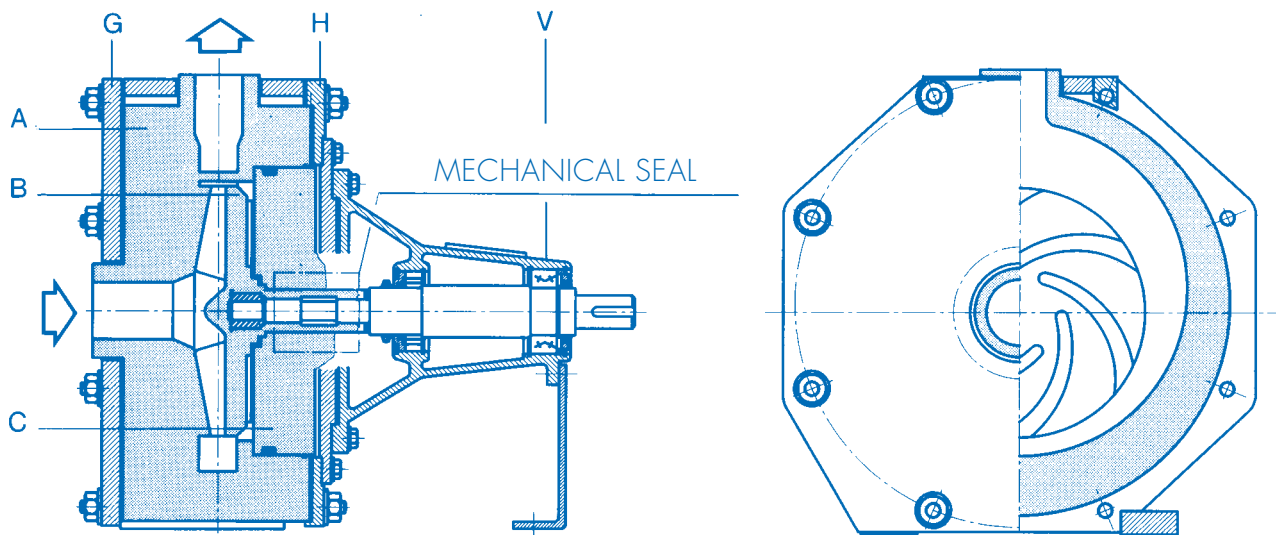


HORIZONTAL CENTRIFUGAL PUMPS

in **GRAPHILOR®**
(impervious graphite)
SERIES NH

Pumps to standards NF E 44121/DIN 24256/ISO 2858

Construction



Design

The NH series standard horizontal axis centrifugal pumps are of the "process" design type.

They comprise 2 assemblies :

- the first including the body (A) and its front flange (G) and rear flange (H).
- the second including the bearing-frame (V) fitted with the impeller (B) and the rear flange plate (C).

This design, and the fact that the coupling is fitted with a spacer part, allow easy dismantling of the second assembly to access the impeller (the first assembly remaining fixed to the baseplate and to the suction and discharge pipes). Under these conditions, it is no longer necessary to dismount and realign the motor.

The discharge orifice is located on the pump axis, making pipework connection and design particularly easy.

Pumps are fitted with open or closed impellers depending on the required flow rate characteristics and discharge head.

For open impellers, the correct clearance at the front (between impeller vanes and body) is obtained by adding or removing spacer washers.

The shaft is sealed by installing standard CARBONE LORRAINE "single" or "double" type seals (see diagram below). Other types of seals can also be supplied (see section "Options").

The bearing-frame is reinforced. It contains two bearings : roller on the pump side, and double row of oblique contact balls on the motor side.

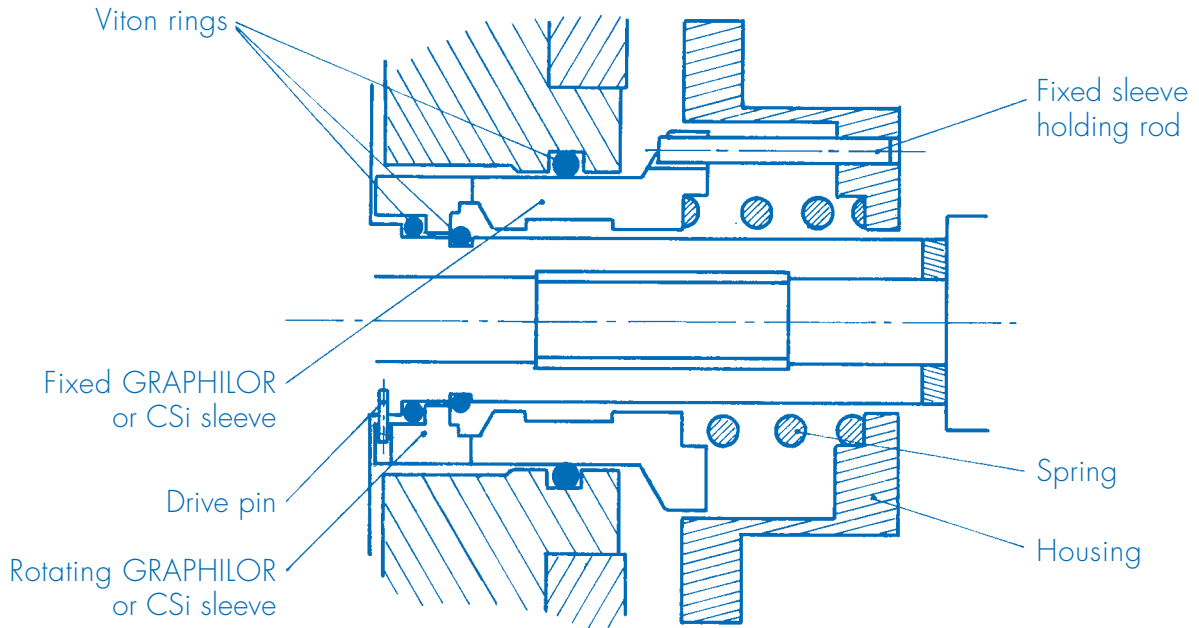
Bearing lubrication by grease allows up to 1 500 hours of operation without the addition of grease (except in the largest model which is oil lubricated).

The shaft has a slight offset which eliminates bending and vibration, thus enlarging the lifetime of the seal and the roller bearings.

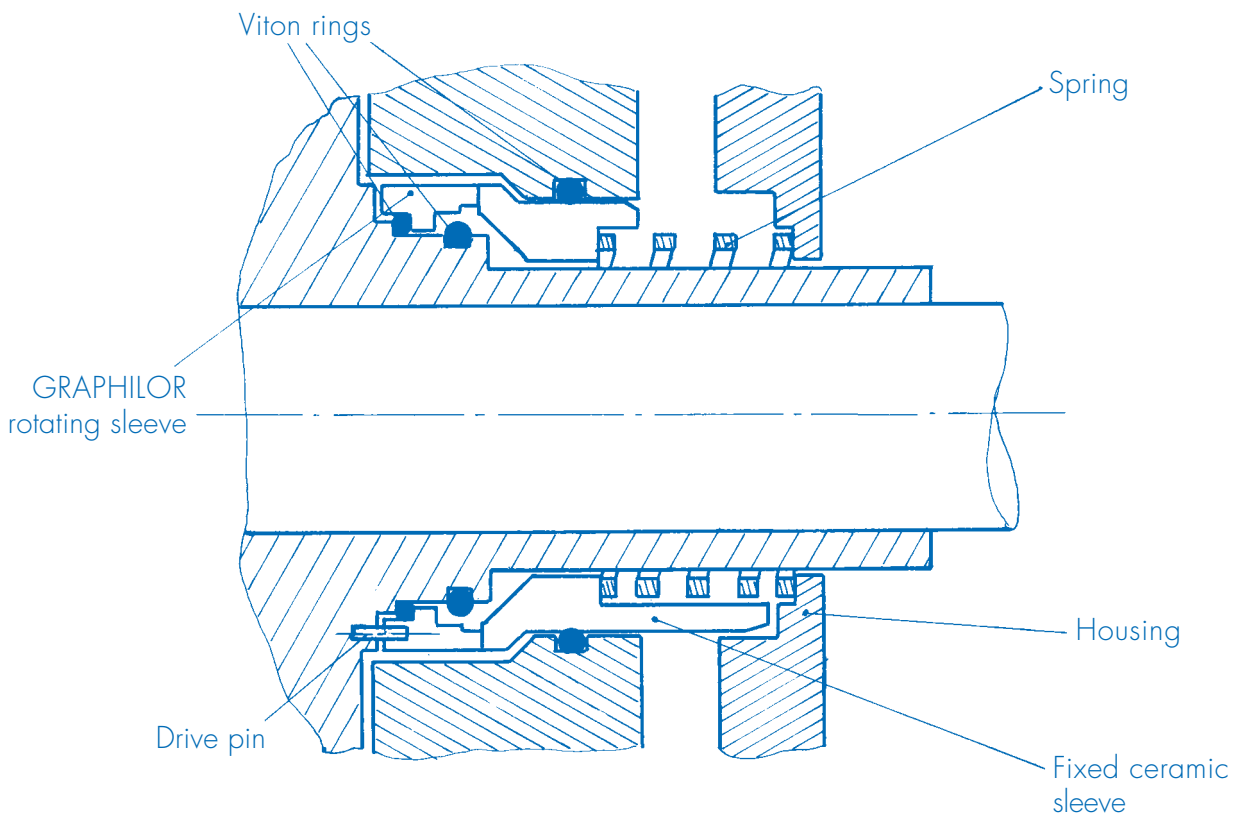
The shaft end is standardised to NF E 44121/DIN 24256/ISO 2858.

Single seals

- Carbon/Carbon or Silicon Carbide/Silicon Carbide
All pump types as indicated in the table on page 6 except NH 200-150-400

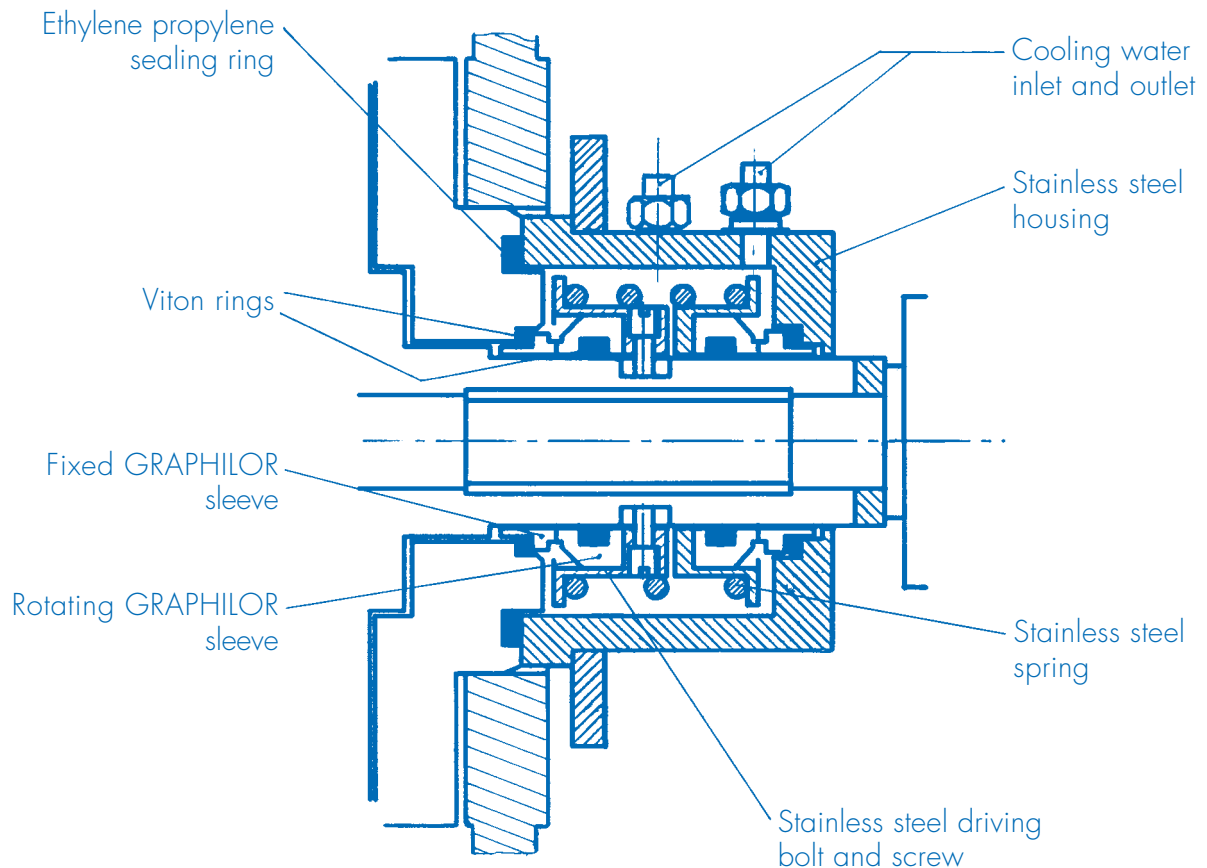


- Carbon/ceramic
Pump types NH 200-150-400



Double seals

- All pump types as shown in the table on page 6 except NH 125-80-400/125-100-400/150-125-250/150-125-315/150-125-400/200-150-400



- Pump types NH 125-80-400/125-100-400/150-125-250/150-125-315/150-125-400/200-150-400

There are no standard double seals for this types of pump, therefore call us for further information.

Materials

The impeller, body, rear end plate and fixed and rotating sleeves of the seal, the only parts in contact with the pumped fluid, are made of GRAPHILOR (**resistant to the most corrosive fluids**).

The bearing-frame is made of cast iron and the flanges are made of E 28-2 steel. All metal parts are protected by an anti-corrosion paint. Gaskets are made of asbestos free fibre, acid resistant grade, or of ethylene-propylene.

Operating conditions

- Maximum service temperature : 165°C.
- Maximum service pressure (design pressure) : 8 bars g.
- Corrosion resistance : see corrosion chart for GRAPHILOR reference GC5 (Column GRAPHILOR BS.)

Documents and certificates

- Installation, commissioning and maintenance leaflet (ref GCA 130).

This is systematically sent when equipment leaves our factory located at PAGNY-sur-MOSELLE, France.

It contains the following information :

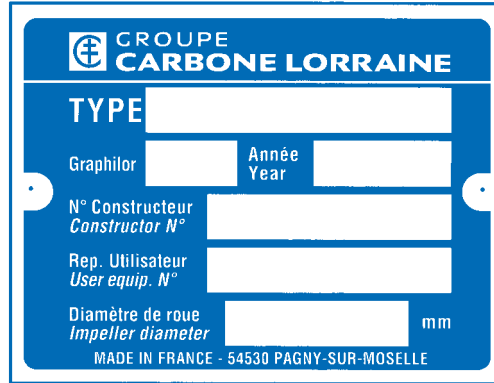
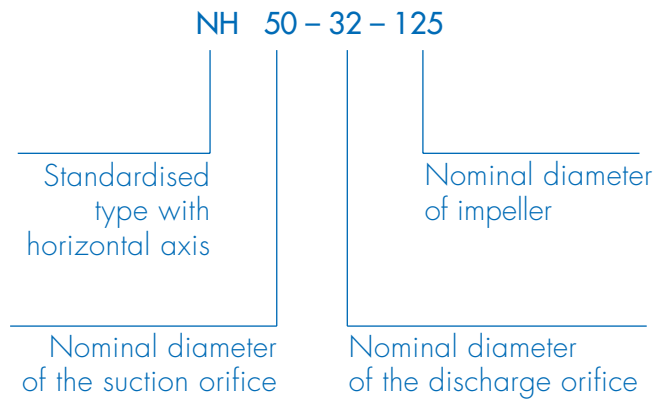
- . dimensions and weight,
- . installation,
- . flange connection,
- . commissioning,
- . dismantling,
- . reassembly,
- . maintenance,
- . partslist,
- . recommend spare parts list to be kept in stock.

- On request, at the latest when placing the order, the following documents may be supplied :
 - . layout drawing,
 - . test certificates and performance curves (possibly with extra charge depending upon tests requested).

Identification

Pump types are identified as shown in the example below :

An identity plate, shown below, is fixed to all our pump models :

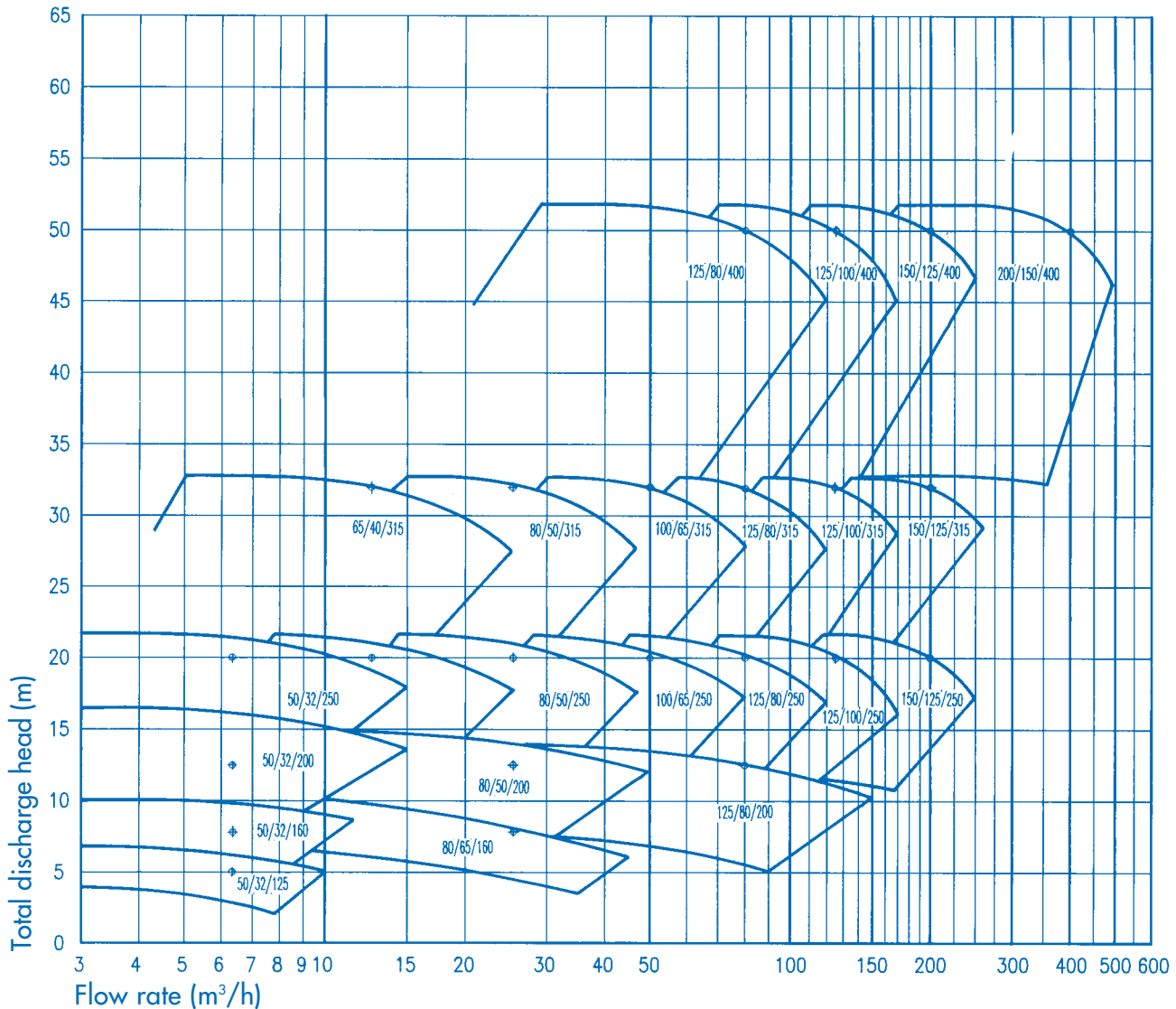


Range

The range of GRAPHILOR horizontal centrifugal pumps includes 23 different pump types. Each can be fitted with different impeller diameters. This covers flow rates up to 500 m³/h and a

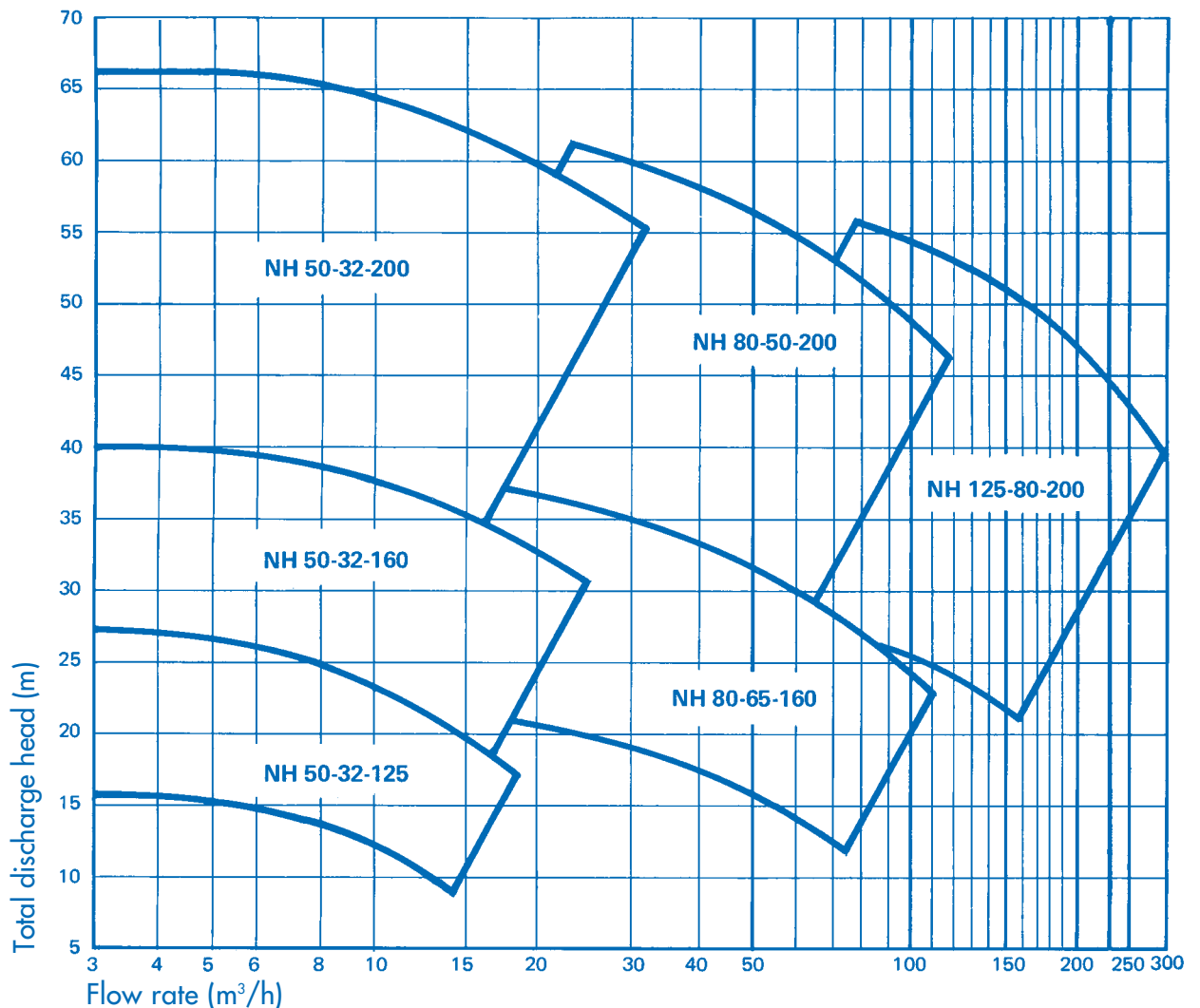
total discharge head which can exceed 60 m depending on the flow and rotation speed considered (1,450 or 2,900 rpm).

1 450 rpm



Note : To select and size pumps, use curves on the individual specification sheets listed on page 6.

2 900 rpm



Note :To select and size pumps, use curves on the individual specification sheets listed on page 6.

Tests

- Hydraulic test of the pump body depending on the type selected.
- Systematic tests :
 - . flow rate
 - . total discharge head
 - . power absorbed.
- Tolerances comply with test standard NF X 10601 Appendix B : "Mass produced pumps", namely :
 - . flow rate : $\pm 8 \%$
 - . total discharge head : $\pm 8 \%$
 - . Power absorbed : $+ 8 \%$
- On request : (with extra charge)
 - . required NPSH.

Inspection

Our QUALITY CONTROL DEPARTMENT carries out inspection of all our products. Any other reception or check will lead to an extra charge, after an exact definition of check.

Maintenance

The leaflet reference GCA 130 containing all information described in the "documents and certificates" chapter is supplied with the equipment.

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Options

- Seal type :
 - FLEXIBOX single
 - FLEXIBOX double
 - PACIFIC single
 - PACIFIC double
 - CRANE PACKING single
 This list is not exhaustive ; other seal types may be considered after a preliminary study of assembly possibilities.
- ARMYLOR (PTFE) bellows for connection to suction and discharge orifices (eliminates stresses and vibrations from the pipework).
- Flexible connection gaskets (spring in corrugated stainless steel + asbestos free fibre + PTFE lining.)
- strainer : a suction strainer is necessary for charged liquids. We can supply GRAPHILOR strainers which have the advantage of easy removal and cleaning.
- Motor : other than IPW 55 or R.
- Protective coupling housing made of steel plate or brass sparkproof.

Motor-pump set

On request, horizontal GRAPHILOR centrifugal pumps may be supplied with :

- coupling,
- cast iron base plate : standard NF E 44131,
- motor : unless mentioned otherwise, our standard motors are mounted in accordance with standard NF 51-115, protection IPW 55 for chemical industries (on request : series R explosion proof motors).

These information must be stated on the order.

When the pump is delivered with its coupling only, the motor side sleeve is not bored (except when requested).

Information required to order a pump

- Pump type (example : NH 80-50-200)
- Required impeller diameter (example : 210 mm)
- Seal type : single or double (example : CARBONE LORRAINE single)
- Options :
 - coupling (specify if the motor side coupling sleeve is to be bored and slotted) (example : PERIFLEX PNA 2/SPN 021)
 - base plate (example : type 4).
 - motor (example : FNCRB 112M - 4 - 4 kW - 50 Hz - 220/380 V - 1,500 tr/mn).
- Other possible options :
 - GRAPHILOR strainer
 - ARMYLOR connection bellows
 - flexible connection gaskets.

Information required to size the pump

- Pumped fluid :
 - nature,
 - temperature,
 - density,
 - viscosity,
 - vapour pressure.
- Required performances :
 - flow rate,
 - total discharge head.
- Installation :
 - available NPSH,
 - schematic plant layout.

This document contains general information only, common to all NH type pumps.

For specific information about each pump type, refer to the following specifications :

Pump type	Specification
NH 50- 32-125*	SH 450 050
NH 50- 32-160*	SH 451 050
NH 50- 32-200*	SH 452 050
NH 50- 32-250	SH 456 050
NH 65- 40-250	SH 457 065
NH 65- 40-315	SH 458 065
NH 80- 65-160*	SH 453 080
NH 80- 50-200*	SH 454 080
NH 80- 50-250	SH 459 080
NH 80- 50-315	SH 460 080
NH 100- 65-250	SH 461 100
NH 100- 65-315	SH 462 100
NH 125- 80-200	SH 455 125
NH 125- 80-250	SH 463 125
NH 125- 80-315	SH 464 125
NH 125- 80-400	SH 465 125
NH 125-100-250	SH 466 125
NH 125-100-315	SH 467 125
NH 125-100-400	SH 468 125
NH 150-125-250	SH 469 150
NH 150-125-315	SH 470 150
NH 150-125-400	SH 471 150
NH 200-150-400	SH 472 200

Pumps showing * Can be made also in magnet drive version. For more informations, please refer to specification SEM 400.000 E

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