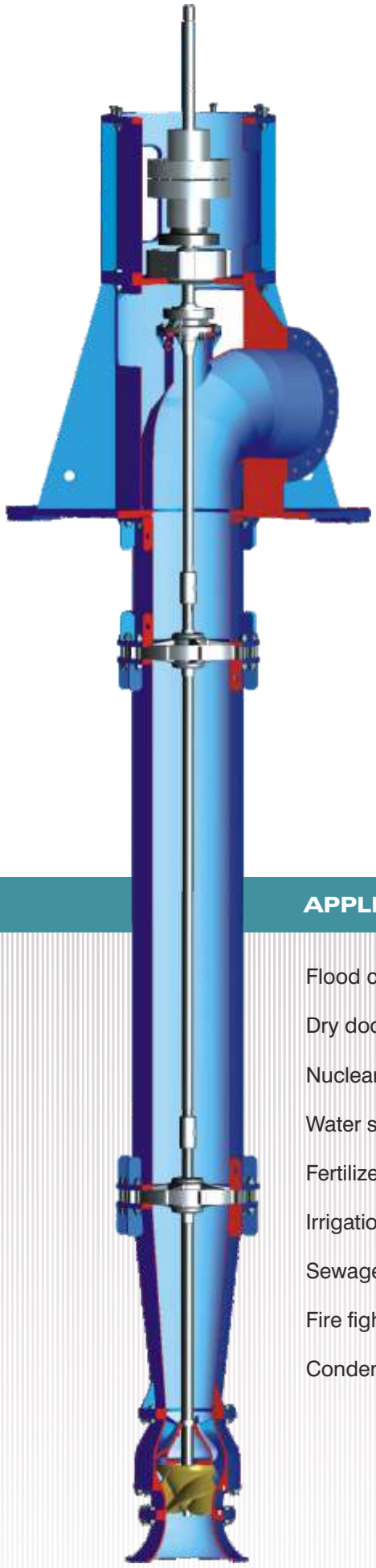
VERTICAL PUMPS

TYPE - BHR / BHQ /BHM/ BHK / BHMa / BHA

RODELTA PUMPS INTERNATIONAL B.V.



RANGE

Delivery size up to 2200 mm.

Capacity up to 55,000 m^3/hr

Head up to 240 meters

TYPES

Turbine

Mixed Flow

Axial Flow

Propeller

APPLICATIONS

Flood control

Dry dock

Nuclear & thermal power station

Water supply

Fertilizer plants and process industries

Irrigation schemes

Sewage handling

Fire fighting and offshore platforms

Condensate extraction

DESCRIPTION

Vertical turbine pumps are single stage or multistage in construction. These pumps can be installed in wet pit and dry pit arrangements. Vertical wet pit pumps are used on boreholes, open wells, rivers and lakes etc. They are designed to operate without being affected by large fluctuations of the water level and are of compact construction. Submerged Impellers allow the pump to be started without need of priming.

Rodelta manufactures a wide variety of vertical turbine pumps. There are different types of models developed such as BHR, BHQ, BHRC, BHM, BHMa, BHA and Deep well series. These models cover specific speed range of 140 rpm [metric] to 850 rpm [metric]. This offers a good choice of suitable model and size for almost for any duty conditions encountered in application like flood control, dry docks, circulating water systems, water supply and irrigation schemes, firefighting, and condensate extraction etc.

Component Description and Features:

Suction Bell (Bell Mouth):
Suction Bells are designed for smooth entry of liquid from the sump into impeller eye. For good performance from a centrifugal pump the liquid must continuously accelerate up to the eye of the impeller. Generally the bell mouth is cast/ fabricated.

Pump Bowl:
The pump bowl in Vertical Pump does the function of a diffuser. The function of diffuser is to convert velocity component into pressure and streamline the flow in axial direction.

Impeller:
The function of Impeller is to impart Kinetic energy to the fluid to be pumped. These impellers have vanes with double curvature. The Impellers are of Mixed flow, Francis vane type & Axial flow type, which are accurately machined, balanced and finished smooth by hand in water passages.

Impeller Guide Piece:
The Impeller guide piece functions as outer shroud for mixed flow Impeller and housing for enclosed type Impeller. This is normally supplied in cast-iron, stainless steel material.
PUMP SHAFT:
Pump shaft accommodate Impeller, shaft sleeve & impeller nut. The other end of shaft is connected to intermediate shaft by means of muff/screwed coupling.

Taper Column Pipe:
It is cast or fabricated component, which connects bowl outlet with column pipe. The taper of this unit is so designed to facilitate smooth enlargement & flow so as to minimize the friction losses.

Muff/ Screwed Coupling:
These types of Couplings are used for connecting shaft ends of impeller shaft, intermediate shaft and head shaft. Generally screwed coupling is used when the shaft diameter is below 50mm and for shaft diameter above 50mm, muff coupling is used.

Shaft Bearings:
These are centrally located into the Bowl / bearing spider. These are neoprene rubber lined with an outer shell of brass or steel. Also composite type bearings are used depending on application and liquid properties. These can be lubricated by the water being pumped. If the water being pumped is not suitable for lubrication, then external clear water is used. In case of Oil lubrication bronze bearings are used. Grease lubrication is used in typical application.

Intermediate Shaft:
Intermediate shaft accommodate shaft sleeve & muff coupling assembly. The ends of shaft are connected to subsequent intermediate shaft or head shaft by means of muff/screwed coupling. The shaft is of highgrade steel and it is accurately machined.

Column Pipe:
These column pipes are fabricated steel or cast & provide passage for liquid to be pumped. These are fastened between taper column pipe & discharge head supported by line shaft bearings. This are supplied with standard lengths and adjusted as per total suspension length.

DESCRIPTION

Discharge Head:
Discharge heads are provided when the pump discharge is above pump floor level. This part directs the flow from column pipe to delivery pipeline. The total weight of pump is supported by discharge head, which is fixed on foundation plate.

Discharge Tee:
The discharge tee is provided when the pump discharge is below pump floor level. The flow is directed from vertical to horizontal through a smooth elbow, causing minimum friction loss.

Stuffing Box:
The purpose of stuffing box is to seal off gap/ aperture around the rotating shaft, when it passes through the discharge head. The purpose of stuffing box is to prevent leakage of water along the shaft. In this case, the stuffing box is entirely filled with packing's which is pressed tight by means of gland.

Mechanical Seal:
For certain applications where the gland packing's are not suitable and zero leakage is expected, in that case mechanical seal are used to prevent the leakage between rotating shaft and housing. Applicable API seal plans are provided for safe operation of mechanical seal.

Thrust Bearing:
Axial thrust developed by pump & weight of rotating component are taken by a thrust bearing. These are of Pad type or antifriction type. The thrust bearing unit is fixed on discharge head/ lower stool.

Coupling:
This is used to transmit power from motor to pump. The standard coupling is of flexible pin bush type.
Many times coupling type is spacer type or rigid type.
In case of thrust bearing located in motor then rigid type coupling will be provided.

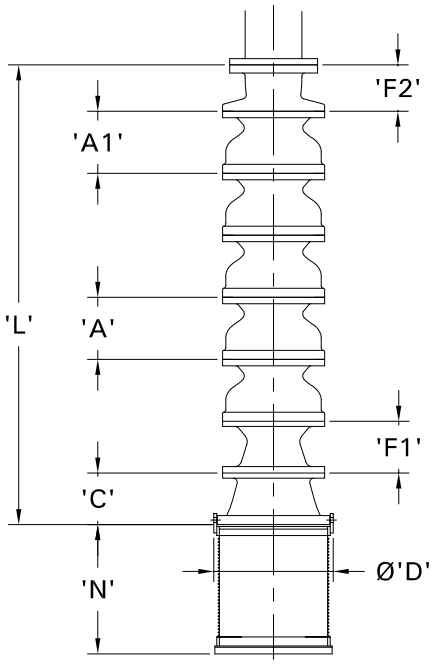
Motor Stool:
The motor stool is designed for rigid construction to ensure vibration free operation of the pump. It acts as support between motor & discharge head there by providing the necessary space for coupling and thrust bearing unit.

Non-reverse Ratchet Arrangement:
If the pump or the motor bearings are suitable only for unidirectional operation, non-reverse ratchet arrangement can be provided to prevent reverse rotation of pump due to back flow of the water in case of pump trip. Due to rotation of pump and with centrifugal action the ratchet pins gets lifted up and the NRR arrangement comes in action. When the speed is reduced or the pump stops the ratchet pins get engaged with ratchet cover teeth and the pump stops rotating in opposite direction.

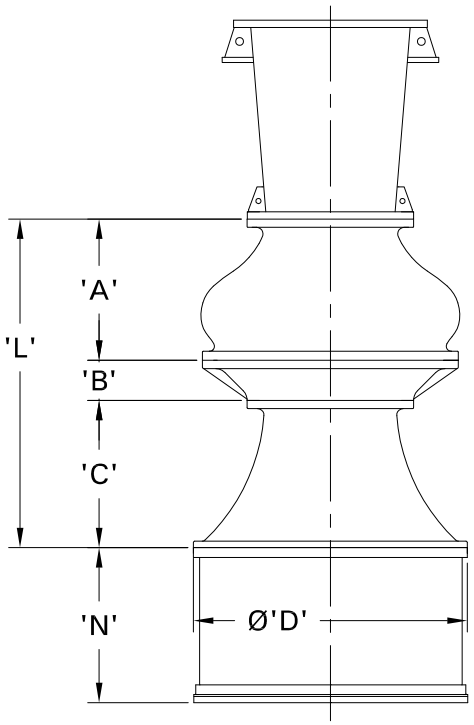
Drive:
The simplest and common most drive for vertical turbine pump is electric motor with vertical hollow shaft or vertical solid shaft. Diesel engine can also be used under certain circumstances by using right angle gearbox. Below are types of Drivers…
Solid Shaft Drive: This is vertical electric motor with extended solid shaft. The pump may be connected to motor either through rigid coupling or through flexible coupling.
Hollow Shaft Motor: The vertical hollow shaft motor drive is an electric motor having a hollow shaft to receive the head shaft of the pump.
Gear Box Drive: Right angle gear drive is a gear mechanism having a hollow shaft to receive the head shaft of the pump. The horizontal shaft of a gear drive receives its power from the prime mover & through a pair of bevel gears and transmits it to the head shaft.

GENERAL DIMENSIONS FOR DEEPWELL & BHR PUMPS:

UPTO BHR60 PUMP



ABOVE BHR60 PUMP

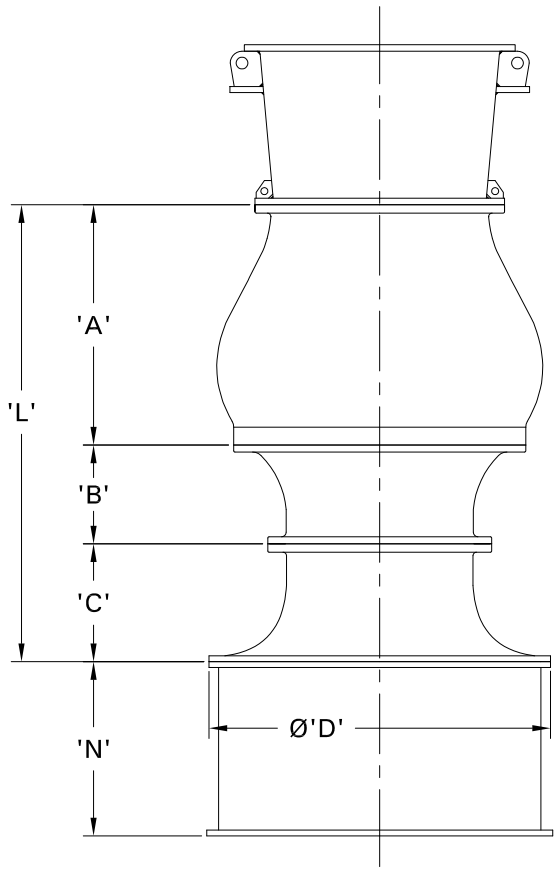


DIMENSIONS FOR DEEPWELL PUMPS										
PUMP MODEL	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	F1 (mm)	F2 (mm)	N (mm)	L (mm)	Maximum stages to be offered.
VT150LH	108	-	-	108	145	108	-	100	324	15
VT150HL	115	-	-	115	145	115	-	100	345	15
VT200LL	144	-	-	144	194	144	-	150	432	12
VT200HH	153	-	-	153	194	153	-	150	459	12
VT200LH	144	-	-	144	194	144	-	150	432	12
VT250HL	192	-	-	192	250	192	-	160	575	10
VT275HL	200	-	-	200	266	200	-	200	600	10
VT250 (BHR22)	220	-	-	190	250	130	-	200	250	10

GENERAL DIMENSIONS FOR BHR PUMPS:

DIMENSIONS FOR BHR PUMPS										
PUMP MODEL	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	F1 (mm)	F2 (mm)	N (mm)	L (mm)	Maximum stages to be offered.
BHR3	240	200	-	200	395	-	-	300	640	5
BHR5	290	240	-	250	480	-	-	380	780	4
BHR7	355	280	-	300	580	-	-	450	935	3
BHR28	240	-	-	200	500	160	200	500	800	10
BHR35	290	-	-	300	555	-	-	610	590	6
BHR42	355	-	-	360	645	-	-	725	715	4
BHR50	420	-	-	428	760	-	-	760	848	3
BHR50R	420	310	-	428	700	-	-	760	738	3
BHR50M	380	-	-	450	700	-	-	760	830	3
BHR54	470	380	-	450	800	-	-	780	830	4
BHR60	500	400	-	650	825	-	-	800	1050	3
BHR60N	-	520	-	325	650	-	-	800	755	2
BHR65M	-	619	117	520	950	-	-	800	1256	2
BHR70	565	410	-	610	940	-	-	950	1020	3
BHR70N	-	619	148	520	900	-	-	800	1287	1
BHR70M	-	500	370	230	1000	-	-	800	1100	3
BHR80	-	547	155	570	1060	-	-	1000	1272	2
BHR90	-	600	165	630	1200	-	-	-	1395	3
BHR95(M1)	-	680	265	800	1300	-	-	900	1745	2
BHR95(M2)	-	680	265	800	1300	-	-	-	1745	2
BHR100	-	740	500	425	1450	-	-	-	1665	1
BHR140	-	965	650	700	1800	-	-	-	2315	1
BHR145	-	1150	600	750	1800	-	-	-	2500	1
BHR130N (BHR115)	-	1090	260	920	1500	-	-	900	2270	1
BHR160N	-	1245	400	855	1850	-	-	900	2500	1
BHR175N	-	1330	595	700	2200	-	-	900	2625	1
BHR175N(M)	-	1330	595	750	1850	-	-	900	2675	1
BHR200N(M)	-	1450	-	1350	2200	-	-	900	2800	1
BHR210N	-	1450	-	1400	2750	-	-	-	2850	1
BHR240N	-	1830	625	970	2970	-	-	-	3425	1

GENERAL DIMENSIONSFOR BHQ / BHM / BHMa / BHK PUMPS:



DIMENSIONS FOR BHMa PUMPS							
PUMP MODEL	A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	L (mm)	
						1 stage	2 stage
BHMa25	265	90	196	435	250	551	906
BHMa30	312	105	216	610	400	633	1050
BHMa35	365	123	245	618	450	733	1221
BHMa40	430	145	290	720	400	865	1440
BHMa45	477	163	320	800	450	960	1600
BHMa55	620	210	400	950	560	1230	2060
BHMa60	676	222	452	1050	800 (*)	1350	-
BHMa65	730	240	490	1110	800 (*)	1460	-
BHMa75	800	278	540	1315	800 (*)	1618	-
BHMa77	800	270	555	1750	800 (*)	1625	2695
BHMa83	928	303	612	1440	850 (*)	1843	-
BHMa87	1125	310	615	1520	850 (*)	2050	-
BHMa100	1034	337	760	2100	900 (*)	2131	-
BHMa120	1300	430	800	2250	900 (*)	2530	-

(*) - Marked dimensions are Tentative.

GENERAL DIMENSIONS FOR BHM PUMPS:

DIMENSIONS FOR BHM PUMPS							
PUMP MODEL	A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	L (mm)	
						1 stage	2 stage
BHM20	216	93	142	348	200	451	760
BHM22.5	250	105	160	440	250	515	870
BHM25	278	294	-	450	300	572	-
BHM30	327	137	215	560	300	679	1143
BHM35	380	160	250	610	350	790	1330
BHM40	432	187	288	750	400	907	1526
BHM45	500	200	320	800	450	1020	1720
BHM45M	500	160	375	800	450	1035	-
BHM50	542	225	355	860	450	1122	1889
BHM50M	542	235	355	1150	450	1132	-
BHM60	650	275	420	1018	550	1345	2260
BHM60N	650	270	420	1060	-	1340	-
BHM70	755	310	490	1110	700	1555	-
BHM70M	755	310	490	1200	-	1555	-
BHM85	920	375	600	1460	800	1895	-
BHM85S	1440	280	600	1800	-	2320	-
BHM100	1090	450	800	1950	850	2340	-
BHM100M (#)	1090	450	800	2000	-	2340	-
BHM125	1350	550	800	2300	-	2700	-
BHM130	2140	420	700	2300	-	3260	-
BHM135	1850	775	800	2650	-	3425	-
BHM150	1850	775	800	2800	-	3425	-

(#) - Direction of rotation is Anticlockwise whenviewed from top.

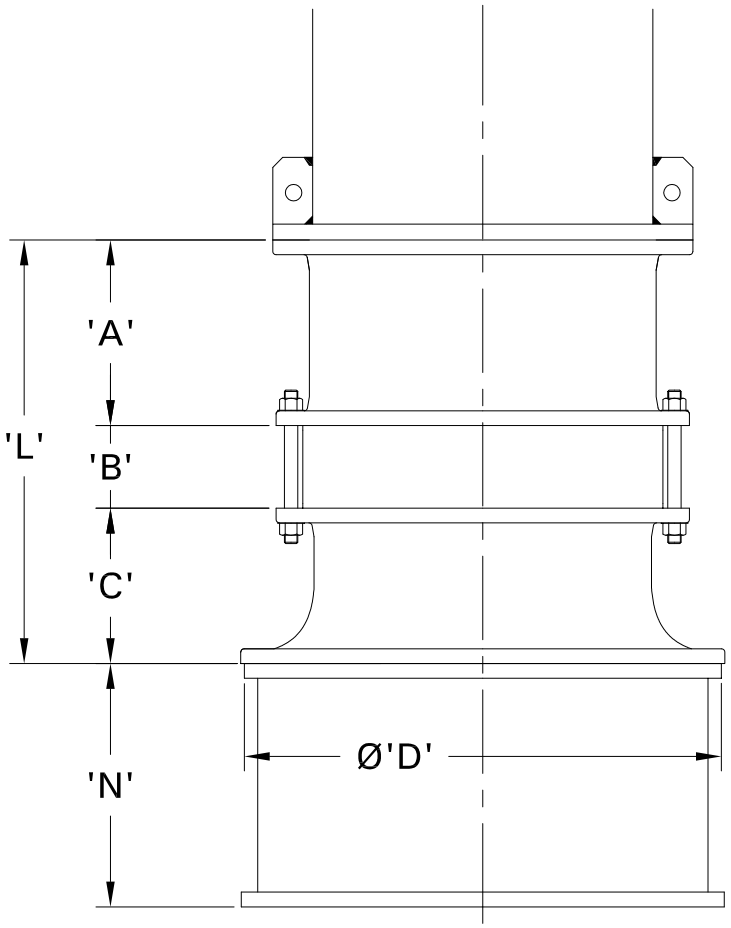
GENERAL DIMENSIONS FOR BHQ PUMPS:

DIMENSIONS FOR BHQ PUMPS						
PUMP MODEL	A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	L (mm)
BHQ27	360	140	170	605	300	670
BHQ27M	370	-	340	605	450	710
BHQ32	432	165	205	590	450	802
BHQ35E (#)	495	185	350	750	-	1030
BHQ37	495	183	232	670	350	910
BHQ40	545	210	250	752	400	1005
BHQ42.5	595	235	270	670	400	1100
BHQ42.5M	775	-	630	1000	800	1405
BHQ45	595	230	280	800	400	1105
BHQ50	680	260	325	1100	500 (*)	1265
BHQ62	825	335	425	1100	550 (*)	1585
BHQ62M	825	335	425	1100	550 (*)	1585
BHQ65M(E)	926	360	600	1450	600 (*)	1886
BHQ70	920	380	450	1350	600 (*)	1750
BHQ75	1020	420	500	1550	600 (*)	1940
BHQ85	1085	478	615	1800	720 (*)	2178
BHQ85M1	1085	478	615	1800	800 (*)	2178
BHQ92	1190	478	650	1950	800 (*)	2318
BHQ92A	1245	400	855	1790	900 (*)	2500
BHQ95M	1415	550	650	2200	850 (*)	2615
BHQ95D	1450	562	785	2200	-	2797
BHQ95D(S)	1800	350	750	2290	-	2900
BHQ105D	1570	655	800	2350	-	3025
BHQ125	1700	700	750	2500	-	3150

(*) - Marked dimensions are Tentative.

(#) - Direction of rotation is Anticlockwise when viewed from top.

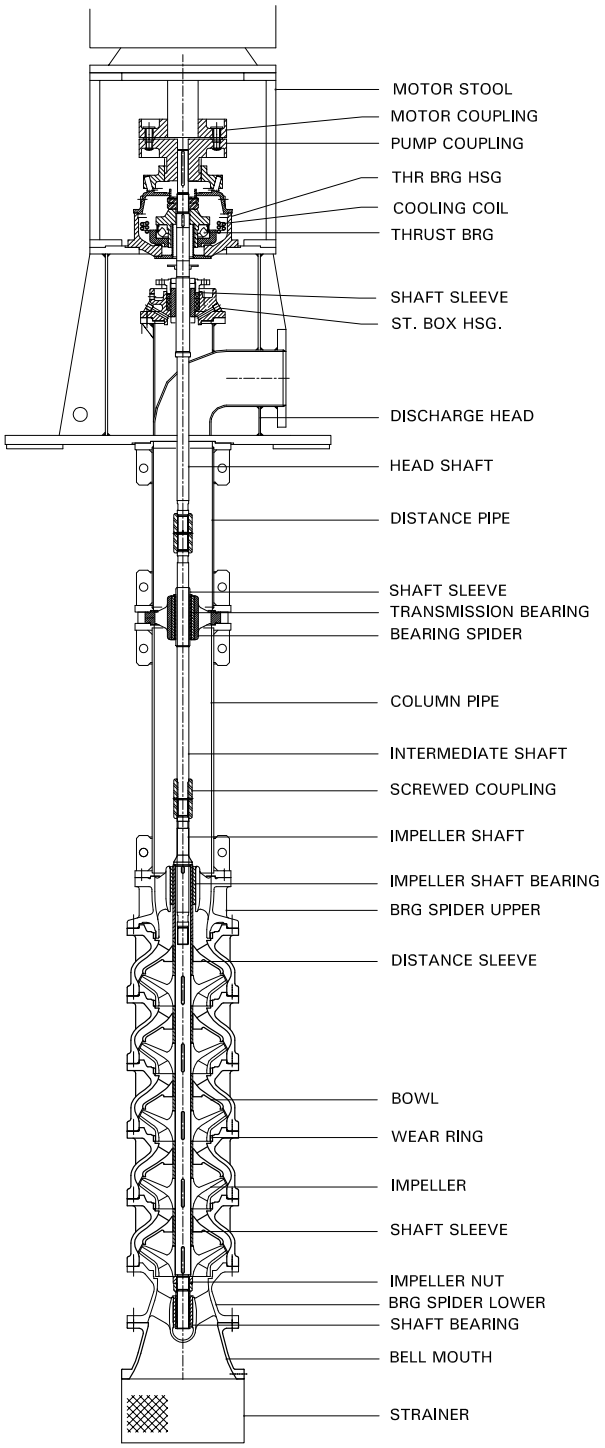
GENERAL DIMENSIONS FOR BHA PUMPS:



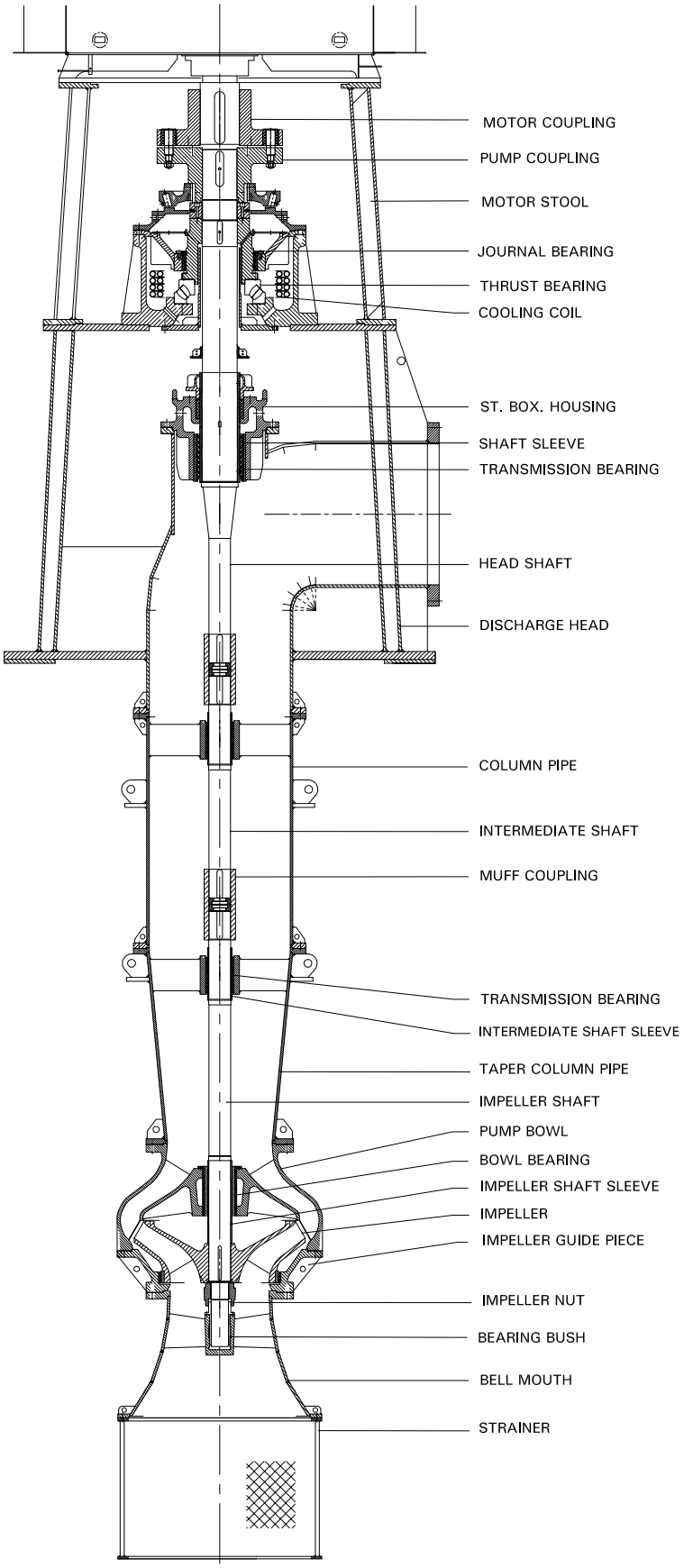
DIMENSIONS FOR BHA PUMPS						
PUMP MODEL	A (mm)	B (mm)	C (mm)	D (mm)	L (mm)	N (mm)
BHA3 S	250	NA	220	450	470	200
BHA3.5 S	192	78	175	525	445	300
BHA400S	280	NA	295	650	575	300
BHA5	440	124	310	850	874	310
BHA5 S	301	NA	260	680	561	310
BHA6 S (#)	352	NA	305	795	657	400
BHA470 S	285	110	240	726	635	400
BHA600 S (#)	352	132	290	950	774	500
BHA700 S	413	154	343	1120	910	600
BHA800 S	400	135	340	1100	875	600
BHA900 S	535	200	445	1450	1180	700
BHA1075 S	610	230	510	1900	1350	800
BHA140 S	830	370	960	2150	1200	1000

(#) - Direction of rotation is Anticlockwise when viewed from top.

CROSS SECTIONAL DRAWINGS:

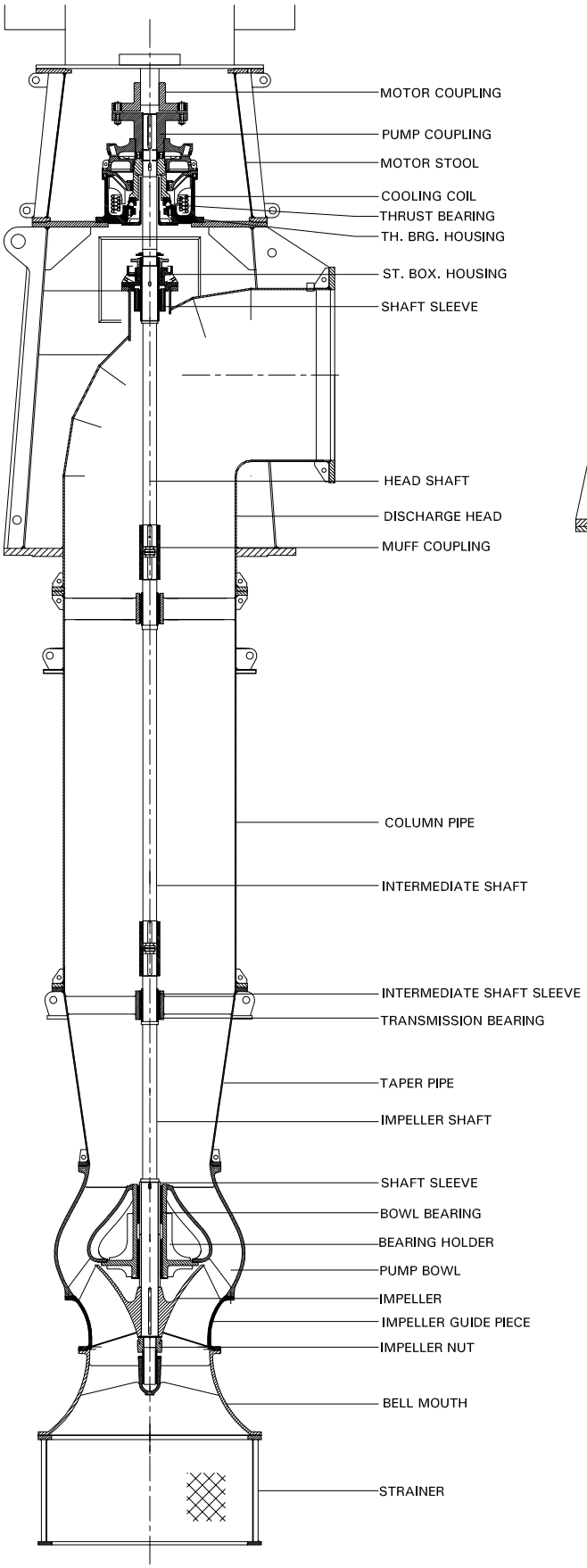


DEEPWELL / SMALL BHR PUMPS

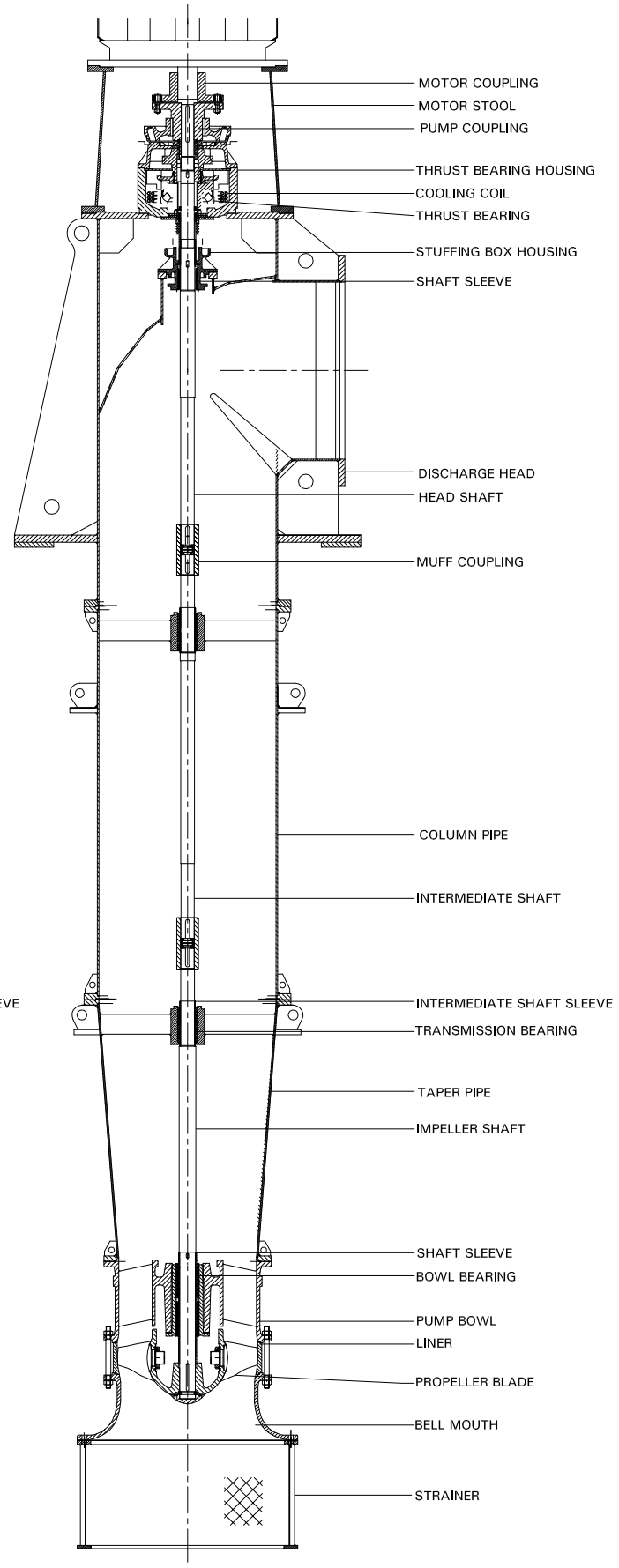


LARGE SIZE BHR PUMPS

CROSS SECTIONAL DRAWINGS:

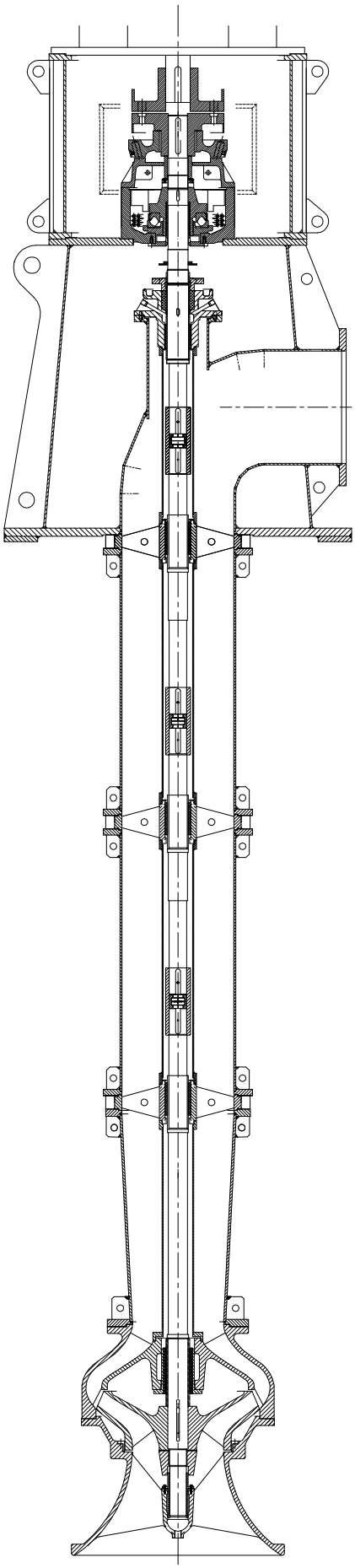


BHQ / BHK / BHM / BHMa PUMPS

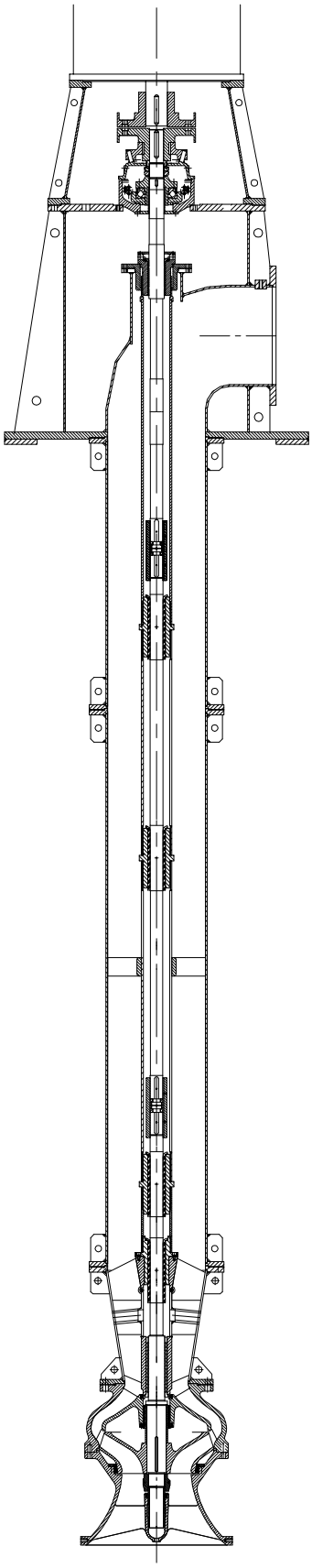


BHA PUMPS

CONSTRUCTIONAL FEATURES:

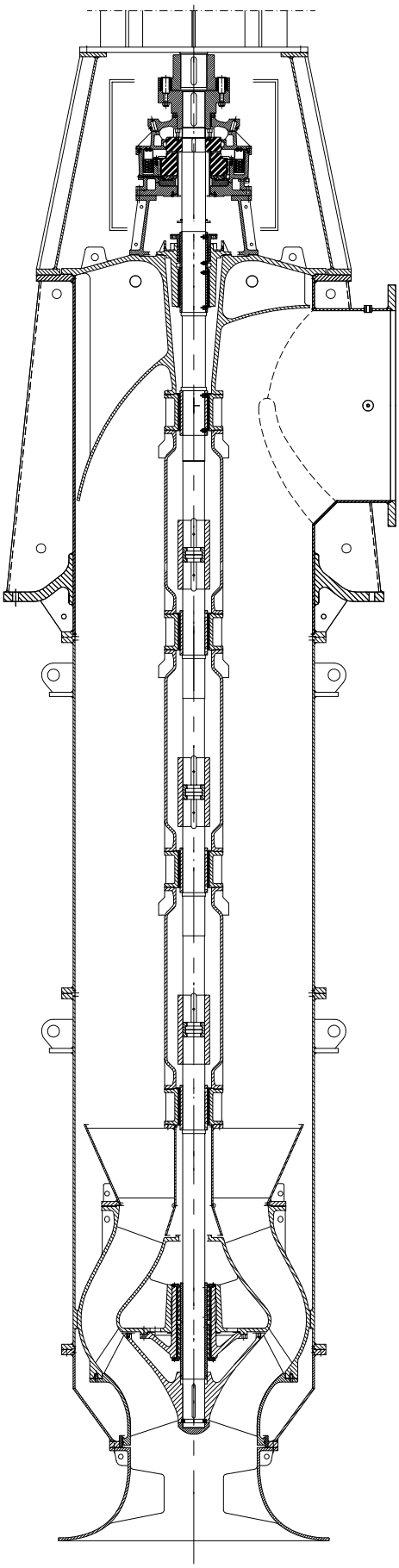


EXTERNAL WATER LUBRICATION

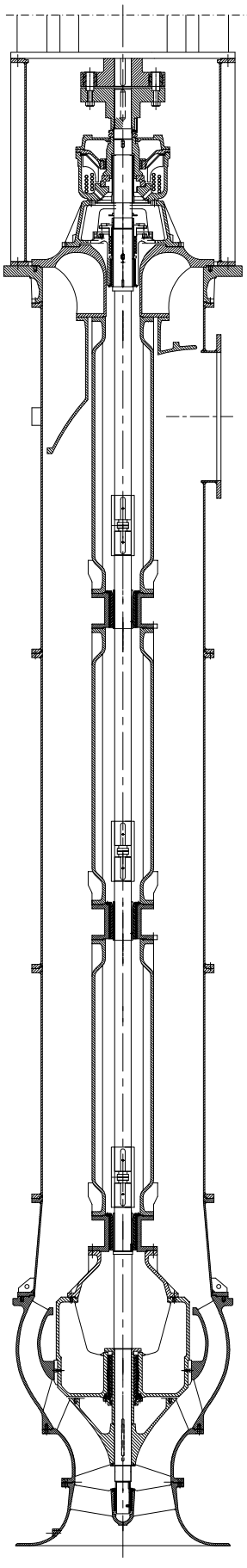


OIL LUBRICATION

CONSTRUCTIONAL FEATURES:



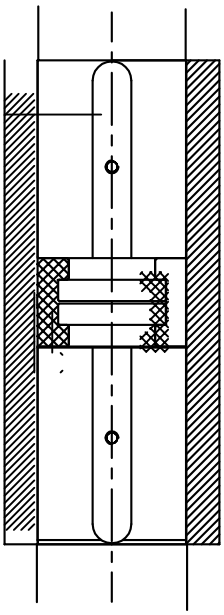
BOWL PULL-OUT



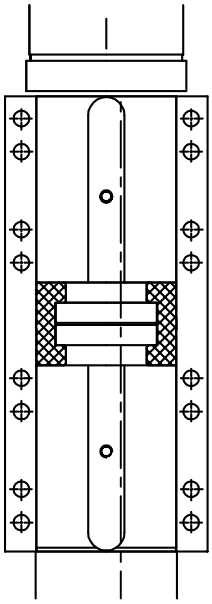
IMPELLER PULL-OUT

CONSTRUCTIONAL FEATURES:

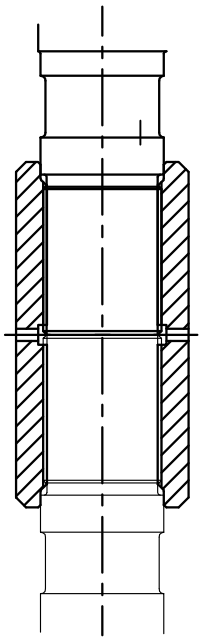
INTERMEDIATE SHAFT COUPLING



MUFF COUPLING

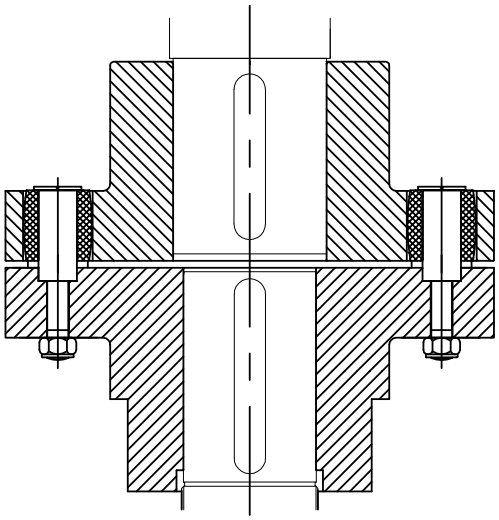


SPLIT MUFF COUPLING

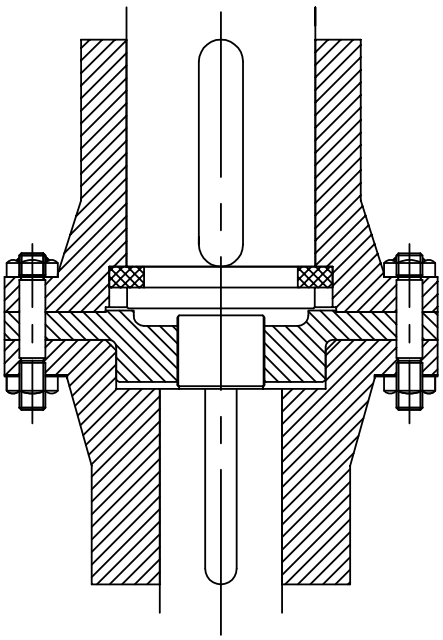


SCREWED COUPLING

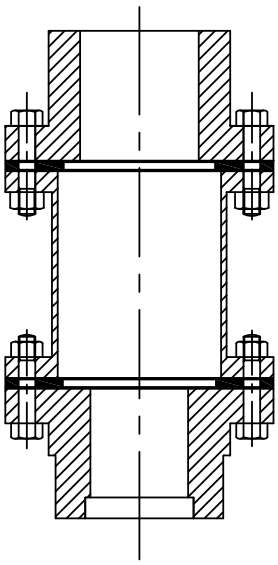
PUMP AND MOTOR COUPLING



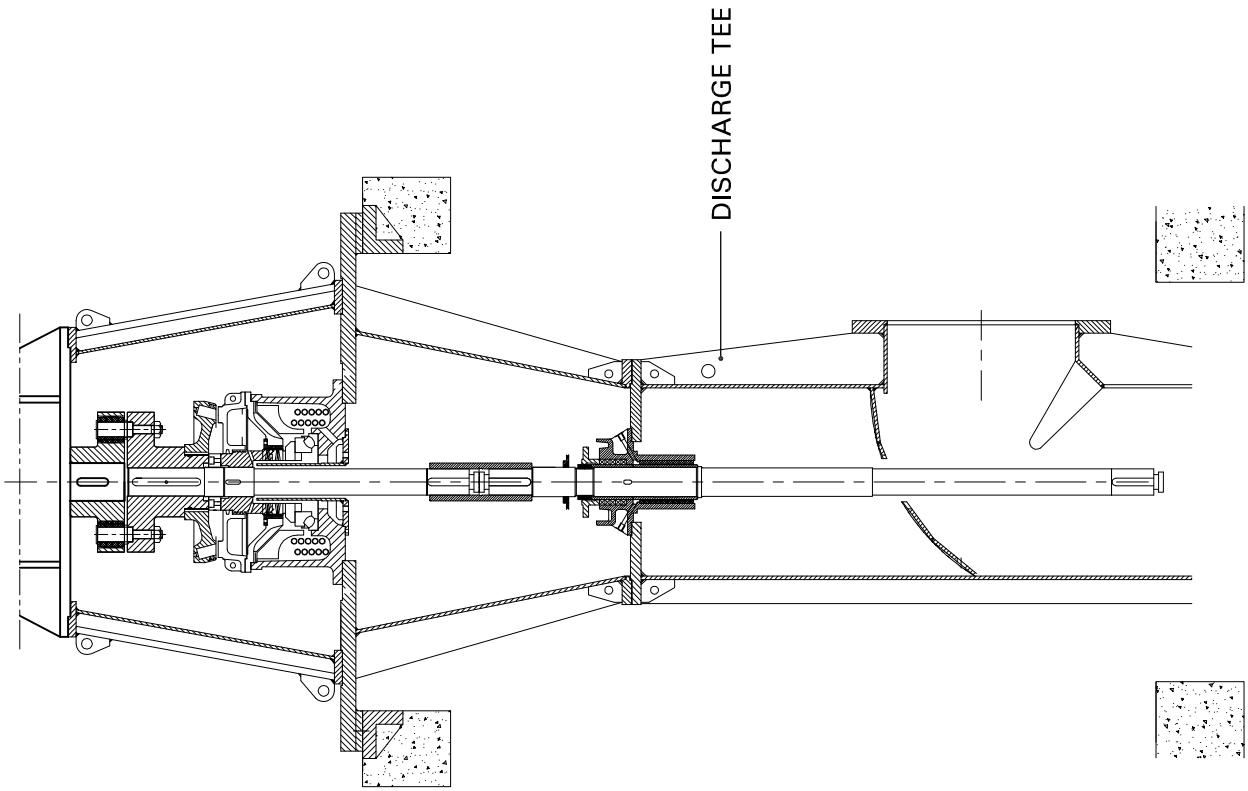
PIN BUSH COUPLING



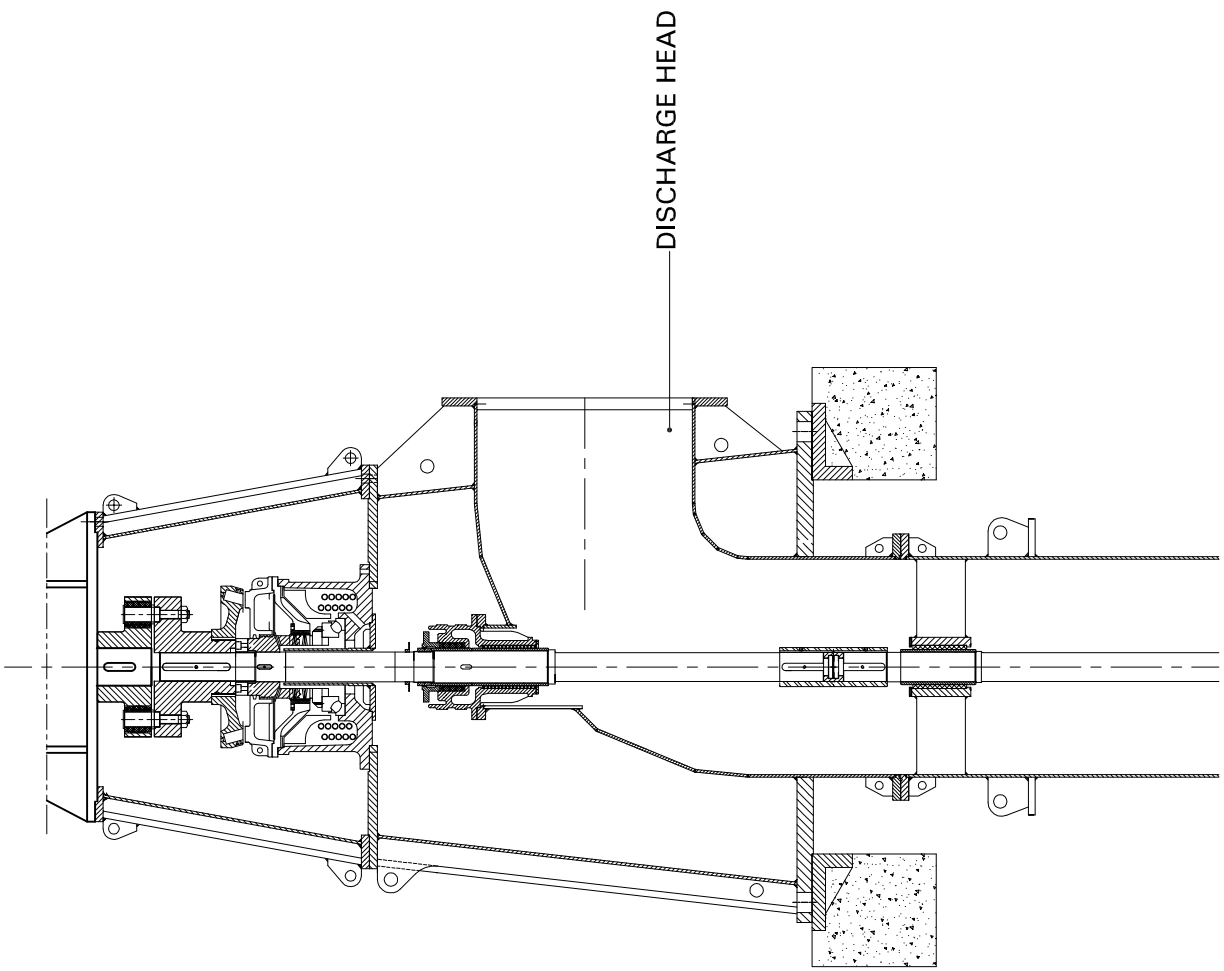
FORGED COUPLING



SPACER COUPLING



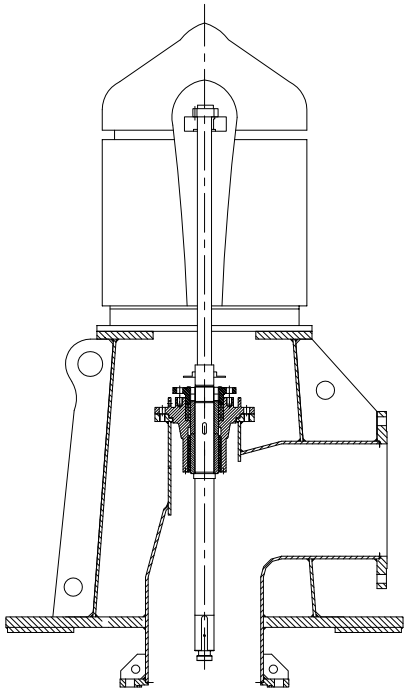
BELOW FLOOR ARRANGEMENT



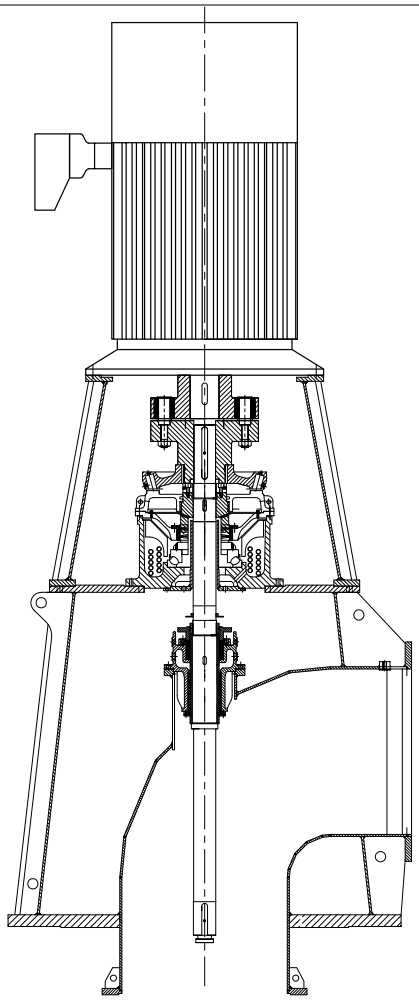
ABOVE FLOOR ARRANGEMENT

CONSTRUCTIONAL FEATURES:

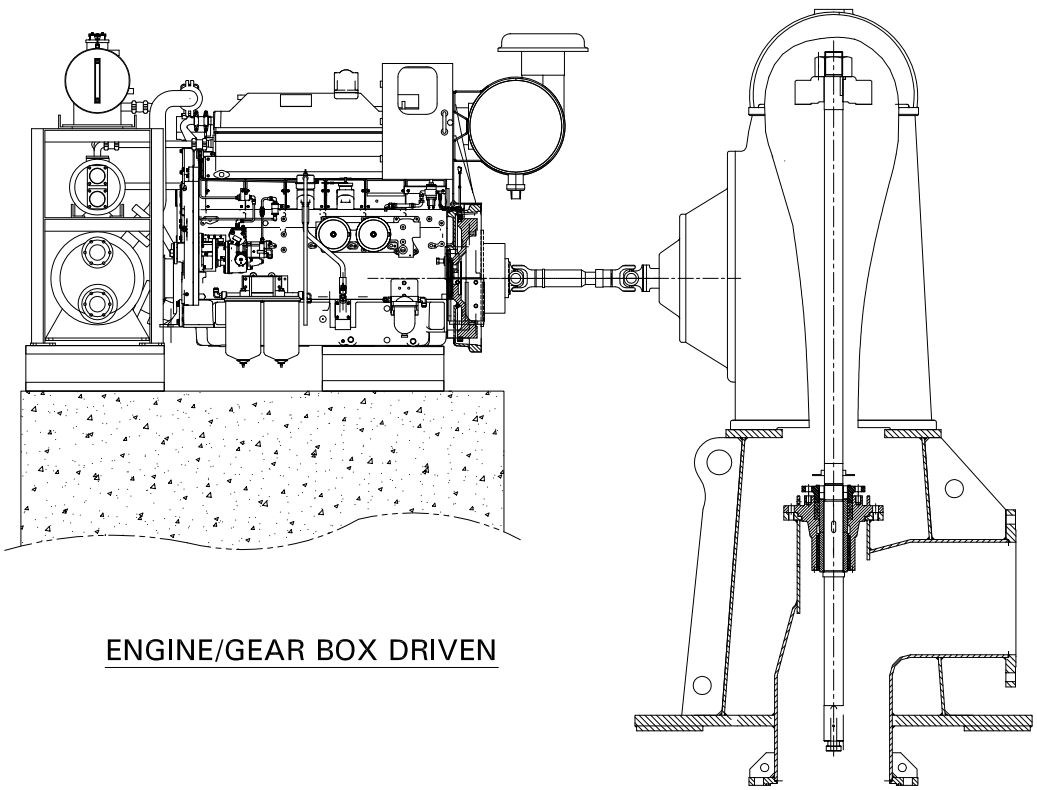
PRIME MOVER ARRANGEMENT



HOLLOW SHAFT MOTOR

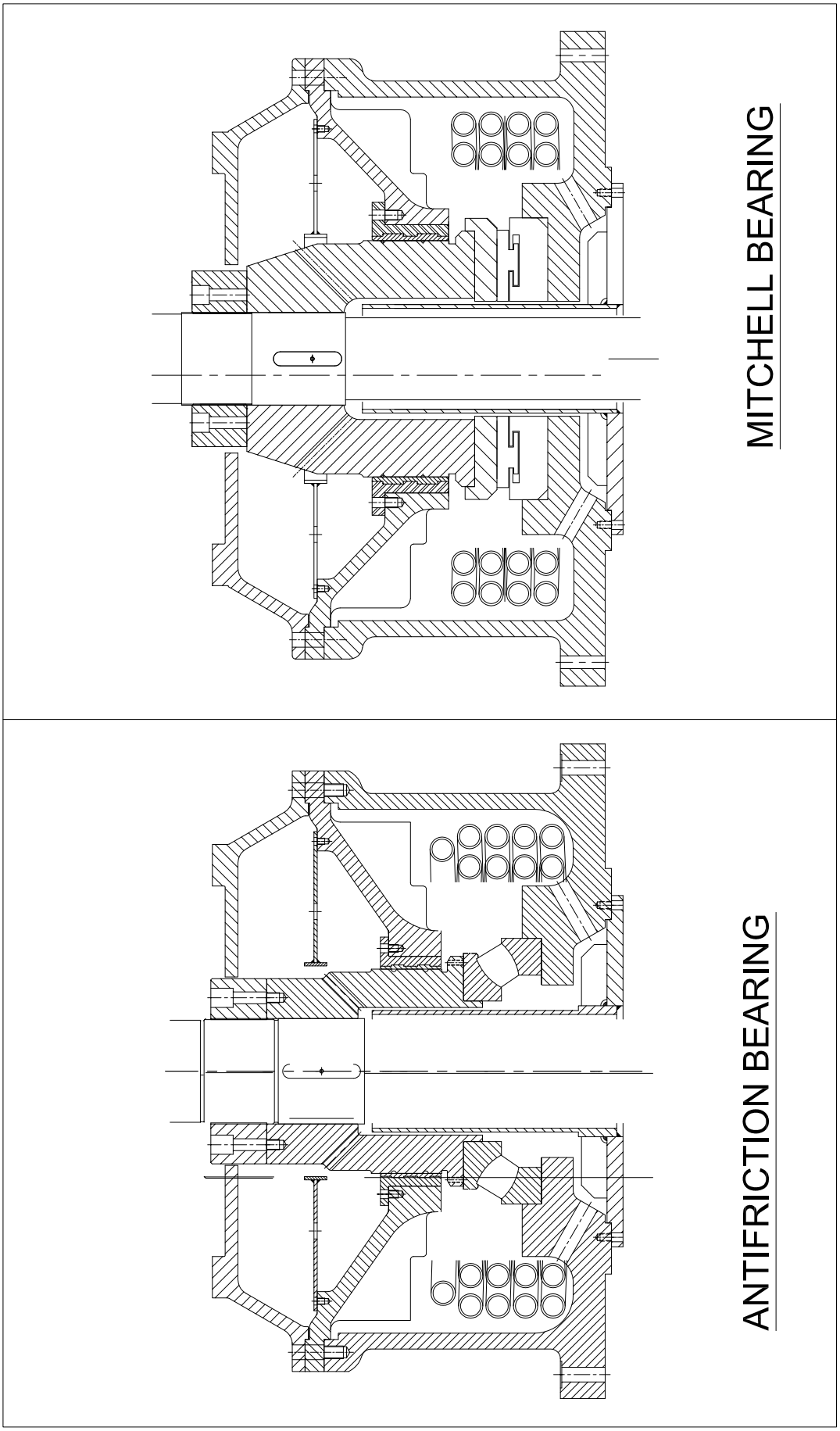


SOLID SHAFT MOTOR



ENGINE/GEAR BOX DRIVEN

THRUST BEARING TYPE



MATERIAL COMBINATION FOR PUMP

Construction	Cast Iron & Bronze	Iron+Stainless Steel	Ni-Resist	All Duplex steel
Pump Components				
Bell mouth	Cast Iron/Cast steel	Cast Iron/stainless steel	Ni-Resist	Duplex steel
Impeller guide piece	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Bowl	Cast Iron/Cast steel	Cast Iron/stainless steel	Ni-Resist	Duplex steel
Impeller	Bronze	Stainless steel	Stainless steel	Duplex steel
Pump Shaft	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Wear Rings	Bronze	Stainless steel	Ni-Resist	Duplex steel
Suction Strainer	Galvanized steel	Stainless steel	Stainless steel	Duplex steel
Collets	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Column pipes	Carbon steel	Carbon steel	Stainless steel	Duplex steel
Line Shafts	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Shafts Sleeves	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Bearings in pump unit	Neoprene Rubber	Neoprene Rubber	Composite bearing /Rubber bearings	Composite bearing / Rubber bearings
Transmission Bearings	Neoprene Rubber	Neoprene Rubber	Composite bearing /Rubber bearings	Composite bearing /Rubber bearings
Bearing Retainer	Bronze	Bronze	Stainless steel	Duplex steel
Bearing Spider	Cast Iron/ Carbon steel	Cast Iron/ Carbon steel	Stainless steel	Duplex steel
Discharge Head	Cast steel/Cast Iron	Cast steel/Cast Iron	Ni-Resist/Stainless steel*	Duplex steel*
Head Shaft	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Stuffing Box Sleeve	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Gland Packing	Non-Asbestos	Non-Asbestos	Non-Asbestos	Non-Asbestos
Motor stool	Carbon steel	Carbon steel	Carbon steel	Carbon steel
Pump and Motor Coupling	Cast Iron	Cast steel/Forged	Forged	Forged
Shaft Enclosing tube	Carbon steel	Carbon steel	Stainless Steel	Duplex steel
Intermediate shaft coupling	Stainless steel	Stainless steel	Stainless steel	Duplex steel
Stuffing Box housing	Cast Iron	Cast Iron/Cast steel	Stainless steel/Ni resist	Duplex steel
Thrust bearing housing	Cast Iron	Cast Iron/Cast steel	Cast Iron/Cast steel	Cast Iron /Cast steel
Ratchet cover	Cast Iron	Cast Iron/Cast steel	Cast Iron/Cast steel	Cast Iron /Cast steel
Ratchet pin housing	Cast Iron	Cast Iron/Cast steel	Cast Iron/Cast steel	Cast Iron/Cast steel

Discharge head inner bend is in Stainless steel/duplex steel while outer skirt is in carbon steel.

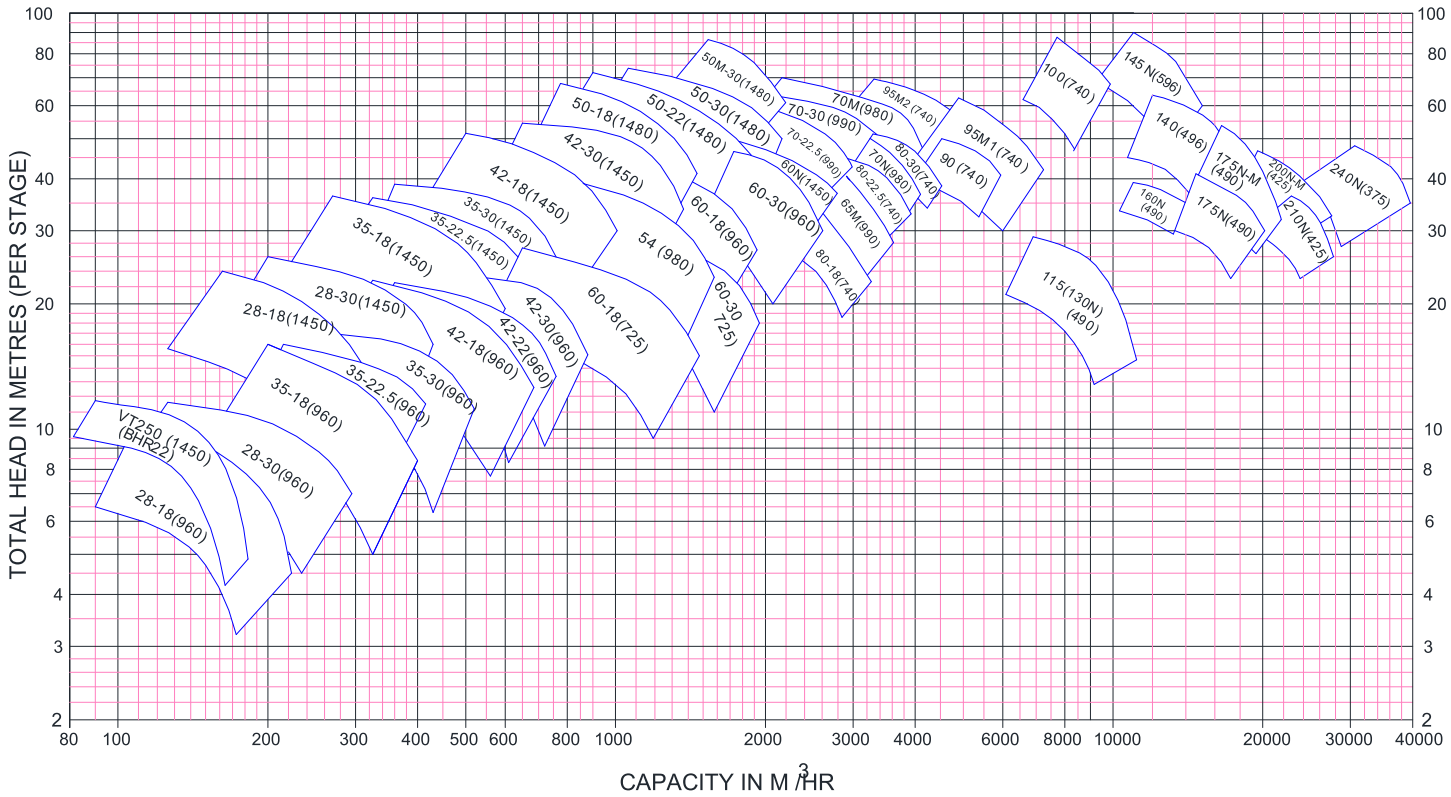
MATERIAL CAN BE SUPPLIED AS PER FOLLOWING STANDARD

Material Type	Indian standard (IS)	American standard (ASTM)
Cast Iron		
Cast Iron	IS 210 Gr. FG 260	ASTM A48 Class 40
Spheroidal Graphite Cast Iron		
SG Iron (Ductile Iron)	IS 1865 Gr 400/15	A536, 60-40-18
SG Iron (Ductile Iron)	IS 1865 Gr 500/7	A536, 65-45-12
Cast Steel Grades		
Cast steel		ASTMA 216 Gr. WCB
Cast Stainless Steel		
Stainless Steel CF8M	IS 3444 Gr. 4	ASTMA 351 Gr. CF8M
Stainless Steel CF8M	IS 3444 Gr. 4	ASTMA 743 Gr. CF8M
Stainless Steel CF3M	IS 3444 Gr. 16	ASTMA 351 Gr. CF3M
Stainless Steel CF3M	IS 3444 Gr. 16	ASTMA 743 Gr. CF3M
Stainless Steel CF8	IS 3444 Gr. 1	ASTMA 351 Gr. CF8
Stainless Steel CF3	IS 3444 Gr. 15	ASTMA 351 Gr. CF3
Cast Chromium Stainless Steel		
Stainless Steel CA15	IS 3444 Gr. 10	ASTMA 217 Gr. CA15
Stainless Steel CA15	IS 3444 Gr. 10	ASTMA 743 Gr. CA15
Stainless Steel CA6NM	IS 3444 Gr. 24	ASTMA 487 Gr. CA6NM
Stainless Steel CA6NM	IS 3444 Gr. 24	ASTMA 743 Gr. CA6NM
Cast Duplex steel		
Duplex Steel 1A		ASTMA 890 Gr. CD4MCu
Duplex Steel 2A		ASTMA 890 Gr. CE8MN
Duplex Steel 3A		ASTMA 890 Gr. CD6MN
Super Duplex Steel 4A		ASTMA 890 Gr. CD3MN
Super Duplex Steel 5A		ASTMA 890 Gr. CE3MN
Chromium Stainless Steel Round Bar		
Stainless Steel 410	IS 1570 (part V) Gr. X12Cr12	ASTMA 276 type 410
Stainless Steel 416	IS 1570 (part V) Gr. X12Cr12	ASTMA 276 type 416
Stainless Steel 420	IS 1570 (part V) Gr. X20Cr13	ASTMA 276 type 420
Stainless Steel 431	IS 1570 (part V) Gr. X15Cr16Ni2	ASTMA 276 type 431
Stainless Steel 316	IS 1570 (part V) Gr. X04Cr17Ni12Mo2	ASTMA 276 type 316
Stainless Steel 316L	IS 1570 (part V) Gr. X02Cr17Ni12Mo2	ASTMA 276 type 316l

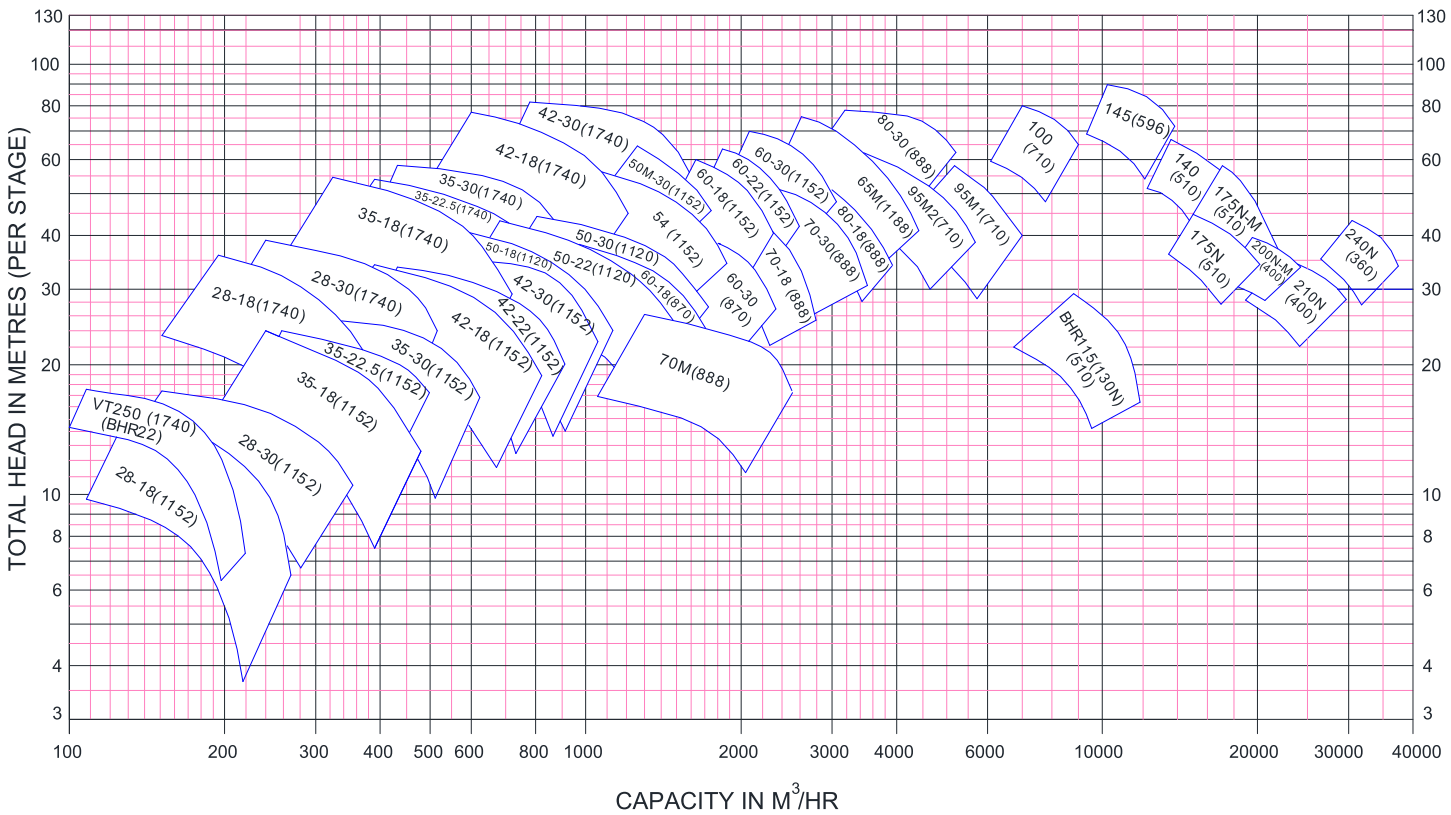
MATERIAL CAN BE SUPPLIED AS PER FOLLOWING STANDARD

Duplex steel Bar		
Duplex steel		ASTMA276-UNS NO. 31803
Super Duplex Steel		ASTMA276-UNS NO. 32760
Carbon steel Plate		
Carbon steel (Wrought)	IS 1570 (part II) Gr. 40C8	ASTM A107 Gr. 1040
Carbon steel (Wrought)	IS 1570 (part II) Gr. 20C8	ASTM A107 Gr. 1020
MS Steel	MS IS 2062-Fe 410 W A	ASTM A36/36M
Duplex steel Plate		
Duplex steel		ASTMA240/240M-UNS NO. 31803
Super Duplex Steel		ASTMA240/240M-UNS NO. 32760
Non Ferrous Materials		
Bronze	IS 318 Gr. LTB2 (CuSn5Zn5Pb5C)	ASTMB 584-C90500
Phosphor Bronze	IS 28 Gr.1(CuSn 11 PC)	
Zink Free Bronze	IS 28 Gr.1(CuSn 10C)	
Note: The Material will be supplied as per the latest ASTM specification.		

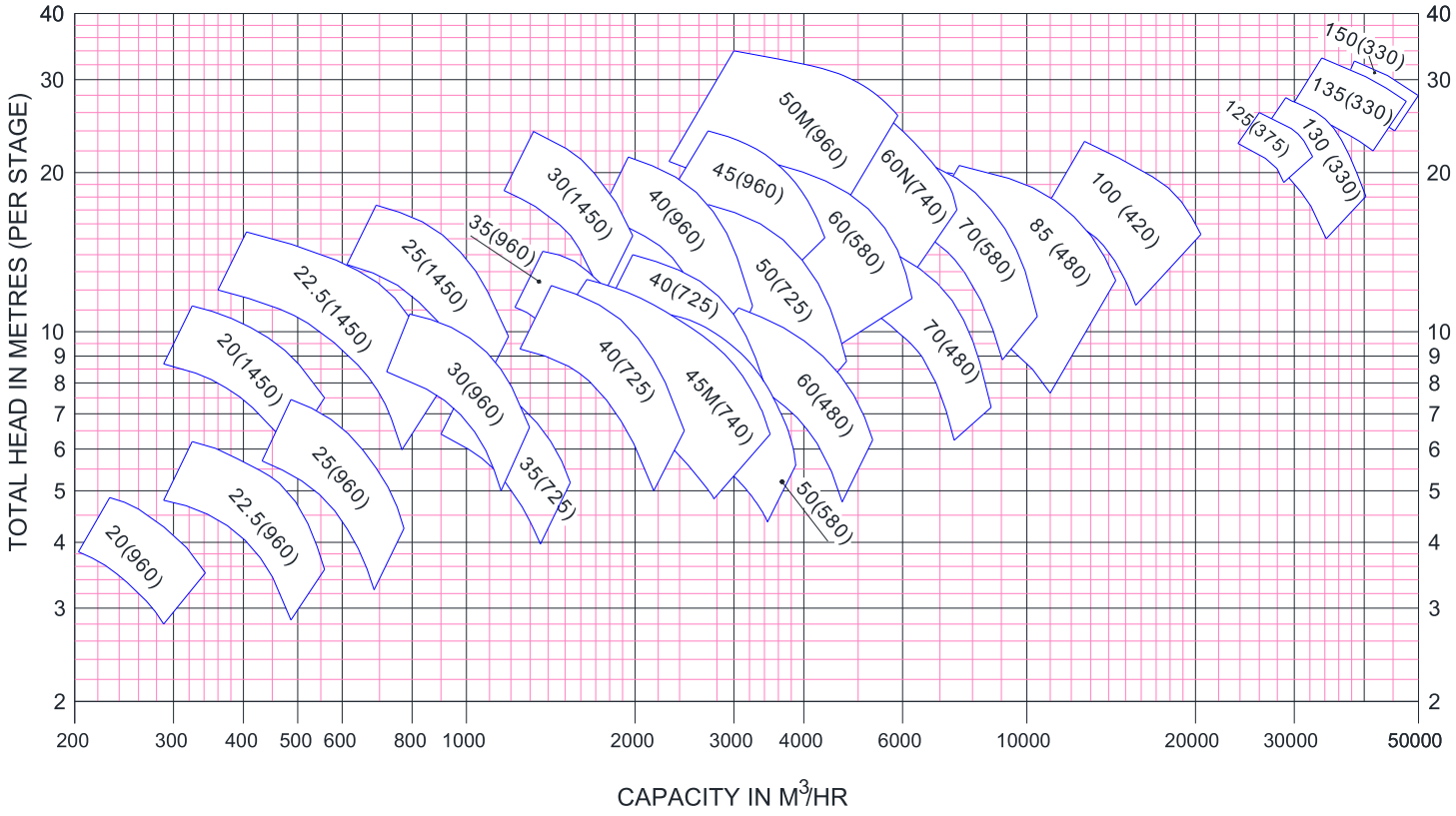
FAMILY CURVES FOR BHR PUMPS AT 50 HZ



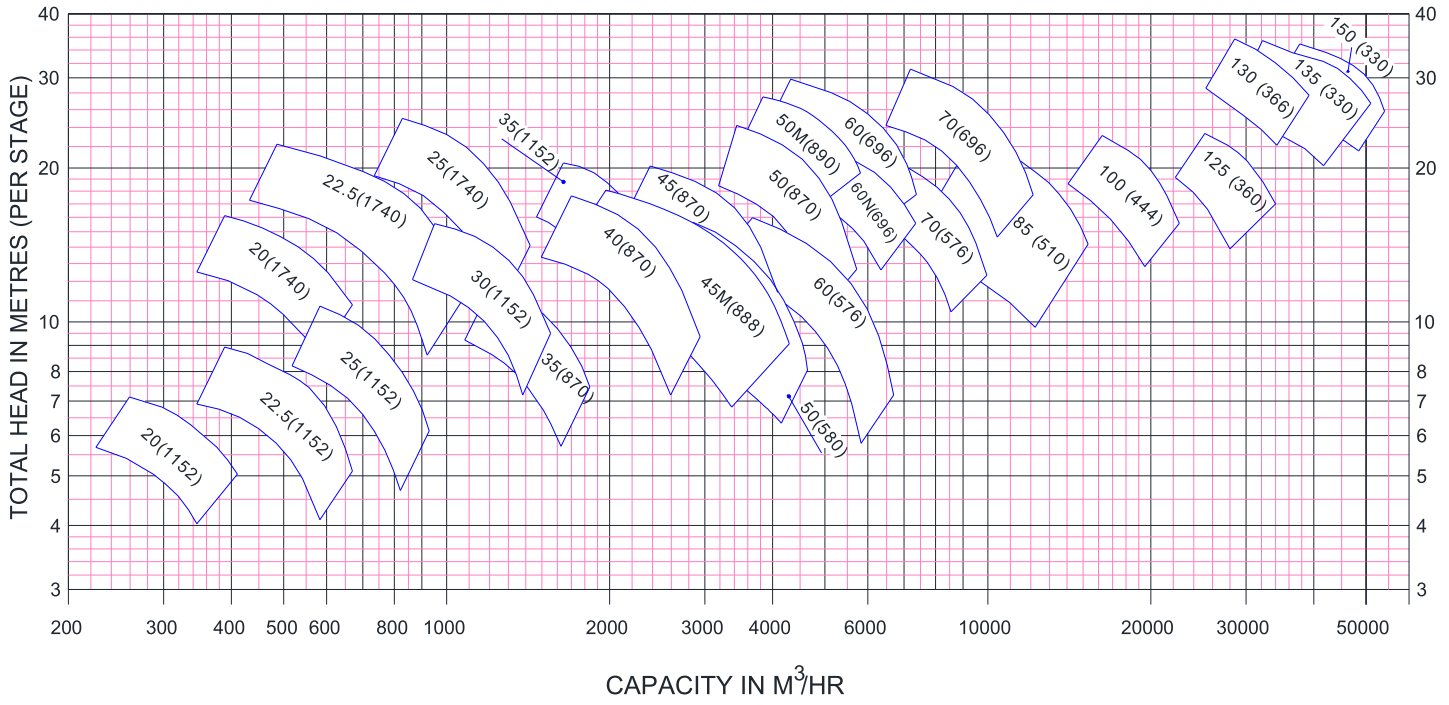
FAMILY CURVES FOR BHR PUMPS AT 60 HZ



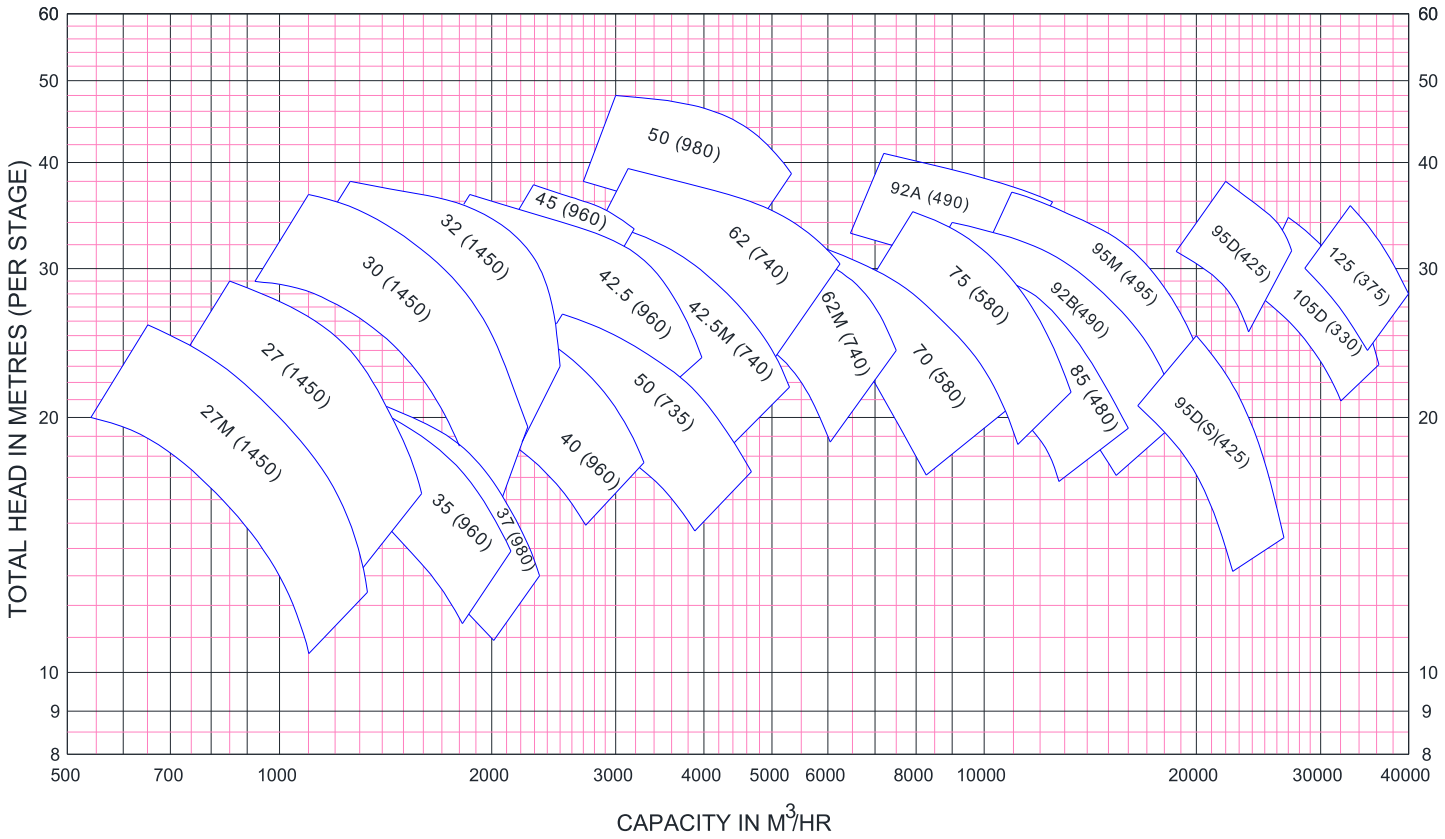
FAMILY CURVES FOR BHM PUMPS AT 50 HZ



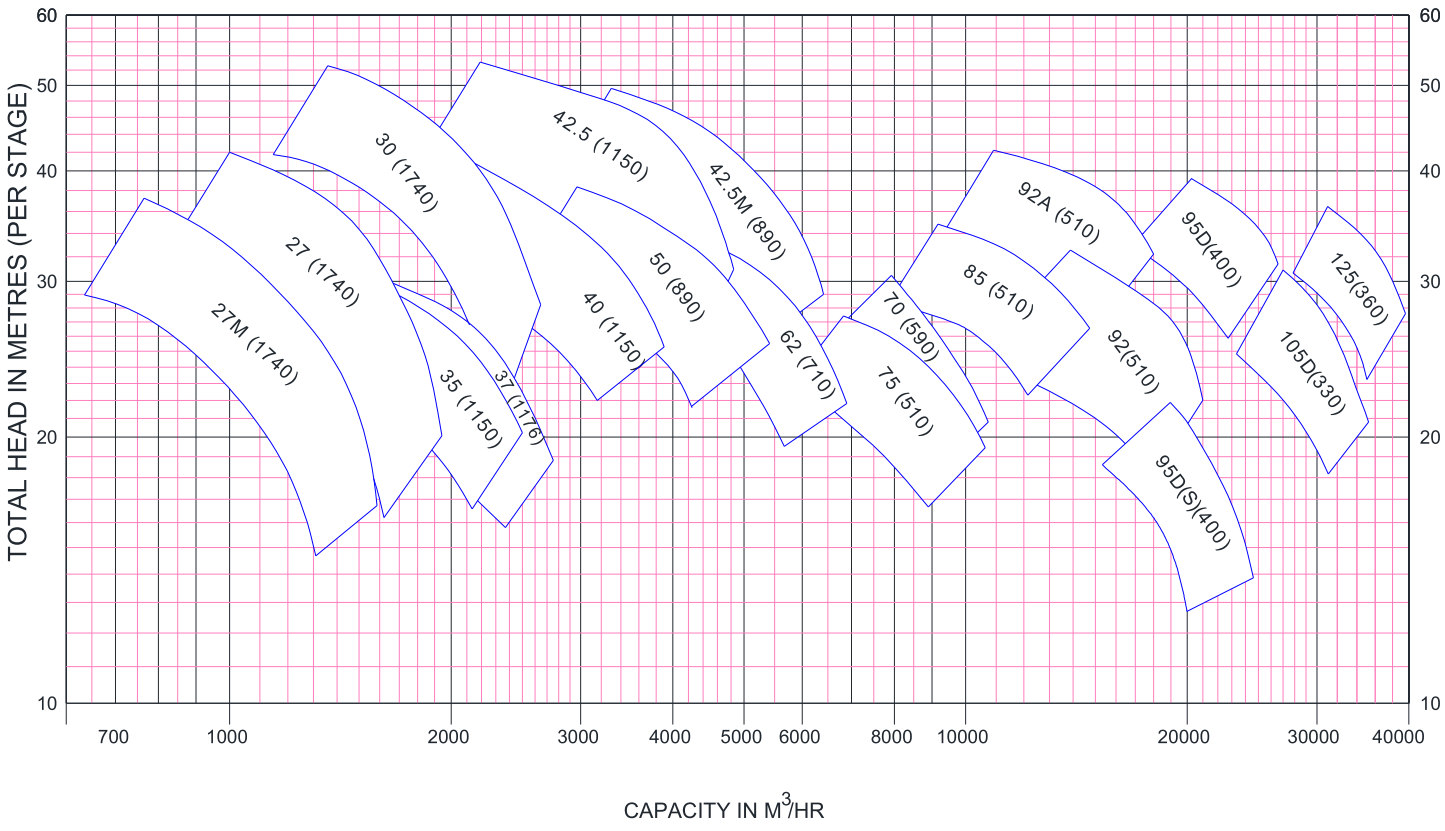
FAMILY CURVES FOR BHM PUMPS AT 60 HZ



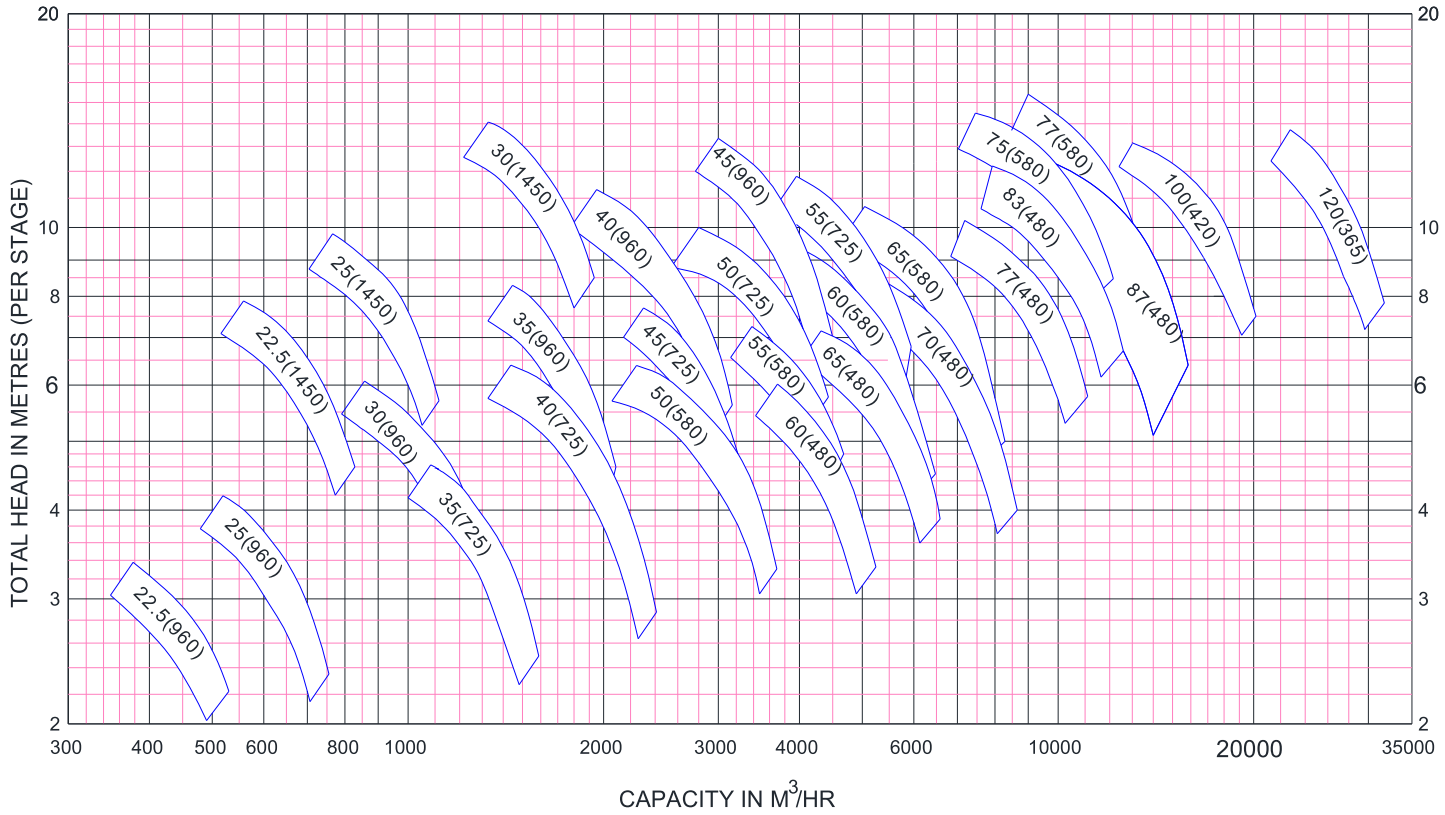
FAMILY CURVES FOR BHQ PUMPS AT 50 HZ



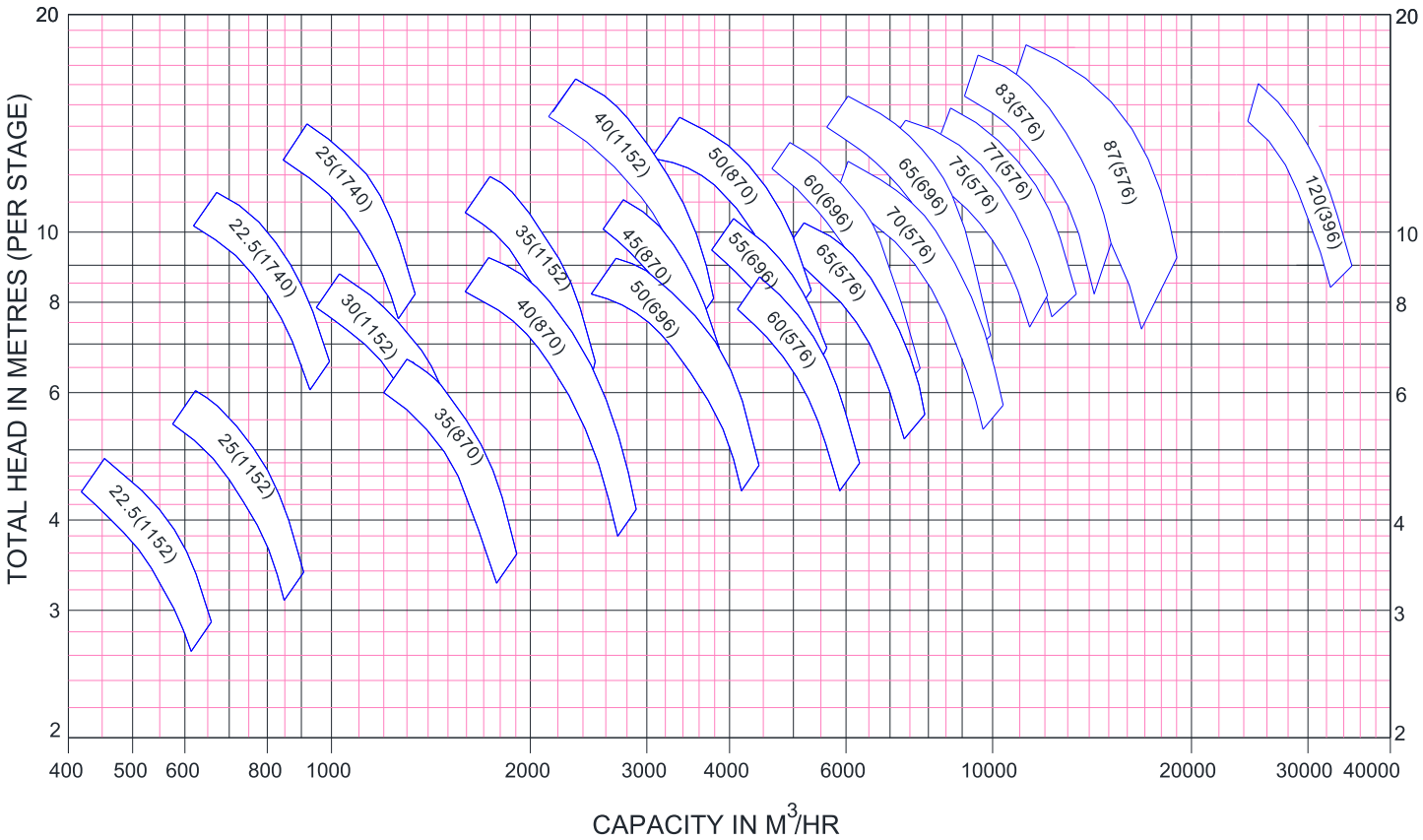
FAMILY CURVES FOR BHQ PUMPS AT 60 HZ



FAMILY CURVES FOR BHMa PUMPS AT 50 HZ



FAMILY CURVES FOR BHMa PUMPS AT 60 HZ



RANGE OF FLOW & HEAD FOR AXIAL FLOW PUMPS:

Pump Type	Speed	Flow in m^3/hr		Head in mtr	
		Minimum	Maximum	Minimum	Maximum
BHA3S	1450	450	600	3.0	6.5
BHA3.5S	1450	900	1100	4.0	7.0
BHA5	740	2000	2300	2.0	3.0
BHA5 S	980	1500	2300	5.0	6.5
BHA6 S	740	1900	2500	3.5	5.5
BHA400 S	980	1200	1650	2.0	3.5
BHA470 S	740	1800	2500	2.5	4.0
BHA600 S	590	2600	3700	3.0	4.5
BHA700 S	515 *	3600	6200	3.0	4.5
	590	4900	6800	4.5	6.0
	740	6000	8300	5.0	6.5
BHA800 S	590	4600	6200	5.5	6.5
BHA900 S	300 *	5200	7300	1.5	2.5
	425 *	7400	10500	3.5	5.0
BHA1075 S	490	13500	19000	5.0	6.5
BHA140 S	325 *	18000	26000	4.5	6.6

RANGE OF FLOW & HEAD FOR DEEPWELL PUMPS:

Pump Type	Speed	Flow in m^3/hr		Head in mtr	
		Minimum	Maximum	Minimum	Maximum
VT150LH	2900	13.5	22	8.0	13
VT150HL	2900	20.5	34.5	7.5	12.5
VT200LL	2900	27	46	20.0	26.5
VT200HH	2900	40	67.5	18.0	26.0
VT200LH	2900	24	59	20.0	27.0
VT250HL	2900	62	106	14.0	37.0
VT275HL	2900	81	140	22.0	48.0