



*Specialist for Pumping Technology*

INNOVATION  
EFFICIENCY  
QUALITY



**SPN**

Vertical Heavy Duty Close Coupled,  
API 610 Process Pump (OH5)

For more than 60 years the name Ruhrpumpen™ has been synonymous worldwide with innovation and reliability for pumping technology

The Ruhrpumpen Type SPN is a vertical, process design, radial split, volute type, single stage, single suction, close coupled design, suction and discharge position: inline pump type OH5, according to API 610, latest Edition. Ruhrpumpen has many years of experience in design, manufacture, quality assurance and operation of process pumps under heavy and medium duty conditions. Due to the direct installation in the pipeworks and the easy maintenance this pump range has a wide application range.

## SPN Design

Vertical, one stage, single suction centrifugal pump according to API 610, latest edition, with mechanical seal in accordance with API 682. The pump is driven by an electric motor and the impeller is mounted directly on the extended shaft of the electric motor. The pump is suitable for being directly mounted into the piping without the need of a baseplate. This inline pump range has been developed in strictly accordance with the latest SHELL DEP Specification referring to the API 610 and the BS 4082.

## Construction

### MODERN AND ROBUST DESIGN

Pressure tight and accurately shaped casing/casing covers are the result of progressive pattern, moulding and casting technique. Trend setting designs and precise machining with permanent and independent quality assurance ensure extreme reliability and long life.

Reduction of radial loads, thereby increase of bearing and shaft seal life through reduction of deflection by proper design of volutes. The corrosion allowance for the wall thickness on the casings and casing covers is 3.2 mm or more. All pumps are equipped with casted flanges acc. to ASME B 16.5 300lb, alternatively acc. to EN 1092-1, PN40. For special conditions all relevant ASME- or EN/ISO-7005-1 flanges are available.

### IMPELLER

Single-suction, closed, one piece, cast impeller, with replaceable impeller ring and balancing holes near the hub. The impellers display high efficiencies and low NPSH-values.

### DRIVERS

Driver and pump are forming a complete unit. The standard design for these drivers are vertical flanged motors with special shafts and bearings. The material selected for the shafts is in accordance with the API 610, latest edition. The electric motors are in accordance with SHELL DEP Regulations, VIK design specifications and DIN-ISO, DIN-EN, IEC, VDE.

### BEARINGS

For this kind of vertical inline pump, axial and radial forces are absorbed through motor bearings. Therefore the electrical motor is equipped with one radial roller bearing and one axial thrust bearing.

### TEST PRESSURE

Pump casing/casing cover will be tested to 1.5 times the maximum working pressure.

### DIRECTION OF ROTATING

Clockwise viewed from the driver end.

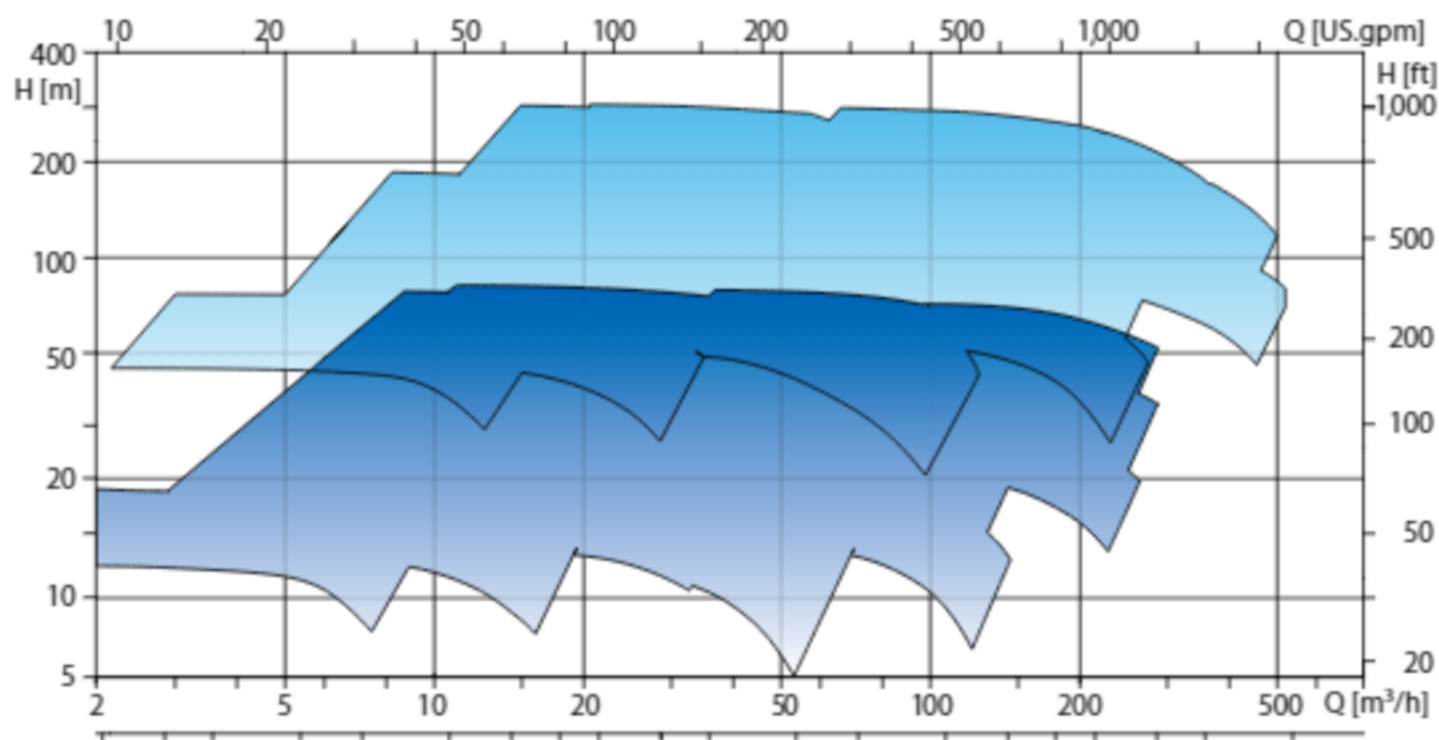


## Selection Charts

The SPN charts are covering 19 pump models with several sets continuous development process allows the extension of the requirements.

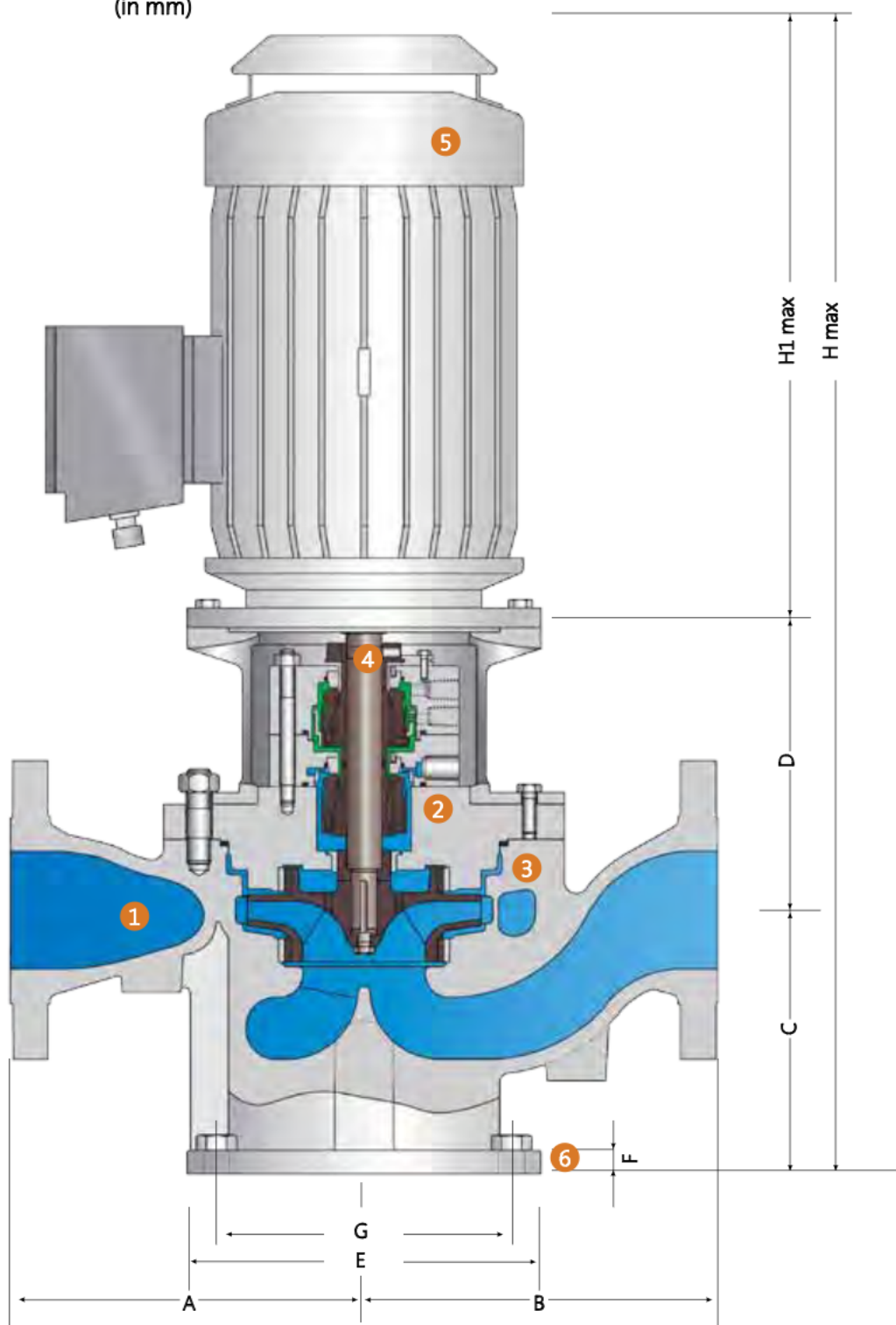
**Selection Chart SPN**

**$n = 1,780/3,560$  rpm 60 Hz**



## Characteristics and Design Features

Main Dimensions  
(in mm)



- 1** 19 volute casing inline pump sizes for 50 Hz and 60 Hz power supply, in top pull out design from 1 1/2" to 8" discharge nozzle, acc. to API 610, latest Edition, BS 4082 and Shell DEP latest edition.
- 2** Mechanical seal chamber dimensions in full compliance with API 610 and API 682.
- 3** Casing/casing cover in metal-to-metal contact. Nonasbestos spirally wound gasket made of stainless steel /graphite foils totally enclosed.
- 4** Shaft deflection of less than 0.03 mm in the stuffing box area is achieved by correct sizing of the bearings and the use of double volutes. Low vibration values will be achieved.
- 5** Antifriction bearings with an operating life of more than 25,000 h. Special double angular contact bearings in the motor are available for compensation of high axial forces.
- 6** Foundation support is possible with a separate foot-plate.



## PERFORMANCE RANGE

Capacity	Q	up to 550 m <sup>3</sup> /h	up to 2420 gpm
Head	H	up to 280 m	up to 656 feet
Temperature	t	up to 260° C	up to 500° F
MAWP	p	up to 40 bar	up to 580 psi
Speed	n	1480/2960min <sup>-1</sup>	1780/3560 rpm

Note: For pump operation outside this range, please contact a Ruhrpumpen representative.

## BROAD APPLICATION RANGE

The SPN inline pumps are a wide range of heavy duty centrifugal pumps for operation in process industry and transfer systems. The range is designed for all process fluids and process conditions.

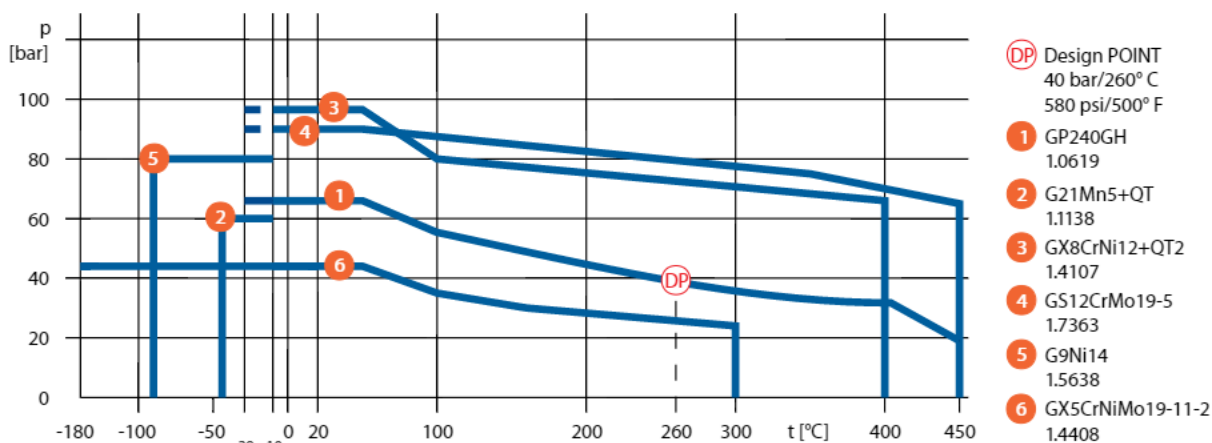
- Oilfields and Terminals
- Refinery Oils
- Transfer Systems
- Process Industry
- On/Offshore

## Dimensions

Please refer to drawing in page 4 for these dimensions. All dimensions are in inches.

Pump Type	Shaft	Nozzles		Main Dimensions								
		DN <sub>SUCT.</sub>	DN <sub>DISCH.</sub>	A/B	C	D	E	F	G	H	H <sub>1</sub>	
SPN	∅											
10 E	30	1 1/2"	1 1/2"	265	125	225	200	15	150	1060	710	
20 E		2"	2"	265	125	225	250	15	200	1060	710	
20 F		2"	2"	265	125	225	250	15	200	1060	710	
20 G		2"	2"	355	125	225	250	15	200	1060	710	
30 E		3"	3"	300	160	225	300	20	250	1095	710	
30 F		3"	3"	300	160	225	300	20	250	1095	710	
40 E		4"	4"	300	224	225	300	20	250	1160	710	
30 G	40	3"	3"	400	160	245	300	20	250	1505	1100	
30 H		3"	3"	400	160	245	300	20	250	1505	1100	
40 F		4"	4"	300	224	245	300	20	250	1570	1100	
40 G		4"	4"	400	224	245	300	20	250	1570	1100	
40 H		4"	4"	400	224	245	300	20	250	1570	1100	
50 E		6"	6"	355	250	245	300	20	250	1595	1100	
50 F		6"	6"	355	250	245	300	20	250	1595	1100	
50 G	6"	6"	400	250	245	300	20	250	1595	1100		
50 H	50	6"	6"	400	250	265	300	20	250	2175	1660	
60 F		8"	8"	375	300	265	350	25	280	2225	1660	
60 G		8"	8"	450	300	265	350	25	280	2225	1660	
60 H		8"	8"	450	300	265	350	25	280	2225	1660	

## Diagram of Allowable Working Pressures-Temperatures



## Materials

MATERIAL TABLE					
DESCRIPTION	MATERIAL CLASS ACC. TO API 610			LOW TEMPERATURE	
	S-1	C-6	A-8	DOWN TO -50°C	DOWN TO -80°C
Volute Casing Casing Cover	GP240GH+QT <sup>1)</sup>	GX8CrNi12+QT2	GX5CrNiMo 19-11-2	G21Mn5+QT	G9Ni 14
Pump shaft Impeller	42CrMo 4+QT GJL250 <sup>2)</sup>	X17CrNi 16-2+QT800 GX8CrNi12+QT2	X6CrNiMoTi 17-12-2 GX5CrNiMo 19-11-2	26CrMo 4 G21Mn5+QT	12Ni 19 G9Ni 14
Bearing bracket	GP240GH+N				
Stuffing box bushing	GJL250	GX20Cr 14	GX5CrNiMo 19-11-2	GX20Cr 14	GX5CrNiMo 19-11-2
Impeller wear ring Case wear ring	GJL250	GX20Cr 14 GX120CrMo 29-2	GX5CrNiMo 19-11-2 GX40CrNi 27-4	GX20Cr 14 GX120CrMo 29-2	GX5CrNiMo 19-11-2 GJSA-XNiMn 23-4
Seal cover Shaft Sleeve	X6CrNiMoTi 17-12-2				

<sup>1)</sup> In special cases GS12 CrMo 19-5

<sup>2)</sup> In special cases GP240GH+QT

Other materials on request

## MATERIAL COMPARISON LIST

MATERIAL	GERMAN STANDARD	MATERIAL NO.	AMERICAN STANDARD	BRITISH STANDARD	
Cast Iron Nickel modular Cast Iron	GJL-250 GJSA-XNiMn 23-4	EN 1561 EN 13835	JL 1040 JS 3021	ASTM A 48-40 B ASTM A 571 Type D-2 M	EN 1561 EN 13835
Steel Cast Steel	42CrMo 4+QT GP240GH+QT	EN 10083 EN 10213	1.7225 1.0619	ASTM A 322-4140 ASTM A 216-WCC	EN 10083 EN 10213
Steel Nickel Steel Chrome Steel	26CrMo 4 12Ni 19 X17CrNi 16-2+QT800	DIN 17 280 DIN 17 280 EN 10088	1.7219 1.5680 1.4057	ASTM A 322-4130 AISI 2515 ASTM A 276-431	BS 1717CDS 110 BS EN 10088
Chrome Nickel Steel Cast Chrome Steel Cast Chrome Steel	X6CrNiMoTi 17-12-2 GX8CrNi 12+QT2 GX20Cr 14	EN 10088 EN 10213 SEW 410	1.4571 1.4107 1.4027	ASTM A 276-316 Ti ASTM A 217-CA 15* ASTM A 743-CA 40	EN 10088 EN 10213 BS 3100-420 C 29
Cast Chrome Nickel Steel Cast Chrome Steel Cast Chrome Nickel Steel	GX5CrNiMo 19-11-2 GX120 CrMo 29-2 GX40CrNi 27-4	EN 10283 SEW 410 SEW 410	1.4408 1.4138 1.4340	ASTM A 743-CF-8 M ASTM A ASTM A 743-CC 50	EN 10283 BS BS
Cast Steel Cast Steel Cast Nickel Steel	GS12CrMo 19-5 G21MN5+QT G9Ni 14	SEW 595 SEW 685 EN 10213	1.7363 1.1138 1.5638	ASTM A 217-C 5 ASTM A 352-LCB ASTM A 352-LC 3	BS 1504-625 BS 1504-161 B EN 10213

\* For pressure-retaining parts. For impellers, ASTM A 743-CA 15 applies, among others.

## Other Ruhrpumpen Products



### Single Stage Horizontal Pump

Overhung, radially split, flanged connections, enclosed impeller, mechanical seal. Standard construction materials according to API latest edition (type OH2). Municipal, General Industry, Irrigation, Fire Service and Pressure Equipments.

### Volute Casing Centrifugal Pump

Axially split, horizontal single or double stage, double volute casing, double suction, radial, closed impeller. Heavy duty process design according to API 610 latest edition (type BB1). Pipeline service-mainline and booster, Oil Extraction, Refinery, Chemical, Petrochemical, Metallurgical and Power Stations.



### Vertical Barrel Pump

Low NPSH "Shockless Entry" first stage impeller (single or double suction), Single or multi-stage. Standard construction materials according to API latest edition (type VS6). Condensate, Power plants, Municipal, Hydrocarbons, Pipeline and Refineries.

### Horizontal Process Pump



Axially split, horizontal multi-stage centrifugal pump. Near centerline mounted. Heavy duty process design according to API 610 latest edition (type BB3). Refinery, Oil Fields, Petrochemical, and Chemical Applications.



With every project you can count on **QUALITY, SERVICE, EXPERTISE, INNOVATION** and **COMPETITIVENESS**.  
Because we have a commitment to each customer, the community, and the world.  
We are Ruhrpumpen, the specialist for pumping technology!



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