Pumping happiness across the Globe

Tormac PUMPS

THE TOUGH ONE

Rugged construction coupled with optimal design parameters make the Bore Hole Submersible Pump a star performer.

CAST IRON
SUBMERSIBLE PUMPS - **50Hz**

● **Products from an ISO 9001 COMPANY**

INDEX

CS SERIES - CAST IRON SUBMERSIBLE PUMPS

GENERAL DATA

CAST IRON SUBMERSIBLE PUMPS > **CB** SERIES

Construction Tormac cast iron submersible pumps are ingeniously designed and developed employing latest engineering softwares, high-tech machinery, tools and cutting edge of pumping technology to deliver the best possible hydraulic efficiency. The integrated and most modern quality assurance systems used at every stage of the production and flawless workmanship ensure sustained and consistent operation.

All these submersible pumps are multistage single suction centrifugal type and provided with integral check-valve and NEMA standard coupling. These pumps are available with impellers made of bronze, diffusers made up of cast iron and the shaft is made of AISI 410/431. The integral check valve prevents back flow, up thrust and reduces the risk of water hammer which paves the way for trouble free performance. The suction screen is designed with utmost care so as not to reduce the inflow of water and at the same time to prevent damage to the pump and clogging due to the entry of sand and other foreign particles.

Applications	Features
Public water supply	Tried and trusted
Fountains	Highly efficient
Irrigation	Wide head and flow range with numerous models
Pressure boosting systems	Good sand resistance capacity, integral check valve
Industrial & Private water supply systems	Corrosion free parts for hygiene
Air-conditioning equipments	Low wear and tear, perfectly and aesthetically designed
Sprinkler systems and Mining	Easily serviceable.
Farming	
Water plants	
Laboratories	

GENERAL DATA

Pumped Liquids

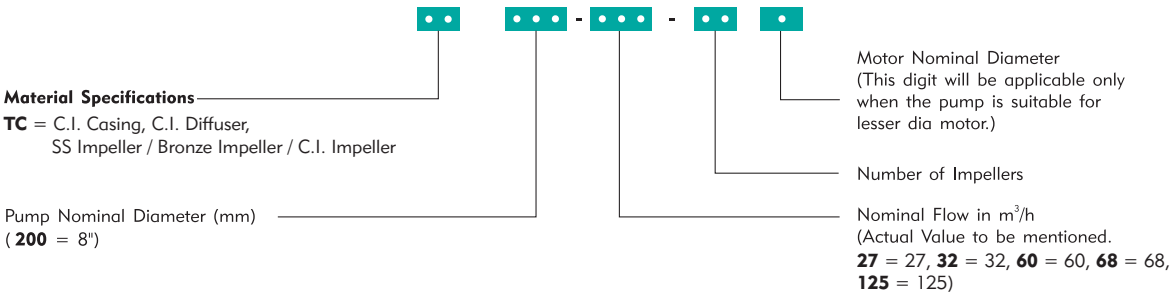
Clean, thin, non-aggressive, non explosive, pure, cold, fresh water without abrasives solid particles or fibre having the following characteristics.

a) pH	6.5 to 8.5
b) Turbidity	50 ppm silica scale (max.)
c) Viscosity	1.75 x $10^{6}m^{2}$ / sec (max.)
d) Hardness (Drinking Water)	300 (max.)
e) Specific gravity	1.004 (max.)
f) Allowable solids	3000 ppm (max.)
g) Chlorine ion density	500 ppm (max.)
h) Permissible amount of sand	50g / m^{3} (max.)
i) Temperature	38°C (max.)

Pump Operating Limitations

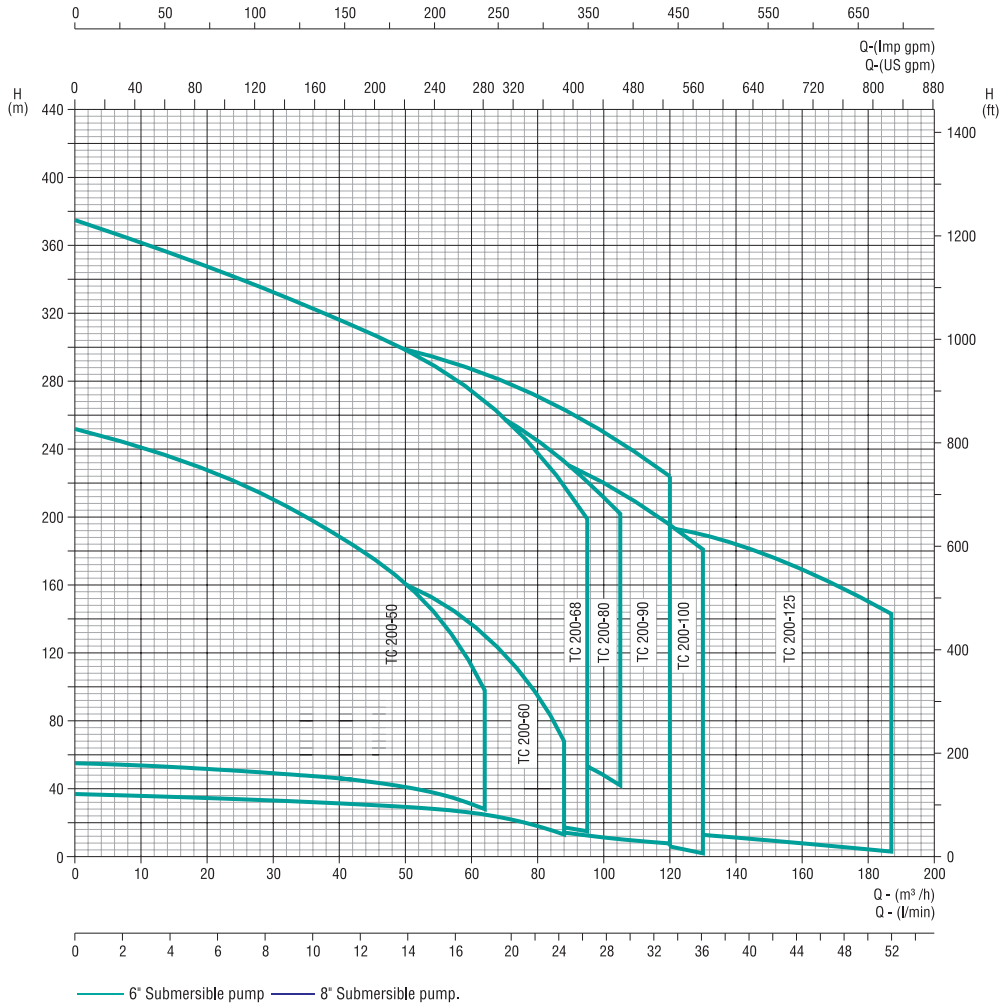
Nominal Diameter		**8"**
Power Range		5.5kW - 93kW
Speed		2900 rpm
Flow Range	lpm	19.7 - 3116.7
	m^{3}/h	11.5 - 187
Max. Recommended Head	ft	6.5 - 1214
	m	2 - 375
Delivery size in mm		80, 100, 125 & 150
Max. Operating Pressure		3.7 Mpa (37 bar)
Horizontal Installation		Minimum - 30° angle

Model Classification BOREHOLE SUBMERSIBLE PUMPS



GENERAL DATA

Quick Selection › CB Series › Version TC › 6" & 8"



Performance Curve Conditions

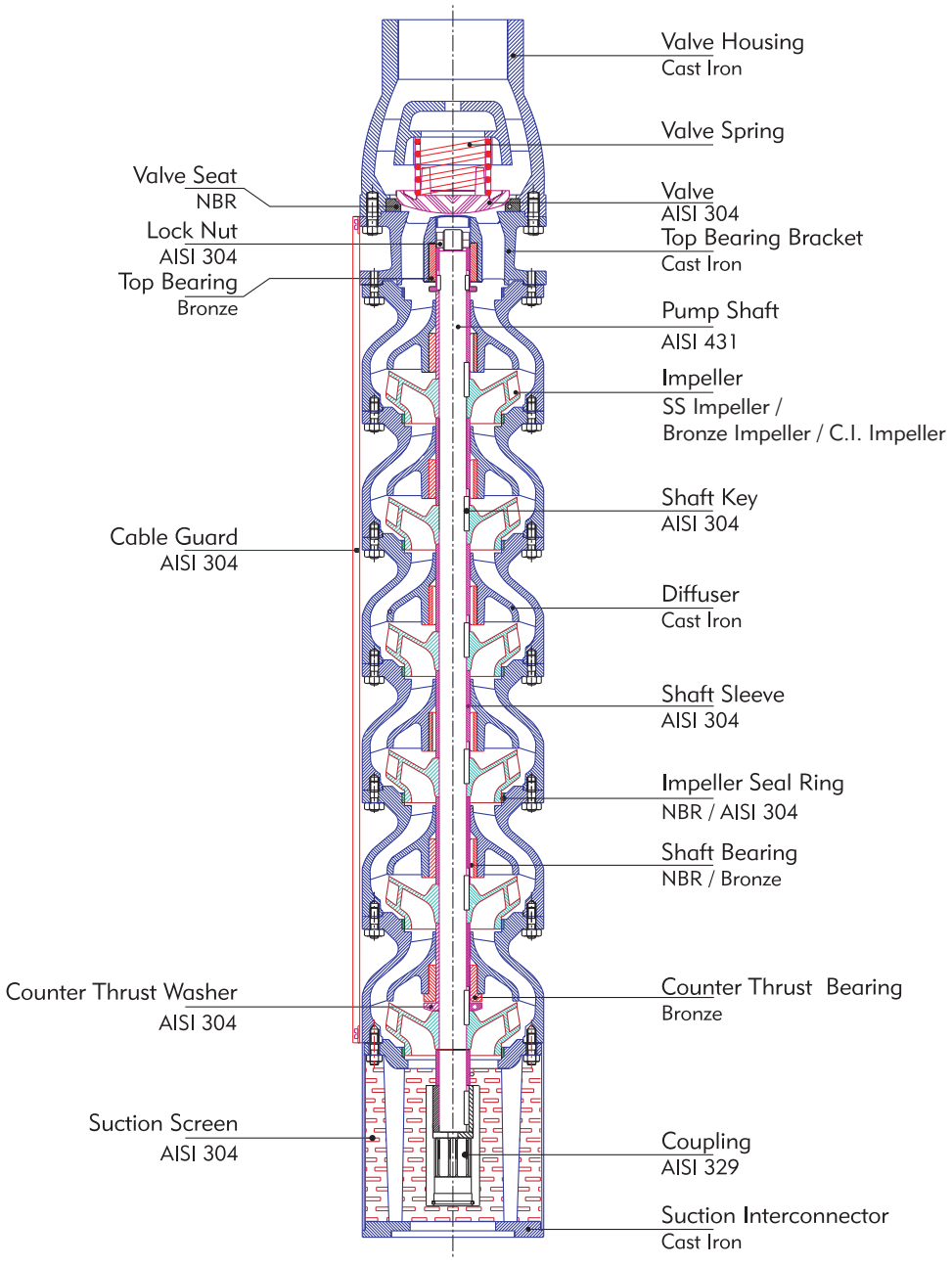
a.	The Performance curves show performance of the pump at rated speed and voltage. (2900 rpm)	e.	The head and discharge curves are inclusive of check valve and suction inter-connector losses at the actual speed.
b.	The measurements were made with airless water at 20°C. For pumping liquids with a density higher than that of water, motors with correspondingly higher outputs must be used.	f.	Efficiency curve: "EFF%" shows pump stage efficiency.
		g.	Curve tolerance according to ISO : 9906, Annex-A.
c.	Pipe friction losses have not been included in the performance curves and performance data.	h.	The performance are at rated voltage and are only Indicative. Actual discharge depends on availability of water in well, based on strength of water source, height of water column, submergence of pump, etc.,
d.	The bold curves indicate the recommended performance range.	i.	The given performance are for a specific materials of construction of pumps.

Available types of materials of construction : TC

CONSTRUCTIONAL DATA

50 - 125 m³/h

8" › **CB** Series › **Version TC** › Constructional Data of Semi - Axial Flow Pump

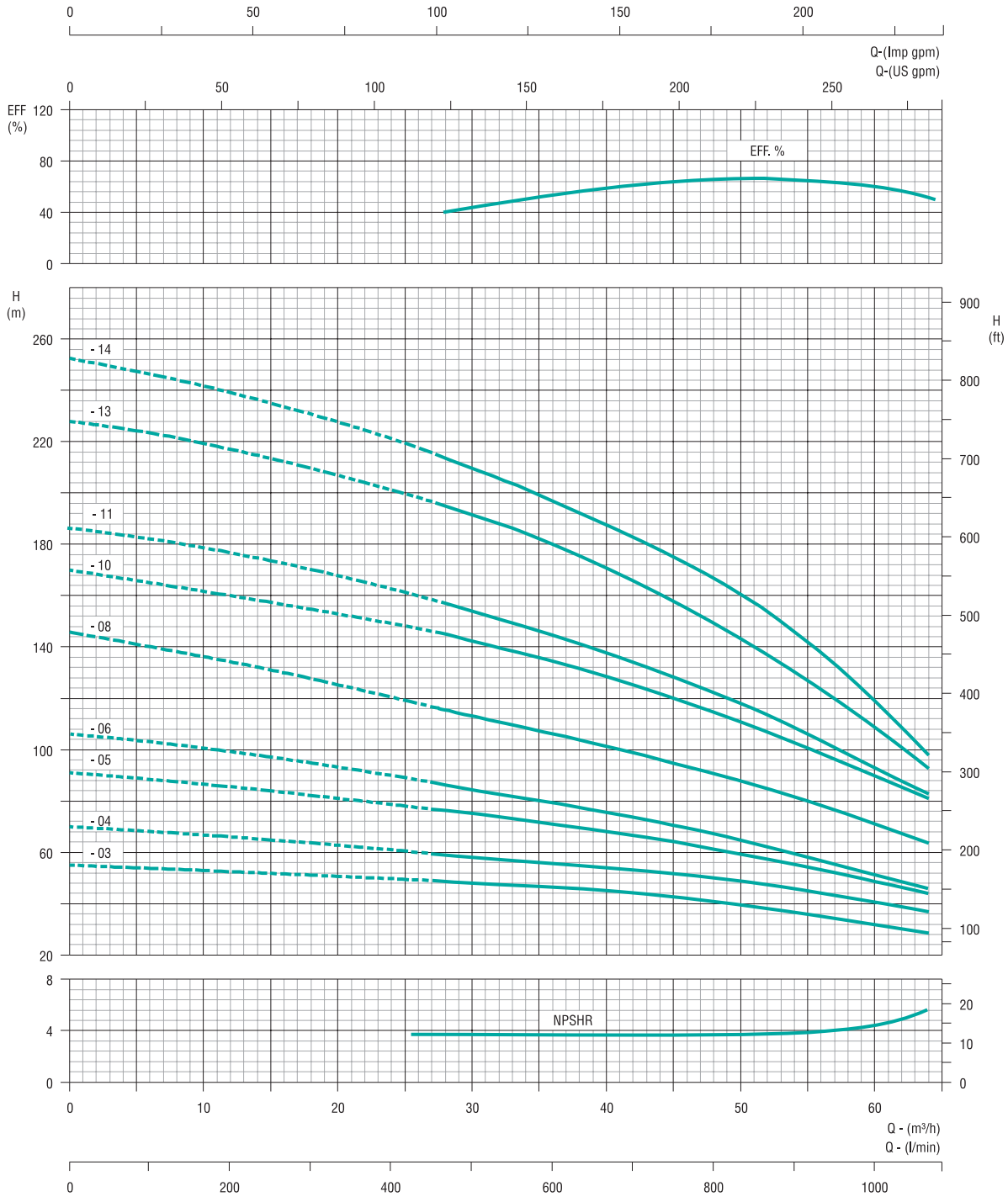


NEMA mounting dimensions.

PERFORMANCE CURVES

CB SERIES › **8"** › **50 m³/h**

Model : **TC 200 - 50** Outlet Size : **3" / 4"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

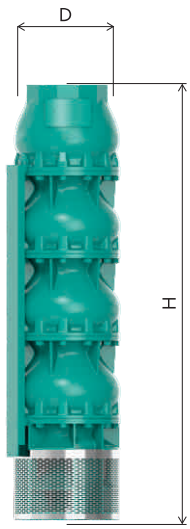
CB SERIES › 8" › 50 m³/h

Model : **TC 200 - 50** Outlet Size : **3" / 4"** **2900 rpm**

Pump Model	Power		lpm	0	500.0	666.7	833.4	1000.0	1066.7
	kW	HP	m³/h	0	30	40	50	60	64
TC200-50-03-6	7.5	10	TOTAL DYNAMIC HEAD IN METRES	55	48	45	40	32	29
TC200-50-04-6	9.3	12.5		70	58	54	48	41	37
TC200-50-05-6	11	15		91	75	68	59	48	44
TC200-50-06-6	15	20		106	83	76	64	51	47
TC200-50-08-6	18.5	25		145	113	102	87	72	64
TC200-50-10-6	22	30		170	142	128	111	90	82
TC200-50-11-6	30	40		187	154	138	118	93	83
TC200-50-13	37	50		228	192	172	146	109	93
TC200-50-14	37	50		252	210	188	160	119	97

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-50-03-6	7.5	10	195	920	81.00
TC200-50-04-6	9.3	12.5	195	1050	93.00
TC200-50-05-6	11	15	195	1180	105.00
TC200-50-06-6	15	20	195	1310	117.00
TC200-50-08-6	18.5	25	195	1570	141.00
TC200-50-10-6	22	30	195	1830	165.00
TC200-50-11-6	30	40	195	1960	184.00
TC200-50-13	37	50	195	2230	209.00
TC200-50-14	37	50	195	2350	221.00



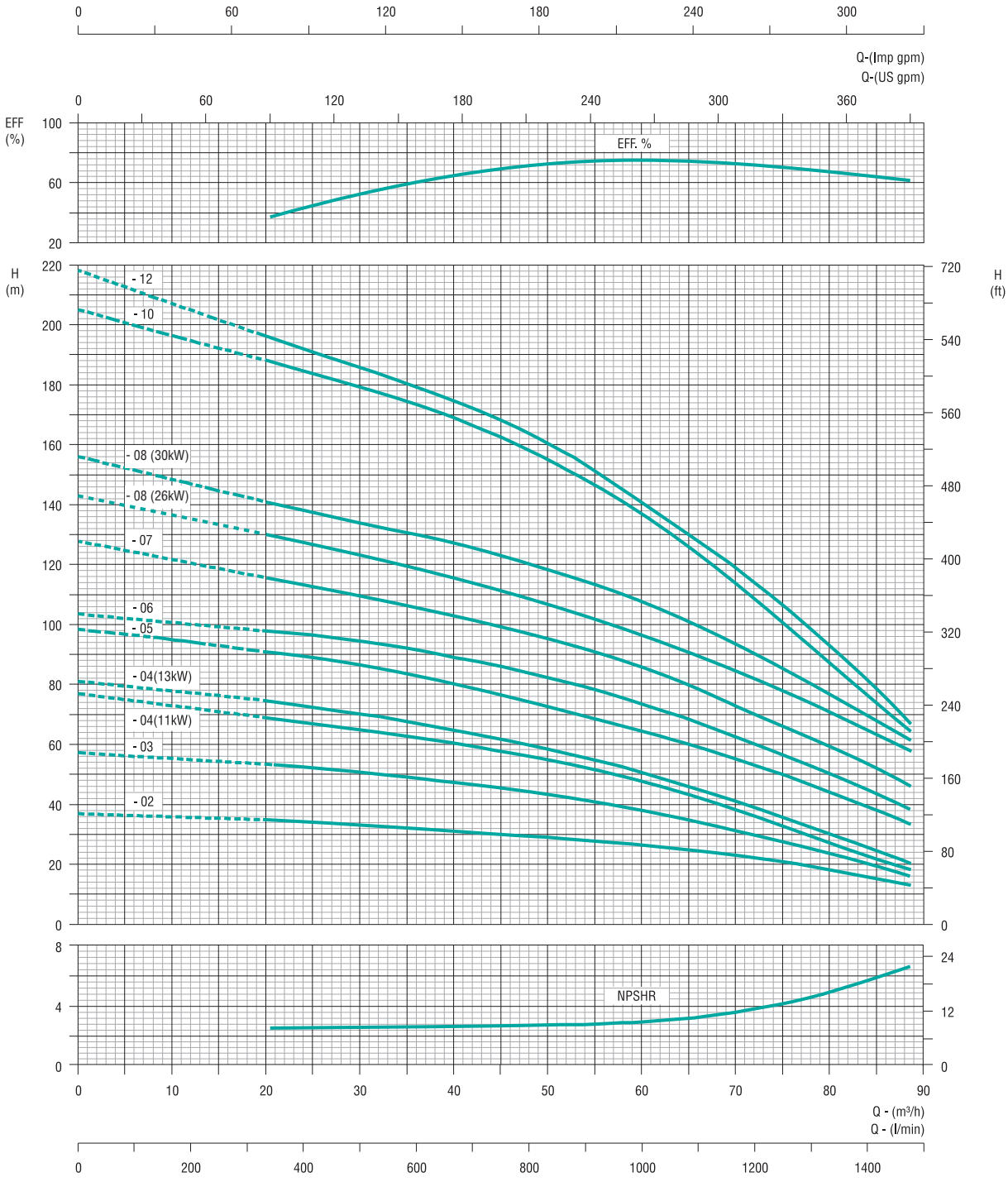
Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › **8"** › **60 m³/h**

Model : **TC 200 - 60** Outlet Size : **3" / 4"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

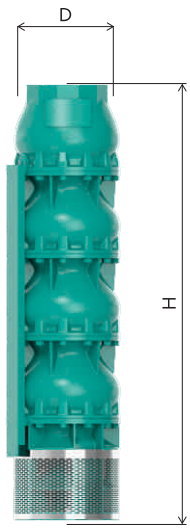
CB SERIES › 8" › 60 m³/h

Model : **TC 200 - 60** Outlet Size : **3" / 4"** **2900 rpm**

Pump Model	Power		lpm	0	333.3	500.0	666.7	833.4	1000.0	1066.7	1333.4
	kW	HP	m³/h	0	20	30	40	50	60	70	80
TC200-60-02-6	5.5	7.5	TOTAL DYNAMIC HEAD IN METRES	37	35	33	32	28	27	23	18
TC200-60-03-6	9.3	12.5		57	54	51	47	43	38	32	24
TC200-60-04-6	11	15		77	68	65	61	55	48	38	28
TC200-60-04-6	13	17.5		81	75	70	65	58	52	42	30
TC200-60-05-6	15	20		98	91	86	79	73	64	55	44
TC200-60-06-6	18.5	25		104	97	95	89	83	74	63	51
TC200-60-07-6	22	30		128	116	109	103	96	86	73	58
TC200-60-08-6	26	35		143	130	123	116	107	97	85	71
TC200-60-08-6	30	40		156	141	134	127	118	107	94	77
TC200-60-10	37	50		205	187	179	168	155	137	114	88
TC200-60-12	37	50		218	196	186	175	161	142	119	93

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-60-02-6	5.5	7.5	195	790	69.00
TC200-60-03-6	9.3	12.5	195	920	81.00
TC200-60-04-6	11	15	195	1050	93.00
TC200-60-04-6	13	17.5	195	1050	93.00
TC200-60-05-6	15	20	195	1180	105.00
TC200-60-06-6	18.5	25	195	1310	130.00
TC200-60-07-6	22	30	195	1440	135.00
TC200-60-08-6	26	35	195	1570	147.00
TC200-60-08-6	30	40	195	1570	147.00
TC200-60-10	37	50	195	1830	172.00
TC200-60-12	37	50	195	2090	197.00

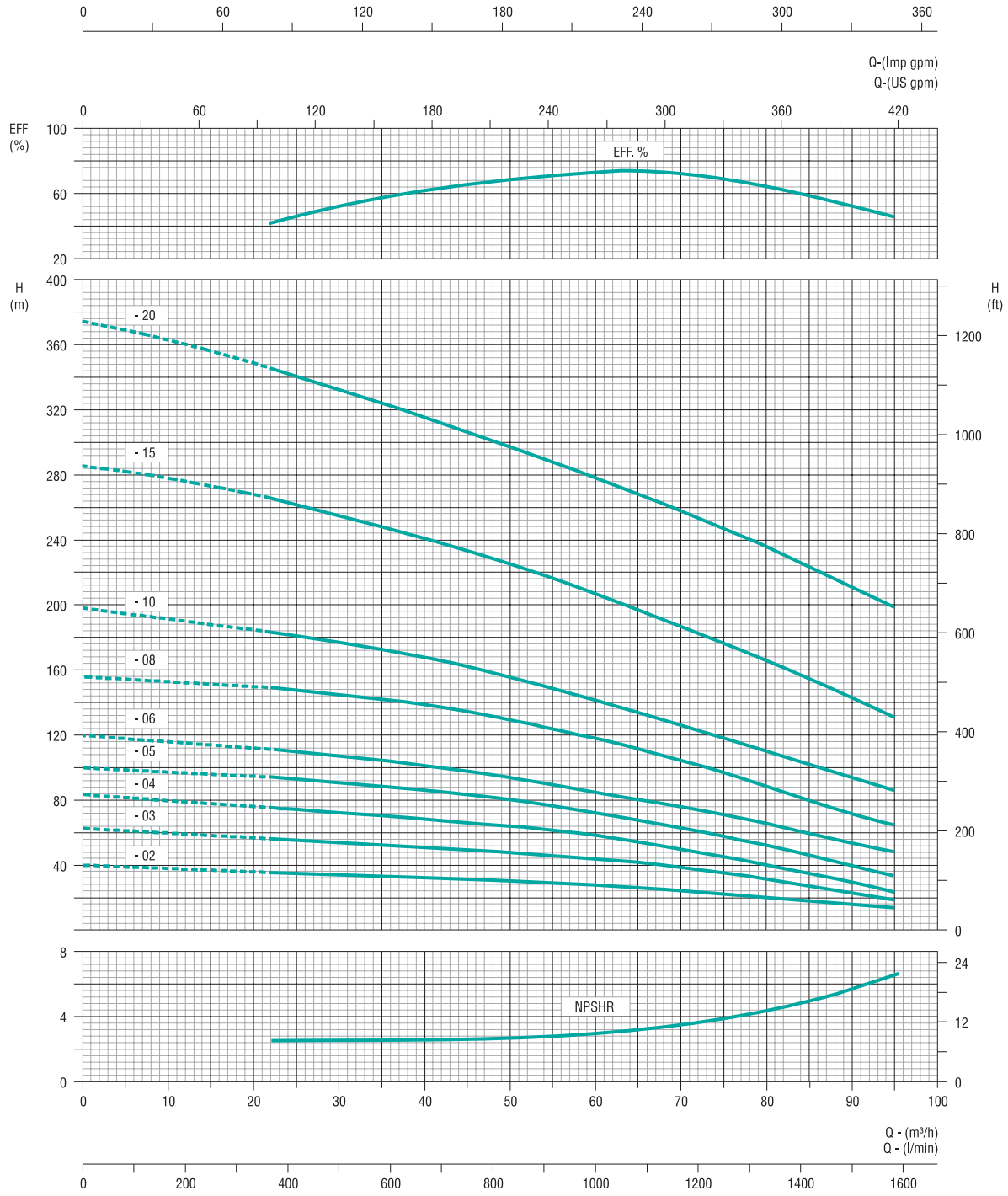


Pump Height(H) and Weight(Kg) are approximate.
All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › **8"** › **68 m³/h**

Model : **TC 200 - 68** Outlet Size : **3" / 4"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

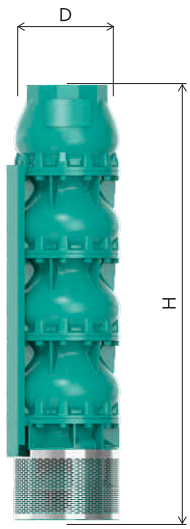
CB SERIES 〉 8" 〉 68 m^3/h

Model : **TC 200 - 68** Outlet Size : **3" / 4"** **2900 rpm**

Pump Model	Power		lpm	0	500.0	666.7	833.4	1000.0	1066.7	1333.4	1500.0
	kW	HP	m^3/h	0	30	40	50	60	70	80	90
TC200-68-02-6	7.5	10	TOTAL DYNAMIC HEAD IN METRES	40	35	33	30	27	25	20	17
TC200-68-03-6	11	15		61	53	50	48	44	38	31	19
TC200-68-04-6	15	20		82	72	68	64	58	50	40	23
TC200-68-05-6	18.5	25		100	90	87	80	72	63	52	34
TC200-68-06-6	22	30		120	108	101	94	85	75	65	50
TC200-68-08-6	30	40		147.5	147	138	129	118	105	89	65
TC200-68-10	37	50		197.5	177	168	157	142	128	112	88
TC200-68-15	55	75		285	255	241	225	207	187	165	103
TC200-68-20	75	100		375	332	315	298	278	258	236	200

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-68-02-6	7.5	10	195	790	69.00
TC200-68-03-6	11	15	195	920	81.00
TC200-68-04-6	15	20	195	1050	93.00
TC200-68-05-6	18.5	25	195	1180	105.00
TC200-68-06-6	22	30	195	1310	130.00
TC200-68-08-6	30	40	195	1570	147.00
TC200-68-10	37	50	195	1830	172.00
TC200-68-15	55	75	195	2480	234.00
TC200-68-20	75	100	195	3130	296.00



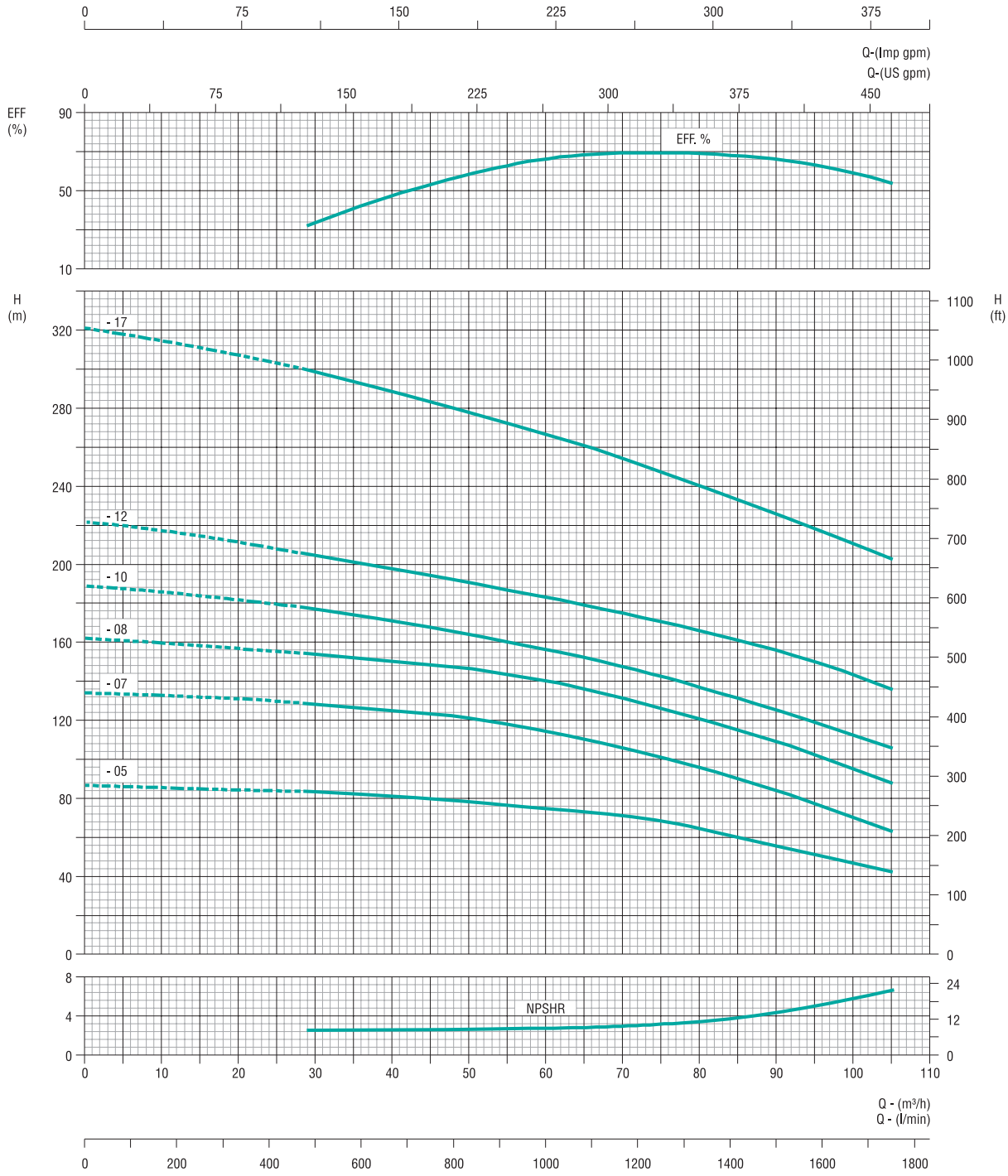
Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › **8"** › **80 m³/h**

Model : **TC 200 - 80** Outlet Size : **4" / 5"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

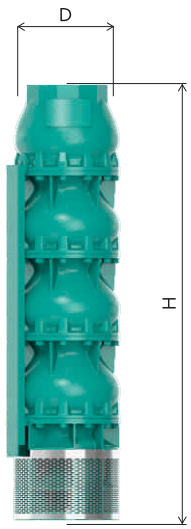
CB SERIES › 8" › 80 m³/h

Model : **TC 200 - 80** Outlet Size : **4" / 5"** **2900 rpm**

Pump Model	Power		lpm	0	500.0	666.7	833.4	1000.0	1066.7	1333.4	1500.0	1666.7
	kW	HP	m³/h	0	30	40	50	60	70	80	90	100
TC200-80-05-6	22	30	TOTAL DYNAMIC HEAD IN METRES	87	83	81	78	75	71	65	58	47
TC200-80-07-6	30	40		136	128	125	122	115	107	97	85	71
TC200-80-08	37	50		162	154	150	147	140	132	121	109	96
TC200-80-10	45	60		188	178	171	164	157	148	137	126	113
TC200-80-12	55	75		222	205	198	191	183	175	166	156	144
TC200-80-17	75	100		320	299	289	278	267	256	242	227	212

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-80-05-6	22	30	195	1180	105.00
TC200-80-07-6	30	40	195	1440	135.00
TC200-80-08	37	50	195	1570	147.00
TC200-80-10	45	60	195	1830	171.00
TC200-80-12	55	75	195	2090	197.00
TC200-80-17	75	100	195	2350	259.00



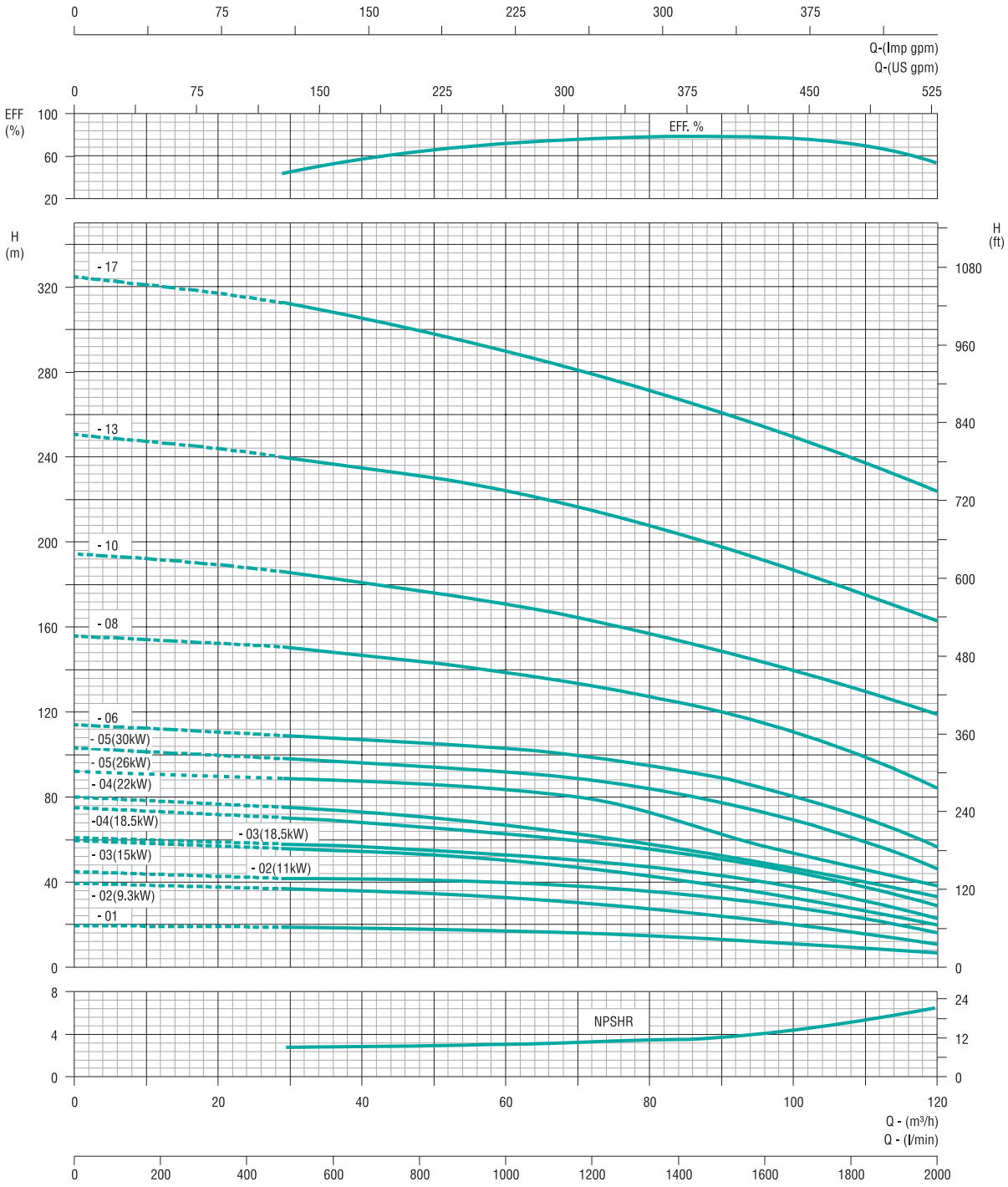
Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › **8"** › **90 m³/h**

Model : **TC 200 - 90** Outlet Size : **4" / 5"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

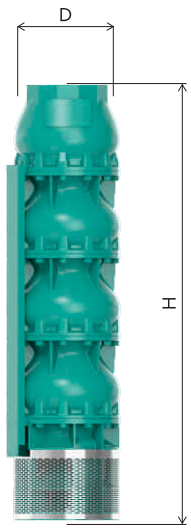
CB SERIES › 8" › 90 m³/h

Model : **TC 200 - 90** Outlet Size : **4" / 5"** **2900 rpm**

Pump Model	Power		lpm	0	500.0	666.7	833.4	1000.0	1066.7	1333.4	1500.0	1992.0
	kW	HP	m³/h	0	30	40	50	60	70	80	90	120
TC200-90-01-6	5.5	7.5	TOTAL DYNAMIC HEAD IN METRES	20	19	18.5	18	17.5	16	15	12	6
TC200-90-02-6	9.3	12.5		40	37	36	35	34	32	29	24	11
TC200-90-02-6	11	15		46	41	40	39	38	36	35	32	18
TC200-90-03-6	15	20		59	56	54	53	51	49	45	40	20
TC200-90-03-6	18.5	25		61	58	57.5	55	53	51	49	44	23
TC200-90-04-6	18.5	25		75.5	70	68	66	64	60	56	48	29.5
TC200-90-04-6	22	30		80	75	73	71	70	68	62	52	34
TC200-90-05-6	26	35		92	88	87	85	83	80	75	61	38
TC200-90-05-6	30	40		102	98	96	94	92	89	85	79.5	46
TC200-90-06	37	50		114	109	107	105	103	100	95	88	58
TC200-90-08	45	60		156.5	150	147	143	138	132	128	120	84
TC200-90-10	55	75		174.5	185	181	176	171	164	158	148	119
TC200-90-13	75	100		250	240	235	230	225	218	208	200	164
TC200-90-17	93	125		324	312	306	299	291	282	272	260	224

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-90-01-6	5.5	7.5	195	660	66.00
TC200-90-02-6	9.3	12.5	195	790	69.00
TC200-90-02-6	11	15	195	790	69.00
TC200-90-03-6	15	20	195	920	81.00
TC200-90-03-6	18.5	25	195	920	81.00
TC200-90-04-6	18.5	25	195	1050	93.00
TC200-90-04-6	22	30	195	1050	93.00
TC200-90-05-6	26	35	195	1180	105.00
TC200-90-05-6	30	40	195	1180	105.00
TC200-90-06-6	37	50	195	1310	130.00
TC200-90-08	45	60	195	1570	147.00
TC200-90-10	55	75	195	1830	172.00
TC200-90-13	75	100	195	2220	209.00
TC200-90-17	93	125	195	2740	259.00



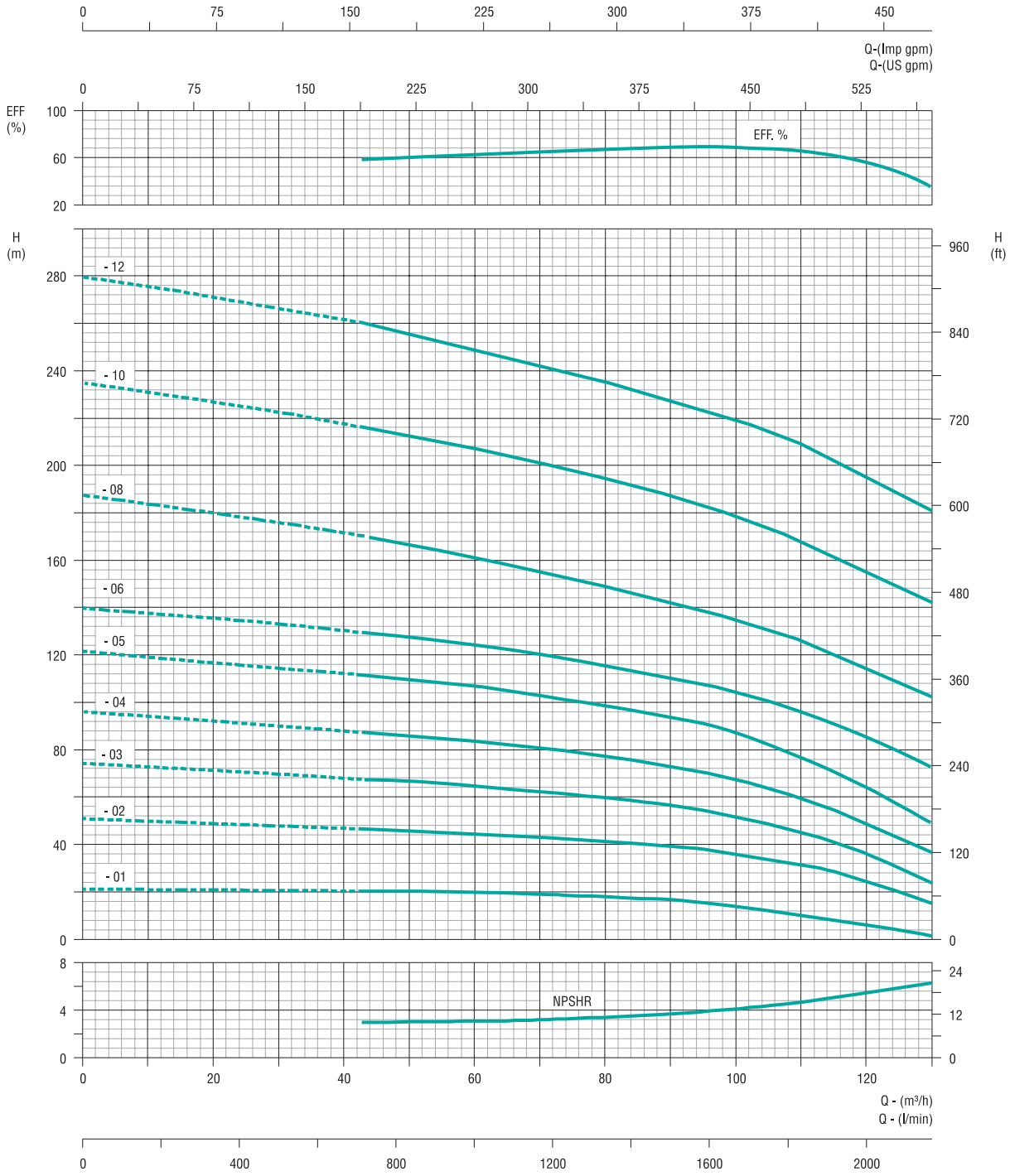
Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › **8"** › **100 m³/h**

Model : **TC 200 - 100** Outlet Size : **5" / 6"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

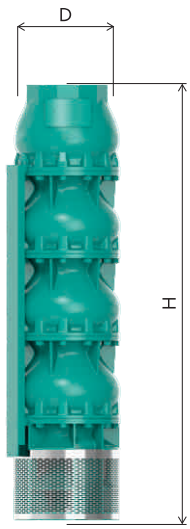
CB SERIES › 8" › 100 m^3/h

Model : **TC 200 - 100** Outlet Size : **5" / 6"** **2900 rpm**

Pump Model	Power		lpm	0	666.7	833.4	1000.0	1066.7	1500.0	1833.4	2166.7
	kW	HP	m^3/h	0	40	50	60	70	90	110	130
TC200-100-01-6	7.5	10	TOTAL DYNAMIC HEAD IN METRES	21	20.50	20	20	19	16	10	3
TC200-100-02-6	15	20		51	47	46	45	43	39	32	15
TC200-100-03-6	22	30		74	68	66	65	63	56	45	24
TC200-100-04-6	30	40		96	88	86	84	81	73	60	36
TC200-100-05	37	50		122	112	110	106	103	94	76	49
TC200-100-06	45	60		140	130	127	125	120	110	96	73
TC200-100-08	55	75		188	171	166	161	155	142	125	104
TC200-100-10	75	100		235	218	212	207	201	187	168	142
TC200-100-12	93	125		280	262	255	250	243	228	209	181

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-100-01-6	7.5	10	195	660	90.00
TC200-100-02-6	15	20	195	790	99.00
TC200-100-03-6	22	30	195	920	106.00
TC200-100-04-6	30	40	195	1050	114.00
TC200-100-05	37	50	195	1180	122.00
TC200-100-06	45	60	195	1310	130.00
TC200-100-08	55	75	195	1570	147.00
TC200-100-10	75	100	195	1830	172.00
TC200-100-12	93	125	195	2090	197.00



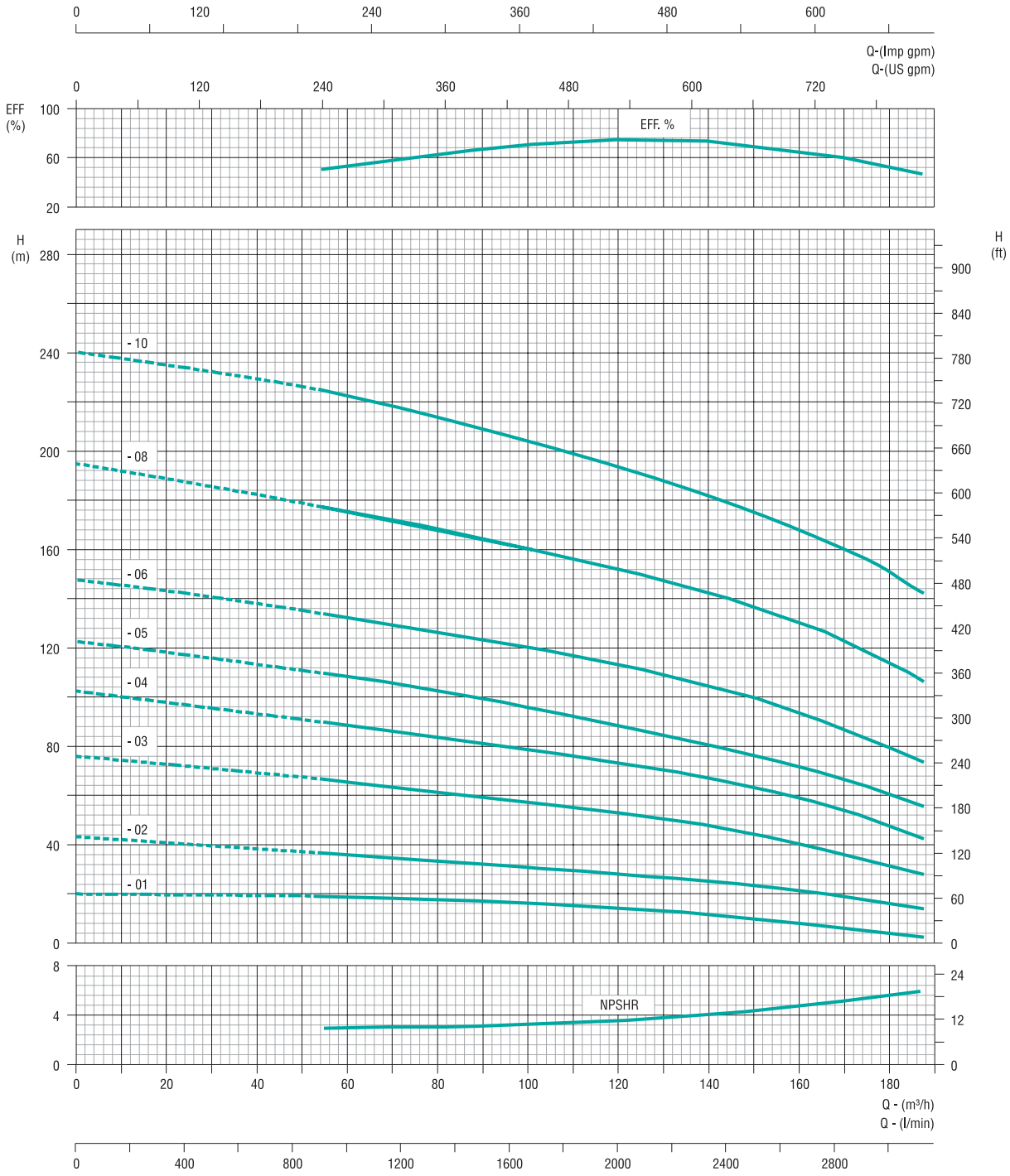
Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

PERFORMANCE CURVES

CB SERIES › 8" › 125 m³/h

Model : **TC 200 - 125** Outlet Size : **5" / 6"** **2900 rpm**



Curve tolerance as per ISO : 9906, Annex - A. * Performance @ 3m minimum submergence.

PERFORMANCE DATA

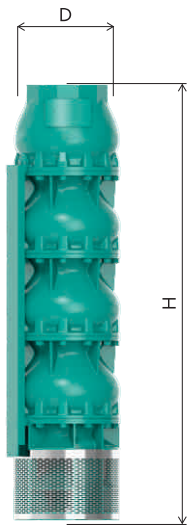
CB SERIES › 8" › 125 m^3/h

Model : **TC 200 - 125** Outlet Size : **5" / 6"** **2900 rpm**

Pump Model	Power		lpm	0	1000.0	1333.4	1666.7	2000.0	2333.4	2666.7	3000.0
	kW	HP	m^3/h	0	60	80	100	120	140	160	180
TC200-125-01-6	9.3	12.5	TOTAL DYNAMIC HEAD IN METRES	20	19	18	17	15	12	8	4
TC200-125-02-6	18.5	25		44	36	34	31	28	26	22	17
TC200-125-03-6	30	40		76	66	62	58	53	48	40	32
TC200-125-04	37	50		102	88	84	79	74	68	59	48
TC200-125-05	45	60		122	108	103	96	88	81	72	60
TC200-125-06	55	75		148	133	127	120	113	105	94	80
TC200-125-08	75	100		194	175	168	160	152	142	130	114
TC200-125-10	93	125		240	223	213	204	193	180	168	171

Nett Weights & Dimensions

Pump Model	Power		Dimensions in mm		Nett Weight (kg)
	kW	HP	D	H	
TC200-125-01-6	9.3	12.5	197	670	66.00
TC200-125-02-6	18.5	25	197	810	74.50
TC200-125-03-6	30	40	197	950	83.00
TC200-125-04	37	50	197	1090	91.50
TC200-125-05	45	60	197	1230	100.00
TC200-125-06	55	75	197	1370	108.50
TC200-125-08	75	100	197	1650	123.50
TC200-125-10	93	125	197	1930	142.50



Pump Height(H) and Weight(Kg) are approximate.

All performance data is based on rated input.

CABLE SELECTION CHART

For Single Phase 3 wire (D.O.L.) Motor Maximum Length of Copper Cable

Motor Rating			CABLE SIZE IN SQUARE MILLIMETRES											
VOLTS	kW	HP	1.5	2.5	4	6	10	16	25	35	50	70	95	
230 VOLT 50Hz	0.37	0.5	120	200	320	480	810	1260	1900	2590	3580	4770	5920	**MAXIMUM LENGTH IN METRES**
	0.55	0.75	80	1030	220	320	550	850	1290	1760	2430	3230	4000	
	0.75	1.0	60	100	170	250	430	670	1010	1380	1910	2550	3460	
	1.1	1.5	40	70	120	180	300	470	710	980	1360	1850	2320	
	1.5	2.0	30	60	90	130	230	360	550	760	1060	1440	1820	
	2.2	3.0		40	60	90	150	230	350	490	680	920	1160	

For Three Phase 3 wire (D.O.L.) Motor Maximum Length of Copper Cable

Motor Rating			CABLE SIZE IN SQUARE MILLIMETRES																		
VOLTS	kW	HP	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	500	630
380 - 415 VOLT 50Hz	0.37	0.5	473	788	1260																
	0.55	0.75	398	660	1050																
	0.75	1	311	518	825																
	1.1	1.5	203	338	533	795															
	1.5	2	161	270	428	638															
	2.2	3	113	188	300	450	731														
	3	4	86	143	233	345	566	885													
	3.7	5	71	120	188	285	465	735													
	4	5.5	67	113	176	263	435	683	1043												
	4.5	6	64	105	169	255	420	653	998	1358											
	5.5	7.5	53	83	135	203	330	518	795	1088											
	7.5	10	38	60	98	150	233	375	563	773											
	9.3	12.5		53	83	128	210	330	503	683	938										
	11	15		45	75	105	173	278	413	563	795	1058									
	13	17.5			60	83	150	233	353	488	668	885									
	15	20			53	75	128	203	308	428	593	788	1005								
	18.5	25				60	105	158	248	338	461	615	788	938							
	22	30					90	135	210	285	398	533	675	810	953						
	26	35					75	113	173	233	330	458	578	705	825	953					
	30	40					68	98	158	210	300	390	503	585	698	803	938				
	37	50						83	128	173	240	315	405	480	563	645	758	863			
	45	60							105	143	195	270	345	420	503	585	698	795			
	55	75								120	165	218	285	353	413	480	570	656			
	63	85								109	150	173	255	315	368	428	503	578			
	75	100									120	165	218	263	308	353	420	480	563		
	93	125										135	173	210	248	285	338	383	450		
	110	150											150	180	218	248	300	345	405	454	
	130	175											128	154	188	218	255	300	345	398	439
	150	200												135	161	188	225	263	311	349	386
	166	225													135	165	195	225	263	300	334
	185	250														150	180	210	248	278	311
	220	300															143	165	191	215	237
	260	350																143	165	188	206
	300	400																124	143	158	180

MAXIMUM LENGTH IN METRES

The given cable lengths are the maximum one from POWER TO MOTOR, Exceeding the lengths mentioned will void warranty.

CABLE SELECTION CHART

For Three Phase 6 wire (S.D.) Motor Maximum Length of Copper Cable

Motor Rating			CABLE SIZE IN SQUARE MILLIMETRES																		
VOLTS	kW	HP	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	500	630
380 - 415 VOLT 50Hz	5.5	7.5	91	143	234	351	572	896	1377	1884											
	7.5	10	65	104	169	260	403	650	974	1338											
	9.3	12.5		91	143	221	364	572	870	1182	1624										
	11	15		78	130	182	299	481	714	974	1377	1832									
	13	17.5			104	143	260	403	611	844	1156	1533									
	15	20			91	130	221	351	533	740	1026	1364	1741								
	18.5	25				104	182	273	429	585	799	1065	1364	1624							
	22	30					156	234	364	494	688	922	1169	1403	1650						
	26	35					130	195	299	403	572	792	1000	1221	1429	1650					
	30	40					117	169	273	364	520	675	870	1013	1208	1390	1624				
	37	50						143	221	299	416	546	701	831	974	1117	1312	1494			
	45	60							182	247	338	468	598	727	870	1013	1208	1377			
	55	75								208	286	377	494	611	714	831	987	1137			
	63	85								188	260	299	442	546	637	740	870	1000			
	75	100									208	286	377	455	533	611	727	831	974		
	93	125										234	299	364	429	494	585	662	779		
	110	150											260	312	377	429	520	598	701	786	
	130	175											221	266	325	377	442	520	598	688	760
	150	200												234	279	325	390	455	539	604	669
	166	225													234	286	338	390	455	520	578
	185	250														260	312	364	429	481	539
	220	300															247	286	331	372	410
	260	350																247	286	325	357
	300	400																214	247	273	312

MAXIMUM LENGTH IN METRES

The given cable lengths are the maximum one from POWER TO MOTOR, Exceeding the lengths mentioned will void warranty.

FRICTION LOSS CHART

Friction loss in metres for 10 metres long new steel galvanized pipe (C=140)

Nominal Pipe Outer dia in mm / inches Volume rate of flow lps	25/ 1"	32/ 1¼"	40/ 1½"	50/ 2"	65/ 2½"	80/ 3"	100/ 4"	125/ 5"	150/ 6"
0.50	0.364								
1.00	1.315	0.341							
1.25	1.988	0.516	0.246						
1.60	3.140	0.814	0.388						
2.00		1.231	0.587						
2.50		1.861	0.888	0.282					
3.2		2.940	1.402	0.446	0.126				
4.0			2.120	0.674	0.190				
5.0			3.205	1.019	0.288				
8.0				2.433	0.887	0.313			
10.0				3.678	1.038	0.474	0.131		
12.5					1.570	0.716	0.198		
16					2.479	1.131	0.312	0.111	
20					3.747	1.710	0.472	0.167	
25						2.585	0.713	0.253	0.106
32						4.033	1.127	0.400	0.157
40							1.704	0.605	0.252
50							2.576	0.914	0.351
60								1.281	0.534
80								0.182	0.910
100								3.299	1.376
125									0.051

Friction loss in metres for 10 metres long new RPVC pipe (C=150)

Nominal Pipe Outer dia in mm / inches Volume rate of flow lps	40/ 1½"	50/ 2"	63/ 2½"	75/ 3"	90/ 3½"	110/ 4¼"	125/ 5"	140/ 5½"	160/ 6¼"
0.50	0.074								
1.00	0.268								
1.25	0.405	0.131							
1.60	0.640	0.211							
2.00	0.967	0.310							
2.50	1.462	0.483	0.150						
3.20	2.309	0.762	0.250	0.106					
4.0	3.491	1.153	0.377	0.160					
5.0		1.742	0.571	0.242					
8.0		4.161	1.363	0.577	0.237				
10.0			2.060	0.873	0.358	0.133			
12.5			3.114	1.319	0.542	0.201			
16			4.919	2.084	0.856	0.317	0.172		
20				3.151	1.293	0.479	0.260		
25					1.955	0.725	0.362	0.225	0.117
32					3.089	1.145	0.020	0.355	0.184
40						1.731	0.937	0.537	0.279
50						2.617	1.416	0.812	0.421
60						3.008	1.985	1.138	0.590
80							3.382	1.939	1.006
100								2.931	1.521
125									2.299

FRICTION LOSS CHART

Permissible ranges of volume rates of flow in l/s through Galvanized Steel Pipe to limit Friction Losses to 10 Percent of the Pipe Length.

Grade →	Light	Medium	Heavy
Nominal pipe dia in mm ↓	Rate of flow in lps	Rate of flow in lps	Rate of flow in lps
40	1.90 - 2.74	1.79 - 2.67	1.59 - 2.41
50	2.74 - 5.24	2.67 - 4.95	2.41 - 4.54
65	5.24 - 9.97	4.95 - 9.80	4.54 - 9.17
80	9.97 - 15.54	9.80 - 14.97	9.17 - 14.20
100	15.54 - 30.84	14.97 - 30.0	14.20 - 28.67
125	-	30.0 - 52.50	28.67 - 51.37
150	-	52.50 - 84.18	51.37 - 82.63

Permissible ranges of volume rates of flow in l/s through RPVC Pipe to limit Friction Losses to 10 Percent of the Pipe Length.

Grade →	Class (0.25Mpa)	Class (0.4Mpa)	Class (0.6Mpa)
Nominal pipe dia in mm ↓	Rate of flow in lps	Rate of flow in lps	Rate of flow in lps
40	-	-	Up to 2.04
50	-	-	2.04 - 3.70
63	-	3.80 - 7.24	3.70 - 6.77
75	-	7.24 - 11.47	6.77 - 10.76
90	1.50 - 19.58	11.47 - 18.50	10.76 - 17.41
110	19.58 - 33.25	18.59 - 31.71	17.41 - 29.75
125	33.25 - 46.63	31.71 - 44.33	29.75 - 41.44
140	46.63 - 62.92	44.33 - 59.79	41.44 - 55.97
160	62.92 - 89.28	59.79 - 84.95	55.97 - 79.76

CONVERSION CHART

FLOW RATE

litre per second l/s	litre per minute l/min	cubic meter per hour m^3/h	cubic foot per hour ft^3/h	cubic foot per minute ft^3/min	Imp.gallon per minute Imp.gal./min	US gallon per minute Us gal./min	Us barrel per day Is barrel/d (Petroleum)
1	60	3.6	127.133	2.1189	13.2	15.85	543.439
0.017	1	0.06	2.1189	0.0353	0.22	0.264	9.057
0.278	16.667	1	35.3147	0.5886	3.666	4.403	150.955
0.008	0.472	0.0283	1	0.0167	0.104	0.125	4.275
0.472	28.317	1.6990	60	1	6.229	7.480	256.475
0.076	4.546	0.2728	9.6326	0.1605	1	1.201	41.175
0.063	3.785	0.2271	8.0209	0.1337	0.833	1	34.286
0.002	0.110	0.0066	0.2339	0.0039	0.024	0.029	1

LIQUID

Cubic meter m^3	litre l	Milli litre ml	Imp. gallon Imp. Gal	US gallon US gal	cubic foot ft^3
1	1000	1×10^6	220	264.2	35.3147
0.001	1	1000	0.22	0.2642	0.0353
1×10^{-6}	0.001	1	2.2×10^{-4}	2.642×10^{-4}	3.53×10^{-5}
0.00455	4.546	4546	1	1.201	0.1605
0.00378	3.785	3785	0.8327	1	0.1337
0.0283	28.317	28317	6.2288	7.4805	1

LIQUID HEAD AND PRESSURE

newton per square meter N/m^2 (Pa)	kilo pascal kPa	bar bar	kilogram force per square centimeter Kgf/cm2	pound force per square inch psi	foot for water ft HO	meter of water m HO	millimeter of mercury mm Hg	inch of mercury in Hg
1	0.001	1×10^{-5}	1.02×10^{-5}	1.45×10^{-4}	3.35×10^{-4}	1.02×10^{-4}	0.0075	2.95×10^{-4}
1000	1	0.01	0.0102	0.145	0.335	0.102	7.5	0.295
1×10^{-5}	100	1	1.02	14.5	33.52	10.2	750.1	29.53
98,067	98.07	0.981	1	14.22	32.81	10	735.6	28.96
6895	6.895	0.069	0.0703	1	2.31	0.703	51.72	2.036
2984	2.984	0.03	0.0305	0.433	1	0.305	22.42	0.882
9789	9.789	0.098	0.1	1.42	3.28	1	73.42	2.891
133.3	0.133	0.0013	0.0014	0.019	0.045	0.014	1	0.039
3386	3.386	0.0338	0.0345	0.491	1.133	0.0345	25.4	1

LENGTH

millimeter mm	centimeter cm	meter m	inch in	foot ft	yard yd
1	0.1	0.001	0.0394	0.0033	0.0011
10	1	0.01	0.3937	0.0328	0.0109
1000	100	1	39.3701	3.2808	1.0936
25.4	2.54	0.0254	1	0.0833	0.0278
304.8	30.48	0.3048	12	1	0.3333
914.4	91.44	0.9144	36	3	1

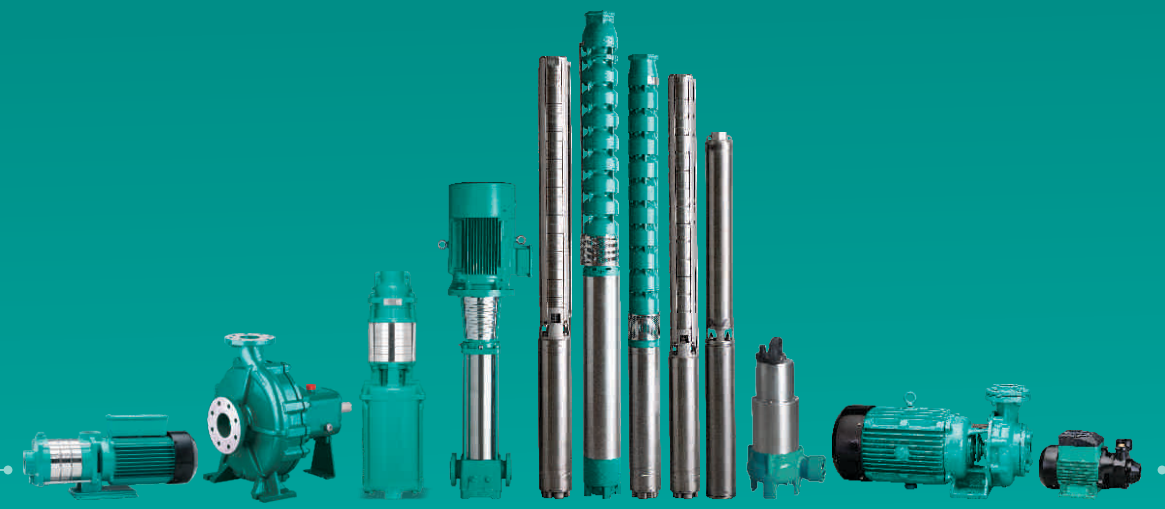
1 Kilometer = 1000 metres = 0.62137 miles 1 mile = 1609.37 metres =- 1.60934 kilometers

MASS

kilogram kg	pound lb	hundred weight (cwt)	tonne t	ton long tn	short ton sh tn
1	2.205	0.0197	0.001	9.84×10^{-4}	0.0011
0.454	1	0.0089	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}
50.802	112	1	0.0508	0.05	0.056
1000	2204.6	19.684	1	0.9842	1.1023
1016	2240	20	1.0161	1	1.102
907.2	2000	17.857	0.9072	0.8929	1

TEMPERATURE

To Convert From	To	Use Formula
Temperature Celsius, tc	Temperature Kelvin, tk	K = tc + 273.15
Temperature Fahrenheit, tf	Temperature Kelvin, tk	K = (tF + 459.67 / 1.8)
Temperature Celsius, tc	Temperature Fahrenheit, tf	F = 1.8 tc + 32
Temperature Fahrenheit, tf	Temperature Celsius, tc	C = (tF - 32) / 1.8
Temperature Kelvin, tk	Temperature Celsius, tc	C = tk - 273.15
Temperature Kelvin, tk	Temperature Fahrenheit, tf	F = 1.8tk - 459.67



THE POWER BEHIND THE FORCE

Naargo Industries Private Limited, one of the leading manufacturers of latest state of art, large range of pumps and motors, is managed by veterans who are in the pump industry for almost half a century. The products are employed in various applications like irrigation, domestic, civil construction, de-watering etc; The Company has a strong distribution network in India for sales & service and a strong global presence.

Quality is the key factor in Naargo's products. The expansive infrastructure and environment accredited with ISO 9001 quality certification, latest engineering softwares, high-tech machinery, futuristic pumping technology and high caliber workforce facilitate the production of flawless and efficient products on par with international standards under the brand name of "Tormac". The well equipped R & D wing stays alive to the changing global trends and comes out with viable solutions for innovative product development and upgradation.

The Products currently available include Stainless Steel Submersible Pumps, 4" Thermoplastic Submersible Pumps, 6" & 8" Cast Iron Submersible Pumps, Submersible Motors and Controls, Centrifugal Pumps, Inline Booster Pumps, Jet Self-priming Pumps and Peripheral Pumps.

The power, performance and endurance of the products backed by the uncompromising teamwork and value systems will certainly propel the company's growth towards new horizons in the pump industry.

IC-CIC-K/19-E2

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Tormac PUMPS