

# HORIZONTAL MULTISTAGE CENTRIFUGAL PUMPS

SH, SHI, SHN SERIES 60HZ



**SHAKTI**

THE POWER OF INNOVATION, EFFICIENCY & TECHNOLOGY.

## CONTENT

---

### SH SERIES

Description	2 - 3
Product Identification	4
Construction	5
Construction - SH, SHI & SHN 2	6
Construction - SH, SHI & SHN 4	6
Construction - SH, SHI & SHN 8	7
Construction - SH, SHI & SHN 12	7
Exploded View	8
Construction	9
Curve Charts	10
Performance Curve - SH, SHI & SHN 2	12
Technical Data	13-15
Performance Curve - SH, SHI & SHN 4	16
Technical Data	17-19
Performance Curve - SH, SHI & SHN 8	20
Technical Data	21-23
Performance Curve - SH, SHI & SHN 12	24
Technical Data	25-27
Pump Liquid	28-30

## DESCRIPTION

### INTRODUCTION

The Shakti SH, SHI, SHN pumps are non-self priming, horizontal, multistage centrifugal pumps.



Pumps and motor are integrated in a compact and user friendly design fitted to a base plate making the pumps suitable for installation in compact systems.

SH, SHI, SHN pumps have many incorporate advantage such as those mentioned below.

#### Worldwide usage

- Different voltage and frequency combinations.
- State-of-the-art shaft seal materials (BVEGG) offering these benefits:
  - high wear resistance and long operating times
  - reduced risk of sticking if the liquid contains glycol
  - improved dry-running properties due to the graphite content of the SiC.

#### Electro-coated cast iron parts

- High corrosion resistance.
- Better efficiency because of smooth surfaces.

#### Customized solutions

- Motor adaptation

#### Materials

**SH:** Chambers and all moving parts in contact with the pumped liquid are made of stainless steel. Discharge chamber, suction chamber and base plate are painted non-gloss black.

**SHI, SHN:** Discharge chamber, suction chamber, base plate and all parts in contact with the pumped liquid are made of stainless steel. The pump is CE-marked.

### APPLICATIONS

The SH, SHI, SHN pumps are designed for small domestic and industrial systems.

- Fluid transfer and circulation of liquids within light industry and farming
- Pressure boosting in single-pump and multi pump booster systems
- Domestic water supply
- Cooling systems
- Air-conditioning systems

### TECHNICAL DATA

Flow, Q	-	Max. 70 GPM
Head, H	-	Max. 265 Feet
Liquid Temp.	-	32 °F to 194 °F
Operat. Pres.	-	Max. 145 PSI

### PUMPED LIQUIDS

**SH:** Thin, clean, non-aggressive and non-explosive liquids without solid particles or fibers.

**SHI, SHN:** Thin, clean, slightly aggressive and non-explosive liquids without solid particles or fibers.

### OPERATING CONDITIONS

Liquid temperature range : 32 °F to 194 °F

Max. ambient temperature : 131 °F

The maximum operating pressure depends on the temperature of the pumped liquid. See the table.

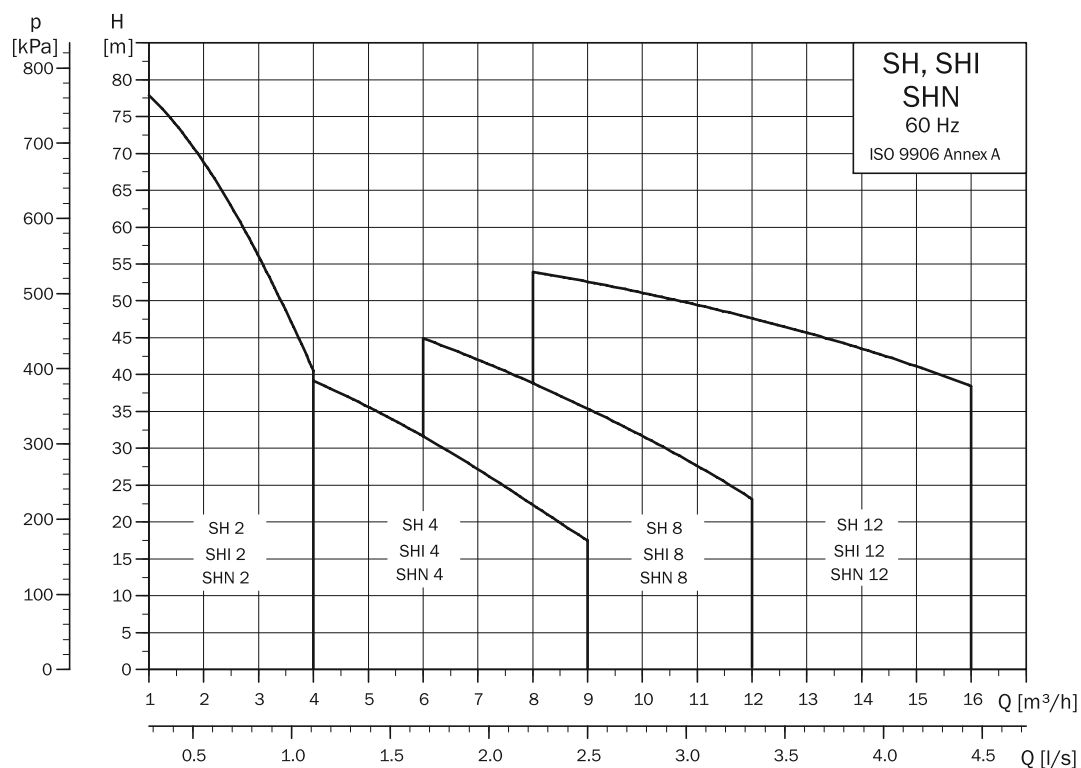
Max. inlet pressure:	1 MPa (145 PSI)	0.6 MPa (87 PSI)
SH, SHI, SHN 2	32 °F to 104 °F	106 °F to 194 °F
SH, SHI, SHN 4		
SH, SHI, SHN 8	32 °F to 133 °F	133 °F to 194 °F
SH, SHI, SHN 12		

Min. inlet pressure: According to the NPSH curve plus a safety margin of 0.5 m.

Max. inlet pressure: Limited by the max. operating pressure.

## DESCRIPTION

## PERFORMANCE RANGE





## CONSTRUCTION

### PUMPS

The SH, SHI, SHN pumps are non-self-priming, horizontal, multistage centrifugal pumps with mechanical shaft seal and through-going pump-motor shaft. The pumps have axial suction port and radial discharge port and are mounted on a base plate. All movable parts in contact with the pumped liquid are made of stainless steel.

EPDM or FKM O-rings are available as standard. See pipe connections in the table.

Max. inlet pressure:	1 MPa (145 PSI)	0.6 MPa (87 PSI)
SH, SHI, SHN 2 SH, SHI, SHN 4	32 °F to 104 °F	106 °F to 194 °F
SH, SHI, SHN 8 SH, SHI, SHN 12	32 °F to 133 °F	133 °F to 194 °F

### MOTOR

The pump is fitted with a TEFC (totally enclosed, fan-cooled), squirrel-cage Shakti motor.

Rated speed: 60 Hz, 3600 rpm  
 Enclosure class: IP 54  
 Insulation class: F  
 Standard voltages: 1 x 200-240 V, 60 Hz  
 3 x 200-240 V/380-440 V, 60 Hz

Voltage tolerance:  $\pm 6\%$   
 Sound-pressure level:  $\leq 70$  dB (A)

The single-phase motors are supplied with a built-in thermal relay to IEC 60034 - 11 : TP 211 (slow overload as well as locked rotor). The motors required no further motor protection.

The three-phase motors do not incorporate thermal protection and therefore require external motor protection in accordance with local regulations.

The **sound pressure** level of the pump is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

#### Frequency converter operation

Most three-phase motors can be operated with a frequency converter.

## CONSTRUCTION

### SH, SHI & SHN 2 Section drawing

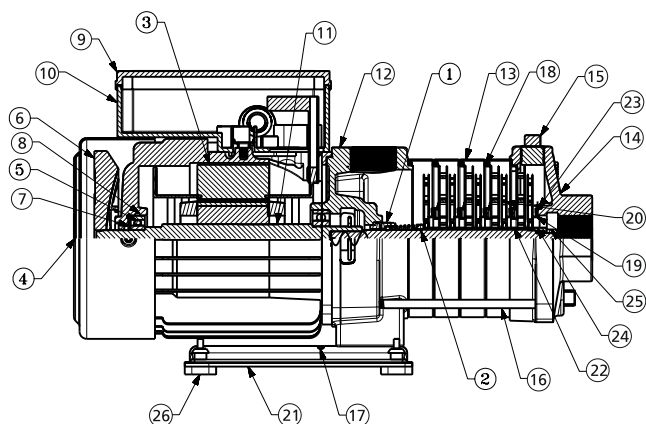


Fig. 1 SH, SHI & SHN 2 with SMG 71 motor

Pos.no.	Description	Pos.no.	Description	Pos.no.	Description
1	Mechanical seal	10	Terminal box	19	Neckring
2	Stop ring	11	Shaft	20	Impeller
3	Stator housing	12	Discharge chamber	21	Base plate
4	Fan cover	13	Chamber	22	Spacer pipe
5	Ball bearing	14	Suction chamber	23	Neck ring retainer
6	Fan	15	Plug	24	Clamp
7	Spring	16	Stay bolt	25	Lock nut
8	O-ring	17	Hex head screw	26	Rubber pad
9	Terminal box cover	18	Gasket		

### SH, SHI & SHN 4 Sectional drawing

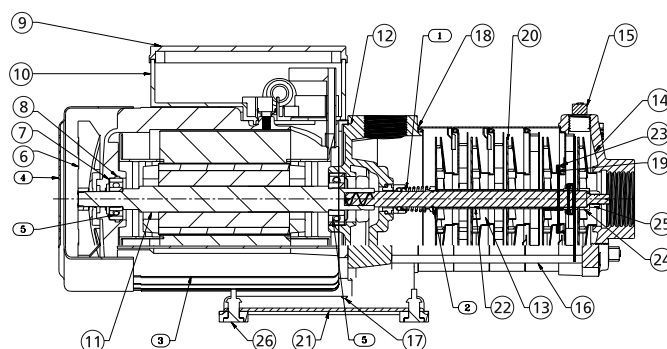


Fig. 2 SH, SHI & SHN 4 with SMG 80 motor

Pos.no.	Description	Pos.no.	Description	Pos.no.	Description
1	Mechanical seal	10	Terminal box	19	Neckring
2	Stop ring	11	Shaft	20	Impeller
3	Stator housing	12	Discharge chamber	21	Base plate
4	Fan cover	13	Chamber	22	Spacer pipe
5	Ball bearing	14	Suction chamber	23	Neck ring retainer
6	Fan	15	Plug	24	Clamp
7	Spring	16	Stay bolt	25	Lock nut
8	O-ring	17	Hex head screw	26	Rubber pad
9	Terminal box cover	18	Gasket		

## CONSTRUCTION

### SH, SHI & SHN 8 Section drawing

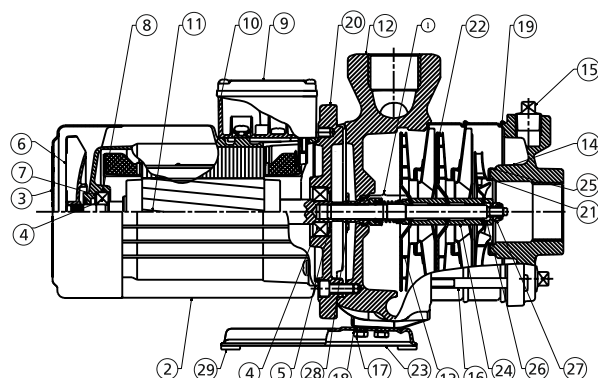


Fig. 3 SH, SHI & SHN 8 with SMG 80 motor

Pos.no.	Description	Pos.no.	Description	Pos.no.	Description
1	Mechanical seal	11	Shaft	21	Neckring
2	Stator housing	12	Pump housing	22	Impeller
3	Fan cover	13	Chamber	23	Base plate
4	Ball bearing	14	Suction chamber	24	Spacing pipe
5	Bearing cover plate	15	Plug	25	Neck ring retainer
6	Fan	16	Stay bolt	26	Clamp
7	Spring	17	Hex head screw	27	Lock nut
8	O-ring	18	Lock washer	28	Diverting disc
9	Terminal box Cover	19	Gasket	29	Rubber pad
10	Terminal box	20	Bearing plate	30	

### SH, SHI & SHN 12 Section drawing

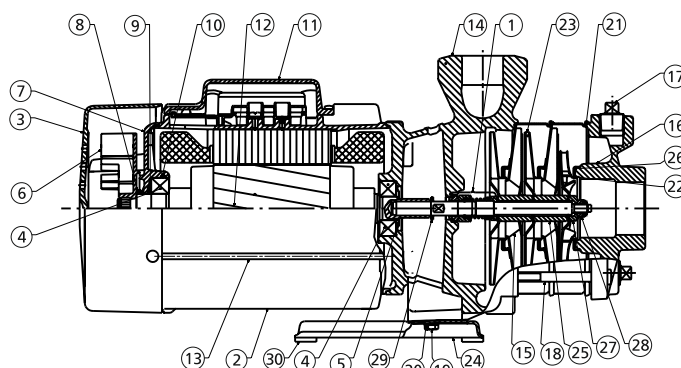


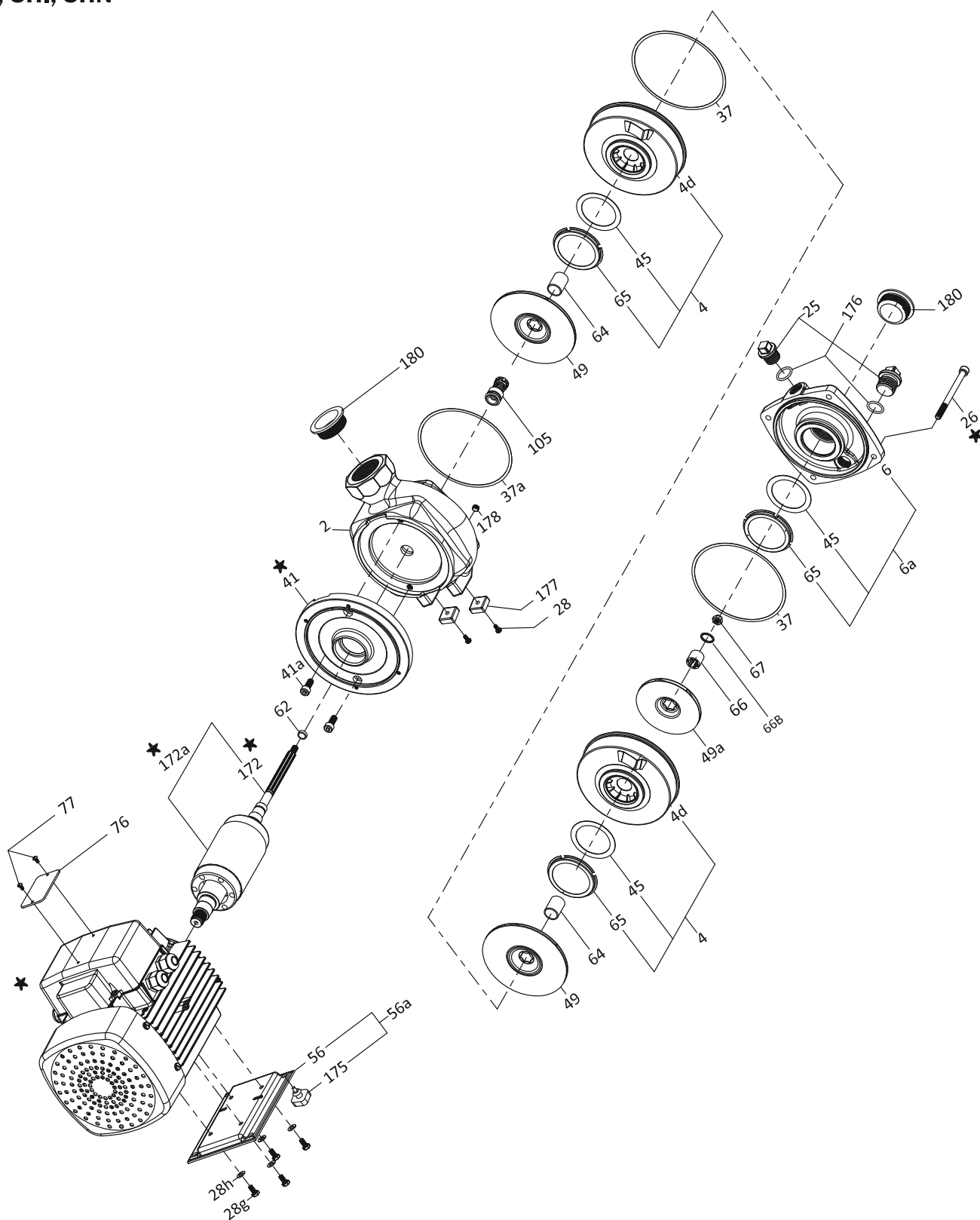
Fig. 4 SH, SHI & SHN 12 with SMG 90 motor

Pos.no.	Description	Pos.no.	Description	Pos.no.	Description
1	Mechanical seal	11	Terminal box Cover	21	Gasket
2	Stator housing	12	Shaft	22	Neckring
3	Fan cover	13	Stay bolt (SMG90)	23	Impeller
4	Ball bearing	14	Pump housing	24	Base plate
5	Bearing cover plate	15	Chamber	25	Spacing pipe
6	Fan	16	Suction chamber	26	Neck ring retainer
7	Non drive end shield	17	Plug	27	Clamp
8	Lip seal	18	Stay bolt	28	Lock nut
9	Spring	19	Hex head screw	29	Diverting disc
10	O-ring	20	Lock washer	30	Rubber pad



## EXPLODED VIEW

SH, SHI, SHN



## CONSTRUCTION

### MATERIAL SPECIFICATION

POS NO	DESCRIPTION	MATERIAL	SH	SHI	SHN
2	DISCHARGE CHAMBER	CAST IRON / STAINLESS STEEL	CI FG 260	SS AISI 304	SS AISI 316
4e	DIFFUSER CUP	SS AISI 304			
4d	DIFFUSER CUP	SS AISI 304			
4a	MIDDLE CHAMBER ASSEMBLY	-			
4	INTER CHAMBER ASSEMBLY	-			
6a	SUCTION CHAMBER ASSEMBLY	-			
6	SUCTION CHAMBER	CAST IRON / STAINLESS STEEL	CI FG 260	SS AISI 304	SS AISI 316
25	PLUG	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
26	STAY BOLT	STD			
28h	WASHER	STD			
28g	BOLT M6	STD			
28	PAN HEAD SCREW M6	STD			
37	GASKET	TEFLON			
45	NECKRING	PTFE			
47b	CHAMBER BEARING	CERIMAC			
47a	BEARING CARBIDE	TUNGSTAN CARBIDE			
49	IMPELLER	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
56a	BASE PLATE ASSEMBLY	-			
56	BASE PLATE	MS	SS AISI 304	SS AISI 304	SS AISI 304
62	STOPER PIPE	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
64a	SPACING PIPE	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
64	SPACING PIPE	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
65	NECKRING RETAINER	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
66	SPLINE CLAMP	STAINLESS STEEL	SS AISI 304	SS AISI 304	SS AISI 316
66b	LOCK WASHER	STD			
67	NYLON LOCK NUT M8	STD			
76	NAME PLATE	SS AISI 304			
77	RIBIT (NAME PLATE)	STD			
105	MECHANICAL SEAL	BVEGG			
172a	PUMP ROTOR SHAFT ASSEMBLY	EN/10088-3/1.4542			
172	PUMP SHAFT	EN/10088-3/1.4542			
175	RUBBER PAD	NBR			
176	O-RING FOR PLUG	NBR			
179	RUBBER SUPPORTER	NBR			
180	THREADED CAP	PVC			

## CURVE CHARTS

### CURVE CONDITIONS

The guideline below apply to the curves on the following pages.

- Tolerances according to ISO 9906, Annex A
- The **bold** curves state the recommended performance range
- The thin curves are only intended as a guide
- The curves must not be used as guarantee curves
- All curves are based on measurements at:
  - 1 x 200-240 V, 60 Hz
  - 3 x 380-440 V, 60 Hz
- When the motor is running at the lowest or highest rated voltage, the pump performance will usually vary by  $\pm 0.5 - 1.0$  m at a given duty point
- Specific minimum performance requirements necessitate individual measurements

- The measurements have been made with airless water at a temperature of  $20^{\circ}\text{C}$  ( $\sim 70^{\circ}\text{F}$ )
- The conversion between head  $H$  (m) and pressure  $p_3$
- The curves apply to a kinematic viscosity of  $\nu = 1\text{ mm}^2/\text{s}$  (1 cSt)

### HOW TO READ THE CURVE CHARTS

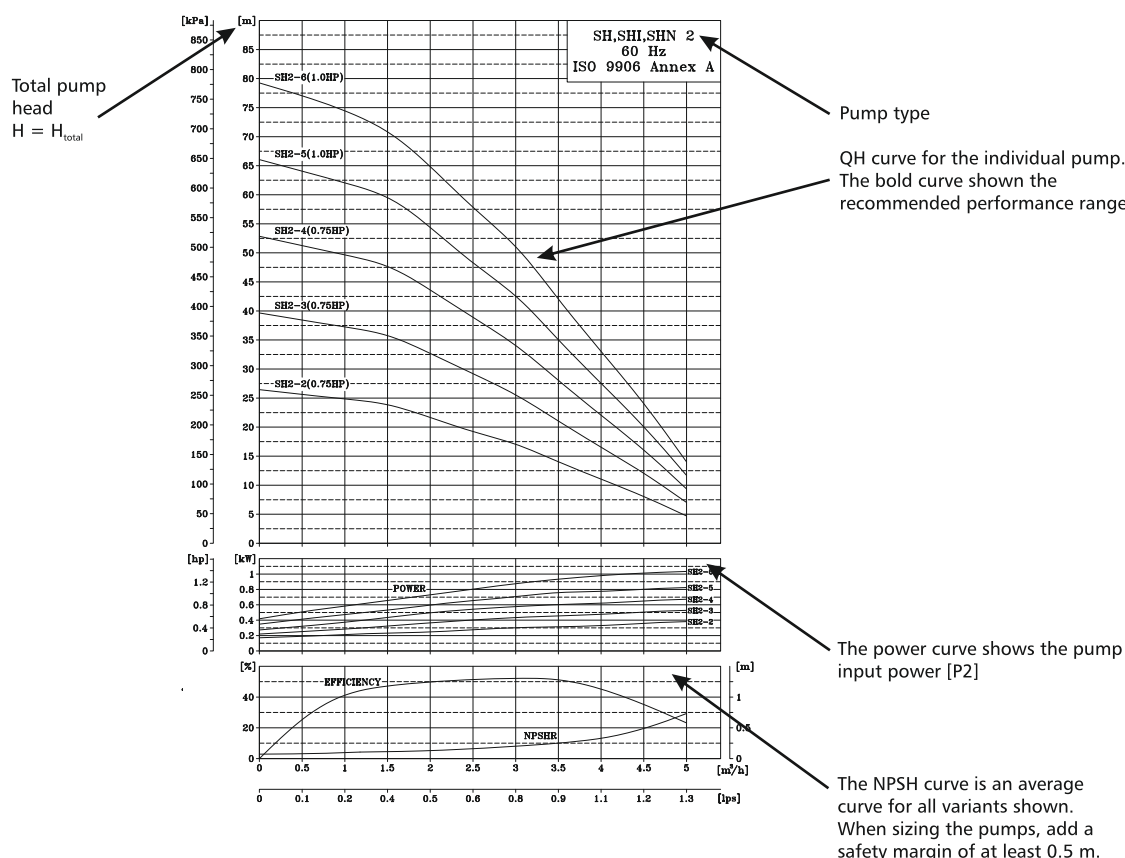
Curves

QH : Pump performance at actual speed.

$P_2$  : Pump input power.

Eta 1 : Total efficiency, i.e. pump with motor, is shown in the curve charts as Eta 1.

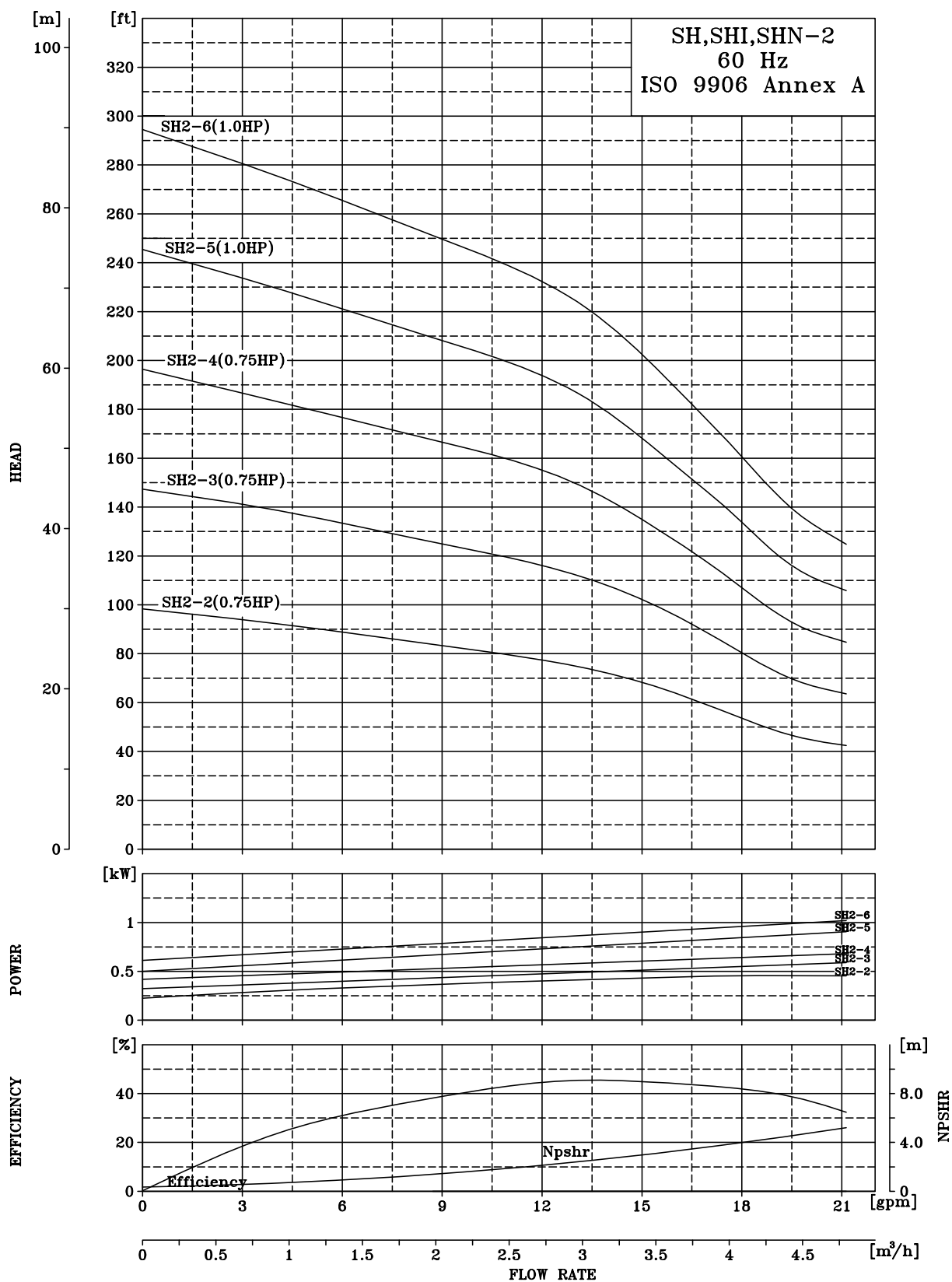
NPSH : Average values for all variants shown in chart 1. When sizing, make a safety allowance of at least 0.5 m.



**PERFORMANCE CURVE & TECHNICAL DATA**

# PERFORMANCE CURVES / PRESSURE BOOSTING PUMP 60 Hz

## SH, SHI, SHN 2



## TECHNICAL DATA

### SH, SHI, SHN 2

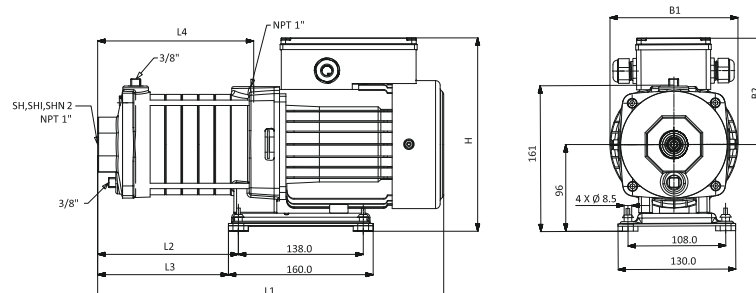


Fig. 5 Dimensional sketches, SH,SHI,SHN-2 with SMG 71/80 motor

### PERFORMANCE CHART

MODEL	kW	HP	PHASE	M <sup>3</sup> /hr	0	1	2	3	4	4.8	SUCTION PIPE	DELIVERY PIPE
				GPM	0	5	9	13	18	21		
SH, SHI, SHN 2 - 2	0.55	0.75	1 & 3	HEAD (Ft)	98	92	85	75	56	46	1"NPT	1"NPT
SH, SHI, SHN 2 - 3	0.55	0.75	1 & 3		148	134	124	112	85	69	1"NPT	1"NPT
SH, SHI, SHN 2 - 4	0.55	0.75	1 & 3		197	180	164	148	112	92	1"NPT	1"NPT
SH, SHI, SHN 2 - 5	0.75	1.0	1 & 3		246	226	207	184	141	115	1"NPT	1"NPT
SH, SHI, SHN 2 - 6	0.75	1.0	1 & 3		295	272	249	223	167	138	1"NPT	1"NPT

### DIMENSION FOR SH

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (Inch)	L2 (Inch)	L3 (Inch)	L4 (Inch)	B1 (Inch)	B2 (Inch)	H (Inch)
1X200-240	60	SH2-2	9000016356	SMG 71	12	3	3	4	6	5	9
		SH2-3	9000016357	SMG 71	13	4	3	5	6	5	9
		SH2-4	9000016358	SMG 71	13	4	4	5	6	5	9
		SH2-5	9000016359	SMG 80	16	7	7	6	6	5	9
		SH2-6	9000015977	SMG 80	17	7	7	7	6	5	9
3X220 -240/380-415	60	SH2-2	9000016369	SMG 71	12	3	3	4	6	5	9
		SH2-3	9000016370	SMG 71	13	4	3	5	6	5	9
		SH2-4	9000016371	SMG 71	13	4	4	5	6	5	9
		SH2-5	9000016372	SMG 80	16	7	7	6	6	5	9
		SH2-6	9000016373	SMG 80	17	7	7	7	6	5	9

## TECHNICAL DATA

### SH, SHI, SHN 2

#### DIMENSION FOR SHI

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X200-240	60	SHI2-2	9000016384	SMG 71	12	3	3	4	6	5	9
		SHI2-3	9000016385	SMG 71	13	4	3	5	6	5	9
		SHI2-4	9000016386	SMG 71	13	4	4	5	6	5	9
		SHI2-5	9000016387	SMG 80	16	7	7	6	6	5	9
		SHI2-6	9000015988	SMG 80	17	7	7	7	6	5	9
3X220 -240/380-415	60	SHI2-2	9000016399	SMG 71	12	3	3	4	6	5	9
		SHI2-3	9000014914	SMG 71	13	4	3	5	6	5	9
		SHI2-4	9000016400	SMG 71	13	4	4	5	6	5	9
		SHI2-5	9000014913	SMG 80	16	7	7	6	6	5	9
		SHI2-6	9000016401	SMG 80	17	7	7	7	6	5	9

#### DIMENSION FOR SHN

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X200-240	60	SHN2-2	9000019449	SMG 71	12	3	3	4	6	5	9
		SHN2-3	9000019450	SMG 71	13	4	3	5	6	5	9
		SHN2-4	9000019451	SMG 71	13	4	4	5	6	5	9
		SHN2-5	9000019452	SMG 80	16	7	7	6	6	5	9
		SHN2-6	9000019453	SMG 80	17	7	7	7	6	5	9
3X220 -240/380-415	60	SHN2-2	9000019454	SMG 71	2	3	3	4	6	5	9
		SHN2-3	9000019455	SMG 71	13	4	3	5	6	5	9
		SHN2-4	9000019456	SMG 71	13	4	4	5	6	5	9
		SHN2-5	9000019457	SMG 80	16	7	7	6	6	5	9
		SHN2-6	9000019458	SMG 80	17	7	7	7	6	5	9

## TECHNICAL DATA

### SH, SHI, SHN 2

#### WEIGHT

PUMP TYPE	SINGLE PHASE			THREE PHASE		
	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )
SH,SHI,SHN 2-2	21	25	0.0187	24	26	0.0187
SH,SHI,SHN 2-3	21	25	0.0187	24	26	0.0187
SH,SHI,SHN 2-4	27	29	0.0187	24	26	0.0187
SH,SHI,SHN 2-5	27	29	0.0236	25	27	0.0235
SH,SHI,SHN 2-6	28	30	0.0236	26	28	0.0235

#### ELECTRICAL DATA

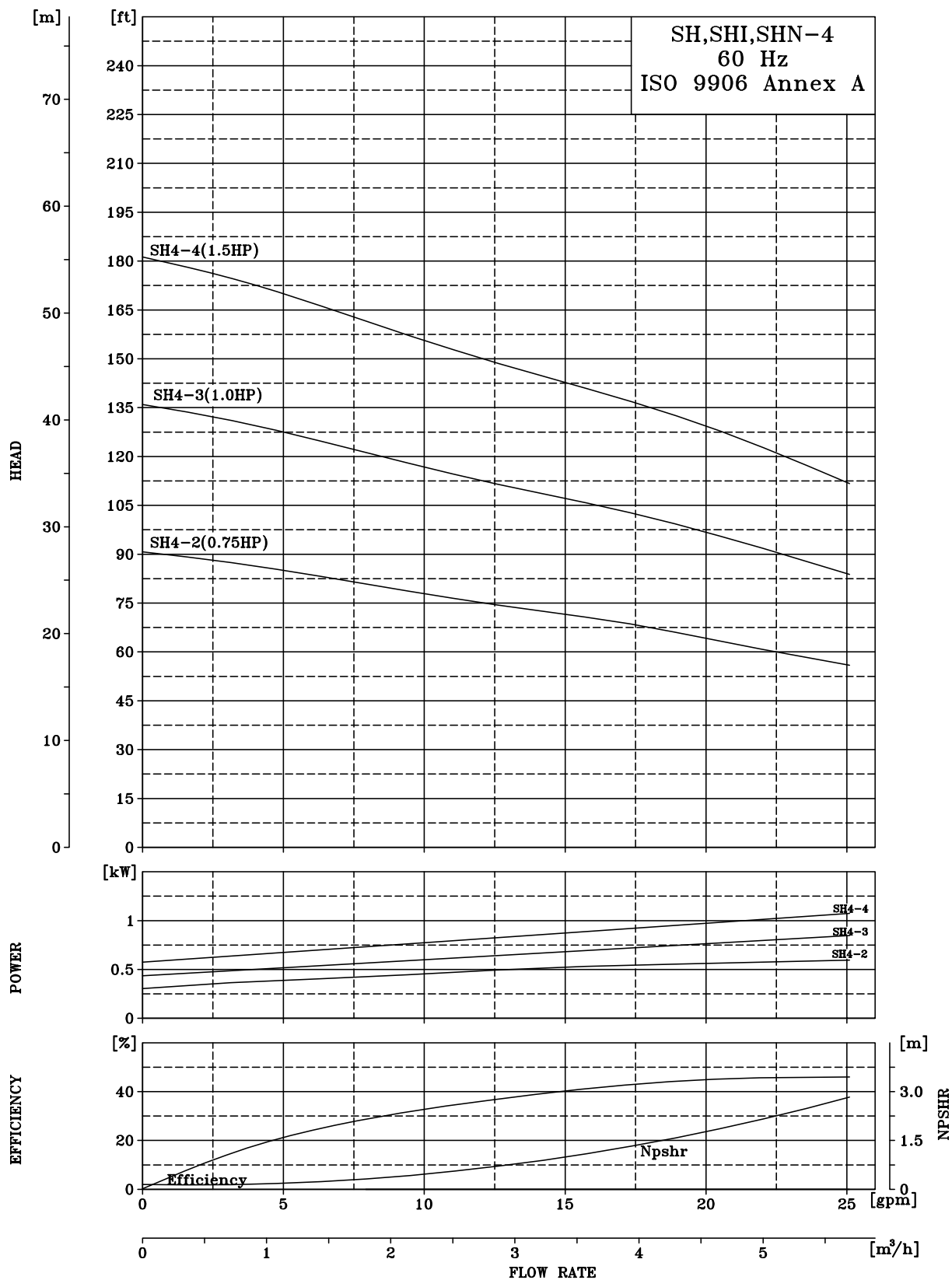
VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MOTOR TYPE	I <sub>L</sub> /1 (A)	1st (A)	P1 (W)	P2 (W)	C (μF/V)
1X200-240	60	SH,SHI,SHN 2-2	SMG 71	3.7	10.5	840	550	15/450
		SH,SHI,SHN 2-3	SMG 71	3.7	10.5	840	550	15/450
		SH,SHI,SHN 2-4	SMG 71	3.7	10.5	840	550	15/450
		SH,SHI,SHN 2-5	SMG 80	6	24	1110	750	20/450
		SH,SHI,SHN 2-6	SMG 80	6	24	1110	750	20/450
3X220 -240/380-415	60	SH,SHI,SHN 2-2	SMG 71	2.2/1.6	14.3/10.4	733	550	
		SH,SHI,SHN 2-3	SMG 71	2.2/1.6	14.3/10.4	733	550	
		SH,SHI,SHN 2-4	SMG 71	2.2/1.6	14.3/10.4	733	550	
		SH,SHI,SHN 2-5	SMG 80	2.4/2.0	15.6/13	950	750	
		SH,SHI,SHN 2-6	SMG 80	2.4/2.0	15.6/13	950	750	

\* Dual-frequency pump; can be used for both 50 and 60 Hz in the voltage range stated.



# PERFORMANCE CURVES / PRESSURE BOOSTING PUMP 60 Hz

## SH, SHI, SHN 4



## TECHNICAL DATA

### SH, SHI, SHN 4

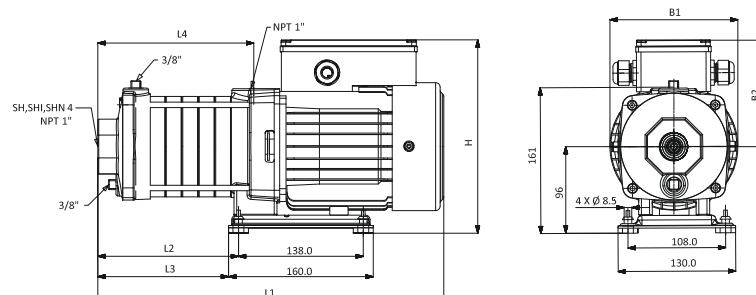


Fig. 6 Dimensional sketches, SH,SHI,SHN-4 with SMG 71/80 Motor

### PERFORMANCE CHART

MODEL	kW	HP	PHASE	M <sup>3</sup> /hr	0	2	3	4	5	5.7	SUCTION PIPE	DELIVERY PIPE
				GPM	0	9	13	18	22	25		
SH, SHI, SHN 4 - 2	0.55	0.75	1 & 3	HEAD (Ft)	92	79	75	66	62	56	1 1/4"NPT	1"NPT
SH, SHI, SHN 4 - 3	0.75	1	1 & 3		135	118	112	98	95	85	1 1/4"NPT	1"NPT
SH, SHI, SHN 4 - 4	1.1	1.5	1 & 3		180	157	148	131	125	112	1 1/4"NPT	1"NPT

### DIMENSION FOR SH

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SH4-2	9000016360	SMG 71	12	3	3	4	6	5	9
		SH4-3	9000011235	SMG 80	15	4	4	5	6	5	9
		SH4-4	9000016361	SMG 80	16	5	5	6	6	5	9
3X200-240/380-415	60	SH4-2	9000016374	SMG 71	12	3	3	4	6	5	9
		SH4-3	9000016375	SMG 80	15	4	4	5	6	5	9
		SH4-4	9000016376	SMG 80	16	5	5	6	6	5	9

## TECHNICAL DATA

### SH, SHI, SHN 4

#### DIMENSION FOR SHI

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHI4-2	9000016389	SMG 71	12	3	3	4	6	5	9
		SHI4-3	9000016390	SMG 80	15	4	4	5	6	5	9
		SHI4-4	9000016391	SMG 80	16	5	5	6	6	5	9
3X200-240/380-415	60	SHI4-2	9000016402	SMG 71	12	3	3	4	6	5	9
		SHI4-3	9000014915	SMG 80	15	4	4	5	6	5	9
		SHI4-4	9000014916	SMG 80	16	5	5	6	6	5	9

#### DIMENSION FOR SHN

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHN4-2	9000019461	SMG 71	12	3	3	4	6	5	9
		SHN4-3	9000019462	SMG 80	15	4	4	5	6	5	9
		SHN4-4	9000019463	SMG 80	16	5	5	6	6	5	9
3X200-240/380-415	60	SHN4-2	9000019464	SMG 71	12	3	3	4	6	5	9
		SHN4-3	9000019465	SMG 80	15	4	4	5	6	5	9
		SHN4-4	9000019466	SMG 80	16	5	5	6	6	5	9

## TECHNICAL DATA

### SH, SHI, SHN 4

#### WEIGHT

PUMP TYPE	SINGLE PHASE			THREE PHASE		
	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )
SH,SHI,SHN 4-2	21	22	0.0187	21	23	0.0187
SH,SHI,SHN 4-3	24	26	0.0187	24	26	0.0187
SH,SHI,SHN 4-4	33	35	0.0235	28	29	0.0235

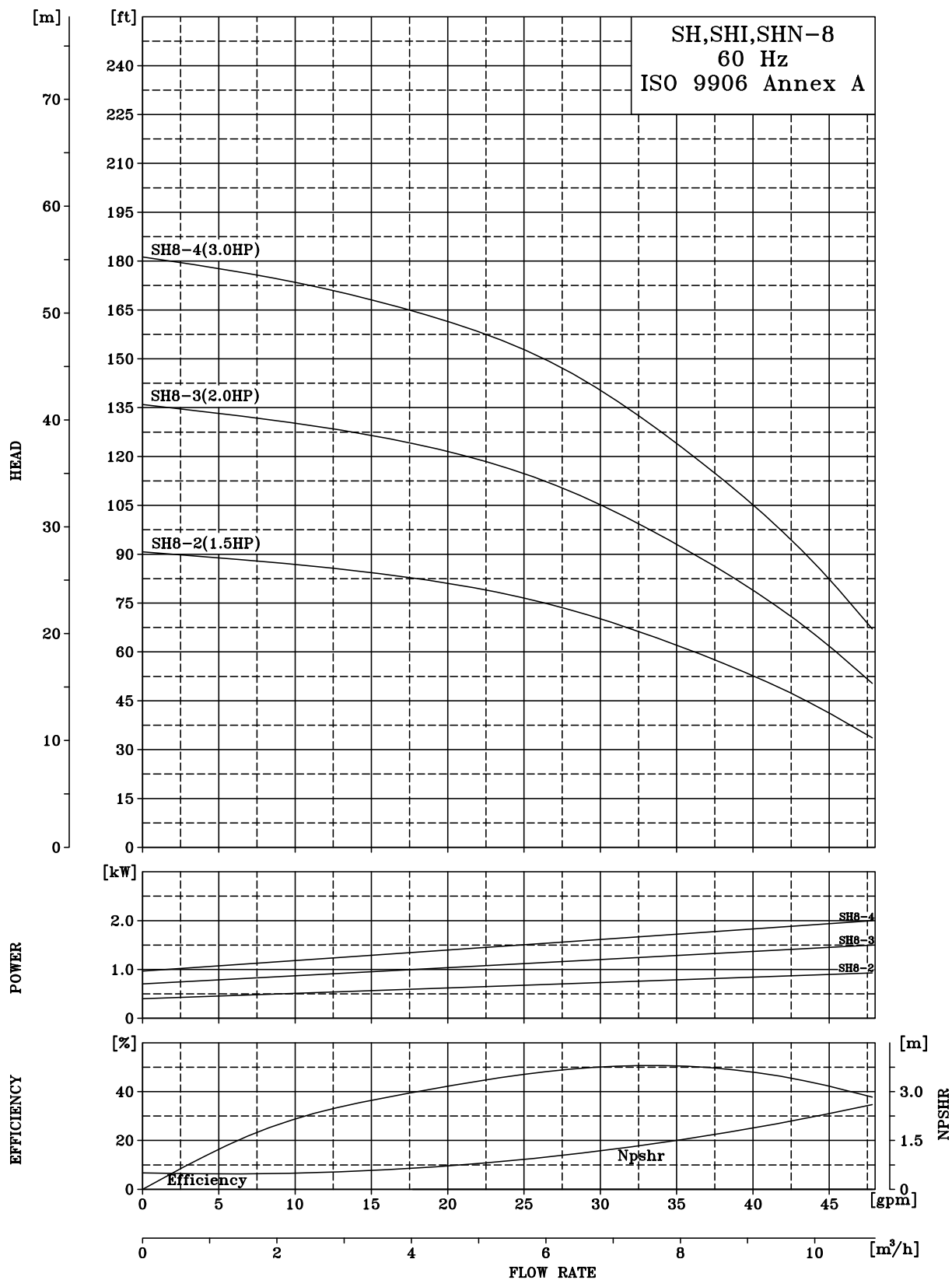
#### ELECTRICAL DATA

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MOTOR TYPE	I1/1 (A)	1st (A)	P1 (W)	P2 (W)	C (μF/V)
1X220-240	60	SH,SHI,SHN 4-2	SMG 71	3.7	10.5	840	550	15/450
		SH,SHI,SHN 4-3	SMG 80	4.9	24	1100	750	20/450
		SH,SHI,SHN 4-4	SMG 80	6.8	24	1540	1100	20/450
3X200 -240/380-415	60	SH,SHI,SHN 4-2	SMG 71	2.2/1.6	14.3/10.4	733	550	
		SH,SHI,SHN 4-3	SMG 80	2.4/2.0	15.6/13	950	750	
		SH,SHI,SHN 4-4	SMG 80	3.9/2.4	25.3/15.6	1428	1100	

\* Dual-frequency pump; can be used for both 50 and 60 Hz in the voltage range stated.

# PERFORMANCE CURVES / PRESSURE BOOSTING PUMP 60 Hz

## SH, SHI, SHN 8



## TECHNICAL DATA

### SH, SHI, SHN 8

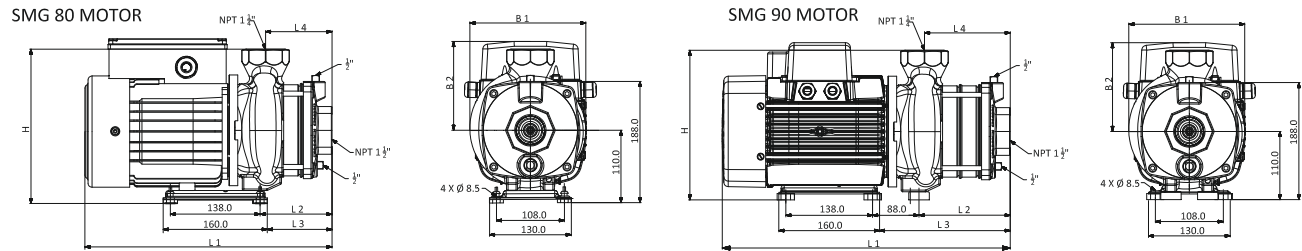


Fig. 7 Dimensional sketches, SH, SHI, SHN-8

### PERFORMANCE CHART

MODEL	kW	HP	PHASE	M <sup>3</sup> /hr	0	3	6	8	9	10.8	SUCTION PIPE	DELIVERY PIPE
				GPM	0	13	26	35	40	48		
SH, SHI, SHN 8 - 2	1.1	1.5	1 & 3	HEAD (Ft)	90	85	75	62	49	36	1 1/2"NPT	1 1/4"NPT
SH, SHI, SHN 8 - 3	1.5	2	1 & 3		135	128	113	94	74	54	1 1/2"NPT	1 1/4"NPT
SH, SHI, SHN 8 - 4	2.2	3	1 & 3		180	171	151	125	98	72	1 1/2"NPT	1 1/4"NPT

### DIMENSION FOR SH

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SH8-2	9000016362	SMG 80	15	3	3	4	6	5	9
		SH8-3	9000016363	SMG 90	17	8	3	5	7	6	10
		SH8-4	9000016364	SMG 90L	19	8	7	5	7	6	10
3X220-240/380-415	60	SH8-2	9000016377	SMG 80	15	3	3	4	6	5	9
		SH8-3	9000016378	SMG 90	17	8	3	5	7	6	10
		SH8-4	9000016379	SMG 90L	19	8	7	5	7	6	10

## TECHNICAL DATA

### SH, SHI, SHN 8

#### DIMENSION FOR SHI

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHI8-2	9000016392	SMG 80	15	3	3	4	6	5	9
		SHI8-3	9000016393	SMG 90	17	8	3	5	7	6	10
		SHI8-4	9000018844	SMG 90L	19	8	7	5	7	6	10
3X220-240/380-415	60	SHI8-2	9000016403	SMG 80	15	3	3	4	6	5	9
		SHI8-3	9000016404	SMG 90	17	8	3	5	7	6	10
		SHI8-4	9000016405	SMG 90L	19	8	7	5	7	6	10

#### DIMENSION FOR SHN

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHN8-2	9000019467	SMG 80	15	3	3	4	6	5	9
		SHN8-3	9000019468	SMG 90	17	8	3	5	7	6	10
		SHN8-4	9000019469	SMG 90L	19	8	7	5	7	6	10
3X220-240/380-415	60	SHN8-2	9000019470	SMG 80	15	3	3	4	6	5	9
		SHN8-3	9000019471	SMG 90	17	8	3	5	7	6	10
		SHN8-4	9000019472	SMG 90L	19	8	7	5	7	6	10

## TECHNICAL DATA

### SH, SHI, SHN 8

#### WEIGHT

PUMP TYPE	SINGLE PHASE			THREE PHASE		
	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )
SH,SHI,SHN 8-2	42	46	0.0422	42	46	0.0422
SH,SHI,SHN 8-3	57	62	0.0422	53	57	0.0422
SH,SHI,SHN 8-4	57	64	0.0422	60	64	0.0422

#### ELECTRICAL DATA

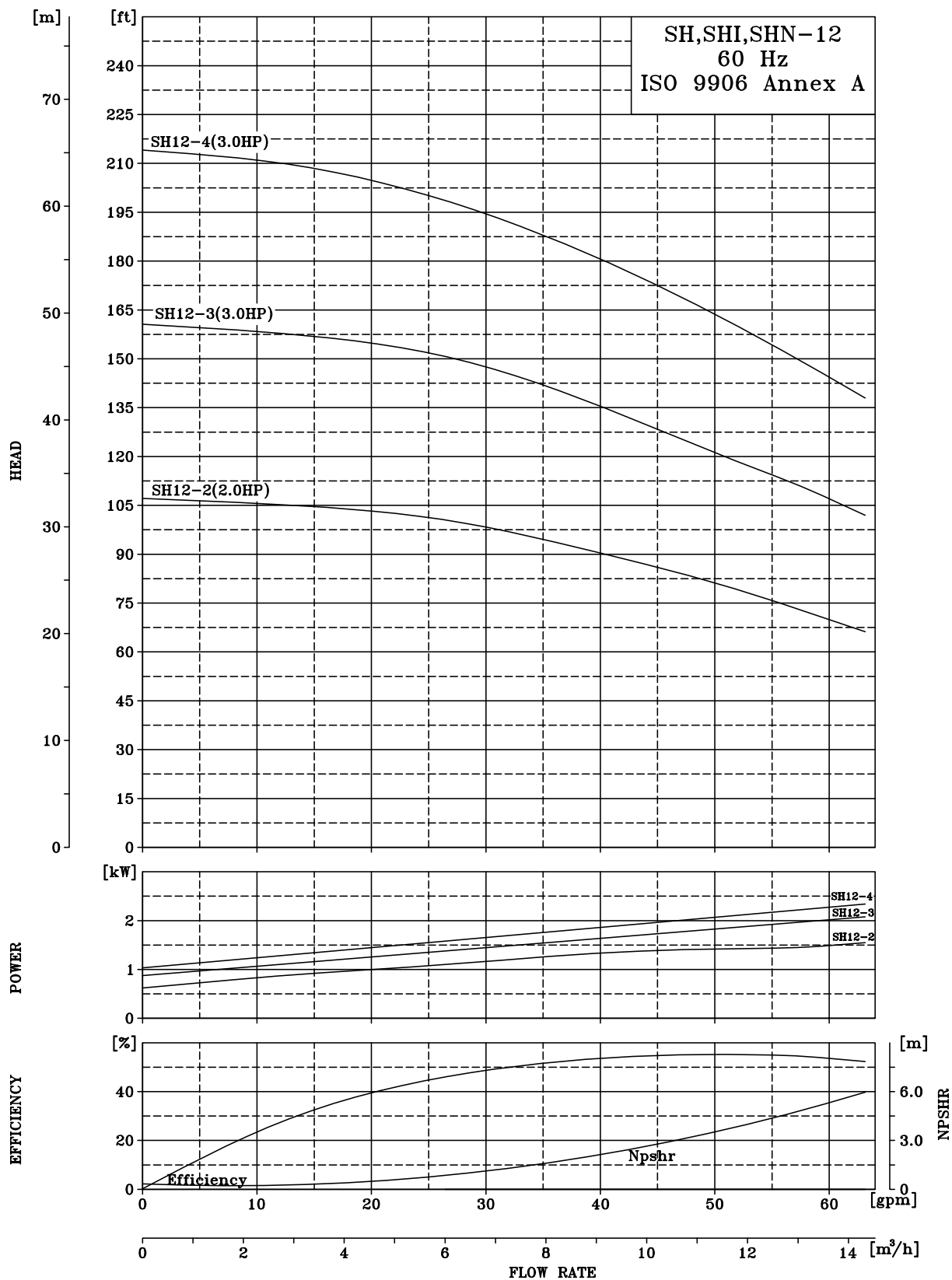
VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MOTOR TYPE	I1/1 (A)	1st (A)	P1 (W)	P2 (W)	C (μF/V)
1X220-240	60	SH,SHI,SHN 8-2	SMG 80	6.8	24	1540	1100	20/450
		SH,SHI,SHN 8-3	SMG 90	10.5	50	2390	1500	50/450
		SH,SHI,SHN 8-4	SMG 90L	14.4	50	3314	2200	50/450
3X200 -240/380-415	60	SH,SHI,SHN 8-2	SMG 80	3.9/2.4	25.3/15.6	1428	1100	
		SH,SHI,SHN 8-3	SMG 90	6.4/3.6	41.6/23.4	1829	1500	
		SH,SHI,SHN 8-4	SMG 90L	7.6/4.5	49.4/29.2	2682	2200	

\* Dual-frequency pump; can be used for both 50 and 60 Hz in the voltage range stated.



# PERFORMANCE CURVES / PRESSURE BOOSTING PUMP 60 Hz

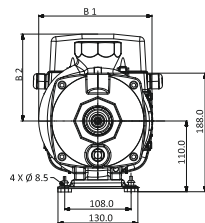
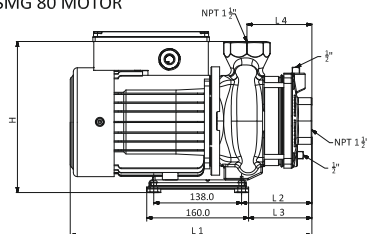
## SH, SHI, SHN 12



## TECHNICAL DATA

### SH, SHI, SHN 12

SMG 80 MOTOR



SMG 90 MOTOR

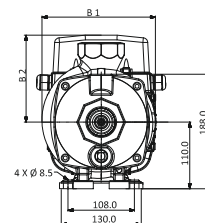
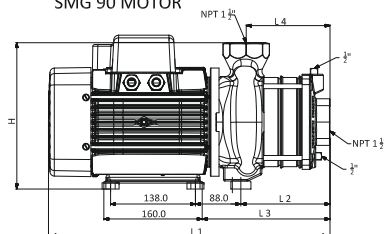


Fig. 8 Dimensional sketches, SH,SHI,SHN-12

### PERFORMANCE CHART

MODEL	kW	HP	PHASE	M <sup>3</sup> /hr	0	4	8	12	13	14.4	SUCTION PIPE	DELIVERY PIPE
				GPM	0	17	35	53	57	63		
SH, SHI, SHN 12 - 2	1.5	2	1 & 3	HEAD (Ft)	105	102	92	79	72	69	1 1/2"NPT	1 1/2"NPT
SH, SHI, SHN 12 - 3	2.2	3	1 & 3		157	153	138	118	108	105	1 1/2"NPT	1 1/2"NPT
SH, SHI, SHN 12 - 4	2.2	3	1 & 3		210	203	184	157	144	138	1 1/2"NPT	1 1/2"NPT

### DIMENSION FOR SH

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SH12-2	9000016366	SMG 90	17	7	6	4	7	5	10
		SH12-3	9000016367	SMG 90L	19	8	7	5	7	5	10
		SH12-4	9000016368	SMG 90L	19	8	7	5	7	5	10
3X220-240/380-415	60	SH12-2	9000016381	SMG 90	17	7	6	4	7	5	10
		SH12-3	9000016382	SMG 90L	19	8	7	5	7	5	10
		SH12-4	9000016383	SMG 90L	19	8	7	5	7	5	10

## TECHNICAL DATA

### SH, SHI, SHN 12

#### DIMENSION FOR SHI

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHI12-2	9000016396	SMG 90	17	7	6	4	7	5	10
		SHI12-3	9000016397	SMG 90L	19	8	7	5	7	5	10
		SHI12-4	9000016398	SMG 90L	19	8	7	5	7	5	10
3X220-240/380-415	60	SHI12-2	9000016407	SMG 90	17	7	6	4	7	5	10
		SHI12-3	9000016408	SMG 90L	19	8	7	5	7	5	10
		SHI12-4	9000016409	SMG 90L	19	8	7	5	7	5	10

#### DIMENSION FOR SHN

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MATERIAL CODE	MOTOR TYPE	L1 (INCH)	L2 (INCH)	L3 (INCH)	L4 (INCH)	B1 (INCH)	B2 (INCH)	H (INCH)
1X220-240	60	SHN12-2	9000019473	SMG 90	17	7	6	4	7	5	10
		SHN12-3	9000019474	SMG 90L	19	8	7	5	7	5	10
		SHN12-4	9000019475	SMG 90L	19	8	7	5	7	5	10
3X220-240/380-415	60	SHN12-2	9000019476	SMG 90	17	7	6	4	7	5	10
		SHN12-3	9000019477	SMG 90L	19	8	7	5	7	5	10
		SHN12-4	9000019478	SMG 90L	19	8	7	5	7	5	10

## TECHNICAL DATA

### SH, SHI, SHN 12

#### WEIGHT

PUMP TYPE	SINGLE PHASE			THREE PHASE		
	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )	NET WEIGHT (lbs)	GROSS WEIGHT (lbs)	SHIPPING VOLUME (M <sup>3</sup> )
SH,SHI,SHN 12-2	57	59	0.0422	57	59	0.0422
SH,SHI,SHN 12-3	57	62	0.0422	57	62	0.0422
SH,SHI,SHN 12-4	59	64	0.0422	59	64	0.0422

#### ELECTRICAL DATA

VOLTAGE (V)	FREQUENCY (Hz)	PUMP TYPE	MOTOR TYPE	I1/1 (A)	1st (A)	P1 (W)	P2 (W)	C (μF/V)
1X220-240	60	SH,SHI,SHN 12-2	SMG 90	10.5	50	2390	1500	50/450
		SH,SHI,SHN 12-3	SMG 90L	14.4	50	3314	2200	50/450
		SH,SHI,SHN 12-4	SMG 90L	14.4	50	3314	2200	50/450
3X220 -240/380-415	60	SH,SHI,SHN 12-2	SMG 90	6.4/3.6	41.6/23.4	1829	1500	
		SH,SHI,SHN 12-3	SMG 90L	7.6/4.5	49.4/29.2	2682	2200	
		SH,SHI,SHN 12-4	SMG 90L	7.6/4.5	49.4/29.2	2682	2200	

\* Dual-frequency pump; can be used for both 50 and 60 Hz in the voltage range stated.

## PUMP LIQUIDS

### PUMP LIQUIDS

Thin, non-explosive fluids, not containing solid particles or fibers. The fluids must not chemically attack the pump materials.

When pumping fluids with a density and/or viscosity higher than those of water, oversized motors must be used, if required.

Whether a pump is suitable for a particular fluid depends on a number of factors of which the most important are the chloride content, pH value, temperature and content of chemicals and oils.

Please note that aggressive fluids (for instance seawater and some acids) may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

### LIST OF PUMPED LIQUIDS

A number of typical fluids are listed below.

Other pump version may be applicable, but those stated in the list are considered to be the best choices.

The table is intended as a general guide only and cannot replace actual testing of the pumped fluids and pump materials under specific working conditions.

The list should, however, be applied with some caution as factors such as concentration of the pumped fluid, fluid temperature or pressure may affect the chemical resistance of a specific pump version.

Safety precautions must be made when pumping dangerous fluids.

### Notes

a	May contain additives or impurities which can cause shaft seal problems.
b	The density and viscosity may differ from those of water. Consider this when calculating motor and pump performance.
c	In order to avoid corrosion, the fluid must be free of oxygen.
d	flammable or combustible fluid. safety precautions must be considered to ensure safe handling of flammable fluids. Handling the fluid above the flashpoint and/or boiling point will require the greatest restrictions. A seal-less pump may be required. Contact Shakti.
e	Risk of crystallization/precipitation on the shaft seal.
f	If oil residues are present, EPDM cannot be used.

SR. NO.	PUMP LIQUID	SH	SHI, SHN	INFORMATION	NOTES
A	WATER				
1	Boiler Feed Water	BVEGG	BVEGG	Max. Temp. 194 °F suitably +	
2	Condensate	BVEGG	BVEGG	Max. Temp. 284 °F suitably +	
3	Cooling & cutting Lubricants	BVEGG	BVEGG	-	a
4	Ground water	BVEGG	BVEGG	≤ 300 PPM Chloride	
5	Demineralised Water	-	BVEGG	Max. Temp. 194 °F suitably +	
6	District Heating Water	BVEGG	BVEGG	Max. Temp. 194 °F suitably +	
7	Oil - containing water	BVEGG	BVEGG	- suitably -	
8	Softened Water	BVEGG	BVEGG	Max. Temp. 194 °F suitably +	
9	Swimming Pool Water ,chlorinated	BVEGG	BVEGG	Max. Temp. 104 °F suitably ++ Max. 5 PPM Chlorine	

## PUMP LIQUIDS

SR. NO.	PUMP LIQUID	SH	SHI, SHN	INFORMATION	NOTES
<b>B</b>	<b>FUELS</b>				
1	Diesel Oil	BVEGG	BVEGG	- suitably -	d
2	Jet Fuel	BVEGG	BVEGG	- suitably -	d
3	Kerosene	BVEGG	BVEGG	-	d
4	Petrol	BVEGG	BVEGG	- suitably -	d
5	Biodiesel	BVEGG	BVEGG	-	d
6	Naptha	BVEGG	BVEGG	-	d
<b>C</b>	<b>MINERAL OILS</b>				
1	Crude Oil	BVEGG	BVEGG	- suitably -	a,b,c
2	Mineral Lubricating Oil	BVEGG	BVEGG		b,d
3	Mineral Motor Oil	BVEGG	BVEGG	- suitably -	b,d
<b>D</b>	<b>COOLANTS</b>				
1	Ethylene Glycol	BVEGG	BVEGG	- suitably -	a , b
2	Glycerine (Glycerol)	BVEGG	BVEGG	Max. Temp. 176 °F Max. Conc.. 50 % suitably ±	a , b
3	Hydrocarbon Based Collent	BVEGG	BVEGG	-	b , d
4	Potassium Acetate (Inhabited)	BVEGG	BVEGG	-	a , b, c, e
5	Potassium Formate (Inhabited)	BVEGG	BVEGG	-	a , b, c, e
6	Propylene Glycol	BVEGG	BVEGG	- suitably -	a , b
<b>E</b>	<b>CLEANING</b>				
1	Alkaline Degreasing Agent	BVEGG	BVEGG		a,f
2	Soap (Salt of fatty Acids)	BVEGG	BVEGG		a
<b>F</b>	<b>VEGETABLE OILS</b>				
1	Corn Oil	BVEGG	BVEGG	- suitably -	a , b
2	Olive Oil	BVEGG	BVEGG	- suitably -	a , b
3	Peanut Oil	BVEGG	BVEGG	- suitably -	a , b
4	Rape-Seed Oil	BVEGG	BVEGG	- suitably -	a , b
5	Soya oil	BVEGG	BVEGG	- suitably -	a , b
<b>G</b>	<b>OXIDANTS</b>				
1	Hydrogen Peroxide		BVEGG	Max. Temp. 68 °F Max. Conc.. 30 % suitably ++	

## PUMP LIQUIDS

SR. NO.	PUMP LIQUID	SH	SHI, SHN	INFORMATION	NOTES
<b>H</b>	<b>SALTS</b>				
1	Ammonium bicarbonate	BVEGG	BVEGG	Max. Temp. 140 °F Max. Conc.. 20 % suitably +	b
2	Potassium Bicarbonate	BVEGG	BVEGG		b
3	Sodium Carbonate	BVEGG	BVEGG	Max. Temp. 176 °F Max. Conc.. 20 % suitably +	b,e
4	Potassium Permanganete		BVEGG	- suitably -	
5	Sodium Nitrate	BVEGG	BVEGG	Max. Temp. 176 °F Max. Conc.. 40 % suitably +	b
6	Sodium Nitrite	BVEGG	BVEGG	Max. Temp. 194 °F Max. Conc.. 30 % suitably +	b
7	Sodium Phospate (mono)		BVEGG	- suitably -	b
8	Sodium Phospate (di)	BVEGG	BVEGG		b
9	Sodium Phospate (tri)	BVEGG	BVEGG		b,e
10	Sodium Sulphate		BVEGG	- suitably -	b,e
11	Sodium Sulphite	BVEGG	BVEGG	Max. Temp. 176 °F Max. Conc.. 20 % suitably +	b,e

<b>I</b>	<b>ACIDS</b>				
1	Acetic acid		BVEGG	suitably ±	
3	Citric Acid		BVEGG	suitably ±	
4	Nitric Acid		BVEGG	suitably ±	b
5	Phosphoric Acid		BVEGG	suitably ±	a

<b>J</b>	<b>ALKALIS</b>				
1	Ammonium hydroxide	BVEGG	BVEGG	suitably -	
2	Calcium hydroxide	BVEGG	BVEGG	suitably -	a
3	Potassium hydroxide	BVEGG	BVEGG	suitably -	b,e
4	Sodium hydroxide	BVEGG	BVEGG	suitably -	b,e

<b>k</b>	<b>SYNTHETIC OILS</b>				
1	Synthetic Lubricating oil	BVEGG	BVEGG		b,d
2	Synthetic Motor oil	BVEGG	BVEGG		b,d
3	Silicon Oil	BVEGG	BVEGG	Max. Temp. 194 °F	b,e
	Sodium hydroxide	BVEGG	BVEGG	Max. Conc.. 100 %	b,e
				suitably +	



India : Toll Free No. 1800 103 5555

Other Countries : +91-7292 410500

## SHAKTI PUMPS (INDIA) LIMITED

Plot No. 401, 402, & 413, Industrial Area, Sector - 3, Pithampur, Dist. Dhar - 454774 (M.P.) India  
Fax: +91-7292 410645, E-mail: [info@shaktipumps.com](mailto:info@shaktipumps.com), [sales@shaktipumps.com](mailto:sales@shaktipumps.com),  
Visit us at : [www.shaktipumps.com](http://www.shaktipumps.com)

Apr. 2019/R1 SAP No. 2900000608  
Apr./2019-20/L4/000 VC - 0000