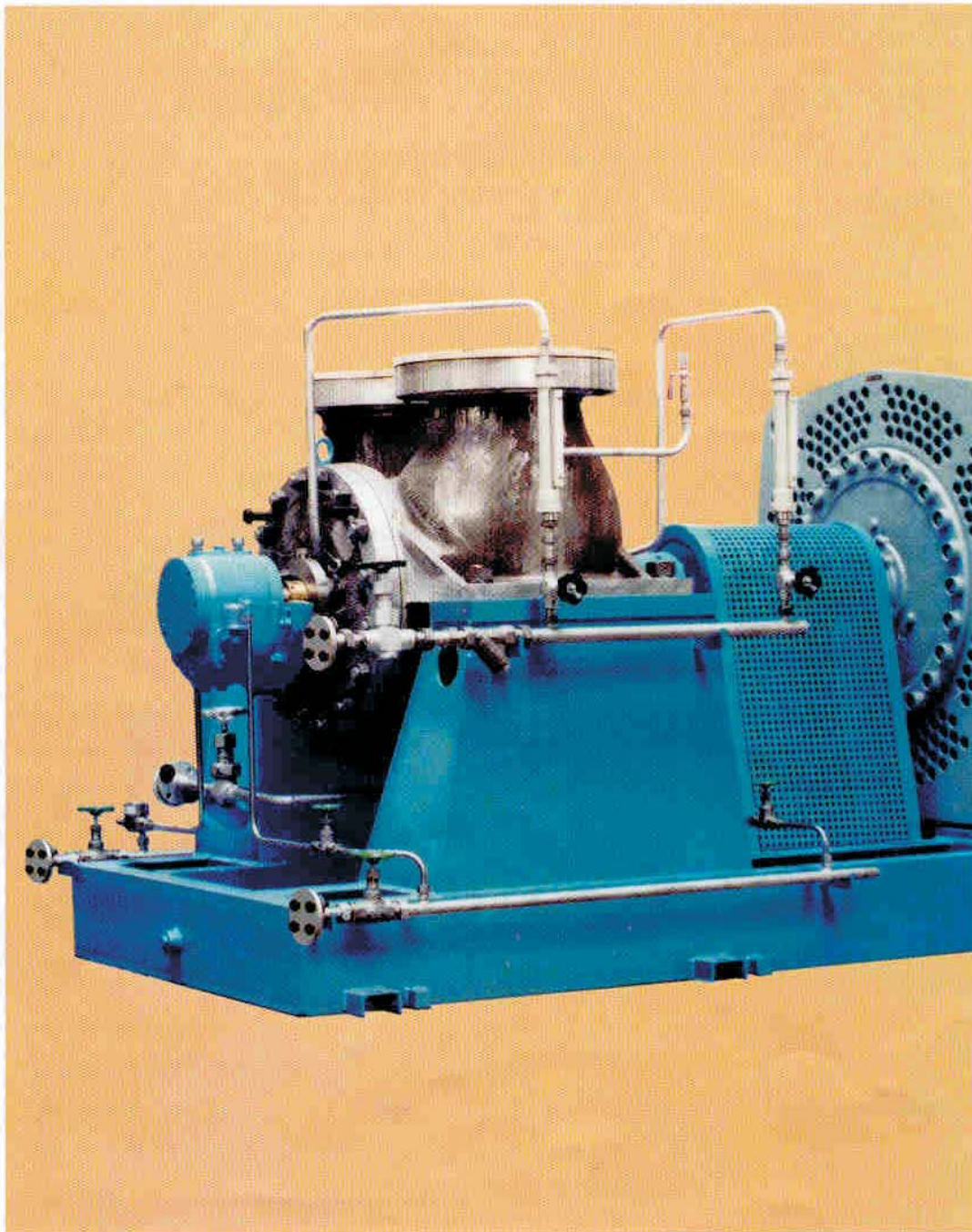




Double Suction Heavy Duty Process Centrifugal Pumps HVN



HVN-Pumps for Multipurpose Applications . . .

For over 45 years the name Ruhrpumpen has been synonymous worldwide with innovation and reliability for pumping technology.

The range comprises of centrifugal and reciprocating pumps for complete water applications, including sewage, pumps for oil fields, pipelines, refineries and petrochemical plants, as well as for offshore, marine and dock construction.

The experience gained over many years and the continuous contact with the end users ensures that Ruhrpumpen are a reliable partner.

Along with Ruhrpumpen, WDM forms the fluid handling unit of the Derlan Industries Ltd of Toronto/Canada. Plants for the group are in Witten/Germany, Memphis/USA and Monterrey/Mexico.

Qualified specialists in all departments ensure that the pumps and equipment from our works are able to operate under the most arduous conditions.

Intensive research and development ensures that the products of Ruhrpumpen are continuously improved to meet the latest technical requirements. It is only possible to achieve

these aims by means of mainly CNC controlled machines in a modern machine shop, supplemented by the works test and development bed as well as inspection and control procedure.

The application of modern, reliable methods of data processing and sophisticated software with high performance, decentralized computers and personal computers offers our customers high reliability and speed in all working processes, from planning to production through to the providing of spare parts.

The instant availability of spare parts, together with a first class service, ensures the customers that they have selected the right partner.

Range of Application

The pumps of the HVN range are heavy-duty centrifugal process pumps for universal applications in

- refineries
- oil fields
- petrochemical plants
- chemical plants

The range comprises of 28 pump sizes with 6 bearing sizes.

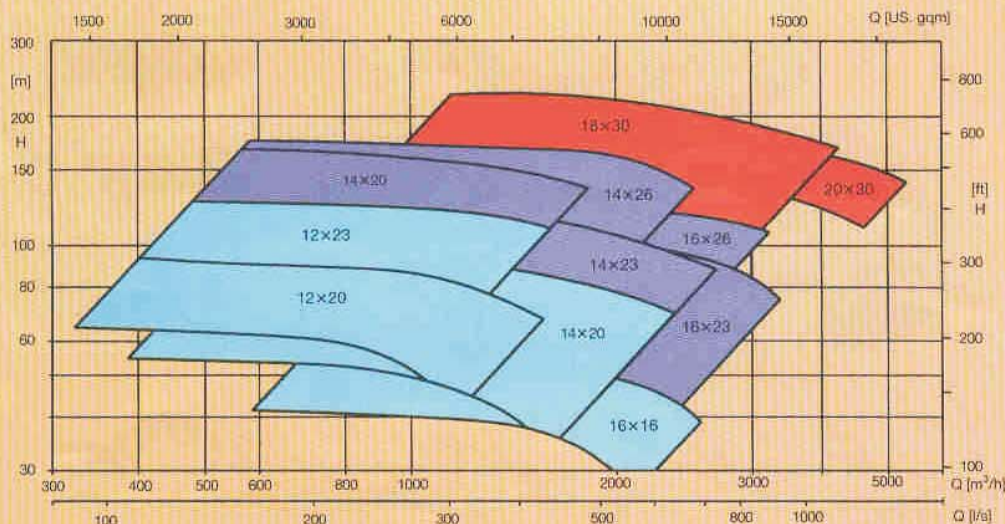
HVN pumps are always of one-stage design. They can be operated at the speeds shown in the selection charts, and even higher speeds are possible under certain conditions.

The pumps meet the stringent specifications of API Standard 610 and reflect the many years of our experience in the design, manufacture, quality assurance and operation of process pumps under heavy- and medium-duty conditions. This pump range also complies with the requirements specified in VDMA 24297, Class A.

To meet these demands, this product range is available in a wide spectrum of materials and numerous design alternatives (see excerpt from material table, page 6).

Selection Chart

n = 1480 rpm



... in all Fields of Process Industry

HVN Pumps

- Horizontal arrangement
- Process design
- Modular design system
- One-stage
- Double suction impeller
- Centerline mounted
- API 610

Modern and Robust Design

The radially split pump casings with sturdy feet arranged in the centerline, suction and discharge branches integrally cast with the casing ensure particularly favourable conditions for the absorption and transfer of forces and moments from the piping. Suction and discharge branches are arranged top-top.

Pressure-tight and accurately shaped pump casings are the result of progressive pattern, moulding and casting techniques. Advanced design engineering and high-precision machining with continuous, independent quality assurance guarantee maximum availability and a long service life.

With the use of a double volute the radial forces were minimized and thereby contributed to reducing the shaft deflection and the bearing load.

The axial forces acting on the bearings are low owing to the double suction of the impellers.

The corrosion allowance for the wall thickness on the casings and casing covers is 3.2 mm or more.

All pumps are available with flanges acc. to ANSI B 16.5,

300 lb, alternatively acc. to DIN 2545, PN 40. For special conditions all relevant ANSI-or DIN/ISO-flanges are available.

Economical and Energy Saving

This range of pumps is built according to the state of the art in hydrodynamics engineering with consequent application of the laws of similarity. It is characterized by the use of robust and proven design elements built to a modular system in order to reduce the number of individual parts.

In extensive research and test programmes, the shape of the impellers and volute casings were optimized with regard to the flow dynamics. The single-

Continuation see page 6

Performance Range

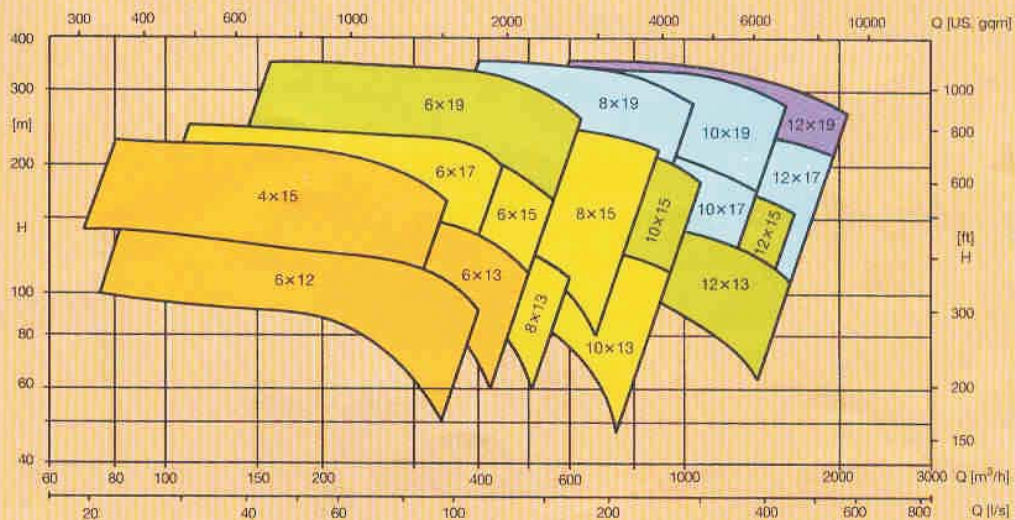
Capacity	Q	100 to 4200 m ³ /h 435 to 18200 gpm	Head	H	40 to 350 m 135 to 1150 ft
Speed 50 Hz (60 Hz on request)	n	1480/2960 rpm	Temperature	t	to 450 °C to 845 °F
Discharge pressure	Basis (260 °C)	40 bar 580 psig	Discharge Branch Size	DN _d	100 to 500 mm 4 to 20 "

Selection Chart

n = 2960 rpm

6 Bearing Sizes

- 38
- 48
- 60
- 70
- 80
- 100



HVN-Pumps Economical . . .

HVN Design Characteristics

1 28 radially split pump casing sizes centerline mounted. Suction and discharge branches are arranged top-top. Discharge branch sizes ranging from 4" to 20".

2 All applicable branch flange connections available. Flange connection sizes to ANSI B 16.5, with flange designs to DIN/ISO, BS, NF, etc. likewise possible. All materials acceptable according to ASME, DIN/ISO, and BS available on request.

3 Basic rating for 40 bar Δ 580 psig at 260 °C Δ 500 °F of base material GS-C 25 N. Operating temperatures possible up to + 450 °C Δ 845 °F. Higher pressures possible due to a wide spectrum of materials.

4 Amply dimensioned shaft sealing chamber for housing all commercial seal designs, standard design with single-acting, cartridge-type balanced mechanical seal. Alternatively, where particularly stringent requirements with regard to medium handled and environmental protection have to be met, supply is also possible with double seals in a back-to-back or tandem arrangement.

5 For higher pumping temperature cooling of the shaft sealing chambers and bearing housings can also be provided, including all necessary piping connections.

6 Casing/casing cover in metal-to-metal contact. Non-asbestos spirally wound gasket made of stainless steel/graphite foils totally enclosed.

7 Casing mounted on feet at centerline on support pedestals, baseplate of sectional steel, welded for process operation. Rated for double the forces and moments specified by API 610, latest edition.

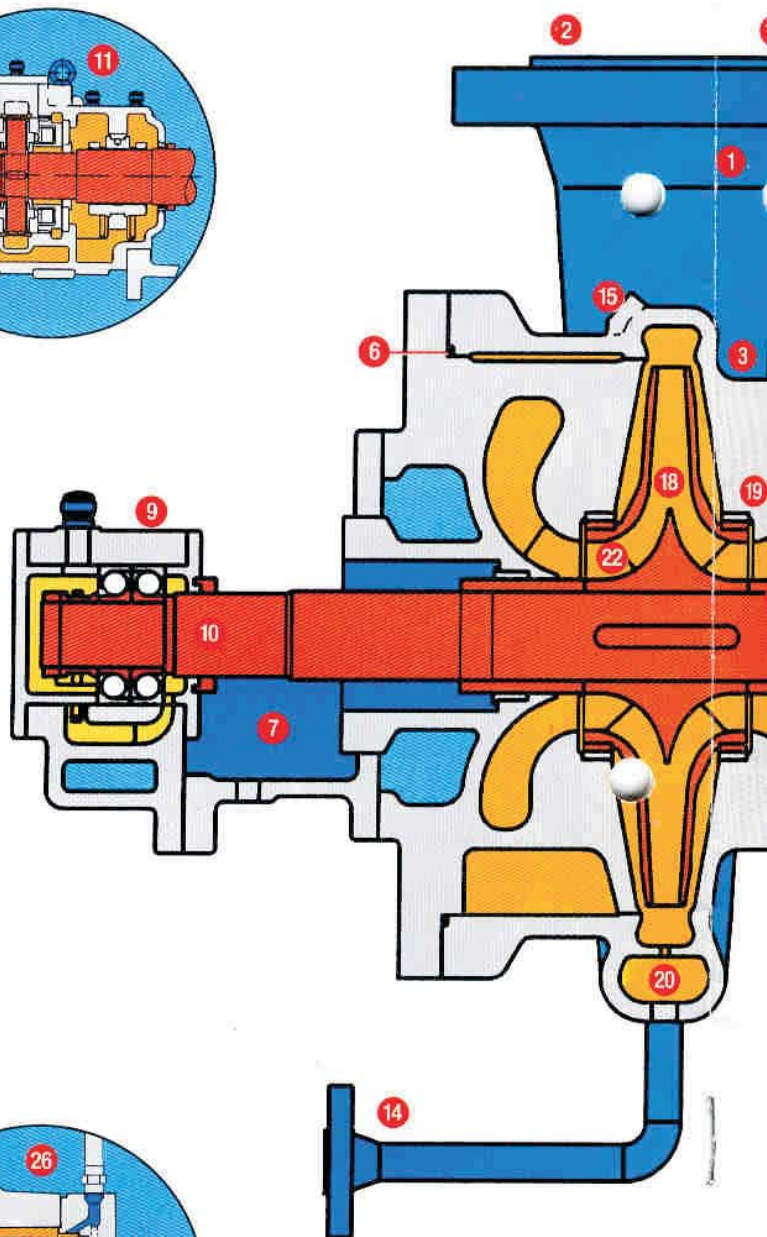
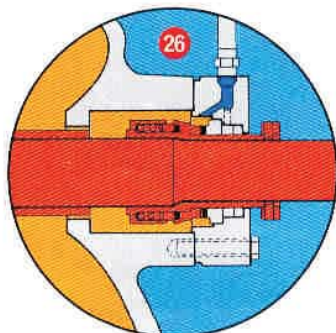
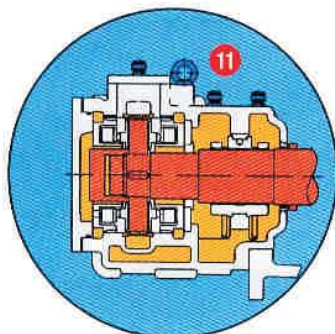
8 Shaft deflection smaller than 0.03 mm in the area of the mechanical seal thanks to the ample pump shaft dimensions and the balancing of the hydrodynamic radial loads. Critical speeds considerably above the operating speed. Low vibration values.

9 Single-piece bearing housing, air cooled. Alternatively, cooling by integrally cast cooling channels with external piping connections for cooling water pipes according to API 610, Annex D.

10 Anti-friction bearings with a service life of more than 25,000 h even under arduous

conditions. Grooved ball bearings on the driver side, double angular ball bearings on the opposite side.

11 Sleeve bearings also possible on request.



... through fully developed Modul Technique

12 Due to the top-top arrangement of the suction and discharge branches on the casing, inspection and maintenance of the HVN pumps do not present any problems. When the rotor is dismantled, the pump casing remains on the baseplate connected with all the piping.

13 Pressurized casing components are subject to the most rigid quality control within the scope of a highly efficient quality assurance system. A long service life is ensured by a minimum corrosion allowance of 3.2 mm.

14 Welded drain line with neck-welded flange, also with

shut-off valve upon request. Alternatively, screwed-in and sealed drain plug.

15 Welded vent line with neck-welded flange. Venting possible to the baseplate or into a collecting main. Alternatively, screwed-in and sealed vent plug.

16 Oil supply to anti-friction bearings by lubricating rings, automatic monitoring of oil level by constant level oiler.

17 Wear-free labyrinth seals with oil return bores, alternatively radial sealing rings.

18 Impeller with a high accuracy of shape and excellent surface finish, resulting in high efficiencies and low NPSH-values. Very good properties in case of variation of impeller diameter.

19 Exchangeable impeller and casing wear rings. Clearances according to API 610, latest edition.

20 The double volute reduces the radial force and therefore the shaft deflection and bearing load.

21 Exchangeable stuffing box bushes. Clearances acc. to API 610, latest edition.

22 Axial force free due to double suction impeller.

23 Balancing with semi-fitted key.

24 Double mechanical seal in back-to-back arrangement.

25 Double mechanical seal in tandem arrangement.

26 Single-acting, balanced mechanical seal of cartridge type.

