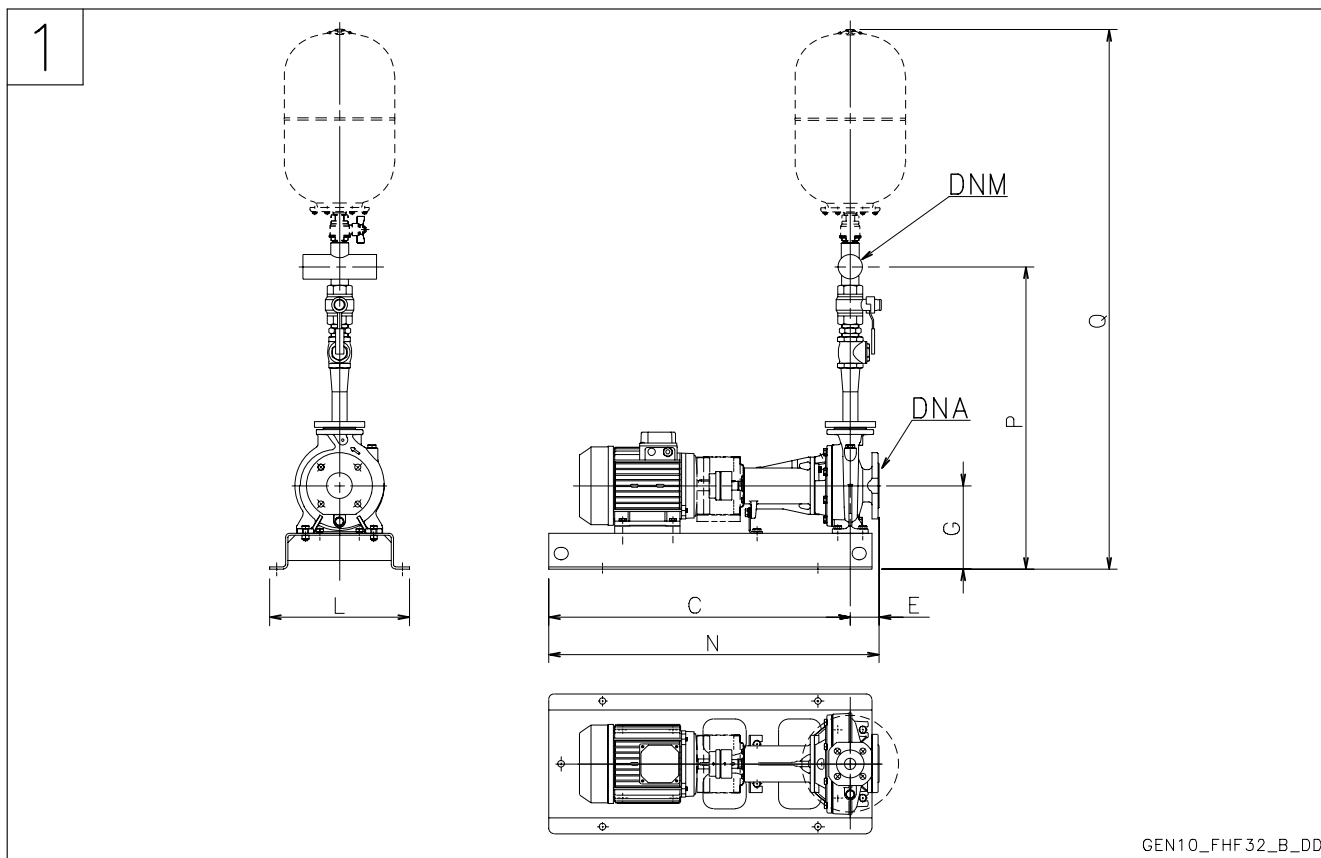
- **Flow** up to 650 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
132 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GEND...).
 - Star/Delta for higher powers (GENY... set).
- **Electric service pump with horizontal axis:**
 - FHF Series (motor protection grade IP55).
- Maximum running pressure:
12 bar.



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GEN..10/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

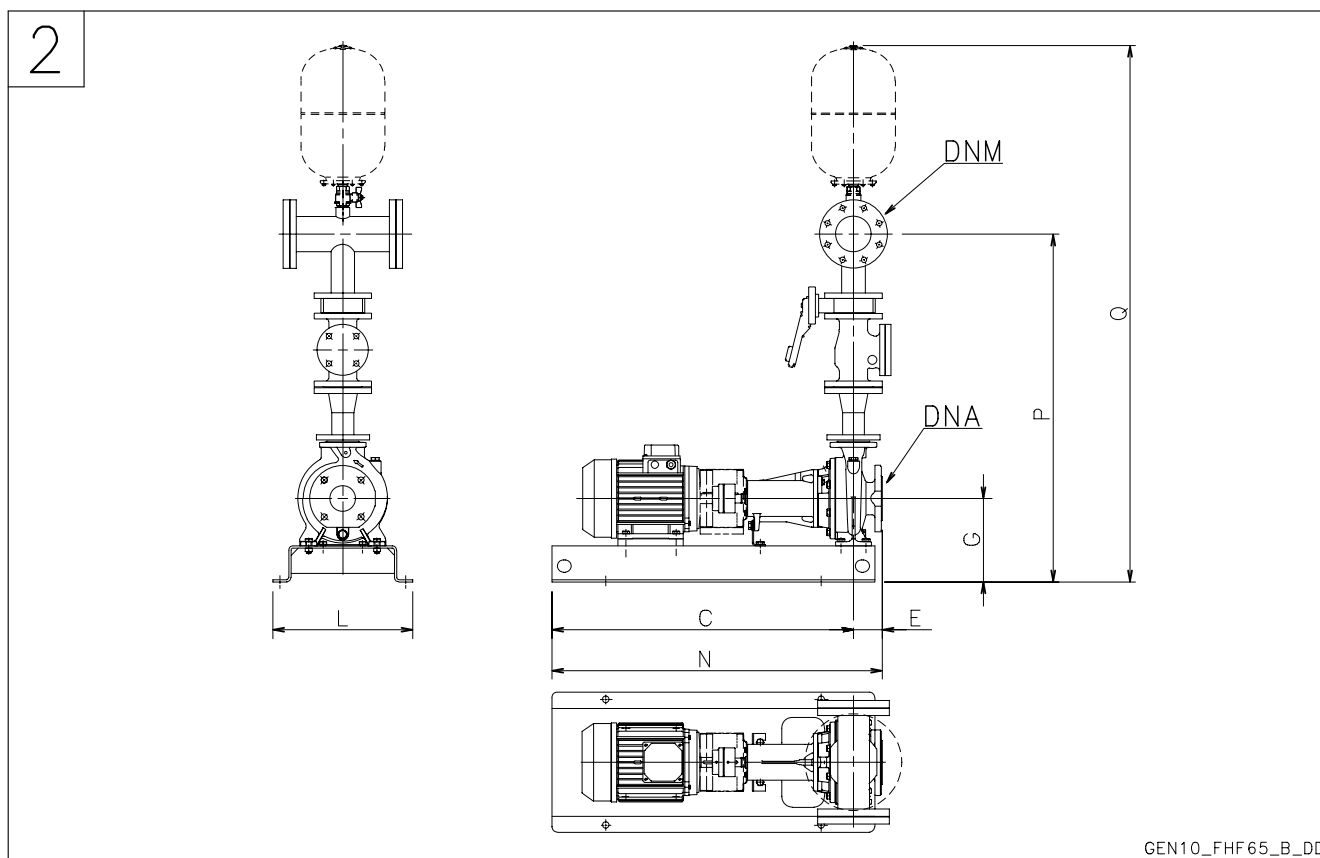


**GEN..10/FHF 32-80 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845**

GEN..10	DRW N°	DNA	DNM	C	E	G	L	N	P	Q
FHF32-125/07	1	R 2"	Rp 1" 1/2	740	80	212	360	820	773	1347
FHF32-125/11	1	R 2"	Rp 1" 1/2	740	80	212	360	820	773	1347
FHF32-160/15	1	R 2"	Rp 1" 1/2	840	80	232	390	920	813	1387
FHF32-160/22	1	R 2"	Rp 1" 1/2	840	80	232	390	920	813	1387
FHF32-200/30	1	R 2"	Rp 1" 1/2	840	80	260	390	920	861	1435
FHF32-200/40	1	R 2"	Rp 1" 1/2	840	80	260	390	920	861	1435
FHF40-125/11	2	65	65	740	80	212	360	820	994	1582
FHF40-125/15	2	65	65	840	80	212	390	920	994	1582
FHF40-125/22	2	65	65	840	80	212	390	920	994	1582
FHF40-160/30	2	65	65	840	80	232	390	920	1034	1622
FHF40-160/40	2	65	65	840	80	232	390	920	1034	1622
FHF40-200/55	2	65	65	940	100	260	450	1040	1082	1670
FHF40-200/75	2	65	65	940	100	260	450	1040	1082	1670
FHF40-250/110A	2	65	65	1175	100	280	540	1275	1147	1735
FHF40-250/110	2	65	65	1175	100	280	540	1275	1147	1735
FHF40-250/150	2	65	65	1175	100	280	540	1275	1147	1735
FHF50-125/22	2	65	65	840	100	232	390	940	1116	1704
FHF50-125/30	2	65	65	840	100	232	390	940	1116	1704
FHF50-125/40	2	65	65	840	100	232	390	940	1116	1704
FHF50-160/55	2	65	65	940	100	260	450	1040	1164	1752
FHF50-160/75	2	65	65	940	100	260	450	1040	1164	1752
FHF50-200/110A	2	65	65	1060	100	260	490	1160	1184	1772
FHF50-200/110	2	65	65	1060	100	260	490	1160	1184	1772
FHF50-250/150	2	65	65	1175	100	280	540	1275	1229	1817
FHF50-250/185	2	65	65	1175	100	280	540	1275	1229	1817
FHF50-250/220	2	65	65	1175	100	280	540	1275	1229	1817
FHF65-125/40	2	80	80	825	100	260	390	925	1221	1815
FHF65-125/55	2	80	80	925	100	260	450	1025	1221	1815
FHF65-125/75	2	80	80	925	100	260	450	1025	1221	1815
FHF65-160/110A	2	80	80	1175	100	260	540	1275	1241	1835
FHF65-160/110	2	80	80	1175	100	260	540	1275	1241	1835
FHF65-160/150	2	80	80	1175	100	260	540	1275	1241	1835
FHF65-200/150	2	80	80	1175	100	280	540	1275	1286	1880
FHF65-200/185	2	80	80	1175	100	280	540	1275	1286	1880
FHF65-200/220	2	80	80	1175	100	280	540	1275	1286	1880
FHF65-250/220	2	80	80	1160	100	310	540	1260	1341	1935
FHF65-250/300	2	80	80	1310	100	310	610	1410	1341	1935
FHF65-250/370	2	80	80	1310	100	310	610	1410	1341	1935
FHF80-160/150	2	100	100	1175	125	280	540	1300	1354	1961
FHF80-160/185	2	100	100	1175	125	280	540	1300	1354	1961
FHF80-200/220	2	100	100	1175	125	280	540	1300	1379	1986
FHF80-200/300	2	100	100	1325	125	310	610	1450	1409	2016
FHF80-250/370	2	100	100	1310	125	310	610	1435	1439	2046
FHF80-250/450	2	100	100	1310	125	365	610	1435	1494	2101
FHF80-250/550	2	100	100	1510	125	390	660	1635	1519	2126

Dimensions in mm. Tolerance ± 10 mm.

gen10_fhf-en_d_td

**GEN..10/FHF 100-125 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845**


GEN..10	DRW	DNM	C	E	G	L	N	P	Q
FHF100-160/185	125	125	1266	125	298	550	1391	1518	2138
FHF100-160/220	125	125	1315	125	298	550	1440	1518	2138
FHF100-160/300	125	125	1435	125	298	550	1560	1518	2138
FHF100-200/185	125	125	1266	125	273	550	1391	1493	2113
FHF100-200/300	125	125	1435	125	273	550	1560	1493	2113
FHF100-200/370	125	125	1435	125	273	550	1560	1493	2113
FHF100-200/450	125	125	1470	125	318	670	1595	1538	2158
FHF100-250/300	125	125	1435	140	298	550	1575	1518	2138
FHF100-250/450	125	125	1470	140	298	550	1610	1518	2138
FHF100-250/550	125	125	1575	140	343	670	1715	1563	2183
FHF100-250/750	125	125	1650	140	373	740	1790	1593	2213
FHF100-250/900	125	125	1650	140	373	740	1790	1593	2213
FHF125-200/300	150	150	1495	140	323	550	1635	1675	2309
FHF125-200/450	150	150	1530	140	343	670	1670	1695	2329
FHF125-200/550	150	150	1635	140	343	670	1775	1695	2329
FHF125-270/750	150	150	1710	140	423	750	1850	1815	2449
FHF125-270/900	150	150	1710	140	423	750	1850	1815	2449
FHF125-270/1100	150	150	1850	140	478	870	1990	1870	2504
FHF125-270/1320	150	150	1850	140	478	870	1990	1870	2504

Dimensions in mm. Tolerance ± 10 mm.

gen10_fhf100-en_c_td

Fire-fighting booster sets EN 12845

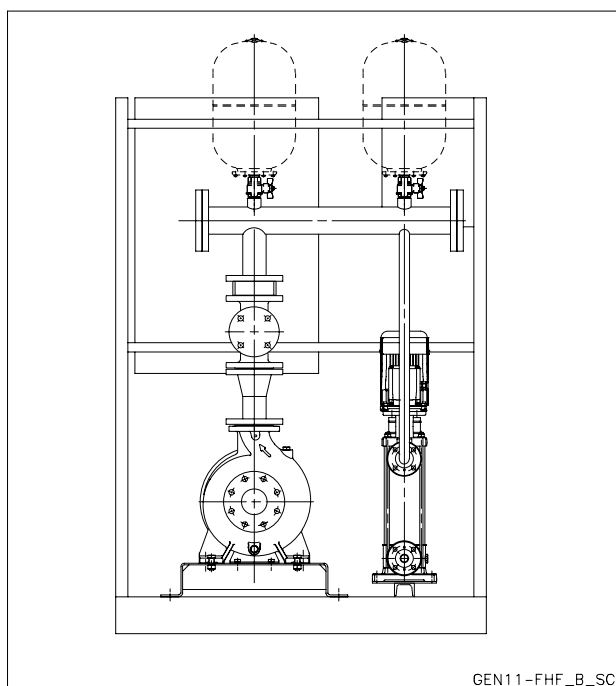
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
- Automatic Sprinkler systems.

GEN..11/FHF Series



SPECIFICATIONS

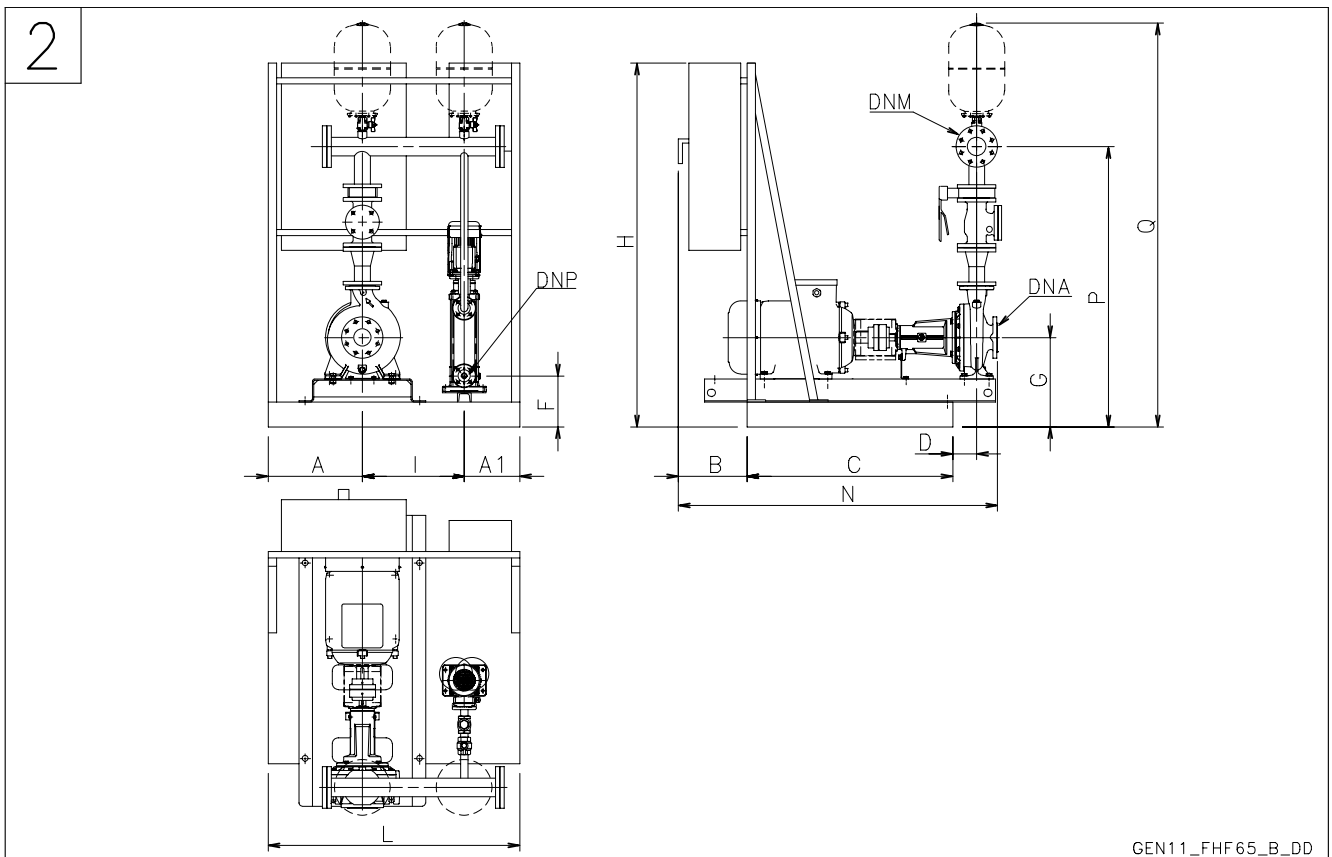
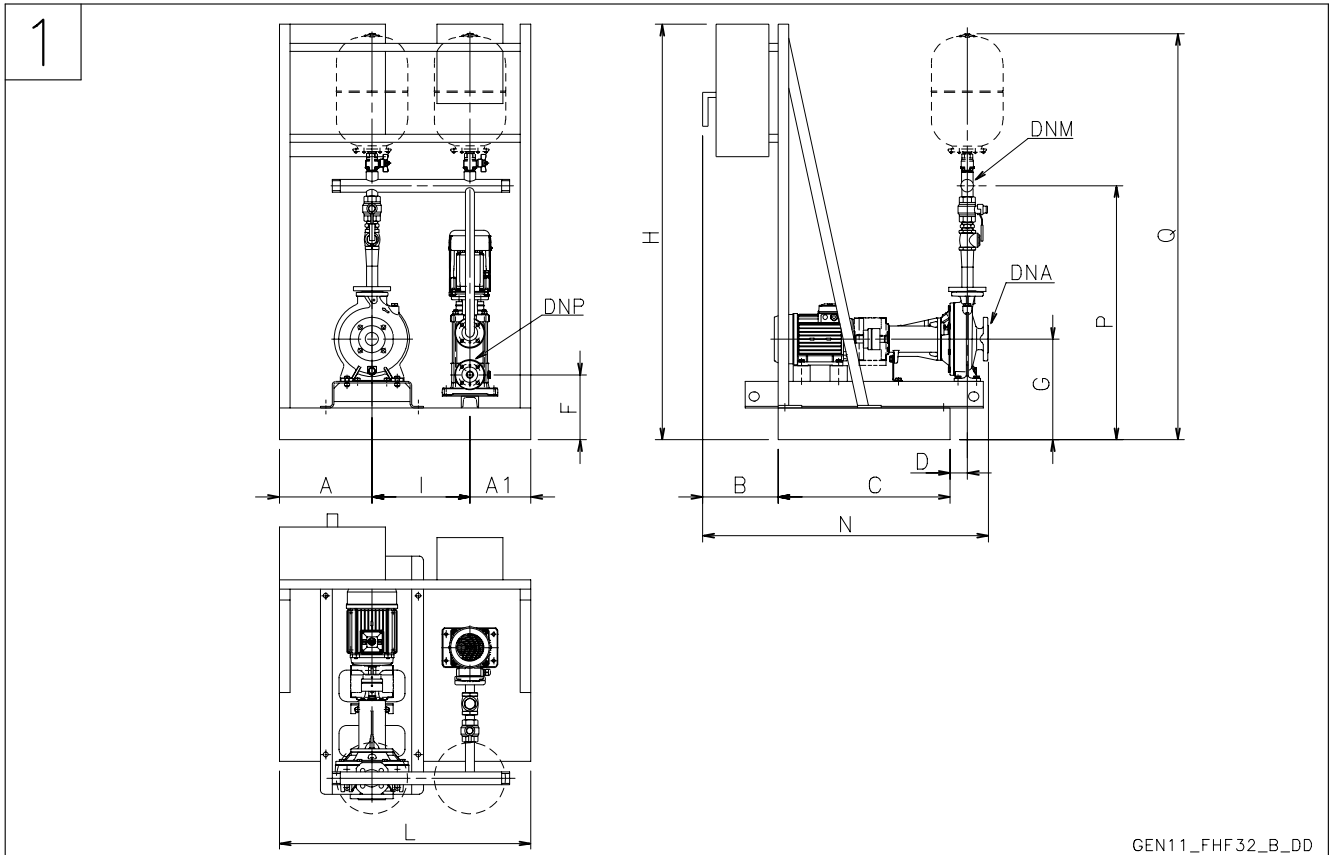
- **Flow** up to 650 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
132 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GEND...).
 - Star/Delta for higher powers (GENY... set).
- **Electric service pump with horizontal axis:**
 - FHF Series (motor protection grade IP55).
- **Electric jockey pump with vertical axis:**
 - SV Series (motor protection grade IP55).
- Maximum running pressure:
12 bar.



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GEN..11/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845





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GEN..11/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..11	DRW N°	DNA	DNP	DNM	A	A1	B	C	D	F	G	H	I	L	N	P	Q
FHF32-125/07	1	R 2"	Rp 1"	Rp 1" 1/2	320	260	240	590	45	225	312	1400	370	950	955	873	1447
FHF32-125/11	1	R 2"	Rp 1"	Rp 1" 1/2	320	260	240	590	45	225	312	1400	370	950	955	873	1447
FHF32-160/15	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	332	1400	370	950	1035	913	1487
FHF32-160/22	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	332	1400	370	950	1035	913	1487
FHF32-200/30	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	360	1400	370	950	1035	961	1535
FHF32-200/40	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	360	1400	370	950	1035	961	1535
FHF40-125/11	2	65	Rp 1"	65	320	260	240	590	45	225	312	1400	370	950	955	1094	1682
FHF40-125/15	2	65	Rp 1"	65	327	253	240	650	65	225	312	1400	370	950	1035	1094	1682
FHF40-125/22	2	65	Rp 1"	65	327	253	240	650	65	225	312	1400	370	950	1035	1094	1682
FHF40-160/30	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1035	1134	1722
FHF40-160/40	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1035	1134	1722
FHF40-200/55	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1202	1790
FHF40-200/75	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1202	1790
FHF40-250/110A	2	65	Rp 1"	65	435	295	280	890	105	245	400	1420	440	1170	1375	1267	1855
FHF40-250/110	2	65	Rp 1"	65	435	295	280	890	105	245	400	1420	440	1170	1375	1267	1855
FHF40-250/150	2	65	Rp 1"	65	435	295	280	890	105	245	400	1570	440	1170	1375	1267	1855
FHF50-125/22	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
FHF50-125/30	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
FHF50-125/40	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
FHF50-160/55	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1284	1872
FHF50-160/75	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1284	1872
FHF50-200/110A	2	65	Rp 1"	65	435	295	280	790	105	245	380	1420	440	1170	1275	1304	1892
FHF50-200/110	2	65	Rp 1"	65	435	295	280	790	105	245	380	1420	440	1170	1275	1304	1892
FHF50-250/150	2	65	Rp 1"	65	435	295	280	890	105	245	400	1570	440	1170	1375	1349	1937
FHF50-250/185	2	65	Rp 1"	65	435	295	280	890	105	245	400	1750	440	1170	1375	1349	1937
FHF50-250/220	2	65	Rp 1"	65	435	295	280	890	105	245	400	1750	440	1170	1375	1349	1937
FHF65-125/40	2	80	Rp 1"	80	323	187	240	650	50	225	360	1400	440	950	1040	1321	1915
FHF65-125/55	2	80	Rp 1"	80	338	222	240	710	70	245	380	1420	440	1000	1120	1341	1935
FHF65-125/75	2	80	Rp 1"	80	338	222	240	710	70	245	380	1420	440	1000	1120	1341	1935
FHF65-160/110A	2	80	Rp 1"	80	435	295	280	890	105	245	380	1420	440	1170	1375	1361	1955
FHF65-160/110	2	80	Rp 1"	80	435	295	280	890	105	245	380	1420	440	1170	1375	1361	1955
FHF65-160/150	2	80	Rp 1"	80	435	295	280	890	105	245	380	1570	440	1170	1375	1361	1955
FHF65-200/150	2	80	Rp 1"	80	435	295	280	890	105	245	400	1570	440	1170	1375	1406	2000
FHF65-200/185	2	80	Rp 1"	80	435	295	280	890	105	245	400	1570	440	1170	1375	1406	2000
FHF65-200/220	2	80	Rp 1"	80	435	295	280	890	105	245	400	1570	440	1170	1375	1406	2000
FHF65-250/220	2	80	Rp 1"	80	435	295	280	890	90	245	430	1750	440	1170	1360	1461	2055
FHF65-250/300	2	80	Rp 1"	80	430	250	280	990	115	245	430	1750	490	1170	1485	1461	2055
FHF65-250/370	2	80	Rp 1"	80	430	250	280	990	115	245	430	1940	490	1170	1485	1461	2055
FHF80-160/150	2	100	Rp 1" 1/4	100	435	295	280	890	105	245	400	1570	440	1170	1400	1474	2081
FHF80-160/185	2	100	Rp 1" 1/4	100	435	295	280	890	105	245	400	1750	440	1170	1400	1474	2081
FHF80-200/220	2	100	Rp 1" 1/4	100	435	295	280	890	105	245	400	1750	440	1170	1400	1499	2106
FHF80-200/300	2	100	Rp 1" 1/4	100	430	250	280	990	130	245	430	1750	490	1170	1525	1529	2136
FHF80-250/370	2	100	Rp 1" 1/4	100	430	250	280	990	115	245	430	1940	490	1170	1510	1559	2166
FHF80-250/450	2	100	Rp 1" 1/4	100	430	250	330	990	115	245	485	1940	490	1170	1560	1614	2221
FHF80-250/550	2	100	Rp 1" 1/4	100	525	275	330	1120	155	265	530	1960	600	1400	1730	1659	2266

Dimensions in mm. Tolerance ± 10 mm.

gen11_fhf-en_d_td

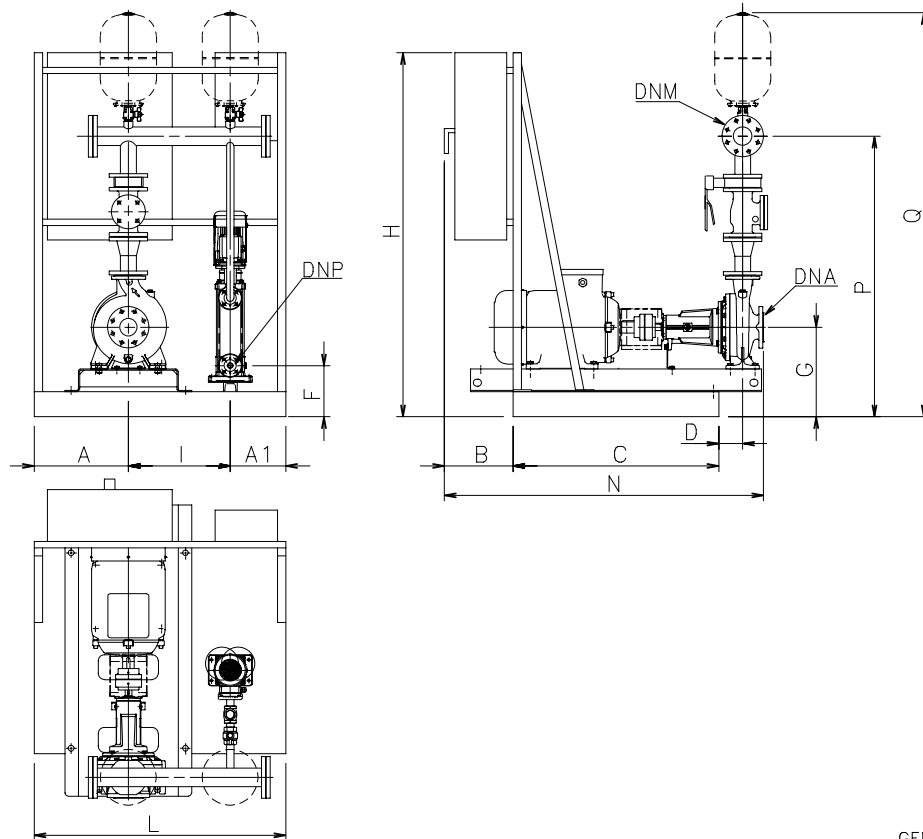


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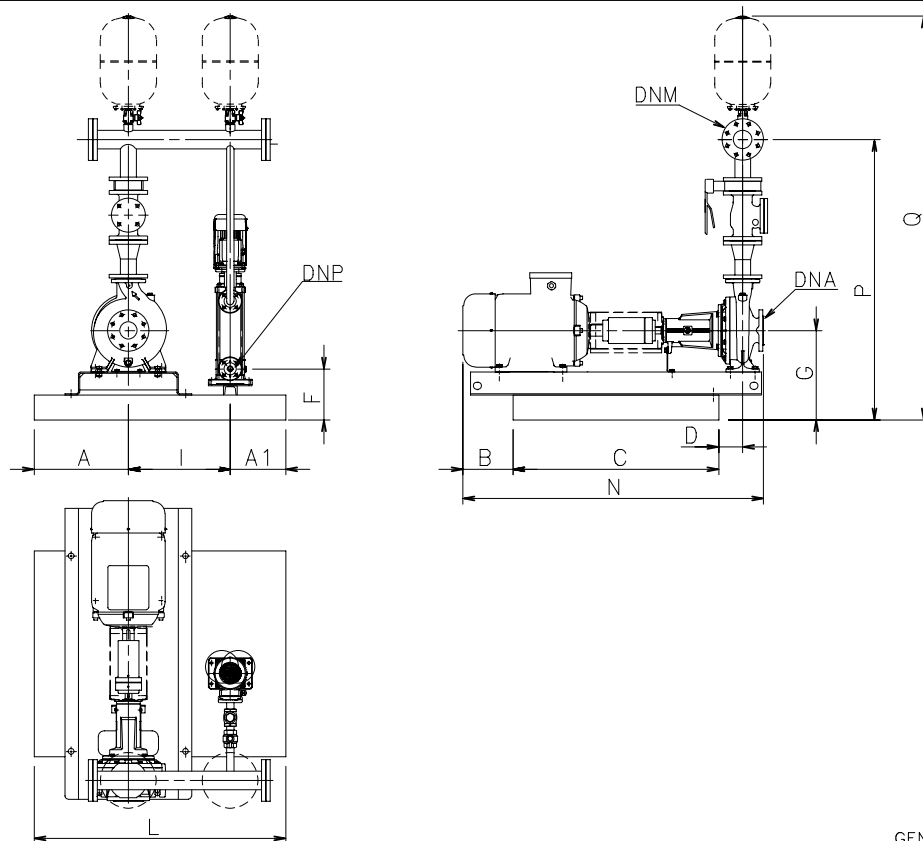
GEN..11/FHF 100-125 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

2



GEN11_FHF65_B_DD

3



GEN11_FHF100_B_DD



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GEN..11/FHF 100-125 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..11	DRW N°	DNA	DNP	DNM	A	A1	B	C	D	F	G	H	I	L	N	P	Q
FHF100-160/185	2	125	Rp 1"1/4	125	411	269	291	890	85	245	418	1750	490	1170	1391	1638	2258
FHF100-160/220	2	125	Rp 1"1/4	125	411	269	190	1020	105	245	418	1750	490	1170	1440	1638	2258
FHF100-160/300	2	125	Rp 1"1/4	125	411	269	310	1020	105	245	418	1750	490	1170	1560	1638	2258
FHF100-200/185	2	125	Rp 1"1/4	125	411	269	291	890	85	245	393	1750	490	1170	1391	1613	2233
FHF100-200/300	2	125	Rp 1"1/4	125	411	269	310	1020	105	245	393	1750	490	1170	1560	1613	2233
FHF100-200/370	2	125	Rp 1"1/4	125	411	269	310	1020	105	245	393	1750	490	1170	1560	1613	2233
FHF100-200/450	2	125	Rp 1"1/4	125	451	249	215	1130	125	245	438	1750	600	1300	1595	1658	2278
FHF100-250/300	2	125	Rp 1"1/4	125	411	269	310	1020	105	245	418	1750	490	1170	1575	1638	2258
FHF100-250/450	2	125	Rp 1"1/4	125	411	269	345	1020	105	245	418	1750	490	1170	1610	1638	2258
FHF100-250/550	2	125	Rp 1"1/4	125	451	249	320	1130	125	245	463	1750	600	1300	1715	1683	2303
FHF100-250/750	3	125	Rp 1"1/4	125	620	220	400	1110	140	265	513	/	600	1440	1790	1733	2353
FHF100-250/900	3	125	Rp 1"1/4	125	620	220	400	1110	140	265	513	/	600	1440	1790	1733	2353
FHF125-200/300	2	150	Rp 1"1/2	150	411	269	370	1020	105	250	443	1750	490	1170	1635	1795	2429
FHF125-200/450	2	150	Rp 1"1/2	150	451	249	275	1130	125	250	463	1750	600	1300	1670	1815	2449
FHF125-200/550	2	150	Rp 1"1/2	150	451	249	380	1130	125	250	463	1750	600	1300	1775	1815	2449
FHF125-270/750	3	150	Rp 1"1/2	150	620	220	370	1400	80	270	563	/	600	1440	1850	1955	2589
FHF125-270/900	3	150	Rp 1"1/2	150	620	220	370	1400	80	270	563	/	600	1440	1850	1955	2589
FHF125-270/1100	3	150	Rp 1"1/2	150	650	220	510	1400	80	270	618	/	650	1520	1990	2010	2644
FHF125-270/1320	3	150	Rp 1"1/2	150	650	220	510	1400	80	270	618	/	650	1520	1990	2010	2644

Dimensions in mm. Tolerance ± 10 mm.

gen11_fhf100-en_d_td



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Fire-fighting booster sets EN 12845

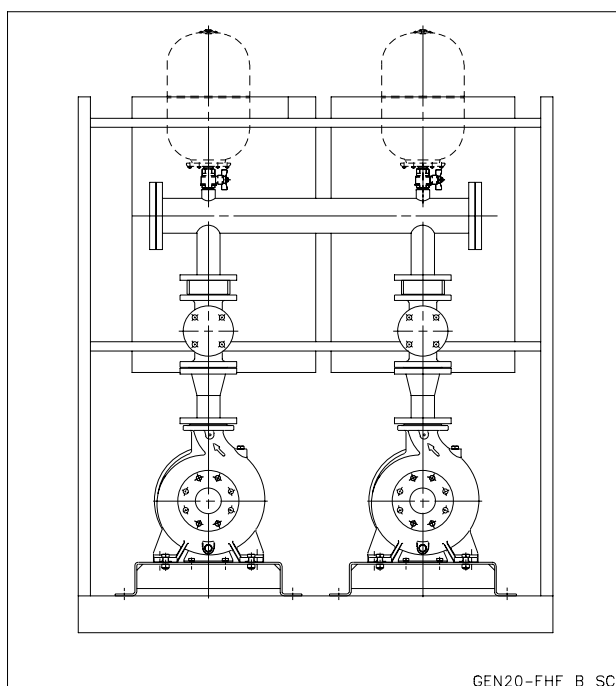
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
- Automatic Sprinkler systems.

GEN..20/FHF Series



SPECIFICATIONS

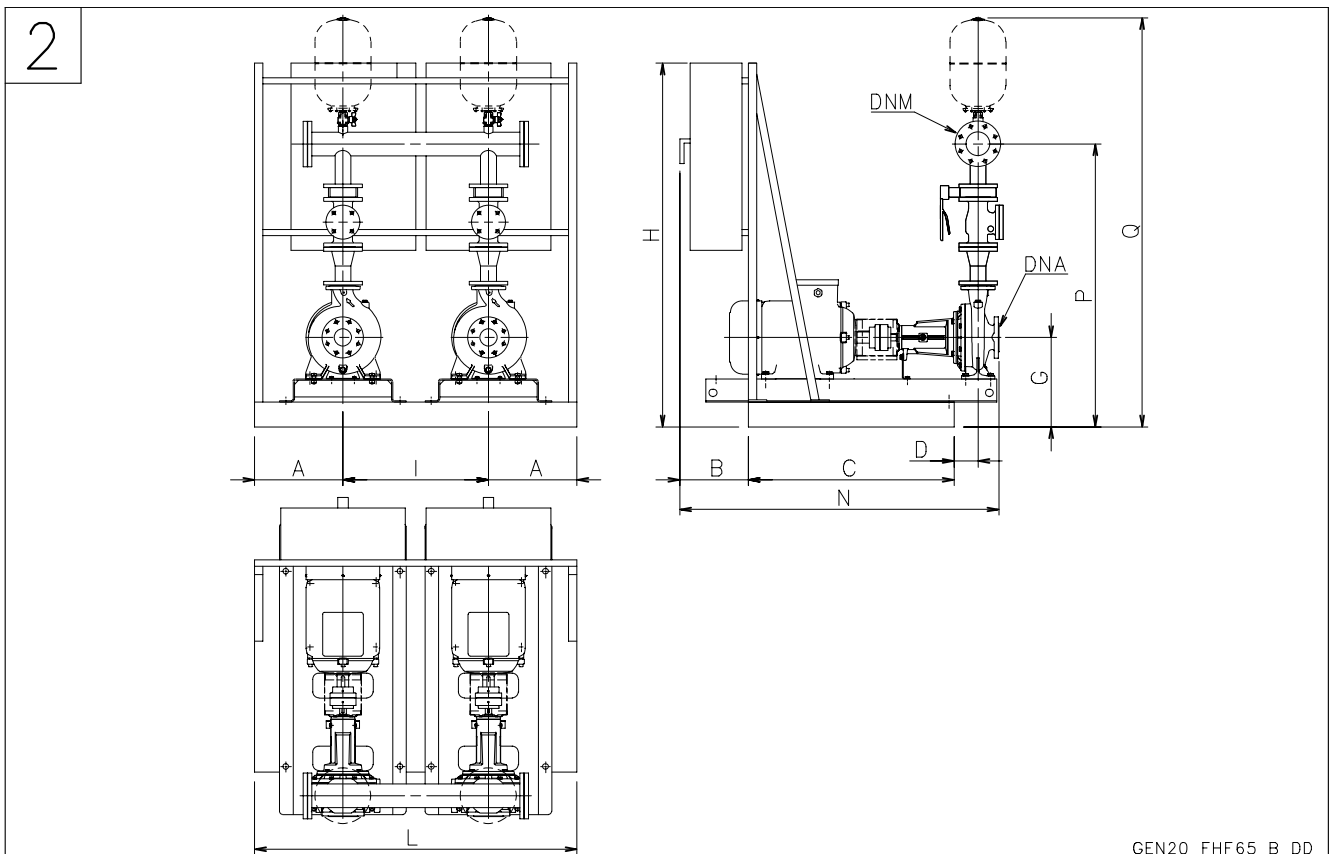
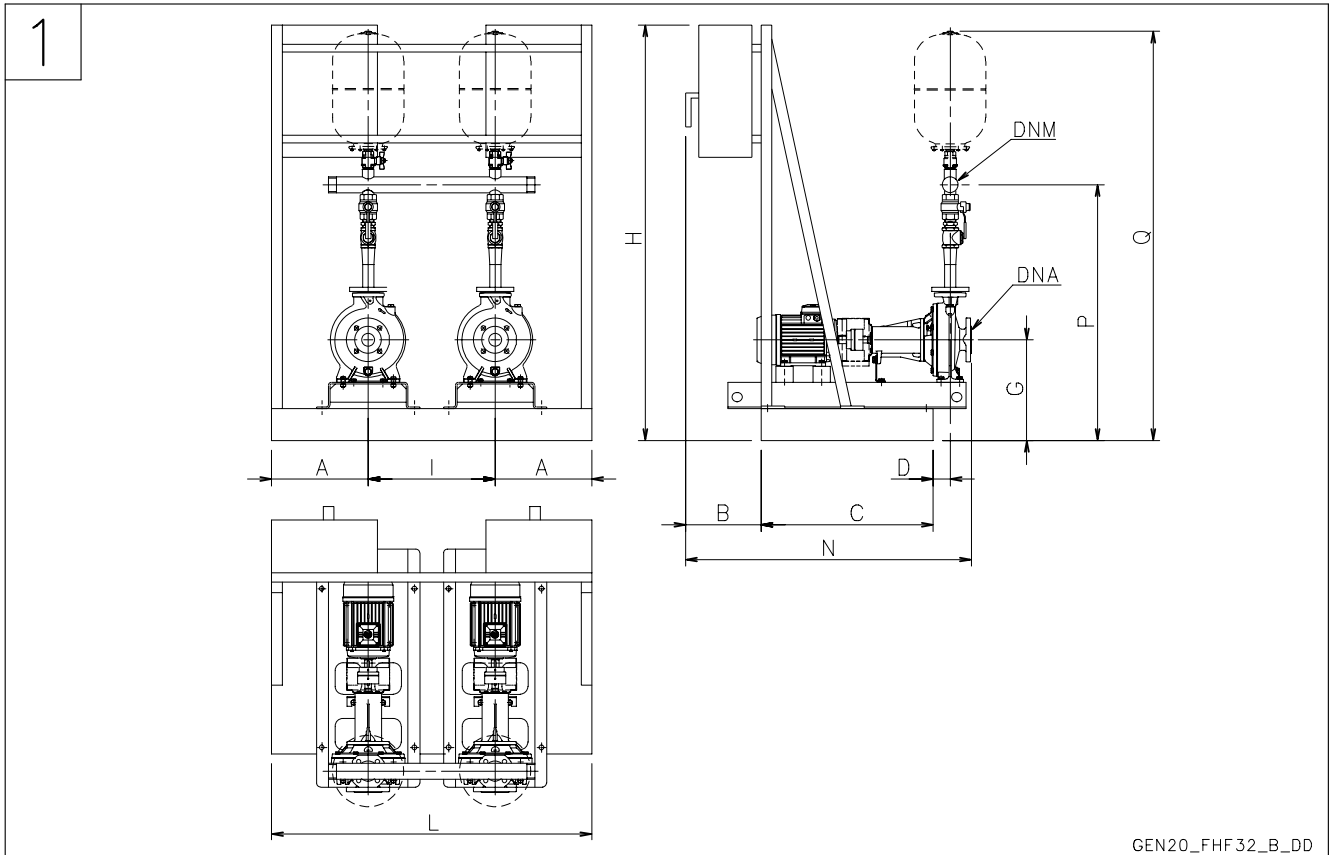
- **Flow** up to 1300 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
132 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GEND...).
 - Star/Delta for higher powers (GENY... set).
- **Electric service pump with horizontal axis:**
 - FHF Series (motor protection grade IP55).
- Maximum running pressure:
12 bar.



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GEN..20/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845



GEN..20/FHF 32-80 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..20	DRW N°	DNA	DNM	A	B	C	D	G	H	I	L	N	P	Q
FHF32-125/07	1	R 2"	R 2"	345	240	590	45	312	1400	480	1170	955	879	1459
FHF32-125/11	1	R 2"	R 2"	345	240	590	45	312	1400	480	1170	955	879	1459
FHF32-160/15	1	R 2"	R 2"	345	240	650	65	332	1400	480	1170	1035	919	1499
FHF32-160/22	1	R 2"	R 2"	345	240	650	65	332	1400	480	1170	1035	919	1499
FHF32-200/30	1	R 2"	R 2"	345	240	650	65	360	1400	480	1170	1035	967	1547
FHF32-200/40	1	R 2"	R 2"	345	240	650	65	360	1400	480	1170	1035	967	1547
FHF40-125/11	2	65	65	335	240	590	45	312	1400	540	1210	955	1094	1682
FHF40-125/15	2	65	65	335	240	650	65	312	1400	540	1210	1035	1094	1682
FHF40-125/22	2	65	65	335	240	650	65	312	1400	540	1210	1035	1094	1682
FHF40-160/30	2	65	65	335	240	650	65	332	1400	540	1210	1035	1134	1722
FHF40-160/40	2	65	65	335	240	650	65	332	1400	540	1210	1035	1134	1722
FHF40-200/55	2	65	65	335	240	710	85	380	1420	540	1210	1135	1202	1790
FHF40-200/75	2	65	65	335	240	710	85	380	1420	540	1210	1135	1202	1790
FHF40-250/110A	2	65	65	385	280	890	105	400	1420	630	1400	1375	1267	1855
FHF40-250/110	2	65	65	385	280	890	105	400	1420	630	1400	1375	1267	1855
FHF40-250/150	2	65	65	385	280	890	105	400	1570	630	1400	1375	1267	1855
FHF50-125/22	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
FHF50-125/30	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
FHF50-125/40	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
FHF50-160/55	2	65	80	335	240	710	85	380	1420	540	1210	1135	1291	1885
FHF50-160/75	2	65	80	335	240	710	85	380	1420	540	1210	1135	1291	1885
FHF50-200/110A	2	65	80	385	280	790	105	380	1420	630	1400	1275	1311	1905
FHF50-200/110	2	65	80	385	280	790	105	380	1420	630	1400	1275	1311	1905
FHF50-250/150	2	65	80	385	280	890	105	400	1570	630	1400	1375	1356	1950
FHF50-250/185	2	65	80	385	280	890	105	400	1750	630	1400	1375	1356	1950
FHF50-250/220	2	65	80	385	280	890	105	400	1750	630	1400	1375	1356	1950
FHF65-125/40	2	80	100	335	240	650	50	360	1400	540	1210	1040	1333	1940
FHF65-125/55	2	80	100	335	240	710	70	380	1420	540	1210	1120	1353	1960
FHF65-125/75	2	80	100	335	240	710	70	380	1420	540	1210	1120	1353	1960
FHF65-160/110A	2	80	100	350	280	890	105	380	1420	700	1400	1375	1373	1980
FHF65-160/110	2	80	100	350	280	890	105	380	1420	700	1400	1375	1373	1980
FHF65-160/150	2	80	100	350	280	890	105	380	1570	700	1400	1375	1373	1980
FHF65-200/150	2	80	100	350	280	890	105	400	1570	700	1400	1375	1418	2025
FHF65-200/185	2	80	100	350	280	890	105	400	1570	700	1400	1375	1418	2025
FHF65-200/220	2	80	100	350	280	890	105	400	1570	700	1400	1375	1418	2025
FHF65-250/220	2	80	100	350	280	890	90	430	1750	700	1400	1360	1473	2080
FHF65-250/300	2	80	100	425	280	990	115	430	1750	700	1550	1485	1473	2080
FHF65-250/370	2	80	100	425	280	990	115	430	1940	700	1550	1485	1473	2080
FHF80-160/150	2	100	125	350	280	890	105	400	1570	700	1400	1400	1487	2107
FHF80-160/185	2	100	125	350	280	890	105	400	1750	700	1400	1400	1487	2107
FHF80-200/220	2	100	125	350	280	890	105	400	1750	700	1400	1400	1512	2132
FHF80-200/300	2	100	125	425	280	990	130	430	1750	700	1550	1525	1542	2162
FHF80-250/370	2	100	125	425	280	990	115	430	1940	700	1550	1510	1572	2192
FHF80-250/450	2	100	125	425	330	990	115	485	1940	700	1550	1560	1627	2247
FHF80-250/550	2	100	125	430	330	1120	155	530	1960	820	1680	1730	1672	2292

Dimensions in mm. Tolerance ± 10 mm.

gen20_fhf-en_e_td



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Fire-fighting booster sets EN 12845

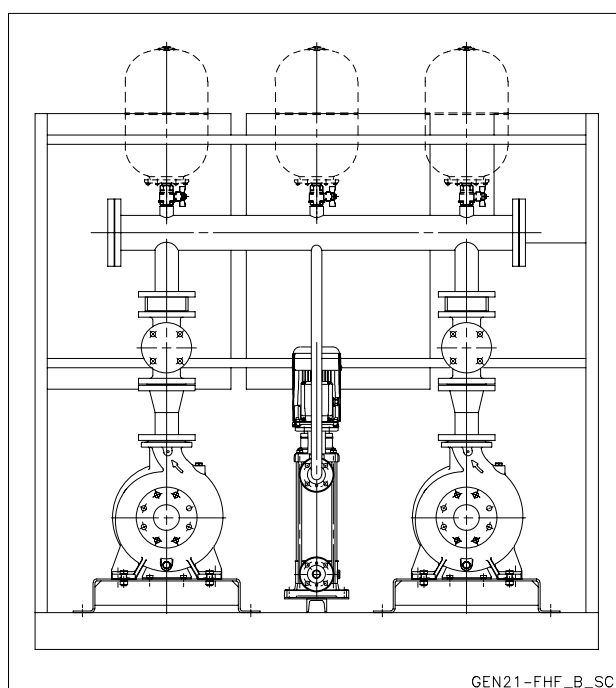
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
Automatic Sprinkler systems.

GEN..21/FHF Series



SPECIFICATIONS

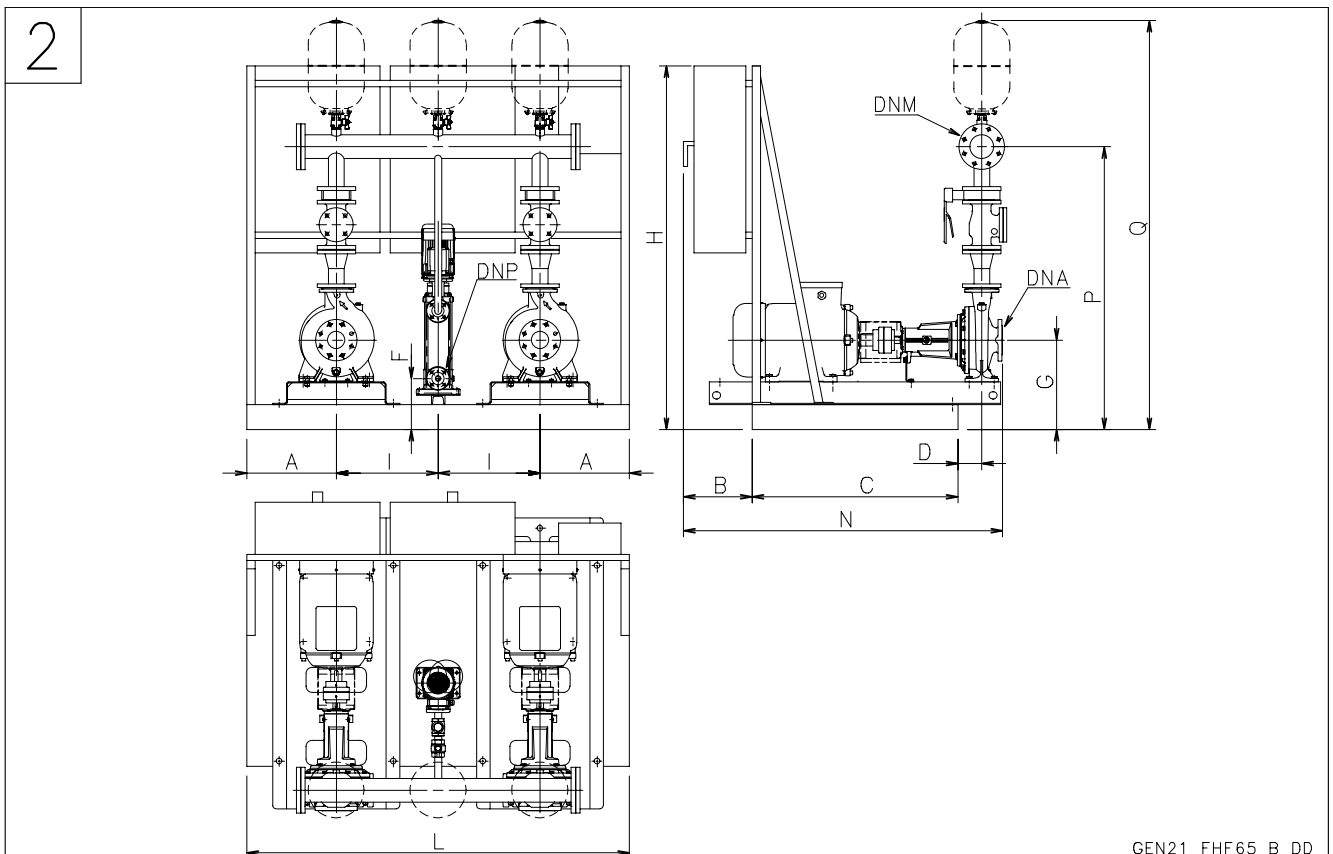
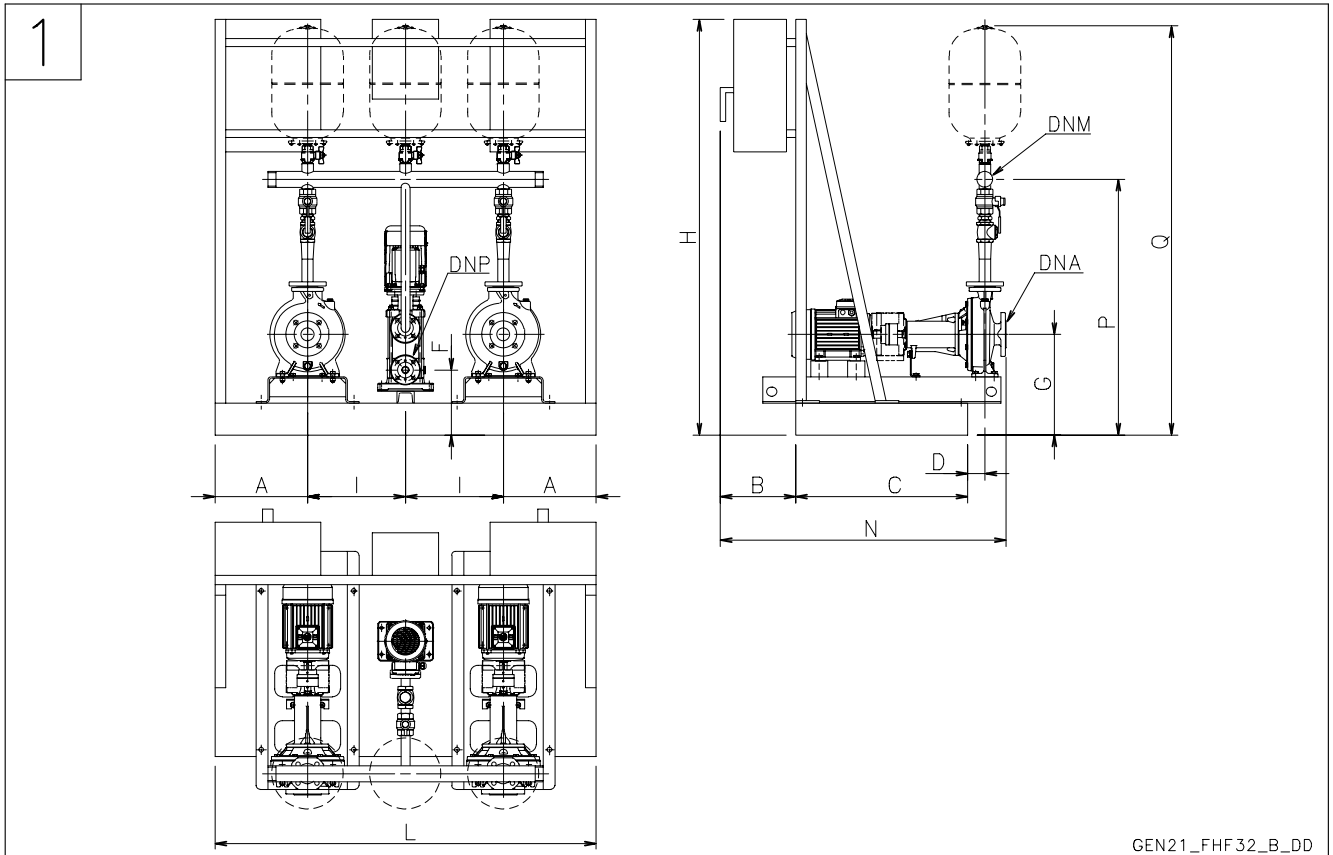
- **Flow** up to 1300 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
132 kW.
- Motor start-up :
- Direct for powers up to 22 kW
inclusive for pump (GEND...).
- Star/Delta for higher
powers (GENY... set).
- **Electric service pump
with horizontal axis:**
- FHF Series (motor protection
grade IP55).
- **Electric jockey pump
with vertical axis:**
- SV Series (motor protection
grade IP55).
- Maximum running pressure:
12 bar.



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GEN..21/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845





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GEN..21/FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..21	DRW N°	DNA	DNP	DNM	A	B	C	D	F	G	H	I	L	N	P	Q
FHF32-125/07	1	R 2"	Rp 1"	R 2"	350	240	590	45	225	312	1400	370	1440	955	879	1459
FHF32-125/11	1	R 2"	Rp 1"	R 2"	350	240	590	45	225	312	1400	370	1440	955	879	1459
FHF32-160/15	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	332	1400	370	1440	1035	919	1499
FHF32-160/22	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	332	1400	370	1440	1035	919	1499
FHF32-200/30	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	360	1400	370	1440	1035	967	1547
FHF32-200/40	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	360	1400	370	1440	1035	967	1547
FHF40-125/11	2	65	Rp 1"	65	350	240	590	45	225	312	1400	370	1440	955	1094	1682
FHF40-125/15	2	65	Rp 1"	65	350	240	590	45	225	312	1400	370	1440	1035	1094	1682
FHF40-125/22	2	65	Rp 1"	65	350	240	590	45	225	312	1400	370	1440	1035	1094	1682
FHF40-160/30	2	65	Rp 1"	65	350	240	650	65	225	332	1400	370	1440	1035	1134	1722
FHF40-160/40	2	65	Rp 1"	65	350	240	650	65	225	332	1400	370	1440	1035	1134	1722
FHF40-200/55	2	65	Rp 1"	65	335	240	710	85	245	380	1420	440	1550	1135	1202	1790
FHF40-200/75	2	65	Rp 1"	65	335	240	710	85	245	380	1420	440	1550	1135	1202	1790
FHF40-250/110A	2	65	Rp 1"	65	400	280	890	105	245	400	1420	440	1680	1375	1267	1855
FHF40-250/110	2	65	Rp 1"	65	400	280	890	105	245	400	1420	440	1680	1375	1267	1855
FHF40-250/150	2	65	Rp 1"	65	400	280	890	105	245	400	1570	440	1680	1375	1267	1855
FHF50-125/22	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
FHF50-125/30	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
FHF50-125/40	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
FHF50-160/55	2	65	Rp 1"	80	335	240	710	85	245	380	1420	440	1550	1135	1291	1885
FHF50-160/75	2	65	Rp 1"	80	335	240	710	85	245	380	1420	440	1550	1135	1291	1885
FHF50-200/110A	2	65	Rp 1"	80	400	280	790	105	245	380	1420	440	1680	1275	1311	1905
FHF50-200/110	2	65	Rp 1"	80	400	280	790	105	245	380	1420	440	1680	1275	1311	1905
FHF50-250/150	2	65	Rp 1"	80	400	280	890	105	245	400	1570	440	1680	1375	1356	1950
FHF50-250/185	2	65	Rp 1"	80	400	280	890	105	245	400	1750	440	1680	1375	1356	1950
FHF50-250/220	2	65	Rp 1"	80	400	280	890	105	245	400	1750	440	1680	1375	1356	1950
FHF65-125/40	2	80	Rp 1"	100	335	240	650	50	225	360	1400	440	1550	1040	1333	1940
FHF65-125/55	2	80	Rp 1"	100	335	240	710	70	245	380	1420	440	1550	1120	1353	1960
FHF65-125/75	2	80	Rp 1"	100	335	240	710	70	245	380	1420	440	1550	1120	1353	1960
FHF65-160/110A	2	80	Rp 1"	100	400	280	890	105	245	380	1420	440	1680	1375	1373	1980
FHF65-160/110	2	80	Rp 1"	100	400	280	890	105	245	380	1420	440	1680	1375	1373	1980
FHF65-160/150	2	80	Rp 1"	100	400	280	890	105	245	380	1570	440	1680	1375	1373	1980
FHF65-200/150	2	80	Rp 1"	100	400	280	890	105	245	400	1570	440	1680	1375	1418	2025
FHF65-200/185	2	80	Rp 1"	100	400	280	890	105	245	400	1570	440	1680	1375	1418	2025
FHF65-200/220	2	80	Rp 1"	100	400	280	890	105	245	400	1570	440	1680	1375	1418	2025
FHF65-250/220	2	80	Rp 1"	100	400	280	890	90	245	430	1750	440	1680	1360	1473	2080
FHF65-250/300	2	80	Rp 1"	100	430	280	990	115	245	430	1750	490	1840	1485	1473	2080
FHF65-250/370	2	80	Rp 1"	100	430	280	990	115	245	430	1940	490	1840	1485	1473	2080
FHF80-160/150	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1570	440	1680	1400	1487	2107
FHF80-160/185	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1750	440	1680	1400	1487	2107
FHF80-200/220	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1750	440	1680	1400	1512	2132
FHF80-200/300	2	100	Rp 1" 1/4	125	430	280	990	130	245	430	1750	490	1840	1525	1542	2162
FHF80-250/370	2	100	Rp 1" 1/4	125	430	280	990	115	245	430	1940	490	1840	1510	1572	2192
FHF80-250/450	2	100	Rp 1" 1/4	125	430	330	990	115	245	485	1940	490	1840	1560	1627	2247
FHF80-250/550	2	100	Rp 1" 1/4	125	450	330	1120	155	265	530	1960	600	2100	1730	1672	2292

Dimensions in mm. Tolerance ± 10 mm.

gen21_fhf-en_e_td

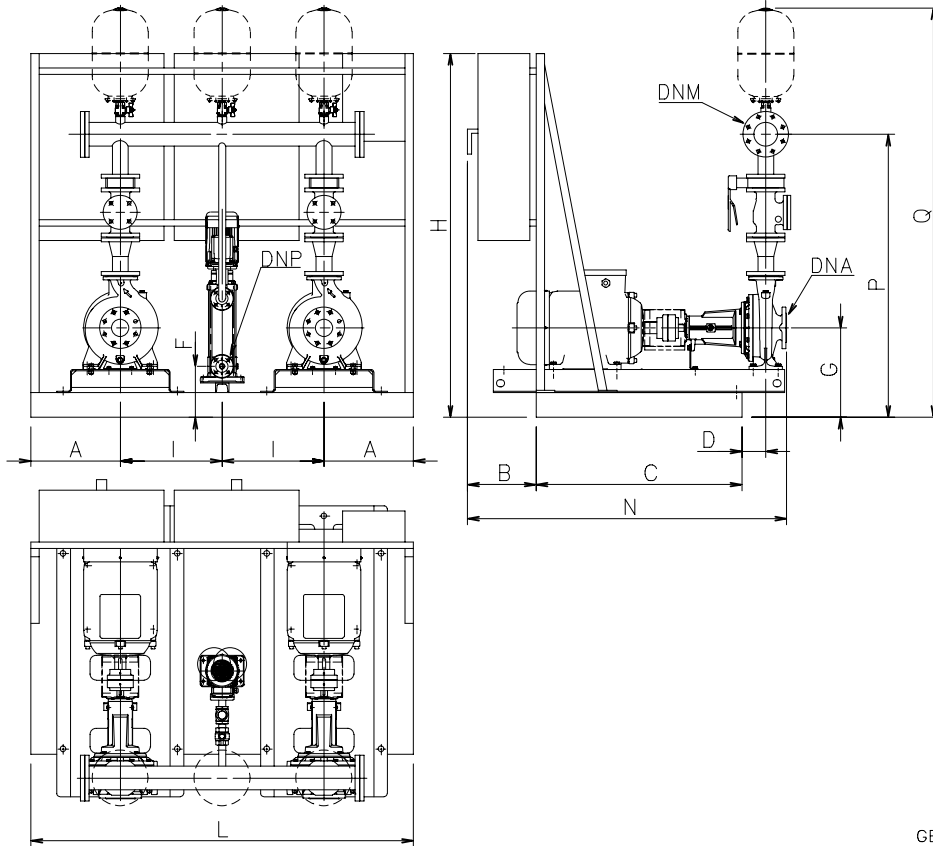


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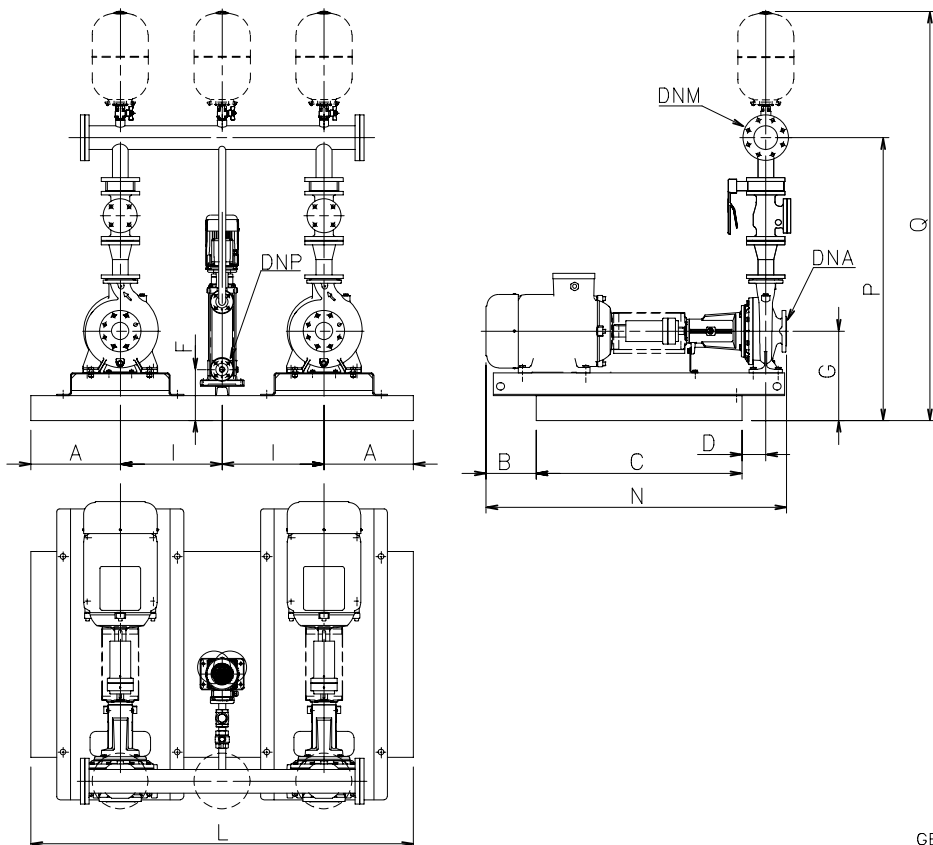
GEN..21/FHF 100-125 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

2



GEN21_FHF65_B_DD

3



GEN21_FHF100_B_DD



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GEN..21/FHF 100-125 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..21	DRW N°	DNA	DNP	DNM	A	B	C	D	F	G	H	I	L	N	P	Q
FHF100-160/185	2	125	Rp 1"1/4	150	430	291	890	85	245	418	1750	490	1840	1391	1652	2286
FHF100-160/220	2	125	Rp 1"1/4	150	430	190	1020	105	245	418	1750	490	1840	1440	1652	2286
FHF100-160/300	2	125	Rp 1"1/4	200	430	310	1020	105	245	418	1750	490	1840	1560	1678	2337
FHF100-200/185	2	125	Rp 1"1/4	150	430	291	890	85	245	393	1750	490	1840	1391	1627	2261
FHF100-200/300	2	125	Rp 1"1/4	150	430	310	1020	105	245	393	1750	490	1840	1560	1627	2261
FHF100-200/370	2	125	Rp 1"1/4	150	430	310	1020	105	245	393	1750	490	1840	1560	1627	2261
FHF100-200/450	2	125	Rp 1"1/4	200	470	215	1130	125	245	438	1750	600	2140	1595	1698	2357
FHF100-250/300	2	125	Rp 1"1/4	150	430	310	1020	105	245	418	1750	490	1840	1575	1652	2286
FHF100-250/450	2	125	Rp 1"1/4	200	430	345	1020	105	245	418	1750	490	1840	1610	1678	2337
FHF100-250/550	2	125	Rp 1"1/4	200	470	320	1130	125	245	463	1750	600	2140	1715	1723	2382
FHF100-250/750	3	125	Rp 1"1/4	200	590	400	1110	140	265	513	/	600	2380	1790	1773	2432
FHF100-250/900	3	125	Rp 1"1/4	200	590	400	1110	140	265	513	/	600	2380	1790	1773	2432
FHF125-200/300	2	150	Rp 1"1/2	200	430	370	1020	105	250	443	1750	490	1840	1635	1821	2480
FHF125-200/450	2	150	Rp 1"1/2	200	470	275	1130	125	250	463	1750	600	2140	1670	1841	2500
FHF125-200/550	2	150	Rp 1"1/2	200	470	380	1130	125	250	463	1750	600	2140	1775	1841	2500
FHF125-270/750	3	150	Rp 1"1/2	250	590	370	1400	80	225	563	/	600	2380	1850	2008	2694
FHF125-270/900	3	150	Rp 1"1/2	250	590	370	1400	80	225	563	/	600	2380	1850	2008	2694
FHF125-270/1100	3	150	Rp 1"1/2	250	650	510	1400	80	225	618	/	650	2600	1990	2063	2749
FHF125-270/1320	3	150	Rp 1"1/2	250	650	510	1400	80	225	618	/	650	2600	1990	2063	2749

Dimensions in mm. Tolerance ± 10 mm.

gen21_fhf100-en_d_td

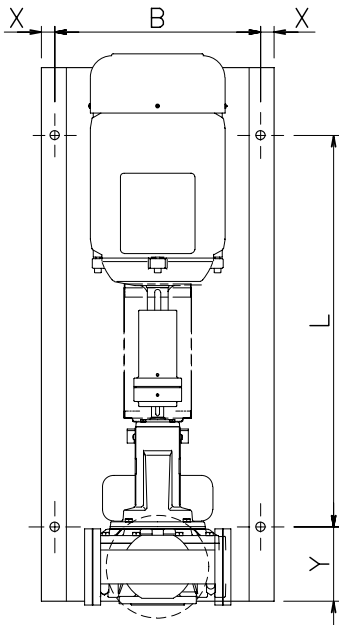


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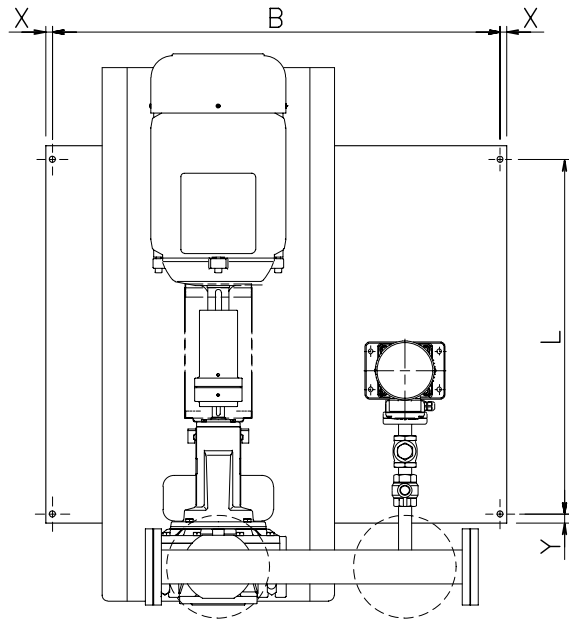
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GEN../FHF 32-80 SERIES DIMENSIONS FOR FLOOR FIXING

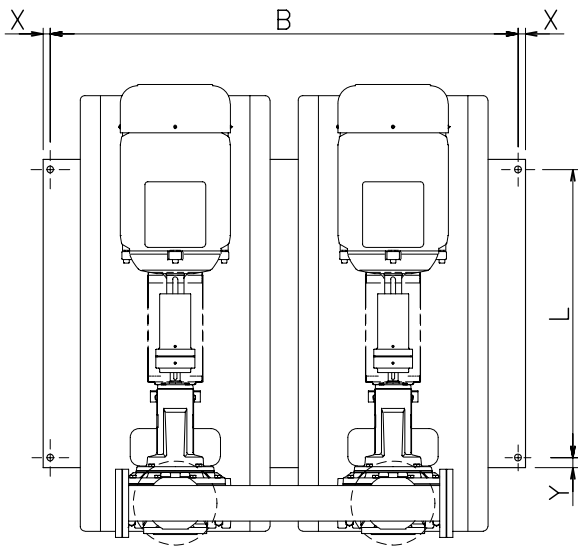
GEN..10



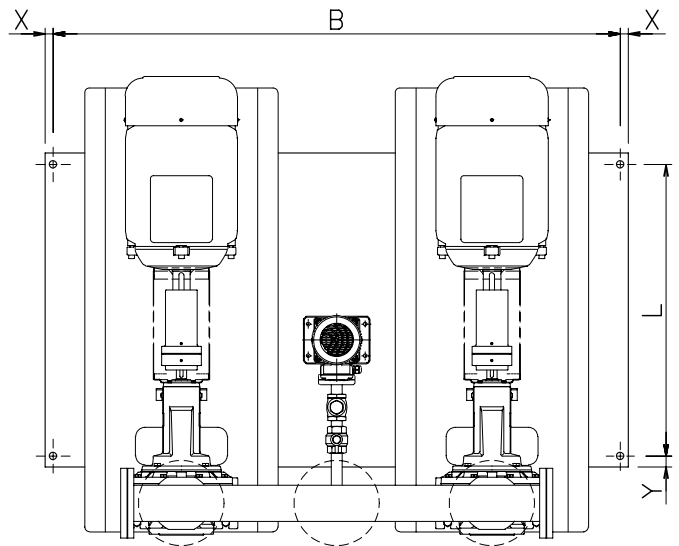
GEN..11



GEN..20



GEN..21



INT-ELP_A_SC

GEN../FHF 32-80 SERIES **DIMENSIONS FOR FLOOR FIXING**

PUMP	GEN..10				GEN..11				GEN..20				GEN..21			
	B	L	X	Y	B	L	X	Y	B	L	X	Y	B	L	X	Y
FHF 32-125/07	320	540	20	130	770	540	90	25	990	540	90	25	1260	540	90	25
FHF 32-125/11	320	540	20	130	770	540	90	25	990	540	90	25	1260	540	90	25
FHF 32-160/15	350	600	20	150	770	600	90	25	990	600	90	25	1260	600	90	25
FHF 32-160/22	350	600	20	150	770	600	90	25	990	600	90	25	1260	600	90	25
FHF 32-200/30	350	600	20	150	770	600	90	25	990	600	90	25	1260	600	90	25
FHF 32-200/40	350	600	20	150	770	600	90	25	990	600	90	25	1260	600	90	25
FHF 40-125/11	350	600	20	150	770	540	90	25	1030	600	90	25	1260	540	90	25
FHF 40-125/15	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 40-125/22	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 40-160/30	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 40-160/40	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 40-200/55	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 40-200/75	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 40-250/110A	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 40-250/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 40-250/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 50-125/22	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 50-125/30	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 50-125/40	350	600	20	150	770	600	90	25	1030	600	90	25	1260	600	90	25
FHF 50-160/55	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 50-160/75	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 50-200/110A	440	740	25	190	1130	665	20	55	1360	665	20	55	1640	665	20	55
FHF 50-200/110	440	740	25	190	1130	665	20	55	1360	665	20	55	1640	665	20	55
FHF 50-250/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 50-250/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 50-250/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-125/40	350	600	20	150	820	600	90	25	1030	600	90	25	1370	600	90	25
FHF 65-125/55	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 65-125/75	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
FHF 65-160/110A	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-160/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-160/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-200/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-200/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-200/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-250/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 65-250/300	550	940	30	230	1130	865	20	55	1510	685	20	55	1800	865	20	55
FHF 65-250/370	550	940	30	230	1130	865	20	55	1510	685	20	55	1800	865	20	55
FHF 80-160/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 80-160/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 80-200/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
FHF 80-200/300	550	940	30	230	1130	865	20	55	1510	685	20	55	1800	865	20	55
FHF 80-250/370	550	940	30	230	1130	865	20	55	1510	685	20	55	1800	865	20	55
FHF 80-250/450	550	940	30	230	1130	865	20	55	1510	685	20	55	1800	865	20	55
FHF 80-250/550	600	1060	30	270	1360	950	20	90	1640	985	20	55	2100	950	20	90

Dimensions in mm. Tolerance ± 10 mm.

inter_fhf-en_b_td

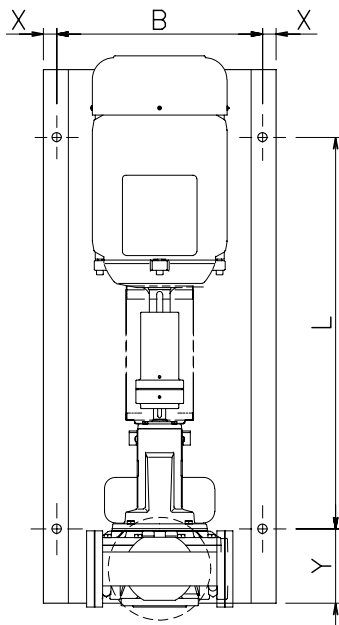


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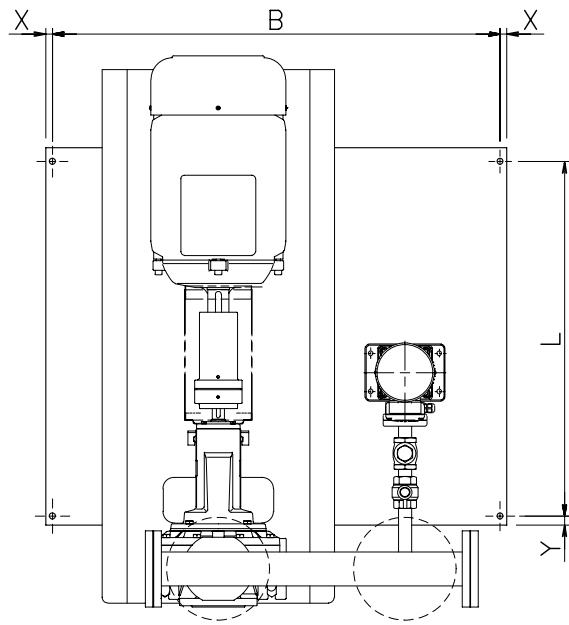
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GEN../FHF 100-125 SERIES DIMENSIONS FOR FLOOR FIXING

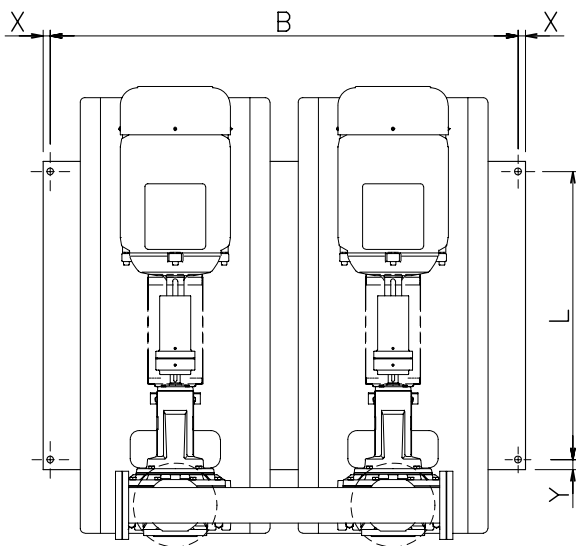
GEN..10



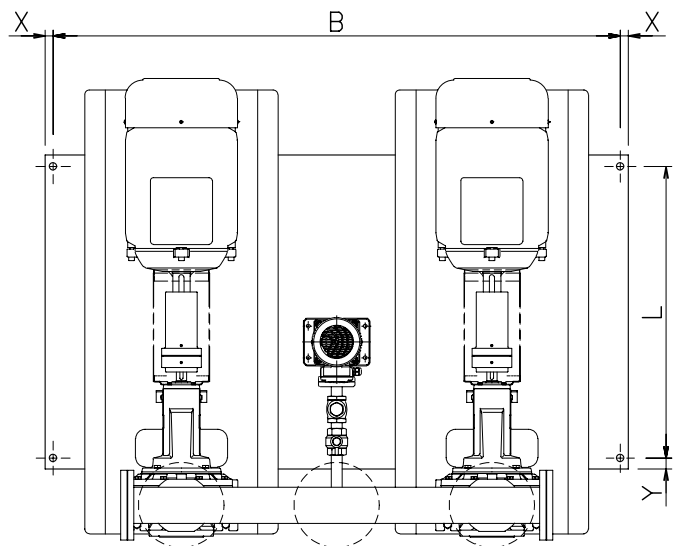
GEN..11



GEN..20



GEN..21



INT-ELP_A_SC

GEN../FHF 100-125 SERIES **DIMENSIONS FOR FLOOR FIXING**

PUMP	GEN..10				GEN..11				GEN..20				GEN..21			
	B	L	X	Y	B	L	X	Y	B	L	X	Y	B	L	X	Y
FHF 100-160/185	500	700	25	200	1130	795	20	25	1510	795	20	25	1800	795	20	25
FHF 100-160/220	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-160/300	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-200/185	500	700	25	200	1130	795	20	25	1510	795	20	25	1800	795	20	25
FHF 100-200/300	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-200/370	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-200/450	610	940	30	240	1260	845	20	25	1800	1035	20	25	2100	1035	20	25
FHF 100-250/300	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-250/450	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 100-250/550	610	940	30	240	1260	845	20	25	1800	1035	20	25	2100	1035	20	25
FHF 100-250/750	680	1050	30	260	1380	930	30	90	1940	930	30	90	1900	930	30	90
FHF 100-250/900	680	1050	30	260	1380	930	30	90	1940	930	30	90	1900	930	30	90
FHF 125-200/300	500	830	25	220	1130	925	20	25	1510	925	20	25	1800	925	20	25
FHF 125-200/450	610	940	30	240	1260	845	20	25	1800	1035	20	25	2100	1035	20	25
FHF 125-200/550	610	940	30	240	1260	845	20	25	1800	1035	20	25	2100	1035	20	25
FHF 125-270/750	700	1200	25	200	1380	1080	30	90	1940	1080	30	90	2320	1080	30	90
FHF 125-270/900	700	1200	25	200	1380	1080	30	90	1940	1080	30	90	2320	1080	30	90
FHF 125-270/1100	820	1200	25	200	1490	1080	30	90	2190	1080	30	90	2540	1080	30	90
FHF 125-270/1320	820	1200	25	200	1490	1080	30	90	2190	1080	30	90	2540	1080	30	90

Dimensions in mm. Tolerance ± 10 mm.

inter_fhf100-en_a_td



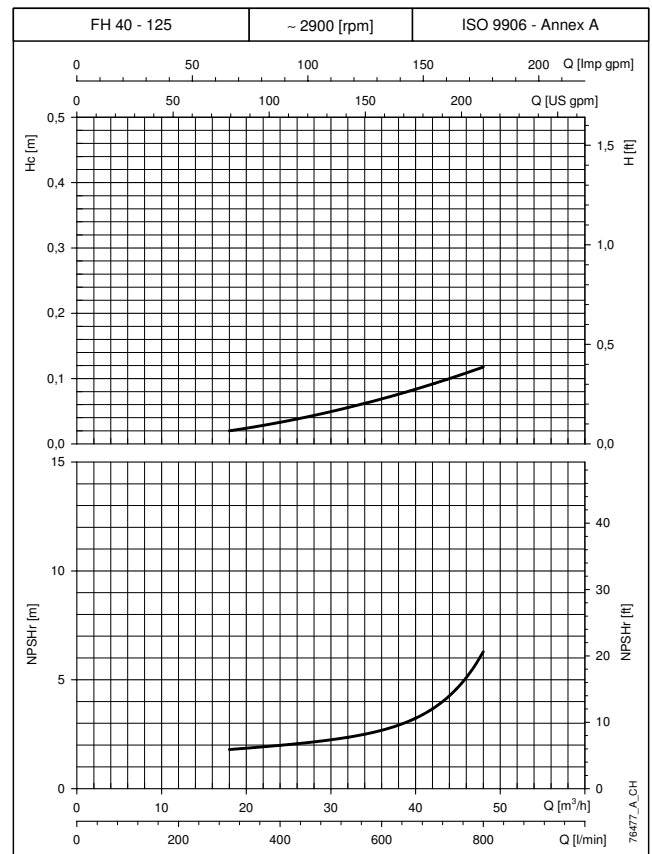
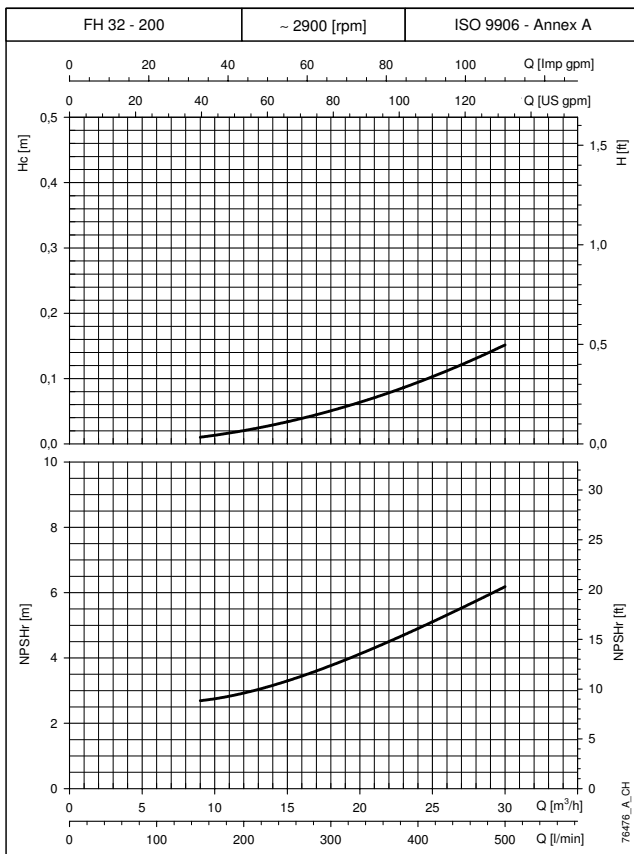
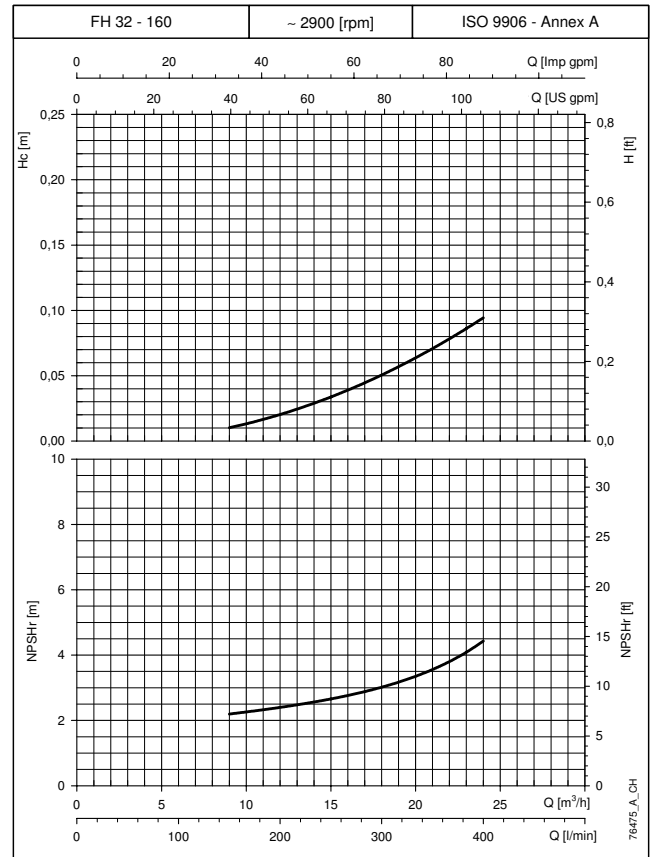
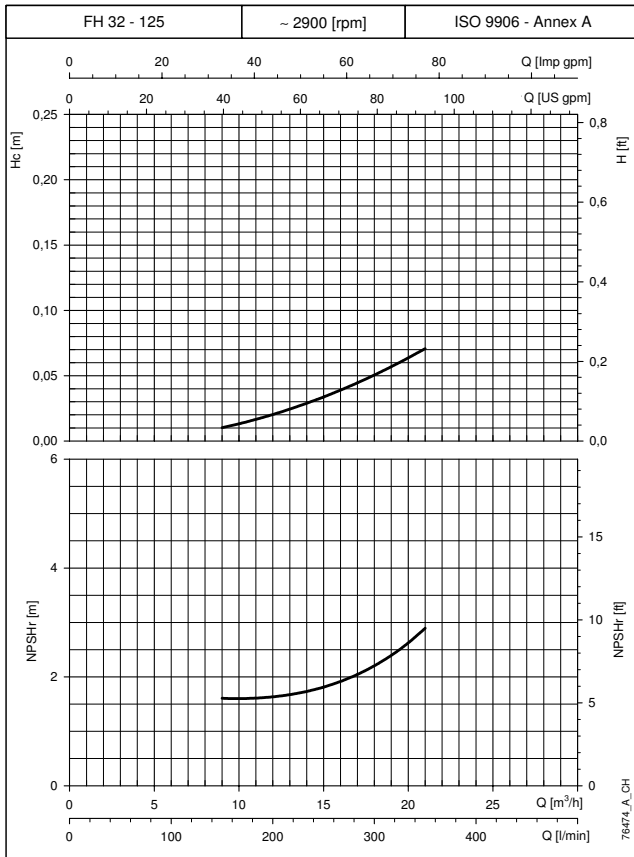
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GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

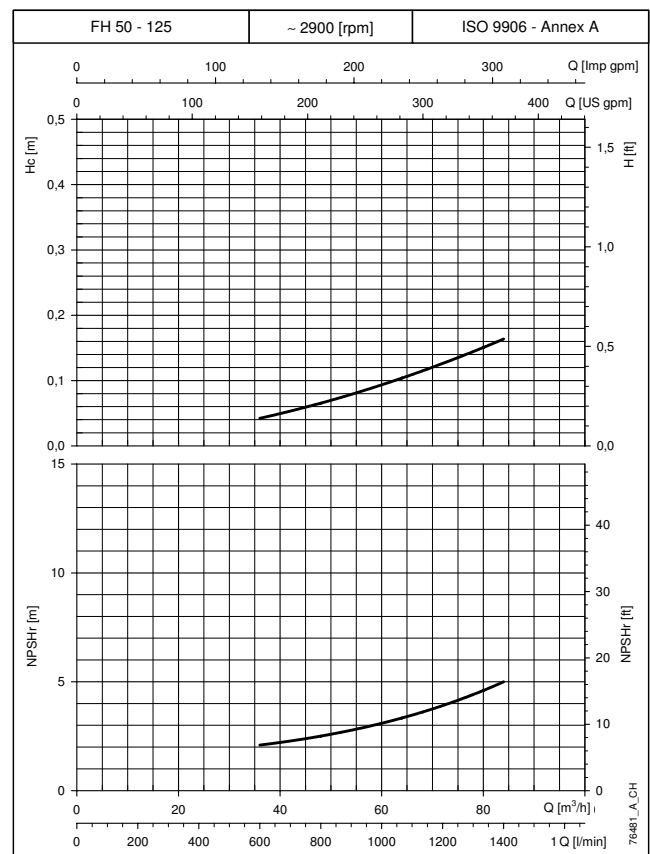
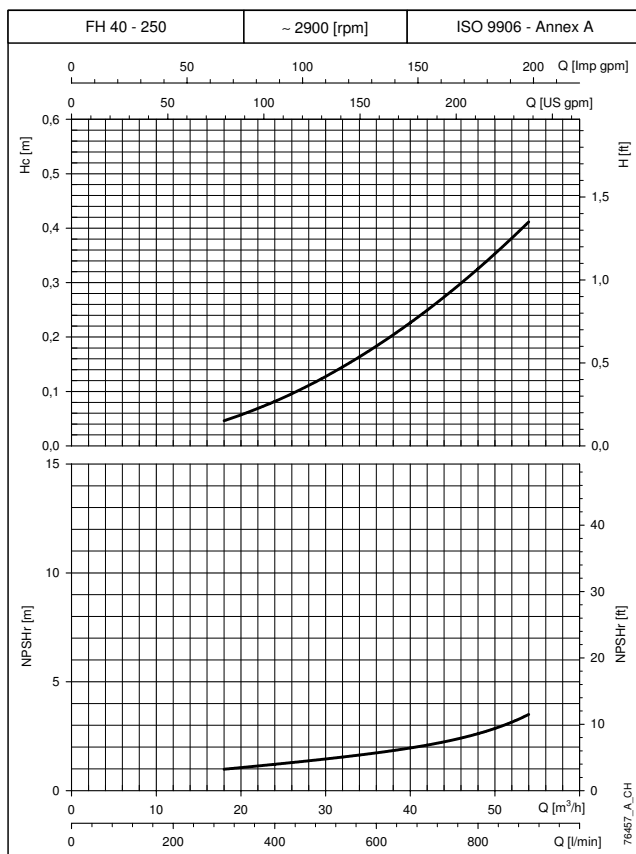
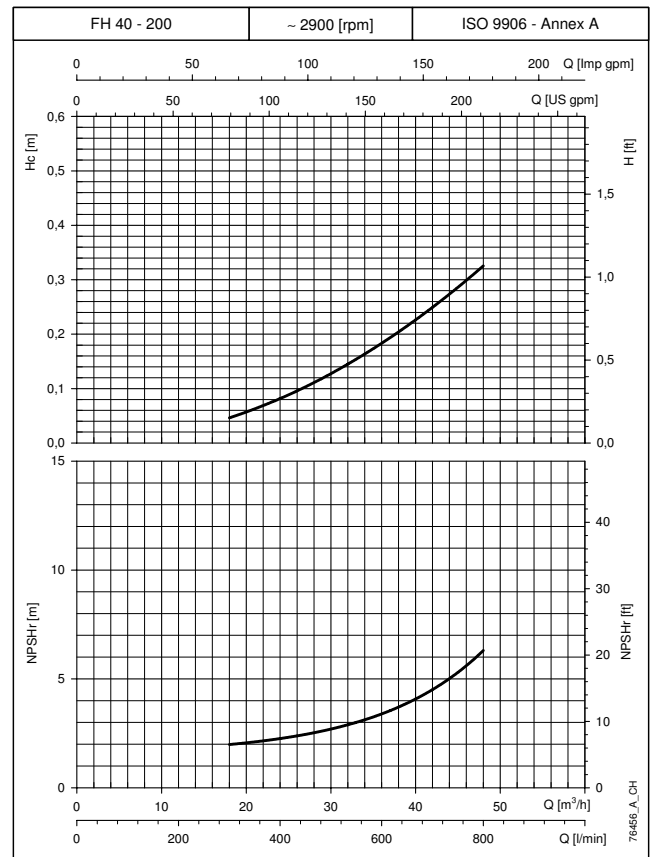
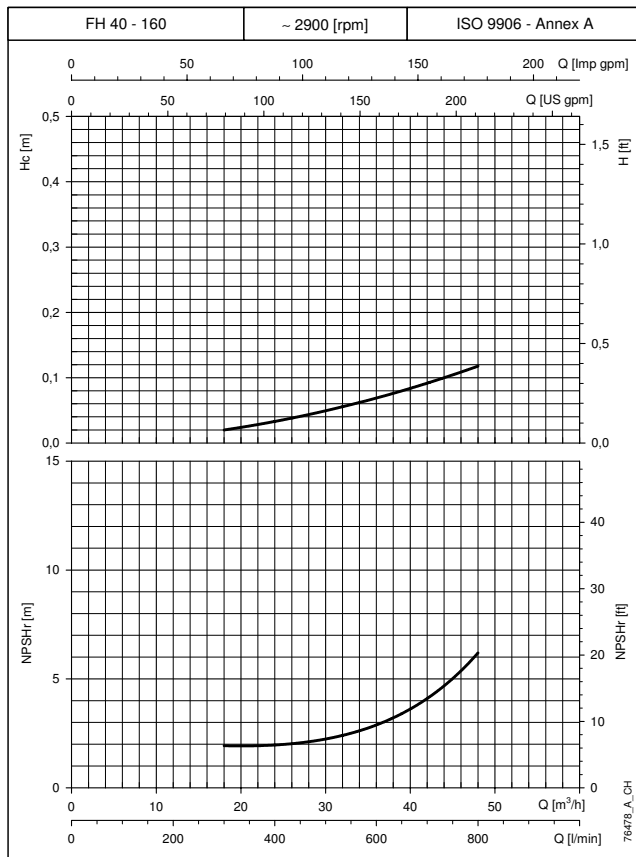
H_c: Pressure drop curve in suction kit.



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GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

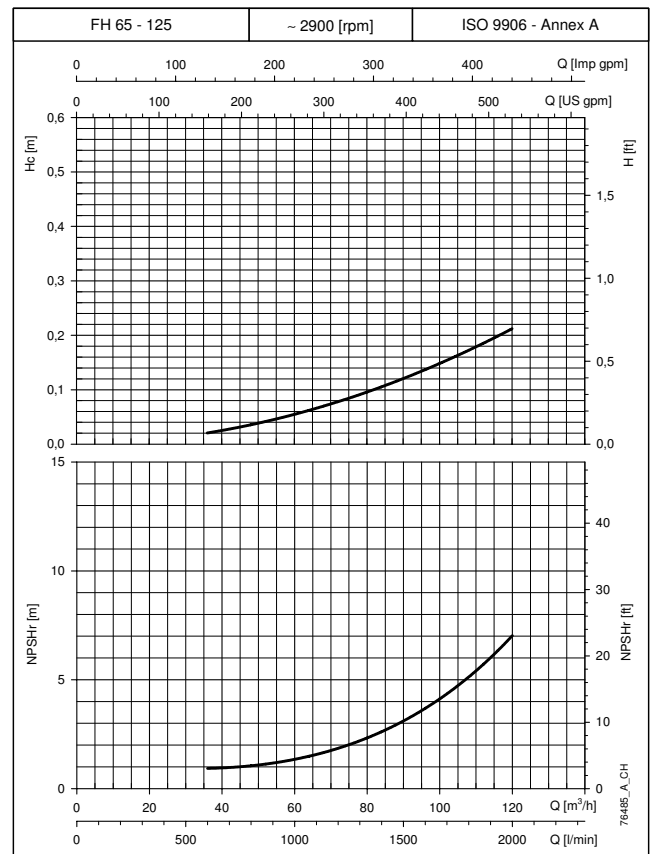
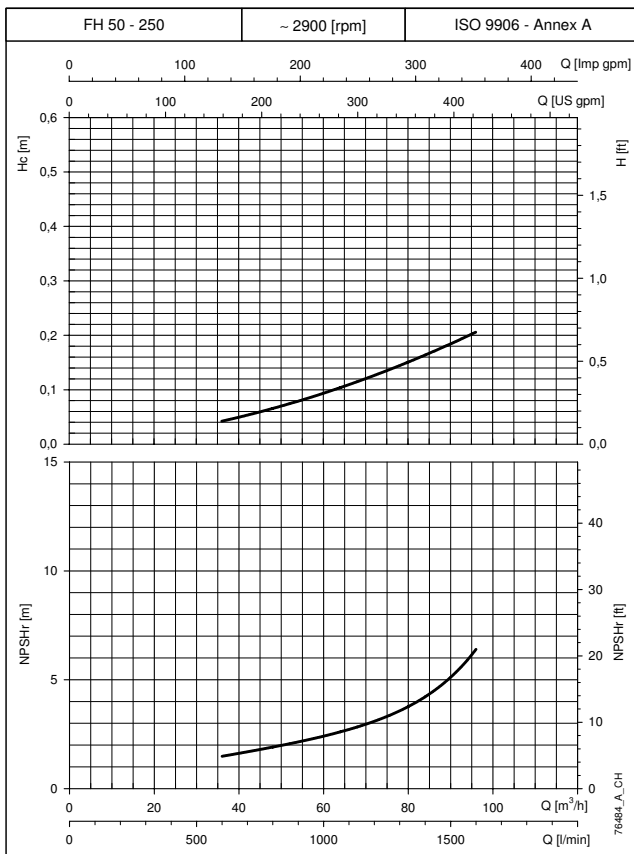
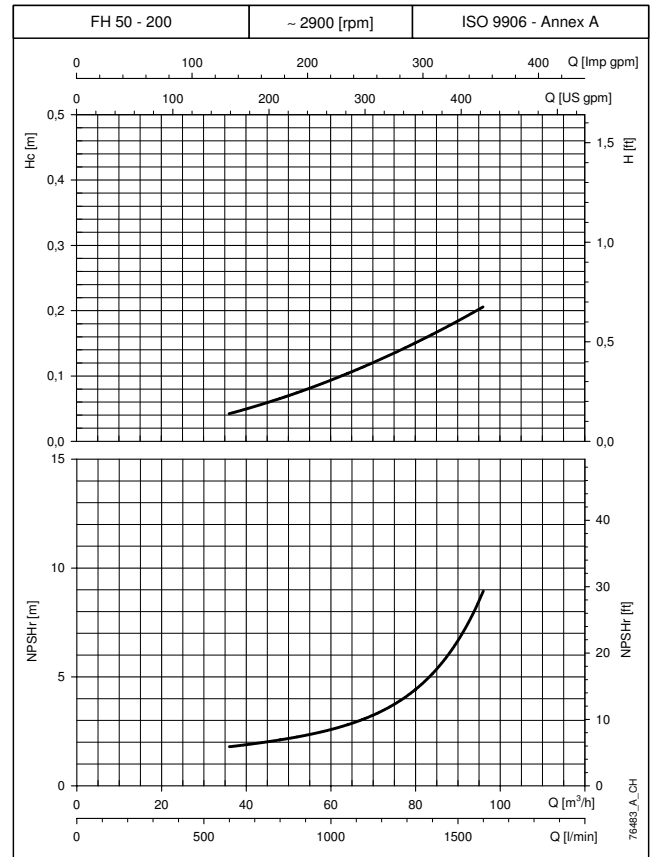
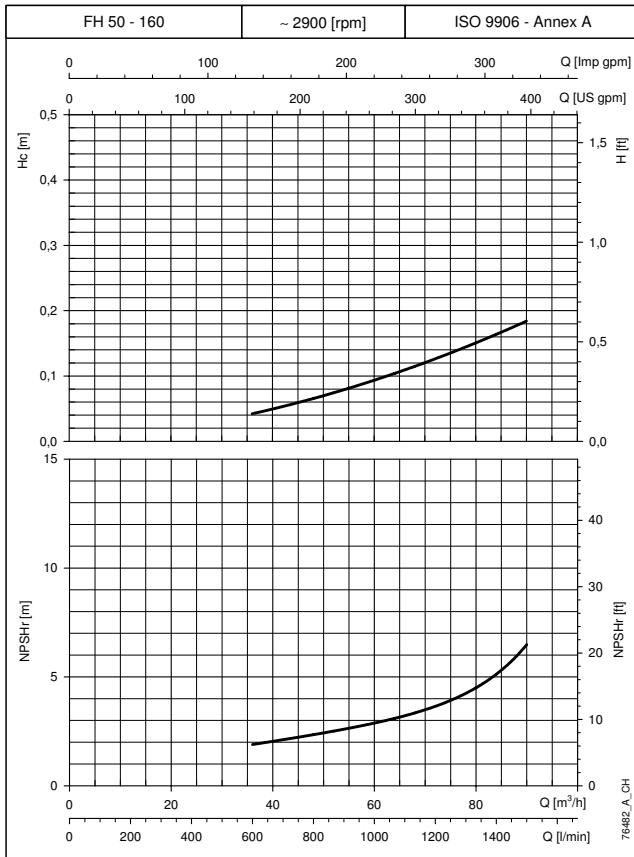
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

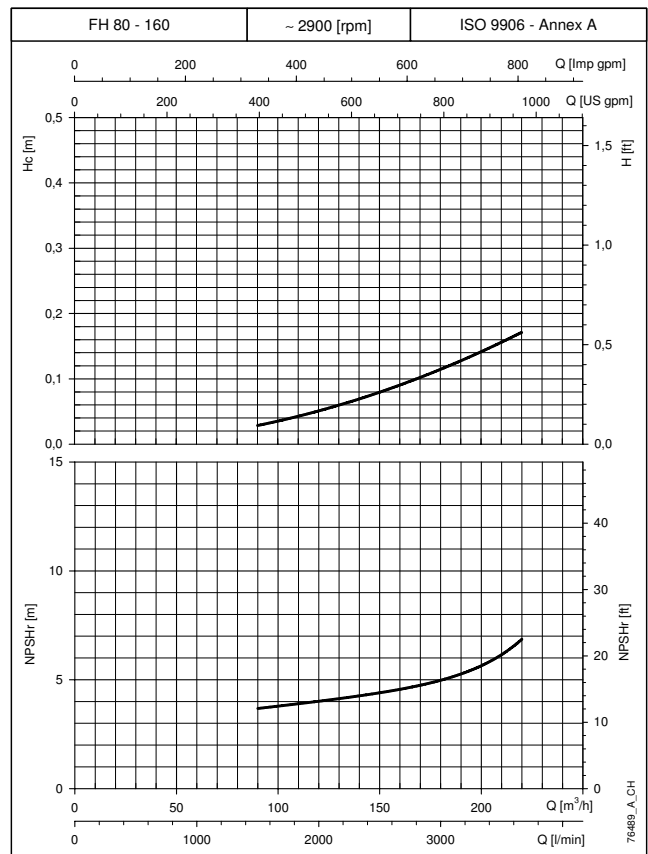
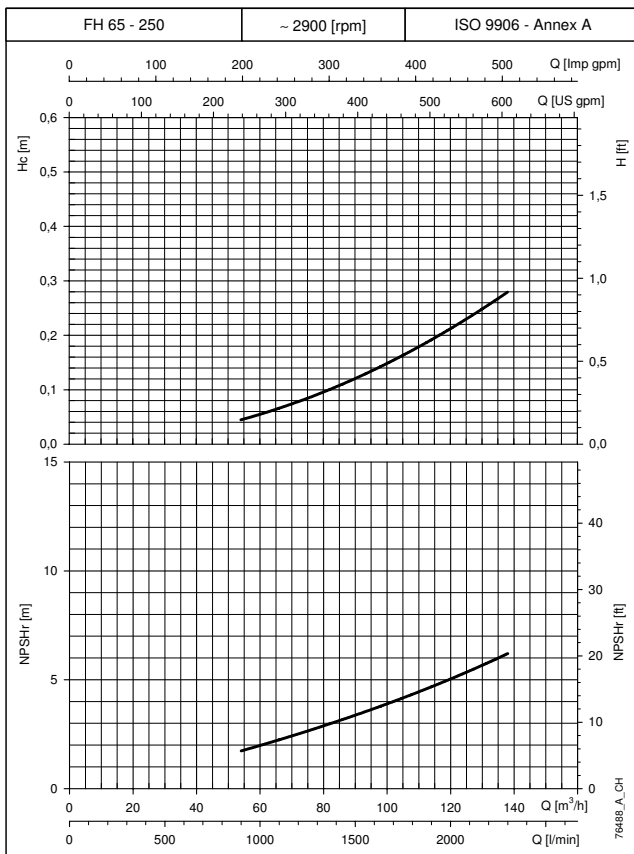
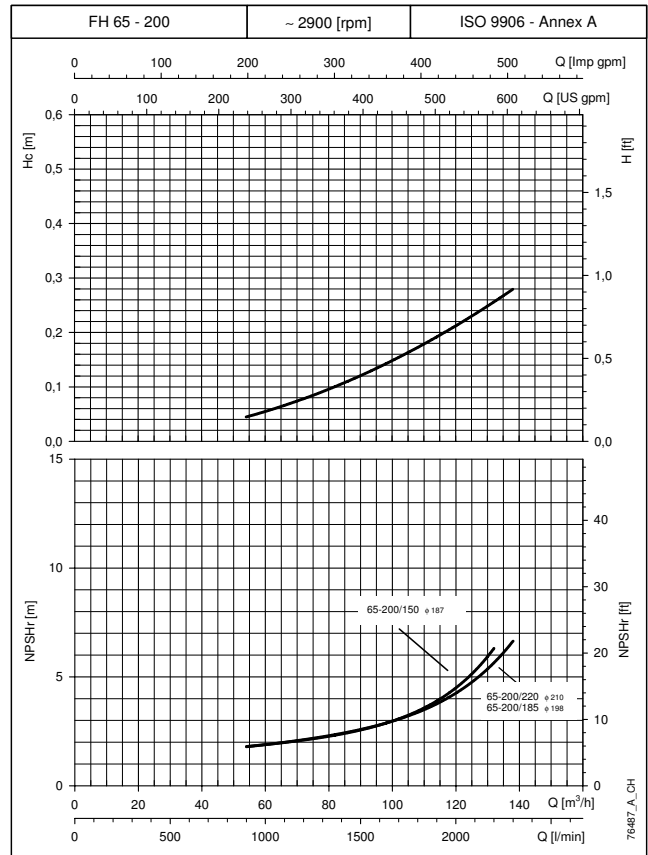
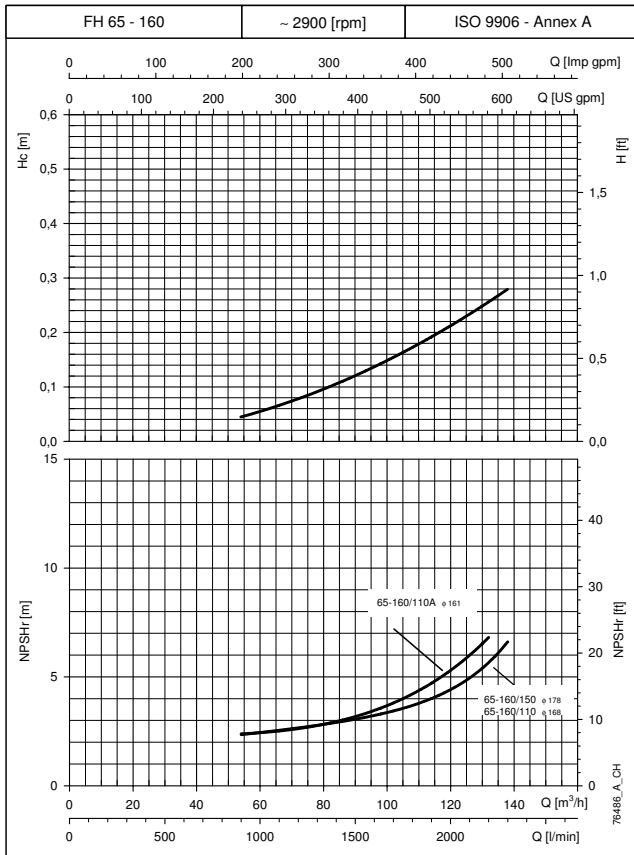
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

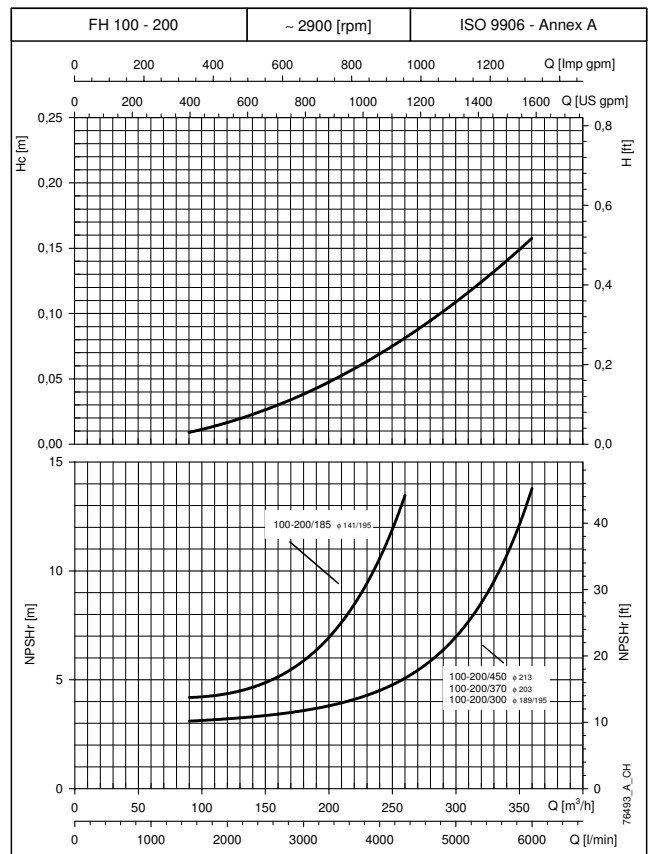
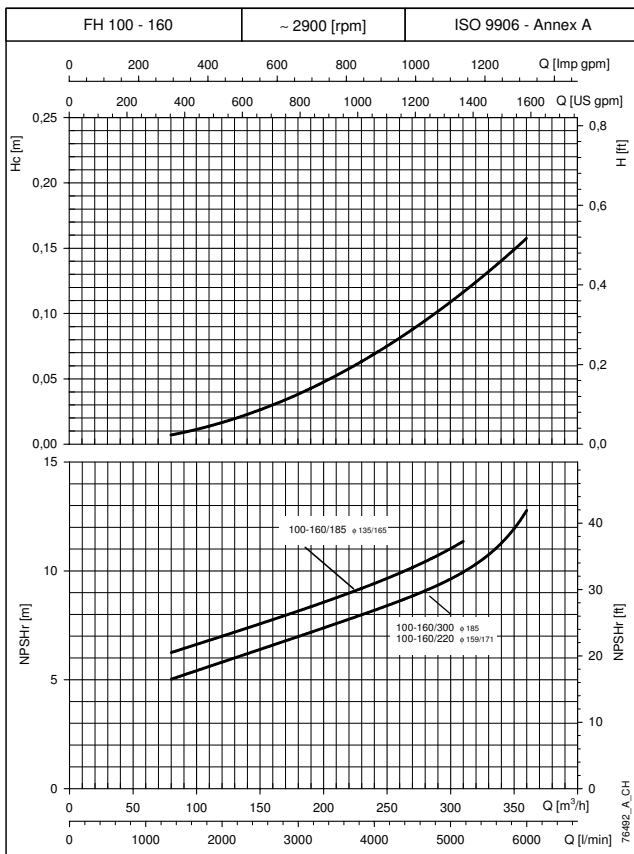
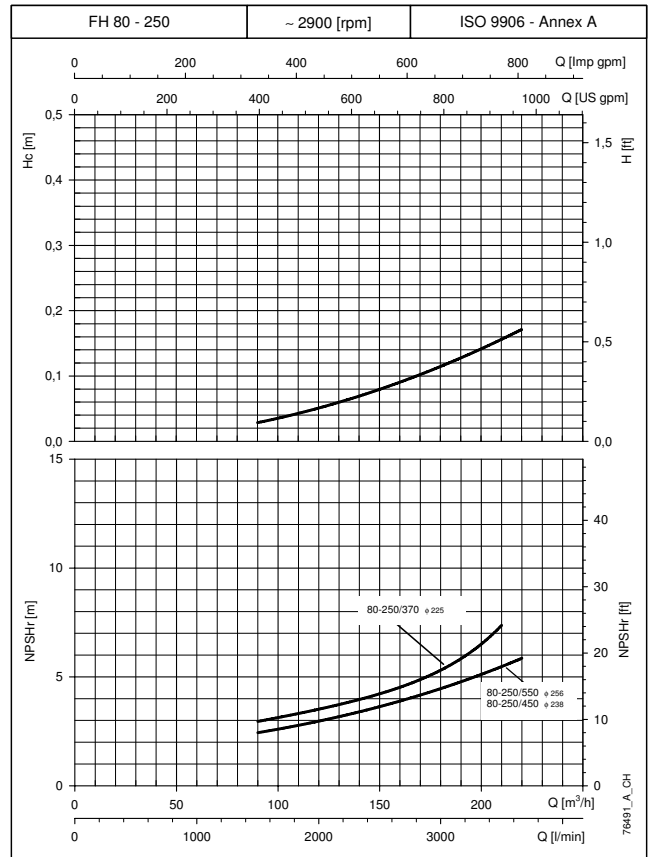
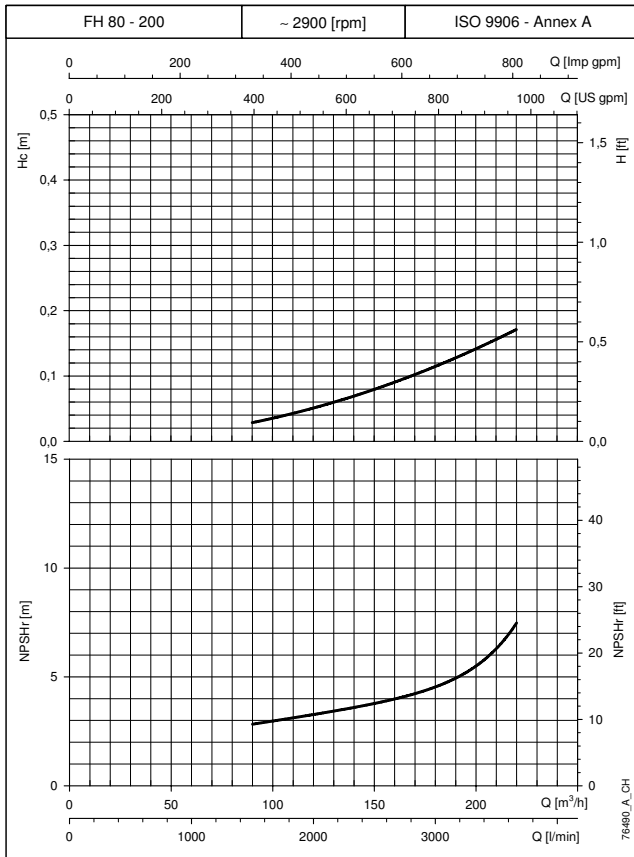
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

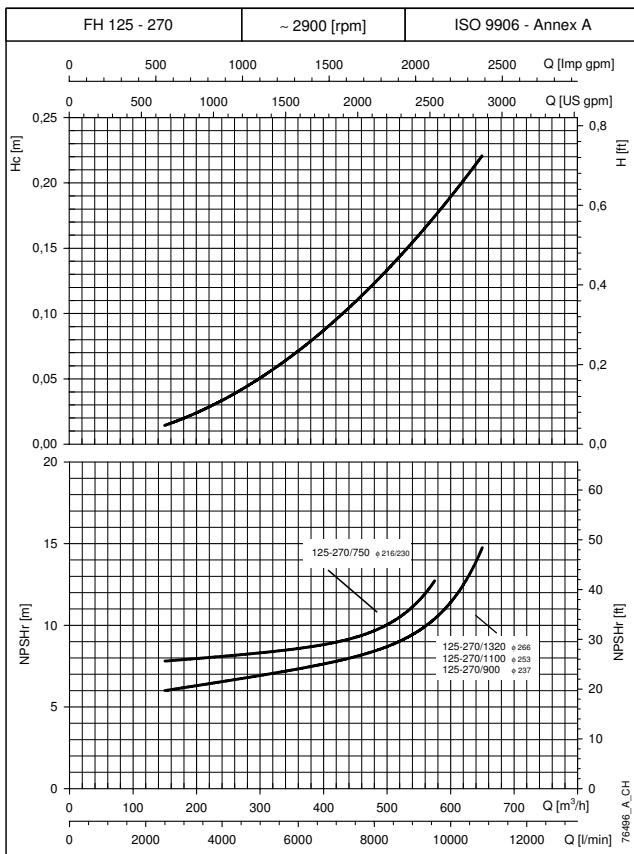
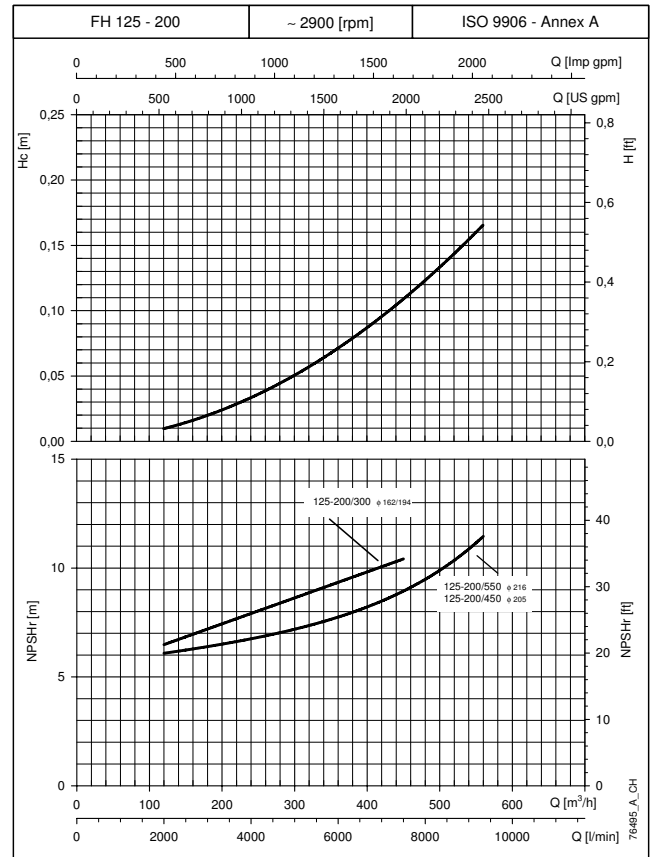
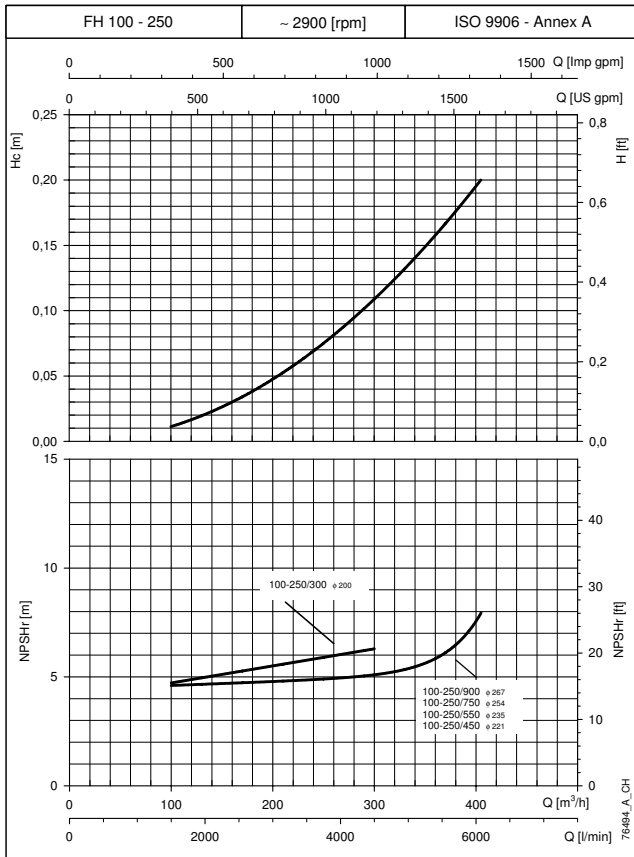
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

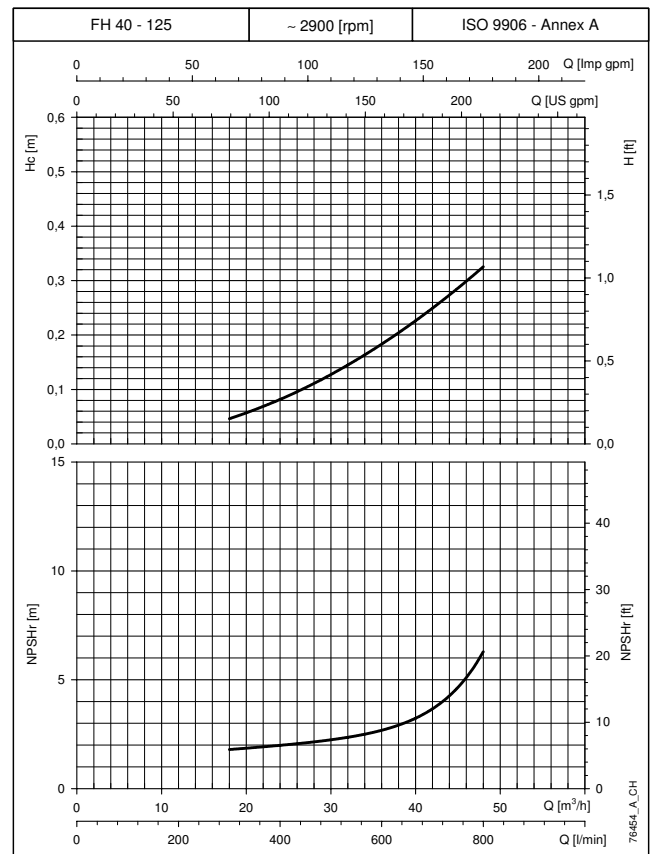
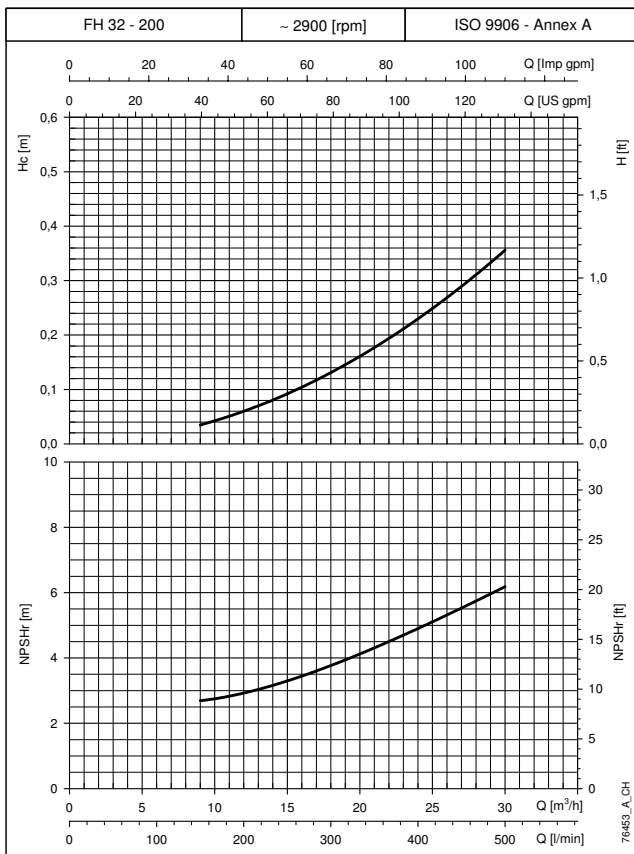
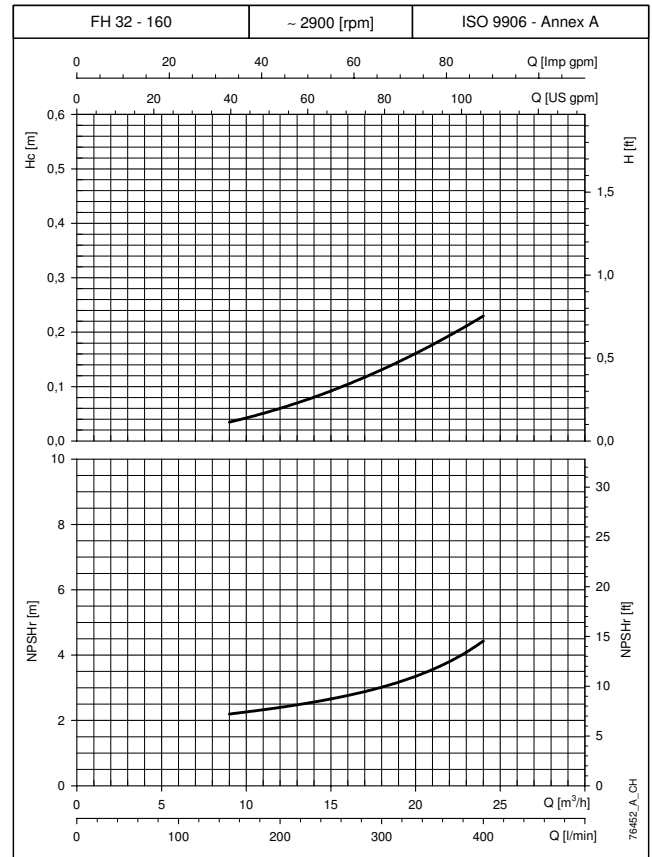
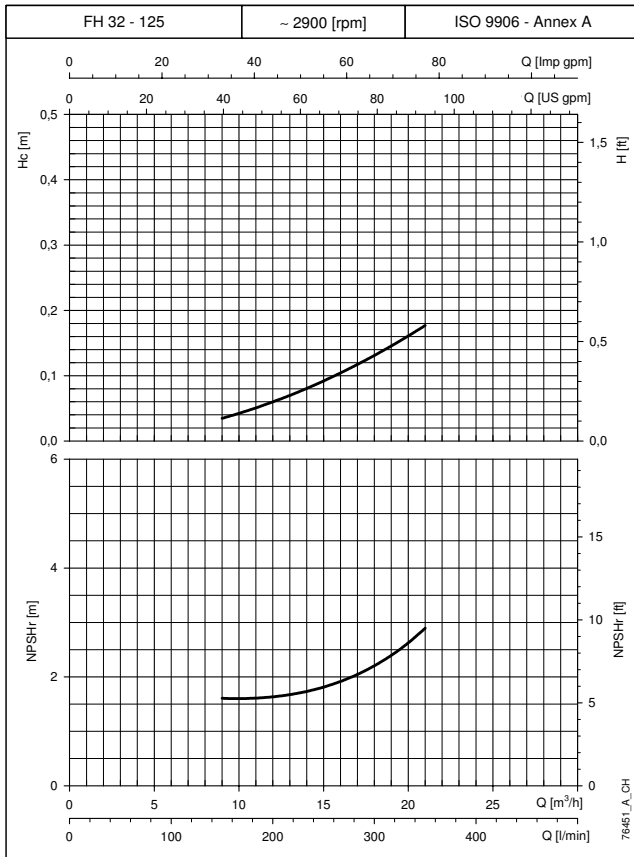
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

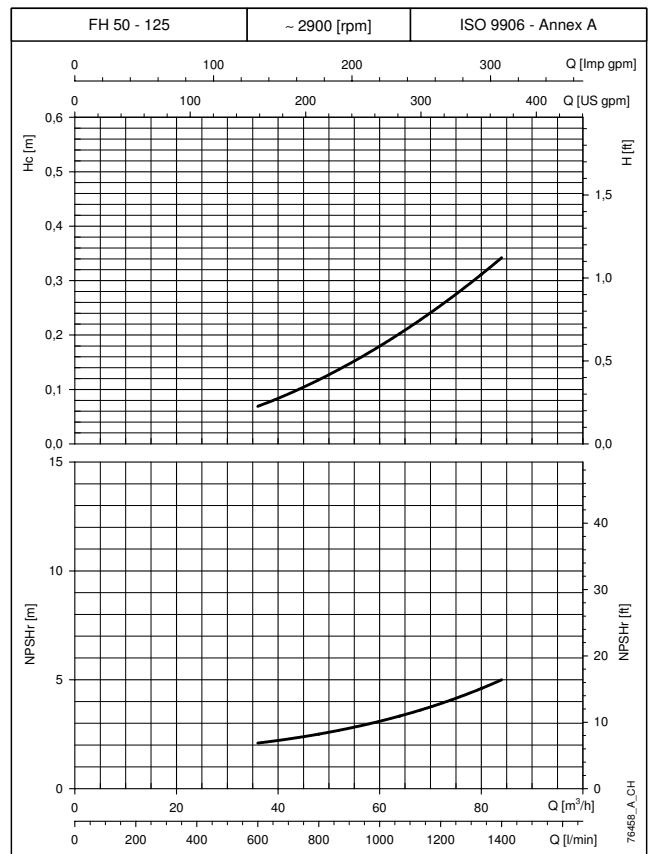
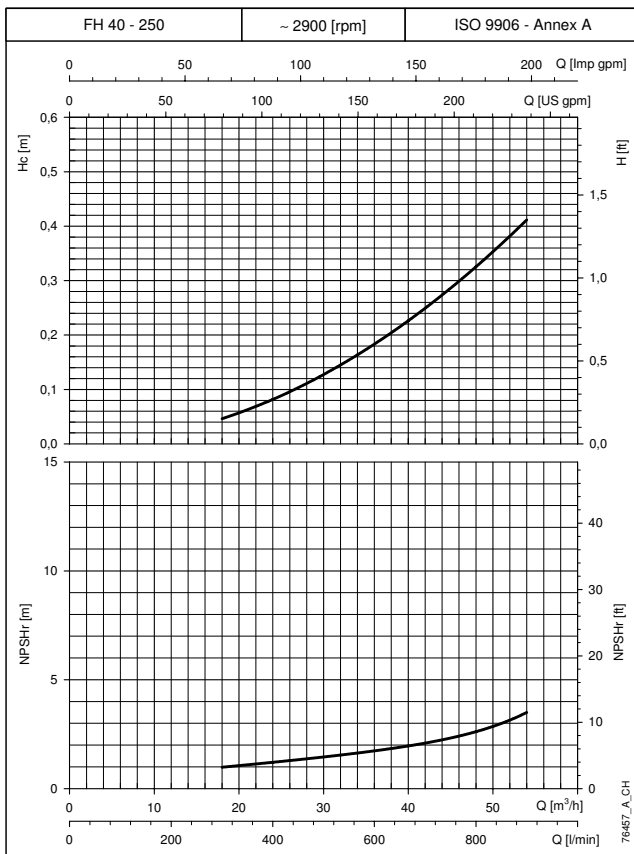
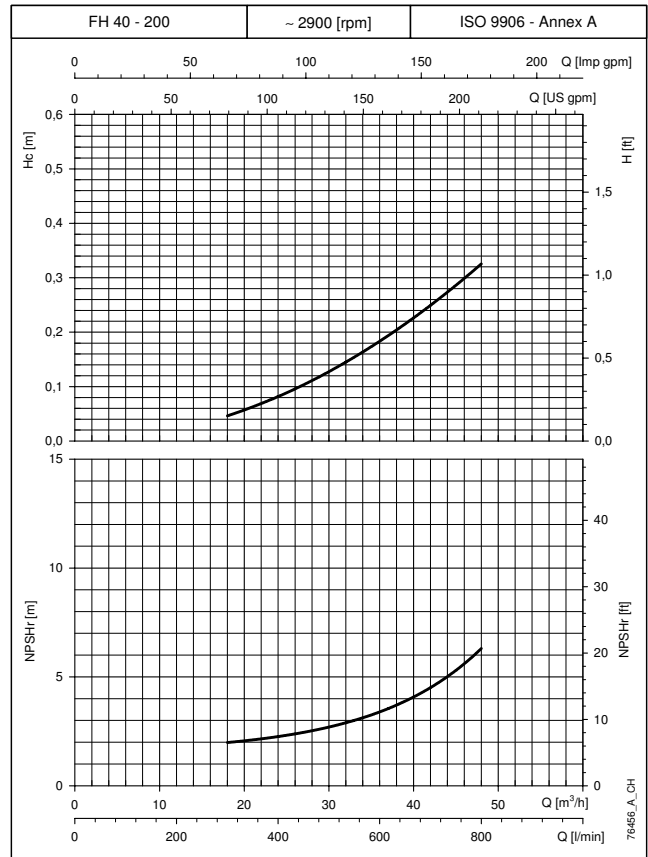
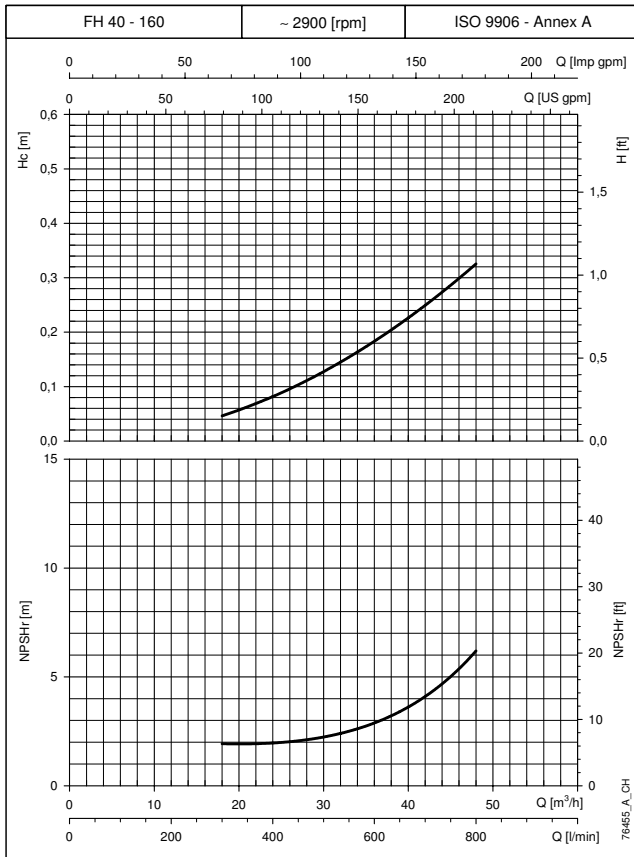
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

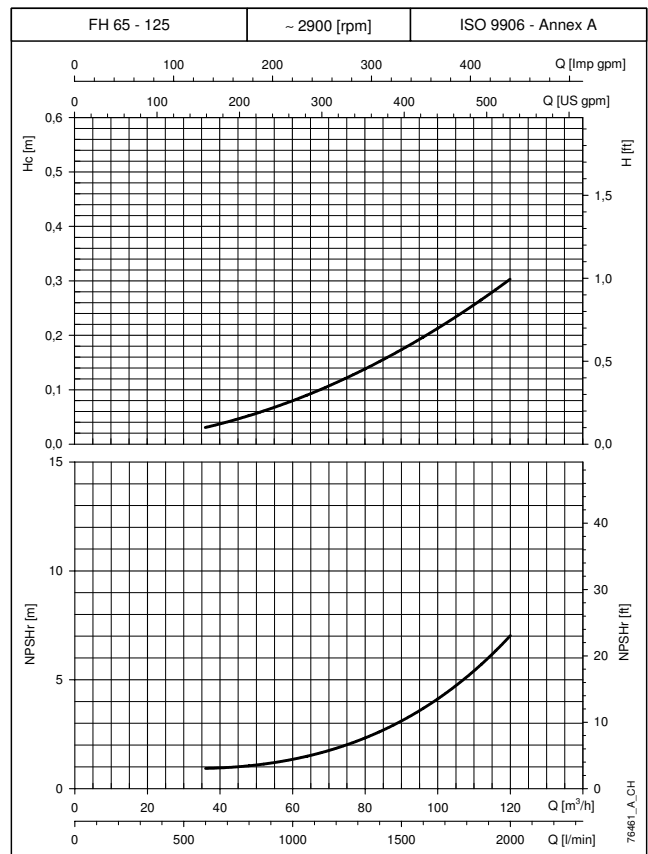
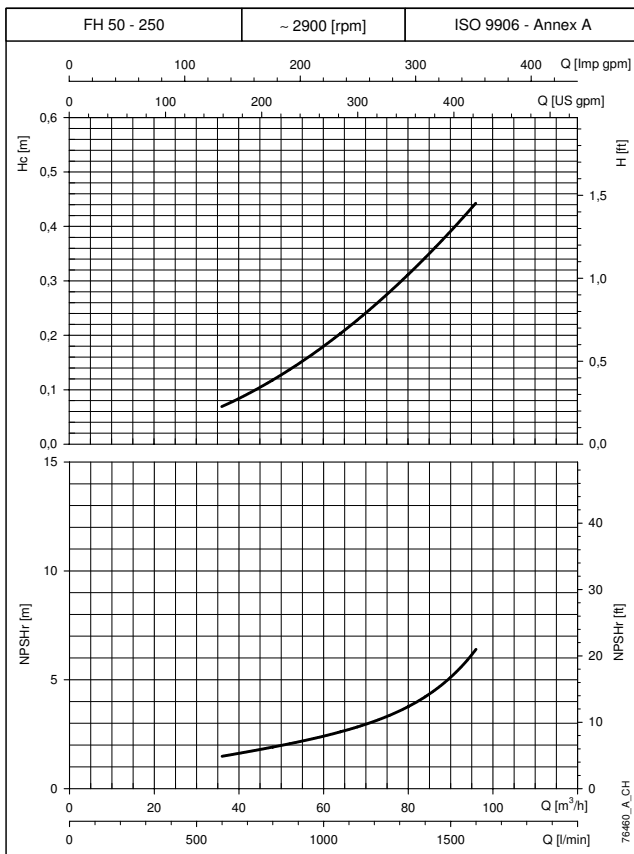
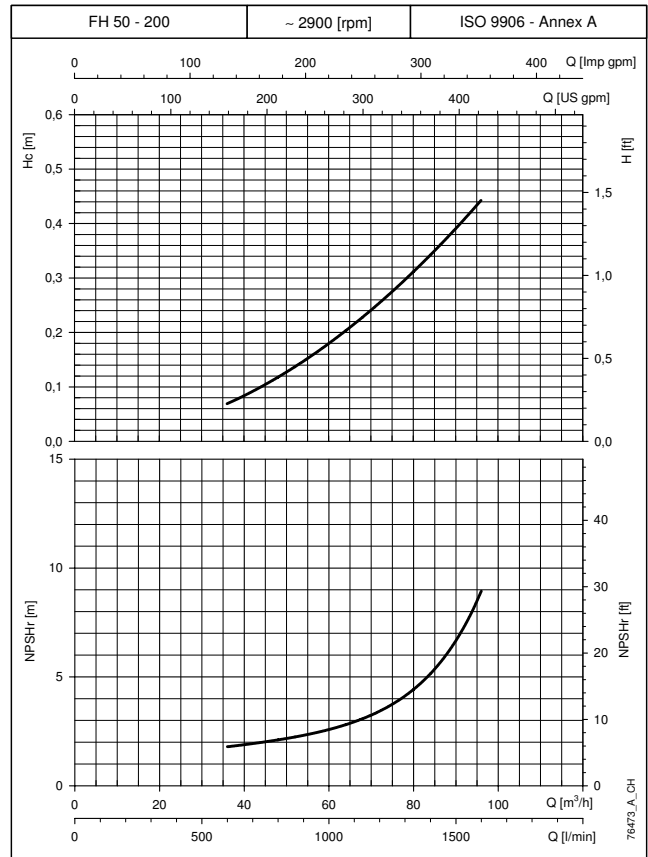
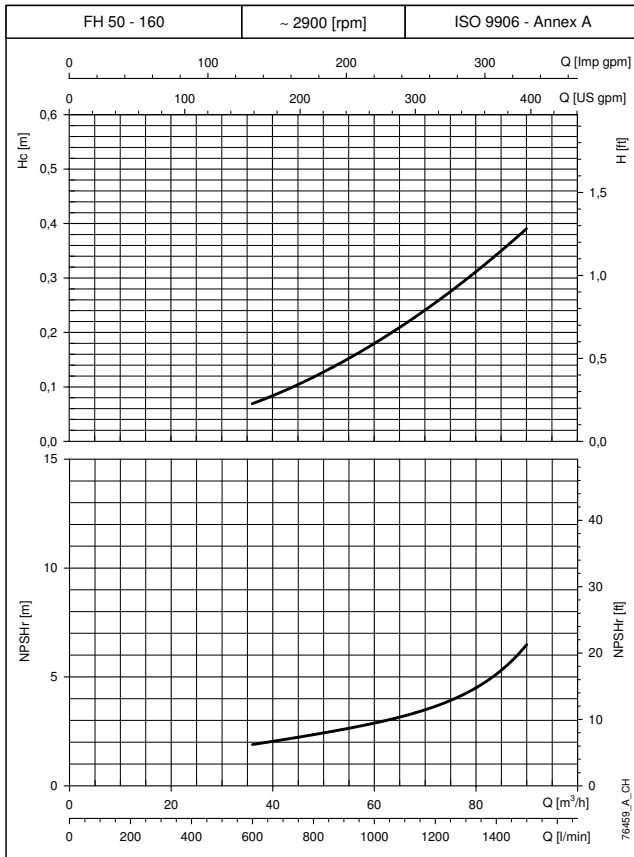
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

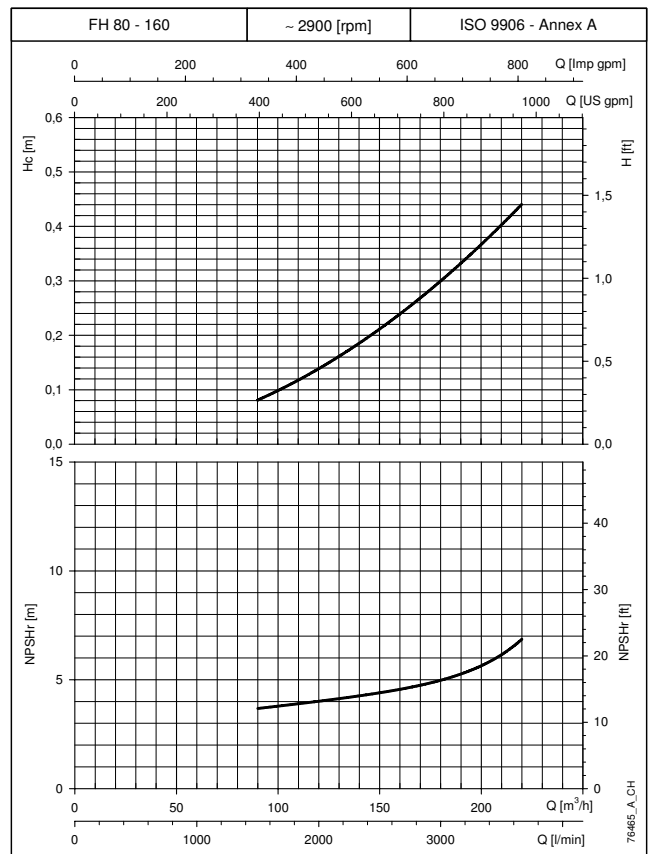
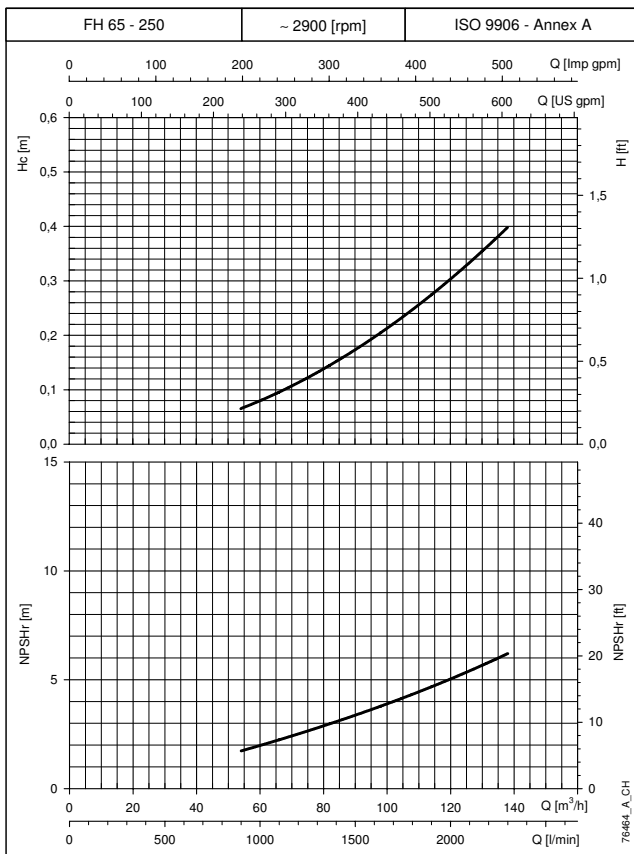
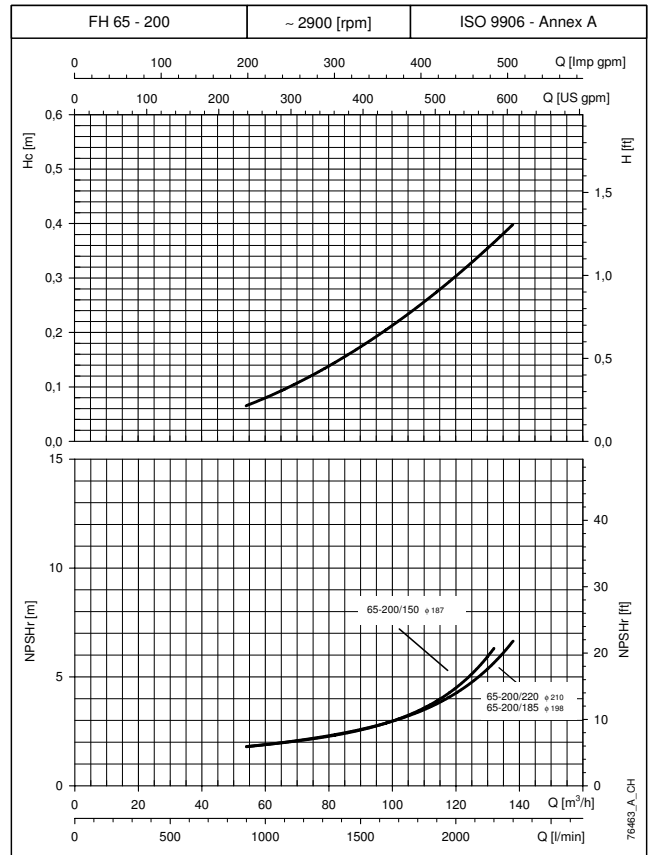
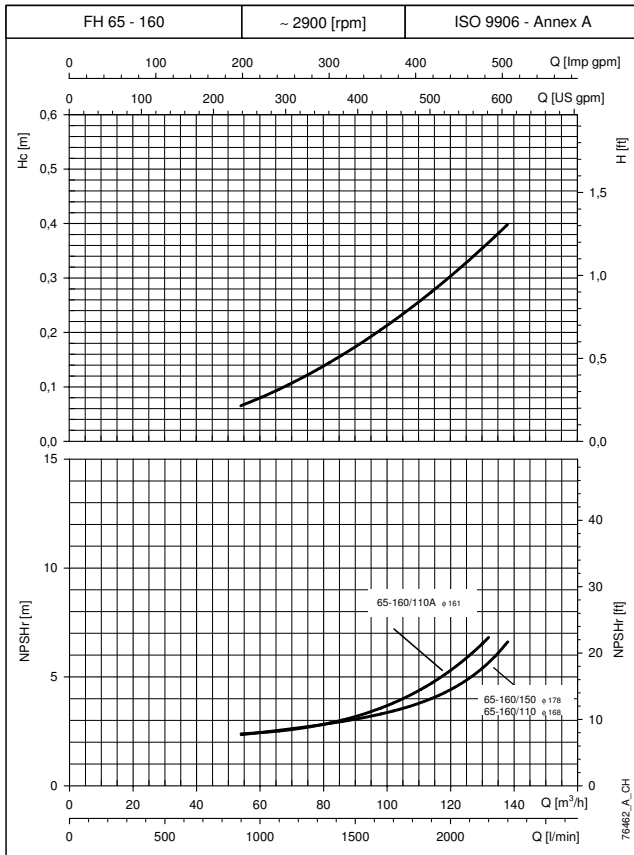
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

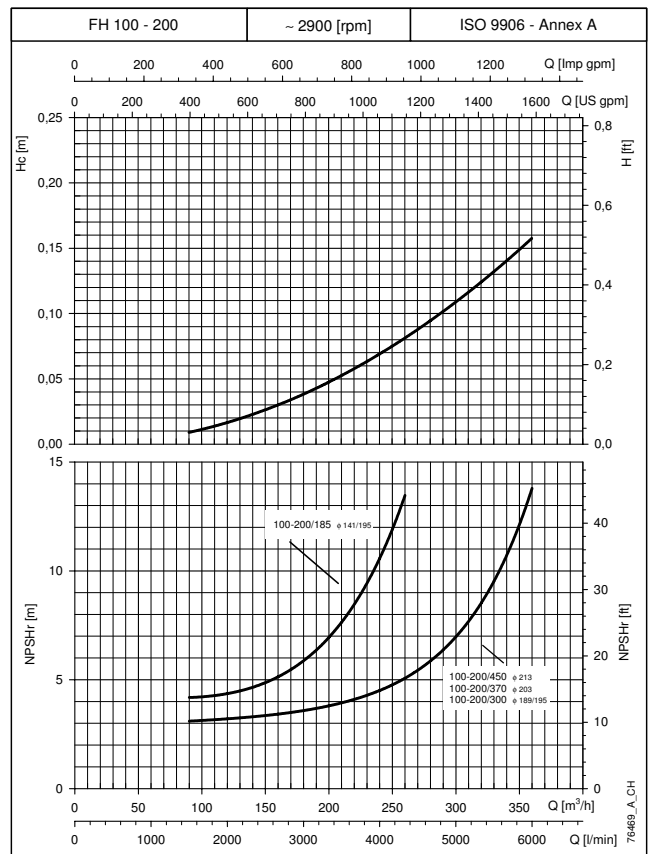
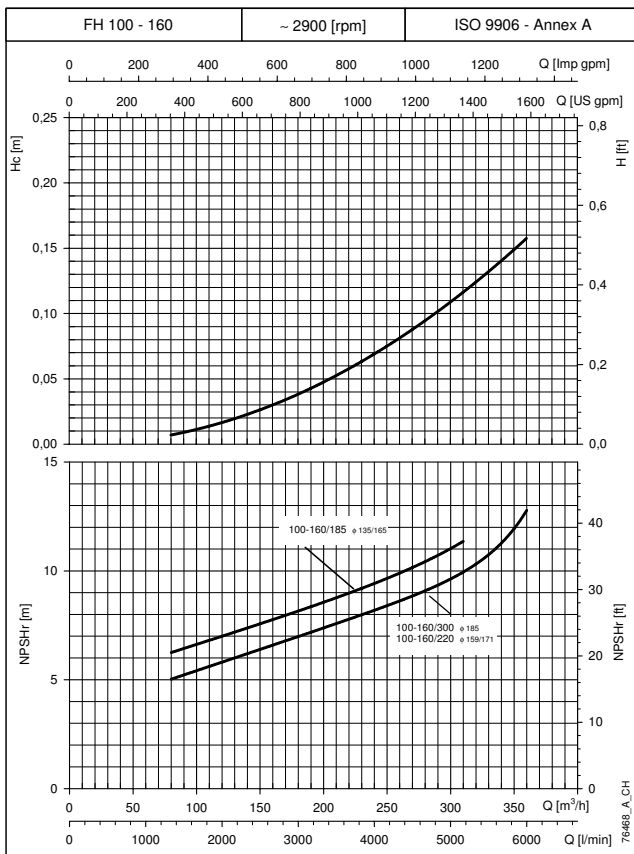
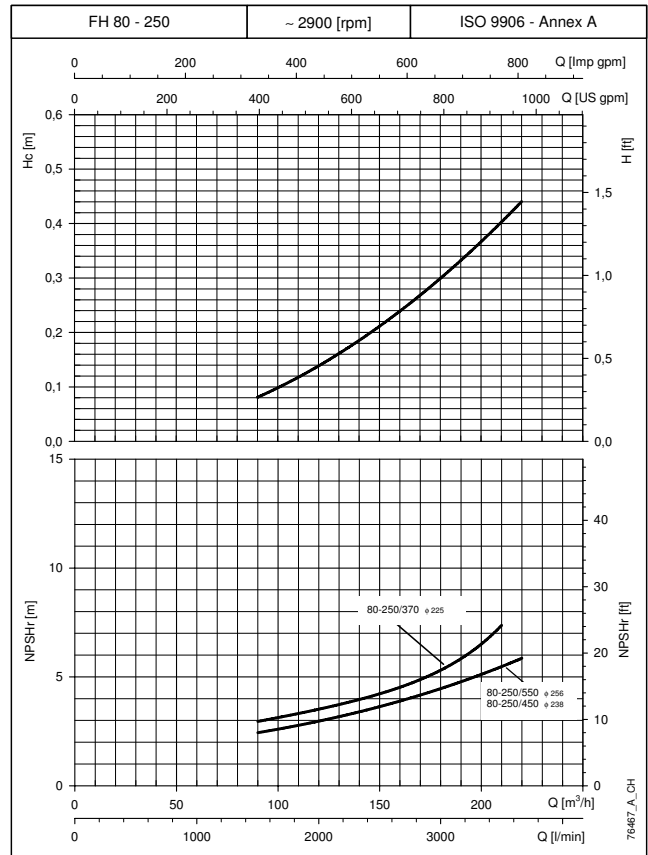
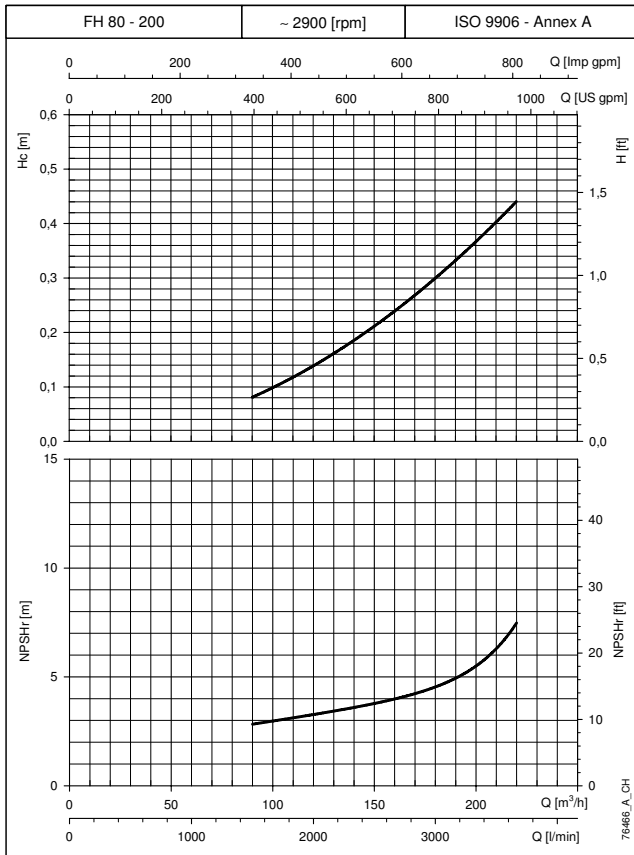
H_c: Pressure drop curve in suction kit.



ITT

Lowara

GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The $NPSH_r$ values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

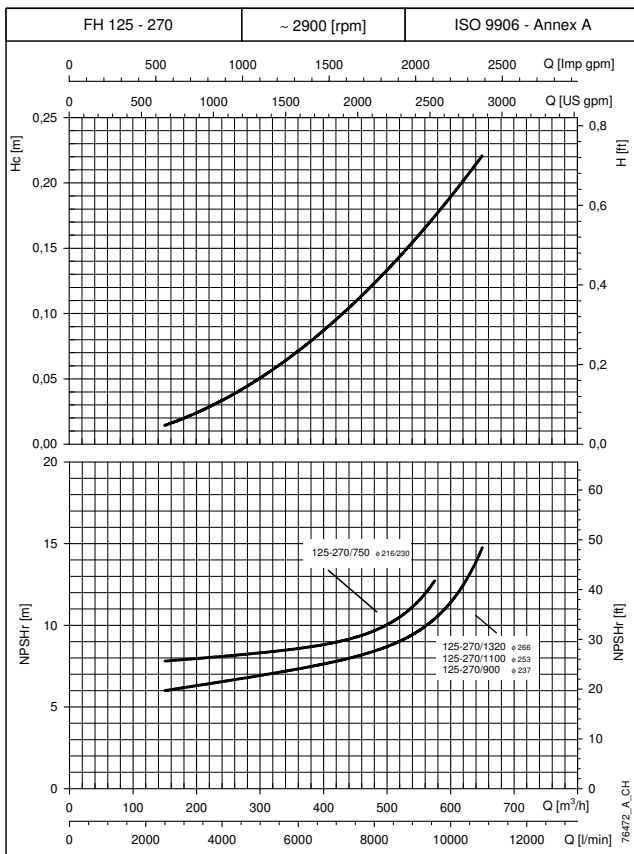
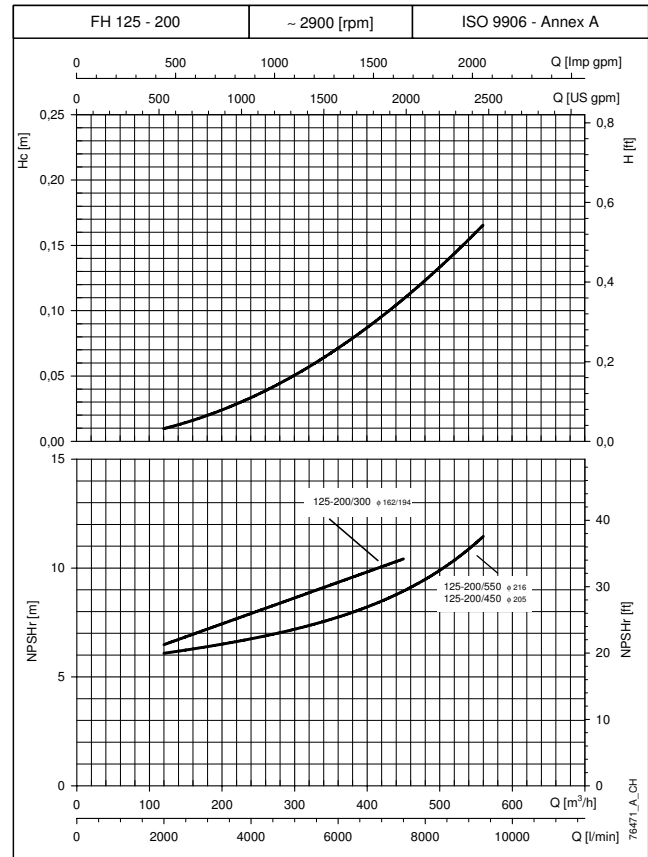
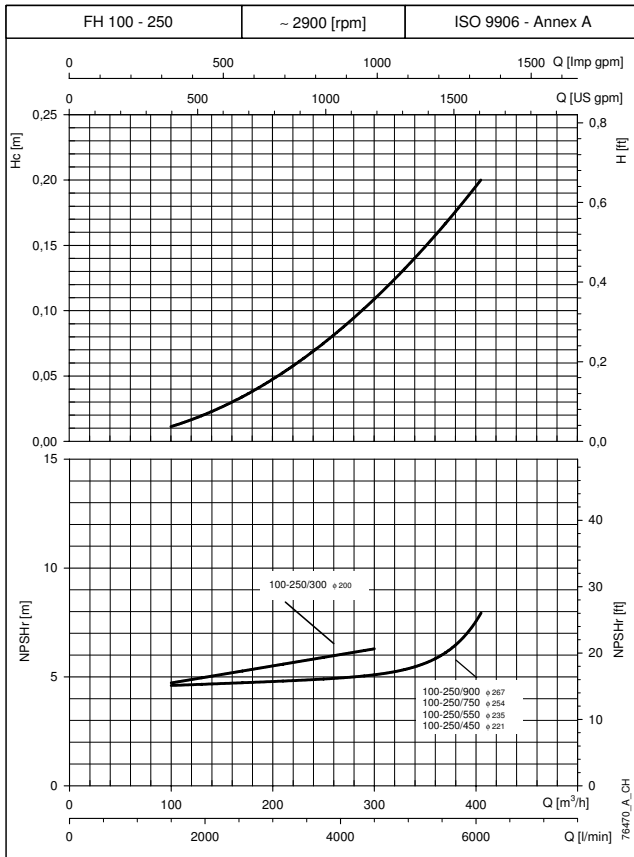
H_c : Pressure drop curve in suction kit.



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GEN../FHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

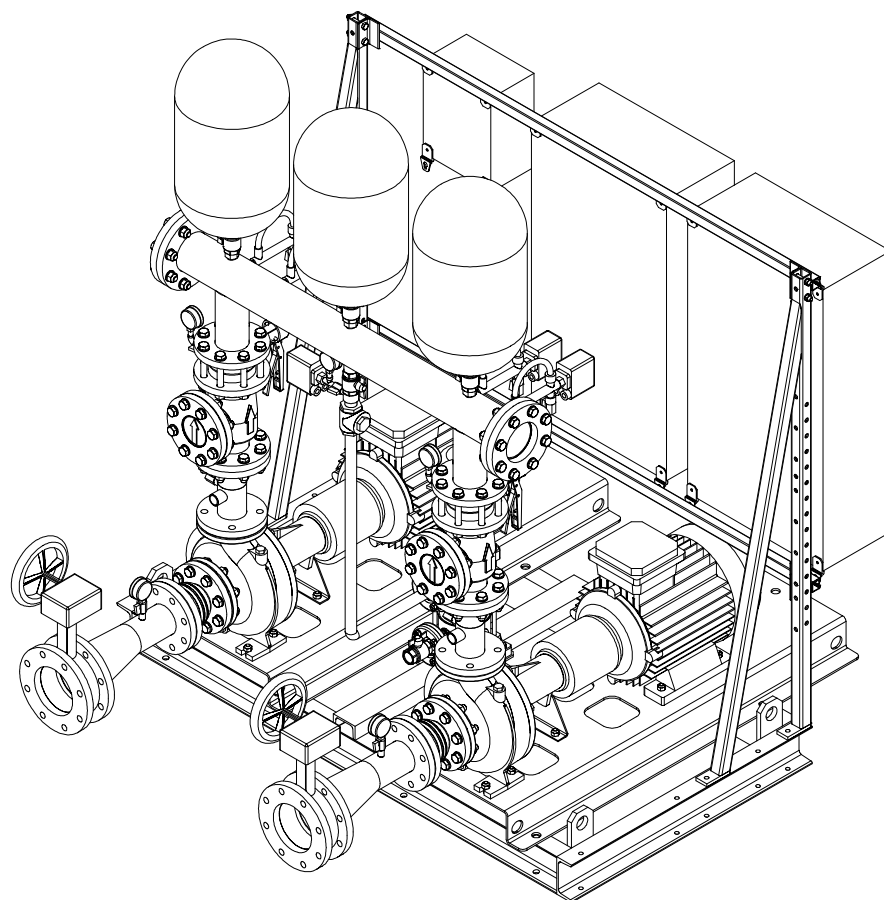
The $NPSH_r$ values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

H_c : Pressure drop curve in suction kit.

GEN../SHF Series

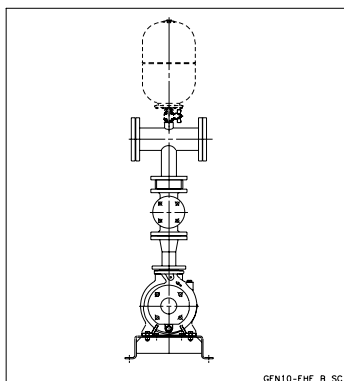
Fire-fighting booster sets EN 12845
Horizontal Centrifugal electric pumps SHF series
equipped with high efficiency PLM motors

50 Hz





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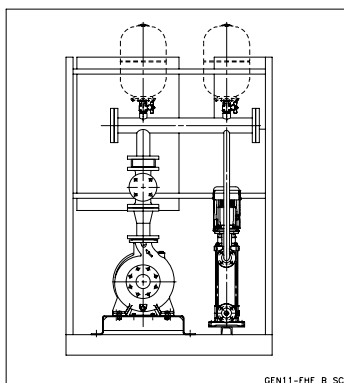
RANGE

GEN./SHF RANGE

- The range of EN 12845 series fire-fighting booster sets includes models with 1 or 2 electric service pumps and some with jockey pumps for adapting to the specific requirements of each application.

GEN10 SERIES

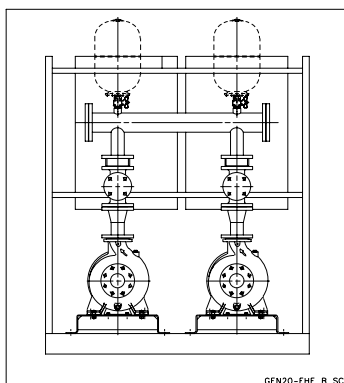
- Fire-fighting sets with a centrifugal service pump horizontal axis and body made of stainless steel in the SHF series.

Head up to 100 m.
Flow up to 220 m³/h.


GEN11 SERIES

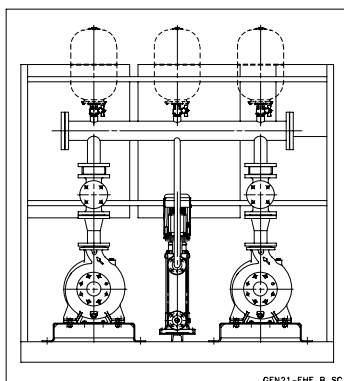
- Fire-fighting sets with a centrifugal service pump horizontal axis and body made of stainless steel in the SHF series and jockey pump.

Head up to 100 m.
Flow up to 220 m³/h.


GEN20 SERIES

- Fire-fighting sets with two centrifugal service pump horizontal axis and body made of stainless steel in the SHF series.

Head up to 100 m.
Flow up to 440 m³/h.


GEN21 SERIES

- Fire-fighting sets with two centrifugal service pump horizontal axis and body made of stainless steel in the SHF series and jockey pump.

Head up to 100 m.
Flow up to 440 m³/h.



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GEN../SHF BOOSTER SETS SERIES HYDRAULIC PERFORMANCE TABLE AT 50 HZ (JOCKEY PUMP)

PUMP TYPE	NOMINAL POWER		Q = DELIVERY									
			l/min 0	20	30	40	50	60	70	100	120	133
	kW	HP	m³/h 0	1,2	1,8	2,4	3	3,6	4,2	6	7,2	8
			H = TOTAL HEAD METRES COLUMN OF WATER									
SV2 04	0,55	0,75	42,5	37,5	34,0	30,5	26,0	20,5	15,0			
SV2 06	0,75	1	64,0	56,0	51,0	45,5	38,5	31,0	22,0			
SV2 09	1,1	1,5	96,0	84,0	76,5	68,5	58,0	46,5	32,5			
SV2 12	1,5	2	128,0	112,0	102,0	91,0	77,0	62,0	44,0			
SV2 14	2,2	3	150,0	131,0	119,0	106,0	90,0	73,0	52,0			
SV2 15	2,2	3	160,2	140,3	128,2	114,0	97,4	78,2	55,9			
SV4 07	1,1	1,5	70,0			59,5	56,0	53,0	51,0	37,0	26,0	18,0
SV4 09	1,5	2	90,0			76,5	73,0	68,5	65,5	47,0	33,5	23,0
SV4 13	2,2	3	131,0			111,0	105,0	99,0	95,0	68,0	48,0	34,0

Performance in accordance with the ISO 9906 - Annex A Standard.

EN12845_pp_sv2-4-2p50-en_b_th

**GEN../SHF BOOSTER SETS SERIES
SERVICE PUMP - JOCKEY PUMP COMBINATIONS**

SERVICE PUMP		JOCKEY PUMP												
ELECTRIC PUMP	TYPE SHF PUMP	SV2 04	SV2 06	SV2 09	SV2 12	SV2 14	SV2 15	SV4 07	SV4 09	SV4 13	SV8 05	SV8 06	SV8 07	SV8 09
32-125/07	32-125/D121		•											
32-125/11	32-125/D136		•											
32-160/15	32-160/D150		•											
32-160/22	32-160/D168		•											
32-200/30	32-200/D188		•											
32-200/40	32-200/D204			•										
32-250/55	32-250/D222			•										
32-250/75	32-250/D242			•										
32-250/110	32-250/D256			•										
40-125/11	40-125/D112		•											
40-125/15	40-125/D126		•											
40-125/22	40-125/D143		•											
40-160/30	40-160/D159		•											
40-160/40	40-160/D171		•											
40-200/55	40-200/D190		•											
40-200/75	40-200/D209			•										
40-250/110A	40-250/D218			•										
40-250/110	40-250/D233			•										
40-250/150	40-250/D251			•										
50-125/22	50-125/D119		•											
50-125/30	50-125/D130		•											
50-125/40	50-125/D139		•											
50-160/55	50-160/D158		•											
50-160/75	50-160/D174		•											
50-200/110A	50-200/D197			•										
50-200/110	50-200/D209			•										
50-250/150	50-250/D224			•										
50-250/185	50-250/D237			•										
50-250/220	50-250/D250			•										
65-160/40	65-160/D119		•											
65-160/55	65-160/D129		•											
65-160/75	65-160/D137		•											
65-160/110A	65-160/D168		•											
65-160/110	65-160/D177		•											
65-200/150	65-200/D192			•										
65-200/185	65-200/D203			•										
65-200/220	65-200/D215			•										
65-250/300	65-250/D240			•										
65-250/370	65-250/D255				•									
80-160/110	80-160/D169							•						
80-160/150	80-160/D177							•						
80-160/185	80-160/D186							•						
80-200/220	80-200/D198							•						
80-200/300	80-200/D215								•					
80-200/370	80-200/D226								•					
80-250/450	80-250/D237								•					
80-250/550	80-250/D252									•				
80-250/750	80-250/D270									•				

12845-SHF_ap-en_a_tc

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../SHF 32 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER kW	RISK CLASS												
			LH												
			Q = DELIVERY												
			l/min 0	150	180	200	225	300	350	375	400	416	425	450	540
ELECTRIC PUMP	PUMP		m ³ /h 0	9	11	12	14	18	21	23	24	25	26	27	32
H = TOTAL HEAD METRES COLUMN OF WATER															
32-125/07	32-125/D121	1 x 0,75	16,7	14,0	12,9	12,1	11,0	7,6	5,1	3,7	1,9				
32-125/11	32-125/D136	1 x 1,1	21,6	19,0	17,9	17,0	15,9	12,3	9,6	8,1	6,2				
32-160/15	32-160/D150	1 x 1,5	27,6	24,2	22,9	21,8	20,5	16,3	13,0	11,3	9,1				
32-160/22	32-160/D168	1 x 2,2	35,0	32,0	30,9	29,9	28,7	24,7	21,5	19,7	17,5	16,1	15,2	13,1	
32-200/30	32-200/D188	1 x 3	43,8	38,1	36,4	35,1	33,4	28,0	23,9	21,6	18,8	17,1			
32-200/40	32-200/D204	1 x 4	53,6	48,6	47,1	45,9	44,4	39,3	35,1	32,8	29,9	28,1	27,0	24,1	
32-250/55	32-250/D222	1 x 5,5	61,7	56,3	54,6	53,2	51,6	46,0	41,7	39,3	36,4				
32-250/75	32-250/D242	1 x 7,5	74,1	68,4	66,7	65,3	63,6	58,1	53,8	51,4	48,6	46,9	45,8		
32-250/110	32-250/D256	1 x 11	86,3	79,8	77,9	76,5	74,7	69,0	64,7	62,3	59,5	57,8	56,7	54,0	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-shf32-2p50-en_a_th

LHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../SHF 32 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER kW	RISK CLASS												
			LH												
			Q = DELIVERY												
			l/min 0	150	180	200	225	300	350	375	400	416	425	450	540
ELECTRIC PUMP	PUMP		m ³ /h 0	9	11	12	14	18	21	23	24	25	26	27	32
H = TOTAL HEAD METRES COLUMN OF WATER															
32-125/07	32-125/D121	1 x 0,75	16,7	14,0	12,9	12,1	11,0	7,6	5,1	3,7	1,9				
32-125/11	32-125/D136	1 x 1,1	21,6	19,0	17,9	17,0	15,9	12,3	9,6	8,1	6,2				
32-160/15	32-160/D150	1 x 1,5	27,6	24,2	22,9	21,8	20,5	16,3	13,0	11,3	9,1				
32-160/22	32-160/D168	1 x 2,2	35,0	32,0	30,9	29,9	28,7	24,7	21,5	19,7	17,5	16,1	15,2	13,1	
32-200/30	32-200/D188	1 x 3	43,8	38,1	36,4	35,1	33,4	28,0	23,9	21,6	18,8	17,1			
32-200/40	32-200/D204	1 x 4	53,6	48,6	47,1	45,9	44,4	39,3	35,1	32,8	29,9	28,1	27,0	24,1	
32-250/55	32-250/D222	1 x 5,5	61,7	56,3	54,6	53,2	51,6	46,0	41,7	39,3	36,4				
32-250/75	32-250/D242	1 x 7,5	74,1	68,4	66,7	65,3	63,6	58,1	53,8	51,4	48,6	46,9	45,8		
32-250/110	32-250/D256	1 x 11	86,3	79,8	77,9	76,5	74,7	69,0	64,7	62,3	59,5	57,8	56,7	54,0	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-shf32-2p50-en_a_th

LHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845).

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



NPSH REQUIRED FOR PUMP SERIES SHF 32

Check that $NPSH_d \geq NPSH_{r+1m}$ is satisfied



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HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../SHF 40 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER kW	RISK CLASS												
			OHn		Q = DELIVERY										
			l/min 0	300	375	540	640	677	700	725	750	800	833	850	1000
			m ³ /h 0	18	23	32	38	41	42	44	45	48	50	51	60
ELECTRIC PUMP		PUMP	H = TOTAL HEAD METRES COLUMN OF WATER												
40-125/11	40-125/D112	1 x 1,1	13,9	11,3	10,0	9,3	3,4	0,7							
40-125/15	40-125/D126	1 x 1,5	18,0	15,3	14,0	13,3	7,4	4,7							
40-125/22	40-125/D143	1 x 2,2	25,3	21,8	20,5	19,8	14,0	11,4	6,4	5,0	3,6	0,6			
40-160/30	40-160/D159	1 x 3	31,6	28,1	26,8	26,0	19,5	16,5	10,8	9,2	7,6				
40-160/40	40-160/D171	1 x 4	38,3	35,1	33,7	32,9	26,5	23,6	18,1	16,5	15,0	11,7			
40-200/55	40-200/D190	1 x 5,5	46,4	42,7	41,2	40,4	33,1	29,7	23,3	21,5	19,6				
40-200/75	40-200/D209	1 x 7,5	57,5	53,1	51,6	50,7	43,8	40,7	34,8	33,2	31,5	28,0			
40-250/110A	40-250/D218	1 x 11	63,6	57,8	56,2	55,2	47,8	44,5	38,2	36,5	34,8	31,1			
40-250/110	40-250/D233	1 x 11	71,7	66,0	64,3	63,4	55,7	52,3	45,8	44,0	42,1	38,3			
40-250/150	40-250/D251	1 x 15	85,0	78,6	76,9	76,0	68,4	65,0	58,6	56,8	55,0	51,1	42,6		

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-shf40-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../SHF 40 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER kW	RISK CLASS												
			OHn		Q = DELIVERY										
			l/min 0	300	375	540	640	677	700	725	750	800	833	850	1000
			m ³ /h 0	18	23	32	38	41	42	44	45	48	50	51	60
ELECTRIC PUMP		PUMP	H = TOTAL HEAD METRES COLUMN OF WATER												
40-125/11	40-125/D112	1 x 1,1	13,9	11,3	10,0	9,3	3,4	0,7							
40-125/15	40-125/D126	1 x 1,5	18,0	15,3	14,0	13,3	7,4	4,7							
40-125/22	40-125/D143	1 x 2,2	25,3	21,8	20,5	19,8	14,0	11,4	6,4	5,0	3,6	0,6			
40-160/30	40-160/D159	1 x 3	31,6	28,1	26,8	26,0	19,5	16,5	10,8	9,2	7,6				
40-160/40	40-160/D171	1 x 4	38,3	35,1	33,7	32,9	26,5	23,6	18,1	16,5	15,0	11,7			
40-200/55	40-200/D190	1 x 5,5	46,4	42,7	41,2	40,4	33,1	29,7	23,3	21,5	19,6				
40-200/75	40-200/D209	1 x 7,5	57,5	53,1	51,6	50,7	43,8	40,7	34,8	33,2	31,5	28,0			
40-250/110A	40-250/D218	1 x 11	63,6	57,8	56,2	55,2	47,8	44,5	38,2	36,5	34,8	31,1			
40-250/110	40-250/D233	1 x 11	71,7	66,0	64,3	63,4	55,7	52,3	45,8	44,0	42,1	38,3			
40-250/150	40-250/D251	1 x 15	85,0	78,6	76,9	76,0	68,4	65,0	58,6	56,8	55,0	51,1	42,6		

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-shf40-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES SHF 40

TYPE SHF..		RATED POWER kW	RISK CLASS												
			OH1n		OH1m		Q = DELIVERY								
			l/min 0	300	375	540	640	677	700	725	750	800	833	850	1000
			m ³ /h 0	18	23	32	38	41	42	44	45	48	50	51	60
ELECTRIC PUMP		PUMP	NPSHr [METRES COLUMN OF WATER]												
40-125/11	40-125/D112	1 x 1,1		0,7	1,0	1,5	2,0								
40-125/15	40-125/D126	1 x 1,5		0,7	1,0	1,5	2,0	2,3	2,5						
40-125/22	40-125/D143	1 x 2,2		0,7	1,0	1,5	2,0	2,3	2,5	2,8	3,1				
40-160/30	40-160/D159	1 x 3		1,1	1,4	2,1	2,6	2,9	3,2	3,5	3,8				
40-160/40	40-160/D171	1 x 4		1,1	1,4	2,1	2,6	2,9	3,2	3,5	3,8	4,9			
40-200/55	40-200/D190	1 x 5,5		1,4	1,8	2,7	3,4	3,7	3,9	4,2	4,5	5,4			
40-200/75	40-200/D209	1 x 7,5		1,4	1,8	2,7	3,4	3,7	3,9	4,2	4,5	5,4	6,4		
40-250/110A	40-250/D218	1 x 11		1,4	1,4	1,7	3,0	4,1	5,0						
40-250/110	40-250/D233	1 x 11		1,3	1,4	1,6	1,8	1,9							
40-250/150	40-250/D251	1 x 15		1,3	1,4	1,6	1,8	1,9	2,1	2,2	2,5	3,3	4,3	5,0	

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-shf40-2p50_NPSHr-en_a_th

OHn, OHm = risk class value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../SHF 50 BOOSTER SETS SERIES

TYPE SHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH _{2n}		OH _{3n}										
			Q = DELIVERY												
		l/min 0	600	680	725	1000	1100	1200	1300	1350	1380	1400	1450	1500	
		m3/h 0	36	41	44	60	66	72	78	81	83	84	87	90	
		H = TOTAL HEAD METRES COLUMN OF WATER													
50-125/22	50-125/D119	1 x 2,2	17,2	13,2	12,0	11,3	5,9	3,6	1,2						
50-125/30	50-125/D130	1 x 3	21,7	17,4	16,1	15,3	9,8	7,6	5,2	2,8					
50-125/40	50-125/D139	1 x 4	25,6	21,8	20,6	19,8	14,4	12,1	9,8	7,3	6,0	5,3	4,7		
50-160/55	50-160/D158	1 x 5,5	34,0	29,3	27,8	26,9	20,4	17,5	14,4	11,1	9,4	8,3	7,6		
50-160/75	50-160/D174	1 x 7,5	40,7	36,1	34,7	33,9	27,6	24,7	21,6	18,1	16,3	15,2	14,4	12,5	10,4
50-200/110A	50-200/D197	1 x 11	34,0	29,3	27,8	26,9	20,4	17,5	14,4	11,1	9,4	8,3	7,6		
50-200/110	50-200/D209	1 x 11	40,7	36,1	34,7	33,9	27,6	24,7	21,6	18,1	16,3	15,2	14,4	12,5	
50-250/150	50-250/D224	1 x 15	70,3	65,5	64,0	63,0	54,6	50,4	45,4	39,6					
50-250/185	50-250/D237	1 x 18,5	80,1	73,8	72,1	71,1	62,8	58,7	54,1	48,9	46,0	44,2			
50-250/220	50-250/D250	1 x 22	88,9	83,2	81,6	80,6	72,3	68,4	64,0	59,1	56,4	54,7	53,6	50,6	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-shf50-2p50-en_a_th

OH_n = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../SHF 50 BOOSTER SETS SERIES

TYPE SHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS												
			OH _{2n}		OH _{3n}										
			Q = DELIVERY												
			l/min 0	600	680	725	1000	1100	1200	1300	1350	1380	1400	1450	1500
H = TOTAL HEAD METRES COLUMN OF WATER			m3/h 0	36	41	44	60	66	72	78	81	83	84	87	90
50-125/22	50-125/D119	1 x 2,2	17,2	13,2	12,0	11,3	5,9	3,6	1,2						
50-125/30	50-125/D130	1 x 3	21,7	17,4	16,1	15,3	9,8	7,6	5,2	2,8					
50-125/40	50-125/D139	1 x 4	25,6	21,8	20,6	19,8	14,4	12,1	9,8	7,3	6,0	5,3	4,7		
50-160/55	50-160/D158	1 x 5,5	34,0	29,3	27,8	26,9	20,4	17,5	14,4	11,1	9,4	8,3	7,6		
50-160/75	50-160/D174	1 x 7,5	40,7	36,1	34,7	33,9	27,6	24,7	21,6	18,1	16,3	15,2	14,4	12,5	10,4
50-200/110A	50-200/D197	1 x 11	34,0	29,3	27,8	26,9	20,4	17,5	14,4	11,1	9,4	8,3	7,6		
50-200/110	50-200/D209	1 x 11	40,7	36,1	34,7	33,9	27,6	24,7	21,6	18,1	16,3	15,2	14,4	12,5	
50-250/150	50-250/D224	1 x 15	70,3	65,5	64,0	63,0	54,6	50,4	45,4	39,6					
50-250/185	50-250/D237	1 x 18,5	80,1	73,8	72,1	71,1	62,8	58,7	54,1	48,9	46,0	44,2			
50-250/220	50-250/D250	1 x 22	88,9	83,2	81,6	80,6	72,3	68,4	64,0	59,1	56,4	54,7	53,6	50,6	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-shf50-2p50-en_a_th

OH_n = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

NPSH REQUIRED FOR PUMP SERIES SHF 50

TYPE SHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS											
				OH2n		OH2m		OH3n		OH3m					
				Q = DELIVERY											
				l/min 0	600	680	725	1000	1100	1200	1300	1350	1380	1400	1450
			m³/h 0	36	41	44	60	66	72	78	81	83	84	87	90
			NPSHr [METRES COLUMN OF WATER]												
50-125/22	50-125/D119	1 x 2,2		1,6	1,8	1,9	2,8	3,4	4,3						
50-125/30	50-125/D130	1 x 3		1,6	1,8	1,9	2,7	3,1	3,7	4,6					
50-125/40	50-125/D139	1 x 4		1,6	1,8	1,9	2,7	3,1	3,7	4,6	5,2	5,7	6,0		
50-160/55	50-160/D158	1 x 5,5		2,0	2,1	2,1	2,8	3,2	3,7	4,7	5,4	5,9	6,3		
50-160/75	50-160/D174	1 x 7,5		1,9	2,1	2,2	2,8	3,1	3,6	4,3	4,9	5,3	5,6	6,5	7,6
50-200/110A	50-200/D197	1 x 11		2,0	2,1	2,1	2,8	3,2	4,0	5,2	6,1	6,7	7,2		
50-200/110	50-200/D209	1 x 11		1,9	2,1	2,2	2,8	3,2	3,7	4,7	5,4	5,9	6,3	7,5	
50-250/150	50-250/D224	1 x 15		1,6	1,7	1,8	2,3	2,7	3,3	4,8					
50-250/185	50-250/D237	1 x 18,5		1,5	1,7	1,8	2,4	2,7	3,1	3,7	4,1	4,4			
50-250/220	50-250/D250	1 x 22		1,5	1,7	1,8	2,4	2,7	3,1	3,7	4,1	4,4	4,7	5,4	

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-shf50-2p50_NPSHr-en_a_th

OHn, OHm = risk class value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../SHF 65 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER	RISK CLASS												
			OH3n						OH4n						
			Q = DELIVERY												
			l/min 0	800	900	1000	1100	1350	1500	1800	1900	2000	2050	2100	2200
ELECTRIC PUMP	PUMP	kW	m3/h 0	48	54	60	66	81	90	108	114	120	123	126	132
H = TOTAL HEAD METRES COLUMN OF WATER															
65-160/40	65-160/D119	1 x 4	19,6	15,9	14,9	13,8	12,6	9,4	7,3	2,9					
65-160/55	65-160/D129	1 x 5,5	24,2	20,5	19,5	18,4	17,2	13,9	11,7	7,0	5,4				
65-160/75	65-160/D137	1 x 7,5	28,2	25,1	24,2	23,1	22,0	18,8	16,7	12,0	10,4	8,7			
65-160/110A	65-160/D168	1 x 11	38,2	34,3	33,0	31,5	29,8	25,2	22,0	15,2	12,9				
65-160/110	65-160/D177	1 x 11	42,9	39,7	38,4	36,9	35,3	30,6	27,4	20,5	18,1	15,6			
65-200/150	65-200/D192	1 x 15	53,0		47,5	45,9	44,1	38,9	35,3	27,1	24,1				
65-200/185	65-200/D203	1 x 18,5	60,2		55,2	53,6	51,9	46,9	43,4	35,5	32,6	29,5			
65-200/220	65-200/D215	1 x 22	68,0		63,0	61,6	60,0	55,2	51,9	44,3	41,5	38,5	37,0	35,5	
65-250/300	65-250/D240	1 x 30	83,7			80,2	78,9	74,9	71,9	64,4	61,4	58,3	56,6	54,9	
65-250/370	65-250/D255	1 x 37	96,7			93,6	92,2	88,0	84,9	77,4	74,6	71,7	70,1	68,5	65,2

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-shf65-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../SHF 65 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER	RISK CLASS												
			OH3n						OH4n						
			Q = DELIVERY												
			l/min 0	800	900	1000	1100	1350	1500	1800	1900	2000	2050	2100	2200
ELECTRIC PUMP	PUMP	kW	m3/h 0	48	54	60	66	81	90	108	114	120	123	126	132
H = TOTAL HEAD METRES COLUMN OF WATER															
65-160/40	65-160/D119	1 x 4	19,6	15,9	14,9	13,8	12,6	9,4	7,3	2,9					
65-160/55	65-160/D129	1 x 5,5	24,2	20,5	19,5	18,4	17,2	13,9	11,7	7,0	5,4				
65-160/75	65-160/D137	1 x 7,5	28,2	25,1	24,2	23,1	22,0	18,8	16,7	12,0	10,4	8,7			
65-160/110A	65-160/D168	1 x 11	38,2	34,3	33,0	31,5	29,8	25,2	22,0	15,2	12,9				
65-160/110	65-160/D177	1 x 11	42,9	39,7	38,4	36,9	35,3	30,6	27,4	20,5	18,1	15,6			
65-200/150	65-200/D192	1 x 15	53,0		47,5	45,9	44,1	38,9	35,3	27,1	24,1				
65-200/185	65-200/D203	1 x 18,5	60,2		55,2	53,6	51,9	46,9	43,4	35,5	32,6	29,5			
65-200/220	65-200/D215	1 x 22	68,0		63,0	61,6	60,0	55,2	51,9	44,3	41,5	38,5	37,0	35,5	
65-250/300	65-250/D240	1 x 30	83,7			80,2	78,9	74,9	71,9	64,4	61,4	58,3	56,6	54,9	
65-250/370	65-250/D255	1 x 37	96,7			93,6	92,2	88,0	84,9	77,4	74,6	71,7	70,1	68,5	65,2

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-shf65-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES SHF 65

TYPE SHF.. ELECTRIC PUMP		PUMP	RATED POWER kW	RISK CLASS												
				OH3n		OH3m		OH4n		OH4m						
				l/min 0	800	900	1000	1100	1350	1400	1500	1800	1900	2000	2100	2200
m³/h 0	48	54	60	66	81	84	90	108	114	120	126	132				
NPSHr [METRES COLUMN OF WATER]																
65-160/40	65-160/D119	1 x 4		1,9	1,8	1,9	1,9	2,5	2,7	3,3	7,4					
65-160/55	65-160/D129	1 x 5,5		1,9	1,9	1,9	1,9	2,4	2,6	3,1	5,4	6,6				
65-160/75	65-160/D137	1 x 7,5		1,9	1,9	1,9	1,9	2,4	2,6	3,1	5,4	6,6	8,0			
65-160/110A	65-160/D168	1 x 11		1,3	1,4	1,6	1,7	2,1	2,1	2,4	3,5	4,2				
65-160/110	65-160/D177	1 x 11		1,3	1,4	1,6	1,7	2,1	2,1	2,4	3,5	4,2	5,2			
65-200/150	65-200/D192	1 x 15			1,7	1,7	1,6	1,7	1,7	1,9	4,1	6,4				
65-200/185	65-200/D203	1 x 18,5			1,7	1,7	1,6	1,7	1,7	1,9	3,0	3,9	5,3			
65-200/220	65-200/D215	1 x 22			1,7	1,7	1,6	1,7	1,7	1,9	3,0	3,9	5,3	7,5		
65-250/300	65-250/D240	1 x 30				1,3	1,3	1,4	1,5	1,7	3,2	4,1	5,4	7,0		
65-250/370	65-250/D255	1 x 37				1,3	1,3	1,3	1,4	1,6	2,9	3,7	4,8	6,2	8,1	

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-shf65-2p50_NPSH-en_a_th

OHn, OHm = risk class value referred to the required rated and maximum capacity (Tab.6 para 7.3.1 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity



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HYDRAULIC PERFORMANCE TABLE AT 50 HZ (POSITIVE SUCTION HEAD) GEN../SHF 80 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER	RISK CLASS												
			OH4n					HH1n							
			Q = DELIVERY												
			l/min 0	1200	1500	1800	2100	2300	3216	3300	3500	3600	3700	3800	4000
ELECTRIC PUMP	PUMP	kW	m3/h 0	72	90	108	126	138	193	198	210	216	222	228	240
			H = TOTAL HEAD METRES COLUMN OF WATER												
80-160/110	80-160/D169	1 x 11	33,0	30,9	28,6	25,7	22,2	19,7	6,2	4,8					
80-160/150	80-160/D177	1 x 15	39,5	37,8	35,6	32,7	29,4	26,9	13,2	11,8	8,4				
80-160/185	80-160/D186	1 x 18,5	46,4	44,7	42,6	39,8	36,6	34,2	20,7	19,3	15,9	14,1	12,4		
80-200/220	80-200/D198	1 x 22	51,9		48,5	45,8	42,5	40,1	26,7	25,3	21,9	20,2			
80-200/300	80-200/D215	1 x 30	62,2		59,7	57,1	53,9	51,5	37,8	36,4	32,9	31,1	29,3	27,4	
80-200/370	80-200/D226	1 x 37	69,8	69,9	68,1	65,7	62,8	60,5	47,2	45,7	42,2	40,4	38,5	36,6	32,7
80-250/450	80-250/D237	1 x 45	82,2		79,1	76,2	72,6	69,8	53,3	51,5	47,0	44,6			
80-250/550	80-250/D252	1 x 55	93,9		91,9	89,2	85,9	83,2	67,7	66,0	61,8	59,6	57,3		
80-250/750	80-250/D270	1 x 75	109,7		108,6	106,0	102,7	100,2	85,0	83,3	79,2	77,0	74,8	72,5	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-sp-shf80-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure that these drops, added to the difference in level (max. 3.2m), are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.

HYDRAULIC PERFORMANCE TABLE AT 50 HZ (SUCTION LIFT) GEN../SHF 80 BOOSTER SETS SERIES

TYPE SHF..		RATED POWER	RISK CLASS												
			OH4n					HH1n							
			Q = DELIVERY												
			l/min 0	1200	1500	1800	2100	2300	3216	3300	3500	3600	3700	3800	4000
ELECTRIC PUMP	PUMP	kW	m3/h 0	72	90	108	126	138	193	198	210	216	222	228	240
H = TOTAL HEAD METRES COLUMN OF WATER															
80-160/110	80-160/D169	1 x 11	33,0	30,9	28,6	25,7	22,2	19,7	6,2	4,8					
80-160/150	80-160/D177	1 x 15	39,5	37,8	35,6	32,7	29,4	26,9	13,2	11,8	8,4				
80-160/185	80-160/D186	1 x 18,5	46,4	44,7	42,6	39,8	36,6	34,2	20,7	19,3	15,9	14,1	12,4		
80-200/220	80-200/D198	1 x 22	51,9		48,5	45,8	42,5	40,1	26,7	25,3	21,9	20,2			
80-200/300	80-200/D215	1 x 30	62,2		59,7	57,1	53,9	51,5	37,8	36,4	32,9	31,1	29,3	27,4	
80-200/370	80-200/D226	1 x 37	69,8	69,9	68,1	65,7	62,8	60,5	47,2	45,7	42,2	40,4	38,5	36,6	32,7
80-250/450	80-250/D237	1 x 45	82,2		79,1	76,2	72,6	69,8	53,3	51,5	47,0	44,6			
80-250/550	80-250/D252	1 x 55	93,9		91,9	89,2	85,9	83,2	67,7	66,0	61,8	59,6	57,3		
80-250/750	80-250/D270	1 x 75	109,7		108,6	106,0	102,7	100,2	85,0	83,3	79,2	77,0	74,8	72,5	

Performance levels relative to set with 1 service pump running and compliant with ISO 9906 - Annex A.

12845_1pg-st-shf80-2p50-en_a_th

OHn = risk class value referred to the required rated capacity (Tab.6 para 7.3.1 EN12845)

Inlet pressure drops must be deducted. Make sure these drops are less than 4.5m

The values shown identify performance levels according to the reference standard EN12845.



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NPSH REQUIRED FOR PUMP SERIES SHF 80

TYPE SHF.. ELECTRIC PUMP		RATED POWER kW	RISK CLASS																				
			OH4n		OH4m		HH1n		HH1m		Q = DELIVERY												
											l/min 0	1200	1500	1800	2100	2300	3216	3300	3500	3600	3700	3800	4000
PUMP		NPSHr [METRES COLUMN OF WATER]																					
				2,3	2,5	2,7	3,0	3,2	5,9	6,5													
				2,3	2,5	2,7	2,9	3,0	4,3	4,6	5,5												
				2,3	2,5	2,7	2,9	3,0	4,3	4,6	5,5	6,1	6,8										
					2,2	2,4	2,7	2,8	3,9	4,1	4,6	4,9											
					2,2	2,4	2,6	2,8	3,7	3,8	4,2	4,4	4,7	5,0									
				2,0	2,2	2,4	2,6	2,8	3,7	3,8	4,2	4,4	4,7	5,0	6,0								
					1,9	2,2	2,4	2,6	3,6	3,7	4,2	4,6											
					1,9	2,2	2,4	2,6	3,6	3,7	4,2	4,6	5,1										
					1,9	2,2	2,4	2,6	3,6	3,7	4,2	4,6	5,1	6,0									

The declared NPSH values were obtained in the laboratory and refer to a single service pump

12845_1p-shf80-2p50_NPSHr-en_a_th

OHn, OHm, HHn, HHm = risk class value referred to the required rated and maximum capacity (Tab.6 para 7.3.1, Tab.7 para 7.3.2 EN12845)

Check that $NPSH_d \geq NPSH_r + 1m$ is satisfied at the maximum requested capacity



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GEN../SHF 32-80 BOOSTER SETS ELECTRICAL DATA TABLE AT 50 Hz

ELECTRIC SERVICE PUMP 3 X 400 V				ELECTRIC JOCKEY PUMP 3 X 400 V			CURRENT ABSORBED SET 3 X 400V			
TYPE SHF..		NOMINAL POWER		TYPE	Pn kW	In A	GEN..10 A	GEN..11 A	GEN..20 A	GEN..21 A
ELECTRIC PUMP	PUMP	Pn kW	In A							
32-125/07	32-125/D121	0,75	2,15	SV206	0,75	2,02	2,15	4,17	4,30	6,32
32-125/11	32-125/D136	1,1	2,61	SV206	0,75	2,02	2,61	4,63	5,22	7,24
32-160/15	32-160/D150	1,5	3,02	SV206	0,75	2,02	3,02	5,04	6,04	8,06
32-160/22	32-160/D168	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
32-200/30	32-200/D188	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
32-200/40	32-200/D204	4	7,59	SV209	1,1	2,61	7,59	10,20	15,18	17,79
32-250/55	32-250/D222	5,5	10,70	SV209	1,1	2,61	10,70	13,31	21,40	24,01
32-250/75	32-250/D242	7,5	13,90	SV209	1,1	2,61	13,90	16,51	27,80	30,41
32-250/110	32-250/D256	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
40-125/11	40-125/D112	1,1	2,61	SV206	0,75	2,02	2,61	4,63	5,22	7,24
40-125/15	40-125/D126	1,5	3,02	SV206	0,75	2,02	3,02	5,04	6,04	8,06
40-125/22	40-125/D143	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
40-160/30	40-160/D159	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
40-160/40	40-160/D171	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
40-200/55	40-200/D190	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
40-200/75	40-200/D209	7,5	13,90	SV209	1,1	2,61	13,90	16,51	27,80	30,41
40-250/110A	40-250/D218	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
40-250/110	40-250/D233	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
40-250/150	40-250/D251	15	26,20	SV209	1,1	2,61	26,20	28,81	52,40	55,01
50-125/22	50-125/D119	2,2	4,68	SV206	0,75	2,02	4,68	6,70	9,36	11,38
50-125/30	50-125/D130	3	5,77	SV206	0,75	2,02	5,77	7,79	11,54	13,56
50-125/40	50-125/D139	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
50-160/55	50-160/D158	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
50-160/75	50-160/D174	7,5	13,90	SV206	0,75	2,02	13,90	15,92	27,80	29,82
50-200/110A	50-200/D197	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
50-200/110	50-200/D209	11	19,80	SV209	1,1	2,61	19,80	22,41	39,60	42,21
50-250/150	50-250/D224	15	26,20	SV209	1,1	2,61	26,20	28,81	52,40	55,01
50-250/185	50-250/D237	18,5	33,40	SV209	1,1	2,61	33,40	36,01	66,80	69,41
50-250/220	50-250/D250	22	41,70	SV209	1,1	2,61	41,70	44,31	83,40	86,01
65-160/40	65-160/D119	4	7,59	SV206	0,75	2,02	7,59	9,61	15,18	17,20
65-160/55	65-160/D129	5,5	10,70	SV206	0,75	2,02	10,70	12,72	21,40	23,42
65-160/75	65-160/D137	7,5	13,90	SV206	0,75	2,02	13,90	15,92	27,80	29,82
65-160/110A	65-160/D168	11	19,80	SV206	0,75	2,02	19,80	21,82	39,60	41,62
65-160/110	65-160/D177	11	19,80	SV206	0,75	2,02	19,80	21,82	39,60	41,62
65-200/150	65-200/D192	15	26,20	SV209	1,1	2,61	26,20	28,81	52,40	55,01
65-200/185	65-200/D203	18,5	33,40	SV209	1,1	2,61	33,40	36,01	66,80	69,41
65-200/220	65-200/D215	22	41,70	SV209	1,1	2,61	41,70	44,31	83,40	86,01
65-250/300	65-250/D240	30	54,00	SV209	1,1	2,61	54,00	56,61	108,00	110,61
65-250/370	65-250/D255	37	65,00	SV212	1,5	3,45	65,00	68,45	130,00	133,45
80-160/110	80-160/D169	11	19,80	SV407	1,1	2,61	19,80	22,41	39,60	42,21
80-160/150	80-160/D177	15	26,70	SV407	1,1	2,61	26,70	29,31	53,40	56,01
80-160/185	80-160/D186	18,5	33,40	SV407	1,1	2,61	33,40	36,01	66,80	69,41
80-200/220	80-200/D198	22	41,70	SV407	1,1	2,61	41,70	44,31	83,40	86,01
80-200/300	80-200/D215	30	54,00	SV409	1,5	3,45	54,00	57,45	108,00	111,45
80-200/370	80-200/D226	37	65,00	SV409	1,5	3,45	65,00	68,45	130,00	133,45
80-250/450	80-250/D237	45	80,00	SV409	1,5	3,45	80,00	83,45	160,00	163,45
80-250/550	80-250/D252	55	99,00	SV413	2,2	5,03	99,00	104,03	198,00	203,03
80-250/750	80-250/D270	75	133,00	SV413	2,2	5,03	133,00	138,03	266,00	271,03

The current indicated is the maximum current absorbed by the electric pumps.

ENELP-SHF_2p50-en_b_te

Fire-fighting booster sets EN 12845

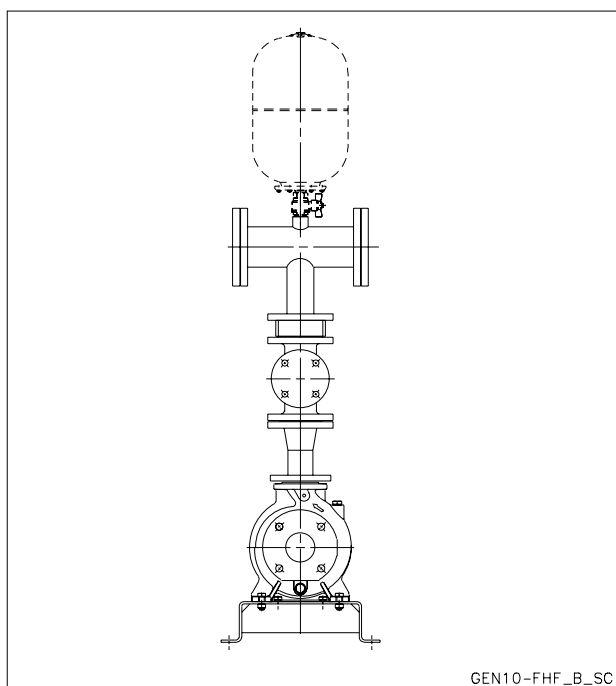
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
- Automatic Sprinkler systems.

GEN..10/SHF Series



SPECIFICATIONS

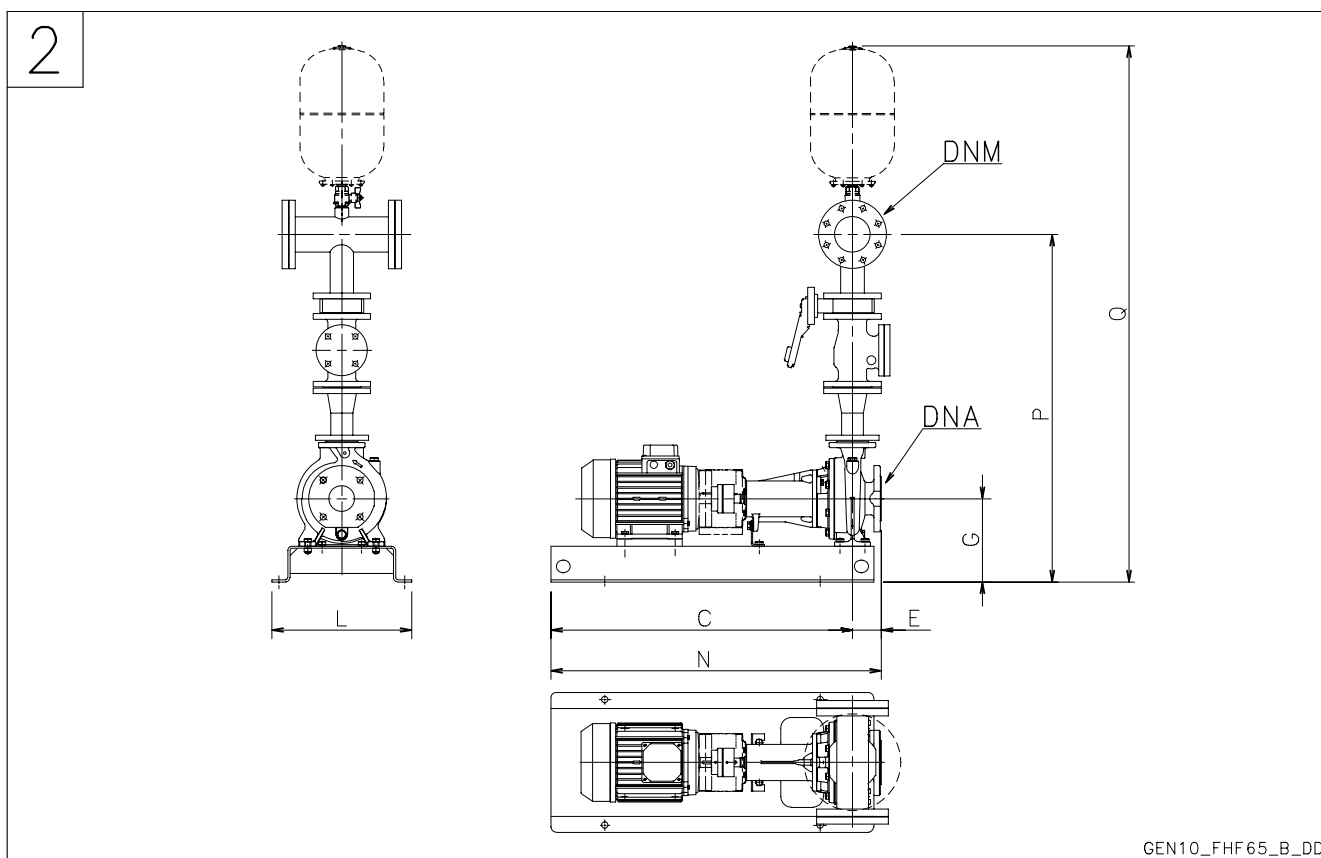
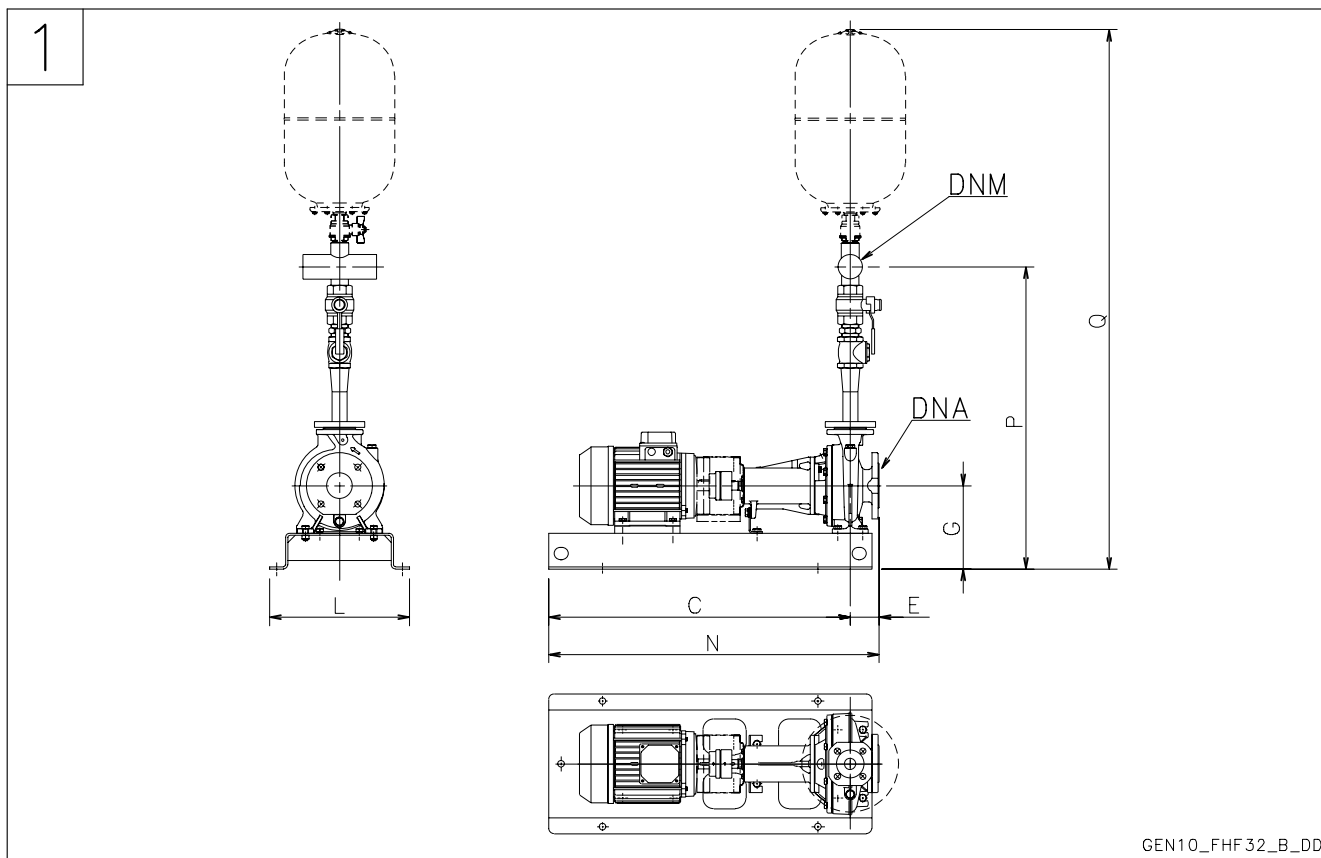
- **Flow** up to 220 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
75 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GEND...).
 - Star/Delta for higher powers (GENY... set).
- **Electric service pump with horizontal axis:**
 - SHF Series (motor protection grade IP55).
- Maximum running pressure:
12 bar.



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GEN..10/SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845



**GEN..10/SHF 32-80 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845**

GEN..10	DRW N°	DNA	DNM	C	E	G	L	N	P	Q
SHF32-125/07	1	R 2"	Rp 1" 1/2	740	80	212	360	820	773	1347
SHF32-125/11	1	R 2"	Rp 1" 1/2	740	80	212	360	820	773	1347
SHF32-160/15	1	R 2"	Rp 1" 1/2	840	80	232	390	920	813	1387
SHF32-160/22	1	R 2"	Rp 1" 1/2	840	80	232	390	920	813	1387
SHF32-200/30	1	R 2"	Rp 1" 1/2	840	80	260	390	920	861	1435
SHF32-200/40	1	R 2"	Rp 1" 1/2	840	80	260	390	920	861	1435
SHF32-250/55	1	R 2"	Rp 1" 1/2	1045	100	280	490	1145	926	1500
SHF32-250/75	1	R 2"	Rp 1" 1/2	1045	100	280	490	1145	926	1500
SHF32-250/110	1	R 2"	Rp 1" 1/2	1175	100	280	540	1275	926	1500
SHF40-125/11	2	65	65	740	80	212	360	820	994	1582
SHF40-125/15	2	65	65	840	80	212	390	920	994	1582
SHF40-125/22	2	65	65	840	80	212	390	920	994	1582
SHF40-160/30	2	65	65	840	80	232	390	920	1034	1622
SHF40-160/40	2	65	65	840	80	232	390	920	1034	1622
SHF40-200/55	2	65	65	940	100	260	450	1040	1082	1670
SHF40-200/75	2	65	65	940	100	260	450	1040	1082	1670
SHF40-250/110A	2	65	65	1175	100	280	540	1275	1147	1735
SHF40-250/110	2	65	65	1175	100	280	540	1275	1147	1735
SHF40-250/150	2	65	65	1175	100	280	540	1275	1147	1735
SHF50-125/22	2	65	65	840	100	232	390	940	1116	1704
SHF50-125/30	2	65	65	840	100	232	390	940	1116	1704
SHF50-125/40	2	65	65	840	100	232	390	940	1116	1704
SHF50-160/55	2	65	65	940	100	260	450	1040	1164	1752
SHF50-160/75	2	65	65	940	100	260	450	1040	1164	1752
SHF50-200/110A	2	65	65	1060	100	260	490	1160	1184	1772
SHF50-200/110	2	65	65	1060	100	260	490	1160	1184	1772
SHF50-250/150	2	65	65	1175	100	280	540	1275	1229	1817
SHF50-250/185	2	65	65	1175	100	280	540	1275	1229	1817
SHF50-250/220	2	65	65	1175	100	280	540	1275	1229	1817
SHF65-160/40	2	80	80	825	100	260	390	925	1221	1815
SHF65-160/55	2	80	80	925	100	260	450	1025	1221	1815
SHF65-160/75	2	80	80	925	100	260	450	1025	1221	1815
SHF65-160/110A	2	80	80	1175	100	260	540	1275	1241	1835
SHF65-160/110	2	80	80	1175	100	260	540	1275	1241	1835
SHF65-200/150	2	80	80	1175	100	280	540	1275	1286	1880
SHF65-200/185	2	80	80	1175	100	280	540	1275	1286	1880
SHF65-200/220	2	80	80	1175	100	280	540	1275	1286	1880
SHF65-250/300	2	80	80	1310	100	310	610	1410	1341	1935
SHF65-250/370	2	80	80	1310	100	310	610	1410	1341	1935
SHF80-160/110	2	100	100	1175	125	280	540	1300	1354	1961
SHF80-160/150	2	100	100	1175	125	280	540	1300	1354	1961
SHF80-160/185	2	100	100	1175	125	280	540	1300	1354	1961
SHF80-200/220	2	100	100	1175	125	280	540	1300	1379	1986
SHF80-200/300	2	100	100	1325	125	310	610	1450	1409	2016
SHF80-200/370	2	100	100	1310	125	310	610	1435	1439	2046
SHF80-250/450	2	100	100	1310	125	365	610	1435	1494	2101
SHF80-250/550	2	100	100	1510	125	390	660	1635	1519	2126
SHF80-250/750	2	100	100	1710	125	420	730	1835	1549	2156

Dimensions in mm. Tolerance ± 10 mm.

gen10_shf-en_d_td



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Fire-fighting booster sets EN 12845

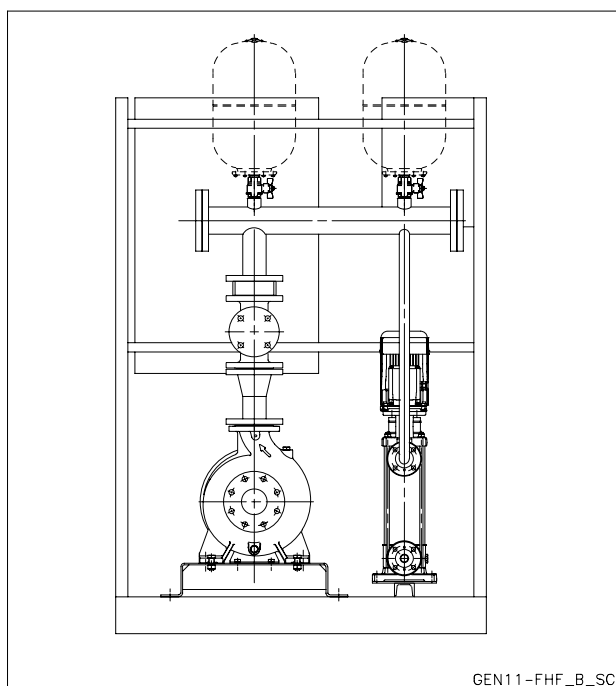
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
- Automatic Sprinkler systems.

GEN..11/SHF Series



SPECIFICATIONS

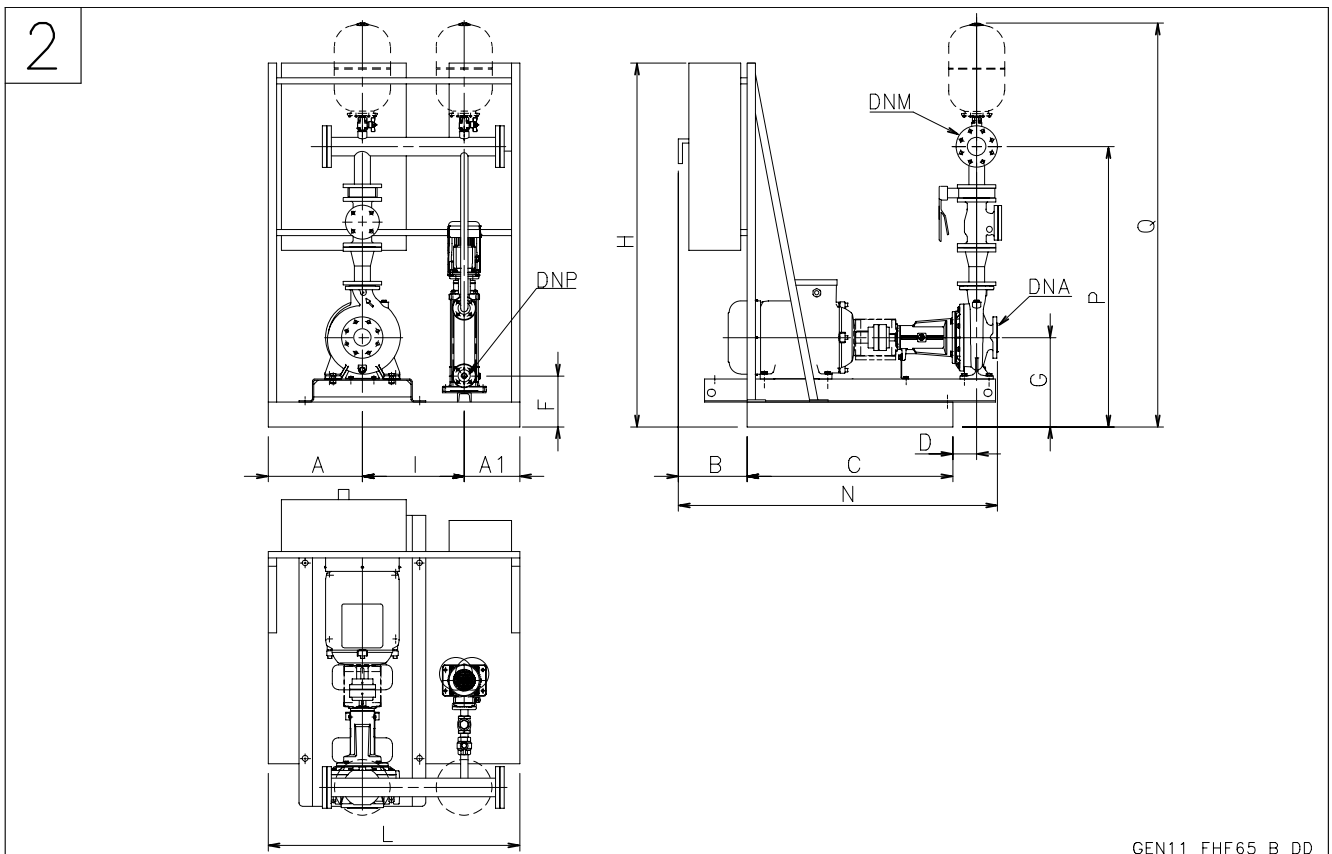
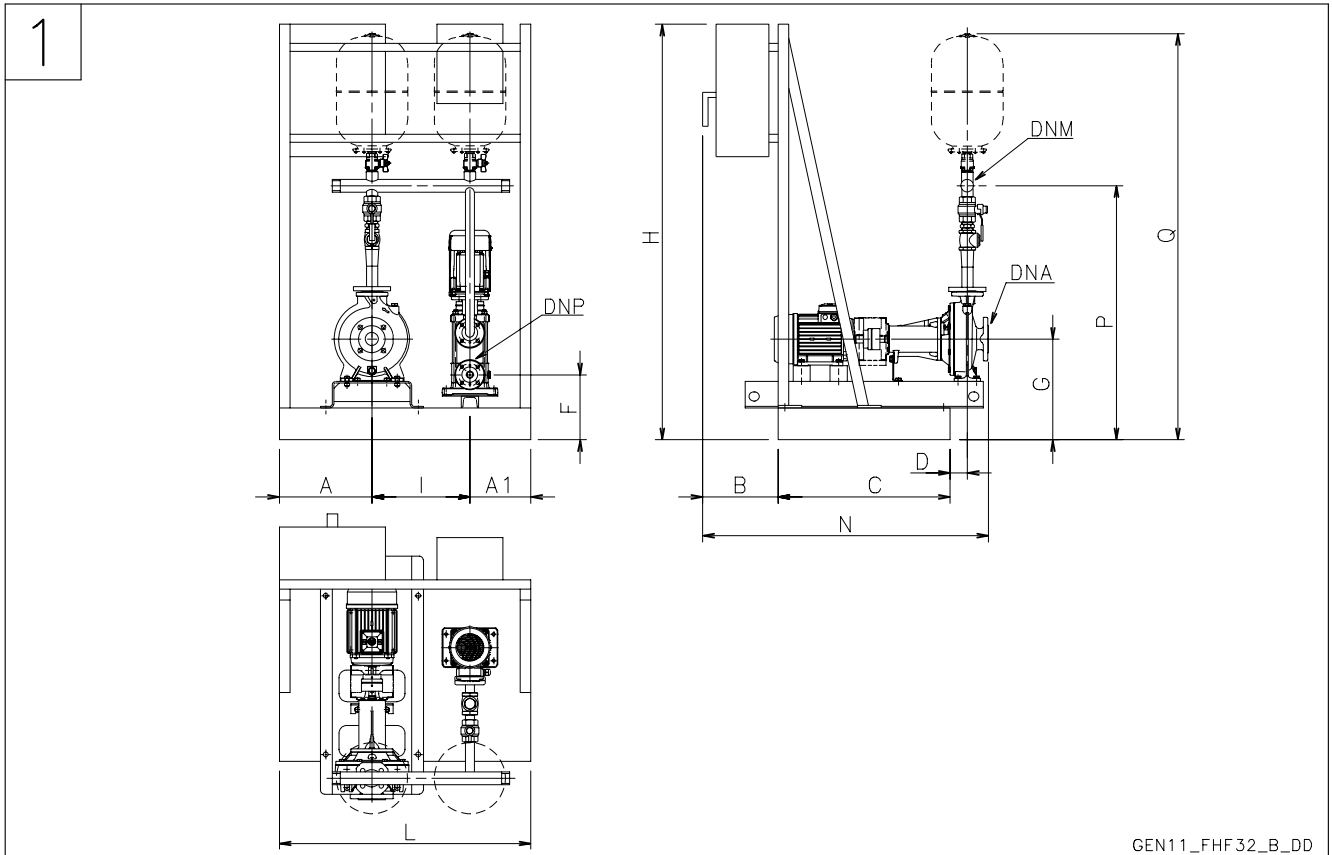
- **Flow** up to 220 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
75 kW.
- Motor start-up :
- Direct for powers up to 22 kW
inclusive for pump (GEND...).
- Star/Delta for higher
powers (GENY... set).
- **Electric service pump
with horizontal axis:**
- SHF Series (motor protection
grade IP55).
- **Electric jockey pump
with vertical axis:**
- SV Series (motor protection
grade IP55).
- Maximum running pressure:
12 bar.



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GEN..11/SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845





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GEN..11/SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..11	DRW N°	DNA	DNP	DNM	A	A1	B	C	D	F	G	H	I	L	N	P	Q
SHF32-125/07	1	R 2"	Rp 1"	Rp 1" 1/2	320	260	240	590	45	225	312	1400	370	950	955	873	1447
SHF32-125/11	1	R 2"	Rp 1"	Rp 1" 1/2	320	260	240	590	45	225	312	1400	370	950	955	873	1447
SHF32-160/15	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	332	1400	370	950	1035	913	1487
SHF32-160/22	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	332	1400	370	950	1035	913	1487
SHF32-200/30	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	360	1400	370	950	1035	961	1535
SHF32-200/40	1	R 2"	Rp 1"	Rp 1" 1/2	327	253	240	650	65	225	360	1400	370	950	1035	961	1535
SHF32-250/55	1	R 2"	Rp 1"	Rp 1" 1/2	448	282	240	790	90	245	400	1420	440	1170	1220	1046	1620
SHF32-250/75	1	R 2"	Rp 1"	Rp 1" 1/2	448	282	240	790	90	245	400	1420	440	1170	1220	1046	1620
SHF32-250/110	1	R 2"	Rp 1"	Rp 1" 1/2	459	271	280	890	105	245	400	1570	440	1170	1375	1046	1620
SHF40-125/11	2	65	Rp 1"	65	327	253	240	590	45	225	312	1400	370	950	955	1094	1682
SHF40-125/15	2	65	Rp 1"	65	327	253	240	650	65	225	312	1400	370	950	1035	1094	1682
SHF40-125/22	2	65	Rp 1"	65	327	253	240	650	65	225	312	1400	370	950	1035	1094	1682
SHF40-160/30	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1035	1134	1722
SHF40-160/40	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1035	1134	1722
SHF40-200/55	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1202	1790
SHF40-200/75	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1202	1790
SHF40-250/110A	2	65	Rp 1"	65	459	271	280	890	105	245	400	1570	440	1170	1375	1267	1855
SHF40-250/110	2	65	Rp 1"	65	459	271	280	890	105	245	400	1570	440	1170	1375	1267	1855
SHF40-250/150	2	65	Rp 1"	65	459	271	280	890	105	245	400	1570	440	1170	1375	1267	1855
SHF50-125/22	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
SHF50-125/30	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
SHF50-125/40	2	65	Rp 1"	65	327	253	240	650	65	225	332	1400	370	950	1055	1216	1804
SHF50-160/55	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1284	1872
SHF50-160/75	2	65	Rp 1"	65	338	222	240	710	85	245	380	1420	440	1000	1135	1284	1872
SHF50-200/110A	2	65	Rp 1"	65	448	282	280	790	105	245	380	1570	440	1170	1275	1304	1892
SHF50-200/110	2	65	Rp 1"	65	448	282	280	790	105	245	380	1570	440	1170	1275	1304	1892
SHF50-250/150	2	65	Rp 1"	65	459	271	280	890	105	245	400	1570	440	1170	1375	1349	1937
SHF50-250/185	2	65	Rp 1"	65	459	271	280	890	105	245	400	1750	440	1170	1375	1349	1937
SHF50-250/220	2	65	Rp 1"	65	459	271	280	890	105	245	400	1750	440	1170	1375	1349	1937
SHF65-160/40	2	80	Rp 1"	80	323	237	240	650	50	225	360	1400	440	1000	1040	1321	1915
SHF65-160/55	2	80	Rp 1"	80	338	392	240	710	70	245	380	1420	440	1170	1120	1341	1935
SHF65-160/75	2	80	Rp 1"	80	338	392	240	710	70	245	380	1420	440	1170	1120	1341	1935
SHF65-160/110A	2	80	Rp 1"	80	459	271	280	890	105	245	380	1570	440	1170	1375	1361	1955
SHF65-160/110	2	80	Rp 1"	80	459	271	280	890	105	245	380	1570	440	1170	1375	1361	1955
SHF65-200/150	2	80	Rp 1"	80	459	271	280	890	105	245	400	1570	440	1170	1375	1406	2000
SHF65-200/185	2	80	Rp 1"	80	459	271	280	890	105	245	400	1750	440	1170	1375	1406	2000
SHF65-200/220	2	80	Rp 1"	80	459	271	280	890	105	245	400	1750	440	1170	1375	1406	2000
SHF65-250/300	2	80	Rp 1"	80	453	227	280	990	115	245	430	1750	490	1170	1485	1461	2055
SHF65-250/370	2	80	Rp 1"	80	453	227	280	990	115	245	430	1750	490	1170	1485	1461	2055
SHF80-160/110	2	100	Rp 1" 1/4	100	459	271	280	890	105	245	400	1570	440	1170	1400	1474	2081
SHF80-160/150	2	100	Rp 1" 1/4	100	459	271	280	890	105	245	400	1570	440	1170	1400	1474	2081
SHF80-160/185	2	100	Rp 1" 1/4	100	459	271	280	890	105	245	400	1750	440	1170	1400	1474	2081
SHF80-200/220	2	100	Rp 1" 1/4	100	459	271	280	890	105	245	400	1750	440	1170	1400	1499	2106
SHF80-200/300	2	100	Rp 1" 1/4	100	453	227	280	990	130	245	430	1750	490	1170	1525	1529	2136
SHF80-200/370	2	100	Rp 1" 1/4	100	453	227	280	990	115	245	430	1750	490	1170	1510	1559	2166
SHF80-250/450	2	100	Rp 1" 1/4	100	453	227	330	990	115	245	485	1940	490	1170	1560	1614	2221
SHF80-250/550	2	100	Rp 1" 1/4	100	525	275	330	1120	155	265	530	1960	600	1400	1730	1659	2266
SHF80-250/750	2	100	Rp 1" 1/4	100	(1)	(1)	270	1260	185	265	560	/	600	(1)	1840	1689	2296

Dimensions in mm. Tolerance ± 10 mm.

(1) Dimensions on request.

gen11_shf-en_d_td



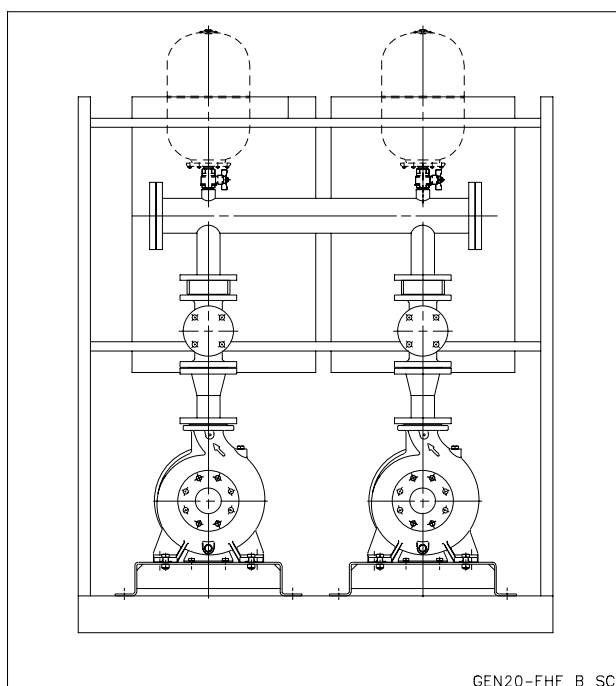
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**Fire-fighting
booster sets
EN 12845**
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
Automatic Sprinkler systems.

**GEN..20/SHF
Series**


GEN20-FHF_B_SC

SPECIFICATIONS

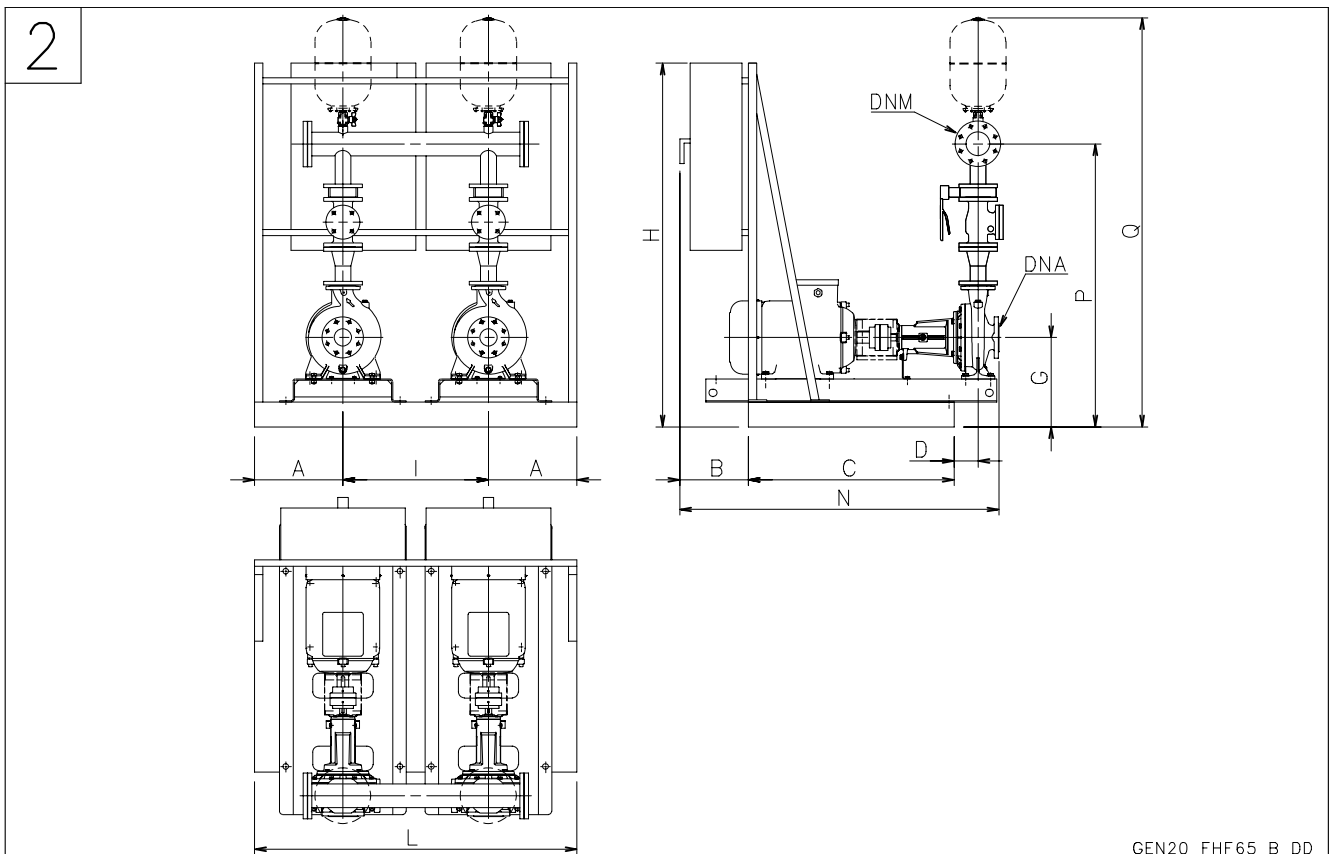
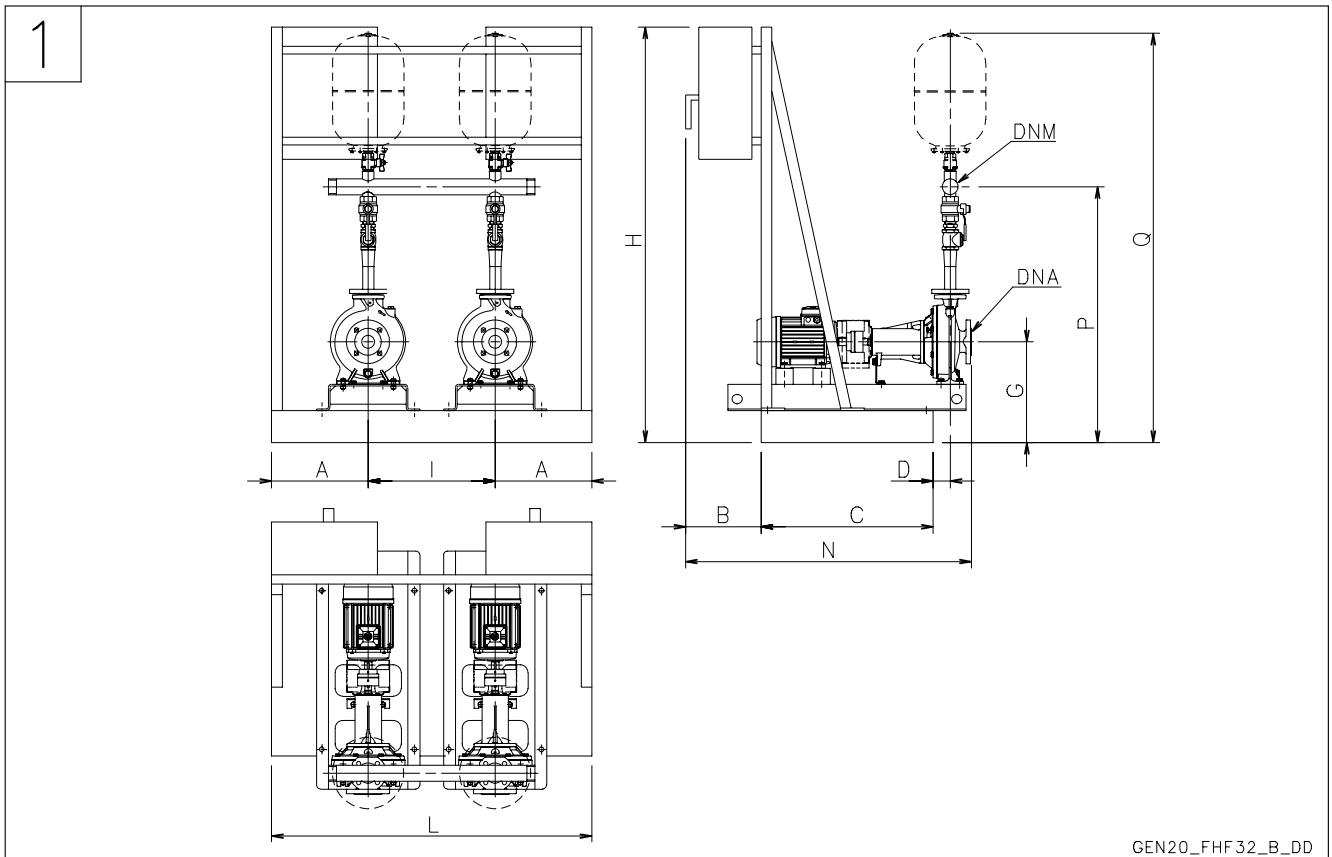
- **Flow** up to 440 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
- electric panel: IP54.
- Electric pumps maximum power
75 kW.
- Motor start-up :
- Direct for powers up to 22 kW
inclusive for pump (GEND...).
- Star/Delta for higher
powers (GENY... set).
- **Electric service pump
with horizontal axis:**
- SHF Series (motor protection
grade IP55).
- Maximum running pressure:
12 bar.



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GEN..20/SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845



GEN..20/SHF 32-80 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845

GEN..20	DRW N°	DNA	DNM	A	B	C	D	G	H	I	L	N	P	Q
SHF32-125/07	1	R 2"	R 2"	345	240	590	45	312	1400	480	1170	955	879	1459
SHF32-125/11	1	R 2"	R 2"	345	240	590	45	312	1400	480	1170	955	879	1459
SHF32-160/15	1	R 2"	R 2"	345	240	650	65	332	1400	480	1170	1035	919	1499
SHF32-160/22	1	R 2"	R 2"	345	240	650	65	332	1400	480	1170	1035	919	1499
SHF32-200/30	1	R 2"	R 2"	345	240	650	65	360	1400	480	1170	1035	967	1547
SHF32-200/40	1	R 2"	R 2"	345	240	650	65	360	1400	480	1170	1035	967	1547
SHF32-250/55	1	R 2"	R 2"	385	240	790	90	400	1420	630	1400	1220	1052	1632
SHF32-250/75	1	R 2"	R 2"	385	240	790	90	400	1420	630	1400	1220	1052	1632
SHF32-250/110	1	R 2"	R 2"	385	280	890	105	400	1570	630	1400	1375	1052	1632
SHF40-125/11	2	65	65	335	240	590	45	312	1400	540	1210	955	1094	1682
SHF40-125/15	2	65	65	335	240	650	65	312	1400	540	1210	1035	1094	1682
SHF40-125/22	2	65	65	335	240	650	65	312	1400	540	1210	1035	1094	1682
SHF40-160/30	2	65	65	335	240	650	65	332	1400	540	1210	1035	1134	1722
SHF40-160/40	2	65	65	335	240	650	65	332	1400	540	1210	1035	1134	1722
SHF40-200/55	2	65	65	335	240	710	85	380	1420	540	1210	1135	1202	1790
SHF40-200/75	2	65	65	335	240	710	85	380	1420	540	1210	1135	1202	1790
SHF40-250/110A	2	65	65	385	280	890	105	400	1570	630	1400	1375	1267	1855
SHF40-250/110	2	65	65	385	280	890	105	400	1570	630	1400	1375	1267	1855
SHF40-250/150	2	65	65	385	280	890	105	400	1570	630	1400	1375	1267	1855
SHF50-125/22	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
SHF50-125/30	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
SHF50-125/40	2	65	80	335	240	650	65	332	1400	540	1210	1055	1223	1817
SHF50-160/55	2	65	80	335	240	710	85	380	1420	540	1210	1135	1291	1885
SHF50-160/75	2	65	80	335	240	710	85	380	1420	540	1210	1135	1291	1885
SHF50-200/110A	2	65	80	385	280	790	105	380	1570	630	1400	1275	1311	1905
SHF50-200/110	2	65	80	385	280	790	105	380	1570	630	1400	1275	1311	1905
SHF50-250/150	2	65	80	385	280	890	105	400	1570	630	1400	1375	1356	1950
SHF50-250/185	2	65	80	385	280	890	105	400	1750	630	1400	1375	1356	1950
SHF50-250/220	2	65	80	385	280	890	105	400	1750	630	1400	1375	1356	1950
SHF65-160/40	2	80	100	335	240	650	50	360	1400	540	1210	1040	1333	1940
SHF65-160/55	2	80	100	335	240	710	70	380	1420	540	1210	1120	1353	1960
SHF65-160/75	2	80	100	335	240	710	70	380	1420	540	1210	1120	1353	1960
SHF65-160/110A	2	80	100	350	280	890	105	380	1570	700	1400	1375	1373	1980
SHF65-160/110	2	80	100	350	280	890	105	380	1570	700	1400	1375	1373	1980
SHF65-200/150	2	80	100	350	280	890	105	400	1570	700	1400	1375	1418	2025
SHF65-200/185	2	80	100	350	280	890	105	400	1750	700	1400	1375	1418	2025
SHF65-200/220	2	80	100	350	280	890	105	400	1750	700	1400	1375	1418	2025
SHF65-250/300	2	80	100	425	280	990	115	430	1750	700	1550	1485	1473	2080
SHF65-250/370	2	80	100	425	280	990	115	430	1750	700	1550	1485	1473	2080
SHF80-160/110	2	100	125	350	280	890	105	400	1570	700	1400	1400	1487	2107
SHF80-160/150	2	100	125	350	280	890	105	400	1570	700	1400	1400	1487	2107
SHF80-160/185	2	100	125	350	280	890	105	400	1750	700	1400	1400	1487	2107
SHF80-200/220	2	100	125	350	280	890	105	400	1750	700	1400	1400	1512	2132
SHF80-200/300	2	100	125	425	280	990	130	430	1750	700	1550	1525	1542	2162
SHF80-200/370	2	100	125	425	280	990	115	430	1750	700	1550	1510	1572	2192
SHF80-250/450	2	100	125	425	330	990	115	485	1940	700	1550	1560	1627	2247
SHF80-250/550	2	100	125	430	330	1120	155	530	1960	820	1680	1730	1672	2292
SHF80-250/750	2	100	125	(1)	270	1260	185	560	/	(1)	(1)	1840	1702	2322

Dimensions in mm. Tolerance ± 10 mm.

gen20_shf-en_e_td

(1) Dimensions on request.



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Fire-fighting booster sets EN 12845

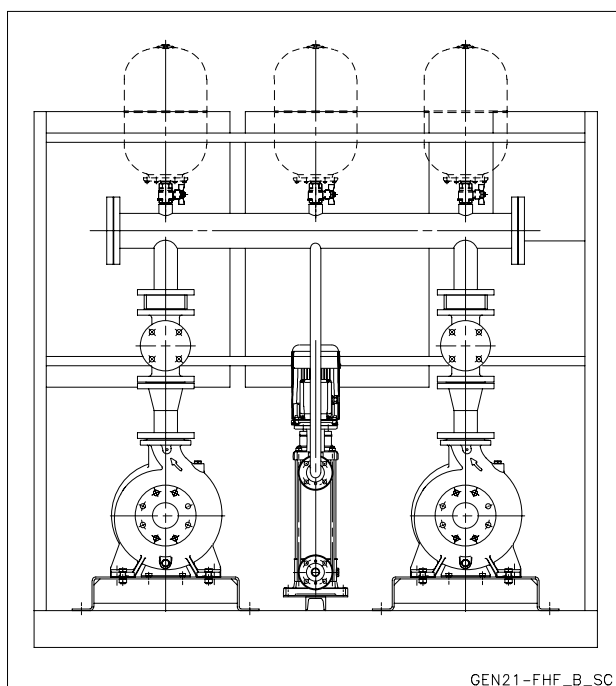
MARKET SECTORS

CIVIL, INDUSTRIAL

APPLICATIONS

- Fixed fire-fighting systems.
- Automatic Sprinkler systems.

GEN..21/SHF Series



SPECIFICATIONS

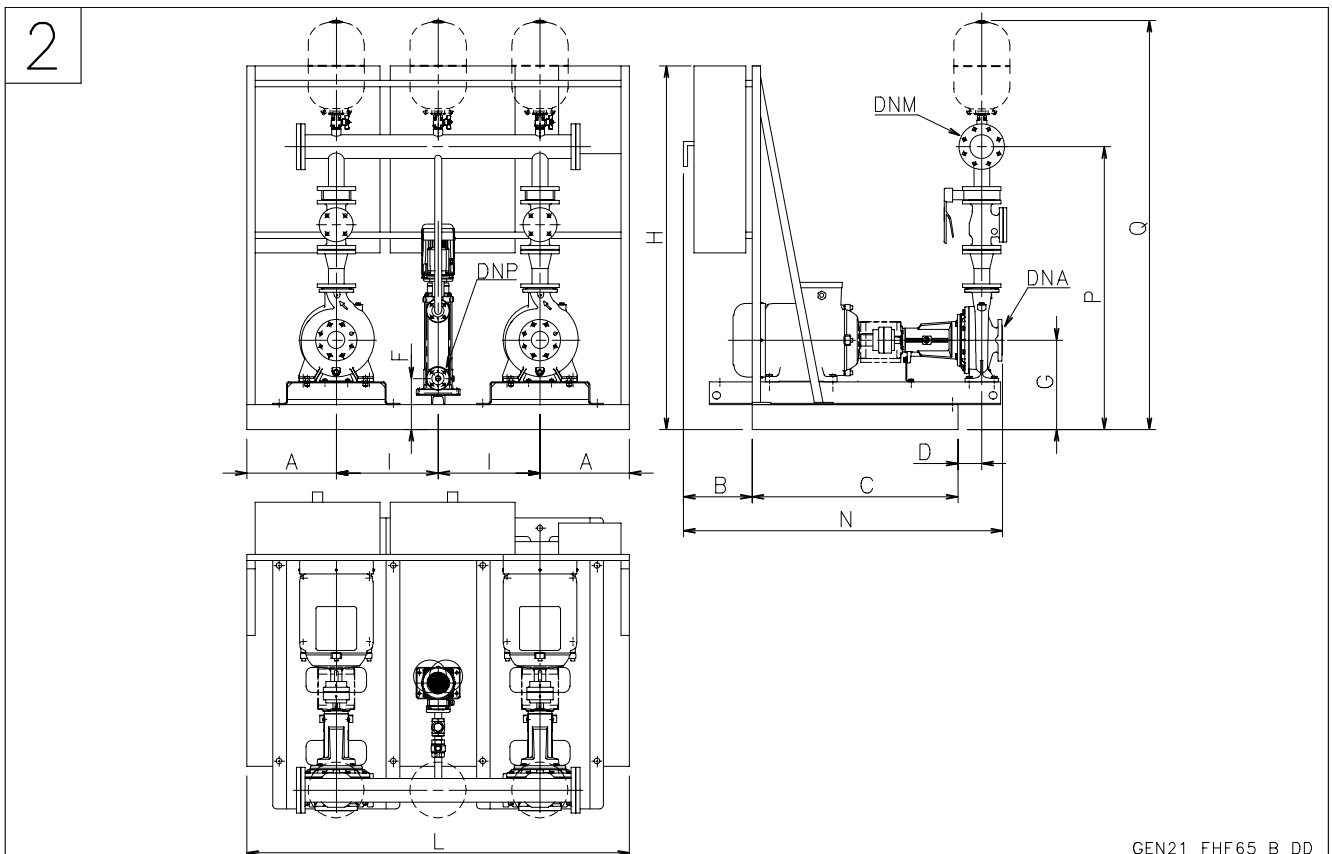
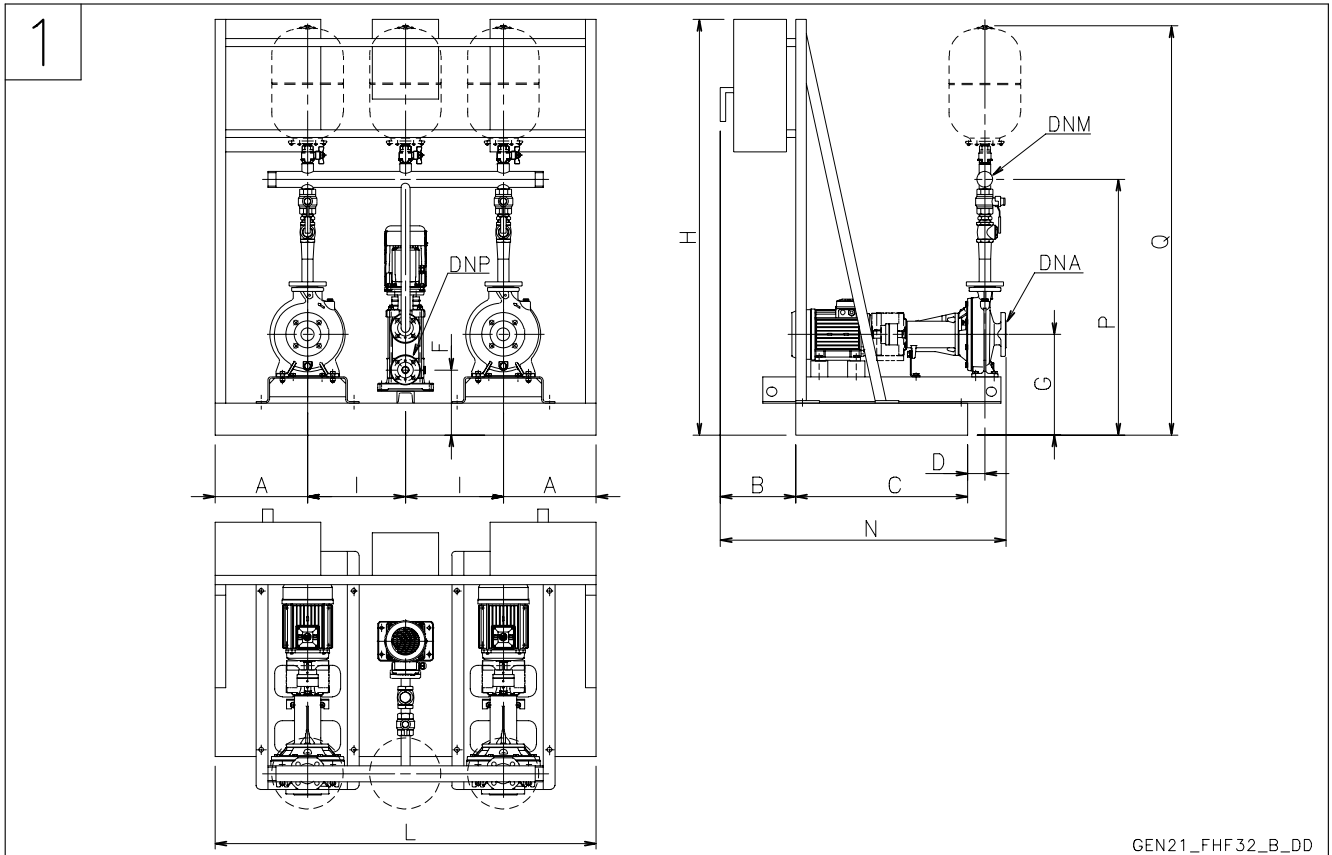
- **Flow** up to 440 m³/h.
- **Head** up to 100 m.
- Panel supply power voltage:
3 x 400V ± 10%.
- Frequency: 50 Hz.
- Voltage for controls outside panel:
24 Vac.
- Protection grade:
 - electric panel: IP54.
- Electric pumps maximum power
75 kW.
- Motor start-up :
 - Direct for powers up to 22 kW inclusive for pump (GEND...).
 - Star/Delta for higher powers (GENY... set).
- **Electric service pump with horizontal axis:**
 - SHF Series (motor protection grade IP55).
- **Electric jockey pump with vertical axis:**
 - SV Series (motor protection grade IP55).
- Maximum running pressure:
12 bar.



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GEN..21/SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS EN 12845



**GEN..21/SHF 32-80 SERIES
FIRE-FIGHTING BOOSTER SETS EN 12845**

GEN..21	DRW N°	DNA	DNP	DNM	A	B	C	D	F	G	H	I	L	N	P	Q
SHF32-125/07	1	R 2"	Rp 1"	R 2"	350	240	590	45	225	312	1400	370	1440	955	879	1459
SHF32-125/11	1	R 2"	Rp 1"	R 2"	350	240	590	45	225	312	1400	370	1440	955	879	1459
SHF32-160/15	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	332	1400	370	1440	1035	919	1499
SHF32-160/22	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	332	1400	370	1440	1035	919	1499
SHF32-200/30	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	360	1400	370	1440	1035	967	1547
SHF32-200/40	1	R 2"	Rp 1"	R 2"	350	240	650	65	225	360	1400	370	1440	1035	967	1547
SHF32-250/55	1	R 2"	Rp 1"	R 2"	400	240	790	90	245	400	1420	440	1680	1220	1052	1632
SHF32-250/75	1	R 2"	Rp 1"	R 2"	400	240	790	90	245	400	1420	440	1680	1220	1052	1632
SHF32-250/110	1	R 2"	Rp 1"	R 2"	400	280	890	105	245	400	1570	440	1680	1375	1052	1632
SHF40-125/11	2	65	Rp 1"	65	350	240	590	45	225	312	1400	370	1440	955	1094	1682
SHF40-125/15	2	65	Rp 1"	65	350	240	650	65	225	312	1400	370	1440	1035	1094	1682
SHF40-125/22	2	65	Rp 1"	65	350	240	650	65	225	312	1400	370	1440	1035	1094	1682
SHF40-160/30	2	65	Rp 1"	65	350	240	650	65	225	332	1400	370	1440	1035	1134	1722
SHF40-160/40	2	65	Rp 1"	65	350	240	650	65	225	332	1400	370	1440	1035	1134	1722
SHF40-200/55	2	65	Rp 1"	65	335	240	710	85	245	380	1420	440	1550	1135	1202	1790
SHF40-200/75	2	65	Rp 1"	65	335	240	710	85	245	380	1420	440	1550	1135	1202	1790
SHF40-250/110A	2	65	Rp 1"	65	400	280	890	105	245	400	1570	440	1680	1375	1267	1855
SHF40-250/110	2	65	Rp 1"	65	400	280	890	105	245	400	1570	440	1680	1375	1267	1855
SHF40-250/150	2	65	Rp 1"	65	400	280	890	105	245	400	1570	440	1680	1375	1267	1855
SHF50-125/22	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
SHF50-125/30	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
SHF50-125/40	2	65	Rp 1"	80	350	240	650	65	225	332	1400	370	1440	1055	1223	1817
SHF50-160/55	2	65	Rp 1"	80	335	240	710	85	245	380	1420	440	1550	1135	1291	1885
SHF50-160/75	2	65	Rp 1"	80	335	240	710	85	245	380	1420	440	1550	1135	1291	1885
SHF50-200/110A	2	65	Rp 1"	80	400	280	790	105	245	380	1570	440	1680	1275	1311	1905
SHF50-200/110	2	65	Rp 1"	80	400	280	790	105	245	380	1570	440	1680	1275	1311	1905
SHF50-250/150	2	65	Rp 1"	80	400	280	890	105	245	400	1570	440	1680	1375	1356	1950
SHF50-250/185	2	65	Rp 1"	80	400	280	890	105	245	400	1750	440	1680	1375	1356	1950
SHF50-250/220	2	65	Rp 1"	80	400	280	890	105	245	400	1750	440	1680	1375	1356	1950
SHF65-160/40	2	80	Rp 1"	100	335	240	650	50	225	360	1400	440	1550	1040	1333	1940
SHF65-160/55	2	80	Rp 1"	100	335	240	710	70	245	380	1420	440	1550	1120	1353	1960
SHF65-160/75	2	80	Rp 1"	100	335	240	710	70	245	380	1420	440	1550	1120	1353	1960
SHF65-160/110A	2	80	Rp 1"	100	400	280	890	105	245	380	1570	440	1680	1375	1373	1980
SHF65-160/110	2	80	Rp 1"	100	400	280	890	105	245	380	1570	440	1680	1375	1373	1980
SHF65-200/150	2	80	Rp 1"	100	400	280	890	105	245	400	1570	440	1680	1375	1418	2025
SHF65-200/185	2	80	Rp 1"	100	400	280	890	105	245	400	1750	440	1680	1375	1418	2025
SHF65-200/220	2	80	Rp 1"	100	400	280	890	105	245	400	1750	440	1680	1375	1418	2025
SHF65-250/300	2	80	Rp 1"	100	430	280	990	115	245	430	1750	490	1840	1485	1473	2080
SHF65-250/370	2	80	Rp 1"	100	430	280	990	115	245	430	1750	490	1840	1485	1473	2080
SHF80-160/110	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1570	440	1680	1400	1487	2107
SHF80-160/150	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1570	440	1680	1400	1487	2107
SHF80-160/185	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1750	440	1680	1400	1487	2107
SHF80-200/220	2	100	Rp 1" 1/4	125	400	280	890	105	245	400	1750	440	1680	1400	1512	2132
SHF80-200/300	2	100	Rp 1" 1/4	125	430	280	990	130	245	430	1750	490	1840	1525	1542	2162
SHF80-200/370	2	100	Rp 1" 1/4	125	430	280	990	115	245	430	1750	490	1840	1510	1572	2192
SHF80-250/450	2	100	Rp 1" 1/4	125	430	330	990	115	245	485	1940	490	1840	1560	1627	2247
SHF80-250/550	2	100	Rp 1" 1/4	125	470	330	1120	155	265	530	1960	600	2140	1730	1672	2292
SHF80-250/750	2	100	Rp 1" 1/4	125	505	270	1260	185	265	560	/	600	2210	1840	1702	2322

Dimensions in mm. Tolerance ± 10 mm.

gen21_shf-en_e_td

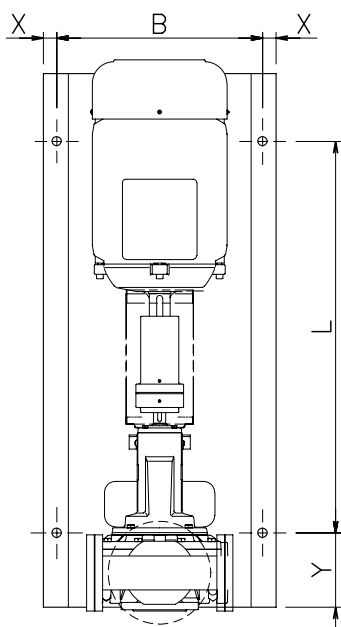


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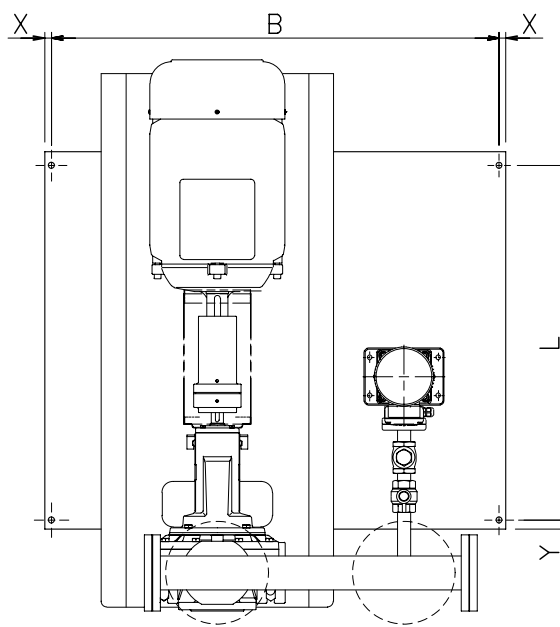
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GEN../SHF 32-80 SERIES DIMENSIONS FOR FLOOR FIXING

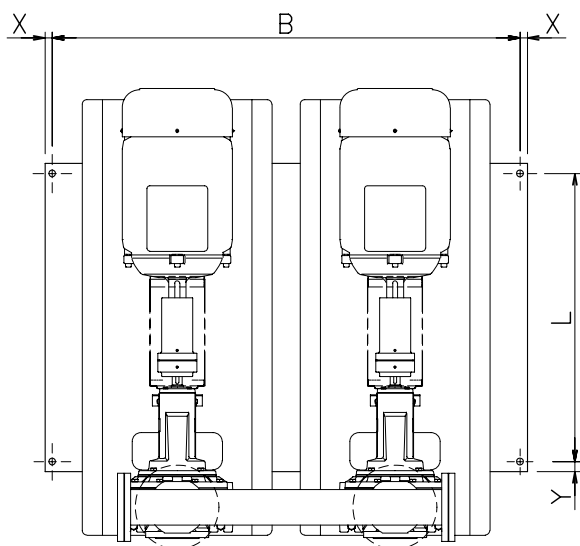
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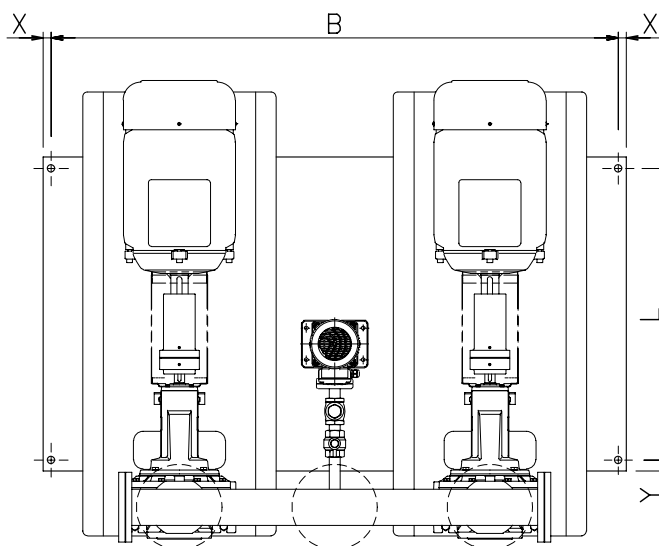
GEN..11



GEN..20



GEN..21



INT-ELP_A_SC

GEN../SHF 32-80 SERIES **DIMENSIONS FOR FLOOR FIXING**

PUMP	GEN..10				GEN..11				GEN..20				GEN..21			
	B	L	X	Y	B	L	X	Y	B	L	X	Y	B	L	X	Y
SHF 32-125/07	320	540	20	130	770	540	90	25	990	540	90	25	1400	495	90	25
SHF 32-125/11	320	540	20	130	770	540	90	25	990	540	90	25	1400	495	90	25
SHF 32-160/15	350	600	20	150	770	600	90	25	990	600	90	25	1400	555	90	25
SHF 32-160/22	350	600	20	150	770	600	90	25	990	600	90	25	1400	555	90	25
SHF 32-200/30	350	600	20	150	770	600	90	25	990	600	90	25	1400	555	90	25
SHF 32-200/40	350	600	20	150	770	600	90	25	990	600	90	25	1400	555	90	25
SHF 32-250/55	440	740	25	190	1130	665	20	55	1360	665	20	55	1640	665	20	55
SHF 32-250/75	440	740	25	190	1130	665	20	55	1360	665	20	55	1640	665	20	55
SHF 32-250/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 40-125/11	350	600	20	150	770	540	90	25	1030	600	90	25	1400	495	90	25
SHF 40-125/15	350	600	20	150	770	600	90	25	1030	600	90	25	1400	555	90	25
SHF 40-125/22	350	600	20	150	770	600	90	25	1030	600	90	25	1400	555	90	25
SHF 40-160/30	350	600	20	150	770	600	90	25	1030	600	90	25	1400	555	90	25
SHF 40-160/40	350	600	20	150	770	600	90	25	1030	600	90	25	1400	555	90	25
SHF 40-200/55	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
SHF 40-200/75	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
SHF 40-250/110A	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 40-250/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 40-250/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 50-125/22	350	600	20	150	770	600	90	25	1360	765	20	55	1400	555	90	25
SHF 50-125/30	350	600	20	150	770	600	90	25	1360	765	20	55	1400	555	90	25
SHF 50-125/40	350	600	20	150	770	600	90	25	1360	765	20	55	1400	555	90	25
SHF 50-160/55	400	660	25	170	960	585	20	55	1360	765	20	55	1510	585	20	55
SHF 50-160/75	400	660	25	170	960	585	20	55	1360	765	20	55	1510	585	20	55
SHF 50-200/110A	440	740	25	190	1130	665	20	55	1360	765	20	55	1640	665	20	55
SHF 50-200/110	440	740	25	190	1130	665	20	55	1360	765	20	55	1640	665	20	55
SHF 50-250/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 50-250/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 50-250/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-160/40	400	660	25	170	960	585	20	55	1170	585	20	55	1510	585	20	55
SHF 65-160/55	440	740	25	190	1130	665	20	55	1170	585	20	55	1640	665	20	55
SHF 65-160/75	440	740	25	190	1130	665	20	55	1170	585	20	55	1640	665	20	55
SHF 65-160/110A	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-160/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-200/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-200/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-200/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 65-250/300	550	940	30	230	1130	865	20	55	1510	865	20	55	1800	865	20	55
SHF 65-250/370	550	940	30	230	1130	865	20	55	1510	865	20	55	1800	865	20	55
SHF 80-160/110	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 80-160/150	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 80-160/185	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 80-200/220	490	840	25	205	1130	765	20	55	1360	765	20	55	1640	765	20	55
SHF 80-200/300	550	940	30	230	1130	865	20	55	1510	865	20	55	1800	865	20	55
SHF 80-200/370	550	940	30	230	1130	865	20	55	1510	865	20	55	1800	865	20	55
SHF 80-250/450	550	940	30	230	1130	865	20	55	1510	865	20	55	1800	865	20	55
SHF 80-250/550	600	1060	30	270	1360	950	20	90	1640	985	20	55	2100	950	20	90
SHF 80-250/750	670	1200	30	300	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2170	1090	20	90

Dimensions in mm. Tolerance ± 10 mm.

inter_shf-en_a_td

(1) Dimensions on request



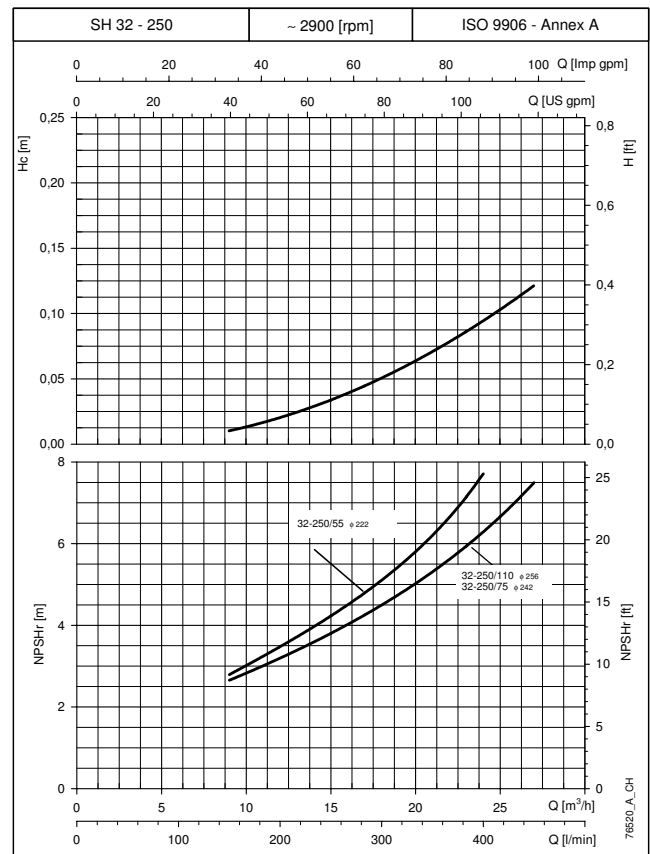
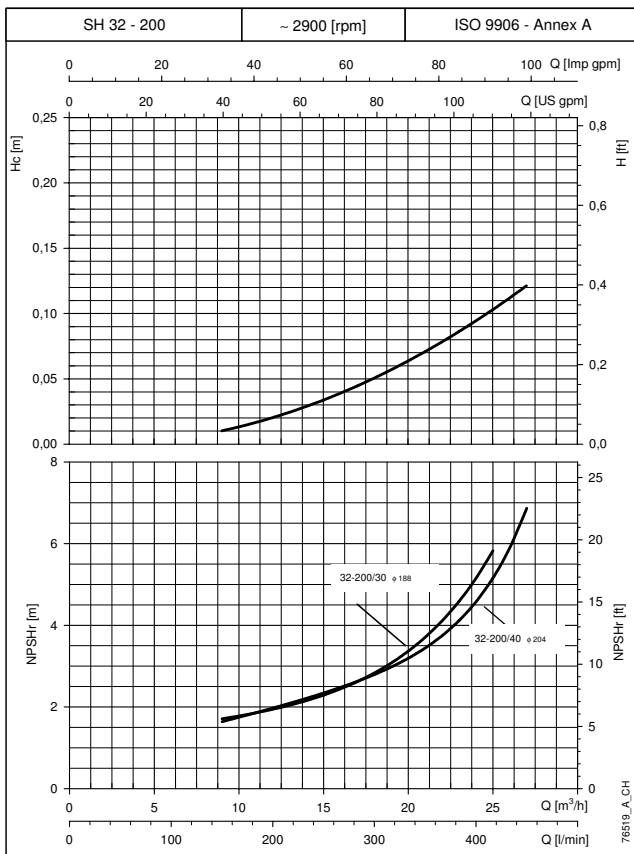
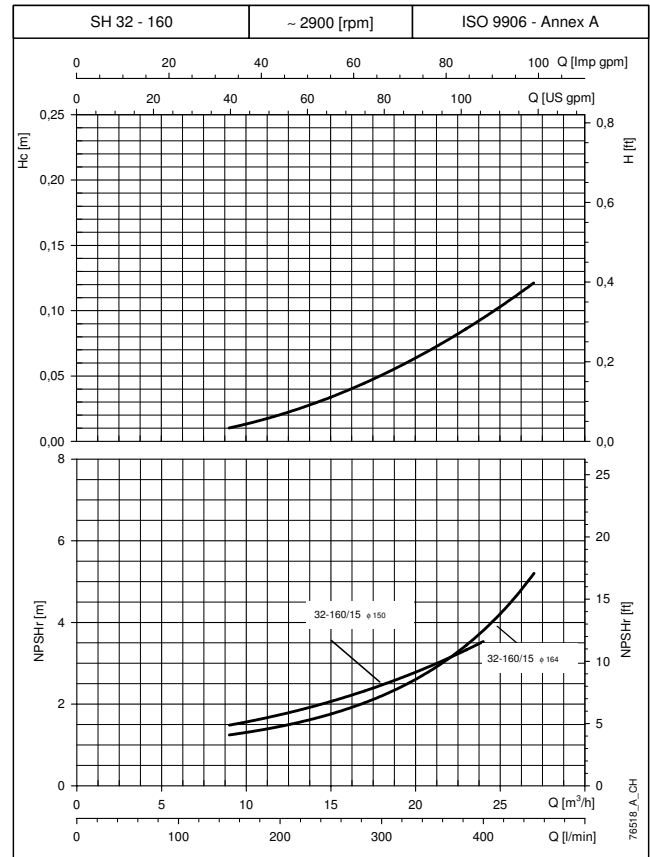
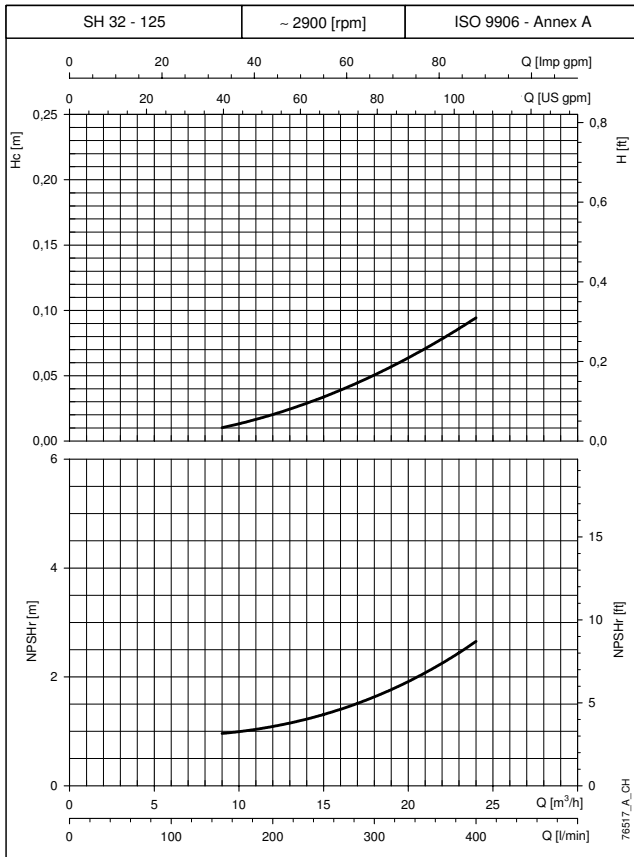
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GEN../SHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

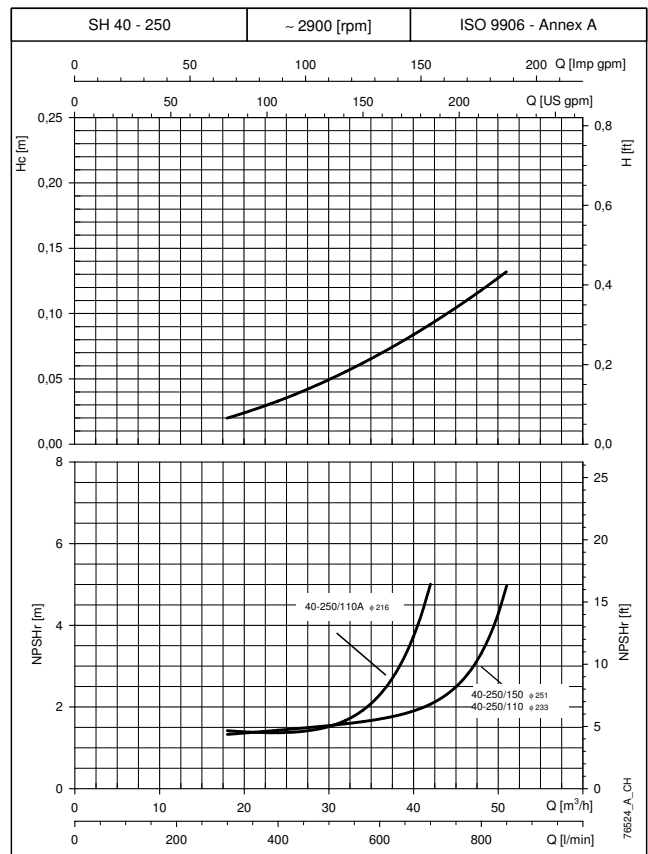
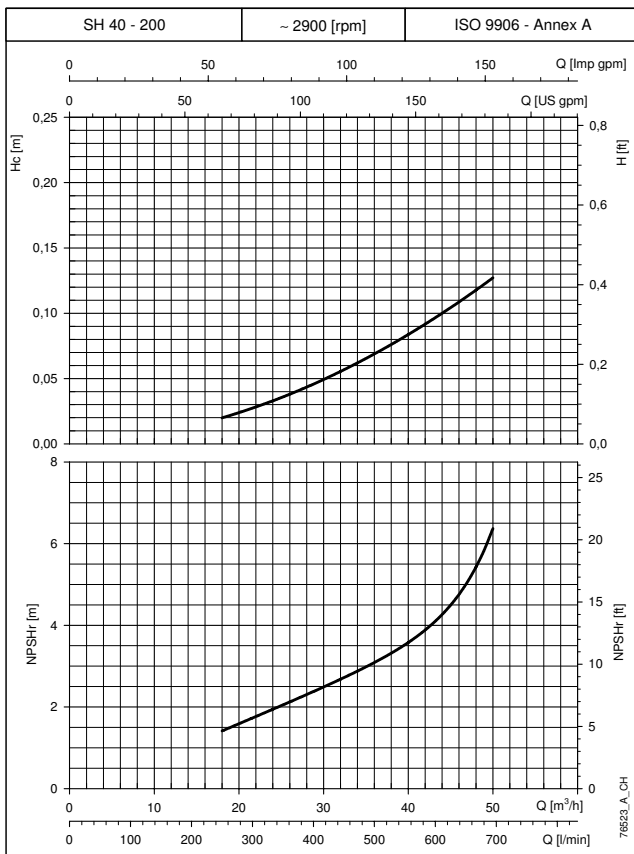
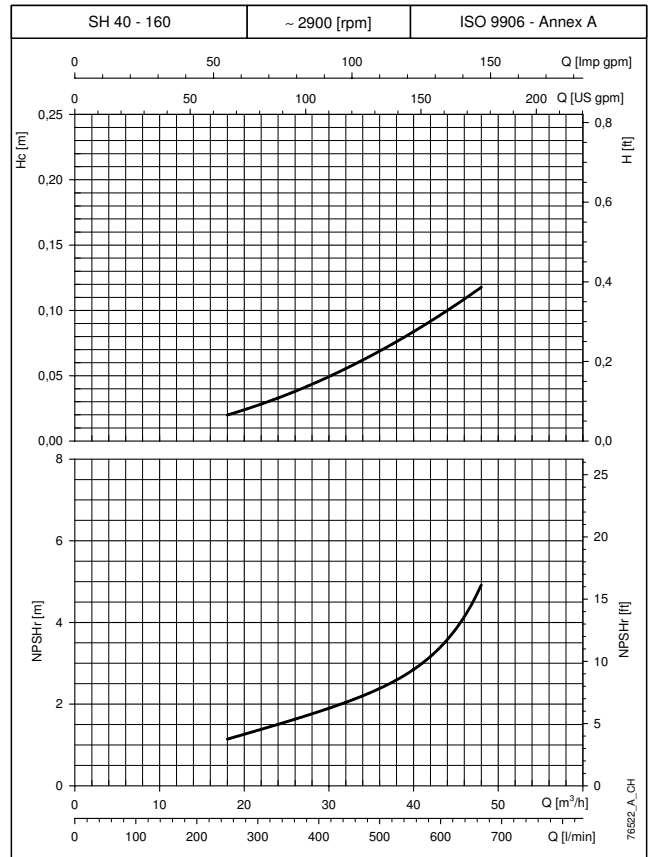
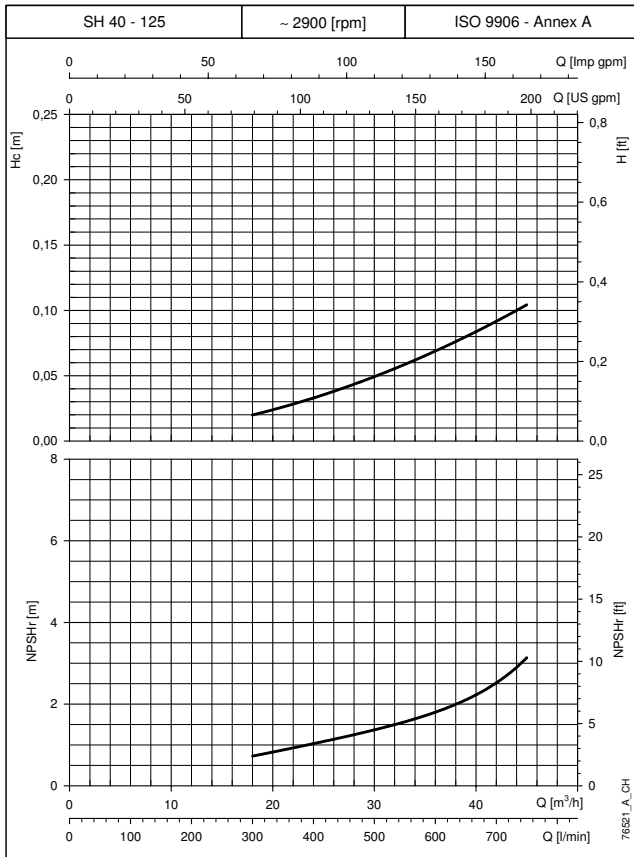
H_c: Pressure drop curve in suction kit.



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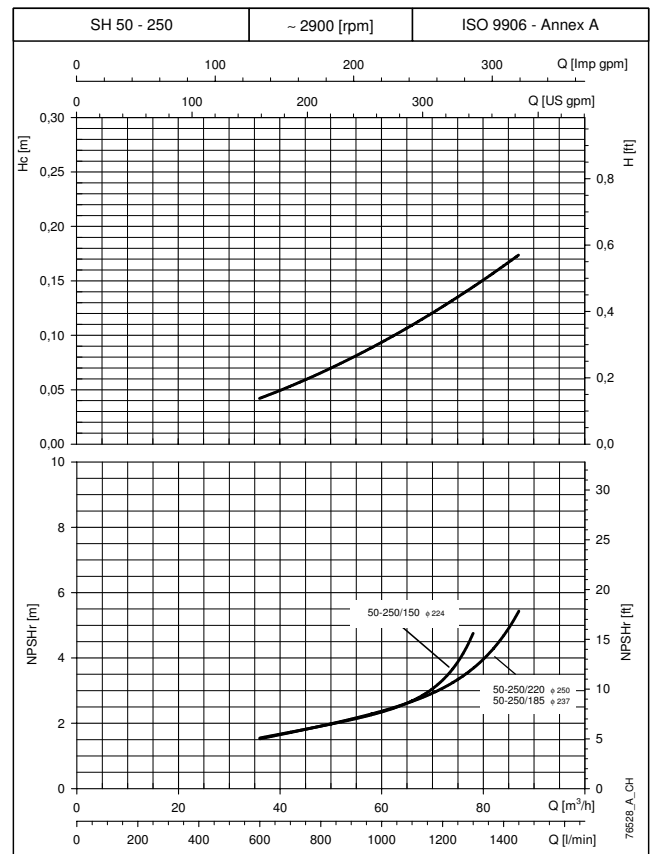
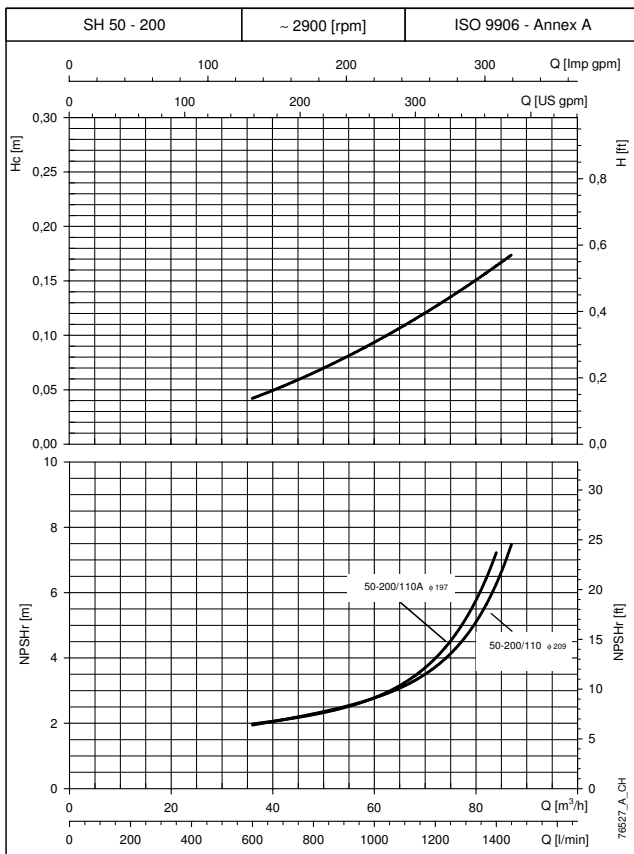
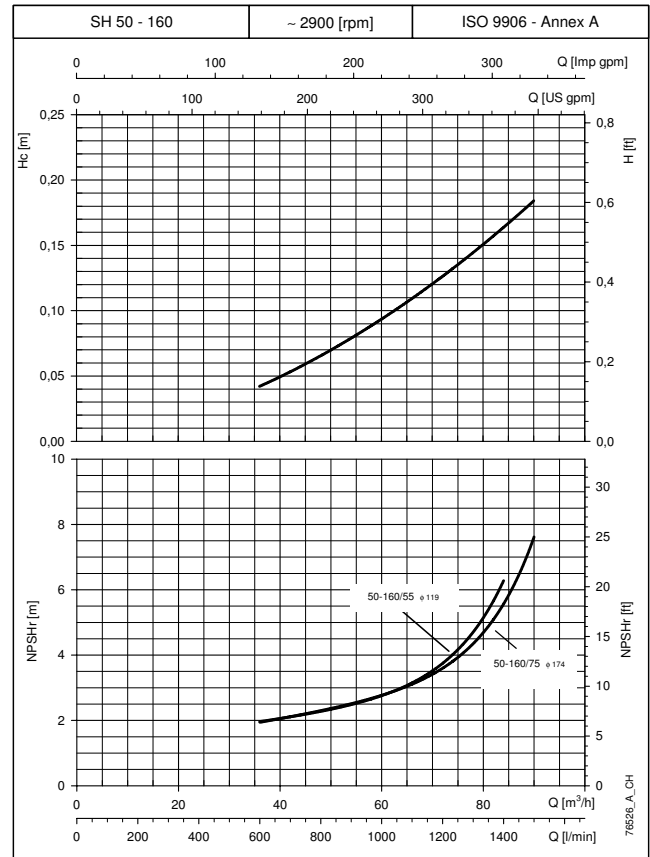
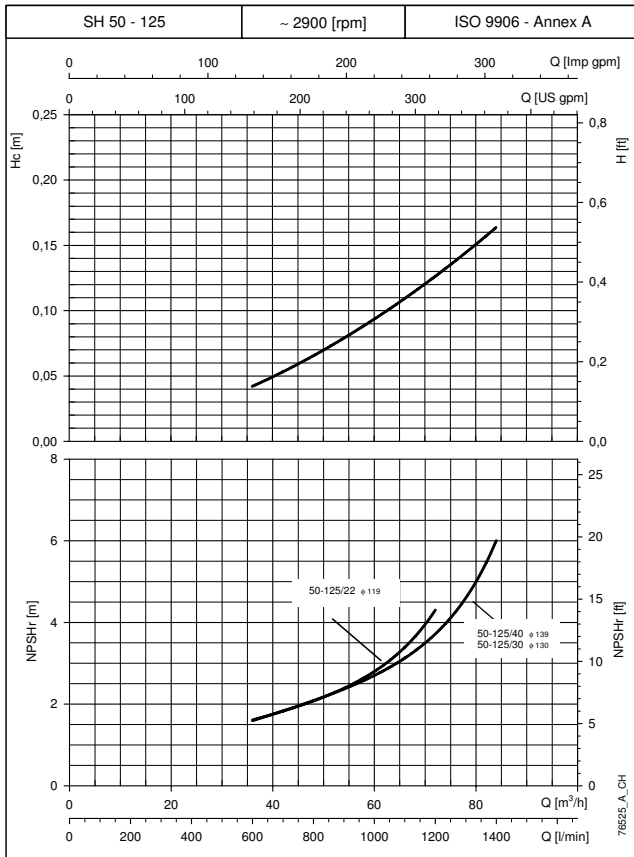
H_c: Pressure drop curve in suction kit.



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GEN../SHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



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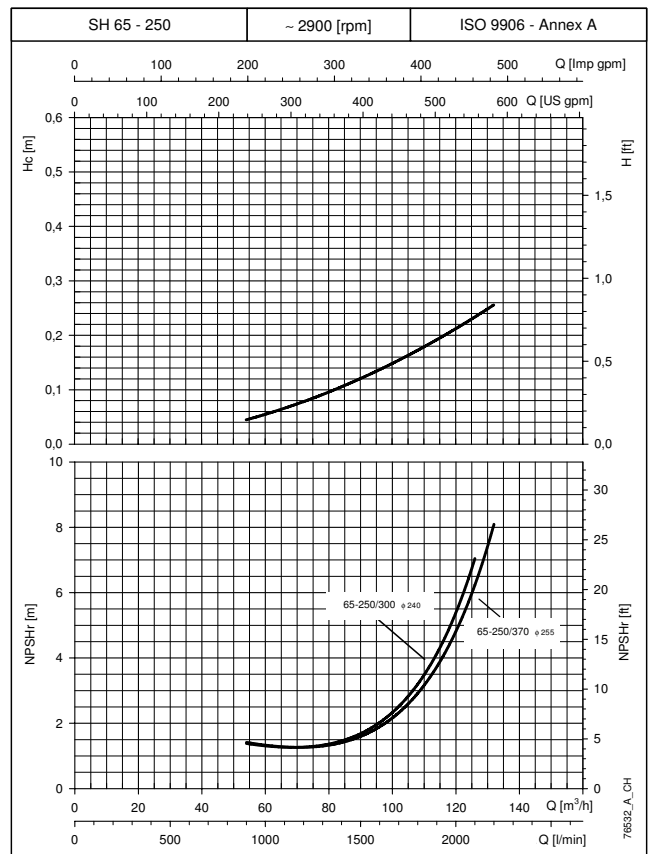
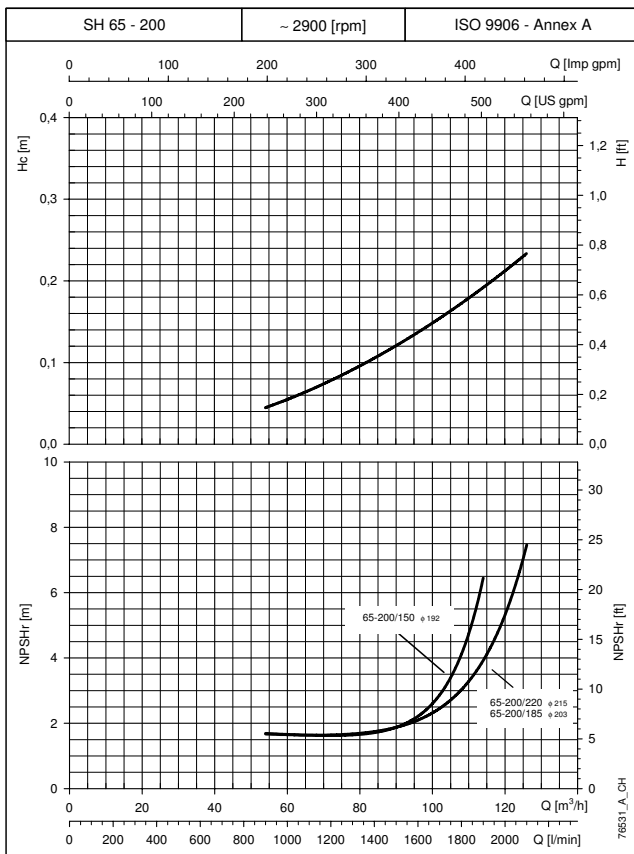
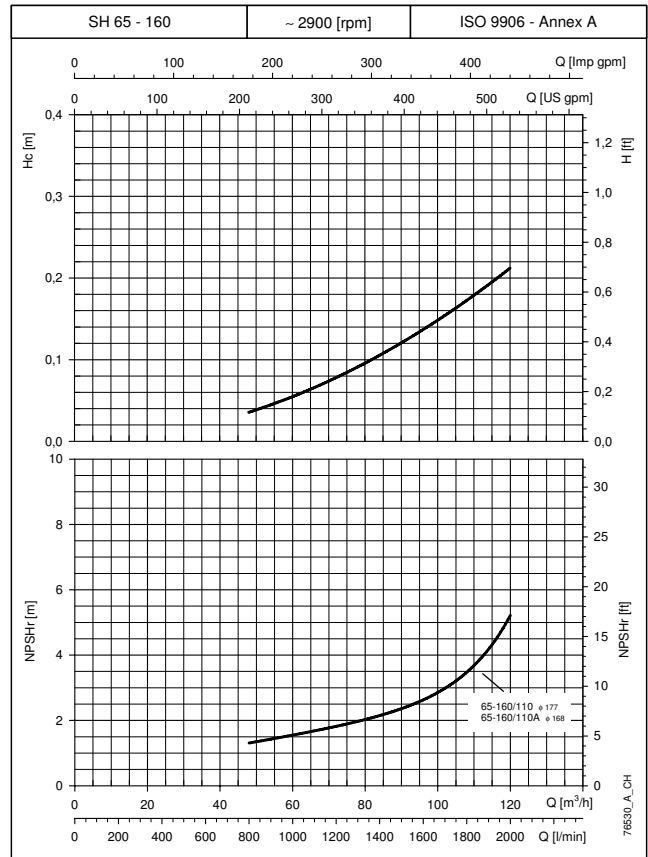
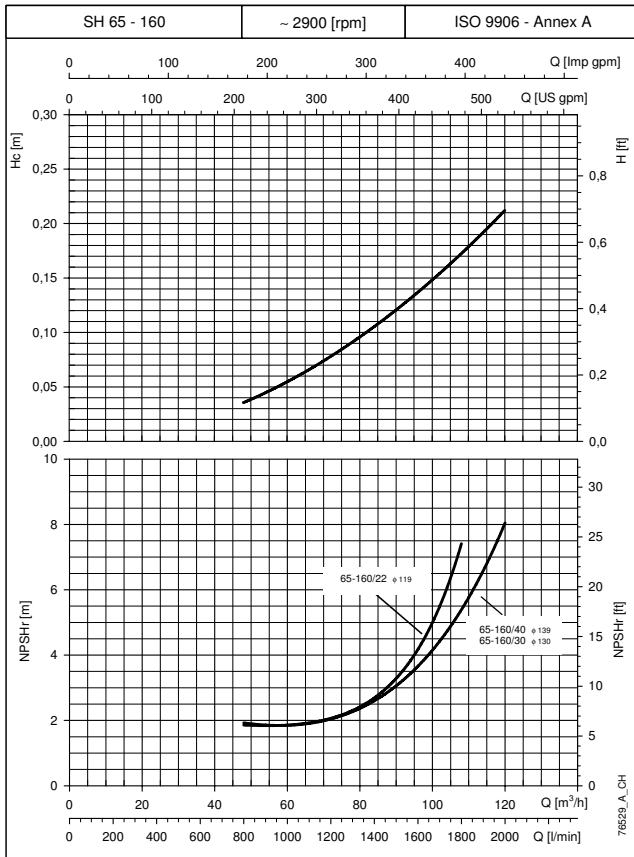
H_c: Pressure drop curve in suction kit.



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Lowara

GEN../SHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



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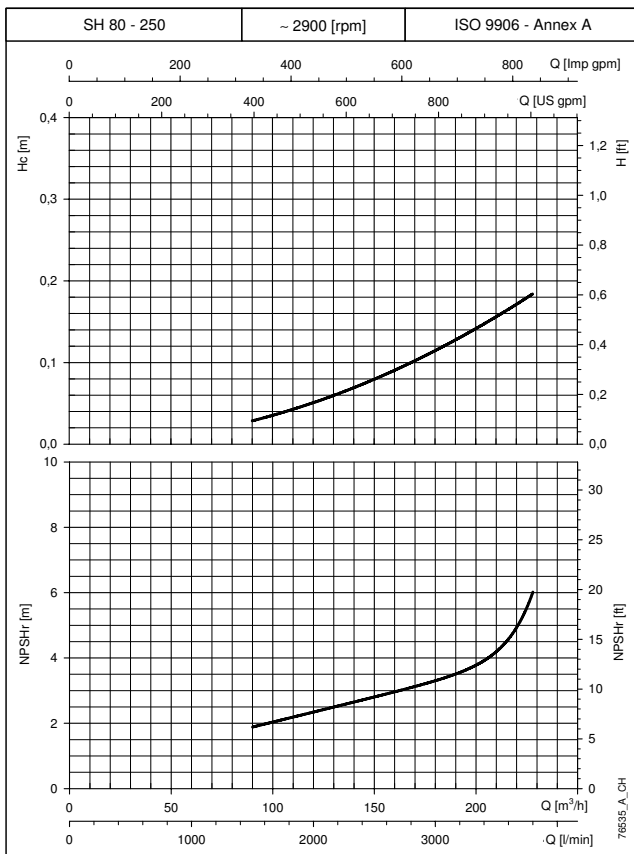
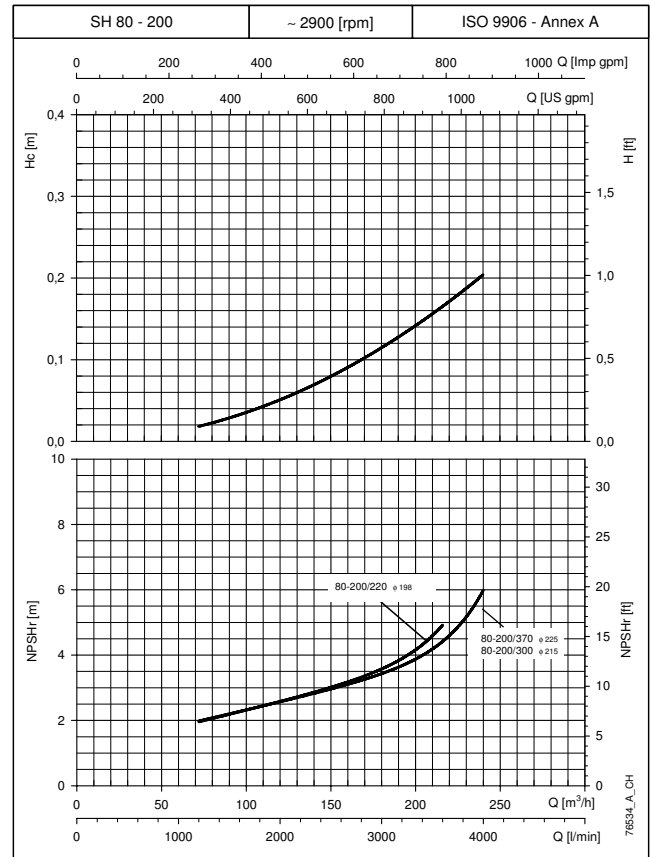
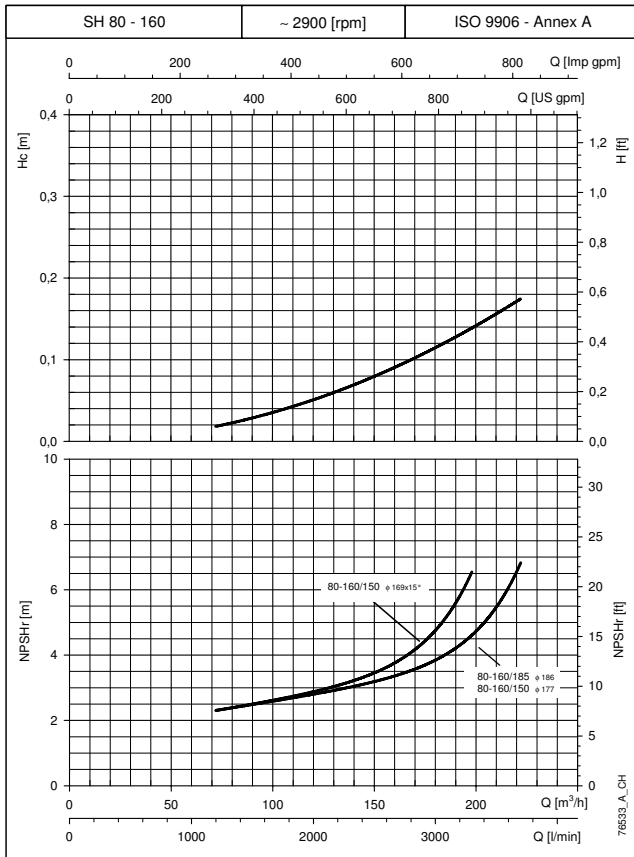
H_c: Pressure drop curve in suction kit.



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GEN../SHF SERIES OF BOOSTER SETS (POSITIVE SUCTION HEAD) H_c PRESSURE DROP CURVE IN SUCTION KIT



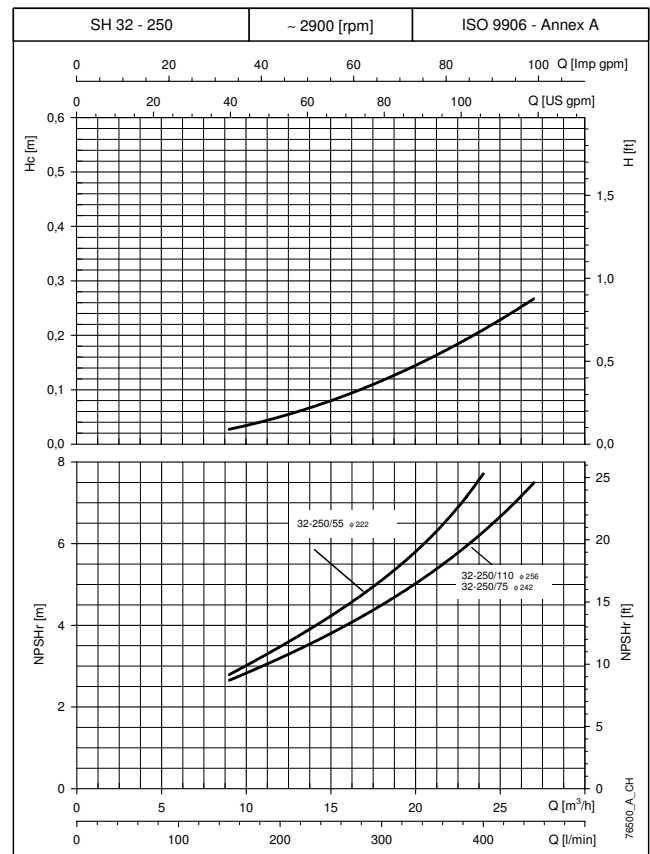
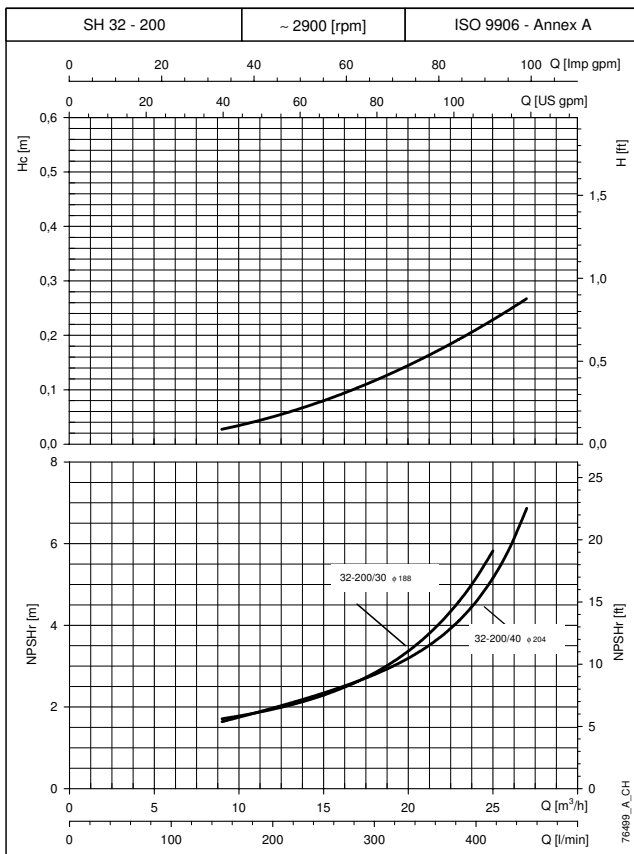
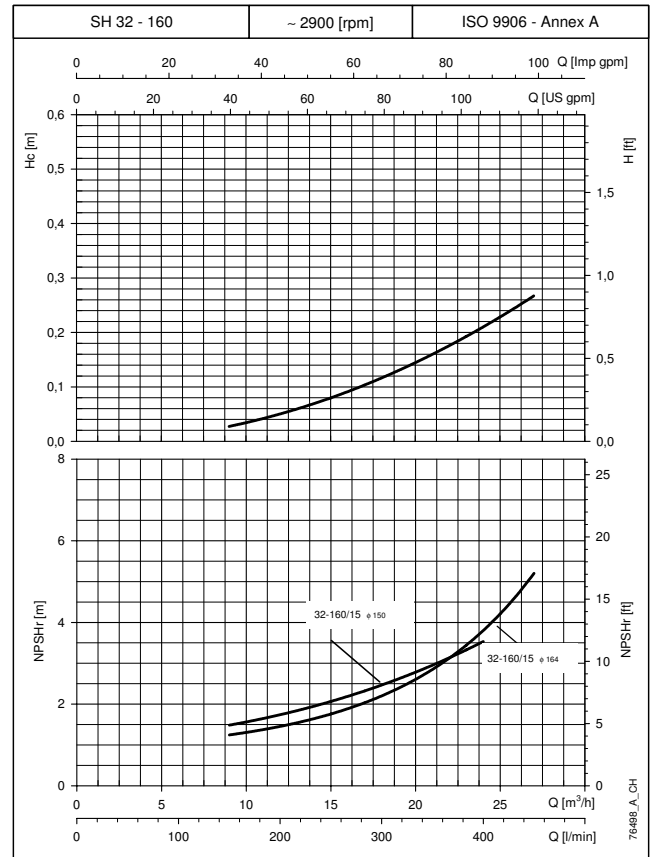
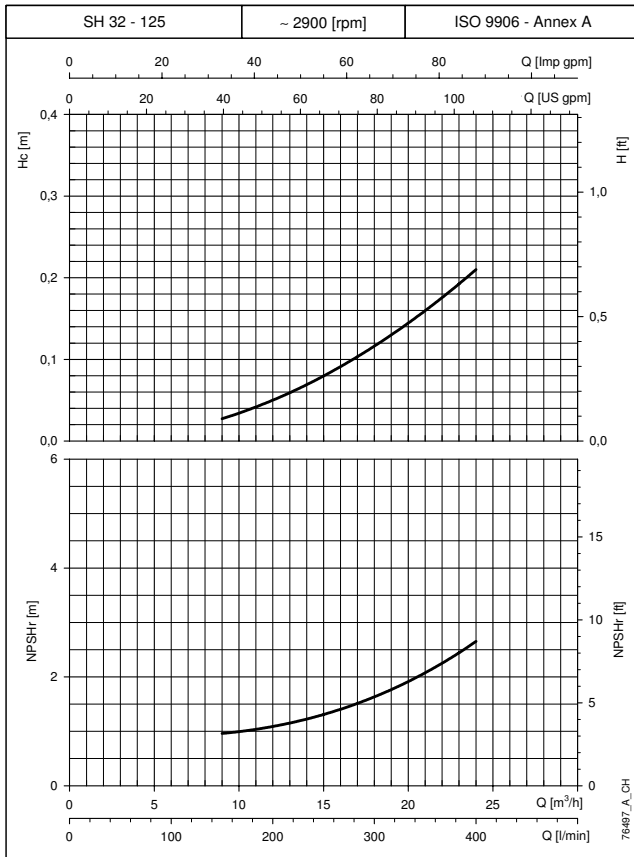
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The NPSH_r values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.
H_c: Pressure drop curve in suction kit.



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GEN../SHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

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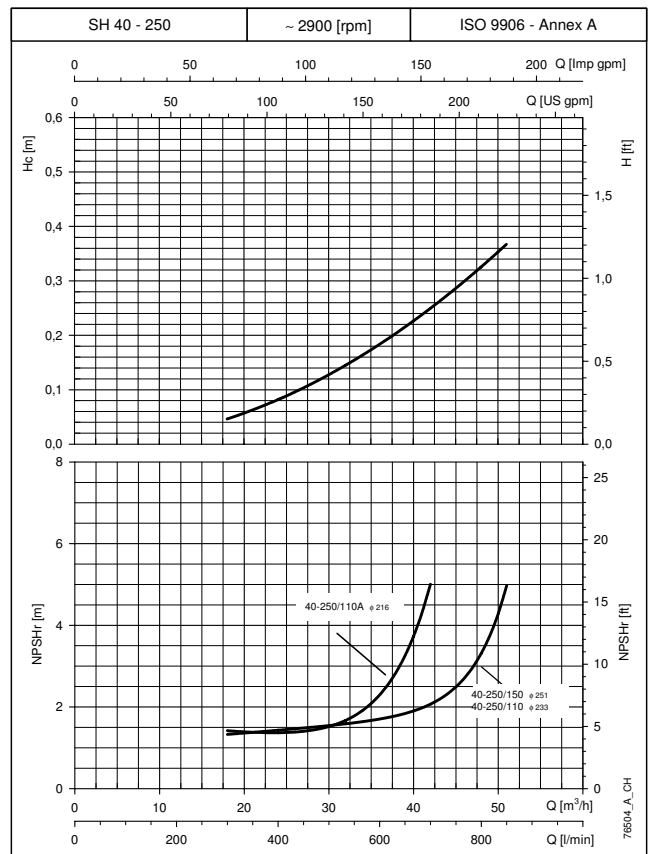
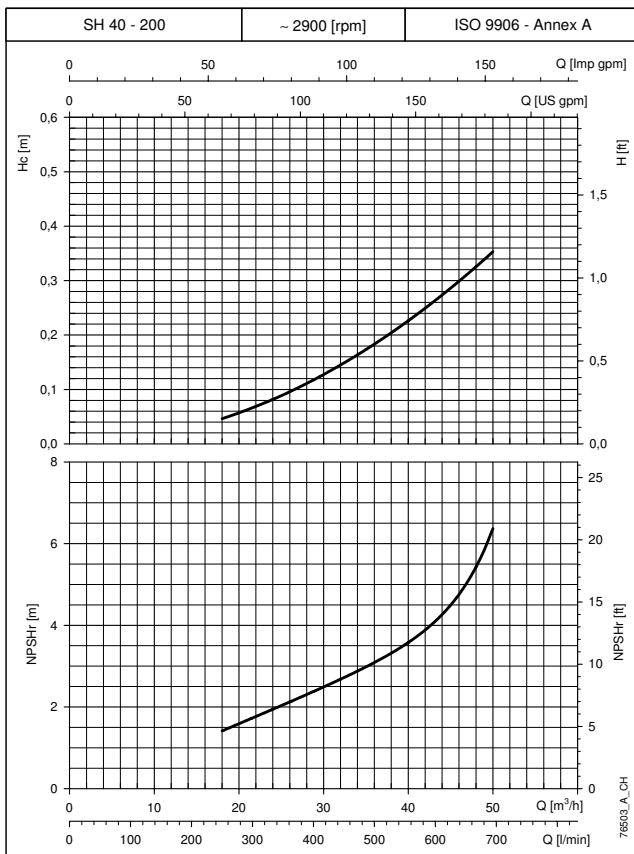
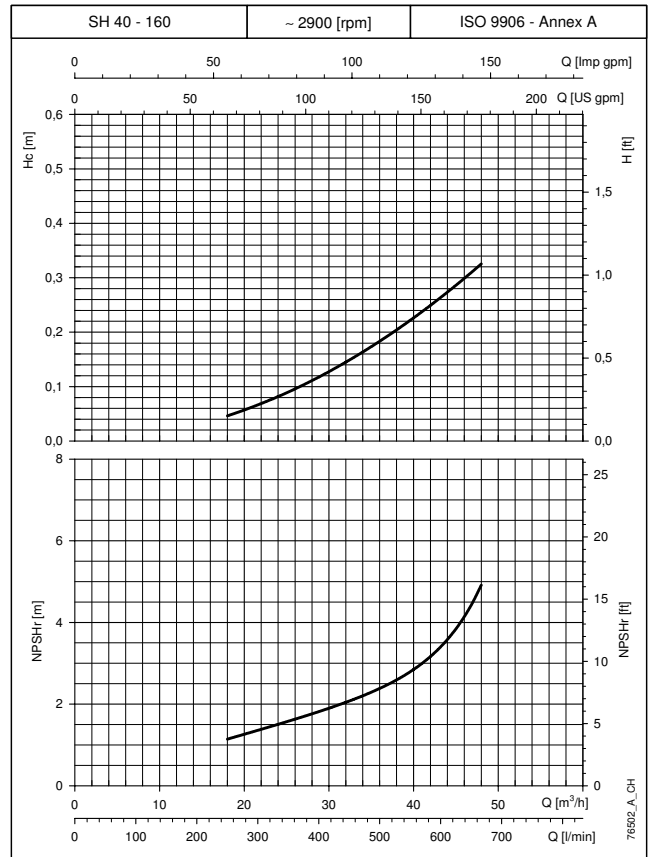
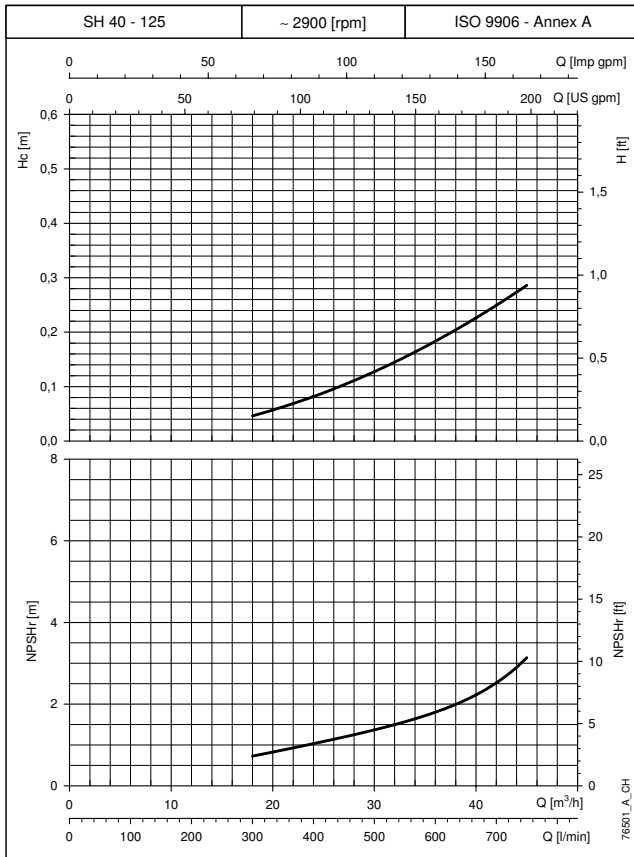
H_c: Pressure drop curve in suction kit.



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Lowara

GEN../SHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

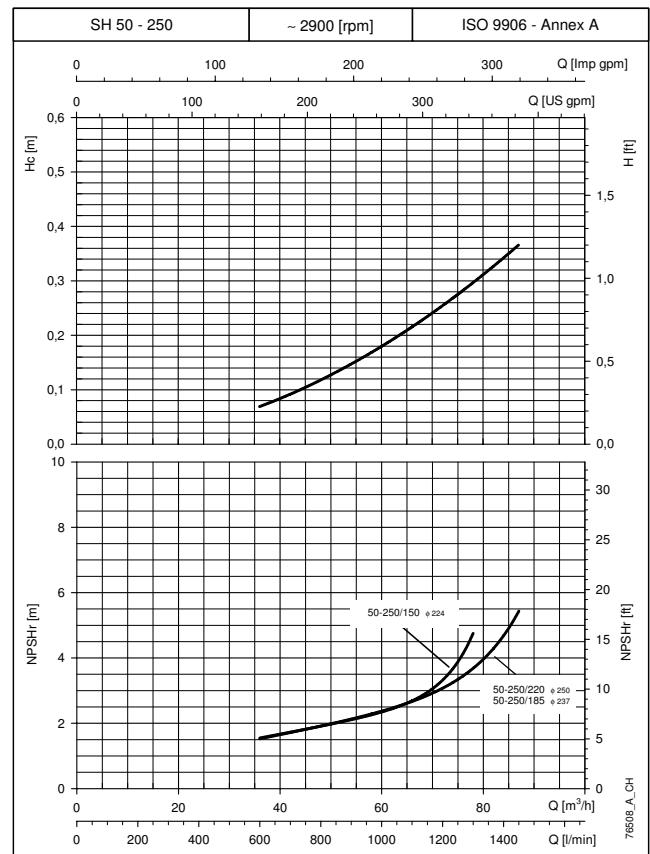
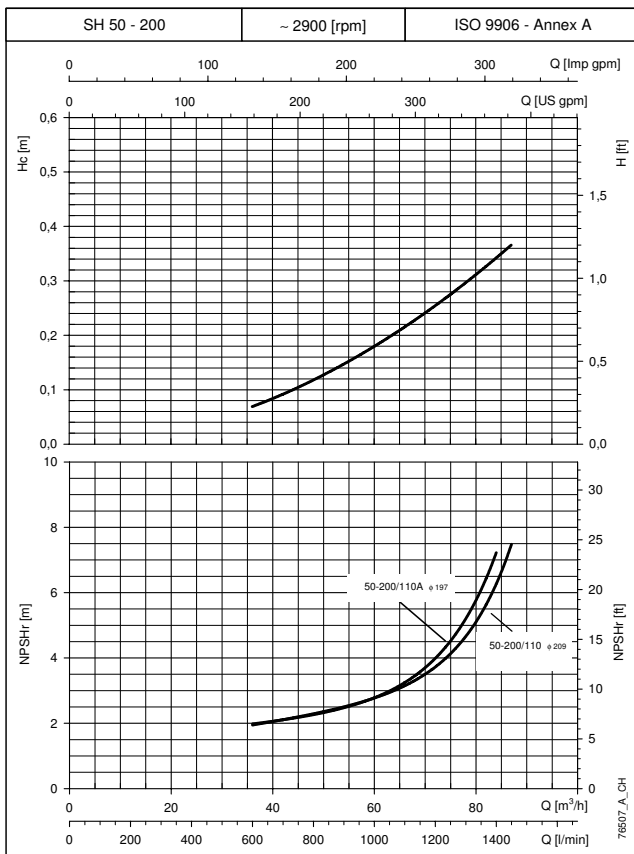
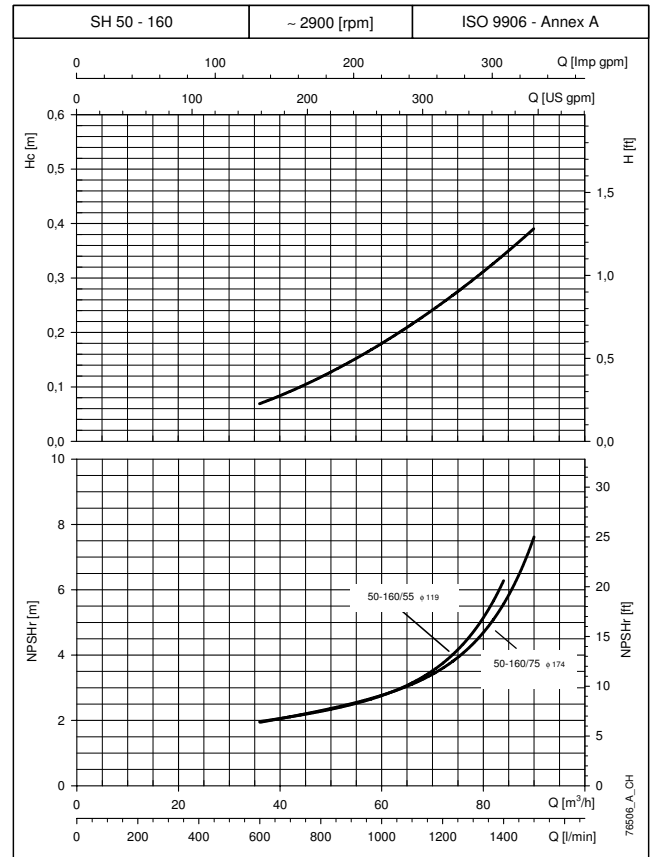
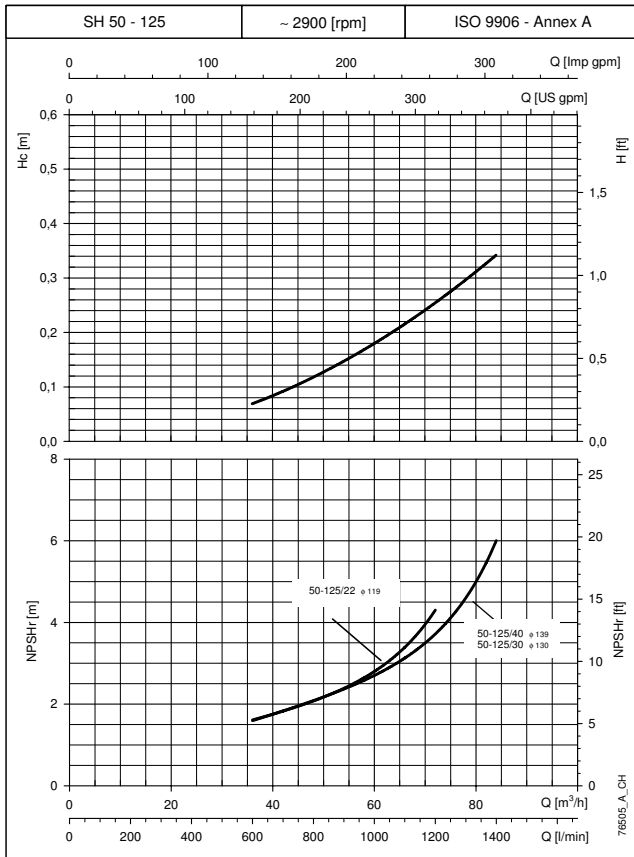
H_c: Pressure drop curve in suction kit.



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Lowara

GEN../SHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



The declared performance value are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

The $NPSH_r$ values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.

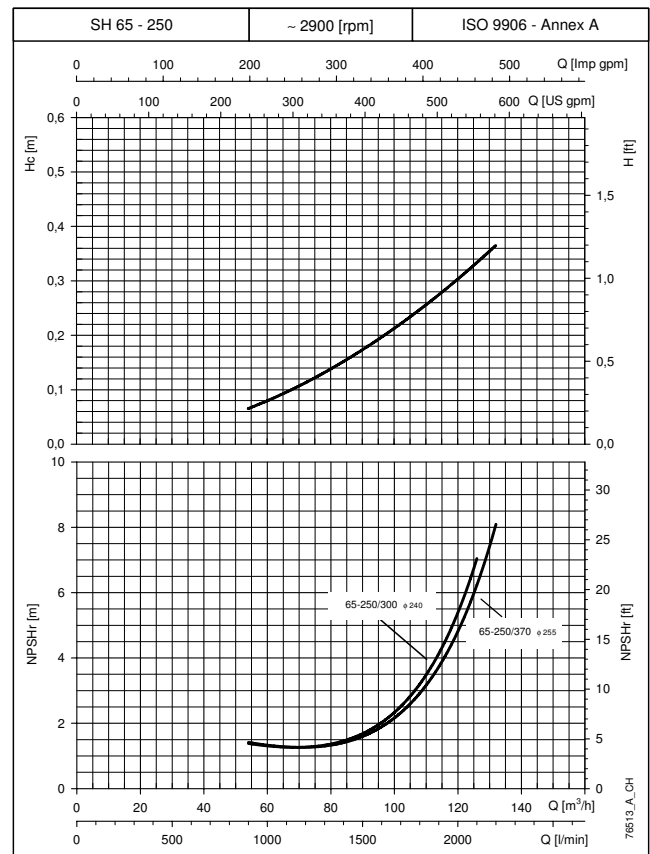
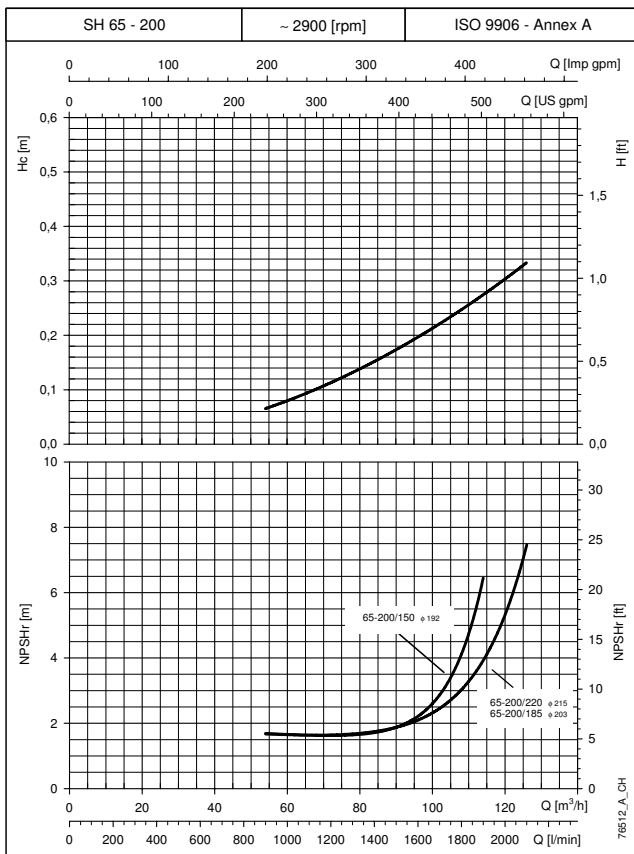
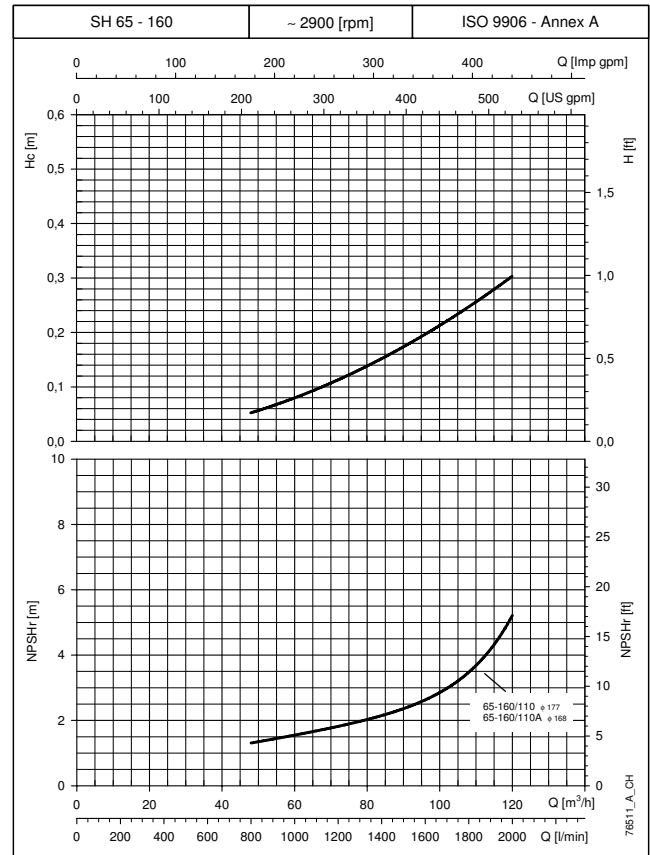
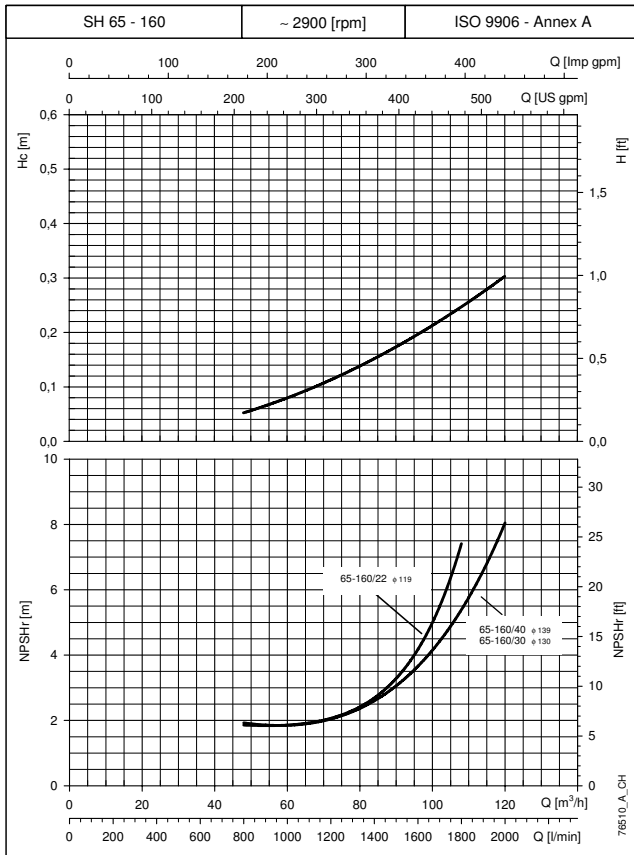
H_c: Pressure drop curve in suction kit.



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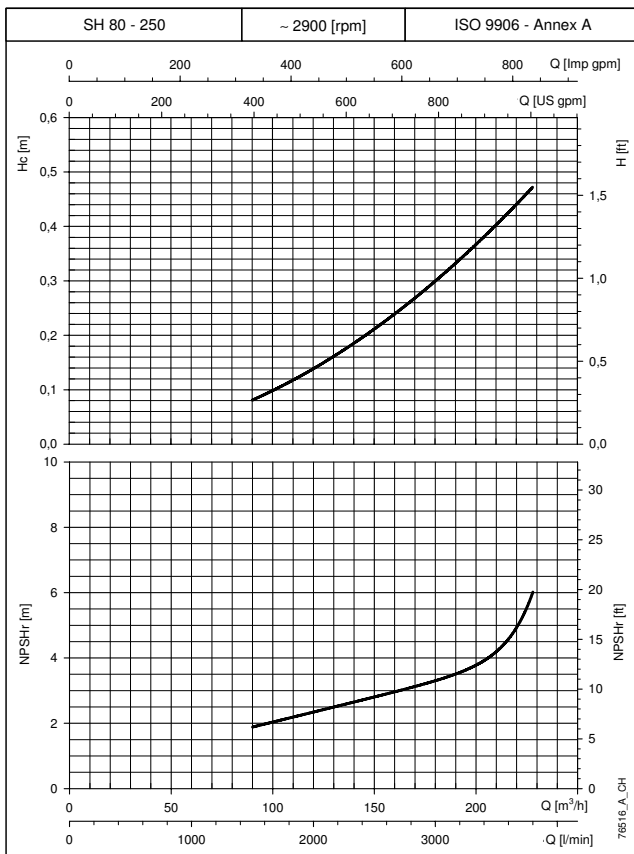
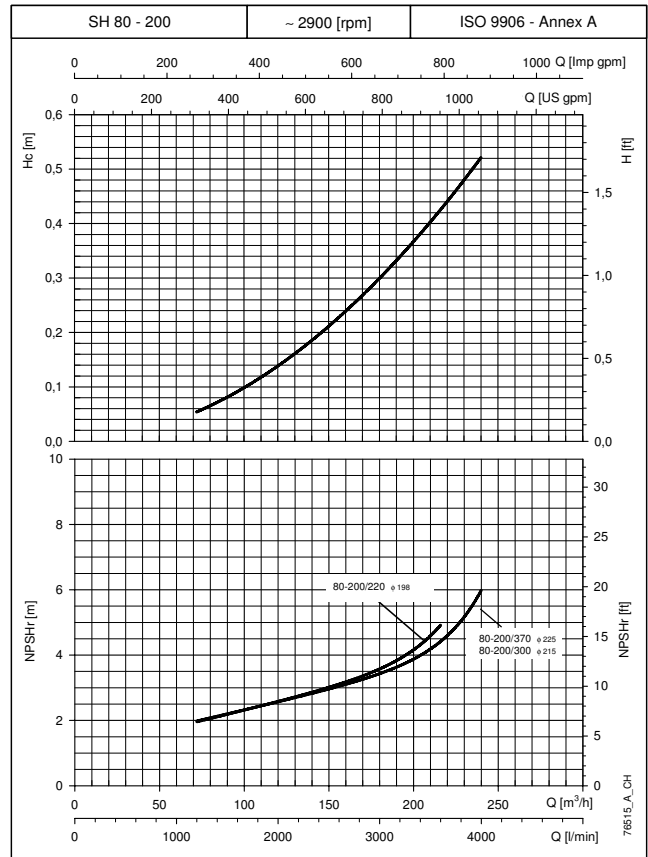
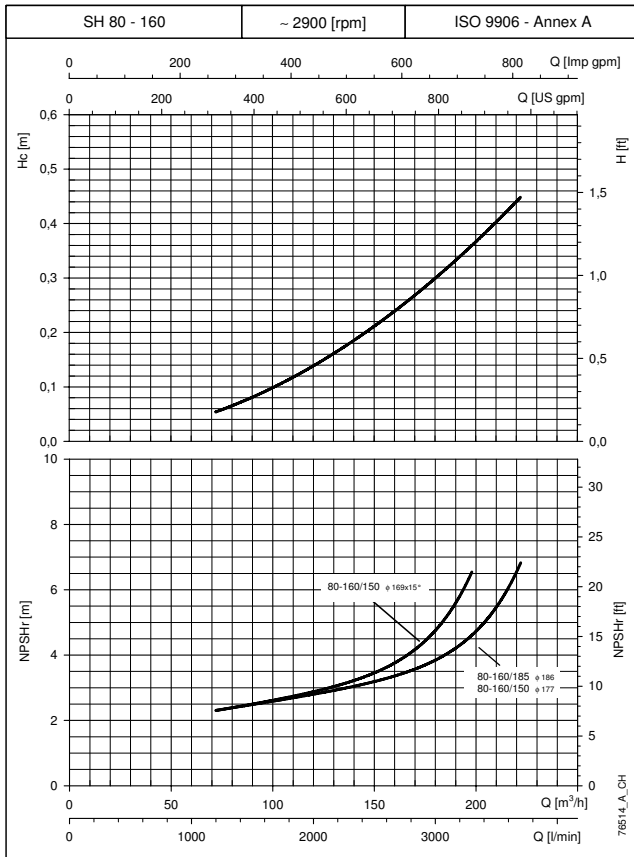
H_c: Pressure drop curve in suction kit.



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Lowara

GEN../SHF SERIES OF BOOSTER SETS (SUCTION LIFT) H_c PRESSURE DROP CURVE IN SUCTION KIT



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The NPSHr values required for the service pump were obtained in the laboratory. When using them for EN 12845 for fire-fighting systems, increase the value by 1 m.
H_c: Pressure drop curve in suction kit.

ACCESSORIES

DIAPHRAGM TANKS

The booster sets are ready for installation, directly on the manifold, of 24-litre diaphragm tanks, one for each pump. The sets are also equipped with caps to close off the unused couplings. Larger tanks can also be connected to the unused end of the discharge manifold. For proper sizing of the tank please refer to the technical appendix.

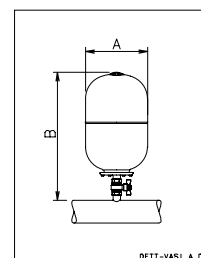
Kit featuring the following accessories are **available on request**:

- diaphragm tank;
- on-off ball valve;
- operating instructions;
- packaging.

DIAPHRAGM TANK KIT

Volume Litres	PN bar	DIMENSIONS (mm)			Materials		
		ø A	B	Valve	Diaphragm	Vessel	Valve
8	8	205	390	1" FF	EPDM	Painted steel	Nickel-plated brass
24	8	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	10	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	16	270	555	1" FF	EPDM	Painted steel	Nickel-plated brass
24	10	270	575	1" FF	Butyl	Stainless steel	AISI 316 Stainless steel

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COUNTERFLANGE KIT

Counterflange coupling kits made of zinc-plated or stainless steel are available on request.

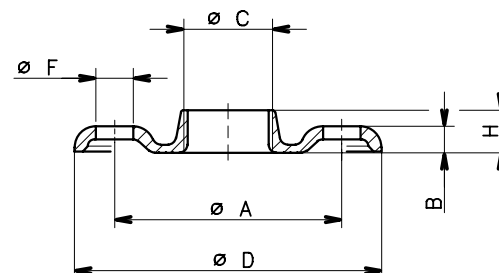
The counterflange kits are equipped with:

- N. 2 flanges.
- gasket and bolts/screws.

THREADED COUNTERFLANGES

KIT TYPE	DN	ø C	DIMENSIONS (mm)				HOLES		PN
			ø A	B	ø D	H	ø F	N°	
2"	50	Rp 2	125	16	165	24	18	4	25
2" 1/2	65	Rp 2 1/2	145	16	185	23	18	4	16
3"	80	Rp 3	160	17	200	27	18	8	16

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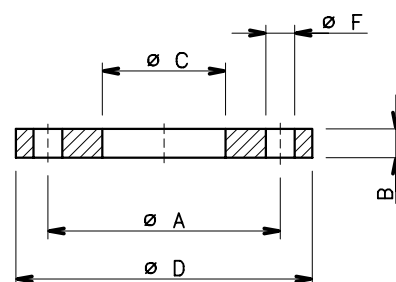


04430_B_DD

WELD-ON COUNTERFLANGES

KIT TYPE	DN	ø C	DIMENSIONS (mm)			HOLES		PN
			ø A	B	ø D	ø F	N°	
2"	50	61	125	19	165	18	4	16
2 1/2"	65	77	145	20	185	18	4	16
3"	80	90	160	20	200	18	8	16
4"	100	116	180	22	220	18	8	16
5"	125	141,5	210	22	250	18	8	16
6"	150	170,5	240	24	285	22	8	16
8"	200	221,5	295	26	340	22	12	16
10"	250	276,5	355	29	405	26	12	16
12"	300	327,5	410	32	460	26	12	16

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04431_A_DD

ACCESSORIES FOR BOOSTER SETS

SUCTION SIDE KIT

The EN 12845 fire-fighting booster sets are supplied without valves and stubs on the suction side of the service pump and can be completed with suitable kits that depend on legal standards.

These requirements are expressed by EN 12845 (chapter 10.5 and chapter 10.6) and are connected with the maximum speed value of the water in the pipes, their minimum section and type of installation - suction lift or positive suction head.

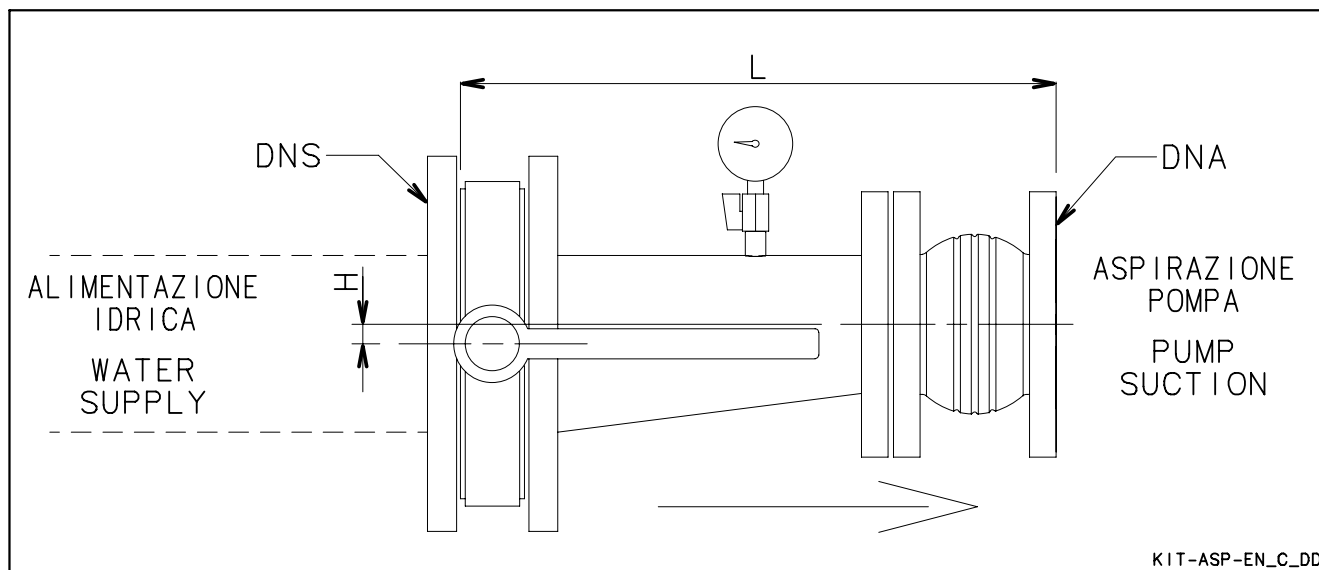
To provide for one suction kit for each duty pump.

The suction side kit are equipped with:

- Anti-vibration joint to attach to the pump inlet.
- Eccentric cone or flanged stub pipe.
- Vacuum pressure gauge.
- On/off butterfly valve with lever handle for diameters up to DN100, butterfly valve with handwheel and reduction manual gear for DN125 and higher. Device for monitoring ON/OFF status included. Electrical connections by customer.
(Valve lock kit available on request).
- Weld-on flange.

The following table summarises the pump type installed on the fire-fighting sets and the kit that corresponds to the installation type.

GEN../ SERIES OF FIRE-FIGHTING BOOSTER SETS **SUCTION SIDE KIT DIMENSIONS TABLE**



KIT-ASP-EN_C_DD

SUCTION KIT TYPE	DIMENSIONS					
	DNS	PN	DNA	PN	L (mm)	H (mm)
50 X 32	50	16	32	16	340	9
50 X 40	50	16	40	16	340	6
65 X 32	65	16	32	16	395	17
65 X 40	65	16	40	16	375	14
65 X 50	65	16	50	16	355	8
80 X 32	80	16	32	16	445	23
80 X 40	80	16	40	16	425	20
80 X 50	80	16	50	16	395	14
80 X 65	80	16	65	16	365	6
100 X 40	100	16	40	16	520	33
100 X 50	100	16	50	16	500	27
100 X 65	100	16	65	16	470	19
100 X 80	100	16	80	16	435	13
125 X 50	125	16	50	16	605	40
125 X 65	125	16	65	16	565	32
125 X 80	125	16	80	16	540	25
125 X 100	125	16	100	16	455	13
150 X 65	150	16	65	16	675	46
150 X 80	150	16	80	16	640	40
150 X 100	150	16	100	16	565	27
150 X 125	150	16	125	16	520	14
200 X 80	200	10	80	16	830	65
200 X 100	200	10	100	16	755	52
200 X 125	200	10	125	16	710	40
200 X 150	200	10	150	16	620	25
250 X 100	250	10	100	16	965	79
250 X 125	250	10	125	16	930	67
250 X 150	250	10	150	16	840	52
300 X 125	300	10	125	16	1120	92
300 X 150	300	10	150	16	1040	78
350 X 150	350	10	150	16	1160	94
400 X 150	400	10	150	16	1375	119

Dimensions in mm. Tolerance ± 10 mm.

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GEN../FHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS SUCTION SIDE KIT DIMENSIONS TABLE

PUMP	SUCTION LIFT				POSITIVE SUCTION HEAD			
	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE
FHF 32-125/07	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 32-125/11	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 32-160/15	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 32-160/22	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 32-200/30	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 32-200/40	LH	65 X 50	-	-	LH	80 X 50	-	-
FHF 40-125/11	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-125/15	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-125/22	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-160/30	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-160/40	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-200/55	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-200/75	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-250/110A	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-250/110	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 40-250/150	OH1	80 X 65	-	-	OH1	100 X 65	-	-
FHF 50-125/22	OH2	100 X 65	-	-	OH2	125 X 65	-	-
FHF 50-125/30	OH2	100 X 65	-	-	OH2	125 X 65	-	-
FHF 50-125/40	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-160/55	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-160/75	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-200/110A	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-200/110	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-250/150	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-250/185	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 50-250/220	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
FHF 65-125/40	OH3	125 X 80	-	-	OH3	150 X 80	-	-
FHF 65-125/55	OH3	125 X 80	-	-	OH3	150 X 80	-	-
FHF 65-125/75	OH3	125 X 80	-	-	OH3	150 X 80	-	-
FHF 65-160/110A	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-160/110	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-160/150	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-200/150	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-200/185	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-200/220	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-250/220	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-250/300	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 65-250/370	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
FHF 80-160/150	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-160/185	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-200/220	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-200/300	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-250/370	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-250/450	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
FHF 80-250/550	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100

* For the risk classes refer to para 6, UNI EN12845.

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- the pumps must be chosen according to the performance levels indicated in Tab. 6 para 7.3.1, Tab.7 para 7.3.2 and the classes of risk.
- some pump models can satisfy the conditions of one or more classes of risk.
- always check the correct selection of the pump depending on the performance level of the set.

** Insert the 50 mm minimal thickness under the GEN10 fire-fighting booster sets only.

GEN../FHF 100-125 SERIES FIRE-FIGHTING BOOSTER SETS SUCTION SIDE KIT DIMENSIONS TABLE

PUMP	SUCTION LIFT				POSITIVE SUCTION HEAD			
	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE
FHF 100-160/185	HH3	250 X 125	HH2	250 X 125	HH3	250 X 125	HH2	250 X 125
FHF 100-160/220	HH4	250 X 125	HH3	250 X 125	HH4	300 X 125**	HH3	250 X 125
FHF 100-160/300	HH4	250 X 125	HH3	250 X 125	HH4	300 X 125**	HH3	250 X 125
FHF 100-200/185	HH3	250 X 125**	HH2	250 X 125**	HH3	250 X 125**	HH2	250 X 125**
FHF 100-200/300	HH3	250 X 125**	HH2	250 X 125**	HH3	250 X 125**	HH2	250 X 125**
FHF 100-200/370	HH4	250 X 125**	HH3	250 X 125**	HH4	300 X 125**	HH3	250 X 125**
FHF 100-200/450	HH4	250 X 125	HH3	250 X 125	HH4	300 X 125**	HH3	250 X 125
FHF 100-250/300	HH3	250 X 125	HH2	250 X 125	HH3	250 X 125	HH2	250 X 125
FHF 100-250/450	HH4	250 X 125	HH3	250 X 125	HH4	300 X 125**	HH3	250 X 125
FHF 100-250/550	HH4	250 X 125	HH3	250 X 125	HH4	300 X 125	HH3	250 X 125
FHF 100-250/750	HH5	300 X 125	HH4	250 X 125	HH5	300 X 125	HH4	300 X 125
FHF 100-250/900	HH6	300 X 125	HH5	300 X 125	HH6	300 X 125	HH5	300 X 125
FHF 125-200/300	HH7	300 X 150	HH6	300 X 150	HH7	300 X 150	HH6	300 X 150
FHF 125-200/450	HH9	300 X 150	HH8	300 X 150	HH9	400 X 150**	HH8	350 X 150**
FHF 125-200/550	HH10	350 X 150**	HH9	300 X 150	HH10	400 X 150**	HH9	400 X 150**
FHF 125-270/750	HH10	350 X 150	HH9	300 X 150	HH10	400 X 150	HH9	400 X 150
FHF 125-270/900	HH10	350 X 150	HH9	300 X 150	HH10	400 X 150	HH9	400 X 150
FHF 125-270/1100	HH10	350 X 150	HH9	300 X 150	HH10	400 X 150	HH9	400 X 150
FHF 125-270/1320	HH10	350 X 150	HH9	300 X 150	HH10	400 X 150	HH9	400 X 150

* For the risk classes refer to para 6, UNI EN12845.

kit-asp-fhf100-en_a_td

- the pumps must be chosen according to the performance levels indicated in Tab. 6 para 7.3.1, Tab. 7 para 7.3.2 and the classes of risk.
- some pump models can satisfy the conditions of one or more classes of risk.
- always check the correct selection of the pump depending on the performance level of the set.

** Insert the 50mm minimal thickness under the GEN10 fire-fighting booster sets only.

GEN../SHF 32-80 SERIES FIRE-FIGHTING BOOSTER SETS

SUCTION SIDE KIT DIMENSIONS TABLE

PUMP	SUCTION LIFT				POSITIVE SUCTION HEAD			
	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE	RISK CLASS *	SUCTION KIT TYPE
SHF 32-125/07	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-125/11	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-160/15	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-160/22	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-200/30	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-200/40	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-250/55	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-250/75	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 32-250/110	LH	65 X 50	-	-	LH	80 X 50	-	-
SHF 40-125/11	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-125/15	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-125/22	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-160/30	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-160/40	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-200/55	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-200/75	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-250/110A	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-250/110	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 40-250/150	OH1	80 X 65	-	-	OH1	100 X 65	-	-
SHF 50-125/22	OH2	100 X 65	-	-	OH2	125 X 65	-	-
SHF 50-125/30	OH2	100 X 65	-	-	OH2	125 X 65	-	-
SHF 50-125/40	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-160/55	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-160/75	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-200/110A	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-200/110	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-250/150	OH2	100 X 65	-	-	OH2	125 X 65	-	-
SHF 50-250/185	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 50-250/220	OH3	125 X 65	OH2	100 X 65	OH3	150 X 65	OH2	125 X 65
SHF 65-160/40	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-160/55	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-160/75	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-160/110A	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-160/110	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-200/150	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-200/185	OH3	125 X 80	-	-	OH3	150 X 80	-	-
SHF 65-200/220	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
SHF 65-250/300	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
SHF 65-250/370	OH4	150 X 80	OH3	125 X 80	OH4	200 X 80	OH3	150 X 80
SHF 80-160/110	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-160/150	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-160/185	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-200/220	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-200/300	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-200/370	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-250/450	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-250/550	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100
SHF 80-250/750	HH1	200 X 100	OH4	150 X 100	HH1	200 X 100	OH4	200 X 100

* For the risk classes refer to para 6, UNI EN12845.

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- the pumps must be chosen according to the performance levels indicated in Tab. 6 para 7.3.1, Tab. 7 para 7.3.2 and the classes of risk.
- some pump models can satisfy the conditions of one or more classes of risk.
- always check the correct selection of the pump depending on the performance level of the set.

** Insert the 50mm minimal thickness under the GEN10 fire-fighting booster sets only.

ALARMS CONTROL ELECTRICAL PANEL

Electric panel for remote status and alarm monitoring of one or two Lowara pumps installed in GEN fire-fighting booster sets, according to EN12845.

In the electric service pump mode, the following conditions are visualised:

- Motor powered.
- Pump start-up request.
- Pump running
- Failure to start.

Additionally: minimum suction tank level, minimum priming tank level, on-off valve on suction and discharge side not fully open. The valves are complete with status monitor.

In the diesel engine service pump mode, the following conditions are visualised, as required by EN12845:

- Switch on diesel engine pump control panel in non-automatic position.
- Diesel engine ails to start after 6 attempts.
- Pump running
- Controller fault.

Additionally: minimum fuel or suction tank level, minimum priming tank level, on-off valve on suction and discharge side not fully open. The valves are complete with status monitor.

All the above conditions, required by EN12845, are visualised with signal LED's and buzzers. A buzzer alarm reset button and LED tester button are included.

The control unit is also fitted out to signal the following general alarms, if present:

- General alarm for incorrect electrical connection in the exchange contacts of: flow meter circuit valve, discharge pump, jockey pump status.
- Fault in electrical connection in the exchange contact relative to panel 1 (electric pump/diesel engine pump)
- Fault in electrical connection in the exchange contact relative to panel 2 (electric pump/diesel engine pump)
- Jockey pump overload (*).
- Jockey pump running(*)
- Discharge pump overload (*).
- Battery voltage low.
- Communications failure with ModBus system.

All the above conditions are visualised with signal LED's and on the display. The customer may decide to enable the buzzer.

The panel comprises a plastic casing (IP55), battery, battery charger, alarms and pump status display, if connected with 485 serial communication.

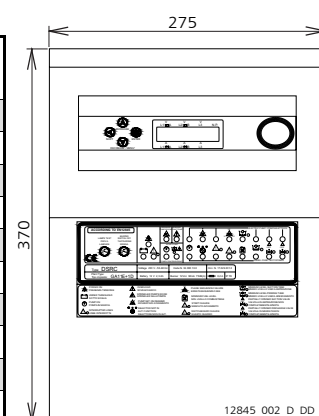
Fitted to transmit alarms for GSM or PC module.

The electric connection between the contacts on the electric alarms control panel and other electric panels is to be seen to by the person installing the equipment.

(*) Check that the electric control panel combined with the electric pump is complete with clean contacts for pump running and overload signals.

TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input voltage (single-phase)	(1F+N) 230V +/-10%, 50-60 Hz
Absorbed	0,1A
Dimensions	370 x 275 x 160 mm
Protection grade	IP55
Battery	Hermetic lead
Rated battery voltage	12 Vcc
Rated battery capacity	2,3 Ah (uncharged in 20 h)
Dimensions of battery	178 x 34 x 66 mm
Sound emission levels	75dB
Control panel weight	1,5kg



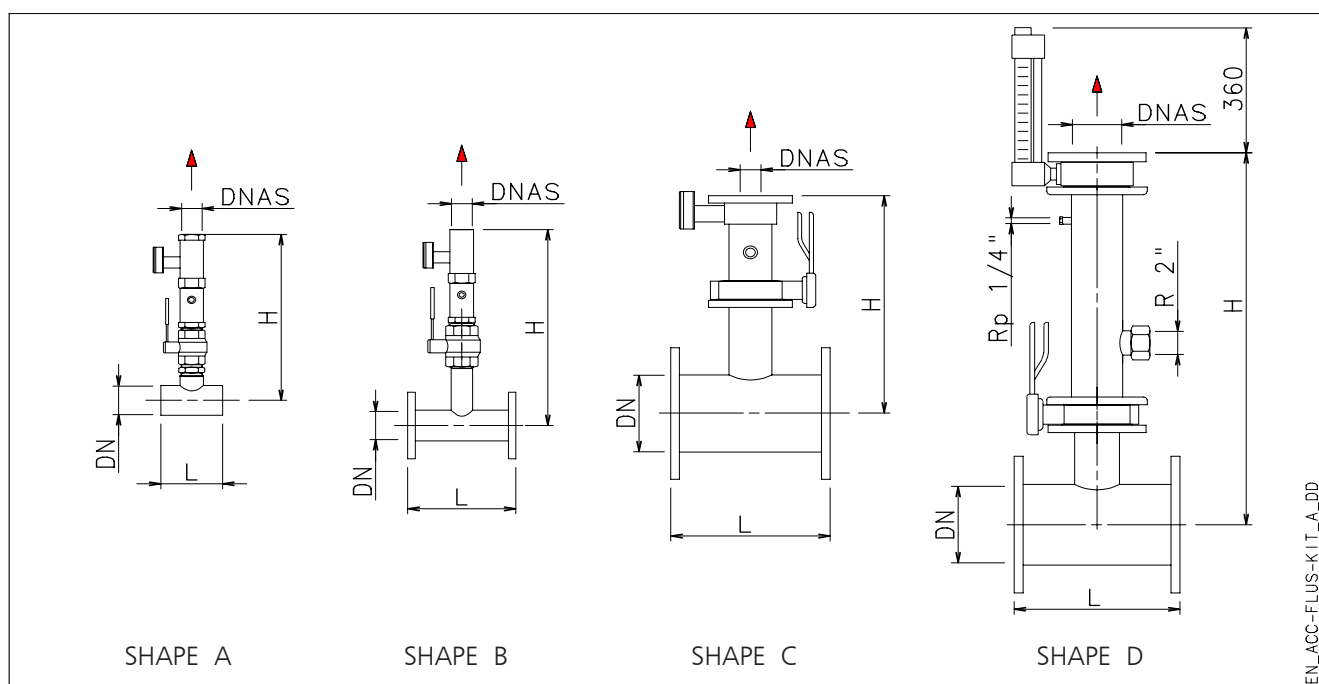
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FLOW METER KIT

The flow meter is supplied as part of the assembly kit. The EN 12845 standard requires the presence of the flow meter for checking the hydraulic performance during the test stage and duration periodic inspections. The suction side kit are equipped with:

- Direct reading flow meter.
- On/off ball valve for diameters up to 2" inclusive, butterfly valve with lever handle from DN65 to DN100 diameter, butterfly valve with handwheel and reduction manual gear for DN125 diameter and above. Device for monitoring ON/OFF status included. Electrical connections by customer. (Valve lock kit available on request).
- Connection piping.

The meter is available in various sizes according to the flow of a service pump and suitable for being connected to the offtake of the head manifold. For a correct match, identify the type as shown in the set size tables. The flow meter must be installed, where possible, in a stretch of piping with a steady flow and sufficient back pressure at the discharge outlet. The assembly and the discharge piping towards the tank and discharge outlet are to be seen to by the person installing the equipment.



DIMENSIONS (mm)						DIMENSIONS (mm)					
TYPE	DN	DNAS	SHAPE	L	H	TYPE	DN	DNAS	SHAPE	L	H
32X25P	32	25	A	90	605	100X40P	100	40	B	300	760
32X32P	32	32	A	90	625	100X50P	100	50	B	300	750
32X40P	32	40	A	90	645	100X65P	100	65	C	340	410
40X25P	40	25	A	100	605	100X80P	100	80	C	340	410
40X32P	40	32	A	100	630	100X125	100	125	D	340	945
40X40P	40	40	A	100	645	125X50P	125	50	B	300	760
40X50P	40	50	A	100	640	125X65P	125	65	C	340	425
50X25P	50	25	A	105	610	125X80P	125	80	C	340	425
50X32P	50	32	A	105	635	125X125	125	125	D	340	755
50X40P	50	40	A	105	655	125X150	125	150	D	340	1085
50X50P	50	50	A	105	645	150X65P	150	65	C	380	435
65X25P	65	25	B	300	700	150X80P	150	80	C	380	440
65X32P	65	32	B	300	725	150X125	150	125	D	380	770
65X40P	65	40	B	300	740	150X150	150	150	D	380	900
65X50P	65	50	B	300	730	150X200	150	200	D	380	1380
65X65P	65	65	C	340	390	200X80P	200	80	C	380	465
65X80P	65	80	C	340	595	200X125	200	125	D	380	795
80X40P	80	40	B	300	745	200X150	200	150	D	380	925
80X50P	80	50	B	300	735	200X200	200	200	D	380	1170
80X65P	80	65	C	340	400	250X125	250	125	D	440	825
80X80P	80	80	C	340	400	250X150	250	150	D	440	950
80X125	80	125	D	340	910	250X200	250	200	D	440	1195



ITT

Lowara

TABLE OF COMBINATIONS FOR FLOW METER KIT AND FHF SERVICE PUMP SERIES

TYPE FHF..		COMBINATION FLOW METER KIT				TYPE FHF..		COMBINATION FLOW METER KIT			
ELECTRIC PUMP	PUMP	GEN..				ELECTRIC PUMP	PUMP	GEN..			
		10	11	20	21			10	11	20	21
32-125/07	32-125/D119	40X25P	40X25P	50X25P	50X25P	65-200/150	65-200/D187	80X80P	80X80P	100X80P	100X80P
32-125/11	32-125/D136	40X32P	40X32P	50X32P	50X32P	65-200/185	65-200/D198	80X80P	80X80P	100X80P	100X80P
32-160/15	32-160/D150	40X32P	40X32P	50X32P	50X32P	65-200/220	65-200/D210	80X80P	80X80P	100X80P	100X80P
32-160/22	32-160/D164	40X32P	40X32P	50X32P	50X32P	65-250/220	65-250/D220	80X80P	80X80P	100X80P	100X80P
32-200/30	32-200/D188	40X32P	40X32P	50X32P	50X32P	65-250/300	65-250/D241	80X80P	80X80P	100X80P	100X80P
32-200/40	32-200/D204	40X32P	40X32P	50X32P	50X32P	65-250/370	65-250/D258	80X80P	80X80P	100X80P	100X80P
40-125/11	40-125/D112	65X40P	65X40P	65X40P	65X40P	80-160/150	80-160/D163	100X80P	100X80P	125X80P	125X80P
40-125/15	40-125/D122	65X40P	65X40P	65X40P	65X40P	80-160/185	80-160/D173	100X125	100X125	125X125	125X125
40-125/22	40-125/D143	65X50P	65X50P	65X50P	65X50P	80-200/220	80-200/D189	100X80P	100X80P	125X80P	125X80P
40-160/30	40-160/D159	65X40P	65X40P	65X40P	65X40P	80-200/300	80-200/D207	100X125	100X125	125X125	125X125
40-160/40	40-160/D171	65X50P	65X50P	65X50P	65X50P	80-250/370	80-250/D225	100X80P	100X80P	125X80P	125X80P
40-200/55	40-200/D190	65X40P	65X40P	65X40P	65X40P	80-250/450	80-250/D238	100X125	100X125	125X125	125X125
40-200/75	40-200/D209	65X50P	65X50P	65X50P	65X50P	80-250/550	80-250/D256	100X125	100X125	125X125	125X125
40-250/110A	40-250/D218	65X50P	65X50P	65X50P	65X50P	100-160/185	100-160/D150	125X125	125X125	150X125	150X125
40-250/110	40-250/D233	65X50P	65X50P	65X50P	65X50P	100-160/220	100-160/D165	125X125	125X125	150X125	150X125
40-250/150	40-250/D251	65X50P	65X50P	65X50P	65X50P	100-160/300	100-160/D185	125X150	125X150	200X150	200X150
50-125/22	50-125/D119	65X50P	65X50P	80X50P	80X50P	100-200/185	100-200/D168	125X125	125X125	150X125	150X125
50-125/30	50-125/D130	65X65P	65X65P	80X65P	80X65P	100-200/300	100-200/D192	125X125	125X125	150X125	150X125
50-125/40	50-125/D139	65X65P	65X65P	80X65P	80X65P	100-200/370	100-200/D203	125X125	125X125	150X125	150X125
50-160/55	50-160/D158	65X65P	65X65P	80X65P	80X65P	100-200/450	100-200/D213	125X125	125X125	200X125	200X125
50-160/75	50-160/D174	65X65P	65X65P	80X65P	80X65P	100-250/300	100-250/D200	125X125	125X125	150X125	150X125
50-200/110A	50-200/D197	65X65P	65X65P	80X65P	80X65P	100-250/450	100-250/D221	125X125	125X125	200X125	200X125
50-200/110	50-200/D209	65X65P	65X65P	80X65P	80X65P	100-250/550	100-250/D235	125X125	125X125	200X125	200X125
50-250/150	50-250/D224	65X65P	65X65P	80X65P	80X65P	100-250/750	100-250/D254	125X150	125X150	200X150	200X150
50-250/185	50-250/D237	65X65P	65X65P	80X65P	80X65P	100-250/900	100-250/D267	125X150	125X150	200X150	200X150
50-250/220	50-250/D250	65X65P	65X65P	80X65P	80X65P	125-200/300	125-200/D180	150X150	150X150	200X150	200X150
65-125/40	65-125/D121	80X65P	80X65P	100X65P	100X65P	125-200/450	125-200/D206	150X200	150X200	200X200	200X200
65-125/55	65-125/D129	80X65P	80X65P	100X65P	100X65P	125-200/550	125-200/D216	150X200	150X200	200X200	200X200
65-125/75	65-125/D140	80X65P	80X65P	100X65P	100X65P	125-270/750	125-270/D224	150X200	150X200	250X200	250X200
65-160/110A	65-160/D161	80X80P	80X80P	100X80P	100X80P	125-270/900	125-270/D237	150X200	150X200	250X200	250X200
65-160/110	65-160/D168	80X80P	80X80P	100X80P	100X80P	125-270/1100	125-270/D253	150X200	150X200	250X200	250X200
65-160/150	65-160/D178	80X80P	80X80P	100X80P	100X80P	125-270/1320	125-270/D266	150X200	150X200	250X200	250X200

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ITT

Lowara

TABLE OF COMBINATIONS FOR FLOW METER KIT AND SHF SERVICE PUMP SERIES

TYPE SHF..		COMBINATION FLOW METER KIT				TYPE SHF..		COMBINATION FLOW METER KIT			
ELECTRIC PUMP	PUMP	GEN..				ELECTRIC PUMP	PUMP	GEN..			
		10	11	20	21			10	11	20	21
32-125/07	32-125/D121	40X32P	40X32P	50X32P	50X32P	50-200/110A	50-200/D197	65X65P	65X65P	80X65P	80X65P
32-125/11	32-125/D136	40X32P	40X32P	50X32P	50X32P	50-200/110	50-200/D209	65X65P	65X65P	80X65P	80X65P
32-160/15	32-160/D150	40X32P	40X32P	50X32P	50X32P	50-250/150	50-250/D224	65X65P	65X65P	80X65P	80X65P
32-160/22	32-160/D168	40X32P	40X32P	50X32P	50X32P	50-250/185	50-250/D237	65X65P	65X65P	80X65P	80X65P
32-200/30	32-200/D188	40X32P	40X32P	50X32P	50X32P	50-250/220	50-250/D250	65X65P	65X65P	80X65P	80X65P
32-200/40	32-200/D204	40X32P	40X32P	50X32P	50X32P	65-160/40	65-160/D119	80X65P	80X65P	100X65P	100X65P
32-250/55	32-250/D222	40X32P	40X32P	50X32P	50X32P	65-160/55	65-160/D129	80X65P	80X65P	100X65P	100X65P
32-250/75	32-250/D242	40X32P	40X32P	50X32P	50X32P	65-160/75	65-160/D137	80X65P	80X65P	100X65P	100X65P
32-250/110	32-250/D256	40X32P	40X32P	50X32P	50X32P	65-160/110A	65-160/D168	80X65P	80X65P	100X65P	100X65P
40-125/11	40-125/D112	65X40P	65X40P	65X40P	65X40P	65-160/110	65-160/D177	80X65P	80X65P	100X65P	100X65P
40-125/15	40-125/D126	65X40P	65X40P	65X40P	65X40P	65-200/150	65-200/D192	80X65P	80X65P	100X65P	100X65P
40-125/22	40-125/D143	65X40P	65X40P	65X40P	65X40P	65-200/185	65-200/D203	80X65P	80X65P	100X65P	100X65P
40-160/30	40-160/D159	65X40P	65X40P	65X40P	65X40P	65-200/220	65-200/D215	80X80P	80X80P	100X80P	100X80P
40-160/40	40-160/D171	65X50P	65X50P	65X50P	65X50P	65-250/300	65-250/D240	80X80P	80X80P	100X80P	100X80P
40-200/55	40-200/D190	65X50P	65X50P	65X50P	65X50P	65-250/370	65-250/D255	80X80P	80X80P	100X80P	100X80P
40-200/75	40-200/D209	65X50P	65X50P	65X50P	65X50P	80-160/110	80-160/D169	100X80P	100X80P	125X80P	125X80P
40-250/110A	40-250/D218	65X40P	65X40P	65X40P	65X40P	80-160/150	80-160/D177	100X80P	100X80P	125X80P	125X80P
40-250/110	40-250/D233	65X40P	65X40P	65X40P	65X40P	80-160/185	80-160/D186	100X125	100X125	125X125	125X125
40-250/150	40-250/D251	65X50P	65X50P	65X50P	65X50P	80-200/220	80-200/D198	100X125	100X125	125X125	125X125
50-125/22	50-125/D119	65X50P	65X50P	80X50P	80X50P	80-200/300	80-200/D215	100X125	100X125	125X125	125X125
50-125/30	50-125/D130	65X65P	65X65P	80X65P	80X65P	80-200/370	80-200/D226	100X125	100X125	125X125	125X125
50-125/40	50-125/D139	65X65P	65X65P	80X65P	80X65P	80-250/450	80-250/D237	100X125	100X125	125X125	125X125
50-160/55	50-160/D158	65X65P	65X65P	80X65P	80X65P	80-250/550	80-250/D252	100X125	100X125	125X125	125X125
50-160/75	50-160/D174	65X65P	65X65P	80X65P	80X65P	80-250/750	80-250/D270	100X125	100X125	125X125	125X125

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PRIMING TANK

The priming tank is used in suction lift installations and carries out the function of maintaining the pump body and suction pipe full of water even if there are leaks through the bottom valve.

Each pump must have its own independent priming tank, placed at a higher level than the pump. The tank must be connected to a water source for adding water and keeping it full. The diameter of the connecting pipe to the pump depends on the use class. The return piping for re-circulation can be connected to the tank, which must also provide for discharge if it is too full.

A level indicator automatically actions the service pump if the level of the tank drops and is not reintegrated.

The hydraulic connections must be seen to by the person installing the equipment.

The horizontal 500 l tank is made of zinc-plated steel.

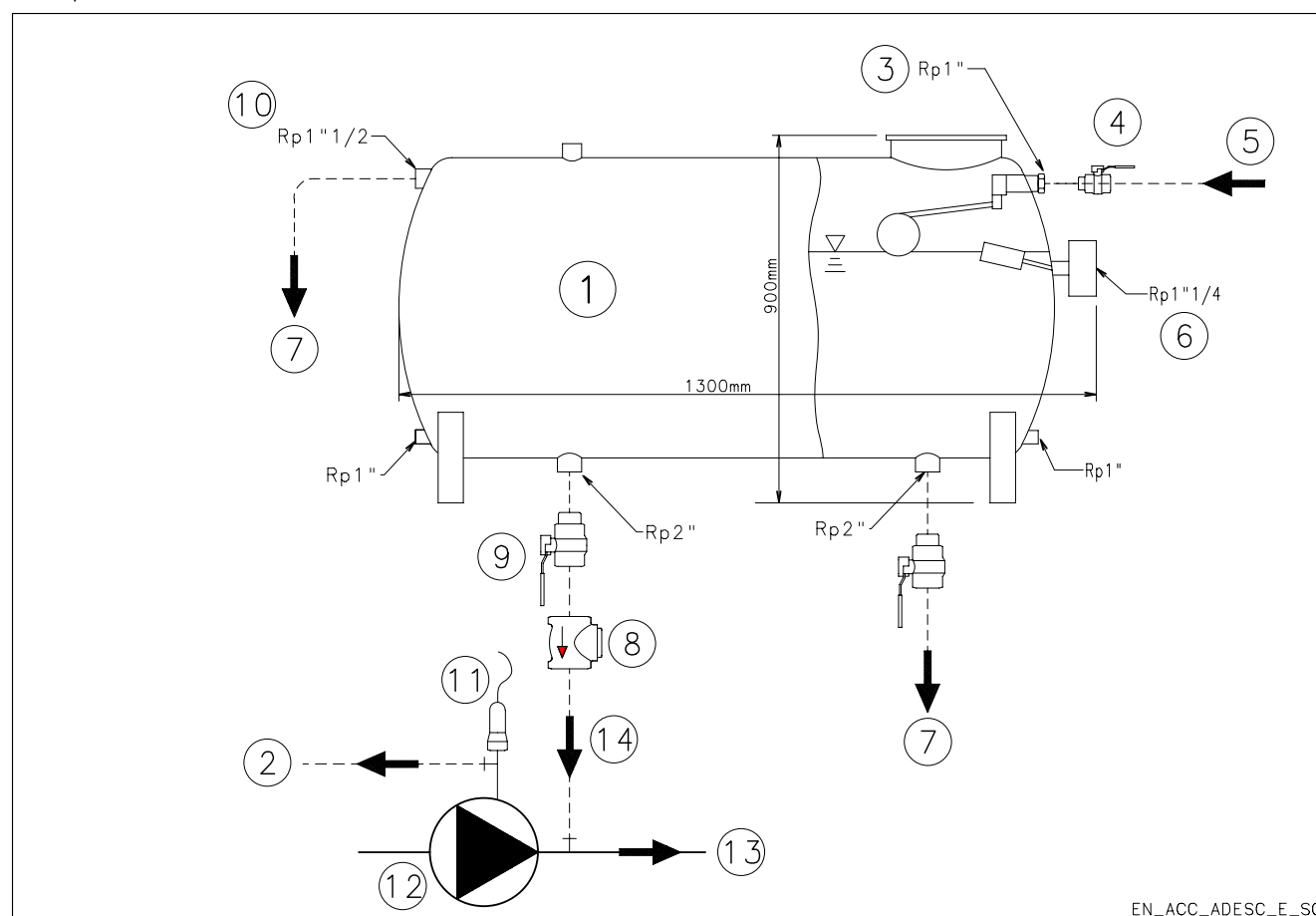
ACCESSORIES PRIMING TANK KIT

The available accessories kit includes:

- Filling and discharge valves, reductions, non-return valve, closing plugs and automatic air discharger.
- Float switch tap complete with ring nut for fixing to the hole through the tank.
- Level indicator to connect to the electric panel and assembly instruction sheet.

Available on request tank support, height 75, 100, 150, 200 cm.

Example of connection to the tank and accessories:



EN_ACC_ADESC_E_SC

N°	DESCRIPTION	N°	DESCRIPTION
1	Pump priming tank	8	Priming supply non return valve
2	Pipe return from pump delivery side	9	Priming supply on-off valve
3	Floating valve	10	Over flow
4	In flow on-off valve	11	Pressure switch
5	In flow	12	Pump
6	Low level switch	13	To trunk main
7	Drain	14	Pipe connection to delivery side of the pump

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ELECTRIC JOCKEY PUMP KIT

The jockey pump or compensation pump has the job of keeping the system under pressure and compensating for any small loses without the intervention of the service pumps. In fact, the jockey pump is commanded by an automatic shut-off panel. Should an electric jockey pump of a different size from the standard be required or should it be installed later on sets which are not predisposed, or should non-standard different size requirements be required, it is possible to configure the booster set with just the service pumps and add the electric jockey pump, also later on.

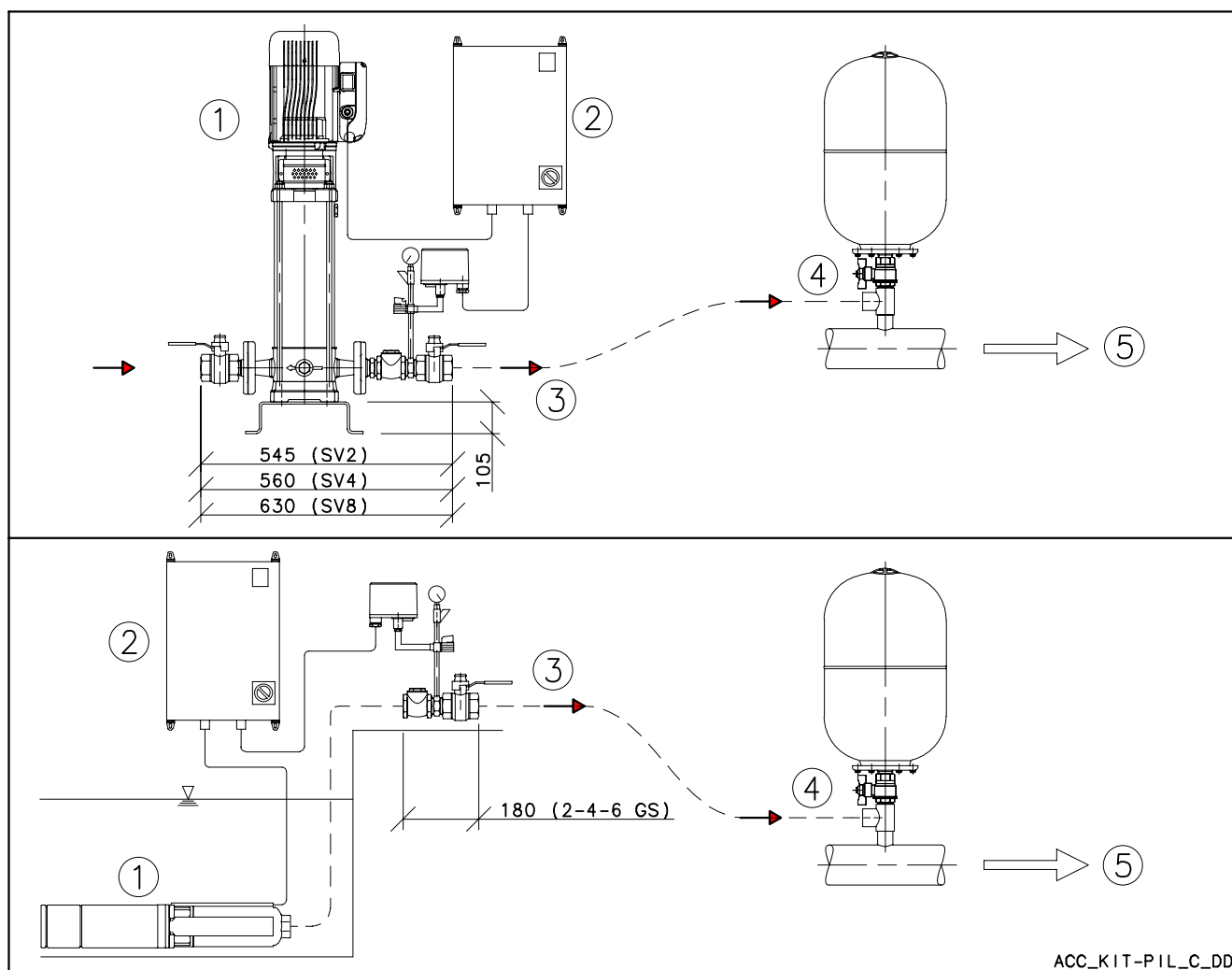
The kit includes:

- the hydraulic components for installing the electric pump (base, valves, pressure switch).
- the pre-chosen electric pump and the relative electric panel.

The hydraulic connection to the set can be easily carried out using one of the couplings on the delivery manifold for the membrane tanks using an adaptor.

Kits are available for the vertical electric jockey pumps SV2, SV4, SV8 series and submersed series 2GS, 4GS, 6GS.

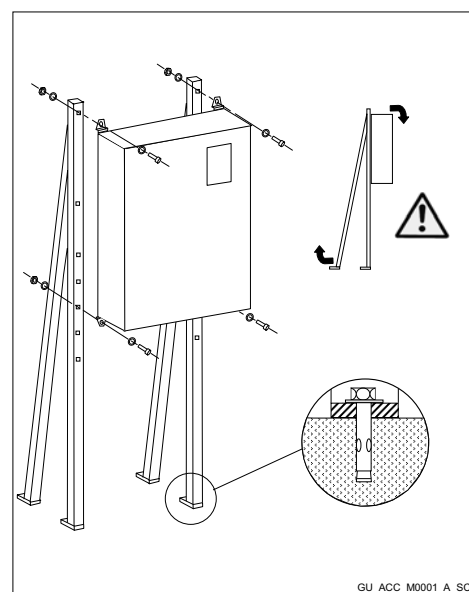
The diagram illustrates some connection examples:



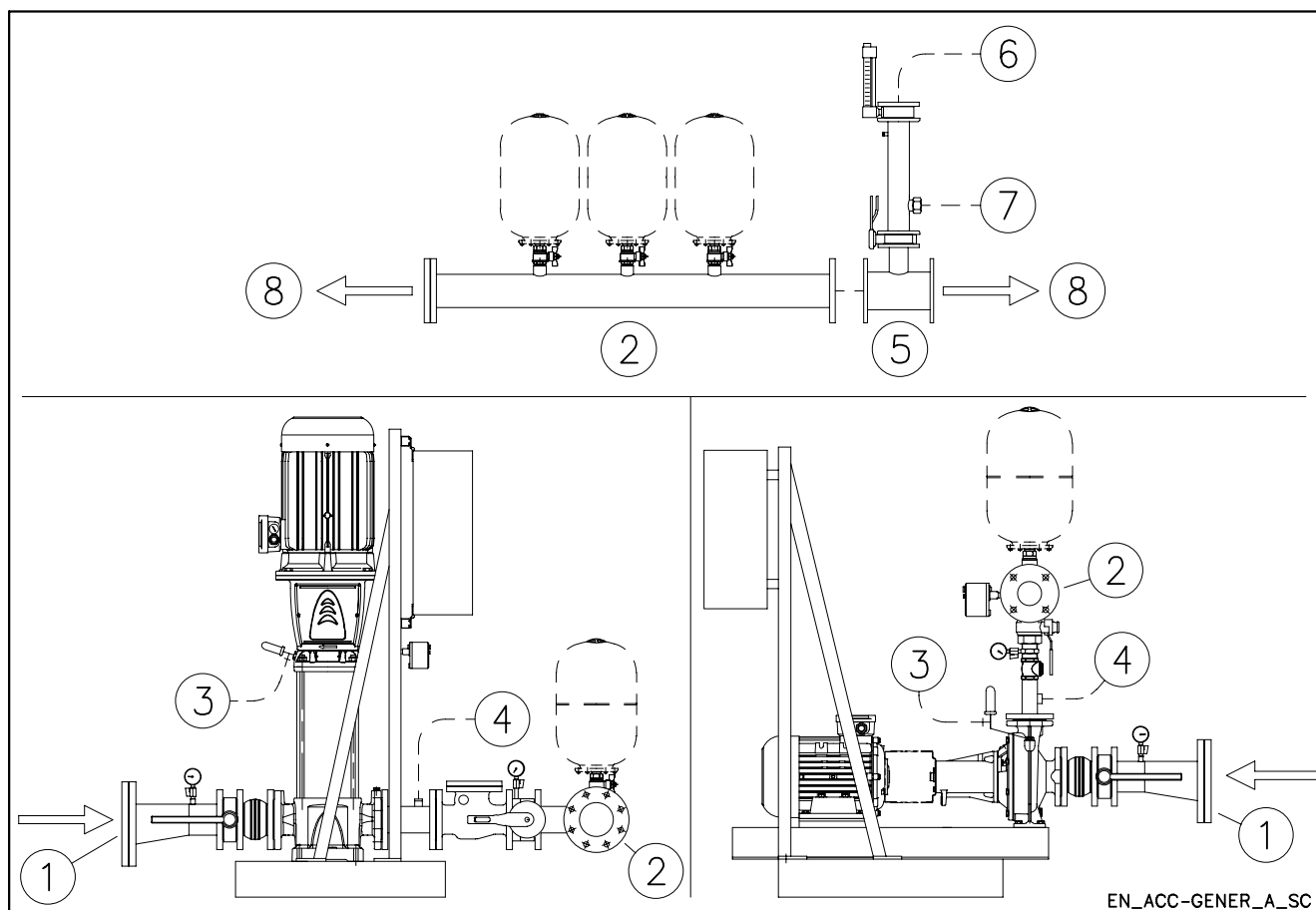
N°	DESCRIPTION
1	Electric pump
2	Control Box
3	Connection to trunk main
4	Pipe connection to delivery side of the jockey pump
5	To trunk main

PANEL BRACKET KIT

The electric command panels supplied separately, for example in the sets with submersed pumps, are suitable for being mounted on the wall. Universal bracket kit are available, upon request, for supporting the panels; it must be fixed to the floor using blocks.



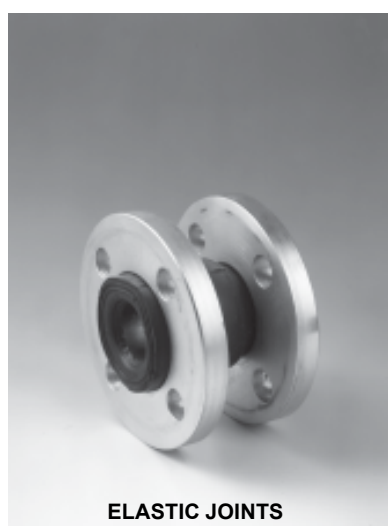
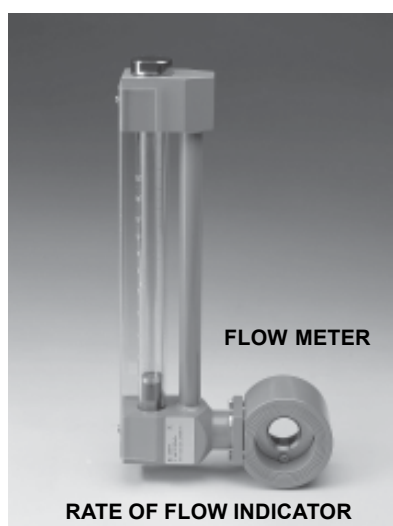
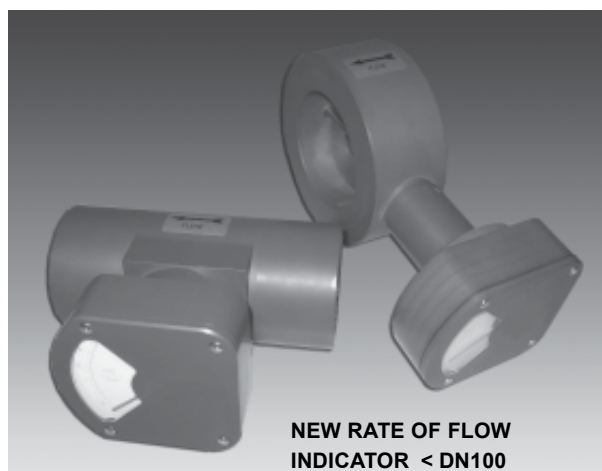
HYDRAULIC CONNECTION FOR FIRE-FIGHTING EN 12845 SETS



N°	DESCRIPTION	N°	DESCRIPTION
1	Suction piping kit *	5	Flow meter kit *
2	Delivery manifold	6	Drain
3	Drain	7	Open discharge
4	From priming tank *	8	To trunk main

* See the instruction sheets.

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PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Description – EN 12845 fire-fighting booster set

Series : GEN

**Model: electric service pump
jockey or compensation pump**

The pump station will comprise the following components:

- N°1 electric jockey pump;
- N°1 electric service pump;
- One electrical power and control panel for the electric service pump;
- One electrical power and control panel for the electric jockey pump;
- Components and materials required for perfect operation and assembly;

ITT Lowara booster sets are CE-certified and comply with the following directives:

- **Machinery Directive 98/37/EC.**
- **Low Voltage Directive 2006/95/EC.**
- **Electromagnetic Compatibility Directive 89/336/EEC as amended.**
 - **The hydraulic pump complies with the following standard:**
- **ISO 9906-A Rotodynamic pumps – hydraulic performance acceptance tests.**
 - **The fire-fighting booster set complies with European standard EN 12845-2009 :
Fixed fire-fighting installations
Automatic sprinkler systems, design, installation and maintenance.**
 - **Version with automatic switch-off according to UNI 10779 “Hydrant systems”
design, installation and operating.**

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Basic version with periodic auto-test, Series GEN..A.

Electronic auto-test circuit with weekly programmer in the electrical panel of the service pump. The pump is turned on and kept working for a minute at the previously established time and date.

During this interval the check circuit checks that the pressure in the re-circulation circuit closes the pressure switch contact of the pump which is running. In the case of irregularities, the relative auxiliary self-test alarm relay available for remote signalling is activated and memorised.

The EN 12845 Standard does not provide for the presence of a self-test circuit but asks for periodic checks to be carried out by the user, hence the periodic self-test function cannot substitute the above checks.

For the precalculated HHP and HHS risk class systems and in the integrally calculated systems, the pump must be able to provide, at 140% of rated capacity, a pressure of not less than 70% of the rated pressure of the pump.

Each pump generally backs up the other even if much depends on the chosen type of water supply. If the service pump fails, or a blackout occurs, system pressure will decrease and the backup diesel pump will start. The pumps are started automatically by the pressure switches while they are manually stopped from the electrical panel (key switch).

➤ **Fire-fighting set components: electric pump**

Electric service pump comprising:

"End-suction" horizontal centrifugal pump, model **FHF**....., single impeller, with cast iron body and AISI316L stainless steel shaft. End suction and radial discharge ports. Impeller in AISI316L stainless steel or cast iron. Hydraulic sizes and nominal diameter DN of suction and discharge ports according to EN 733 (ex DIN 24255).

Flanging to EN 1092-2 (formerly UNI2236) and DIN2532. Maximum running pressure: 12 bar. Mechanical seal according to EN12756 (formerly DIN 24960) in Ceramic/Carbon/NBR lubricated with recirculation duct between discharge and seal housing.

The pump is directly coupled to the respective motor with an elastic spacer joint ("back pull out" version) and alignment and anchor base.

B3 three-phase electric motor with short circuit squirrel cage, totally enclosed, fan-cooled. The performance levels of the electric motors lie within what is usually referred to as efficiency class 1. Protected to IP55, insulation class F.

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Main characteristics of the electric service pump:

Brand	ITT LOWARA	
Model:	FHF	
Flow rate		m ³ /h
Head:		m.c.a.
Pump body:	Cast iron, EN 1561-GJL-200 (JL1030)	
Seal housing:	Cast iron, EN 1561-GJL-200 (JL1030)	
Impeller:	Cast iron, EN 1561-GJL-200 (JL1030)	
Shaft:	Stainless steel EN10088-1-X2 CrNiMo17-12-2	
Elastomers:	NBR	
Mechanical seal:	Ceramic/Carbon/NBR	
Motor power:		Kw
Input voltage:	400 / 3	V
Frequency:	50	Hz
Rated current input:		A
Speed of rotation:	2900	r.p.m.
Max. ambient temp:	40	°C
Protection class:	IP 55	
Insulation class:	F	

tec_FHF-en_a_tm

Electric jockey pump comprising:

Multi-cell vertical centrifugal Jockey pump, **SV**..... with metal parts in contact with liquid in stainless steel, pump body and shaft in AISI 304 stainless steel, impeller in AISI 304 stainless steel, mechanical seal in Carburundum/ carbon/EPDM.

Three-phase electric motor, shape B14, performance values within what is referred to as efficiency class 2, short circuit squirrel cage motor, closed aluminium casing and external ventilation, performance according to EN 60034-1, directly coupled to the vertical pump. Protected to IP55, insulation class F.

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Main technical characteristics of the jockey pump:

Brand:	ITT LOWARA	
Model:	SV.....	
Flow rate:		m ³ /h
Head:		m.c.a.
Pump body:	Stainless steel (1.4301)	
Impeller:	Stainless steel (1.4301)	
Diffuser:	Stainless steel (1.4301)	
Shaft:	Stainless steel (1.4301)	
Outer sleeve:	Stainless steel (1.4301)	
Mechanical seal:	Silicon carbide/Carbon/EPDM	
Motor power:		Kw
Input voltage:	400 / 3	V
Frequency:	50	Hz
Rated current:		A
Speed:	2900	r.p.m.
Max. ambient temp.:	40	°C
Protection class:	IP - 55	
Insulation class:	F	

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➤ Electric panels

Electric service pump panel

Painted metal casing (IP54) complete with:

- General door-locking switch.
- Analogical ammeter.
- "MAN – AUT – 0" selector with extractable key only in automatic position.
- Keyboard for indicating electric voltage presence, correct phase sequence (three phase power supply), start-up request, pump functioning and no start-up, through LED lamps, lamp test button and starting and stopping buttons, according to the provisions of EN12845 paragraph 10.8.6.

Inside:

- 12/24V transformer for auxiliary circuits and electronic board.
- Fuse holder and fuses for power and auxiliary circuits.

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

- Line contact maker (direct start-up), line and star/delta contact makers (star/delta start-up), line contact makers and reactance switching (impedance start-up).
- Star/delta exchanger timer or reactance switching.
- Relay for signalling no phase.
- Auxiliary relays.
- Current transformer.
- Terminal boards.
- Clean contacts (max 24V, 1A) for activating acoustic/ visual alarms for no phase, pump on demand, pump running and start failure.
- Cable glands (excluding the versions to be fixed to the floor).
- Wiring diagram.

Jockey pump electrical panel

Painted metal casing (IP55) complete with:

- General door-locking switch.
- Visual indicators for line, running, thermal shutdown.
- Manual – automatic selector – excluded.

Inside:

- Transformer for auxiliary circuits at 24 V.
- Fuse holder and fuses for power and auxiliary circuits.
- Line contact maker.
- Overload cut-out switch.
- Pump shut-off timer (0 ÷ 90 s).
- Terminal boards.
- Cable glands.
- Wiring diagram.

Suitable for connecting to a float switch or a minimum pressure switch for preventing dry running. An optional level control module (supplied upon request) allows the connection of probes with the possibility of regulating the sensitivity according to the hardness of the water.

Series of clean contacts for checking the status of the electric service pump panel, as well as the contacts already provided for signalling alarms (on request):

- No phase.
- Motor running..
- Selector position Man-Aut-0.
- Failure to start.
- Start-up request.

Series of clean contacts for checking the status of the electric jockey pump (on request)

- Pump running.
- Thermal shutdown (overload).
- No water.

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Electrical alarms panel

Plastic casing protected to IP55 with an electronic board at the front for the visual and acoustic signalling of the status of one or two service pumps. The following alarms are signalled :

Electric pump

- Power off.
- Start-up request.
- Pump running.
- No start-up.

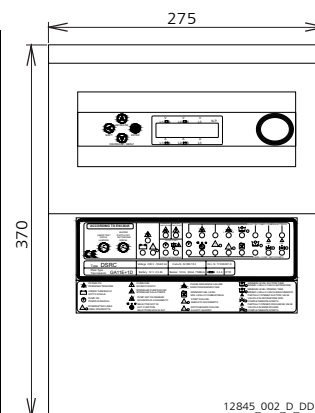
The electric panel is fitted with a buzzer with reset button, signal LED test button, battery charger and battery and is fitted out to signal the following general alarms, if present:

- General alarm for incorrect electrical connection in the exchange contacts of:
status of flow measurement circuit valve, drain pump, jockey pump.
- Fault in electrical connection in the exchange contact relative to panel 1 (electric pump/diesel engine pump).
- Fault in electrical connection in the exchange contact relative to panel 2 (electric pump/diesel engine pump).
- Jockey pump overload.
- Jockey pump running.
- Discharge pump overload.
- Battery voltage low.
- Communications failure with ModBus system.

GSM modem system status transmission module and RS232/485 converter module available on request.

TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input voltage (single-phase)	(1F+N) 230V +/-10%, 50-60 Hz
Absorbed	0,1A
Dimensions	370 x 275 x 160 mm
Protection grade	IP55
Battery	Hermetic lead
Rated battery voltage	12 Vcc
Rated battery capacity	2,3 Ah (uncharged in 20 h)
Dimensions of battery	178 x 34 x 66 mm
Sound emission levels	75dB
Control panel weight	1,5kg



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➤ Control instruments and hydraulic accessories

The main components of the sets are:

- On/off valves on the delivery side of each pump, ball valves with lever handle for diameters up to 1 1/4" inclusive, butterfly valve with lever handle from DN65 to DN100 diameter, butterfly valve with handwheel and reduction manual gear for DN125 diameter and above.
- Re-circulation device for each service pump.

The re-circulation device allows a minimum capacity in order to prevent the pump overheating when working with closed delivery. It includes the activation pressure switch for the alarms of the pumps running, the test valve for checking the seal of the check valves, the couplings for any connecting pipes to the priming tank in the case of suction lift installation. The connection of each re-circulation to the suction tank or the priming tank is to be seen to by the person installing the equipment.

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

- Pressure gauge on the delivery side of each service pump between check valve and on/off valve.
- Check valve be inspected type, on the delivery side of each pump. Threaded connector up to and including a diameter of 1 1/4". Flanged connector for larger diameters.
- Painted iron delivery manifold (PN 16) and threaded stubs with relative caps for connecting any 24 litre membrane tanks. Blind and welding zinc-plated flanges.
- Two start-up pressure switches for every service pump.
For the electric service pumps, start-up takes place through the pressure switch, but it must be manually stopped using the key-operated selector switch on the panel (excluding the version with automatic shut-off).
For the electric jockey pump, if present, both start-up and stopping are determined by the pressure switch.
- Start-up pressure switch circuit for the service pump, including connecting pipes for the delivery manifold, recirculation circuit. This circuit includes on/off valve, a non-return valve, a discharge or test valve and various pipe fittings. The configuration of the circuit allows the pressure switch to intervene also when the relative on/off valve is closed.
- Various pipe fittings (copper, zinc-plated steel).
- Base made of bent sheet or structural iron with epoxy powder painting RAL 5010.
- Control panel frame made of structural iron with epoxy powder painting RAL 5010.

The control panels for the electric pumps up to 55 kW power supply are fixed on bracket. For higher powers, the control panels for electric pump service are floor mounted, instead the jockey electric pump panel is wall mounted fixed.

- Electric panel for each electric service pump.



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PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Flow meter

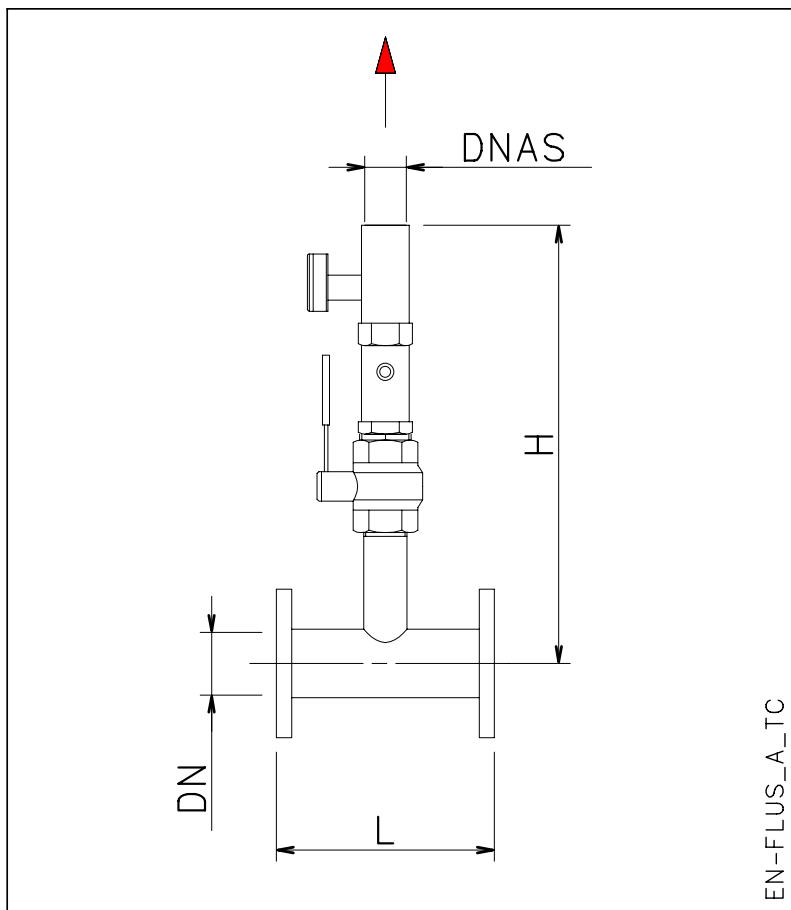
The flow meter is supplied as part of the assembly kit. The EN 12845 standard requires the presence of the flow meter for checking the hydraulic performance during the test stage and duration periodic inspections. The kit comprises:

- Direct reading flow meter.
- On/off ball valve for diameters up to 2" inclusive, butterfly valve with lever handle from DN65 to DN100 diameter, butterfly valve with handwheel and reduction manual gear for DN125 diameter and above.
- Straight plastic connection piping.

The flow meter is available in various sizes according to the flow of a service pump and suitable for being connected to the offtake of the head manifold. For a correct match, identify the type as shown in the set size tables.

The assembly and the discharge piping towards the tank and discharge outlet are to be seen to by the person installing the equipment.

The following illustration shows the type and size of flow meter:



Dimensions (mm):

DN =

DNAS =

L =

H =

Qmax (m³/h) =

PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

Diaphragm tanks

The booster sets are ready for installation, directly on the manifold, of 24-litre diaphragm tanks, one for each pump. The sets are also equipped with caps to close off the unused couplings. Larger tanks can also be connected to the unused end of the discharge manifold.

The kit is made up of the following accessories:

- Diaphragm tank;
- On-off ball valve;
- Instructions manual;
- Packaging.

Suction kit

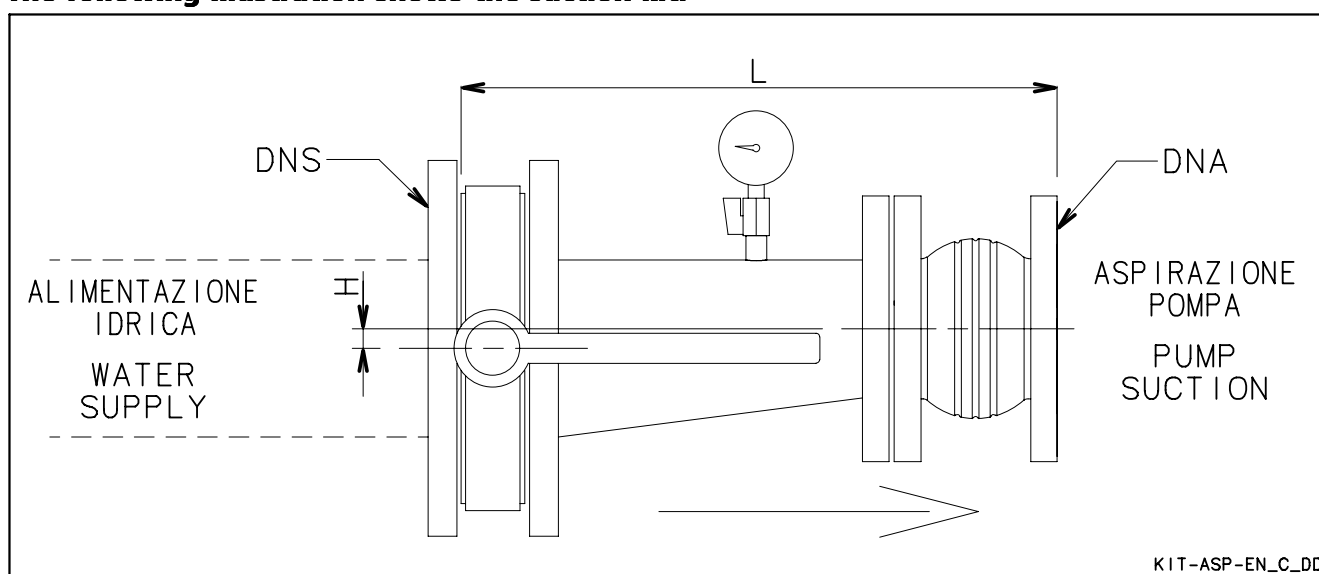
The EN 12845 fire-fighting booster sets are supplied without valves and stubs on the suction side of the service pump and can be completed with suitable kits that depend on legal standards.

These requirements are expressed by EN 12845 (chapter 10.5 and chapter 10.6) and are connected with the maximum speed value of the water in the pipes, their minimum section and type of installation - suction lift or positive suction head. To provide for one suction kit for each duty pump.

The kit comprises:

- Anti-vibration joint to attach to the pump inlet.
- On/off butterfly valve with lever handle for diameters up to DN100, butterfly valve with handwheel and reduction manual gear for DN125 and higher.
- Eccentric cone.
- Vacuum pressure gauge.
- Weld-on flange.

The following illustration shows the suction kit:



Dimensions (mm):

DNA =
DNS =

L =
H =



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PRODUCT DESCRIPTION BY TECHNICAL SPECIFICATIONS

- **The set is supplied already assembled, calibrated and factory tested. The set is supplied complete with an instruction manual, pump manuals and wiring diagrams for the panels. For the sets including floor panels, the electric panels are sent together with the set in a separate pack and supplied with 5-metre long connecting cables (longer lengths available on request). The fitter is responsible for preparing the routes and installing the cables.**

ITT Lowara part of ITT Corporation and headquarters of "Residential and Commercial Water - EMEA".

World leading in offering high reliable fluid handling solutions for Building Services, Irrigation and Industrial applications. We provide a complete range of high quality pumps, packaged systems and controls and are specialized in engineering and manufacturing stainless steel products.

ITT Lowara is headquartered in Vicenza, Italy and operates in more than 80 countries across the world with own plants in Italy, Austria, Poland and Hungary. The company has 1.300 employees and generated 2008 sales exceeding \$440 million. ITT Lowara is wholly owned by the ITT Corporation of White Plains, New York, and is the EMEA headquarter of ITT's Residential and Commercial Water division. ITT Corporation is a high-technology engineering and manufacturing company operating on all seven continents in three vital markets: water and fluids management, global defense and security, motion and flow control. ITT Corporation generated 2008 sales of \$11.7 billion

ITT RESIDENTIAL AND COMMERCIAL WATER DIVISION - EMEA

Headquarters

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

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

FRANCE
LOWARA FRANCE S.A.S.
BP 57311
37073 Tours Cedex 2
Tel. (+33) 02 47 88 17 17
Fax (+33) 02 47 88 17 00
e-mail: lowarafr.info@itt.com
<http://www.lowara.fr>

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

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

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

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

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

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

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

For additional addresses, please visit
www.lowara.com

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