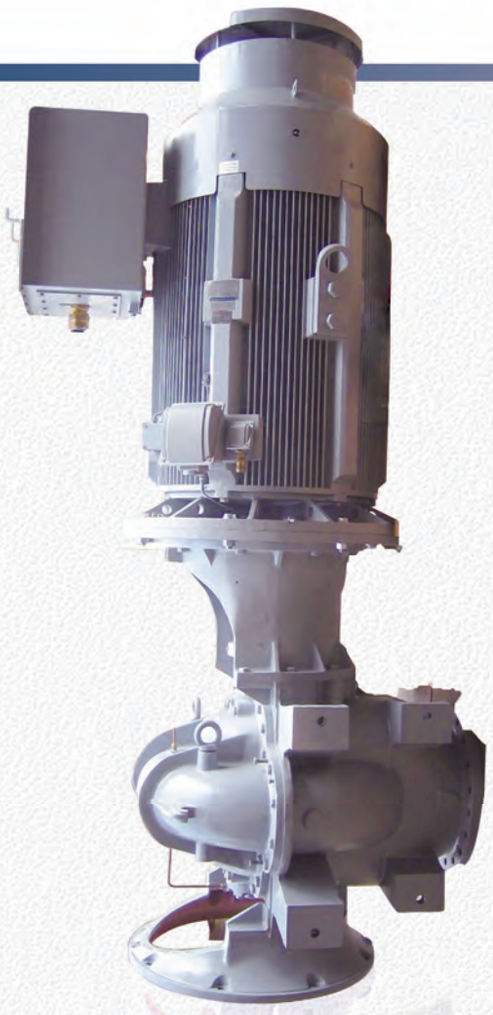
PUMPSENSE

Fluid Engineering Pvt. Ltd



CENTRIFUGAL PUMPS FOR INDUSTRY, MARINE BUILDING TRADE AND MUNICIPAL SERVICES

- Axially Split Case Pumps – Single & Two Stage
- End Suction Pumps - ISO2858 and Larger Sizes
- Horizontal Mixed Flow Pumps
- Vertical Inline Pumps
- Fifi Pumps for external fire fighting in ships and FPSO Fire Pumps
- Vertical and Horizontal Dry Pit Sewage Pumps
- Pump Services

Beginnings

History of PUMPSENSE goes back to 1995 when a group of professionals working in large international pump companies decided to team together. At PUMPSENSE, we are united through a common vision to build an excellent pump company through which we can express ourselves fully and freely. Each one of us has an abiding interest in one aspect or the other of the pump business —right from hydraulic design to applications engineering, product development to marketing. We also share a common conviction that with our skills, passion and commitment, we can redefine the existing norms and standards of customer satisfaction. We wish to work, learn and create value in a nourishing and fulfilling environment for our customers, business associates and ourselves. PUMPSENSE exists to fulfill this collective dream, based on a core set of values which are our guiding philosophy in creating this organization.

Guiding Philosophy

The business of PUMPSENSE is to provide centrifugal pumps and related services. We will constantly strive to increase the delivered value to our customer by careful attention to details, by continuous improvement of our core capabilities and by our commitment to delight the customer at every point of contact. The quality of our products and services will reflect the improvement in the quality of life that we are able to bring to our employees – we will provide them with an informal and liberal work environment, where they can constantly learn and grow. We recognize that our suppliers play a key role in the quality of our products and services. We will work closely with our suppliers so that they share our energy and focus to serve the customer with excellence. Above all we will strive to create an organization where there are no barriers amongst customer, employees and suppliers and all of us work together to create value, to grow, to learn and to enhance the quality of our lives.

Products

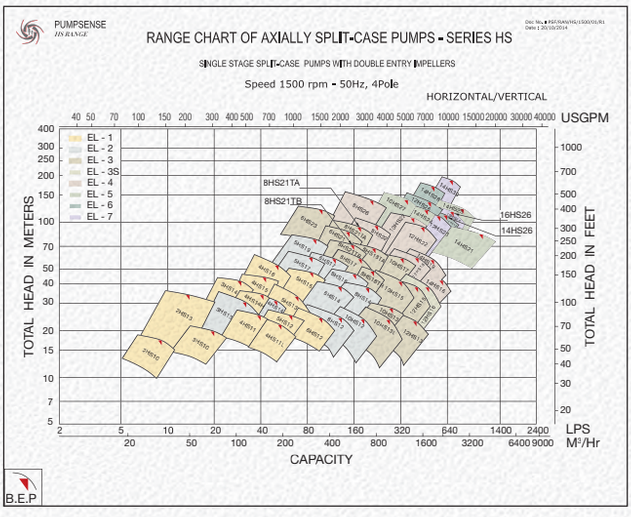
The present product range of PUMPSENSE includes the following :

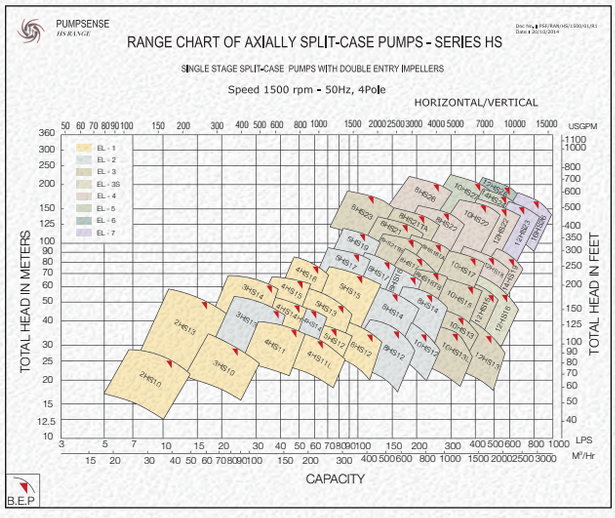
Product Group	Approximate no of sizes	Capacity up to $m^3/hr.$	Head up to m	Speed up to RPM	Application Areas	Representative Pump
Standard Split Case Pumps. Series - HS	67	4300	200	3000	Air-conditioning Water Supply Industrial Applications	
Compact Split Case Pumps. Series - CSC	29	1400	85	2100	Air-conditioning Water Supply Industrial Applications	
Two Stage Split Case Pumps. Series - HST	20	1250	400	1800	High Pressure Cleaning Water Supply Industrial Applications	
Split Case NFPA 20 Fire Pumps. Series - HF/HFT	15	2000	280	3000	Fire Protection of Buildings and Industrial Installations	
Large End Suction Pumps. Series - ESL	31	3200	200	1800	Air-conditioning Water Supply Industrial Applications	
ISO 2858 End Suction Pumps. Series - ES	37	500	150	3000	Air-conditioning Fire Protection Industrial Applications	
Horizontal and Vertical Dry Pit Sewage Pumps. Series -SW	20	3000	100	1800	Municipal Sewage Industrial Effluent	
Vertical Inline Pumps. Series - IL	8	350	120	3600	Air-conditioning Fire Protection	
External Fire Pumps for ships (FiFi pumps) Split Case and End Suction Pumps-SF/SFM/ESF	24	3000	170	2600	Used in ships for external fire fighting	
End Suction Mixed Flow Pumps -EMF	4	1600	13	1500	Flood Irrigation Water Harvesting Drainage	

Services

- **Pump specification and pump selection services** – We assist large pump users to prepare detailed pump specifications and to select and procure right centrifugal pumps for critical applications.
- **Training in centrifugal pumps** – We offer structured and group- specific training programs in the selection, operation and maintenance of centrifugal pumps.
- **Retrofit & pump upgrade services** – This service also includes performance and energy audit of existing pumping installations.
- **Trouble-shooting** - Diagnostics of problems in pumping systems & their resolution.
- **Repair Services** – This service incudes performance testing of repaired pumps in our fully equipped test bed.

Series HS – Single Stage Split Case Pumps – Horizontal/Vertical





Range Description

Discharge NB : 50 to 500 mm

Capacity : Up to 4300 m³/hr.

Head : Up to 200 m

Speed : Up to 3000 rpm

Options

Materials- CI, Ductile Iron, Bronze, Stainless Steel, Ni Resist

Stuffing Box - Packed Gland, Mechanical Seal

Orientation - Horizontal/Vertical

Constructional Features - Foot/Center line mounting, Bearing options, Cooling options, Staggered vane and special impellers

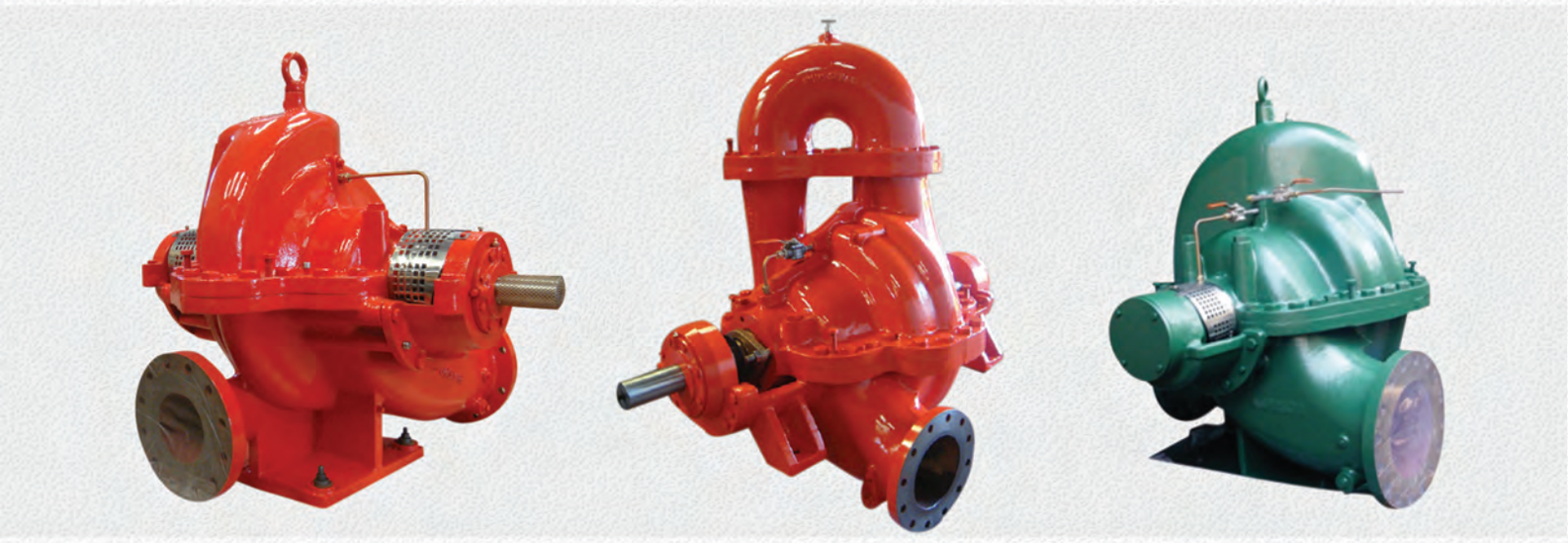
Applications

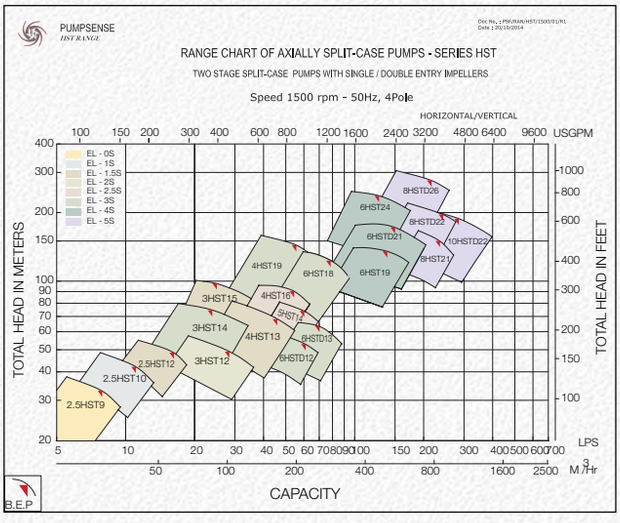
1. Air Conditioning
2. Water Supply
3. Fire Protection
4. Drainage
5. Industrial Application
6. Irrigation

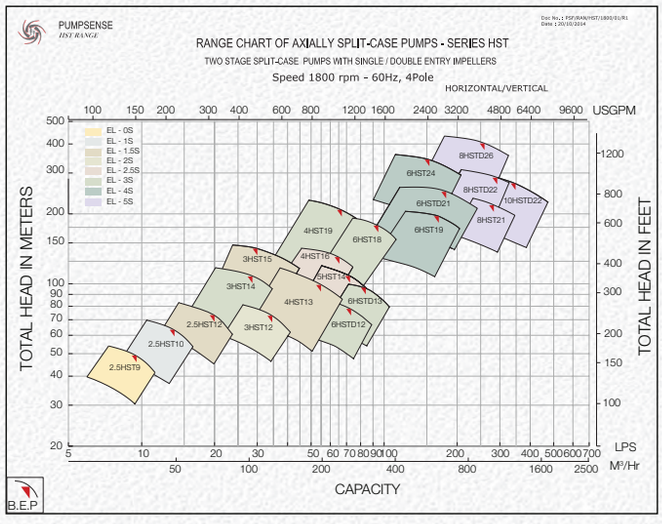
Features

1. Optimum efficiency
2. Low NPSHr
3. Stable characteristics
4. Over 67 sizes ensure optimum selection for all duties
5. Quick customization possible to meet special system requirements.
6. High head units have double volute casings to reduce radial thrust.

Series HST - Two Stage Split Case Pumps - Horizontal / Vertical







Range Description

Discharge NB : 65 to 250 mm

Capacities : Up to 1250 m^3/hr.

Head : Up to 400m

Speed : Up to 2100 rpm

Applications

1. Mine Dewatering
2. Water Supply
3. Fire Protection
4. High Pressure Cleaning

Options

Materials - CI, DI, Bronze, SS, Ni Resist

Stuffing Box - Packed Gland, Mechanical Seal

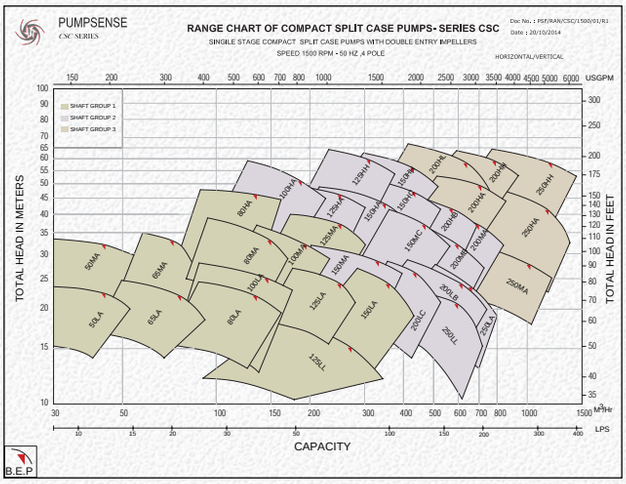
Orientation - Horizontal/Vertical

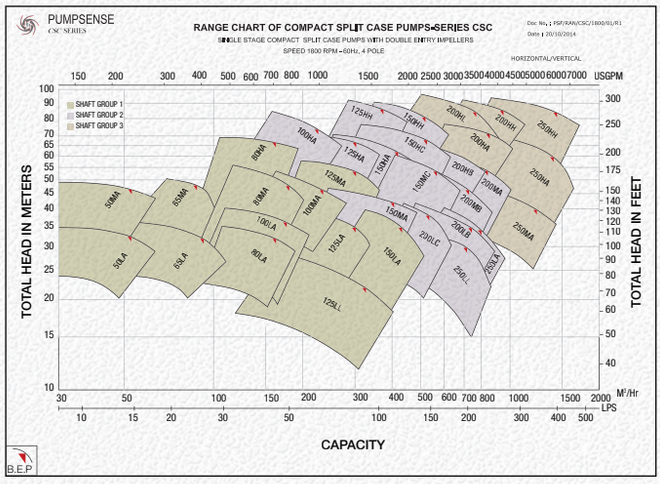
Constructional Features - Foot/Center Line Mounting, Bearing options, cooling options, staggered vane and special impellers

Features

1. High Efficiency
2. Both integral & external inter-stage cross-over passages are used to ensure optimum performance.
3. Two single/double entry impellers are placed back to back to eliminate radial thrust.
4. Head characteristics more stable and efficiency higher compared to single stage units for similar duties.
5. Special custom-built units.

Series CSC - Compact Split Case Pumps - Horizontal / Vertical





DEVELOPMENT OBJECTIVES

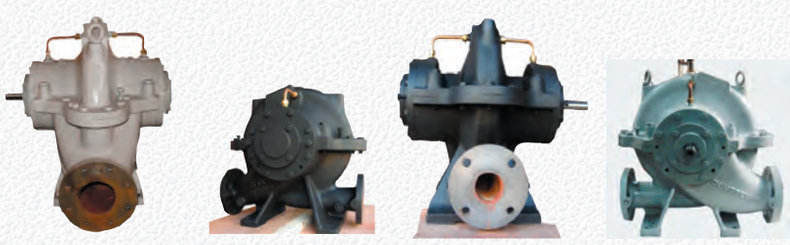
Environmental concerns increasingly demand highest possible efficiency in pumps.

Universal efforts to reduce or eliminate stand-by units for energy and life-cycle-cost optimization demand optimum hydraulic and mechanical reliability.

Application Areas:

Where, the pumps are required for long un-interrupted service with minimum of maintenance Where, mechanical seal fitted pumps are a natural choice Where, the energy costs constitute a significant portion of the life-cycle cost of an industrial plant:

- Industrial & Urban Water Supply
- Air-conditioning
- Process Industry



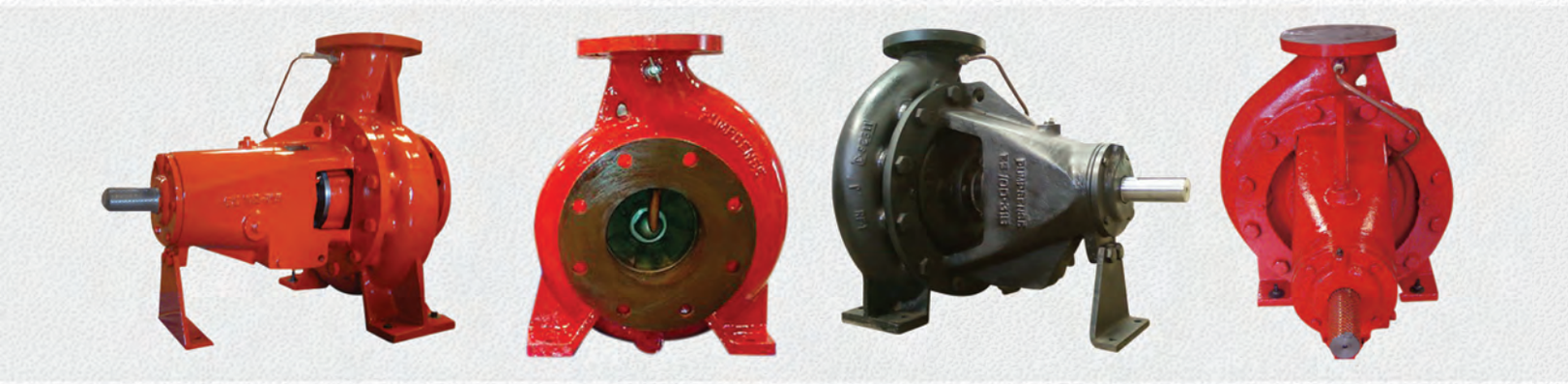
DESIGN FEATURES

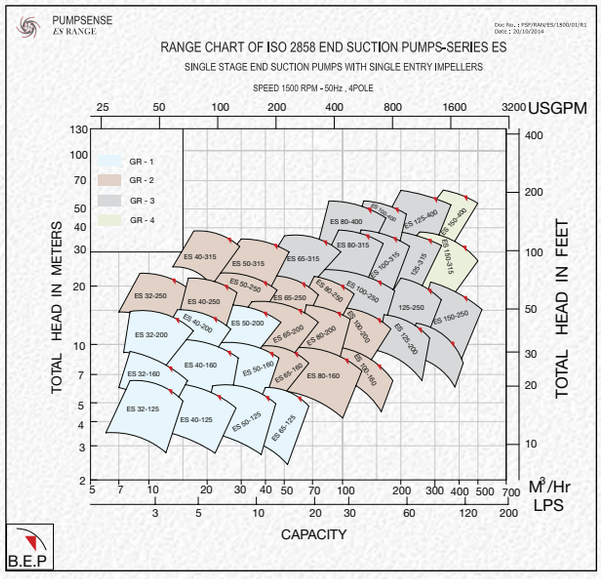
- **Compact Design** - Shorter shaft span reduces shaft deflection and increases seal and bearing lives. Casing machining is simplified, eliminating chances of machining errors and reducing machining time. Requires lesser installation space – releases expensive retail space for revenue generation. Permits faster assembly & dismantling.
- **Optimum Efficiency** – Hydraulic Institute norms have been used as bench mark. Established hydraulic designs have been used where the benchmark was achieved or exceeded.
- **Optimized Selection** - A large number of sizes help to find a pump with optimum efficiency for any duty cluster. Pump selection is always possible in the B.E.P zone (+10% to -15% of B.E.P).
- **Use of Double Volute Casing** - Double volute casing design has been adopted for 100 mm delivery branch size & above, to minimize radial thrust. This is a distinct advantage for air-con applications where over-specification of head and varying load leads to operation of pump at part or over flow conditions.

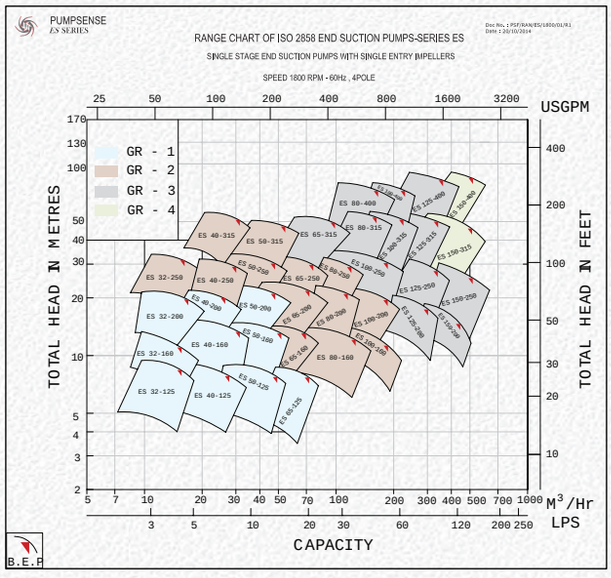
CONSTRUCTION OPTIONS

- High-pressure (HP) version for high working pressure in tall buildings. HP version is equipped with external bearing brackets and cartridge balanced mechanical seals.
- Vertical Version (VE) is available as a pre-engineered unit.
- Packed Gland Version (PG) is available with external bearing bracket.

Series ES - ISO 2858 End Suction Pumps







Range Description

Discharge NB : 32 to 150 mm

Capacity : Up to 500 m3/hr.

Head : Up to 150m

Speed : Up to 3000 rpm

Applications

1. Air Conditioning
2. Water Supply
3. Fire Protection
4. Process Industries

Options

Materials - CI, DI, Bronze, SS, Ni Resist

Stuffing Box- Packed Gland, Mechanical Seal

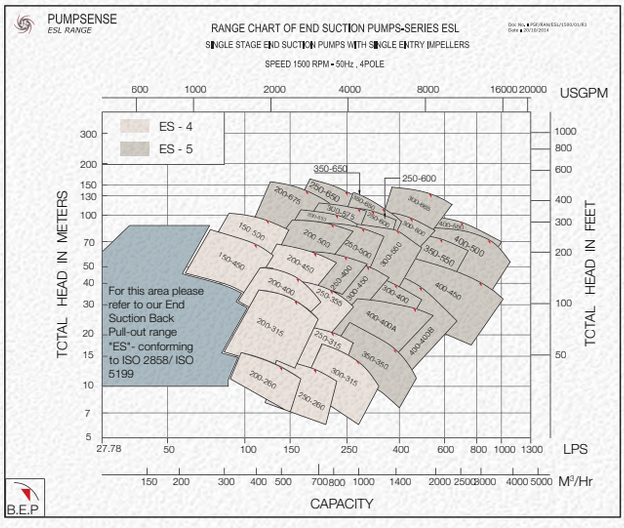
Constructional Features - Foot/Center Line Mounting, Bearing options, cooling options, Open & semi-open impellers

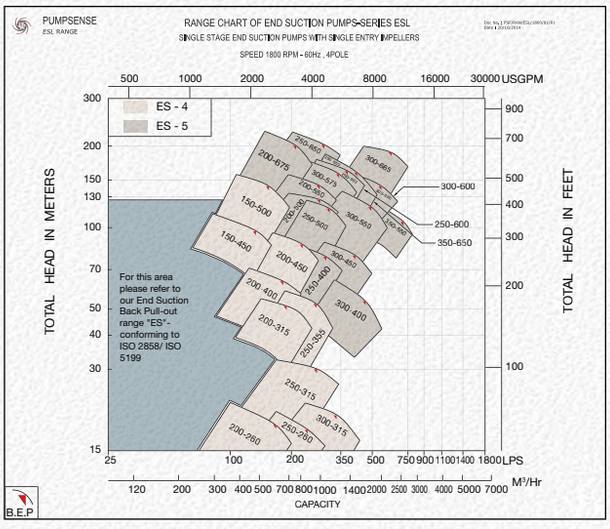
Features

1. Conforms to ISO 2858
2. Conforms to ISO 5199
3. High Efficiency, Low NPSHr
4. Over 37 frames ensures optimum selection for all duties
5. Quick Customization possible to ensure optimum operation.

Series ESL - Large End Suction Pumps





Range Description

Size : 150 to 400 mm

Capacities : Up to 3200 m3/hr.

Head : Up to 200m

Speed : Up to 1800 rpm

Applications

1. Air Conditioning
2. Water Supply
3. Fire Protection
4. Process Industries
5. Mine Dewatering
6. Power Generation

Options

Materials - CI, DI, Bronze, SS, Ni Resist

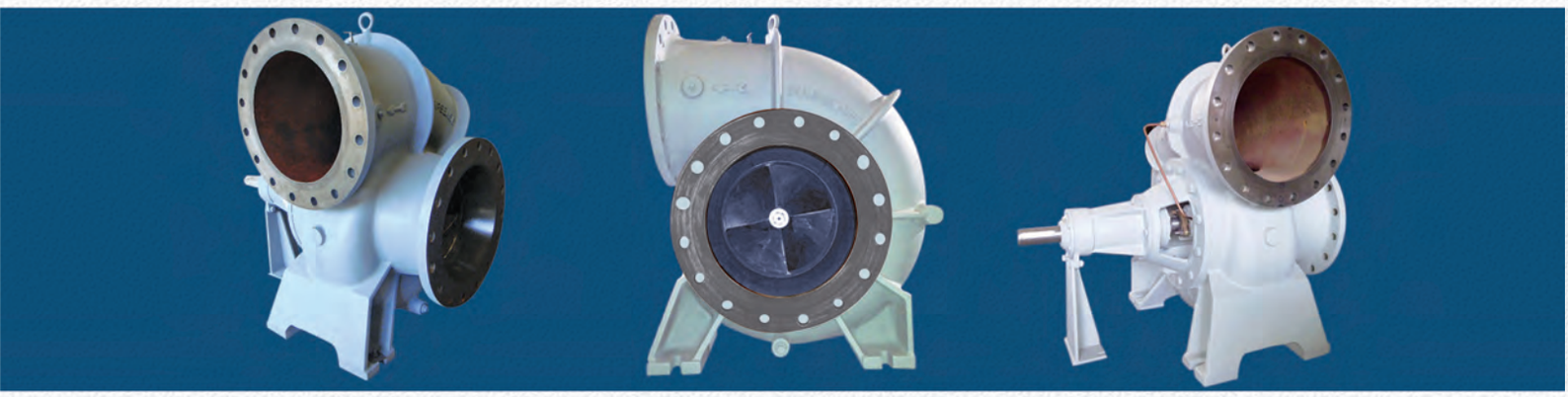
Stuffing Box - Packed Gland, Mechanical Seal

Constructional Features - Foot/Center Line Mounting, Bearing options, cooling options, Open & semi-open impellers

Features

1. High head pumps incorporate double volute design to reduce radial load and improve seal /bearing lives.
2. Conforms to ISO 5199
3. High Efficiency, Low NPSHr
4. Over 31 frames ensures optimum selection for all duties
5. Quick Customization possible to ensure optimum operation.

Series EMF - End Suction Mixed Flow Pumps



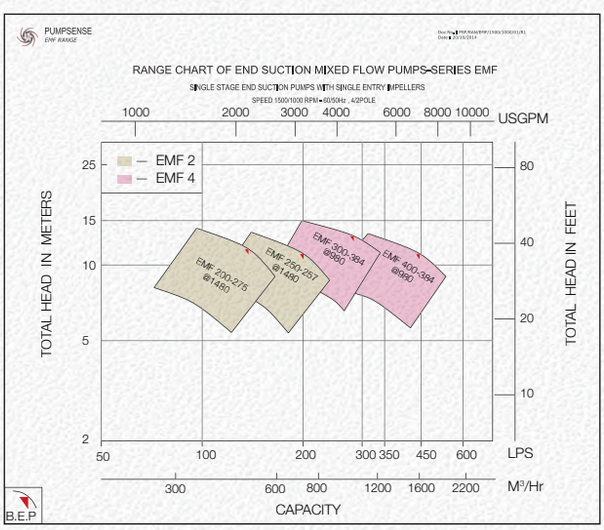
General

Series EMF (End Suction Mixed Flow) pumps have been designed for efficiently handling large volumes of water at low and medium heads – they are available in sizes 8”, 10”, 12” and 16”.

Operational Limits

Pumps are suitable for clean, chemically and mechanically non-aggressive liquids

- maximum content of suspended solids, with hardness and granulometry of slit: 40 gm/m^3
- maximum temperature of pumped liquids: 80^{0}C
- maximum operating pressure: 10 bar
- coaxial drive only, by flexible coupling or cardan shaft



Range Description

Size	:	200 to 400 mm
Capacities	:	Up to 1650 m3/hr.
Head	:	Up to 16m
Speed	:	Up to 1500 rpm

Applications

1. Flood Irrigation
2. Water Harvesting
3. Drainage
4. Waste Disposal

Options

Materials - CI, DI, Bronze, SS, Ni Resist

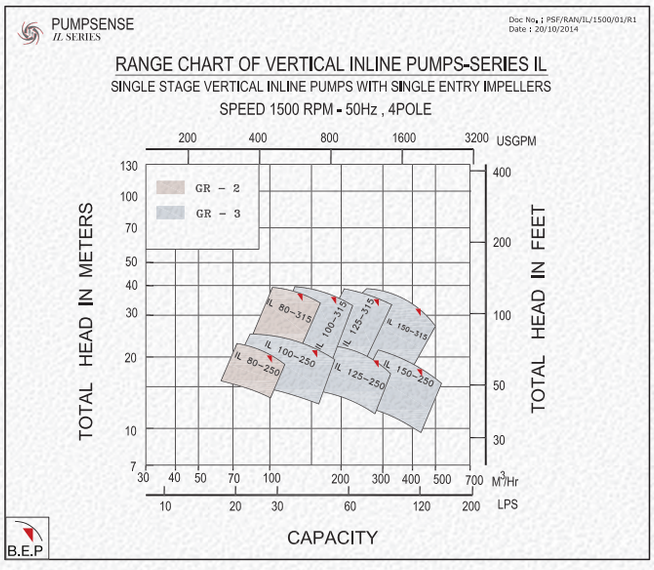
Stuffing Box - Packed Gland, Mechanical Seal

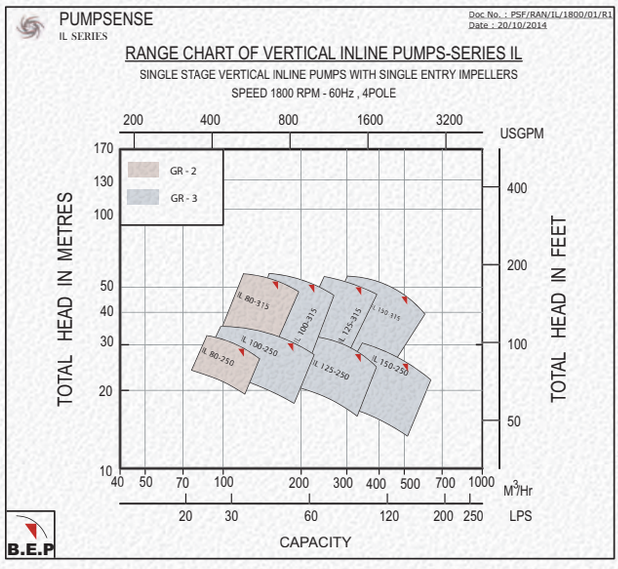
Constructional Options - Bearing options, cooling options, special impellers

Features

1. Stable head-capacity characteristics
2. Non-overloading power curve
3. High Efficiency, Low NPSHr
4. Rugged heavy duty construction
5. Quick Customization possible for specific applications.

Series IL - Vertical Inline Pumps





Range Description

Discharge NB	:	80 to 150 mm
Capacities	:	Up to 350 m3/hr.
Head	:	Up to 120m
Speed	:	Up to 3600 rpm

Applications

1. General Water Supply
2. Water Circulation for air conditioning systems
3. Petro-Chemical Industry
4. Industrial Cooling System
5. Process Industry

Options

Materials - CI, DI, Bronze, SS, Ni Resist

Stuffing Box - Packed Gland, Mechanical Seal

Constructional Features - Horizontal & vertical orientation, Compact close-coupled design is an optional construction.

Features

1. Suction and discharge connections are in-line and are of the same size to simplify piping. This enabling easy installation and minimizes installation space.
2. Pump is provided with its own independent thrust bearing and is flexibly coupled to the motor shaft
3. Smallest foot print – utilizes the least amount of floor space.
4. Quick Customization possible to ensure optimum operation.

NFPA20 FIRE PUMP SELECTION TABLE

We offer one of the most comprehensive range of NFPA 20 fire pumps from the smallest to the largest high capacity/high head unit. The range is constantly being upgraded to optimize driver rating, range coverage and reliability.





NFPA 20 Fire Pump Selection Table - 500 GPM to 5000 GPM (SPLIT CASE)

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
500	114	50-85	35-60	1500	4HS16	HSC SINGLE STAGE	45	60
		50-102	35-72		4HST13	HSC TWO STAGE	45	60
		95-150	68-105		4HST16	HSC TWO STAGE	75	101
		128-228	90-160		4HST19	HSC TWO STAGE	110	147
		57-99.5	40-70	1800	4HS15	HSC SINGLE STAGE	45	60
		85-170	60-120		4HST13	HSC TWO STAGE	75	101
		170-227	120-160		4HST16	HSC TWO STAGE	110	147
		50-78	35-55	2100	4HF11	HSC SINGLE STAGE	37	50
		71-135	50-95		3HF15	HSC SINGLE STAGE	55	74
		114-220	80-155	2600	3HF15	HSC SINGLE STAGE	90	121
		57-163	40-115	3000	3HF11	HSC SINGLE STAGE	60	80
		163-291	115-205		3HF15	HSC SINGLE STAGE	132	177
		127-298	90-210		3HFT12	HSC TWO STAGE	132	177
		291-469	205-330		3HFTD14	HSC TWO STAGE	200	268
		99-241	70-170	3600	3HF11	HSC SINGLE STAGE	110	147
DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
750	170	28-57	20-40	1500	5HS13	HSC SINGLE STAGE	30	40
		77-115	54-81		5HST14	HSC TWO STAGE	75	101
		95-199	95-140		6HST18	HSC TWO STAGE	132	177
		213-355	150-250		6HST24	HSC TWO STAGE	275	369
		50-85	35-60	1800	5HS13	HSC SINGLE STAGE	55	74
		85-114	60-80		5HS15	HSC SINGLE STAGE	75	101
		123-178	87-125		5HST14	HSC TWO STAGE	110	147
		213-312	150-220		4HST19	HSC TWO STAGE	225	302
		64-114	45-80	2100	4HF14	HSC SINGLE STAGE	75	101
		99-184	70-130	2600	4HF14	HSC SINGLE STAGE	132	177
		97-157	68-110	3000	4HF11	HSC SINGLE STAGE	110	147
		157-270	110-190		3HF15	HSC SINGLE STAGE	132	177
		142-305	100-215		4HFT12	HSC TWO STAGE	200	268
		149-238	105-168	3600	4HF11	HSC SINGLE STAGE	150	201
DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
1000	227	50-93	35-65	1500	5HS17	HSC SINGLE STAGE	75	101
		74-118	52-83		5HS19	HSC SINGLE STAGE	90	121
		121-180	85-127		6HS23	HSC SINGLE STAGE	150	201
		227-348	160-245		6HST24	HSC TWO STAGE	350	469
		78-135	55-95	1800	5HS17	HSC SINGLE STAGE	132	177
		121-185	85-130		5HS19	HSC SINGLE STAGE	150	201
		185-270	130-190		6HS23	HSC SINGLE STAGE	275	369
		348-540	245-380		6HST24	HSC TWO STAGE	550	737
		45-85	32-60	2100	6HF12	HSC SINGLE STAGE	75	101
		112-227	79-160		6HFTD13	HSC TWO STAGE	180	241
		106-177	75-125	2600	6HF14	HSC SINGLE STAGE	180	241
		88-149	62-105	3000	4HF11	HSC SINGLE STAGE	132	177
		114-187	80-132		5HF12	HSC SINGLE STAGE	160	214
		135-234	95-165		4HF14	HSC SINGLE STAGE	180	241
		227-341	160-240		6HFTD12	HSC TWO STAGE	180	241
		177-284	125-200	3600	5HF12	HSC SINGLE STAGE	250	335
DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
1250	284	60-88	42-62	1500	6HS17	HSC SINGLE STAGE	90	121
		90-139	64-98		6HS21	HSC SINGLE STAGE	150	201
		227-348	160-245		6HST24	HSC TWO STAGE	400	536
		92-135	65-95	1800	6HS17	HSC SINGLE STAGE	132	177
		116-179	82-126		5HS19	HSC SINGLE STAGE	180	241
		179-270	126-190		6HS23	HSC SINGLE STAGE	315	422
		340-540	240-380		6HST24	HSC TWO STAGE	675	905
		257-386	181-272	2100	6HST18	HSC TWO STAGE	425	570
		65-100	45-70	2350	8HF12H	HSC SINGLE STAGE	110	147
		108-200	76-141	2400	5HS15	HSC SINGLE STAGE	225	302
		99-173	70-122	2600	6HF14	HSC SINGLE STAGE	180	241
		92-258	65-120	3000	6HF12	HSC SINGLE STAGE	180	241
		128-220	90-155		4HF14	HSC SINGLE STAGE	200	268
		227-334	160-235		6HFTD12	HSC TWO STAGE	350	469
		334-454	235-320		6HFTD13	HSC TWO STAGE	575	771
DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
1500	341	61-99	43-70	1500	8HS17	HSC SINGLE STAGE	132	177
		88-138	62-97		6HS21	HSC SINGLE STAGE	180	241
		227-340	160-240		6HST24	HSC TWO STAGE	450	603
		88-135	62-95	1800	6HS17	HSC SINGLE STAGE	180	241
		142-217	100-153		6HS21	HSC SINGLE STAGE	275	369
		241-270	170-190		6HS23	HSC SINGLE STAGE	350	469
		336-540	237-380		6HST24	HSC TWO STAGE	725	972
		65-100	45-70	2350	8HF12H	HSC SINGLE STAGE	110	147
		105-196	74-138	2400	5HS15	HSC SINGLE STAGE	250	335
		99-163	70-115	2600	8HF14	HSC SINGLE STAGE	180	241
		85-170	60-120	3000	6HF12	HSC SINGLE STAGE	180	241
		142-213	100-150		6HF14	HSC SINGLE STAGE	250	335
		128-200	90-140		6HF14H	HSC SINGLE STAGE	275	369
		227-326	160-230		6HFTD12	HSC TWO STAGE	400	536
		227-454	160-320		6HFTD13	HSC TWO STAGE	575	771

NFPA20 FIRE PUMP SELECTION TABLE





DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
1500	341	61-99	43-70	1500	8HS17	HSC SINGLE STAGE	132	177
		88-138	62-97		6HS21	HSC SINGLE STAGE	180	241
		227-340	160-240		6HST24	HSC TWO STAGE	450	603
		88-135	62-95	1800	6HS17	HSC SINGLE STAGE	180	241
		142-217	100-153		6HS21	HSC SINGLE STAGE	275	369
		241-270	170-190		6HS23	HSC SINGLE STAGE	350	469
		336-540	237-380		6HST24	HSC TWO STAGE	725	972
		65-100	45-70	2350	8HF12H	HSC SINGLE STAGE	110	147
		105-196	74-138	2400	5HS15	HSC SINGLE STAGE	250	335
		99-163	70-115	2600	8HF14	HSC SINGLE STAGE	180	241
		85-170	60-120	3000	6HF12	HSC SINGLE STAGE	180	241
		142-213	100-150		6HF14	HSC SINGLE STAGE	250	335
		128-200	90-140		6HF14H	HSC SINGLE STAGE	275	369
		227-326	160-230		6HFTD12	HSC TWO STAGE	400	536
		227-454	160-320		6HFTD13	HSC TWO STAGE	575	771

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
2000	454	57-92	40-65	1500	8HS17	HSC SINGLE STAGE	150	201
		80-106	57-75		8HS18	HSC SINGLE STAGE	180	241
		114-145	80-102		8HS21	HSC SINGLE STAGE	250	335
		64-106	45-75	1800	8HS16	HSC SINGLE STAGE	180	241
		106-142	75-100		8HS17	HSC SINGLE STAGE	225	302
		142-210	100-148		6HS21	HSC SINGLE STAGE	350	469
		121-199	85-140	2100	8HS17	HSC SINGLE STAGE	325	436
		85-152	60-107	2600	8HF14	HSC SINGLE STAGE	200	268
		142-163	70-115	3000	8HF12	HSC SINGLE STAGE	275	369
		142-294	100-160		8HF14	HSC SINGLE STAGE	375	503

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
2500	568	92-149	65-105	1500	8HS22	HSC SINGLE STAGE	275	369
		122-213	86-150		8HS26	HSC SINGLE STAGE	415	556
		199-312	140-220		10HSTD22	HSC TWO STAGE	600	804
		57-81	40-57	1800	8HS14	HSC SINGLE STAGE	180	241
		81-138	57-97		8HS17	HSC SINGLE STAGE	250	335
		169-213	119-150		8HS21	HSC SINGLE STAGE	425	570
		185-320	130-225		8HS26	HSC SINGLE STAGE	675	905
		114-193	80-136	2100	8HS17	HSC SINGLE STAGE	350	469
		97-155	68-109	3000	8HF12	HSC SINGLE STAGE	315	422
		123-223	87-157		8HF14	HSC SINGLE STAGE	400	536

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
3000	682	30-44	21-31	1500	10HS13	HSC SINGLE STAGE	160	214
		47-71	33-50		10HS15	HSC SINGLE STAGE	180	241
		64-92	45-65		10HS17	HSC SINGLE STAGE	225	302
		106-163	75-115		10HS22	HSC SINGLE STAGE	450	603
		185-298	130-210		10HSTD22	HSC TWO STAGE	675	905
		85-199	60-140	1800	8HS22	HSC SINGLE STAGE	475	637
		199-312	140-220		8HS26	HSC SINGLE STAGE	650	871
		284-440	200-310		10HSTD22	HSC TWO STAGE	1050	1407
		114-185	80-130	2100	8HS17	HSC SINGLE STAGE	375	503
		199-298	140-210		8HS22	HSC SINGLE STAGE	700	938
		90-152	63-107	3000	8HF12	HSC SINGLE STAGE	350	469

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
3500	795	47-68	33-48	1500	10HS15	HSC SINGLE STAGE	180	241
		62-89	44-63		10HS17	HSC SINGLE STAGE	250	335
		71-99	50-70		12HS18	HSC SINGLE STAGE	275	369
		102-165	72-116		10HS22	HSC SINGLE STAGE	475	637
		142-227	100-160		10HS27	HSC SINGLE STAGE	600	804
		170-290	120-204		10HSTD22	HSC TWO STAGE	725	972
		64-104	45-73	1800	10HS15	HSC SINGLE STAGE	300	402
		104-163	73-115		10HS18	HSC SINGLE STAGE	450	603
		163-241	115-170		10HS22	HSC SINGLE STAGE	800	1072
		284-426	200-300		10HSTD22	HSC TWO STAGE	1150	1541
		48-85	34-60	2100	10HS13L	HSC SINGLE STAGE	225	302
		186-297	131-209		8HS22	HSC SINGLE STAGE	775	1039

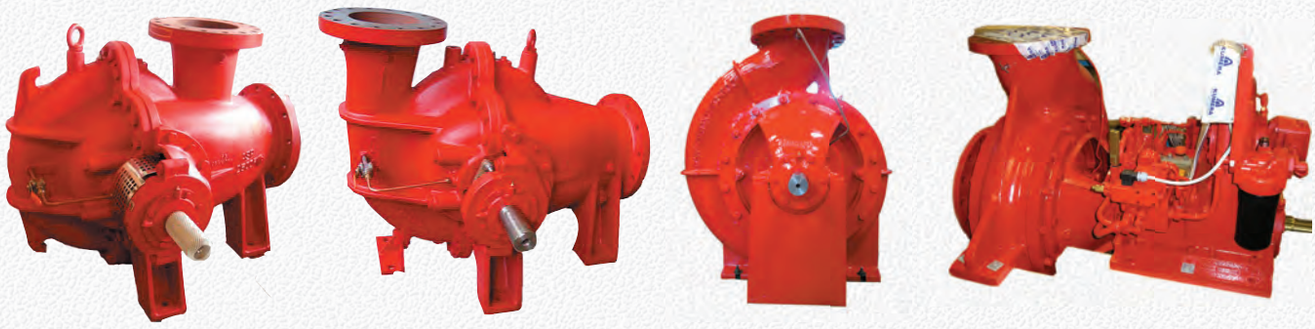
DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
4000	909	61-89	43-63	1500	10HS17	HSC SINGLE STAGE	275	369
		68-96	48-68		12HS18	HSC SINGLE STAGE	275	369
		100-163	70-115		10HS22	HSC SINGLE STAGE	500	670
		163-220	115-155		10HS27	HSC SINGLE STAGE	675	905
		68-101	48-71	1800	10HS15	HSC SINGLE STAGE	300	402
		96-136	68-96		10HS17	HSC SINGLE STAGE	450	603
		105-146	74-103		12HS18	HSC SINGLE STAGE	450	603
		213-338	150-238		10HS27	HSC SINGLE STAGE	1100	1474
		270-426	190-300		10HSTD22	HSC TWO STAGE	1250	1675

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
4500	1022	35-49	50-70	1500	12HS18	HSC SINGLE STAGE	300	402
		53-70	75-100		12HS22	HSC SINGLE STAGE	450	603
		63-105	90-150		12HS26	HSC SINGLE STAGE	800	1072
		35-49	50-70	1800	12HS15	HSC SINGLE STAGE	325	436
		49-70	70-100		12HS18	HSC SINGLE STAGE	475	637
		81-105	115-150		12HS22	HSC SINGLE STAGE	850	1139
		105-176	150-250		10HS27	HSC SINGLE STAGE	1100	1474

DUTY DETAILS					PUMP MODEL		DRIVER RATING	
Flow		Head		SPEED	PUMP MODEL	PUMP TYPE		
USGPM	M^3/HR.	PSIG	M	RPM			Kw	HP
5000	1136	42-68	30-48	1500	12HS16	HSC SINGLE STAGE	225	302
		64-92	45-65		12HS18	HSC SINGLE STAGE	315	422
		99-147	70-104		12HS22	HSC SINGLE STAGE	550	737
		113-184	80-130		14HS24	HSC SINGLE STAGE	700	938
		118-213	83-150		12HS26	HSC SINGLE STAGE	800	1072
		39-59	28-42	1800	12HS13	HSC SINGLE STAGE	225	302
		66-93	47-66		12HS15	HSC SINGLE STAGE	350	469
		71-99	50-70		12HS16	HSC SINGLE STAGE	400	536
		99-137	70-97		12HS18	HSC SINGLE STAGE	500	670
		156-225	110-160		12HS22	HSC SINGLE STAGE	875	1173

For the selection of NFPA-20 End Suction Fire Pump please refer to PUMPSENSE.

MARINE EXTERNAL FIRE PUMPS (FIFI PUMPS)



Range Coverage - Pumpsense has the most extensive range of ships external firefighting pumps. The hydraulics of the range is based on our very successful split-case and end suction range of pumps. A large number of pump sizes allow us to optimize selection based on available engine rating and speed.

Pump Types and product variants - Pumps are offered in a large variety of construction options, such as:

- Axially split case -Side Suction/Side Delivery - CW /CCW
- Axially split case -Side Suction/ Top Delivery - CW/CCW
- Axially split case - Bottom Suction/ Side Delivery - CW/CCW
- Axially Split Case - Bottom Suction/ Top Delivery - CW/CCW
- Axially Split Case Vertical Shaft

End Suction Pumps - CW/CCW with several suction branch options.

Customization/Special Design - We work closely with customers to design “space optimized” special designs such as clutch mounted pumps, pumps with lip seals in place of conventional packing/ mechanical seal, pumps specially designed for a specific engine rating or speed, etc.

Material of Construction - Pumps are offered in a variety of material options such as Ductile Iron, Nickel Aluminum Bronze, Duplex Stainless Steel, etc.

Certification - Pumps are certified by agencies such as ABS, Lloyds, BV, DNV, KR, CCS, etc. When required product/type approvals are also obtained from these agencies.

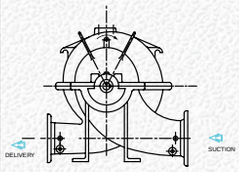
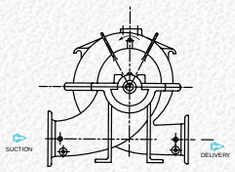
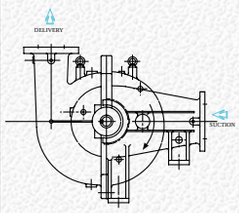
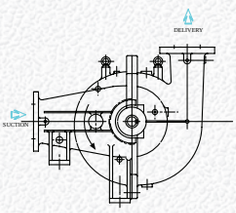
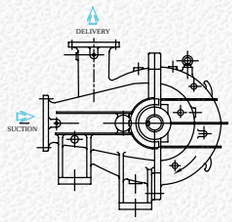
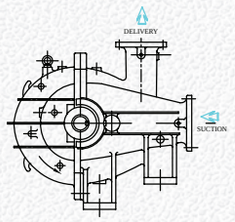
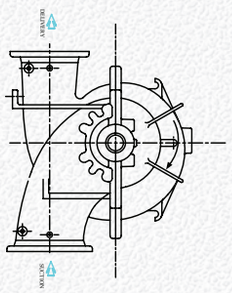
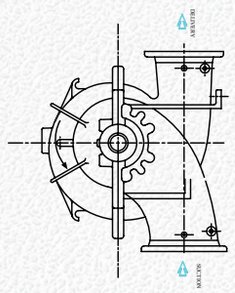
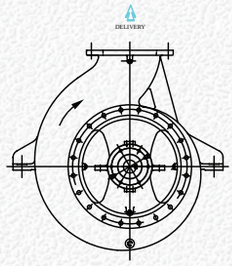
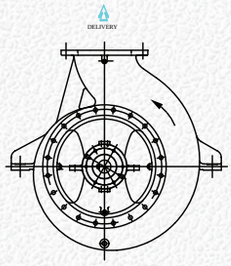
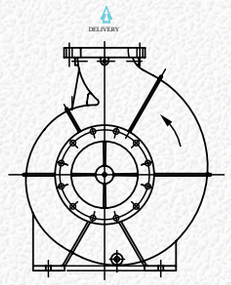
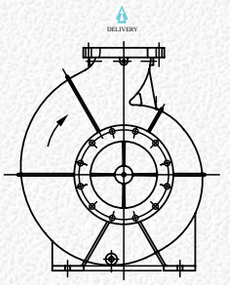
FPSO Fire Pumps - Our Range include engineered NFPA20 FPSO fire and lift pumps in a variety of material options.


AMERICAN BUREAU OF SHIPPING

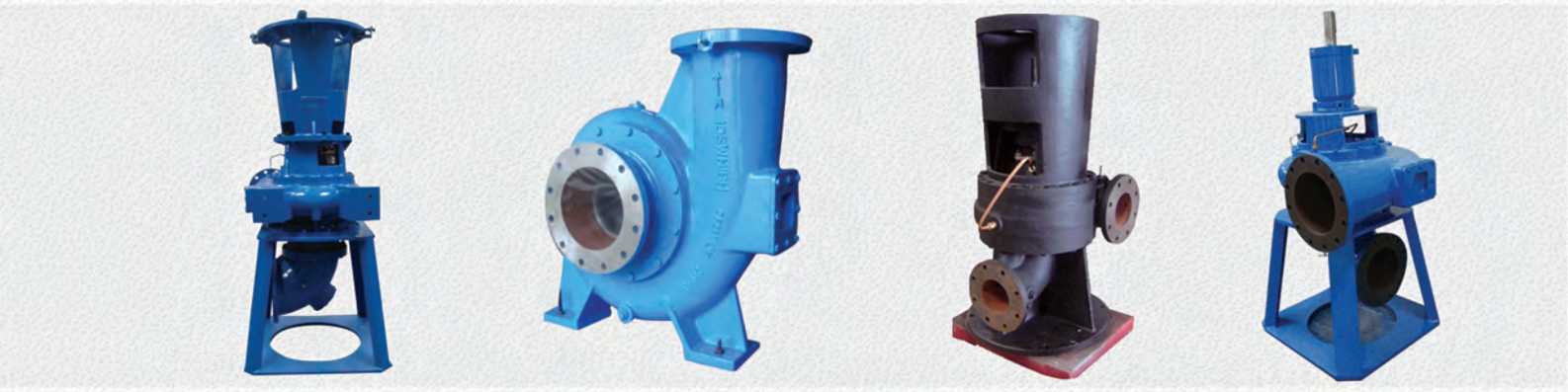

CERTIFICATE FOR PUMP

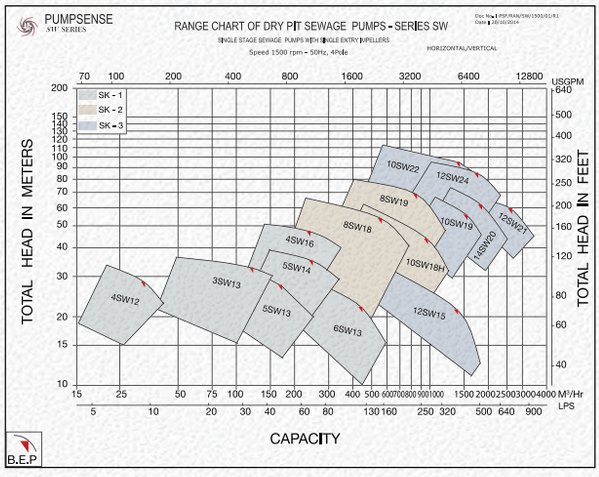

中国船级社
CHINA CLASSIFICATION SOCIETY
船用产品证书
CERTIFICATE OF MARINE PRODUCT

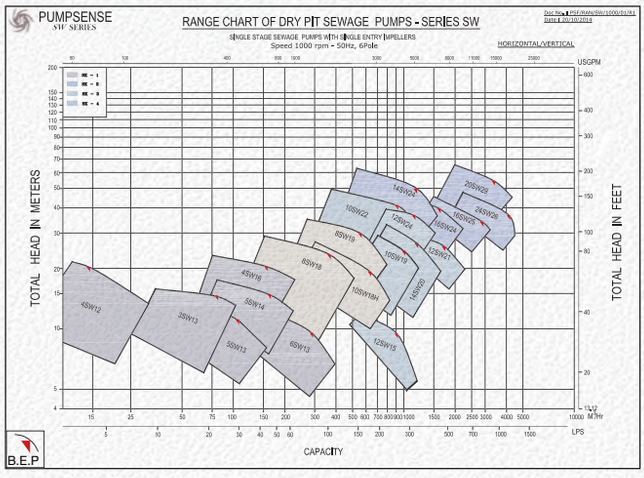

Certificate for Pump
KOREAN REGISTER OF SHIPPING

Product Available					Available option for marine fire pump flange orientation		
Capacity (m3/hr.)	Head Range (Bar)	End Suction (ESF Range)	Split Case (HS/SF/ SFM) Range	Speed Range	Type	CW looking from DE	CCW looking from DE
300	12-14	ESF 125-500	5SF20	1800-2100	Horizontally Split Case Side Suction/ Side Delivery		
400	12-14	ESF 150-500	5SF19	1800-2100			
600	12-14	ESF 150-500	6SF21	1800-2100			
750	12-14	ESF 200-500	8SF22	1800-2100			
	12-14	ESF 200-550	8SF22	1800-2100			
900	12-14	ESF 200-500	8SF22	1800-2100	Horizontally Split Case Side Suction/ Top Delivery		
	12-14	ESF 200-550	8SF26	1800			
1200	12-14	ESF 250-500	10SF22	1800			
	12-14	ESF 250-600	10SF27	1800	Horizontally Split Case		
1500	12-14	ESF 250-500	10SF22	1800	Side Suction/ Top Delivery (Mirror version)		
	12-14	ESF 250-600	10SF27	1800			
1600	12-14	ESF 300-550	10SF22	1800			
	12-14	ESF 300-600	10SF27	1800	Horizontally Split Case Bottom Suction/ Top Delivery		
1800	12-14	ESF 300-550	12SF23	1800			
	12-14	ESF 300-665	12SF23	1800			
2100	12-14	ESF 300-665	12SF23	1800	End Suction Pumps		
2400	12-14	ESF 400-500	12SF23	1800	End Suction/ Top Delivery (Center Mounted)		
	12-14	ESF 400-600	12SF23	1800			
2700	12-14	ESF 400-500	16SF26	1800	End Suction Pumps		
	12-14	ESF 400-600	16SF28	1800			
3000	12-14	ESF 400-500	16SF26	1800	End Suction/ Top Delivery (Foot Mounted)		
	12-14	ESF 400-600	16SF28	1800			
3600	12-14	ESF 400-600	16SF26	1800			
	12-14	ESF 400-600	16SF28	1800			

Series SW - Non-clog Dry Pit Sewage Pumps







Range Description

Size	:	80 to 600 mm
Capacities	:	Up to 4000 m^3/hr.
Head	:	Up to 100m
Speed	:	Up to 1800 rpm

Applications

1. General Water Supply
2. Water Circulation for air conditioning system
3. Petro-Chemical Industry
4. Industrial Cooling System
5. Light Textile Industry

Options

Materials - CI, DI, Bronze, SS, Ni Resist

Stuffing Box - Packed Gland, Mechanical Seal

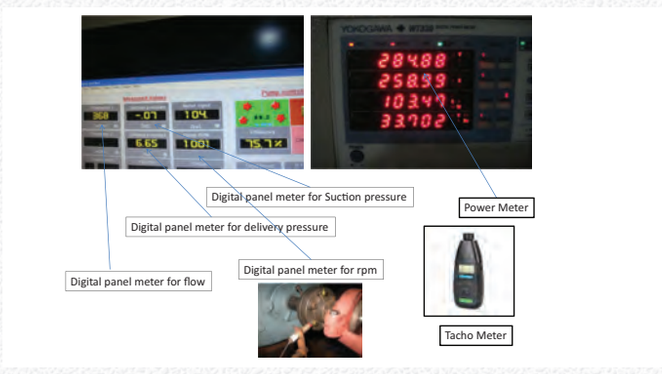
Constructional Features - Centrifugal, Horizontal/vertical model, open shrouded design with supplementary vanes, minimum no of vanes for solid handling capacity.

Two Vane Non-Clog Impeller

Features

1. High Energy Efficiency
2. Optimum Mechanical Reliability
3. Large Solid Handling Capacity
4. Large Number of Pumps for optimum selection
5. Horizontal, Vertical and Cardan Shaft option

Quality Assurance & Testing



For each order executed by Pumpsense, detailed quality plan is drawn up to reflect special conditions of the order and customers specific QA requirements. As a minimum, the following QA documents are available for each pump manufactured by Pumpsense and the customer may access these documents at any time:

1. Dimensional conformance report & “as built” general arrangement drawing.
2. Physical and chemical test certificates for major pump components such as casing, impeller and shaft.
3. Dynamic balancing report for the rotating element.
4. Hydrostatic pressure test report
5. Seal integrity test report
6. Performance test report

In-house Non-destructive test facilities -

1. Dynamic balancing machine
2. Liquid penetrant test arrangement
3. Ultrasonic test equipment

Hydrostatic Pressure Test & Seal Integrity Test -

- All pump casings are pressure tested as per applicable code/customer’s order.
- Fully assembled mechanical seal fitted pumps are subjected to a second hydrostatic test at the maximum allowable seal pressure or casing hydrostatic test pressure, whichever is lower, to check leak free operation of seals under pressure.

Performance Test - All pumps are tested for performance as per ISO 9906 Grade 1. Pumpsense is equipped with a state of the art test bed with the following key features:

1. **Test Tank** - The tank which is partly underground and partly overground ensures adequate NPSHA for performance test. The tank size is 23ft(L) X 10ft(W) X 12ft(W) and holds 80 m3 of potable water for testing. The test tank has been specially designed as per the guidelines of the Hydraulic Institute Standards and is provided with necessary flow stabilizers, separate return chambers, etc. in order to ensure vortex free suction condition.
2. **Test Lines** - There are two test lines of 250 mm and 150 mm capable of measuring flows up to 1500 m3/hr.
3. **Flow Measurement** - Flow measurement is done primarily by magnetic flow meters. However, the test lines are also equipped with orifice meters supported by differential pressure transducers for flow measurements/calibration. Ultrasonic flow meter provides a third means of flow measurement in the test bed.
4. **Pressure Measurement** - This is done by both pressure transducers and bourdon type pressure gauge.
5. **Power Measurement** - Power is measured by YOKOGAWA power meter. For non-synchronous motor speeds the power is also measured by S. HIMMELSTEIN make torque meter.
6. **Speed** - Pump speed is measured by stroboscope.
7. **Vibration** - Vibration data is obtained by a Bruel & Kjaer vibration analyzer
8. **Speed Variation** - Speed variation for testing is achieved through a 132kW VFD supplied by Fuji
9. **Flow control** - Flow control is achieved by actuator operating globe and butterfly valves.
10. **Data acquisition and control panel** - A specially designed control panel with the state-of-the-art instrumentation is used for data acquisition and test sheet/test curve generation. The system uses proprietary software for pump testing.
11. **NPSH test** - NPSH test is conducted by a 3% head-decay method by throttling the suction globe valves.

PUMPSENSE - RETROFIT SERVICES

RETROFIT PROCEDURE

Condition monitoring
Analysis of problems
Establish system characteristics

↓

Identification of constraints
– Prime mover rating
– Available NPSH
– Range of operation

↓

Measurement of Internal dimensions of the pump
Inspection of the pump internals for diagnostics and material/ design parameter selection

↓

Estimation of performance of new Impeller/rotating element, energy consumption, suction performance

↓

Design and Development

↓

Testing and commissioning






PUMPSENSE – CORE VALUE PROPOSITION

1. Over 35 years of accumulated learning and experience in the field of centrifugal pumps.
2. Sophisticated understanding of the pump business.
3. Highly experienced hydraulic designers with a large pool of proven pump designs.
4. Ability to develop new pumps quickly and competitively.
5. Over five thousand pumps in operation in Asia Pacific, Middle East, Europe, Americas and South Asia.
6. Ability to quickly customize pumps and offer product variants competitively.
7. Well developed supply chain, experienced pattern makers, specialized foundries, pump serviceproviders.

SPECIAL PUMPS AND SERVICES

PACKAGED PUMP SETS– Packaged pump sets are supplied with fabricated steel base plates, couplingsand guards. Driver selection includes speed torque and rotor dynamic analysis.

SPECIAL PUMPS – special pumps are designed and built to meet specific needs of customers.

DESIGN & DEVELOPMENT – We have developed spilt case, end suction, vertical and horizontal inline pumpsfor other pump makers. This service includes complete hydraulic and mechanical design, development of pat-terns and prototype. The service usually extends to commercial production on behalf of the customer.

RETROFIT – Retrofit division of PUMPSENSE provides performance enhancement of your existing pumps.

PUMP COMPONENTS – Supply of fully machined pump components.

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Web: worldofpumps.com email: enquiries@worlofpumps.com