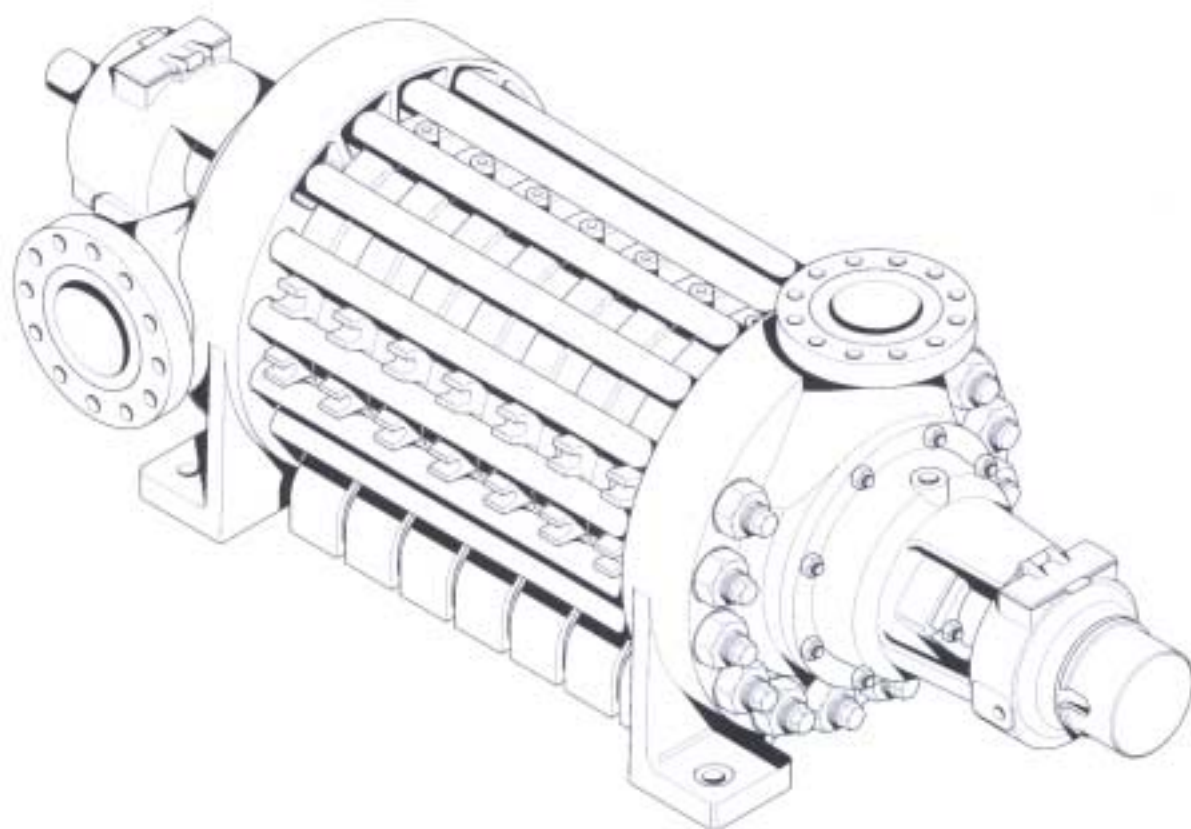


*HIGH LIFT  
STAGE CASING PUMPS*



***HPH***

# HIGH LIFT STAGE CASING PUMPS

# HPH



Type HPH stage casing pumps in multistage horizontal design are available in 9 different standard sizes.

## APPLICATIONS

HPH pumps are suitable for pumping clean or slightly polluted water

- > for mine dewatering
- > for water supply in pumping stations
- > for reverse running as energy turbines (modified design)
- > for boiler feed duties up to 105°C

## PERFORMANCE

Capacities	up to 1000m <sup>3</sup> /h
Heads	up to 180 m
Operating pressure	up to 16 MPa
Operating temperatures	up to 105°C

## DESIGN FEATURES

### Casing

The stage casings are sealed against each other by O-rings and secured by external tiebolts.

Suction, discharge casings and stage casings are designed with individual feet below.

### Branch positions

The suction branch is positioned to the right (viewed from the drive end) and the discharge branch upwards.

Alternative positions available on request.

### Metrication

All selected, screws and accessories are supplied in metric sizes, except for the connections.

## Hydraulics and compensation for axial thrust

The majority of sizes employ special first stage impellers to improve suction characteristics, while all stages use matched diffusers and overflow pieces.

Axial thrust is compensated by a balancing disc.

A wear indicating limit switch is fitted on the non drive end to monitor the amount of wear on the balancing device.

## Wear protection

Both suction and stage casings incorporate protection inserts, and the neck bush is replaceable.

Large and small casing wear rings between impellers, casings and overflow pieces facilitate the maintenance of correct clearances.

The operating surfaces of both balancing and counter discs are fitted with replaceable wear rings. The shaft, which is nowhere in direct contact with the water being pumped, is fitted with sleeves in the packed glands. It is protected by a bush in the throttling bore leading to balancing device.

## Bearing and lubrication

The shaft runs in white metal sleeve bearings using oil-ring lubrication. Provision is made for bearing cooling.

## Shaft sealing

Packed stuffing boxes are provided as standard with sealing water injection to the suction gland.

## Flanges, drive, direction of rotation

Flanges are rated on DIN standards. Pumps are driven from the suction end and the direction of rotation is clockwise (viewed from the drive end).

## MATERIALS

The components of this range of pumps are manufactured as standard in the following materials:

Casing:	Spheroidal Cast Iron 0.7040 to DIN 17007
Impellers:	Phosphor Bronze PB 1 to BS 1400
Shafts:	Forged Alloy Steel 1.7225 to DIN 17007

Other materials are available, subject to confirmation.

Wear resistant coatings can be applied to wearing parts on request.

## CONDITION MONITORING

Pump condition can be monitored by measuring pressure in the balance disc assembly, this enables pump future life and efficiency to be determined.

This monitoring service is available on request.

# HIGH LIFT STAGE CASING PUMPS

VERSATILE – ECONOMICAL, RELIABLE, ROBUST.

UNSPILT BEARING BRACKETS FOR MAXIMUM RIGIDITY. SPLIT BEARING BRACKETS ARE AVAILABLE ON REQUEST

DE GLAND CAN BE FLUSHED TO CLEAN OR PROVIDE SEAL FOR NEGATIVE SUCTION LIFTS

EACH CASING SECTION FORMS A COMPLETE ASSEMBLY LIFTED BY EYE BOLT – PROTECTION PLATES, DIFFUSERS AND OVERFLOW PIECES FIRST BOLTED IN POSITION.

ONLY ONE JOINT RING BETWEEN EACH STAGE CASING.

HIGH VELOCITY AREAS PROTECTED BY REPLACEABLE PLATES AVOIDING NEED FOR EXPENSIVE REMACHINING OF HIGH COST CASINGS.

HEAVY SUCTION AND DISCHARGE COVERS RESIST LIMITED PIPE FORCES – WHICH ARE TRANSMITTED THROUGH FEET TO BASEPLATE.

FORGED SHAFT ENSURES STABILITY AND PREVENTS DISTORTION COMMON WITH SHAFTS MADE FROM BAR STOCK.

SUCTION CASING HAS INTERNAL RIB TO COUNTER PRE-ROTATION.

INTERNAL BRONZE SURFACES HAND POLISHED TO HIGHEST PRACTICAL FINISH.

CASINGS ARE CAST IN ECONOMICAL DUCTILE CAST IRON – WITH EXTERNAL LUGS TO FACILITATE ALIGNMENT DURING ASSEMBLY.

ALL MAJOR JOINTS SPIGOTTED TO AVOID SELECTIVE ASSEMBLY.

BALANCE DISC COMPENSATES HYDRAULIC THRUST – FITTED WITH REPLACEABLE WEAR FACES OF DIFFERENT MATERIAL ON BALANCE AND COUNTER DISCS.

BALANCE DISC MONITORING IS A REALTIME METHOD OF DETERMINING THE INTERNAL CONDITION OF A PUMP BY MEASURING THE PRESSURE IN THE BALANCING ASSEMBLY.

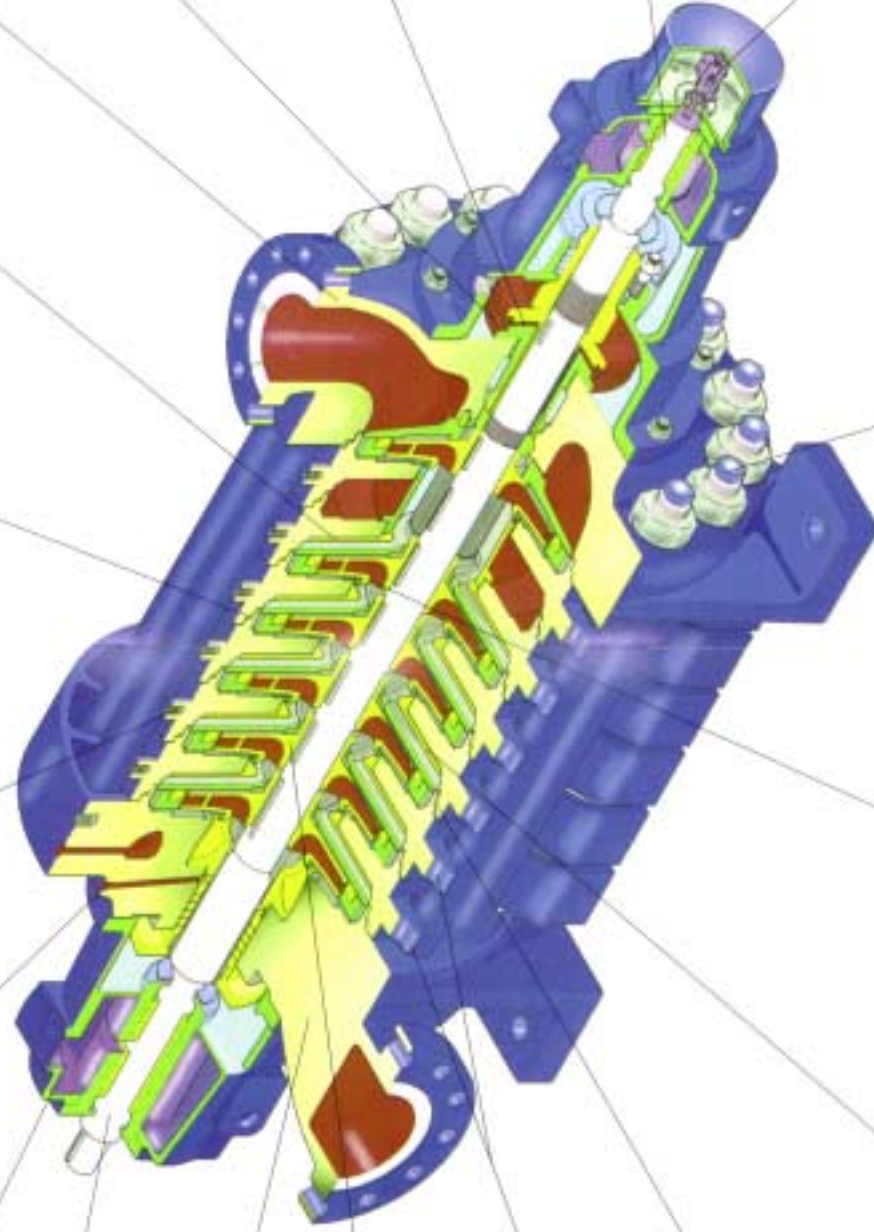
UNSPILT WHITE METAL LINED SLEEVE BEARINGS TO ALLOW FOR AXIAL MOVEMENT OF ROTOR.

PHOSPHOR BRONZE USED FOR WETTED PARTS ENSURING PROLONGED SERVICE LIFE.

REPLACEABLE WEAR RINGS TO AVOID COSTLY REPAIRS TO STAGE CASINGS.

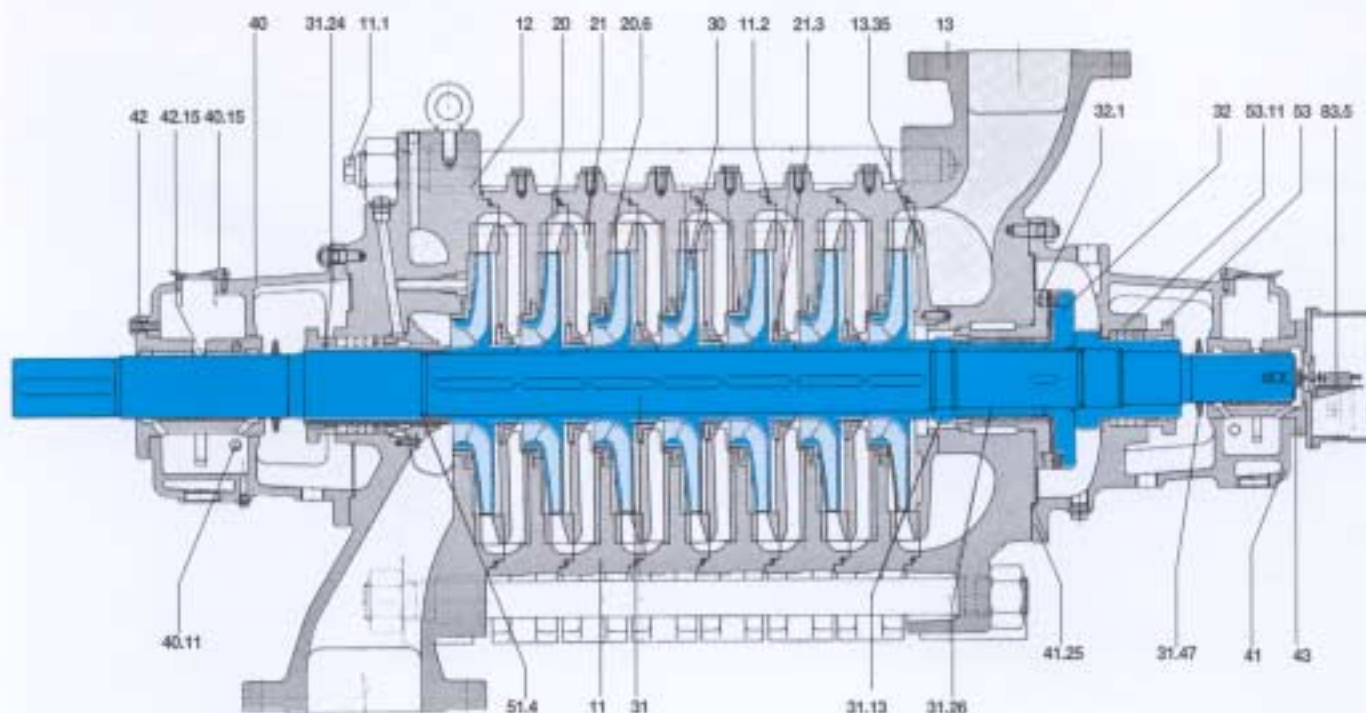
GENEROUSLY SIZED TIE BOLTS TO ENSURE RIGID PUMP CONSTRUCTION.

EXCLUSIVE SULZER LIMIT SWITCH FOR MONITORING BALANCE DISC WEAR.



### Cross-section of a typical HPH Pump

Disc-type balancing device  
Packings  
Oil lubricated



### Index of Parts

11	Stage Casing	30	Impeller	40.15	Oil Chamber Lid DE
11.1	Tie Bolt	31	Shaft	41	Bearing Bracket NDE
11.12	O-Ring to 11 & 12	31.13	Shaft Nut	41.25	O-Ring
11.2	Casing Wear Ring to 30	31.24	Shaft Sleeve DE	42	Bearing Liner DE
12	Suction Casing	31.26	Throttling Bush (grooved)	42.15	Lubricating Ring DE
13	Discharge Casing	31.47	Finger NDE	43	Bearing Liner NDE
13.35	Plate to Last Diffuser	32	Balancing Disc	(51.4)	Neck Bush DE
20	Diffuser	32.1	Counter Disc	53	Stuffing Box Gland NDE
20.6	Protection Insert to 11	40	Bearing Bracket DE	53.11	Stuffing Box Packing NDE
21	Overflow Piece	40.11	Oil Level Gauge DE	83.5	Wear Limit Switch
21.3	Wear Ring (small)				

#### Notes:

- When ordering spare parts an axial cross-section for the specific pump type should be used.
- HPH 33-17 $\frac{1}{2}$  differs from range with regard to drain connections and feet position.

### Connections Sizes and Flange Dimensions

Connections	Size						
	24	28	32	36	40	48/50	54/55/56
1 Drain - suction casing	G $\frac{1}{2}$ "	G $\frac{3}{4}$ "	G $\frac{1}{2}$ "	G $\frac{3}{4}$ "	-	G1"	G1"
1a Vent - suction casing	-	-	-	-	G $\frac{1}{2}$ "	-	-
2 Drain - discharge casing	G $\frac{1}{2}$ "	-	-	G $\frac{1}{2}$ "	-	-	-
2a Balancing water - discharge	-	-	-	-	G1 $\frac{1}{2}$ "	-	G2"
3 Pressure gauge - suction casing	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "
4 Pressure gauge - discharge casing	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "	G $\frac{1}{2}$ "
5 Cooling water inlet	G $\frac{3}{4}$ "	G1"	G1"	G1"	G1"	G1"	G1"
6 Cooling water outlet	G $\frac{3}{4}$ "	G1"	G1"	G1"	G1"	G1"	G1"

### Flanges

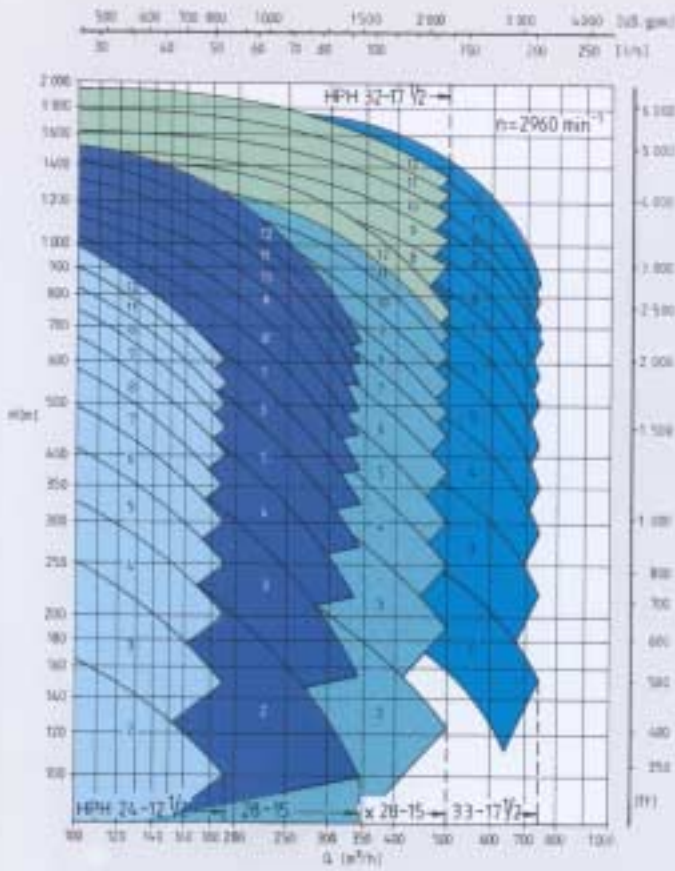
DN <sub>s</sub>	DN <sub>d</sub>	DIN	OD <sub>1</sub>	b <sub>1</sub>	OK <sub>1</sub>	OL <sub>1</sub>	Z <sub>1</sub>	raised face
125	2547	315	40	250	33	8	Ø186 x 3	
150	2548	355	50	290	33	12	Ø218 x 3	
150	2546	345	36	280	33	8	Ø218 x 3	
175	2546	375	40	310	33	12	Ø245 x 3	
175	2548	390	68	320	36	12	Ø260 x 3	
175*	2549	430	74	355	39	12	Ø260 x 3	
200	2547	430	55	360	36	12	Ø285 x 3	
200	2546	415	42	345	36	12	Ø285 x 3	
225	-	475	55	400	39	12	Ø295 x 3	
250	2548	515	76	430	42	12	Ø325 x 3	
300	2546	530	52	460	36	16	Ø375 x 4	

\*HPH-33-17 $\frac{1}{2}$

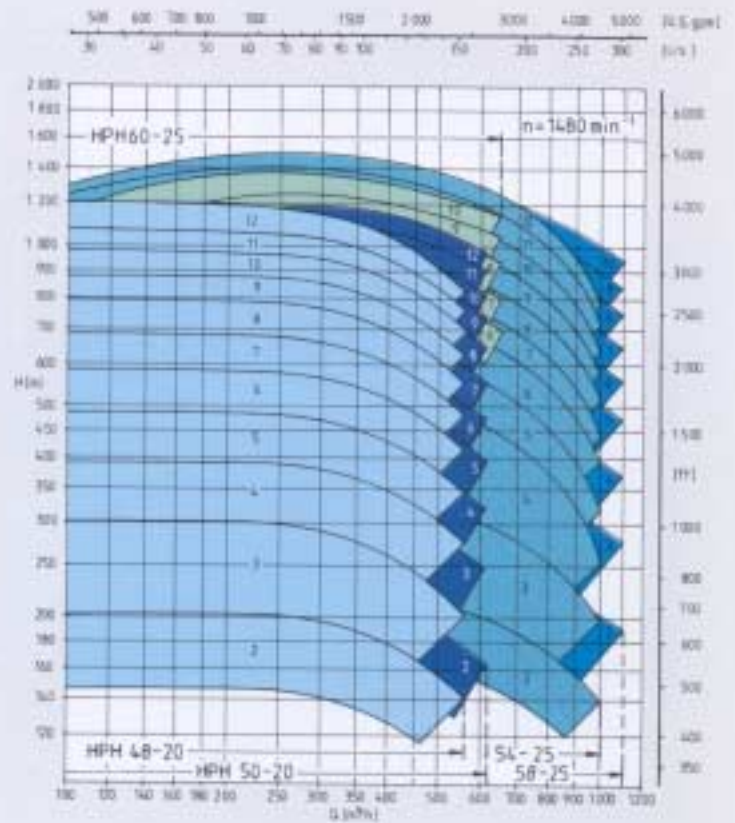


### Performance Ranges

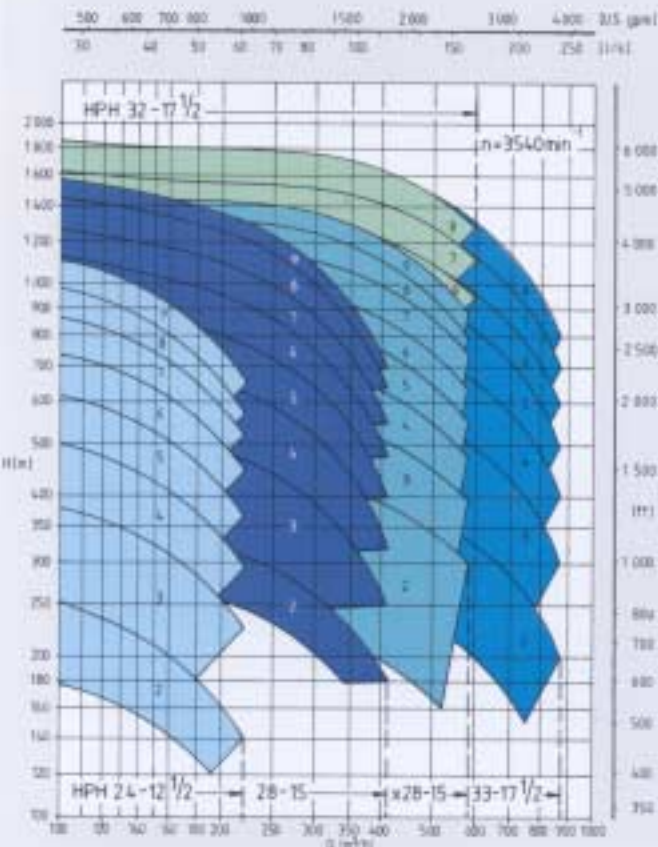
50 Hz



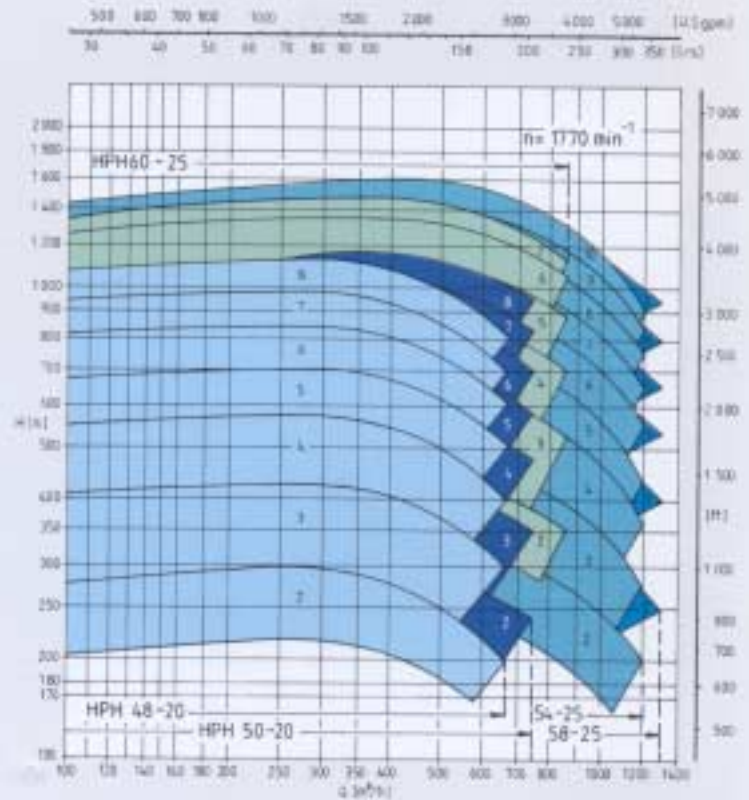
50 Hz



60 Hz



60 Hz





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Sulzer Weise GmbH

NETHERLANDS  
Sulzer Pompen Benelux B.V.

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Sulzer Espana, S.A.

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