TORONTECH™

CATALOGUE

2014

TTAAP-Boiler Water supply pump

PRODUCT BROCHURE

TORONTECH™ PUMPS

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Torontech™ is a leading North American based international manufacturer and supplier of pumps, pipes, valves & actuators. The Torontech™ group has established an extensive network in the USA as well as international markets and remains to be a preferred vendor of choice supplying quality pumps for today's leading corporations.

Creating comprehensive solutions for our clients has always been the core value of our company. From sales, to order execution, and post-sales support; every staff member is here to assist you in selecting the solution that best suits your unique requirements and budget.

The Torontech™ group offers a complete range of quality pumps that are,ANSI to ISO approved and engineered to last, ensuring your company continuous production without interruptions.

Since the beginning, we have succeeded in only offering quality manufactured pumps that are currently being used worldwide. We offer the best value for your investment and provide world-class support.

Due to the demand for our quality pumps, Torontech™ has experience explosive growth primarily in the oil & gas, water filtration and chemical refinery industries.

We offer an extensive range of solutions and products for oil & gas projects, refineries, petrochemical plants, and marine applications. Our main class of pumps includes API (American Petroleum Institute) Standard, Mining, Water & Sewage and Firefighting applications. The pumps are offered in various configurations depending on orientation of the pump, required head and type of fuel used for operation.

CONTENTS

TORONTECH™ Pumps and Valves TTAAP

TTAAP-Boiler Water supply pump

Product purpose

TTAAP-DG horizontal multi-stage centrifugal pump is a perfect fit for pure water transportation (with foreign matter content less than 1% and grain size less than 0.1mm) and other liquids of which the physical and chemical natures are similar to pure water.

TTAAP-DG middle and low pressure boiler water supply pump is applicable to transport hot water and medium that have similar characteristic to hot water with temperature no higher than 105

TTAAP-DG hypo-high-pressure boiler water supply pump is applicable to transport hot water and medium that have similar characteristic to water with temperature no higher than 160℃.

Model meaning

TTAAP-DG 6 - 25 × 5

- 5 — No. of stages
- 25 — Head of single stage (m)
- 6 — Flow (m^3/h)
- DG — Multi-stage boiler water supply pump

About the structure

For this series horizontal multi-stage centrifugal pump, both ends are supported. The casing is connected to and actuated by a motor via a resilient clutch and the rotating direction is clockwise, if view from the actuating end. Please refer to Fig. 1 for the structure details. The pump is consisted of suck-in section, middle-section, spitting section, guide vane, packing etc., which are linked toget her by a take-up bolt, with both suck-in and spitting mouths vertically upward.

The whole rotor is supported by the roller bearings or sliding bearings on both ends of the shaft and the bearings are lubricated with grease or 20 engine oil.

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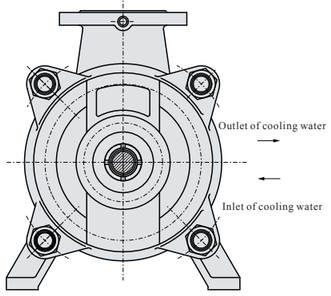
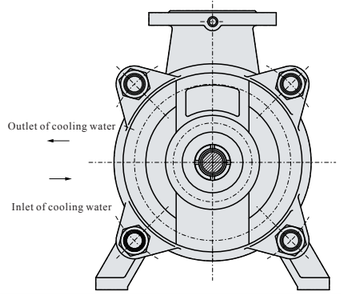
Bearing portion

The joint-part between suction section, intermediate section and discharge section is coated with molybdenum disulfide lubricating grease as seal. Rotor and fixed parts will are sealed by seal ring, guide-vane jacket and packing. The packing tensile degree of shaft seal should be proper and seep should be feasible. The seal ring and guide vane jacket should be replaced if they are too worn to be used. There is spare shaft sleeve near shaft seal to protect shaft of pump.

When temperature of the liquid transferred is above 80ºC, cooling water should be filled to the water cooling packing gland and shaft seal cooling chamber. Cooling water should be clean water. The pressure of water should be 1.5-3Kg/cm2. The positions of cooling water pipe joints are different for various kind of water pump. Please refer to construction drawing of pump for axial position, and refer to chart 1 for radial position.

Shaft seals are classified as packing seal and mechanical seal. The water supply of packing seal is softened water, with pressure of 2-3kg/cm2. The flushing water of mechanical seal is softened water, the pressure of which should be 3kg/cm2 higher than the inlet pressure.

DG25-30 DG46-30 DG12-25 DG155-30	View from the motor side 	View from the opposite side of motor 

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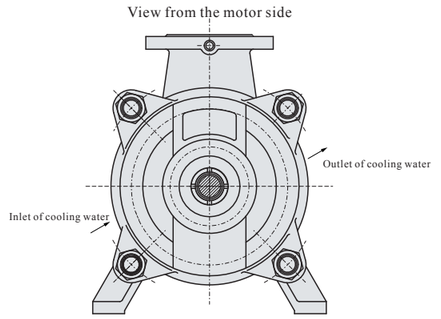
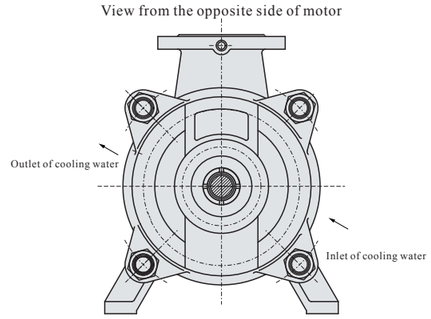
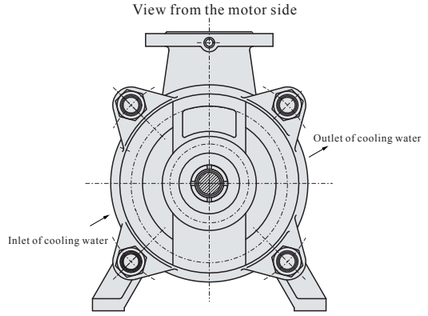
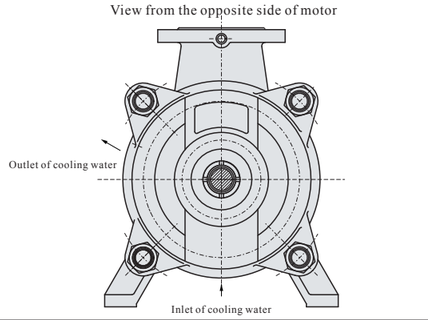
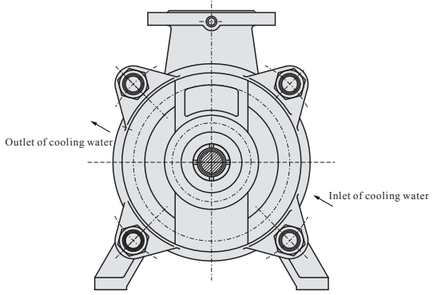
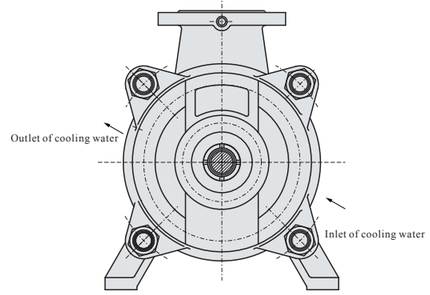
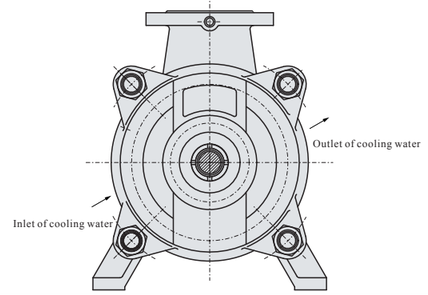
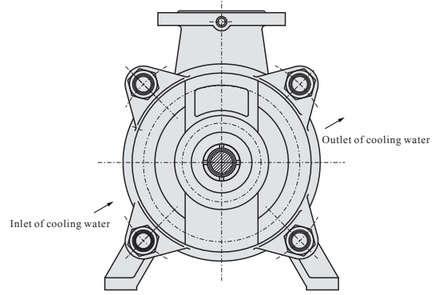
DG6-25 DG280-100 DG150-100	View from the motor side 	View from the opposite side of motor 
DG25-50 DG46-50	View from the motor side 	View from the opposite side of motor 
DG85-45 DG85-67 DG155-67	View from the motor side 	View from the opposite side of motor 
DG25-80 DG45-80 DG85-80	View from the motor side 	View from the opposite side of motor 

Structural drawing

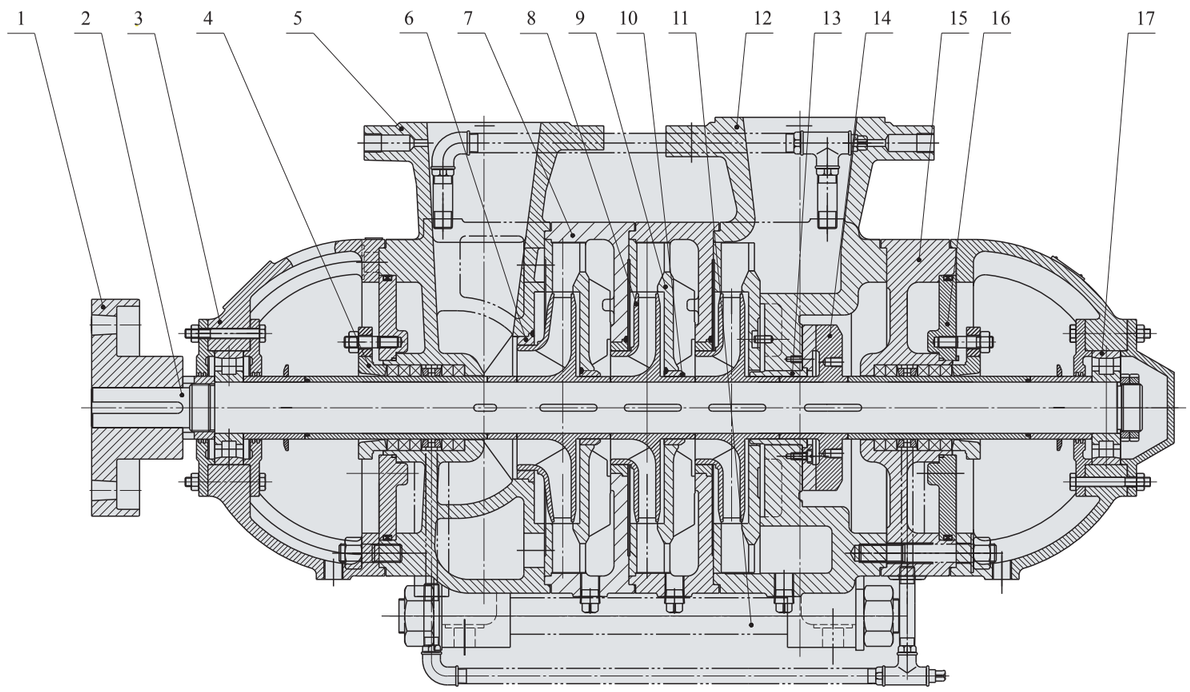


fig.1

1	Column resilient clutch part	2	Shaft	3	Roller bearing part	4	Water cooled packing gland	5	Suck-in section
6	Seal ring	7	Middle section	8	Impeller	9	Guide vane	10	Guide vane sleeve
11	Take-up bolt	12	Spitting section	13	Balancing sleeve	14	Balancing disk	15	Packing
16	Cover of water cooling room	17	Bearing						

Structural drawing

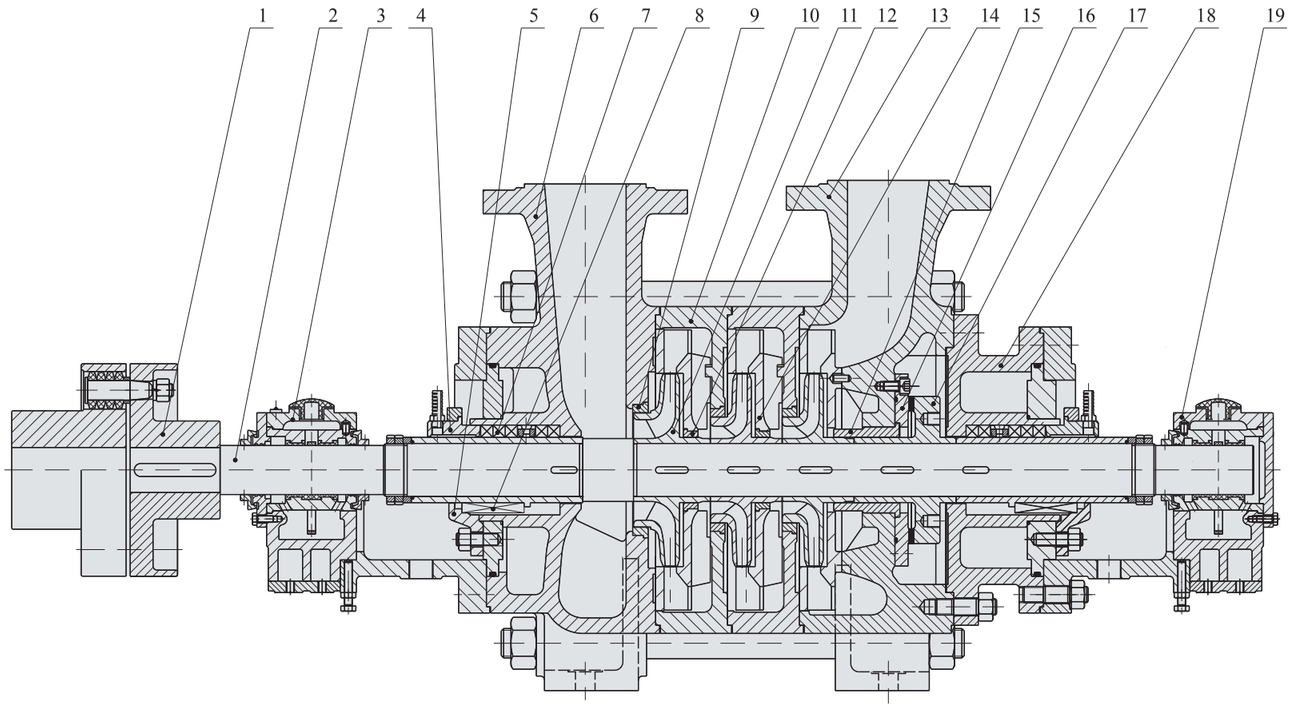


fig.2

1	Column resilient clutch part	2	Shaft	3	Bearing part	4	Water cooled packing gland	5	Mechanical seal gland
6	Suck-in section	7	Stuffing	8	Mechanical seal	9	Seal ring	10	Middle section
11	Impeller	12	Guide vane sleeve	13	Spitting section	14	Guide vane	15	Balancing sleeve
16	Balancing ring	17	Balancing disk	18	Stuffing content	19	Bearing part		

Struvtural drawing

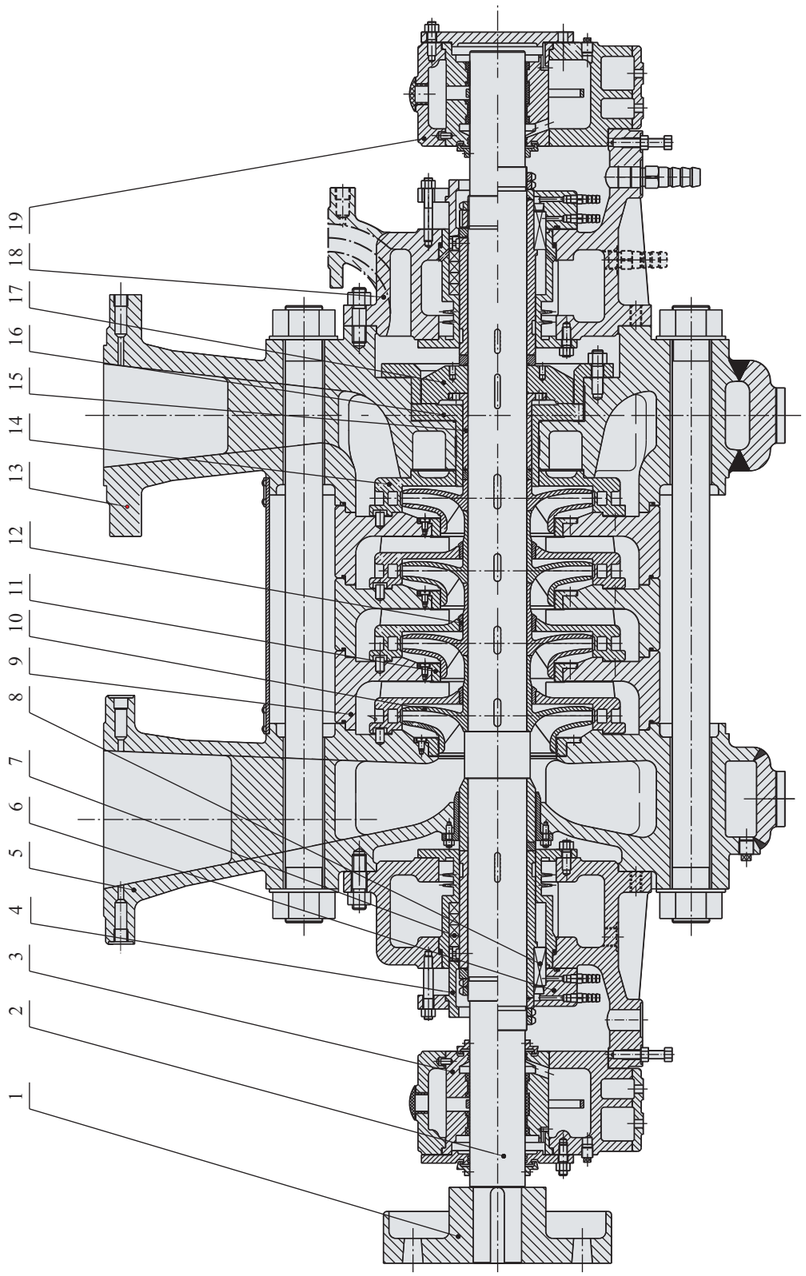


fig.3

1	Column resilient clutch part	2		3	Shaft	4	Bearing part
6	Mechanical seal gland	7		8	Stuffing	9	Mechanical seal
11	Seal ring	12		13	Guide vane sleeve	14	Spitting section
16	Balancing ring	17		18	Balancing disk	19	(Front)Behind cover
5	Stuffing gland	10		15	Balancing sleeve		
4	Middle section	9		14	Guide vane	19	Bearing part
5	Suck-in section	10		15	Impeller		

TTAAP-Boiler Water supply pump

TTAAP- Performance table

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG6-25	3	2950	3.75 6.3 7.5	76.5 75 73.5	2.37 2.86 3.19	4.0	33 45 47	2 2 2.5
	4		3.75 6.3 7.5	102 100 98	3.16 3.81 4.26	5.5	33 45 47	2 2 2.5
	5		3.75 6.3 7.5	127.5 125 122.5	3.95 4.77 5.32	5.5	33 45 47	2 2 2.5
	6		3.75 6.3 7.5	153 150 147	4.73 5.72 6.39	7.5	33 45 47	2 2 2.5
	7		3.75 6.3 7.5	178.5 175 171.5	5.52 6.67 7.45	7.5	33 45 47	2 2 2.5
	8		3.75 6.3 7.5	204 200 196	6.31 7.63 8.52	11	33 45 47	2 2 2.5
	9		3.75 6.3 7.5	229.5 225 220.5	7.1 8.58 9.58	11	33 45 47	2 2 2.5
	10		3.75 6.3 7.5	255 250 245	7.89 9.53 10.65	15	33 45 47	2 2 2.5
	11		3.75 6.3 7.5	280.5 275 269.5	8.68 10.5 11.71	15	33 45 47	2 2 2.5
	12		3.75 6.3 7.5	306 300 294	9.47 11.44 12.78	15	33 45 47	2 2 2.5
DG12-25	3	2950	7.5 12.5 15	84.6 75 69	3.93 4.73 5.32	5.5	44 54 53	2 2 2.5
	4		7.5 12.5 15	112.8 100 92	5.24 6.3 7.09	7.5	44 54 53	2 2 2.5
	5		7.5 12.5 15	141 125 115	6.55 7.88 8.89	11	44 54 53	2 2 2.5
	6		7.5 12.5 15	169.2 150 138	7.85 9.46 10.64	15	44 54 53	2 2 2.5
	7		7.5 12.5 15	197.5 175 161	9.16 11.0 12.41	15	44 54 53	2 2 2.5
	8		7.5 12.5 15	225.6 200 184	10.41 12.61 14.18	15	44 54 53	2 2 2.5
	9		7.5 12.5 15	253.8 225 207	11.78 14.18 15.95	18.5	44 54 53	2 2 2.5

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG12-25	10	2950	7.5 12.5 15	282 250 230	13.09 15.76 17.73	18.5	44 54 53	2 2 2.5
	11		7.5 12.5 15	310.2 275 253	14.4 17.34 19.5	22	44 54 53	2 2 2.5
	12		7.5 12.5 15	338.4 300 276	15.7 18.9 21.3	22	44 54 53	2 2 2.5
DG12-50	3	2950	7.5 12.5 15	162 150 139.5	8.8 10.6 11.9	18.5	37.8 48 48	2 2 2.5
	4		7.5 12.5 15	216 200 186	11.7 14.1 15.9	22	37.8 48 48	2 2 2.5
	5		7.5 12.5 15	270 250 232.5	14.6 17.7 19.8	30	37.8 48 48	2 2 2.5
	6		7.5 12.5 15	324 300 279	17.6 21.3 23.7	30	37.8 48 48	2 2 2.5
	7		7.5 12.5 15	378 350 325.5	20.4 24.8 27.7	37	37.8 48 48	2 2 2.5
	8		7.5 12.5 15	432 400 372	23.3 28.4 31.7	37	37.8 48 48	2 2 2.5
	9		7.5 12.5 15	468 450 418.5	26.3 31.9 35.7	45	37.8 48 48	2 2 2.5
	10		7.5 12.5 15	540 500 465	29.2 35.5 39.6	45	37.8 48 48	2 2 2.5
	11		7.5 12.5 15	594 550 511.5	32.1 39.0 43.5	55	37.8 48 48	2 2 2.5
	12		7.5 12.5 15	648 600 558	35.0 42.6 47.8	75	37.8 48 48	2 2 2.5
DG25-30	3	2950	15 25 30	102 90 82.5	8.33 9.88 10.7	15	50 62 63	2.2 2.2 2.6
	4		15 25 30	136 120 110	11.1 13.1 14.26	18.5	50 62 63	2.2 2.2 2.6
	5		15 25 30	170 150 137.5	13.89 16.47 17.83	22	50 62 63	2.2 2.2 2.6
	6		15 25 30	204 180 165	16.67 19.17 21.4	30	50 62 63	2.2 2.2 2.6

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TTAAP-Performance table

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG25-30	7	2950	15	238	19.44	30	50	2.2
			25	210	23.1		62	2.2
			30	192.5	24.96		63	2.6
	8		15	272	22.22	37	50	2.2
			25	240	26.4		62	2.2
			30	220	28.53		63	2.6
	9		15	306	25	37	50	2.2
			25	270	29.65		62	2.2
			30	247.5	32.1		63	2.6
	10		15	340	27.8	45	50	2.2
			25	300	32.9		62	2.2
			30	275	35.7		63	2.6
DG25-50	3	2950	15	154.5	15.78	22	40	2.5
			25	150	18.91		54	2.8
			30	144	20.64		57	3.2
	4		15	206	21.04	30	40	2.5
			25	200	25.22		54	2.8
			30	192	27.5		57	3.2
	5		15	257.5	26.2	37	40	2.5
			25	250	31.52		54	2.8
			30	240	34.40		57	3.2
	6		15	309	31.56	45	40	2.5
			25	300	37.82		54	2.8
			30	288	41.28		57	3.2
	7		15	380.5	38.86	55	40	2.5
			25	350	44.1		54	2.8
			30	336	48.16		57	3.2
	8		15	412	42	75	40	2.5
			25	400	50.45		54	2.8
			30	384	55.04		57	3.2
	9		15	463.5	47.33	75	40	2.5
			25	450	56.74		54	2.8
			30	432	61.92		57	3.2
	10		15	515	52.59	75	40	2.5
			25	500	63.04		54	2.8
			30	480	68.8		57	3.2
	11		15	566	57.8	90	40	2.5
			25	550	69.3		54	2.8
			30	528	75.68		57	3.2
	12		15	618	63.11	110	40	2.5
			25	600	75.65		54	2.8
			30	576	82.56		57	3.2
DG46-30	3	2950	30	102	13.02	22	64	2.4
			46	90	16.11		70	3
			55	81	18.84		68	4.6
	4		30	136	17.36	30	64	2.4
			46	120	21.48		70	3
			55	108	23.79		68	4.6
	5		30	170	21.7	37	64	2.4
			46	150	26.85		70	3
			55	135	29.74		68	4.6

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG46-30	6	2950	30	204	26.04	37	64	2.4
			46	180	32.21		70	3
			55	162	35.68		68	4.6
	7		30	238	30.38	45	64	2.4
			46	210	37.58		70	3
			55	189	41.63		68	4.6
	8		30	274	34.72	55	64	2.4
			46	240	42.95		70	3
			55	216	47.58		68	4.6
	9		30	306	39.06	55	64	2.4
			46	270	48.32		70	3
			55	243	53.53		68	4.6
	10		30	340	43.3	75	64	2.4
			46	300	53.7		70	3
			55	270	59.5		68	4.6
DG46-50	3	2950	30	166.5	25.19	37	54	2.5
			46	150	29.83		63	2.8
			55	138	32.3		64	3.2
	4		30	222	33.59	45	54	2.5
			46	200	39.77		63	2.8
			55	184	43.06		64	3.2
	5		30	277.5	41.98	55	54	2.5
			46	250	49.71		63	2.8
			55	230	53.85		64	3.2
	6		30	333	50.38	75	54	2.5
			46	300	59.65		63	2.8
			55	276	64.59		64	3.2
	7		30	388.5	58.78	90	54	2.5
			46	350	69.6		63	2.8
			55	322	75.36		64	3.2
	8		30	440	67.18	90	54	2.5
			46	400	79.54		63	2.8
			55	368	86.12		64	3.2
	9		30	499.5	75.57	110	54	2.5
			46	450	89.48		63	2.8
			55	414	96.89		64	3.2
	10		30	555	83.97	132	54	2.5
			46	500	99.42		63	2.8
			55	460	107.66		64	3.2
	11		30	610.5	92.37	132	54	2.5
			46	550	109.36		63	2.8
			55	506	118.42		64	3.2
	12		30	666	100.8	132	54	2.5
			46	600	119.3		63	2.8
			55	552	129.2		64	3.2
DG85-45	2	2950	55	102	24.25	37	63	3.2
			85	90	28.94		72	4.2
			100	78	30.33		70	5.2
	3		55	153	36.38	55	63	3.2
			85	135	43.4		72	4.2
			100	117	45.52		70	5.2

TTAAP-Boiler Water supply pump

TTAAP-Performance table

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG85-45	4	2950	55	204	48.5	75	63	3.2
			85	180	57.87		72	4.2
			100	156	60.7		70	5.2
	5		55	255	60.63	90	63	3.2
			85	225	72.34		72	4.2
			100	195	75.86		70	5.2
	6		55	306	72.75	110	63	3.2
			85	270	86.81		72	4.2
			100	234	91.04		70	5.2
	7		55	357	84.88	132	63	3.2
			85	315	101.3		72	4.2
			100	273	106.2		70	5.2
	8		55	408	97	132	63	3.2
			85	360	115.7		72	4.2
			100	312	121.4		70	5.2
	9		55	459	109.1	160	63	3.2
			85	405	130.2		72	4.2
			100	351	136.6		70	5.2
DG85-67	3	2950	55	222	57.3	90	58	3.3
			85	201	68.4		68	4.0
			100	183	73.3		68	4.4
	4		55	296	76.4	110	58	3.3
			85	268	91.2		68	4.0
			100	244	97.7		68	4.4
	5		55	370	95.6	132	58	3.3
			85	335	114		68	4.0
			100	305	122.2		68	4.4
	6		55	444	114.7	160	58	3.3
			85	402	136.9		68	4.0
			100	366	146.6		68	4.4
	7		55	518	133.8	200	58	3.3
			85	469	159.6		68	4.0
			100	427	171		68	4.4
	8		55	592	152.9	220	58	3.3
			85	536	182.4		68	4.0
			100	488	195.4		68	4.4
	9		55	666	172	250	58	3.3
			85	603	205.2		68	4.0
			100	549	219.9		68	4.4
DG155-30	2	1480	119	64	28.76	55	72.0	3.2
			155	60	32.84		77.0	3.9
			190	54	36.68		76.5	4.8
	3		119	96	43.14	75	72.0	3.2
			155	90	49.26		77.0	3.9
			190	81	55.02		76.5	4.8
	4		119	128	57.52	90	72.0	3.2
			155	120	65.68		77.0	3.9
			190	108	73.36		76.5	4.8
	5		119	160	71.90	110	72.0	3.2
			155	150	82.10		77.0	3.9
			190	135	91.70		76.5	4.8
	6		119	192	86.28	132	72.0	3.2
			155	180	98.52		77.0	3.9
			190	162	110.04		76.5	4.8

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG155-30	7	1480	119	224	100.66	160	72.0	3.2
			155	210	114.97		77.0	3.9
			190	189	128.38		76.5	4.8
	8		119	256	115.04	160	72.0	3.2
			155	240	131.36		77.0	3.9
			190	216	146.72		76.5	4.8
	9		119	288	129.42	200	72.0	3.2
			155	270	147.78		77.0	3.9
			190	243	165.06		76.5	4.8
	10		119	320	143.80	200	72.0	3.2
			155	300	164.20		77.0	3.9
			190	270	183.40		76.5	4.8
DG155-67	3	1480	100	228	97.0	132	64	3.2
			155	201	114.7		74	5.0
			185	177	123.9		72	6.6
	4		100	304	129.3	200	64	3.2
			155	268	152.9		74	5.0
			185	236	165.1		72	6.6
	5		100	380	161.6	220	64	3.2
			155	335	191.1		74	5.0
			185	295	206.4		72	6.6
	6		100	456	194	280	64	3.2
			155	402	229.3		74	5.0
			185	354	247.7		72	6.6
	7		100	532	226.3	315	64	3.2
			155	469	267.5		74	5.0
			185	413	289		72	6.6
	8		100	608	258.6	355	64	3.2
			155	536	305.7		74	5.0
			185	472	330.3		72	6.6
	9		100	684	290.9	400	64	3.2
			155	603	344		74	5.0
			185	531	371.6		72	6.6
DG280-43	3	1480	185	141	103.0	160	69	3.0
			280	129	127.7		77	4.7
			335	114	138.7		75	6.0
	4		185	188	137.3	200	69	3.0
			280	172	170.3		77	4.7
			335	152	184.9		75	6.0
	5		185	235	171.6	250	69	3.0
			280	215	212.9		77	4.7
			335	190	231.1		75	6.0
	6		185	282	205.9	315	69	3.0
			280	258	255.5		77	4.7
			335	228	277.3		75	6.0
	7		185	329	240.2	355	69	3.0
			280	301	298.1		77	4.7
			335	266	323.6		75	6.0
	8		185	376	274.5	400	69	3.0
			280	344	340.7		77	4.7
			335	304	369.8		75	6.0
	9		185	423	308.9	450	69	3.0
			280	387	383.2		77	4.7
			335	342	416.0		75	6.0

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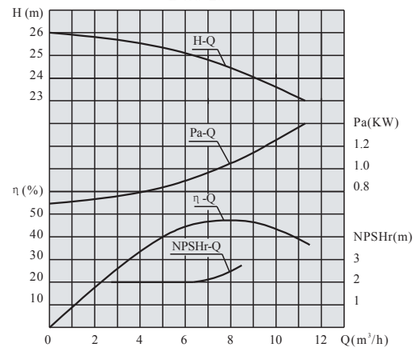
TTAAP- Performance table

Model	No.Of Stage	Speed (r/min)	Flow (m^3/h)	Head (m)	Power(kW) Shaft	Power(kW) Motor	Efficiency (%)	(NPSH)r (m)
DG25-80	5	2980	15 25 30	433.0 400.0 390.0	55.00 60.50 72.10	75.0	32 45 44	3.2 3.5 5
	6		15 25 30	519.6 480.0 468.0	66.00 72.60 86.52	90.0	32 45 44	3.2 3.5 5
	7		15 25 30	606.2 560.0 546.0	77.00 84.70 100.94	110.0	32 45 44	3.2 3.5 5
	8		15 25 30	692.8 640.0 624.0	88.00 96.80 115.36	132.0	32 45 44	3.2 3.5 5
	9		15 25 30	779.4 720.0 702.0	99.00 108.90 129.78	132.0	32 45 44	3.2 3.5 5
	10		15 25 30	866.0 800.0 780.0	110.00 121.00 144.20	160.0	32 45 44	3.2 3.5 5
	11		15 25 30	952.6 880.0 858.0	121.00 133.10 158.62	200.0	32 45 44	3.2 3.5 5
	12		15 25 30	1039.2 960.0 936.0	132.00 145.20 173.04	200.0	32 45 44	3.2 3.5 5
DG45-80	6	2950	36 45 62	501.2 480 415.7	98.3 107.0 125.4	160	50 55 56	3.9 4 5.5
	7		36 45 62	585.2 560.0 477.4	114.8 124.6 143.5	160	50 55 56	3.9 4 5.5
	8		36 45 62	668.8 640.0 545.6	131.2 142.4 164.0	200	50 55 56	3.9 4 5.5
	9		36 45 62	752.4 720.0 613.8	147.6 160.2 184.5	220	50 55 56	3.9 4 5.5
	10		36 45 62	836.0 800.0 682.0	164.0 178.0 205.0	250	50 55 56	3.9 4 5.5
	11		36 45 62	919.6 880.0 750.2	180.4 195.8 225.5	280	50 55 56	3.9 4 5.5
	12		36 45 62	1003.2 960.0 818.4	196.8 213.6 246.0	280	50 55 56	3.9 4 5.5
DG85-80	5	2950	54 85 108	443.6 400 338.9	123.2 142.5 151.1	250	53 65 66	4.4 4.5 5.3
	6		54 85 108	540.3 480 412.2	150.0 171.0 183.8	250	53 65 66	4.4 4.5 5.3
	7		54 85 108	616 560 490	170.9 199.3 218.4	250	53 65 66	4.4 4.5 5.3
DG85-80	8	2950	54 85 108	704 640 560	195.3 227.8 249.6	280	53 65 66	4.4 4.5 5.3
	9		54 85 108	792 720 630	219.8 256.3 280.7	355	53 65 66	4.4 4.5 5.3
	10		54 85 108	880 800 700	244.2 284.8 311.9	355	53 65 66	4.4 4.5 5.3
	11		54 85 108	968 880 770	268.6 313.2 343	400	53 65 66	4.4 4.5 5.3
	12		54 85 108	1056 960 840	293 341.7 374.3	450	53 65 66	4.4 4.5 5.3
DG150-100	6	2950	120 150 180	630 600 540	307 353 368	450	67 70 72	3.4 4.8 5.5
	7		120 150 180	735 700 630	359 412 429	500	67 70 72	3.4 4.8 5.5
	8		120 150 180	840 800 720	410 470 491	630	67 70 72	3.4 4.8 5.5
	9		120 150 180	945 900 810	461 518 552	630	67 70 72	3.4 4.8 5.5
	10		120 150 180	1050 1000 900	512 588 613	800	67 70 72	3.4 4.8 5.5
DG280-100	4	2950	250 280 300	420.0 400.0 392.0	386.4 396.0 416.0	450	74 77 77	5.1 5.6 5.9
	5		250 280 300	525.0 500.0 490.0	483.0 495.0 520.0	630	74 77 77	5.1 5.6 5.9
	6		250 280 300	630.0 600.0 588.0	579.6 594.0 624.0	710	74 77 77	5.1 5.6 5.9
	7		250 280 300	735.0 700.0 686.0	676.2 693.0 728.0	800	74 77 77	5.1 5.6 5.9
	8		250 280 300	840.0 800.0 784.0	772.8 792.0 832.0	1000	74 77 77	5.1 5.6 5.9
	9		250 280 300	945.0 900.0 882.0	869.4 891.0 936.0	1120	74 77 77	5.1 5.6 5.9
	10		250 280 300	1050.0 1000.0 980.0	966.0 990.0 1040.0	1250	74 77 77	5.1 5.6 5.9

TTAAP- Performance curve figures

DG6-25



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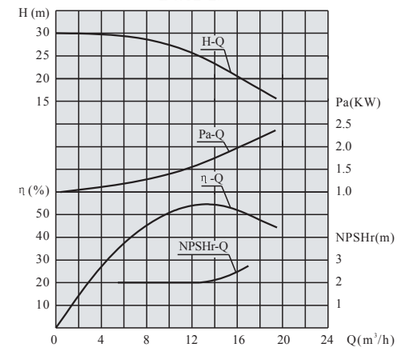

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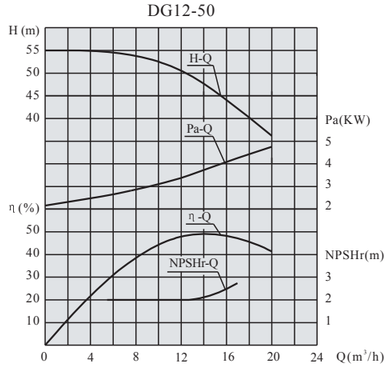

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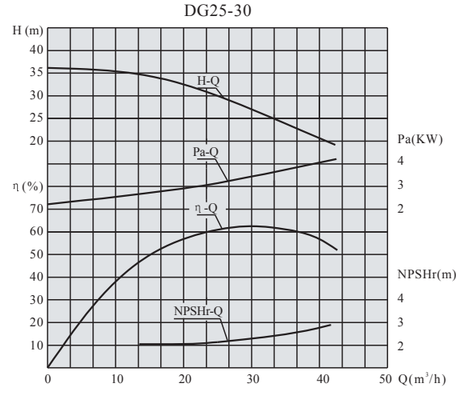

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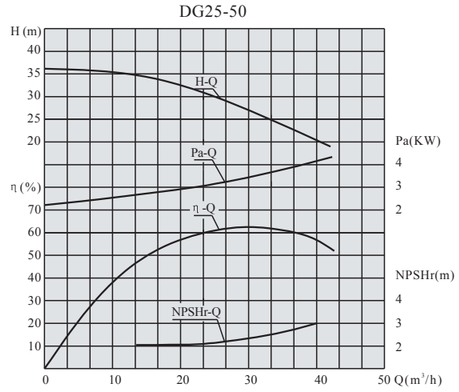

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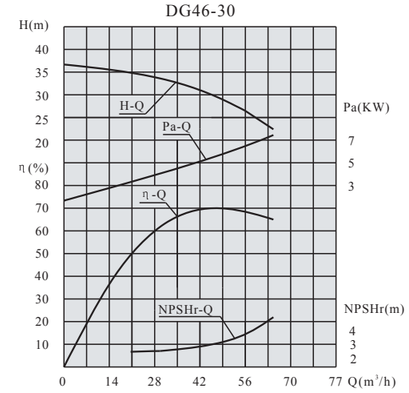
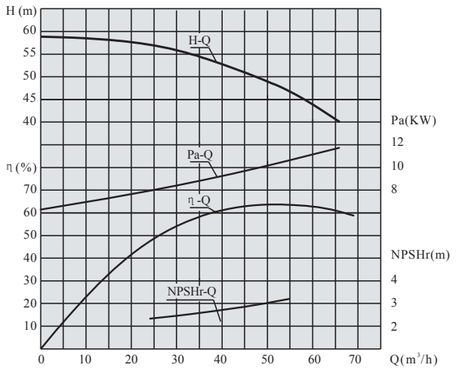


TTAAP-Performance curve figures

DG46-50



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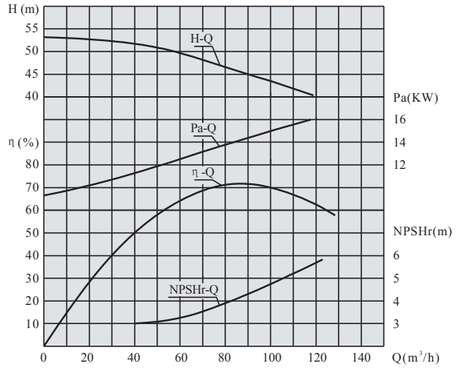

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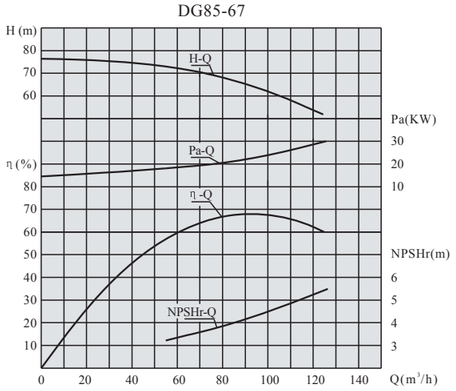

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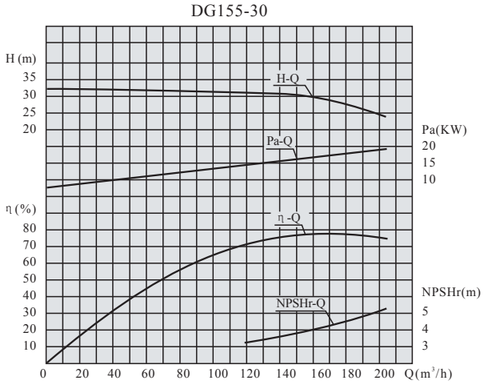

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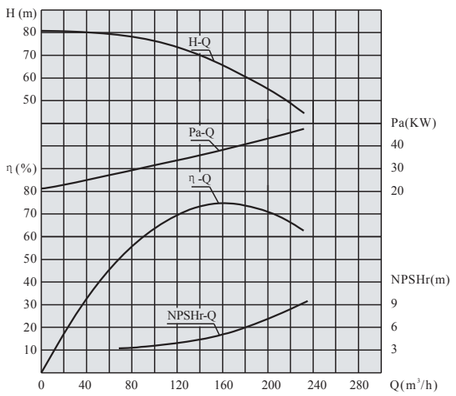

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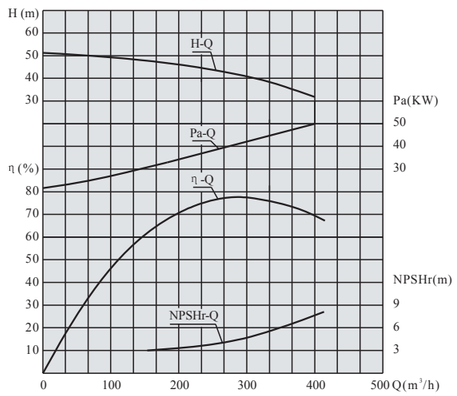
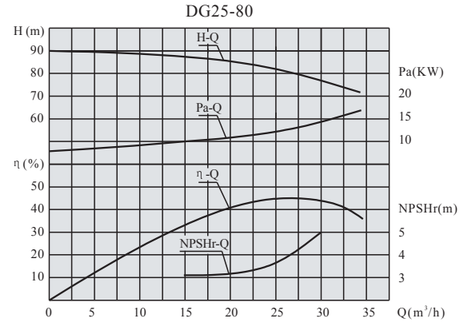


TTAAP-Performance curve figures

DG25-80



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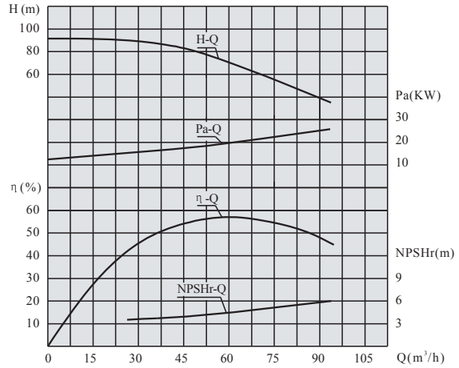
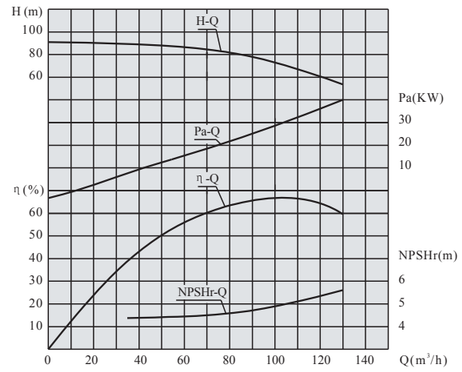
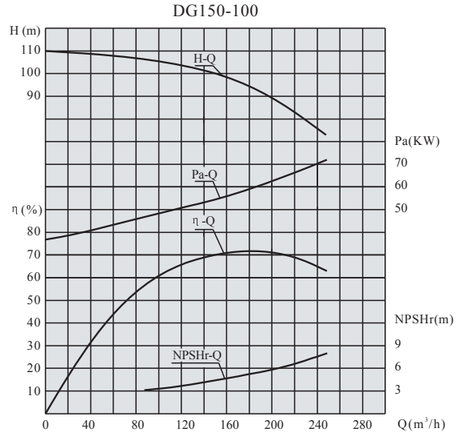


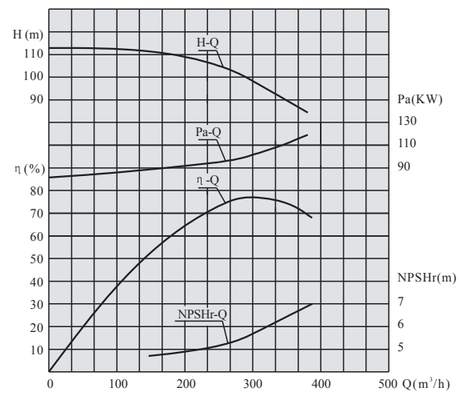
DG85-80



DG150-100



DG280-100



The curve shows the performance of No. 1 stage. When the stage number is increased, the flow is kept unchanged, both head and shaft power are those gained from the curves and multiplied by the number of the stage, e.g. multiplied by 2 in case of 2 stages, by 3 in case of 3 stages, and so on and so forth.

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Assembly and detection of pump

The assembly quality of the pump will result in a notable affection to the performance and the running stability of it and can not be guaranteed unless the technical requirements in the drawings are strictly followed in the assembly, such as on the alignment between the centers of the impeller's outlet and the guide vane's inlet, the uniform values of the sealing intervals of both rotor and stator portions etc.

1.Rotor

It takes two bearings as the support and measure the circle jumping values of the oral ring of the impeller, the impell-er's baffling sleeve (or rear navel), the balancing baffling sleeve and the muff, respectively, and the jumping value of the balancing disk's end-face, which should conform the requirements in the figure of the jointed parts of rotor (Fig. 4).

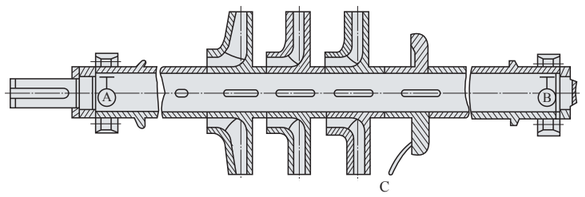

Fig. 4

For the nominal radial intervals of the seal rings of both pump casing and impeller, upon the table below:

Nominal size (mm)	30～90	＞90～120	＞120～180	＞180～250	＞250～500	＞500～800	＞800～1250	＞1250
Diameter interval (mm)	0.3～0.4	0.4～0.5	0.5～0.6	0.6～0.7	0.7～0.85	0.85～1.2	1.2～1.6	1.6～2.0

For the allowed radial jumping error of each part of the assembled rotor, upon the table below:

Part / Nominal diameter	≤50	＞50～120	＞120～260	＞260～500	＞500～800
Seal ring of impeller (A-B)	0.08	0.10	0.10	0.12	0.15
End-face jumping of disk C (A-B)	0.05	0.05	0.06	0.08	0.08

1.Stator

Measure the axial serial amount of the rotor and the end-face jumping value of the balancing ring (sleeve), which should conform the requirements in the overall assembly drawing.

3.At the end of assembly, move the rotor with hand to check if there is frictional sound,non-flexible movement etc. abnormal condition inside of the pump.

Installation of pump

1.Installation steps

Generally covering the placement of the pump on the foundation, leveling, adjustment and connection of the pump's pipeline.

2.Facilities necessary for installation

The following common facilities and tools are required in installation:

a.Safe lifters available with a proper loading capacity.

b.Set a steehorn or wedge horn on every foot screw for leveling foundation.

c.The grouting material must be a non-shrinking one and it is necessary to prepare a wood case for grouting, which has to be fitted with a hopper.

d.To mount and remove the packing, a set of special tools is required, such as the clamp with hooks.

3.Pump transportation

When to transport the pump, take care of safety to prevent any accident from occurring and the following cautions:

a.Place the hook of the lifter under the foundation or use a folk lifter, do not lift it with the hook in the pump, the prime mover and bolt holes or on the bearing, furthermore, on the pump shaft.

b.Make the lifted load even and balanced, take care about the lifting capacity and not to let the pump parts collided with each other, especially the processed fitting-surface of the shaft on the pump clutch, not to let it damaged.

c.Prohibited foreign matters or dust from getting into both pump and motor during transportation.

4.Unpacking and check of pump

Unpack and check, when the pump arrives, if any part is lost and if there is any damage, report it to the transporter and the pump manufacturer at once if any.

5.Temporary storage

If the pump is to be stored for a period of time before installation, pack it and place it on a dry, rain-proof and dust-proof ground with both spitting and suck-in mouths covered to prevent foreign matters inPay attention not to let the shaft, bearing and other precisely processed parts of the pump getting wet and coat them with a protective oil layer.

⚠ Note: turn the pump once per two weeks and make sure it can be turned flexibly.

6.Basis for the pump

6.1 The basis should be a concrete one of sufficient strength and size, with the mass of it 3~5 times that of the unit one, and 50~70mm longer than that of the pump foundation, plus the foot bolt holes (a steel pipe's diameter 3~4 times that of the foot bolt).

6.2 The job to set the basis covers: locating the foot bolt hole, grouting and leave the place for the pipeline connection, then grouting into the other space.

6.3 The rougher the surface of the basis, the better the grouting effect.

6.4 Do not install any equipment until the basis gets completely solidified.

7.Movement, placement and leveling

7.1 Place steel and wedge horns or regulating iron at the foot bolts under the pump foundation, in general, place a horn in between two bolts in case of a longer foundation.

7.2 Check the basis under the pump foundation and clear dust, oil and other foreign matters.

7.3 Place lifting hooks on the four corners of the foundation to lift it above the basis and then slowly put it on the position with the bolt holes aligned.

7.4 Place a knife edge flat ruler and a mechanical leveler under the processed planes of both pump and motor's foundations and use the thickness of a regulating wedge iron or pad to decide the levelness of the foundation on every respect, for which, non-flatness less than 0.25mm per 100mm is recommended. Then tighten the nut of the foot bolt to a proper extent (not over-tightened) and secure the wedge iron or regulating pad.

7.5 Level the foundation, do not grout until it is more closely fitted with the basis.

8.Grout the foundation

8.1 Make sure the air inside of each space is completely exhausted when to grout.

8.2 Tighten the nut of the foot bolt when the grouted material is solidified and then coat the material with paint for wet resisting.

8.3 After grouting, adjust both pump and motor.

9.Adjustment of equipments

Covering angle and central line position adjustment. check the equipments at least in the following three periods and take adjustment:

The first time, both pump and foundation are secured while the motor is not.

The second time, both pump and motor are secured while the bolts on the suck-in and spitting pipeline flanges are not.

The third time is in 24 hours after the pump starts running, then secure both pump and motor.

Pay attention to the following cautions in the adjustment:

a.Before adjusting, check all pipelines to make sure they will not produce any action or moment on the pump foundation.

b.Put the pad under the motor while to adjust both pump and motor. Angle adjustment is to guarantee the parallelism of the two planes of the clutches. Use a dial gauge to check four points on the end-face of the clutch flange, the reading on the gauge is 0.02~0.03, and use a feeler to check the parallelism, the difference (a-b) between the two planes is ≤0.06 (see Fig. 5). Central line alignment means the aligned degree between the central lines of both pump and motor's shafts, c should be ≤0.08 (see Fig. 5)

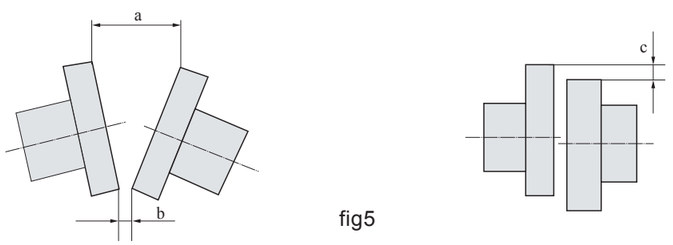

fig5

10.Link the main pipelines

Cautions in the installation of the pipeline:

After grouting and securing the pump on the basis, align and link the flanges of both pump and pipeline without subject
to an external force, i.e. the force from the flange bolt.

For the pipeline support (additional), it should be able to avoid
the pipeline vibration and reduce the cleaning to the pipeline.

a.The pipeline used should be of a proper norm and length and a sufficient bearing capacity, reducing both bends and fittings of the pipeline as can as possible.

b.The suck-in pipeline of the pump should be short and straight, the diameter of it should be equal or more than that of the pump's suction inlet and the bent radius of the suck-in pipeline should be made as big as possible.

11.Link the additional equipments

11.1 Pressure gauge

The pressure gauges used on both suck-in and spitting pipelines must be good quality and certified performance. It is better for the spitting pressure gauge to be mounted at the distance
2 times of the diameter of the spitting flange of both pump and main pipeline while not by both elbow and valve so as to prevent the disturbance from unstable flowing.

11.2 Clutch

Recheck the alignment before linking the clutches of both pump and motor; check if the motor moves in the correct direction, and the pump shaft as well; viewing from the clutch, the pump moves clockwise and adjust it if the motor moves in a direction not in line with the pump's.

11.3 Shaft seal

Readjust or reassemble the shaft seal before the pump starts moving if necessary.

Running of the pump

1.Cautions in operation

1.1 The pump is allowed to run within the set parameter range only.

1.2 The pump is not allowed to run with the spitting valve closed or closed to a little opening, or it will be caused heated and duration lowered. Each pump is required to run under the special parameters so as to guarantee the flow of it if mounted in a parallel system.

1.3 The pump can not run with the suck-in valve closed, or it may be dried moving to cause parts damaged.

1.4 The medium the pump transports can not contain air or gas, or both flow and head of the pump may not be accurately measured and, meanwhile, grinding may be produced to damage parts.

1.5 This pump is not allowed to transport any material with grains, or both pump efficacy and part duration may be lowered.

1.6 Check the pump before starting it.

2.Check before starting the pump

2.1 Before starting the pump, check if all the bolts, pipelines and the lead-wires are securely connected.

2.2 Check if all the meters, valves and instruments are normal.

2.3 Check if the oil ring's position and the oil in the oil leveler are normal.

2.4 Check if the motor moves in the correct direction.

2.5 Turn the pump before starting it to make sure it does not get stuck.

3.Start the pump

3.1Cautions therein

a.The temperature of the medium this pump transports is higher (<160°C).

b.Look at the indications of both pressure gauge and switch during starting so as to adjust them.

c.After starting the pump, do not let the spitting valve closed or nearly closed for a longer time, or the liquid inside of the pump may become overheated.

3.2 Steps to start the pump

a.First do the before-starting check (as abovementioned).

TTAAP-Boiler Water supply pump

1.Cautions in operation

2.Check before starting the pump

1.1 The pump is allowed to run within the set parameter range only.

1.2 The pump is not allowed to run with the spitting valve closed or closed to a little opening, or it will be caused heated and duration lowered. Each pump is required to run under the special parameters so as to guarantee the flow of it if mounted in a parallel system.

1.3 The pump can not run with the suck-in valve closed, or it may be dried moving to cause parts damaged.

The medium the pump transports can not contain air or gas, or both flow and head of the pump may not be accurately measured and, meanwhile, grinding may be produced to damage parts.

This pump is not allowed to transport any material with grains, or both pump efficacy and part duration may be lowered.

Check the pump before starting it.

2.1 Before starting the pump, check if all the bolts, pipelines and the lead-wires are securely connected.

2.2 Check if all the meters, valves and instruments are normal.

2.3 Check if the oil ring's position and the oil in the oil leveler are normal.

2.4 Check if the motor moves in the correct direction.

3.Start the pump

3.1Cautions therein

a.The temperature of the medium this pump transports is higher (160 C).

b.Look at the indications of both pressure gauge and switch during starting so as to adjust them.

c.After starting the pump, do not let the spitting valve closed or nearly closed for a longer time, or the liquid inside of the pump may become overheated.

3.2 Steps to start the pump

a.First do the before-starting check (as abovementioned).

b.Open the pump's suck-in valve and the water sealed water pipeline's valve.

c.Close the spitting pipeline to have inside of the pump full of liquid.

d.Start the motor and then open the valve on the spitting pipeline.

4.Check of the pump movement

After the pump starts moving, check the meters every certain time upon the procedure in 2.2 to see if it works normally and the rotating speed of it. In addition, check the flow, head, temperature and lubrication of it. In case of a failure, stop it and repair it by referring the table of troubleshooting.

5.Stop the pump

5.1Close the pump's spitting valve to the smallest flow, but do not close the pump's suck-in valve.

5.2Turn off the motor.

5.3Close the pump's spitting valve.

5.4Then close the sick-in valve when the pump stops stably.

⚠ Warning: Idle running is forbidden!

Repair of pump

⚠ Turn off the power before maintenance!

1.General

To keep the pump in a high effective and stable work, it must be often repaired, the items of repair and the interval between every repair depend on the working condition and running state of it.

2.Maintenance of pump

Hold a periodic check of the pump's performance (as the flow, head, vibration etc.) And make a record, then analyze the pump upon these recorded data to see if it works normally, needs repairing or decide which portion needs repairing.

In general conditions, reliable information whether the pump needs repairing can be gained every several months provided that insistent and accurate tests and records as well as periodic summarizing of the records have been made.

In addition to the monitor of the pump at the set time, the follo-wings need to be maintained often:

a.Check if the pump, foundation and motor are secured, causing the pump vibrated if loose.

b.Check the meters and leading-wires' state; check if the pipeline leaks or loosens or gets damaged in any other forms, repair it at once if necessary.

c.Do not let the packing gland pressed too tightly, or the duration of it may be affected.

d.Replace the lubricating oil on the bearings every 1000h of work.

Failures and troubleshooting of pump

Failure	Causes	Troubleshooting
1、 Pump not suck in, pointers of pressure gauge and vacuum meter severely jumping	Water injected into the pump insufficient, air leaks from water inlet pipe, meters etc.	Inject water into pump, tighten the leaking places
2、 Pump not suck water, high vacuum shown on vacuum meter	Foot valve not opened or blocked up, too big resistance with water sucking pipe, too high suck-in height	Correct or replace foot valve, clean or replace water sucking pipe, lower the height
3、 Pressure available at pump outlet viewing from pressure gauge while no water out of pump	Too big resistance with water outlet pipe, wrong rotating direction, impeller blocked up, or pump damaged, insufficient r.p.m.	Check or shorten outlet pipe, check motor, remove the pipe union, clean or replace impeller, raise r.p.m.
4、 Insufficient flow	Pump blocked up, too much friction with seal ring, insufficient r.p.m.	Clean pump and pipe, replace seal ring, raise r.p.m.
5、 Too big power the pump consumes	Too tightly pressed packing gland, packing room heated, impeller worn out, water supply quantity of the pump increases	Loosen packing gland or replace packing, replace impeller, increase resistance with outlet pipe to reduce the flow
6、 Abnormal sound inside of pump, no water into pump	Too big flow, too big resistance inside of water sucking pipe, too high water-sucking height, air gets in the water-sucking place, too high temperature of the liquid being transported	Increase the resistance inside of water outlet pipe to reduce the flow, check water-sucking pipe and foot valve, lower the height, tighten the air leaking places
7、 Pump vibrates	Axes of pump and motor not on one central line, dirt or water gets into the bearing	Align the two central lines, clean bearing, replace lubricating grease
8、 Bearing overheated	Lubricating grease dried or dirty, axes of pump and motor not on one central line	Check or clean bearing, replace lubricating grease, align the central lines
9、 Balancing water stops, balancing room heated, motor's power increased	Pump runs under a big flow and low head, grinding occurs between balancing disk and board	Close outlet valve to the designed working condition, remove balancing disk for rep-Airing

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TTAAP-Boiler Water supply pump

4.Removal of pump

4.1 Cautions in the removal

a.Stop the pump upon the pump stopping procedure in 5.

b.Drain the liquid inside of the pump casing out (for the cooling water sleeve too if it is available).

c.Drain out the thinned oil if it is used for lubricating the bearings.

d.Remove the additional pipelines obstructing the removal, such as the balancing pipe, water sealed water pipe etc.

e.Remove the clutches by way of heating (for the motor's clutch too if necessary to remove it).

4.2 Sequence of removal

Start the pump removal from the bearing on the spitting side, the sequence comes as below:

a.Screw out the bolts on the bearing gland on the spitting side and the linking nuts between the spitting section, packing and bearing to remove the bearing.

b.Screw out the circular nut on the shaft, then in turn remove the inner ring of the bearing, gland and baffling sleeve, then the spitting section (including the packing gland, packing ring, packing etc.).

c.Remove the O-seal ring, muff, balancing disk and key on the shaft in turn, then the spitting section (including the guide vane on the last stage, balancing board etc.).

d.After removing the last-stage impeller and key, remove the middle section (including the guide vane), then the impeller, middle section, guide vane on the rest stages in the same way till the impeller on the first stage.

e.Screw out the linking nuts between the suck-in section and the bearing and the bolt on the bearing gland to remove the bearing (remove the pump clutch prior to this).

f.Draw out the shaft from the suck-in section, screw out the fixing nut on it, then remove the inner ring of the bearing, O-seal ring, muff, baffling sleeve etc. in turn).

The removal has then been finished generally. However some parts are still linked together during the removal and can be removed once the linking nuts are screwed out, in general.

5. Clean and check

5.1 Clean all the parts with coal oil and let them dried in the air or with a cloth.

5.2 Check the worn-out conditions on the all parts and replace those unable to make sure of normal work.

5.3 Check if there is dust or rust on the shaft and use a dial gauge to check the non-straightness of it (the radial jumping valve of it not more than the 8-class accuracy).

5.4 Replace the sealing element when the sealing interval is over the maximum value of the recommended one by 50%.

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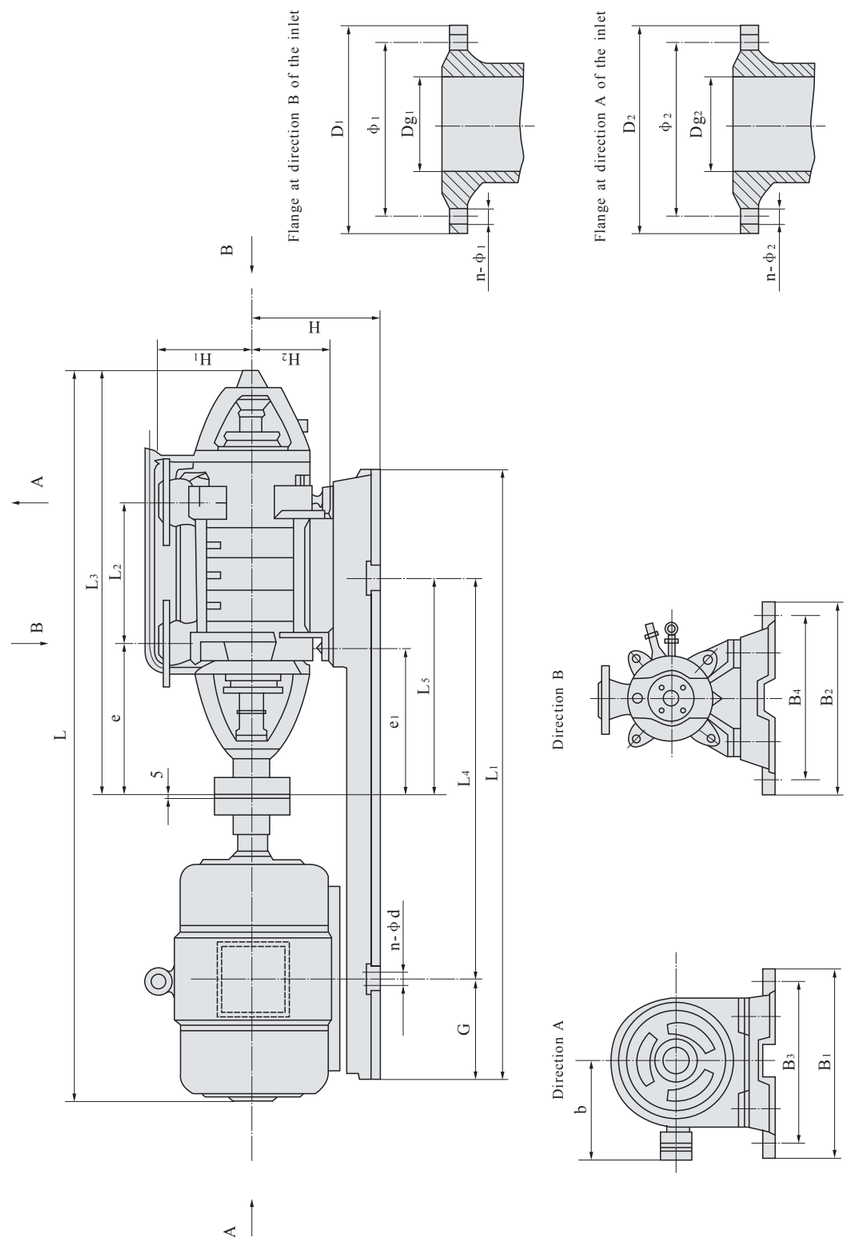
Out–form and installation dimensions of pump



TTAAP-Boiler Water supply pump

TTAAP- The dimension of model dg model middle and low pressure, hypo–high–pressure boiler water supply pump

Model	No.of stage	Installation dimension of pump(mm)																											
		L	L1	L2	L3	L4	L5	e	e1	B1	B2	B3	B4	b	H	H1	H2	G	n-d	Flange at inlet				Flange at outlet					
																				Dg1	Φ1	D1	n-Φ1	Dg2	Φ2	D2	n-Φ2		
DG6-25	3	1198	885	180	718	600	358	261	266	440	440	390	390	210	230	170	150	148.5	4-Φ25	40	100	130	4-Φ13.5	40	110	150	4-Φ17.5		
	4	1248	985	230	768	650	408											176											
	5	1298		280	818																								
	6	1350	1206	330	868	785	459			485	485	435	435	255	240														
	7	1400		380	918																								
	8	1573	1306	430	968	835	509											195											
	9	1623		480	1018																								
	10	1673	1500	530	1068	935	584																						
	11	1723		580	1118																								
	12	1773		630	1168																								
DG12-25	3	1192	965	180	695	645	355	275	275	420	420	370	370	210	250	170	150	130	4-Φ24	50	110	140	4-Φ13.5	40	110	150	4-Φ17.5		
	4	1378	1120	230	745	745	403			490	410	440	360	255	280			170											
	5	1428		280	795																								
	6	1478	1215	330	845	820	458			480	410	430	360	235															
	7	1528		380	895																								
	8	1623	1430	430	945	920	501			530	460	480	410	270	280			210											
	9	1673		480	995																								
	10	1743	1490	530	1045	975	520			530	415	470	365	285	280														
	11	1793		580	1095																								
	12	1952	1640	630	1145	965	578			550	400	500	350	310	350														
DG25-30	3	1450	1110	230	845	760	432	330	315	530	530	460	460	255	250	210	170	165	4-Φ30	65	130	160	4-Φ17.5	65	145	185	8-Φ17.5		
	4	1560	1219	295	910	850	478							285	260			180											
	5	1650	1297	360	975	880	510																						
	6	1825	1432	425	1040	970	553			575	530	505	460	310	280			200											
	7	1890	1497	490	1105	1000	583																						
	8	1955	1562	555	1170	1030	613																						
	9	2020	1627	620	1235	1080	663																						
	10	2120	1728	685	1300	1120	680			610	545	545	460	345	305			210											
DG46-30	3	1520	1167	230	845	845	487	330	315	530	530	460	460	285	260	210	170	192	4-Φ30	80	150	190	4-Φ18	65	145	185	8-Φ18		
	4	1690	1312	295	910	850	443																						
	5	1755	1367	360	975	910	503			575	530	505	460	315	280			210											
	6	1820	1432	425	1040	935	528																						
	7	1925	1532	490	1105	1010	580			615	545	545	460	345	305			220											
	8	2105	1694	555	1170	1110	600			664	594		385	330				235											
	9	2170	1759	620	1235	1140	630																						
	10	2305	1897	685	1300	1245	679			720	650		410	360				250											

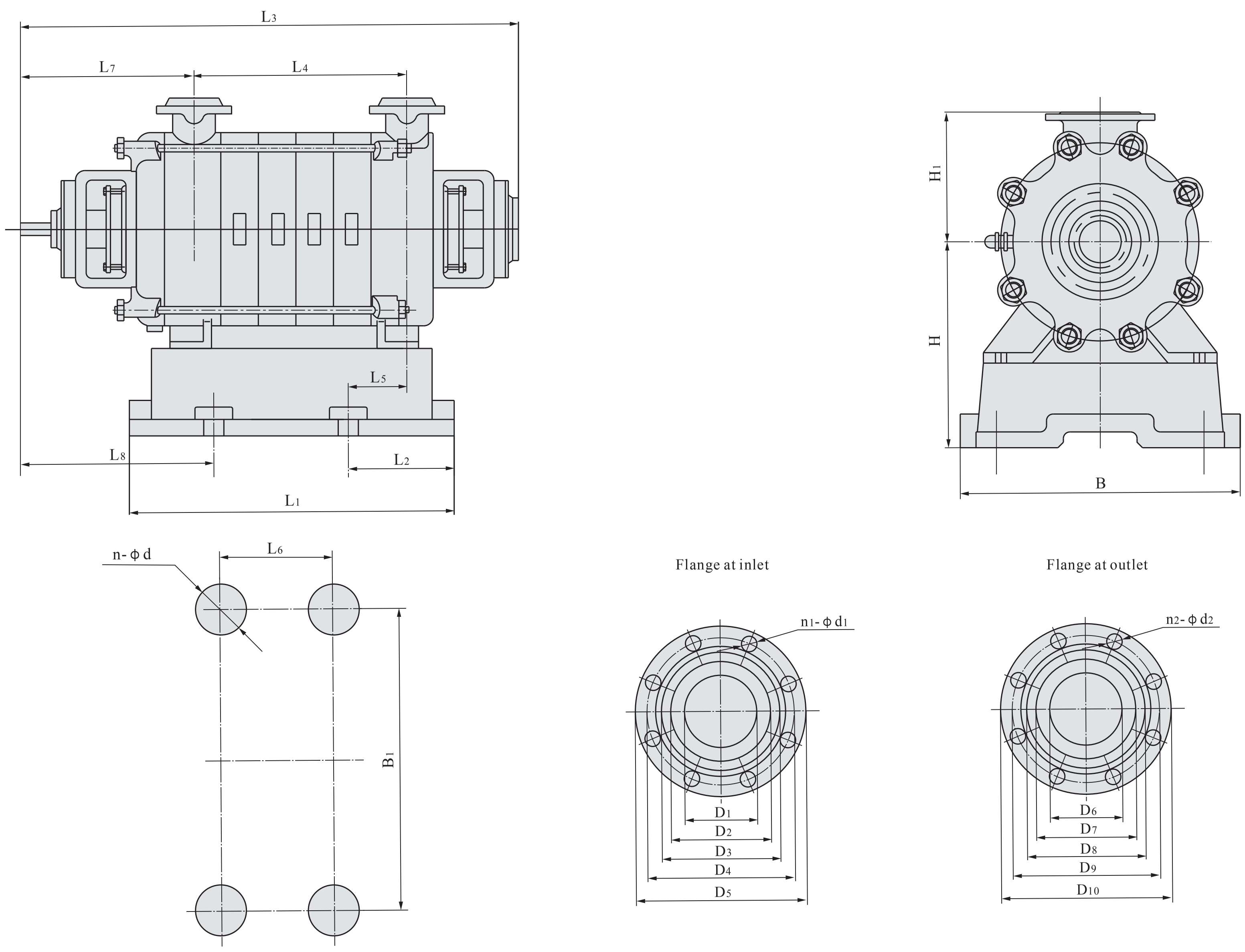
TTAAP- The dimension of model dg model middle and low pressure, hypo-high-pressure boiler water supply pump

Model	No.of stage	Installation dimension of pump(mm)																		Flange at inlet				Flange at outlet			
		L	L_1	L_2	L_3	L_4	L_5	e	e_1	B_1	B_2	B_3	B_4	b	H	H_1	H_2	G	n-d	Dg_1	ϕ_1	D_1	n-ϕ_1	Dg_2	ϕ_2	D_2	n-ϕ_2
DG12-50	3	1517	1230	248	852	845		319	315		490		490		250	230	200	250	4-φ27	50	135	175	4-φ23	50	135	175	4-φ23
	4	1597	1310	301	905	880					545				280			247									
	5	1762	1650	354	958	990																					
	6	1822		407	1011																						
	7	1882		460	1064						610				310			190									
	8	1982	1750	513	1117	1305																					
	9	2042		566	1170																						
	10	2204	1870	619	1223	1200					670				350			350									
	11	2264		672	1276																						
	12	2407	2000	725	1329	1300																					
DG25-50	3	1615	1228	245	936	830	506	351	318.5	550	550	480	480	285	360	270	210	188	4-φ24	65	160	205	8-φ23	65	160	205	8-φ23
	4	1780	1426	305	996	935	509							315	390			219									
	5	1840		365	1056																						
	6	1940	1517	425	1116	985	547			620		550		345	410			229									
	7	2115	1679	485	1176	1100	581			670		600		385	420			263	6-φ24								
	8	2245	1811	545	1236	1180	620			720		650		410	450			302									
	9	2305	1931	605	1296	1280	625											307									
	10	2365		665	1356													307									
	11	2475	2102	725	1416	1420	646											328									
	12	2535		785	1476													328									
DG46-50	3	1720	1317	245	937	875	475.5	351	318	570	570	500	500	315	360	270	210	227	4-φ24	80	170	215	8-φ22	80	170	215	8-φ22
	4	1820	1415	305	997	925	460.5			620		550		345				197									
	5	1995	1571	365	1057	1020	535.5			670		600		385	420			210									
	6	2125	1758	425	1117	1130	615.5			720		650		410				307									
	7	2185		485	1177																						
	8	2295	1869	545	1237	1180	665.5											358	6-φ24								
	9	2575	2046	605	1297	1330	770.5			820		750		576	515			355.5									
	10	2665		665	1357																						
	11	2765	2222	725	1427	1480	880.5											371.5									
	12	2825		785	1477																						
DG85-45	3	1945	1468	277	1010	1040	473	344	327	675	580	615	520	385	365	250	210	198	4-φ25	100	170	210	4-φ17.5	100	190	235	8-φ22
	4	2089	1615	351	1084	1060	505			730		670		410	395			280	6-φ25								
	5	2213	1740	425	1158	1120	549											315	6-φ25								
	6	2507	683	499	1232	303	430							576	345												
	7	2651	757	573	1306	377																					
	8	2725	831	647	1380	415																					
	9	2799	905	721	1454	525																					
DG155-30	2	2137	1550	315	1202	1060	572.5	435	460	650	650	580	580	385	430	350	280	220	6-φ30	150	250	300	8-φ26	150	250	300	8-φ26
	3	2322	1895	430	1317	1260	760.5			710	710	640		410													
	4	2487		545	1432		815																				

注：DG85-45的2～5级为共同底座，6～9级为单独底座。

TTAAP-Boiler Water supply pump

Figure of the out-form and installation dimensions

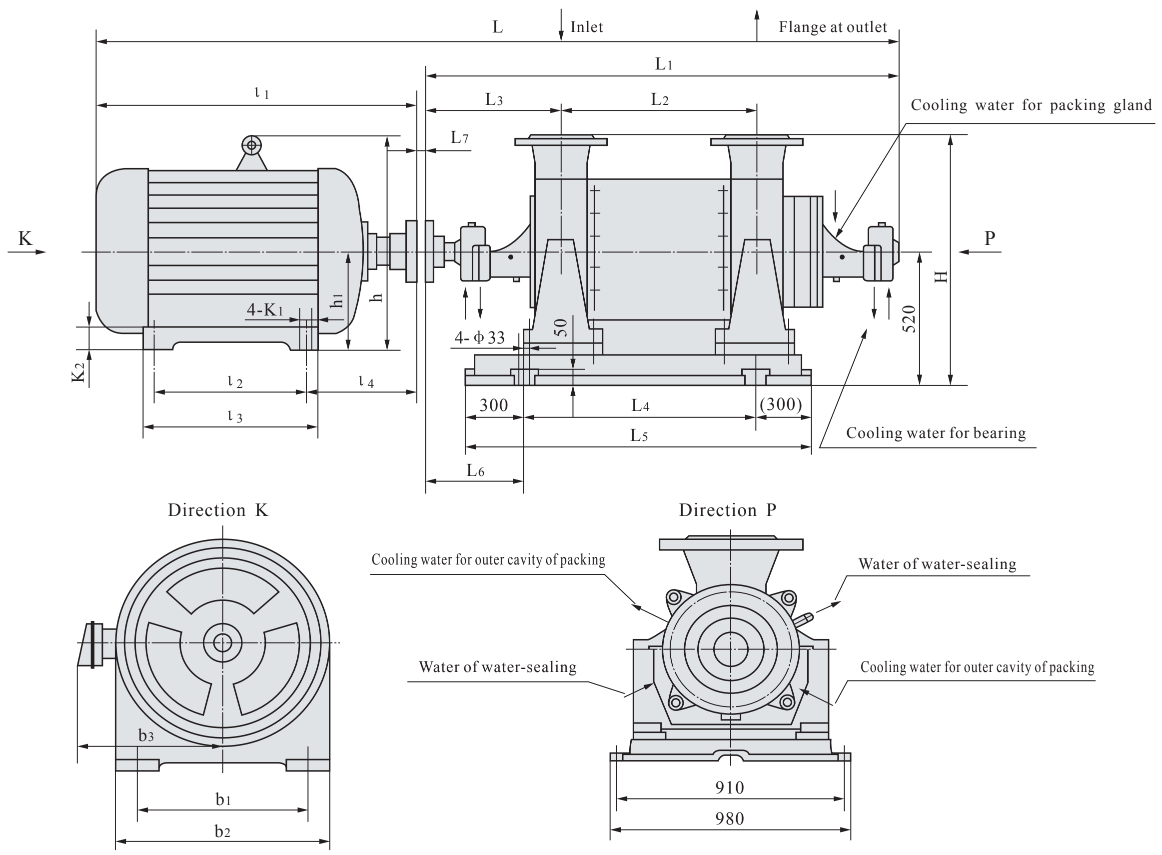


TTAAP- Table of the out-form and installation dimensions

Model of pump	No. of stage	L1	L2	L3	L4	L5	L6	L7	L8	B	B1	H	H1	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	n-φd	n1-φd1	n2-φd2	Corollary motor Model	Power (kW)	Voltage (V)
DG85-67	3	765	182	1409	371	13	400	557	541	670	600	420	350	100	149	168	200	250	100	149	168	200	250	4-φ30	8-φ24	8-φ24	Y280M-2	90	380
	4	765	182	1497	459	31	400	557	585	670	600	420	350														Y315S-2	110	380
	5	765	182	1585	547	75	400	557	629	670	600	420	350														Y315M-2	132	380
	6	945	182	1673	635	27	580	557	585	670	600	420	350														Y315L1-2	160	380
	7	945	182	1761	723	71	580	557	629	670	600	420	350														Y315L2-2	200	380
	8	1125	182	1849	811	27	760	557	581	670	600	420	350														Y3551-2	220	6000
	9	1125	182	1937	899	71	760	557	625	670	600	420	350														Y3552-2	250	6000
DG155-30	5	1030	175	1547	660	-50	680	435	524	670	600	430	350	150	203	211	250	300	150	203	211	250	300	4-φ30	8-φ22	8-φ26	Y315S-4	110	380
	6	1030	175	1662	775	7.5	680	435	524	670	600	430	350														Y315M-4	132	380
	7	1030	175	1777	890	65	680	435	524	670	600	430	350														Y315L1-4	160	380
	8	1375	175	1892	1005	-50	1025	435	524	670	600	430	350														Y315L1-4	160	380
	9	1375	175	2007	1120	7.5	1025	435	524	670	600	430	350														Y315L2-4	200	380
	10	1375	175	2122	1235	65	1025	435	524	670	600	430	350														Y315L2-4	200	380
DG155-67	3	765	182	1407	371	13	400	557	541	670	600	420	350	150	203	242	280	345	150	203	242	280	345	4-φ30	8-φ33	8-φ33	Y315M-2	132	380
	4	765	182	1495	459	31	400	557	585	670	600	420	350														Y315L2-2	200	380
	5	765	182	1583	547	75	400	557	629	670	600	420	350														Y3551-2	220	6000
	6	945	182	1671	635	27	580	557	585	670	600	420	350														Y3553-2	280	6000
	7	945	182	1759	723	71	580	557	629	670	600	420	350														Y3555-2	355	6000
	8	1125	182	1847	811	27	760	557	581	670	600	420	350														Y3555-2	355	6000
	9	1125	182	1935	899	71	760	557	625	670	600	420	350														Y4001-2	450	6000
DG280-43	3	605	152.5	1459	509	62.5	300	491	618.5	810	740	450	400	200	265	-	295	341	200	259	282	320	375	4-φ30	12-φ23	12-φ30	Y315L1-4	160	380
	4	865	182.5	1589	639	27.5	500	491	583.5	810	740	450	400														Y315L2-4	200	380
	5	865	182.5	1719	769	92.5	500	491	648.5	810	740	450	400														Y35541-4	250	6000
	6	1125	207.5	1849	899	52.5	710	491	608.5	810	740	450	400														Y3556-4	315	6000
	7	1125	207.5	1979	1029	117.5	710	491	673.5	810	740	450	400														Y4001-4	355	6000
	8	1385	217.5	2109	1159	62.5	950	491	618.5	810	740	450	400														Y4002-4	400	6000
	9	1385	217.5	2239	1289	127.5	950	491	683.5	810	740	450	400														Y4003-4	450	6000

TTAAP-Boiler Water supply pump

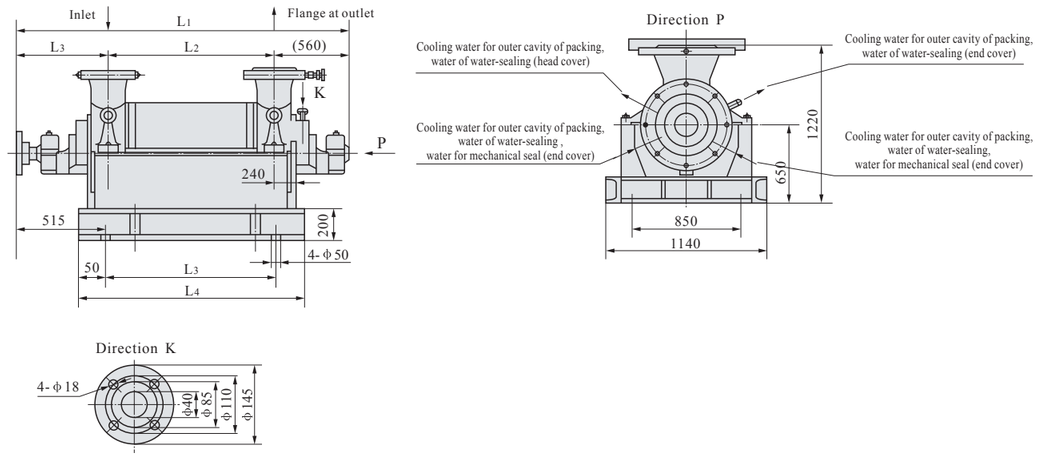
pump installation dimensions



TTAAP- DG45–80 pump installation dimensions table

Model	Total L	Pump part L1	L2	L3	L4	L5	L6	L7	H	Motor part l1	l2	l3	l4	b1	b2	b3	h	h1	K1	K2
DG25-80x5	2378	1388	449	447	432	1032	643	5	880	985	368	535	330	457	550	410	680	280	24	38
DG25-80x6	2507	1467	528	447	432	1032	643	5	880	1035	419	586	330	457	550	410	680	280	24	38
DG25-80x7	2736	1546	607	447	432	1032	643	5	880	1185	406	610	356	508	635	530	845	315	28	45
DG25-80x8	2925	1625	686	447	595	1195	643	5	880	1295	457	660	356	508	635	530	845	315	28	45
DG25-80x9	3004	1704	765	447	595	1195	643	5	880	1295	457	660	356	508	635	530	845	315	28	45
DG25-80x10	3083	1783	844	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG25-80x11	3162	1862	923	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG25-80x12	3241	1941	1002	447	827	1427	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x7	2846	1505	615	439	432	1032	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x8	2925	1574	694	439	595	1195	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x9	3004	1663	773	439	595	1195	643	5	880	1295	508	740	356	508	635	530	845	315	28	45
DG45-80x10	3288	1742	852	439	827	1427	643	5	880	1500	560	750	394	610	730	655	1010	355	28	52
DG45-80x11	3367	1821	931	439	827	1427	643	5	880	1500	630	750	394	610	730	655	1010	355	28	52
DG45-80x12	3446	1900	1010	439	827	1427	643	5	880	1500	630	750	394	610	730	655	1010	355	28	52

Installation dimensions

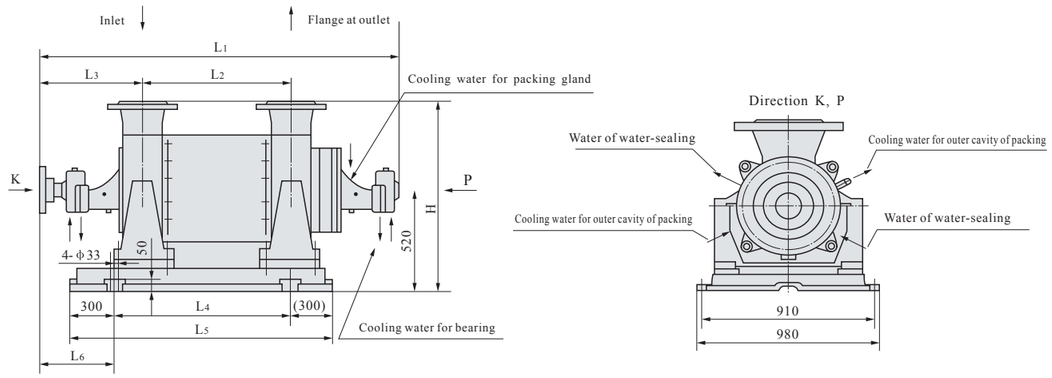


TTAAP- DG150–100、DG280–100 installation dimensions table

Model	L1	L2	L3	L4	L5	L6	H1	H2	B1	B2
DG150-100x6	2052	795		1085	1185					
DG150-100x7	2157	900		1190	1290					
DG150-100x8	2262	1005	642	1295	1395	507	650	1220	850	1140
DG150-100x9	2367	1110		1400	1500					
DG150-100x10	2472	1215		1505	1605					
DG280-100x4	1861	600		930	1030					
DG280-100x5	1981	720		1050	1150					
DG280-100x6	2101	840		1170	1270					
DG280-100x7	2221	960	663	1290	1390	498	585	1085	870	1130
DG280-100x8	2341	1080		1410	1510					
DG280-100x9	2461	1200		1530	1630					
DG280-100x10	2581	1320		1650	1750					

TTAAP-Boiler Water supply pump

installation dimensions



TTAAP- DG85–80 installation dimensions table

Model	L1	L2	L3	L4	L5	L6	H1	H2	B1	B2
DG85-80x7	1700	630		432	1032					
DG85-80x8	1780	710		595	1195					
DG85-80x9	1860	790	543			643	520	880	910	980
DG85-80x10	1940	870		827	1427					
DG85-80x11	2020	950								
DG85-80x12	2100	1030								

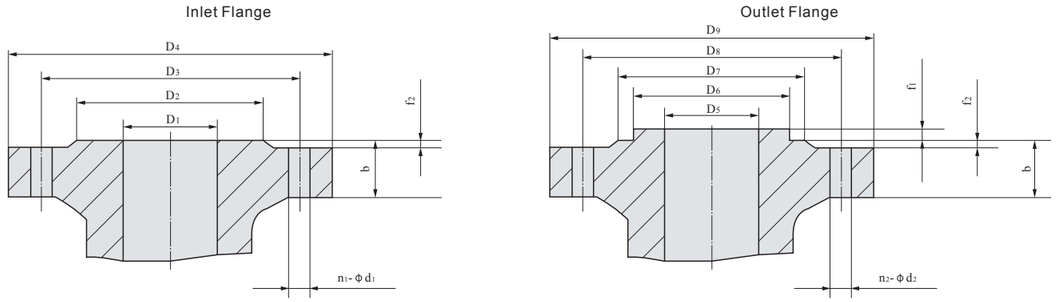


Figure of the inlet and outlet flange dimensions

Flange dimensions table

	Inlet Flange							Outlet Flange								
	D1	D2	D3	D4	f2	b	n1- ϕ d1	D5	D6	D7	D8	D9	f1	f2	b	n2- ϕ d2
DG25-80	65	118	145	185	3	20	4- ϕ 18	65	110	138	170	220	4	3	32	8- ϕ 25
DG45-80	80	135	160	195	3	22	8- ϕ 18	65	109	138	170	220	4	3	32	8- ϕ 25
DG85-80	100	155	180	220	3	22	8- ϕ 18	100	149	172	210	265	4	3	38	8- ϕ 30
DG150-100	200	278	310	360	3	36	12- ϕ 25	150	203	250	290	350	4.5	4.5	50.5	12- ϕ 34
DG280-100	200	278	310	360	3	36	12- ϕ 26	150	203	250	290	355	4.5	3	50	12- ϕ 33

Application

TTAAP-DG high pressure boiler feed pumps are used for feeding high pressure boiler or pumping high pressure clean water.

The temperature of pumped media is not more than 170℃.

Range of capacity:120-1100m³/h

range of total head:967 to 2500m

TTAAP-Model meaning

1 DG - 12

- Pump stage
- Multi-stage boiler pump
- Pump design No.

DG 450 - 180

- Design point nominal head divide 10
- Design point nominal capacity
- Multi-stage boiler pump

Construction

1.The pumps are cectional casing,multi-stage centrifugal pumps. The suction casing, stage casing and discharge casings are figidly held together by tie bolts. The joints between these casings are primarily sealed by means of metal-metal contact. Simultaneously,O-rings are used as auxiliary seals.

2.The shafts of these pumps are sealed by soft-packing and cooling water. Mechanical seal can be used according to the client's requirement.

3.The rotating assembly is supported by sliding bearings on both ends of the pump shaft. Bearings of pump are forced-lubricated. The oil system is equiped for type DG pump. The axial thrust of rotor osis balanced by balance disc. And the thrust bearing is also provided which is rsed to bear resi-dral axial force caused by the change of working conditions.

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Drive

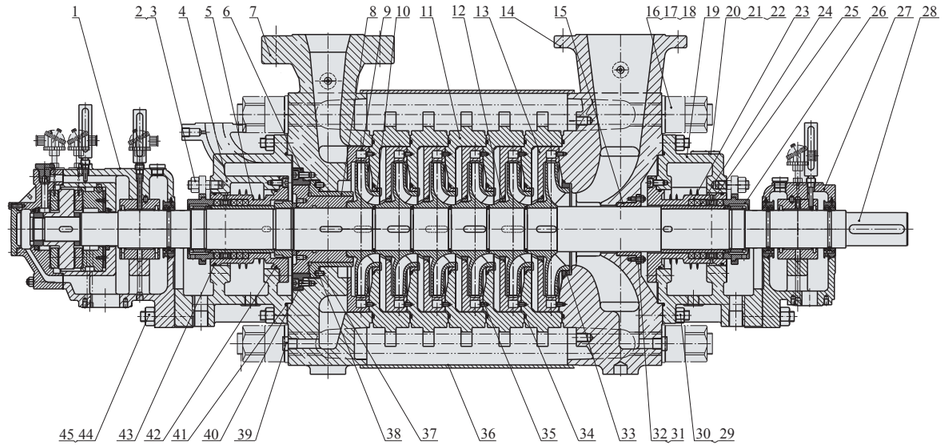
The pump is dirven by the motor through the coupling. The gear, menbrane coupling and hydraulic coupling can be used according to client's requirements. The pump can be driven by turbine or motor.

The rotating direction of pumps are clockwise when viewed from the driving end.

Material

Suction casing,discharge casing, diffuser, and impeller: carbon steel or chrome steel shaft,wear ring and diffuser bush: chromic alum steel or chrome steel.

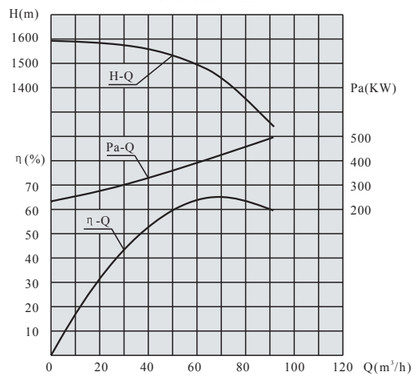
Standard construction of type TTAAP-DG pumps



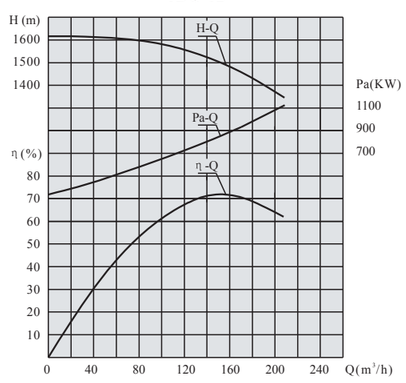
1	Rear bearing part	13	Guide vane	25	Packing ring	37	O-seal ring
2	Stud	14	Suck-in section	26	Packing gland part	38	Pin
3	Nut	15	Bush of water inlet section	27	First bearing part	39	Wire-jam
4	Tail cover	16	Through handspike	28	Rotor part	40	Screw
5	Bush of tail cover	17	Nut	29	Stud	41	O-seal ring
6	Press-ring of balancing sleeve	18	Washer	30	Nut	42	O-seal ring
7	Spitting section	19	Head cover	31	Stud	43	O-seal ring
8	Balancing sleeve	20	Label	32	Nut	44	Stud
9	End-section guide vane	21	Rotating direction plate	33	Suck-in section seal-ring	45	Nut
10	Mid-section seal-ring	22	Rivet	34	O-seal ring		
11	Mid-section	23	Bush of head cover	35	Screw		
12	Guide vane sleeve	24	Packing	36	Pump cover part		

TTAAP- Performance curve figures

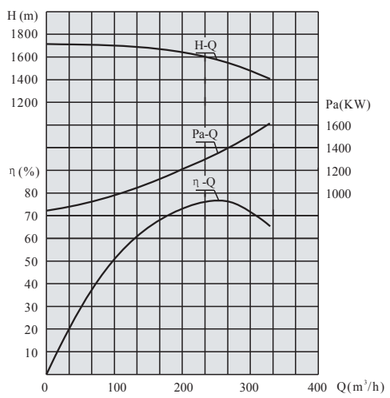
DG70-120×12



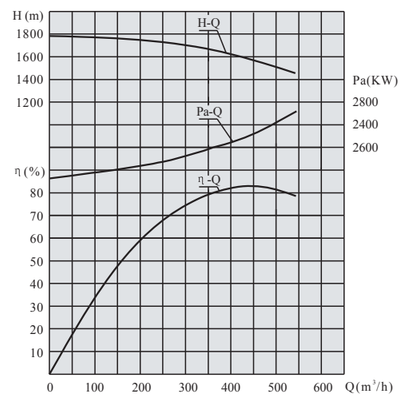
1DG-12



2DG-10



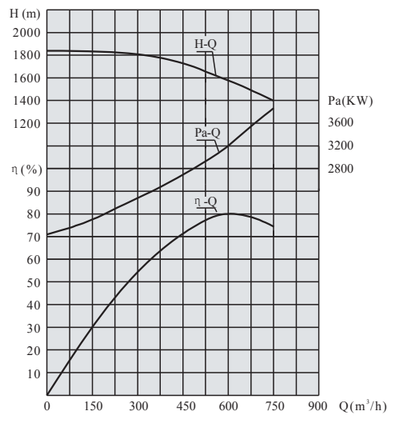
3DG-10



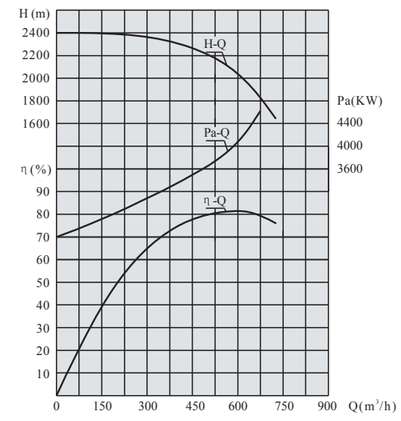
TTAAP-Boiler Water supply pump

TTAAP- Performance curve figures

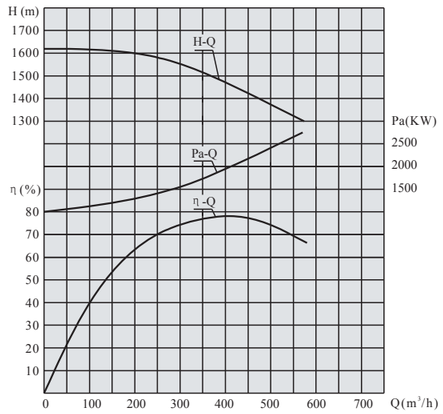
4DG-8C



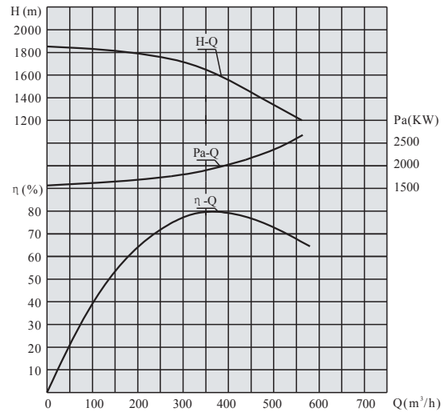
5DG-10



DG270-140B



DG270-140C



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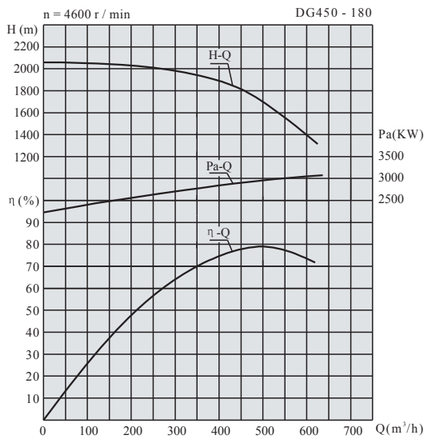
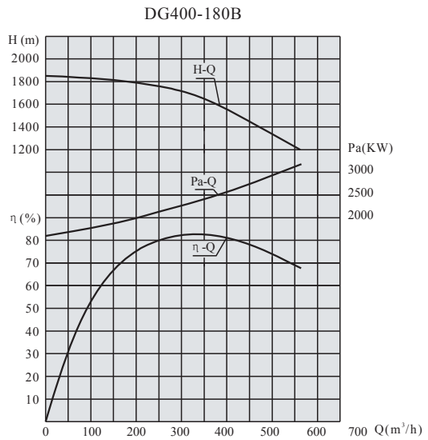
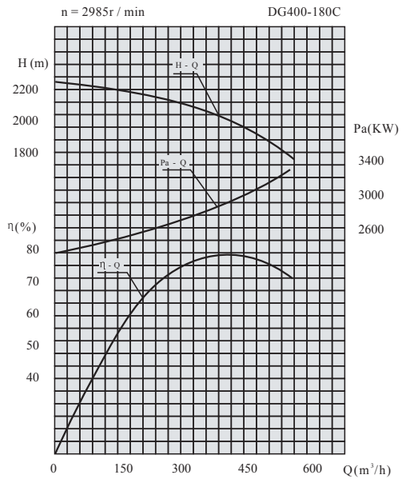
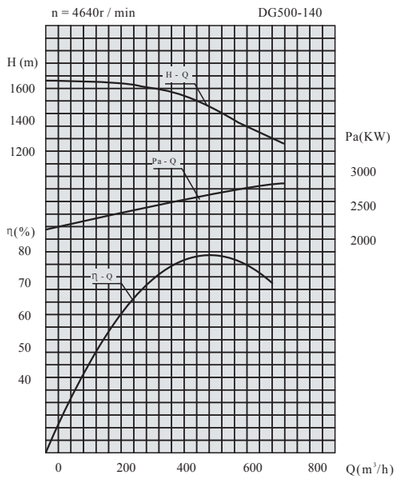
TTAAP-Boiler Water supply pump

TTAAP-Performance curve figures

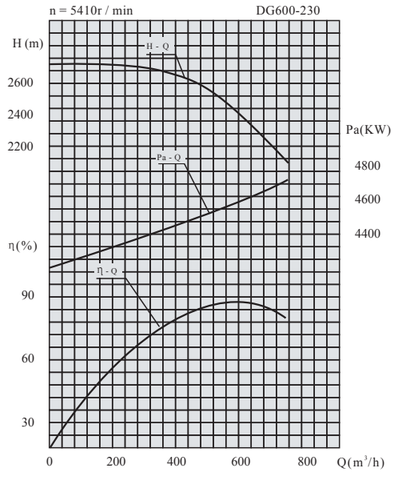


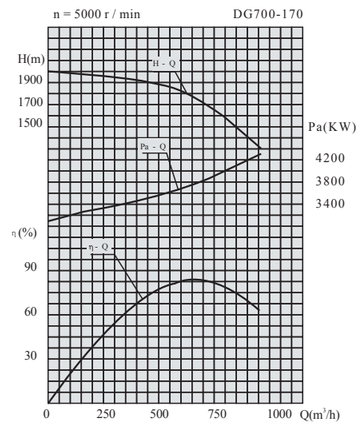


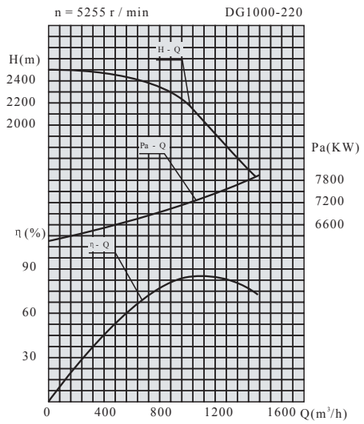




TTAAP-Performance curve figures







TTAAP-high pressure boiler feed pumps performance

Type	Q (m^3/h)	H (m)	n (r/min)	Pa (kW)	η (%)	(NPSH)r (m)	N (kW)
DG70-120×9	50 70 84	1125 1080 973	2980	268 317 364	57 65 61	4.5	400
DG70-120×10	50 70 84	1250 1200 1080	2980	299 352 405	57 65 61	4.5	450
DG70-120×11	50 70 84	1375 1320 1188	2980	329 387 446	57 65 61	4.5	500
DG70-120×12	50 70 84	1500 1440 1300	2980	358 422 487	57 65 61	4.5	560
1DG-8	120 140 170	1040 1027 967	2980	500 544 631	68 75 71	4.5	710
1DG-9	120 140 170	1170 1155 1088	2980	563 612 710	68 72 71	4.5	800
1DG-10	120 140 170	1300 1283 1208	2980	625 680 788	68 72 71	4.5	800
1DG-11	120 140 170	1430 1412 1330	2980	688 748 867	68 72 71	4.5	1000
1DG-12	120 140 170	1560 1540 1450	2980	750 816 946	68 72 71	4.5	1000
2DG-8	200 270 280	1344 1213 1184	2980	990 1189 1221	74 75 74	5	1400
2DG-9	200 270 280	1512 1363 1330	2980	1114 1337 1371	74 75 74	5	1600
2DG-10	200 270 280	1680 1515 1480	2980	1237 1486 1524	74 75 74	5	1600

Type	Q (m^3/h)	H (m)	n (r/min)	Pa (kW)	η (%)	(NPSH)r (m)	N (kW)
3DG-10	360 440 496	1660 1560 1470	2985	2033 2270 2453	80.1 82.4 81	8	2500
4DG-8C	500 550 600	1670 1630 1580	2985	2953 3090 3227	77 79 80	10	3400
5DG-10	500 572 620	2210 2150 2100	2987	3764 4087 4327	80 82 82	10	4800
DG270-140B	270 320 440	1570 1500 1422	2985	1560 1721 2186	74 76 78	5	2300
DG270-140C	270 320 440	1750 1610 1460	2985	1705 1999 2244	75.5 79 78	5	2300
DG400-180B	245 385 415	1940 1910 1800	4640	2279 2444 2513	80 82 81	12	3200
DG400-180C	400 450 500	1975 1900 1815	2985	2778 2949 3131	77 79 79	12	4000
DG450-180	400 450 500	1920 1825 1700	4640	2790 2869 2932	75 78 79	23.5	3200
DG500-140	450 504 550	1540 1470 1400	4640	2518 2588 2656	75 78 79	23.5	3200
DG600-230	540 597 650	2500 2381 2260	5410	4486 4557 4655	82 85 86	23.5	4800
DG700-170	600 671 740	1810 1730 1640	5000	3699 3811 3937	80 83 84	23.5	4500
DG1000-220	900 1014 1100	2320 2213 2100	5255	6939 7194 7319	82 85 86	23.5	8000

Note: 1. The above performance parameter table is made by converting the test with the water temperature at 20℃.

2. It is not allowed for the pump to run when the minimum flow is less than the rated one by 30%.

3. The performance of other stages shall be calculated per proportion.

Range of completed supply

The completed supply of steam-powered water supply pump group includes:

- Its inlet filtering pre-pump(upon thereal requirement) and water supply pump
- Actuating motor for the pre-pump,motor and prepump mutually used foundation
- Check valve at the outlet of the water supply pump
- Minimum flow device: includes recycling valve, stop valve and flow measurer
- Clutch and other accessories
- Oil thinnig station

The completed supply of electric water supply pump group includes:

- Water supply pump, pre-pump and its inlet filtering screen
- Motor
- Hydraulic coupler and oil cooler for both working and lubricating oils
- Check valve at the outlet of the water supply pump
- Minimum flow device: includes recycling valve, stop valve and flow measurer
- Clutch and other accessories
- Oil thinnig station

Of which the motor, recycling valve, hydraulic coupler, oil thinning station, check valve,pre-pump, stop valve and flow measurer can also be purchased by clients and this Co.will be in charge of technical coordination.

Notice at order

Please provide the following parameters when to order the product of this Co.:

Flows at the outlet of the water supply pump and the tap (boosting class)

Pressures(or the pump group's head) at the outlet of the water supply pump and the inlet of the pre-pump

Water supply temperature

Pump group's type(steam-powered or electric pump)

The installation dimensions are to be provide at order upon the contract requirement

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