



Enriching Lives

CUSTOMER SUPPORT NETWORK

INDIA BUSINESS

BANGALORE

bangalore@kepl.in.net

CHENNAI

chennai@kepl.in.net

HYDERABAD

hyderabad@kepl.in.net

JAMNAGAR

jamnagar@kepl.in.net

KOLKATA

kolkata@kepl.in.net

MUMBAI

mumbai@kepl.in.net

NEW DELHI

newdelhi@kepl.in.net

PUNE

kepl@kepl.in.net

VADODARA

vadodara@kepl.in.net

OVERSEAS BUSINESS

AMERICAS

Kirloskar Brothers LLC

john_mayorga@spppumps.com

john_lessard@spppumps.com

EAST ASIA

Kirloskar Brothers (Thailand) Limited

admin@kirloskarthailand.com

KEPL, INDIA

exports@kepl.in.net

MIDDLE EAST

SPP Pumps Limited

shrikant.deshpande@kepl.in.net

NORTH AFRICA

Kirloskar Brothers Limited

narayan.mirji@kbl.co.in

REST OF EUROPE

Kirloskar Pompen BV

info@kirloskar.eu

SOUTH AFRICA

SPP Pumps SA (Pty) Ltd.

ph@spppumps.co.za

UNITED KINGDOM

SPP Pumps Limited

oil&gas@spppumps.com



RELIABILITY
ENGINEERING • PASSION • COMMITMENT



KIRLOSKAR EBARA PUMPS LIMITED

A Kirloskar Group Company

Head Office :

Pride Kumar Senate Building, Senapati Bapat Road, Pune 411 016, Maharashtra. India.

Phone : +91 20 2560 0100 Fax : +91 20 2560 0351

Email : kepl@kepl.in.net Website : www.kepl.in.net

CIN : U29120MH1988PLCO45865

Works :

Savantpur Vasahat, Kirloskarvadi, Dist. Sangli 416 308, Maharashtra.

Phone : +91 2346 279071 to 75 Fax : +91 2346 279099



KEPL/C-10/BFW-C/2015/NOVEMBER/REV.00



Enriching Lives

KIRLOSKAR EBARA PUMPS LIMITED

A Kirloskar Group Company

KEPL, a Kirloskar Group company established in year 1988, is engaged in manufacturing and supply of API 610 process Pumps and Turbines. It has been manufacturing Boiler Feed Water Pumps for more than 15 years and has supplied more than 1000 pumps for high pressure fluid handling applications especially in oil refineries, petrochemical industries and water treatment plants.

MSS/MSSH
(KBSL /
KBSM)

INDUSTRIES WE CATER TO



Sugar



Steel



Chemical, Fertilizer
and Allied Industries



Oil and Gas



Cement



Water Treatment and
Desalination Plants

DESIGNING CAPABILITIES AND INFRASTRUCTURE

- Pump / turbine hydraulics using Computerised Fluid Dynamics (CFD)
 - Lateral Analysis of Rotor
 - Torsional Analysis of complete driving train
 - Seismic Analysis of unit
 - Dynamic Analysis of Pump and its support
 - Finite Element Analysis for high pressure / temperature application
 - Research and Development centre to conduct trials to arrive at effective solutions on Sound Emission Levels, Bearing Temperature Rise, Improvement in Pump Efficiency and NPSH3
- requirements, new hydraulic developments etc.
- 3D model piping
 - Full fledged pump engineering department having a team of experienced engineers and technicians in Design of API pumps and boiler feed water pumps
 - Design department with designing and drafting facilities viz. AutoCAD 2013 (Mechanical), Pro-E Version 2.0, Solid Works 2014, software - Ansys (Mechanical & CFD), MSC Nastran, AFT Phathom

PERFORMANCE TESTING

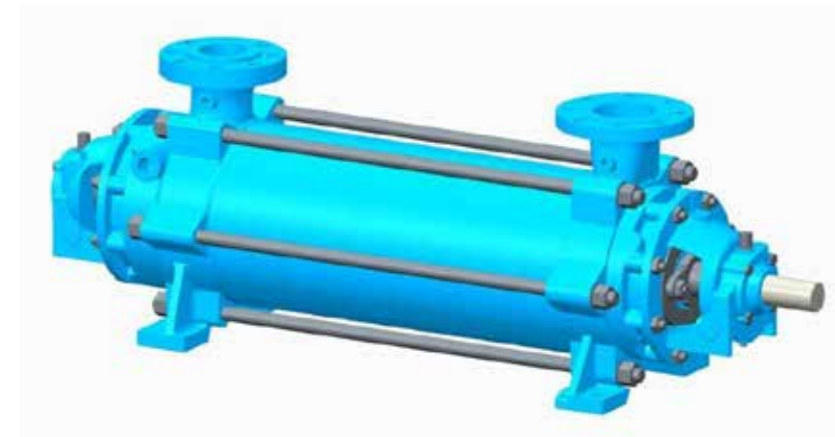
- Pump testing at 50 Hz and 60 Hz frequency covering all global supply voltages (3.3 to 13.3 Kv) upto 5 MW
- Closed circuit NPSH testing capabilities for pumps
- No load test for steam turbines with high pressure steam
- Computerised data acquisition system

MAJOR CUSTOMERS

- Thermax Limited
- ThyssenKrupp Industries India Pvt. Ltd.
- TPSC India Private Limited
- Reliance Industries Limited

AFTER SALES SERVICES

- Spare stock initiative for low down time
- Dedicated team at our service centre, for Refurbishment of equipments
- Wide spared service network in India and overseas market
- Dedicated team for customer training activity
- Refurbishment of pumps / turbines
- Bharat Heavy Electricals Limited
- Saudi ARAMCO
- Nuclear Power Corporation of India Ltd.
- ISGEC Heavy Engineering Limited



NON API

Rating

Capacity (m ³ /hr)	Upto 270 (for MSS), Upto 180 (for MSSH)
Head (m)	Upto 550 (for MSS), Upto 850 (for MSSH)
Temperature Range °C	-5 to 165
Discharge Pressure	Upto Cl. 600 #
Suction Pressure kg/cm ² (g)	Upto 11
Nozzle Orientation (Suc./Dis.)	Top-Top & Side-Top
Motor Synchronous Speeds (rpm)	3000 / 3600
Max. Operating Speed (rpm)	3600
Direction of Rotation	Clockwise when viewed from coupling end
Flange Ratings (#RF)	Cl. 150 / 600

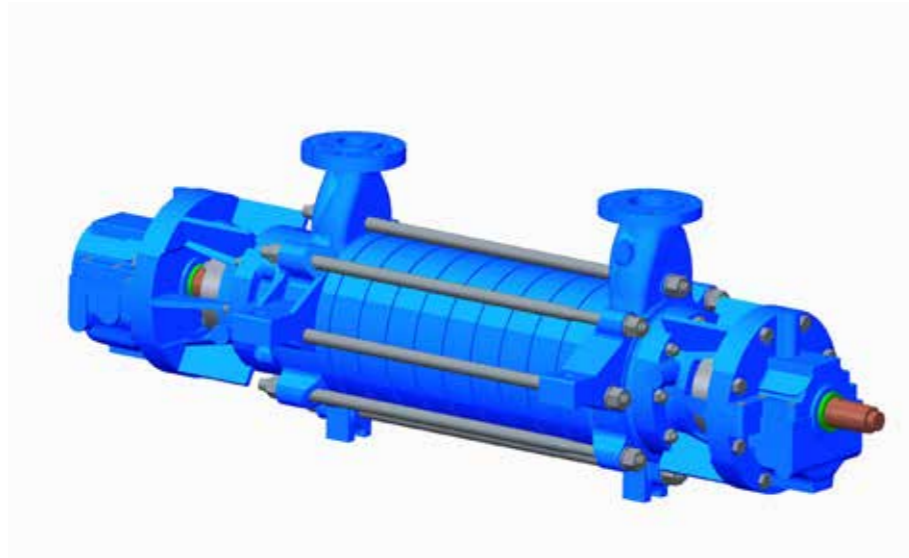
Features

- Design and manufacture as per company standard
- Multistage pump with ring section diffuser casing design with foot mounted casing suitable for low pressure requirements
- Easy inspection and repair maintenance of bearings and mechanical seal after removal of coupling spacer only
- Specially designed to meet reliable performance for extended low cost operation
- Bleed off flow extraction from Intermediate casing

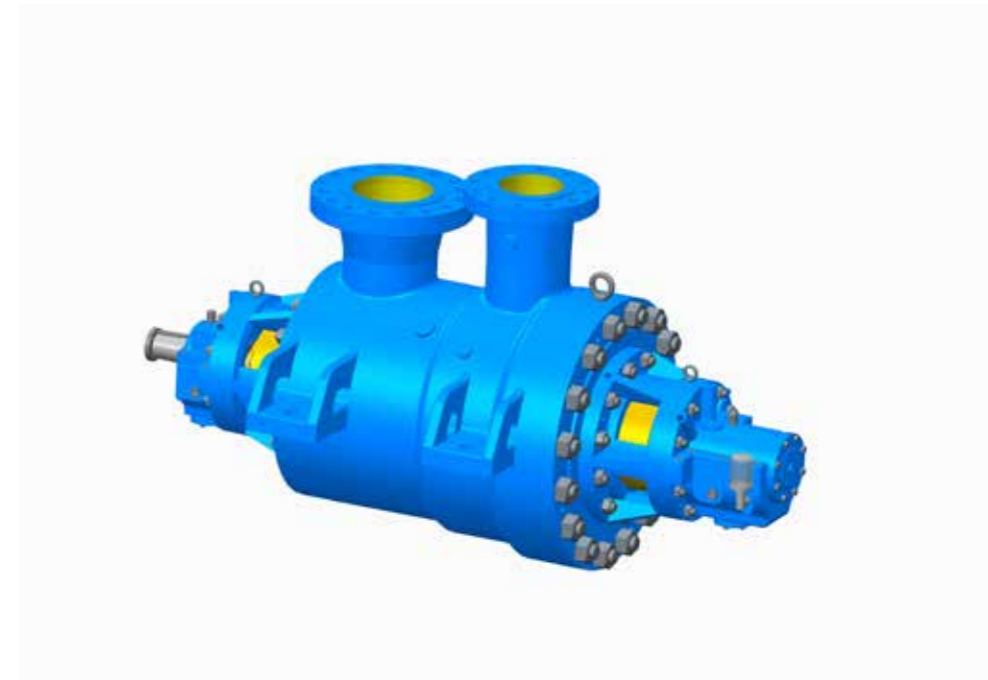
Applications

- **MSS**
Low pressure boiler feed applications
- Low pressure applications in water treatment plants
- Low pressure applications in light chemical plants
- **MSSH**
Medium pressure boiler feed applications
- Medium pressure applications in water treatment plants
- Medium pressure applications in light chemical plants

SS/SSD
(KBSH /
KBDH)



DCS/DCD
(KBDS /
KBDD)



API / Non API
Between Bearing BB 4

Rating

Capacity (m ³ /hr)	Upto 650	<i>*More higher capacity and head is possible when pumps are operated at higher speeds</i>
Head (m)	Upto 2500	<i>*More higher capacity and head is possible when pumps are operated at higher speeds</i>
Temperature Range °C	-5 to 200	
Discharge Pressure	Upto Cl. 2500 #	
Suction Pressure kg/cm ² (g)	Upto 17 (higher on request)	
Nozzle Orientation (Suc./Dis.)	Top-Top & Side-Top	
Motor Synchronous Speeds (rpm)	3000 / 3600	
Max. Operating Speed (rpm)	7000	
Direction of Rotation	Clockwise when viewed from coupling end	
Flange Ratings (#RF)	Cl. 300 / 600 / 900 / 1500 / 2500	

Features

- Design and manufacture as per company standard, can meet API 610 requirements
- Multistage pump with ring section diffuser casing design with centerline support to meet high temperature and high pressure BFW application
- Easy inspection and repair maintenance of bearings and mechanical seal after removal of coupling spacer only
- First stage impeller with double suction is provided in SSD models to improve NPSH3 performance
- Specially designed to meet high performance for reliability and extended low cost operation
- Bleed off flow extraction from Intermediate casing

Applications

- Medium / High pressure boiler feed water applications
- High pressure mine drainage applications
- High pressure applications in water treatment plant
- Pump as hydraulic power recovery turbine in water treatment plants

API / Non API
Between Bearing BB 5

Rating

Capacity (m ³ /hr)	Upto 650	<i>*More higher capacity and head is possible when pumps are operated at higher speeds</i>
Head (m)	Upto 2500	<i>*More higher capacity and head is possible when pumps are operated at higher speeds</i>
Temperature Range °C	-104 to 425	
Discharge Pressure	Upto Cl. 2500 #	
Suction Pressure kg/cm ² (g)	Upto 80	
Nozzle Orientation (Suc./Dis.)	Top-Top & Side-Top	
Motor Synchronous Speeds (rpm)	3000 / 3600	
Max. Operating Speed (rpm)	7000	
Direction of Rotation	Clockwise when viewed from coupling end	
Flange Ratings (#RF)	Cl. 300 / 600 / 900 / 1500 / 2500	

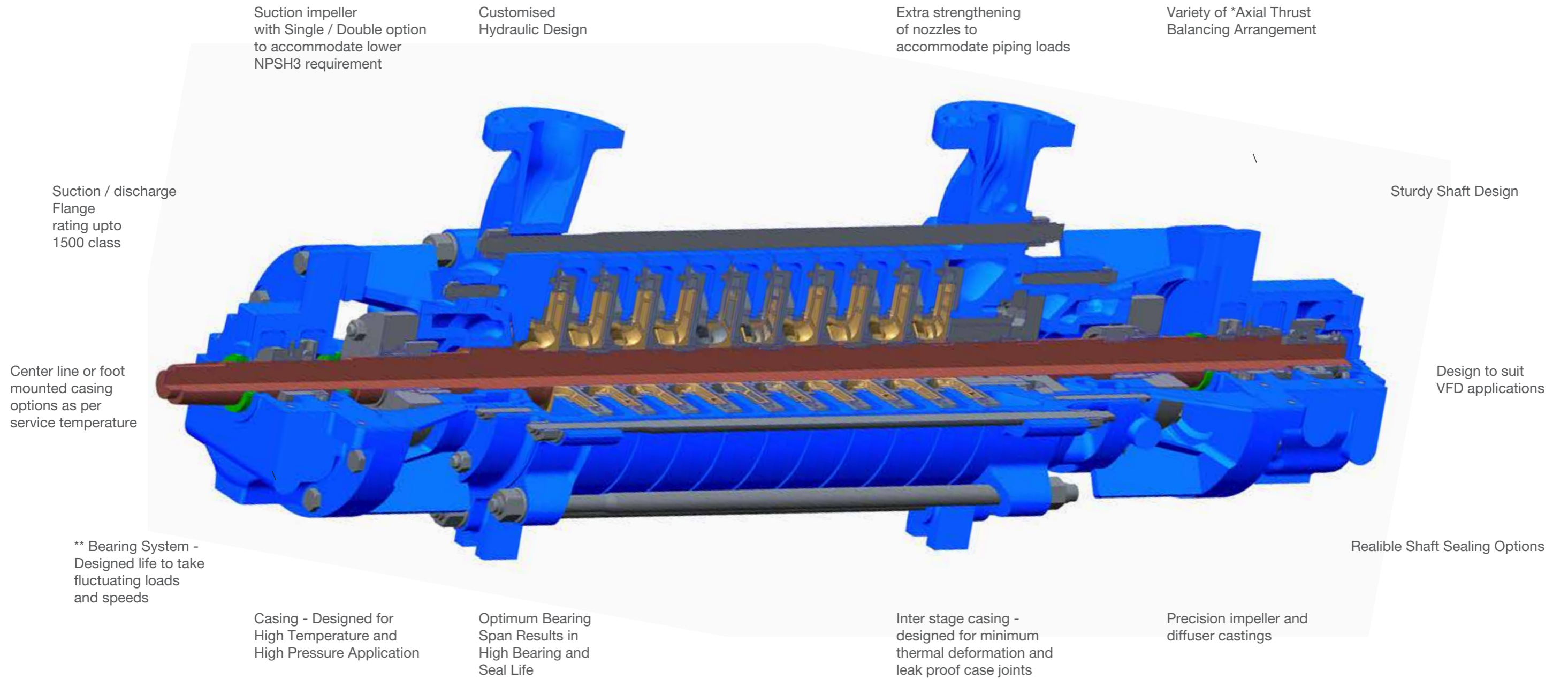
Features

- Design and manufacture as per API 610 or company standard
- Multistage centerline supported heavy duty double casing diffuser design for handling high pressure and high temperature applications
- Easy inspection and repair maintenance of bearings and mechanical seal after removal of coupling spacer only. The cartridge (assembly of all parts except outer casing) can be removed without disturbing suction / discharger piping and driver
- Axial thrust balancing is with the help of options like piston & balance disc, double piston or straight piston
- Low NPSH requirement can be met with first stage double suction impeller in DCD pumps
- Bleed of flame extraction at partial pressure

Applications

- High pressure fluid handling in oil refineries and petrochemical industry
- LP, MP and HP boiler feed applications
- Light hydrocarbon and liquid gas transfer applications
- Sea water injection application in oil wells
- Mine dewatering
- Petroleum product pipeline booster applications
- Pump as hydraulic power recovery turbine in chemical and process plants

RELIABILITY IN BOILER FEED WATER PUMPS



Multistage Boiler Feed Pump
Available in End Suction Configuration - KRO

* BALANCING OPTIONS

Balancing Disk

Balancing Disk and Drum (Piston)

Balancing Drum (Piston)

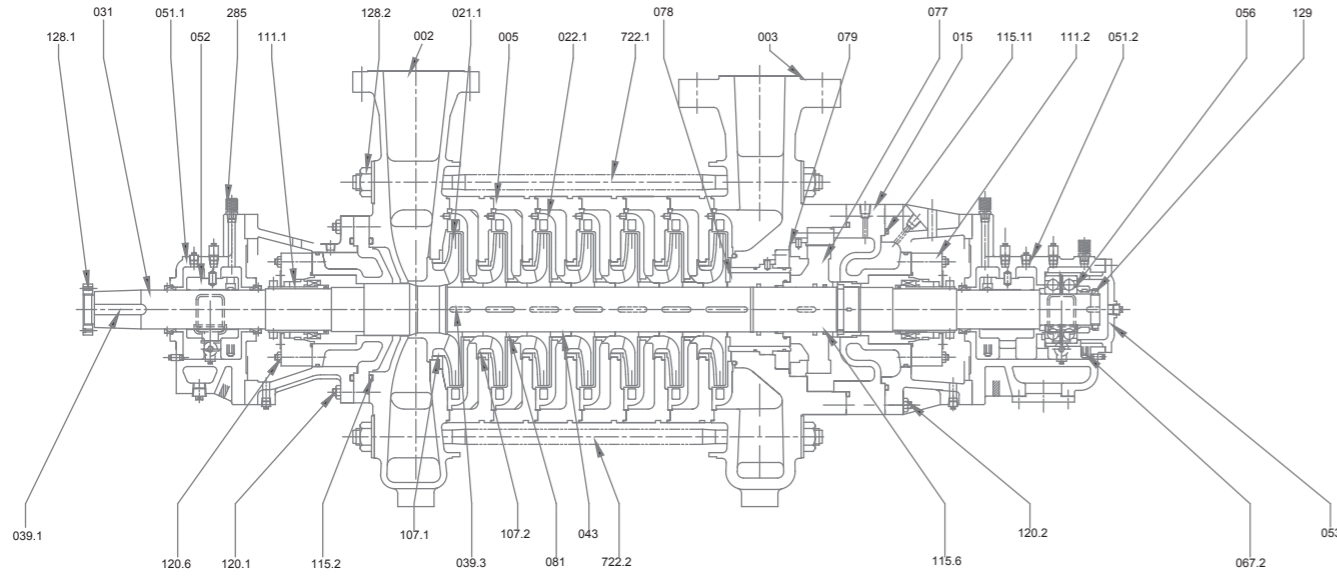
** BEARING OPTIONS

Driving End	Non Driving End
# Roller Bearing	Angular Contact Ball Bearing
# Sleeve Bearing	Sleeve and Angular Contact Ball Bearing
• Sleeve Bearing	Sleeve and Tilting Pad Bearing

Available in water cooled as well as fan cooled arrangement

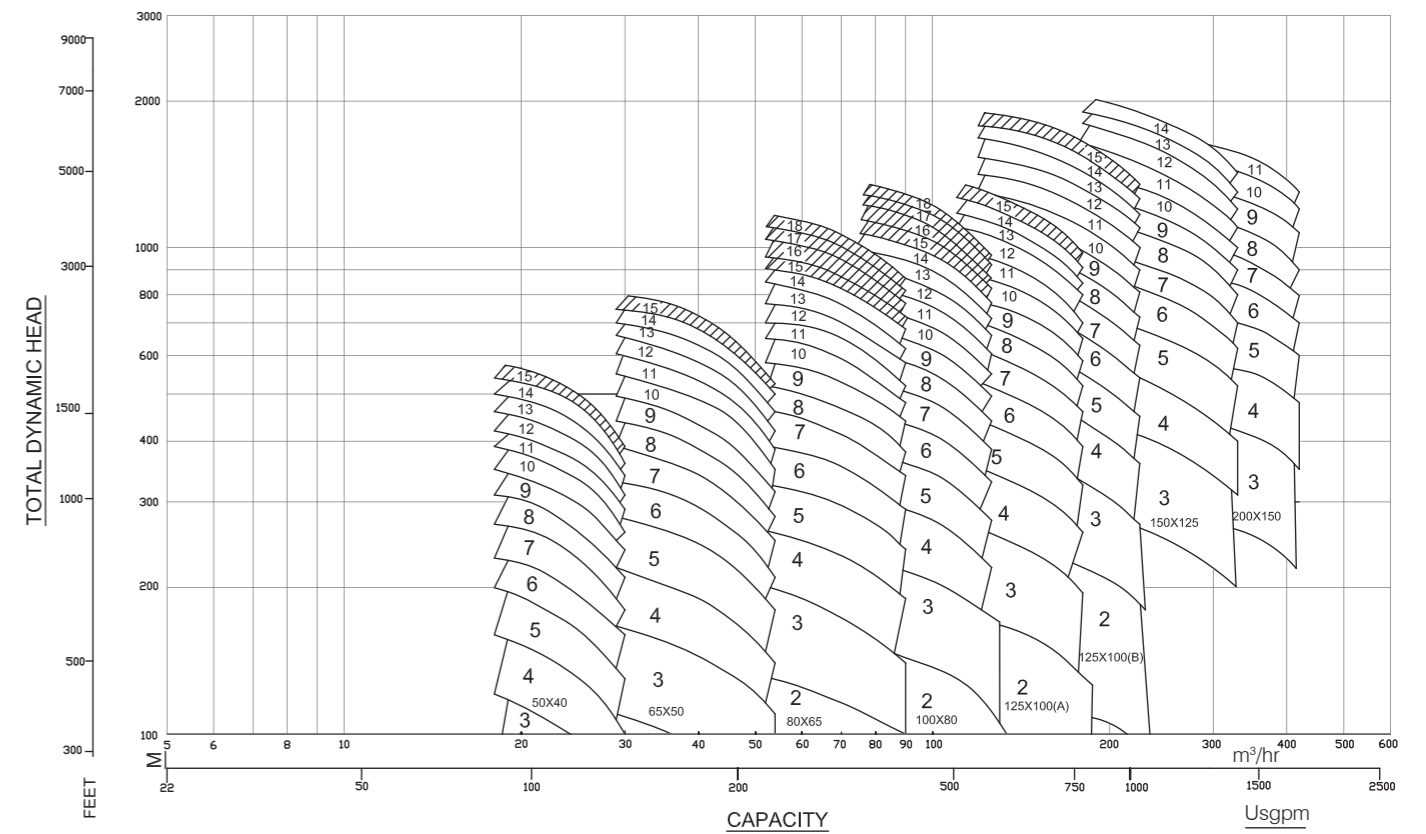
• Pressurised oil lubrications

Cross Section Drawing of SS Pump

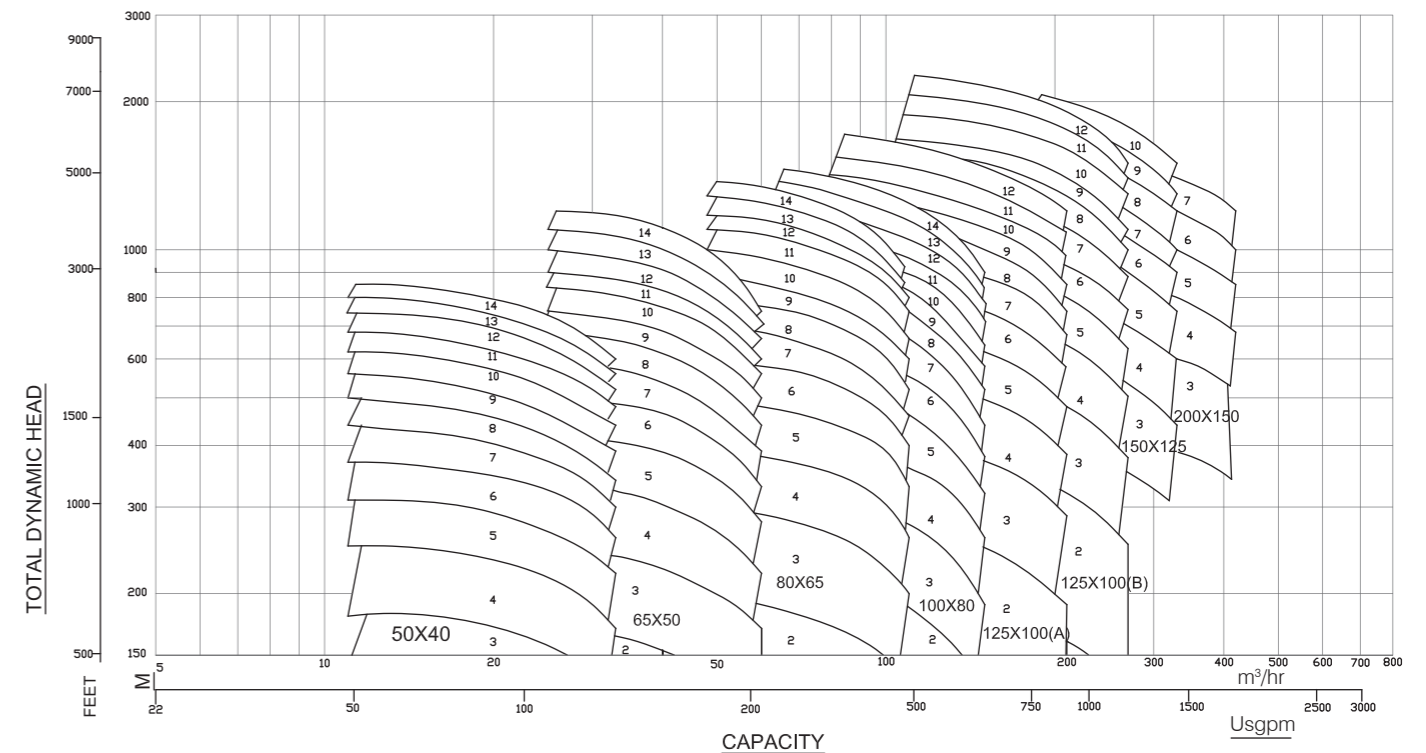


PART NO.	PART NAME	MATERIAL OPTIONS				
		Cast Steel	Cast Steel / Chrome Steel	Chrome Steel	Stainless Steel	Super Duplex
002	SUCTION CASING	Cast Steel	Cast Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
003	DISCHARGE CASING	Cast Steel	Cast Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
005-1	INTERSTAGE CASING	Cast Steel	Cast Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
008	STUFFING BOX	Cast Steel	Cast Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
015	BALANCING CHAMBER	Cast Steel	Cast Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
021-1	IMPELLER - 1ST STAGE	Cast Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
022-1	GUIDE VANE - SERIES	Cast Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
031	SHAFT	AISI 4140/ ASTM A276 TYPE 410 T			Stainless Steel	Super Duplex
039-1	KEY (FOR COUPLING)	Carbon Steel				
039-3	KEY (IMPELLER- 1ST STAGE)	Carbon Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
043	INTERSTAGE SLEEVE	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
051-1	BEARING HOUSING (D.E.)	Cast Steel				
051-2	BEARING HOUSING (N.D.E)	Cast Steel				
052	SLEEVE BEARING	Cast Steel with White Metal lining				
053	BEARING COVER	Cast Steel				
056	BALL BEARING	Bearing Steel				
067-2	OIL RING	Bronze				
077	BALANCE DISC	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
078	BALANCE PISTON	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
079	BALANCE SEAT	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
081	INTERSTAGE BUSHING	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
086	BALANCE BUSHING	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
107-1	CASE WEAR RING (1ST STAGE)	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
107-2	CASE WEAR RING (SERIES)	12 % Chrome Steel	12 % Chrome Steel	12 % Chrome Steel	Stainless Steel	Super Duplex
111.01	MECHANICAL SEAL (DE SIDE)	As per Application				
111.02	MECHANICAL SEAL (NDE SIDE)	As per Application				
115-02	'O'RING (ST.BOX+SUC. CASING)	VITON/ EBR				
115-6	'O'RING (BALANCE DISK)	VITON/ EBR				
115-11	'O'RING (JACKET COVER+BAL. CHAMBER)	VITON/ EBR				
117.01	GASKET (BEARING COVER)	SS 316 L Spiral Wound Graphite filled				
120-01	SUC. CASING STUD WITH NUTS	Alloy Steel				
120-02	DIS. CASING STUD WITH NUTS	Alloy Steel				
120-06	STUD WITH NUT (SEAL END PLATE)	SS 316				
128	COUPLING NUT	Carbon Steel				
128-02	NUT FOR TIE BOLT (L.H.)	Alloy Steel				
129	BEARING LOCK NUT	Carbon Steel				
285	AIR BREATHER	Steel				
722-01	TIE BOLTS (L.H.)	Alloy Steel				
722-02	TIE BOLTS (R.H.)	Alloy Steel				

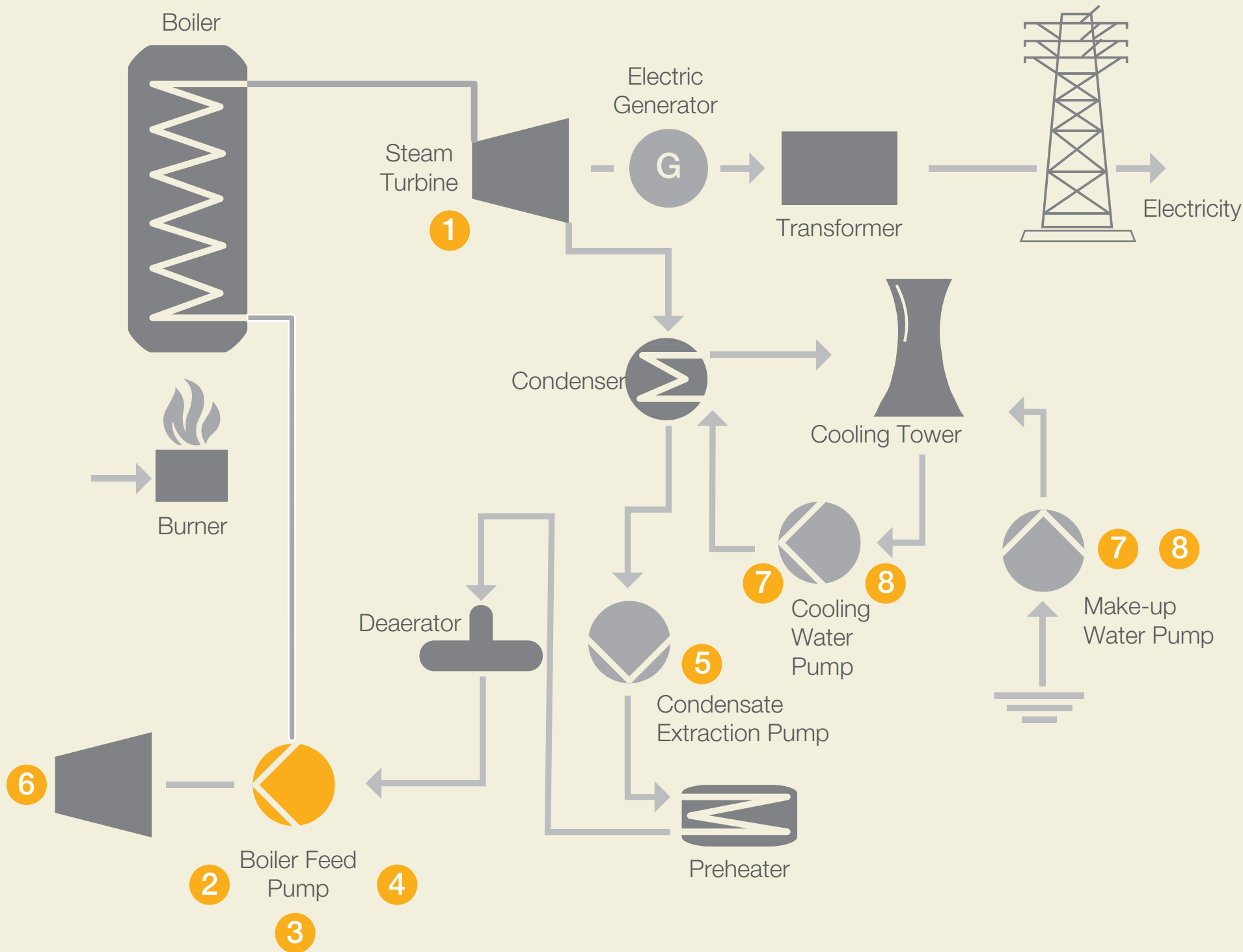
Hydraulic Performance Curve 50 Hz (2950 RPM)



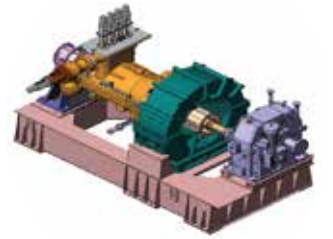
Hydraulic Performance Curve 60 Hz (3550 RPM)



PROCESS MAP : Centrifugal Pumps and Turbines in Typical Captive Power Plant



- 1** Steam Turbine
 - Backpressure Turbine
 - Extraction cum Condensing Turbine



- 2** Boiler Feed Pump - BB4 Type (API / Non API) SS / SSD (KBSH / KBDH)



or

- 3** Boiler Feed Pump - BB5 Pump (API / Non API) DCS / DCD (KBDS / KBDD)



or

- 4** Boiler Feed Pump (Non API) MSS / MSSH (KBSL / KBSM)



- 5** VS6 Pump (API) VPCS / VPCH (KVSL / KVSH) RKBC / BHRC



- 6** Drive Turbine
 - KT-B
 - KT-D
 - KT-BH



- 7** Horizontal Split Case Pump (Non API)
 - UP
 - SCT



- 8** Vertical Turbine Pump (Non API)
 - BHR / BHQ / BHA / BHMA

