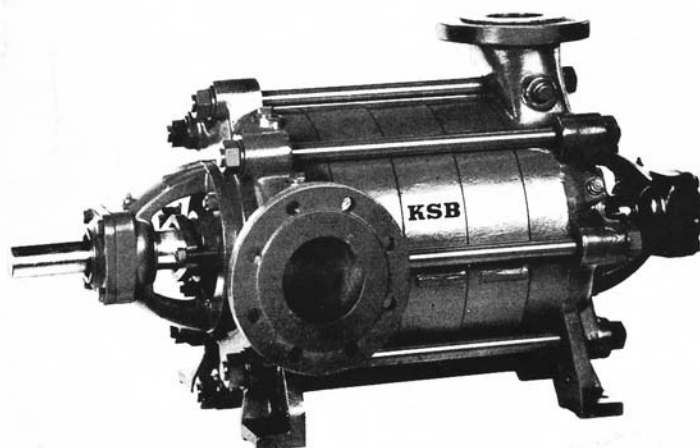


## High Pressure Centrifugal Pumps



### Applications

For municipal and industrial water supply in water works, pressure boosting installations, irrigation and sprinkler plants; as boiler feed pumps and condensate pumps, cooling water and hot water circulation pumps; for high pressure water in hydraulic presses, as fire pumps etc.

### Construction

Horizontal high pressure centrifugal pumps in ring sectional design, single- or multistage, vertically split suction, discharge and stage casings. The individual casing parts are sealed by O-rings and are clamped together by external tie bolts. The pump feet are cast integrally with the suction and discharge casings, and are arranged beneath the pump.

### Bearings

The bearings are enclosed in two bearing housings, flanged onto each end of the pump. On the suction end of all pump sizes a cylindrical roller bearing with spacer sleeve is fitted; on the discharge side of 32 and 40 a deep groove ball bearing, 50 and up an angular ball bearing is fitted.

The rotating assembly is hydraulically balanced by means of back vanes or balance holes at the rear of the impeller; the residual axial thrust being absorbed by a ball bearing at the discharge side.

### Shaft Seal

The shaft is fitted with renewable protective sleeves in the region of the stuffing box.

Uncooled soft-packed stuffing boxes are used for temperatures up to 110°C (230°F); for temperatures above 110°C (230°F) up to 140°C (285°F) a cooled soft-packed stuffing box is used, where the temperature on the stuffing box is kept within permissible limits with the aid of the cooling liquid. Furthermore, special stuffing boxes for connection of sealing liquid from an outside source are available.

Uncooled mechanical seal up to 110°C (230°F) maximum.

### Nozzle orientation

The suction nozzle is horizontal, right-hand side when viewed from driving end, and the discharge nozzle is top, vertical.

The suction flange is machined according to DIN 2533, NP 16 or BS 4504 table 16/11. The discharge flange is machined according to DIN 2535, NP 40 or BS 4504 table 40/1.

### Drive

Direct drive by electric motor through a flexible coupling.

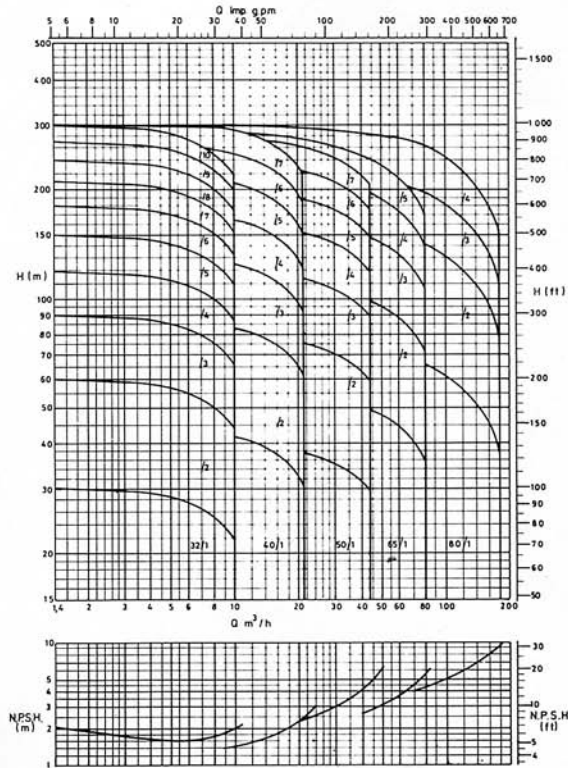
The suction end of the pump is the driving end, direction of rotation is clockwise; the shaft stub of the driver is fitted on the discharge side (direction of rotation is counterclockwise), or two shaft stubs can be provided, one at each end.

### Materials of Construction

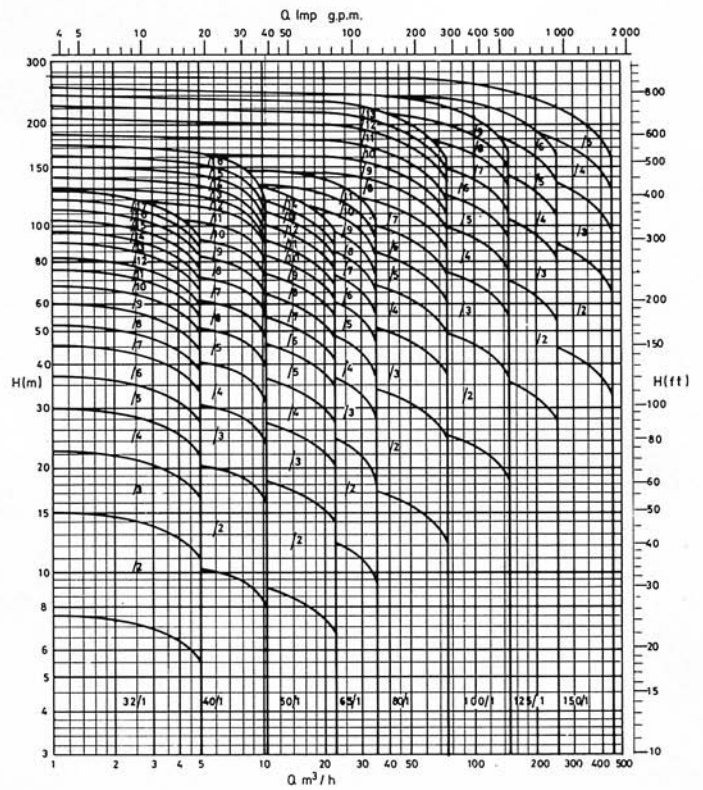
Part No.	Part Designation	Material Combinations							
		(01)	(02)	(03)	(04)	(05)	(06)	(08)	(22)
106/107	Suction-/Discharge casing	GG-25							
230	Impeller	GG-25	GCuSn10	GG-25	GCuSn10	GG-25	GCuSn10	GG-25	GCuSn10
171.1/2	Diffuser	GG-25							GCuSn10
210	Shaft	O80M40Q			431S29				O80M40Q
524.1/2	Shaft protection sleeve	GGZ-20	GCuSn10	316S16	GGZ-20	GCuSn10	316S16	GCuSn10	
502	Casing wear ring	GG							G-CuPbSn10
	Seal	Packed gland		Mechanical	Packed gland		Mechanical	Packed gland	

### Performance Characteristics

Selection chart 2900 1/min  
 Number of stages for uncooled and cooled stuffing box constructions

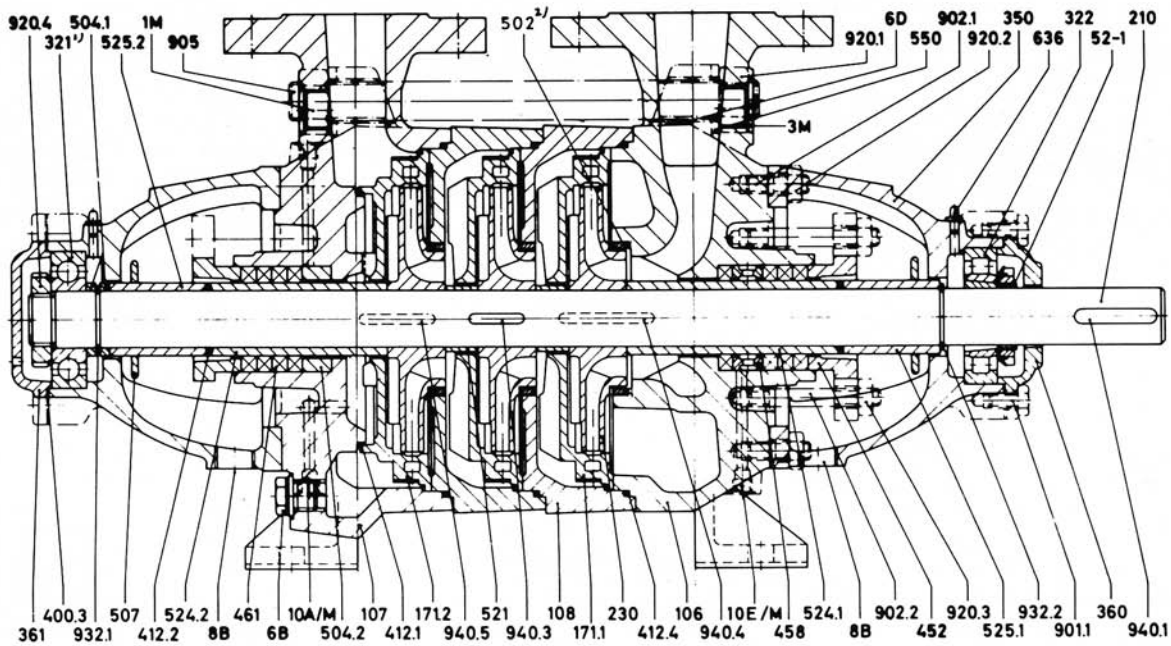


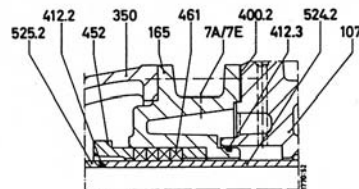
Selection chart 1450 1/min  
 Number of stages for construction with uncooled stuffing box.  
 For construction with cooled stuffing box reduction of number of stages for size 32 to 65 = 2, sizes 80 to 150 = 1



**Construction with uncooled soft-packed stuffing box (N)  $t \leq 110^\circ\text{C}$  ( $230^\circ\text{F}$ )**

WKLn 32 up to 65


**Cross section of stuffing box**

 Cooled soft-packed stuffing box (HW),  
 $t > 110^\circ\text{C}$  up to  $140^\circ\text{C}$   
 ( $230$  up to  $285^\circ\text{F}$ )


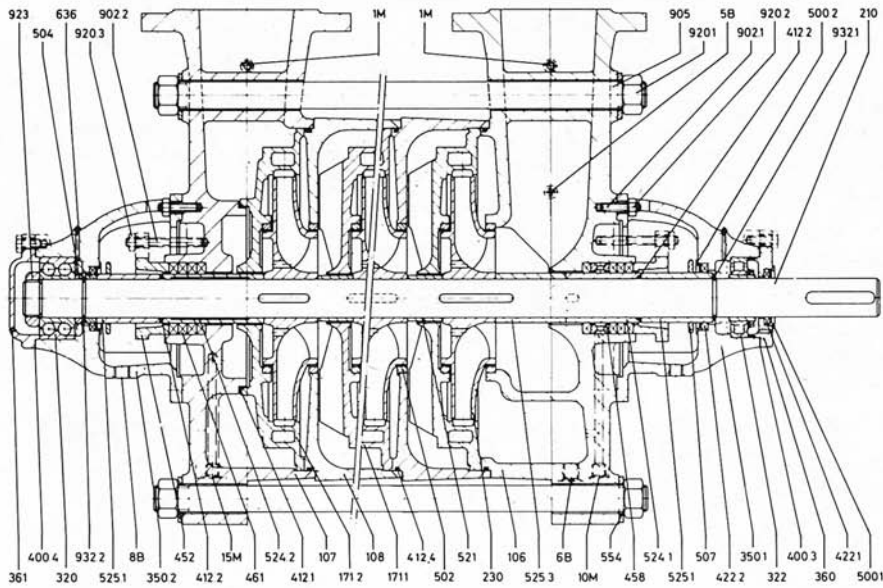
Part No.	Designation	Part No.	Designation	Part No.	Designation
106	Suction casing	461	Stuffing box packing	902.1/2	Stud
107	Discharge casing	478 <sup>3)</sup>	Spring-right hand (Suction side)	905	Tiebolt
108	Stage casing	479	Spring-left hand (Discharge side)	920.1/.2/.3	Hexagonal nut
165	Cooling cover	502 <sup>2)</sup>	Casing wear ring	920.4	Grooved nut
171.1	Diffuser	504.1/.2	Spacer ring	932.1/2	Circlip
171.2	Diffuser, last stage	507	Thrower	932.1/.3/.4	Key
210	Shaft	521	Stage sleeve	940.5/.6	Key
230	Impeller	52-1	Clamping sleeve	1M	Pressure gauge
321 <sup>3)</sup>	Deep groove ball bearing	523.1 <sup>1)</sup>	Shaft sleeve (Suction side)	3M	Pressure vacuum gauge
322	Cylindrical roller bearing	524.1	Shaft protecting sleeve (Suction side)	6B	Drain
350	Bearing housing	524.2	Shaft protecting sleeve (Discharge side)	6D	Priming and venting
360	Bearing cover	525.1	Spacer sleeve (Suction side)	7A	Cooling liquid outlet
361	Bearing end cover	525.2	Spacer sleeve (Discharge side)	7E	Cooling liquid inlet
400.2/.3	Flat gasket	550	Disc	8B	Leakage drain
412.1/.3	O-ring	636	Grease nipple	10A	Sealing liquid outlet
412.4	O-ring	901.1	Hexagonal head bolt	10E	Sealing liquid inlet
452	Stuffing box gland			10M	Connection for sealing liquid from an outside source
458	Lantern ring				

1) not shown in drawing

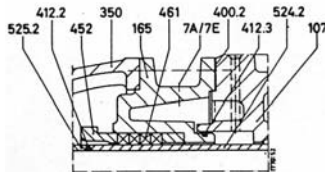
2) fitted from size 50 up

3) size 50 and 65 fitted with 320 Angular Contact Bearing

WKLn 80 up to 150



**Cross section of stuffing box**  
 Cooled soft-packed stuffing box (HW),  
 $t > 110^{\circ}\text{C}$  up to  $140^{\circ}\text{C}$   
 ( $230$  up to  $285^{\circ}\text{F}$ )



Part No.	Designation	Part No.	Designation	Part No.	Designation
106	Suction casing	502	Casing wear ring (WKLn 50 to 150)	901.1	Hexagonal head bolt
107	Discharge casing	504	Spacer ring	902.1/2/3 <sup>4)</sup>	Stud
108	Stagecasing	507	Thrower	905	Tiebolt
165	Cooling cover	521	Stage sleeve	920.1/2/3	Hexagonal nut
171.1	Diffuser	52-1	Clamping sleeve	920.4	Grooved nut (Nut with two flats WKLn 80 up to 150)
171.2	Diffuser, last stage	523.1 <sup>1)</sup>	Shaft sleeve (Suction side)	932.1/2	Circlip
210	Shaft	524.1	Shaft protecting sleeve (Suction side)	940.1/3/4	Key
320	Angular contact ball bearing	524.2	Shaft protecting sleeve (Discharge side)	940.5/6	Key (940.5 omitted on WKLn 125 and 150)
230	Impeller	525.1	Spacer sleeve (Suction side)	1M	Pressure gauge
321	Deep groove ball bearing	525.2	Spacer sleeve (Discharge side)	3M	Pressure vacuum gauge
322	Cylindrical roller bearing	525.3	Spacer sleeve (size 150 on stuffing box construction N; Sizes 100 to 150 on stuffing box construction HW)	6B	Drain
350.1/2	Bearing housing	525.4 <sup>1)</sup>	Spacer sleeve (sizes 100 and 150 on stuffing box construction HW)	6D	Priming and venting
360	Bearing cover	543	Spacer bush	7A	Cooling liquid outlet
361	Bearing end cover	550	Disc	7E	Cooling liquid inlet
400.2/3	Flat gasket	636	Grease nipple	8B	Leakage drain
412.1/2/3	O-ring			10A	Sealing liquid outlet
412.4	O-ring			10E	Sealing liquid inlet
422.1/2	Felt ring(WKLn 125 and 150)			10M	Connection of sealing liquid from an outside source
452	Stuffing box gland			14A	Balance liquid outlet
458	Lantern ring			14E	Balance liquid inlet
461	Stuffing box packing				
478 <sup>1)</sup>	Spring-right hand (Suction side)				
500.1/2	End ring (WKLn125 and 150)				

1) Not shown in drawing  
 2) Stud 902.3 from WKLn 100 onwards

