

Schedule of rates
For
Mechanical – Electrical works



PUBLIC HEALTH ENGINEERING DEPARTMENT

GOVERNMENT OF WEST BENGAL

NOVEMBER – 2021



PREFACE

With a view to prepare a common schedule of Rates (SOR) for frequently used electro-mechanical works under PHE Dte. Like supply, installation of pumping machineries, electrical panels & others accessories, which will be applicable for all Divisions under all circles of PHE Dte. in different district of West Bengal, a Schedule Committee was formed for finalizing the Schedule of Rates in terms of G.O. No. PHE/IV/2018/W-108/2020 dated. 04-12-2020.

It may be noted that rates for various items of electrical works which are already covered under SOR of West Bengal PHE (Mechanical / Electrical) – July 2019 (vide G.O. No. PHE/1723/IT-10/189 dated. 08-08-2018) which was further modified in September 2021

Rate for rate for Single Phase / 3 Phase Submersible Pump sets & rate for Single Phase Starter Panel (PLC based) were not included in the modified SOR September – 2021.

Hence, schedule for Single Phase / 3 Phase Submersible Pump sets & Single Phase Starter Panel micro-processor based and (PLC based) for different W/S Scheme are prepared.

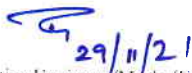
For items like i) Schedule of Rates for Wiring with PVC Insulated & Unsheathed Copper Wires in PVC Rigid Conduit, ii) Schedule of Rates for Earthing Installation, iii) Schedule of Rates for Installation of Lightning Conductor, iv) Schedule of Rates for Fixing of Approved Materials (Main Switch, Distribution Boards, Fittings, Fans etc.), etc rates are taken from PWD Schedule of Rates (Electrical Works) Vol. I November 2017.

In order to arrive at the rate, the prevailing market rates have been considered along with carrying & forwarding charges @ 5% & contractor's profit @ 10%. GST as applicable will have to be added to the rate of any item of this SOR in order to arrive at the final rate of that item for preparation of estimate of supply work or GST @ 12% & Labour Cess @ 1% are to be added at the end of the estimate for any composite work.

Extra rates, in the form of Riverine Charges, will be allowed in respect of all scheduled items to overcome the difficulties encountered in riverine areas. The Riverine charges will be applicable to sites connected through ferry crossing only as per the following rates and in addition to district charges :-

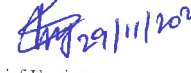
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|------|------------------------------------|----|
| (i) | For crossing a single river. | 5% |
| (ii) | For crossing each additional river | 5% |

Enhancement of rate by 5% every year is to be considered.


29/11/21
Executive Engineer (Mech./Elec.)
PIU, North 24-Parganas,
WBDWSIP, P.H.Engg. Dte.
Govt. of West Bengal.


29/11/2021
Superintending Engineer,
Mech./Elec.,
P.H.Engg. Dte.
Govt. of West Bengal.


29/11/21
Superintending Engineer,
Planning Circle-I,
P.H.Engg. Dte.
Govt. of West Bengal.


29/11/2021
Chief Engineer
(Mech./Elec.),
Southern Zone,
P.H.Engg. Dte.
Govt. of West Bengal.


30/11/2021
Chief Engineer,
Planning & WQM,
and Chairman, SOR Committee
P.H.Engg. Dte.
Govt. of West Bengal.

Single Phase Submersible Pump Controller (Microprocessor Based)
Without Water Level Control

SI No.	Item	Unit	Rate in Rs.
1	Supply and delivery of direct on line (DOL) strater panel board conforming to IS13947 and IEC 947 of suitable HP rating for operation in 230V ($\pm 10\%$) AC, single phase, 50HZ($\pm 5\%$) comprising of ammeter, voltmeter, thermal overload relay, 2 pole magnetic contactor, under voltage protection, indicating lamp, capacitors, on/off push buttons including 5 way connector, wiring with 1/1.5 sq. mm PVC insulated copper wire, powder coated vermin proof box of following capacities:-		
(i)	1 H.P. (Relay Range 6-10 Amp.)	Each	4503.00
(ii)	1.5 H.P. (Relay Range 9-14 Amp.)	Each	4850.00
(iii)	2 H.P. (Relay Range 11-18 Amp.)	Each	5105.00
(iv)	3 H.P. (Relay Range 13-22 Amp.)	Each	5643.00

- 1) Above rates are basic rates only
- 2) GST Extra as applicable

SINGLE PHASE SUBMERIBLE PUMP CONTROLLER
(Microprocessor Based)
WITH WATER LEVEL CONTROL

Sl No.	Item	Unit	Rate in Rs.
1	Supply and delivery of direct on line (DOL) strater panel board conforming to IS13947 and IEC 947 of suitable HP rating for operation in 230V (±10%) AC, single phase, 50HZ(±5%) comprising of ammeter, voltmeter, thermal overload relay, 2 pole magnetic contactor with in built water level control , under voltage protection, indicating lamp, capacitors, on/off push buttons including 5 way connector, wiring with 1/1.5 sq. mm PVC insulated copper wire, powder coated vermin proof box of following capacities:-		
(i)	1 H.P. (Relay Range 6-10 Amp.)	Each	9147.00
(ii)	1.5 H.P. (Relay Range 9-14 Amp.)	Each	9602.00
(iii)	2 H.P. (Relay Range 11-18 Amp.)	Each	9818.00
(iv)	3 H.P. (Relay Range 13-22 Amp.)	Each	10170.00

- 1) Above rates are basic rates only
- 2) GST Extra as applicable

PDB cum MCC wall mounted Panel (Single Phase)
with PLC Logic

Sl. No.	DESCRIPTION	Approved Rate (Including all charges except GST)
1.	Supply & delivery of 230 V MCC cum PDB. with minimum 2mm thickness and degree of protection IP-54, conforming to IS-8623 with suitable Bus bar, Digital Voltmeter Ammeter, Contactor, delay timer, MCB, Valve Actuator starter etc. with PLC Logic as detailed in Annexure a) 1-3 HP with DOL (Direct On-line) starter (Detailed specified in Annexure).	1,24,740.00

- 1) Above rates are basic rates only
- 2) GST Extra as applicable

ANNEXURE

Technical specifications and feeder details of PDB cum MCC wall mounted Panel (Single Phase 1-3 HP DOL)

- 1.01 230V MCC cum PDB shall comprise of factory assembled switch board for indoor installation. The board shall be totally enclosed, metal clad, dead front, cubicle type. Sheet metal thickness shall be minimum 2mm and degree of protection shall be IP-54. Front door of the panel shall be hinged type with neoprene rubber gasket. All cubicle doors shall be interlocked with switch handle so that doors cannot be opened without putting the switch in the off position. All hinged doors shall be earthed by means of flexible copper wires. All outgoing feeders will be designed for receiving cables from bottom of the MCC. All bare current carrying parts at 230V in accessible location shall be properly shrouded to avoid any accidental contact. The panel shall conform to IS-8623.
- 1.02 The panel shall be suitable for wall mounting. Feeder/ board labels shall be made out of black anodized Aluminum plate with engraved letters.
- 1.03 All meters shall be digital type and all indicating lamps cluster LED type. All meters will have class 1.0 accuracy.
- 1.04 All control, CT circuit and instrumentation wiring shall be of 1.1KV grade, PVC insulated 2.5sq. Mm. stranded flexible copper wires (FRLSH).
- 1.05 Both inside and outside of the panel shall be painted by means of synthetic enamel paint using powder coating method. Paint shade shall be RAL-7032.
- 1.06 Starters of pump and chlorinator shall be suitable for both in manual and auto mode through PLC.
- 2.00 Bus Bars :
The bus bars of the 230V PDB cum MCC will be air insulated and made of E91E grade Aluminum of adequate cross-section so that temperature rise is limited to 35°C over an ambient temperature of 50°C and shall be PVC sleeved (1.1KV Grade) with proper marking. The main bus bars are suitably braced with non-hygroscopic Glass Fibre Reinforced Polyester (FRP) supports/ SMC supports to provide a through fault withstand capacity of 25KA RMS symmetrical for 1 sec. Bus bar supports shall be spaced not more than 250mm. Even neutral bus bars and earth bars shall have to be designed for 25KA RMS as per requirements to IS: 8623 on factory built assemblies. Adequate numbers of floating sturdy supports are to be provided to brace the bus bars against fault conditions. Maximum current density of bus bar shall be 1A/ sq. mm. Minimum rating of bus bars shall be equal to the incoming breaker rating. Phase to Earth Gap & Phase to Neutral/ Earth Gap shall be 32mm and 26mm respectively. Starters of the panel shall be manual as well as PLC operated.

Feeder Details:-

AUTO/MANUAL 3HP SINGLE PHASE STARTER PANEL			
Qty.	Description	RATING	Quantity (Nos. /Set)
A.	INCOMER COMPRISING OF:		
1	MCCB, TMD, TP (WITH O/L,S/C TRIPS)	63A, 25KV	1
2	DIGITAL AMMETER 96 SQ. MM.	0-60A	1
3	DIGITAL VOLT METER 96 SQ. MM.	0-300V AC	1
4	CT 60/5A,15VA,CL-I TAPE WOUND	60/5A	1
5	INDICATION LAMPS LED TYPE (Red)	230V	1
6	MCB,SP FOR CONTROL	6A	1
7	EMERGENCY PUSH BUTTON	10A	1
B.	1-3HP SINGLE PHASE DOL STARTER- 1 NO. COMPROSING OF:		
1	MCB,DP	20A	1
2	BI-METALIC THERMAL O/L RELAY	13-19A	1
	MOUNTING KIT (FOR ABOVE OLR)		1
3	POWER CONTACTOR, 3P (MAIN)	18A	1
4	1 NO AUX. CONTACT for above Contactor		2
5	POWER CONTACTOR, 3P (FOR START CAP.)	9A	1
6	ON DELAY TIMER,230V AC	3Sec.-3Hrs.	1
7	CAPACITOR,230V AC (FOR START)	150-200MFD	1
8	CAPACITOR,230V AC (FOR RUN)	72-100MFD	1
9	MCB, SP FOR CAPACITOR	6A	1
10	NORMAL P.B SWITCH, GREEN	10A	1
11	NORMAL P.B SWITCH, RED	10A	1
12	AUTO/MANUAL SWITCH (1P,2WAY)	10A	1
13	INDICATING LAMP LED TYPE (R,G,A)	230V	3
14	MCB,SP FOR CONTROL	6A	1
15	P.TERMINAL 2WAY	50A	1

Qty.	Description	RATING	Quantity (Nos. /Set)
C.	SINGLE PHASE CHLORINATOR STARTER- 1 NO. COMPRISING OF:		
1	DP MCB	16A	1
2	POWER CONTACTOR, 3P	9A	1
3	1 NC AUX. CONTACT for above Contactor		1
4	BI-METALLIC OVERLOAD RELAY	6-8.5A	1
	MOUNTING KIT FOR ABOVE RELAY		1
5	INDICATING LAMPS LED TYPE (ON,OFF,TRIP)	230V	3
6	NORMAL PUSH.BUTION (GREEN)	10A	1
7	NORMAL PUSH.BUTION (RED)	10A	1
8	LEVEL CONTROLLER FOR CHLORINATOR TANK	230V	1
9	ON DELAY TIMER	230V	1
10	MCB,SP FOR CONTROL	6A	1
11	P.TERMINAL 2WAY	15A	1
D.	LOGIC CONTROLLING SET -1 NO. COMPRISING OF:		
1	SP MCB FOR CONTROL	2A	1
2	PLC DI/DO 8/4	24V DC	1
3	4 CHANNEL RELAY BOARD	24V DC	1
4	SMPS (230V AC/24V DC,2.5A)	2.5A	1
5	INDICATING LAMPS LED TYPE (ON)	230V	1
6	CONTROL TERMINAL	2.5 SQ, MM.	12
E.	INTERNAL LIGHT - 1NO. COMPRISING OF:		
1	MCB,DP FOR AREA LIGHT	32A	1
2	P.TERMINAL 4WAY FOR AREA LIGHT	150A	1
F.	YARD LIGHT-1 NO. COMPRISING OF:		
1	DP MCB	16A	1
2	POWER CONTACTOR, 3P	9A	2
3	1 NC AUX. CONTACT for above Contactor		1
4	INDICATING LAMPS LED TYPE (ON)	230V	1
5	MCB,SP FOR CONTROL	6A	1
6	24 Hrs. Clock Timer (Digital)	230V AC	1
7	AUTO/MANUAL SELECTOR SWITCH	10A	1
8	P.TERMINAL 2WAY	50A	1

Single Phase Submersible Pump set A Per Latest BIS (Without Panel Board)

Sl No.	Item							
A	Supply and delivery of clear water vertical wet type submersible pump suitable for bore well conforming to IS : 8034 (and as amended thereafter) with standard MOC for potable clear cold water and BEE 3 Star Rated capable of discharging noted M ³ /hr against head of water column. The pump shall be directly coupled with a continuous rated 2- pole suitable wet type vertical squirrel cage induction motor conforming to IS : 9283 (and as amended thereafter), suitable for operation in AC Single phases 220 V, 50HZ (category B motor)							
	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge(Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
1	100 mm	1	21	90	1.1	32	Each	18531.00
2	100 mm	1	25	105	1.1	32	Each	19352.00
3	100 mm	1	13	58	1.8	32	Each	23928.00
4	100 mm	1	15	65	1.8	32	Each	24335.00
5	100 mm	1	9	51	1.8	32	Each	16131.00
6	100 mm	1	10	56	1.8	32	Each	16689.00
7	100 mm	1	11	62	1.8	32	Each	23662.00
8	100 mm	1	8	38	3	38	Each	16107.00
9	100 mm	1	9	43	3	38	Each	16220.00
10	100 mm	1	10	48	3	38	Each	16528.00
11	100 mm	1	7	45	2.5	38	Each	16045.00
12	100 mm	1	8	51	2.5	38	Each	16088.00
13	100 mm	1	9	58	2.5	38	Each	16403.00
14	100 mm	1	8	42	3.5	38	Each	15828.00
15	100 mm	1	6	32	3.5	38	Each	20860.00
16	100 mm	1	5	31	5	38/50	Each	15403.00
17	75 mm	1	10	28	1.8	32	Each	15532.00
18	75 mm	1	15	41	1.8	32	Each	17468.00
19	75 mm	1	20	55	1.8	32	Each	20177.00
20	75 mm	1	15	42	2.4	32	Each	18662.00
21	75 mm	1	13	33	3.0	32	Each	18214.00
22	75 mm	1	16	30	3.6	32	Each	19532.00
23	75 mm	1	12	24	4.2	32	Each	18519.00
24	100 mm	1.5	30	125	1.1	32	Each	21314.00
25	100 mm	1.5	35	150	1.1	32	Each	25331.00
26	100 mm	1.5	18	78	1.8	32	Each	18927.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge(Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
27	100 mm	1.5	21	92	1.8	32	Each	19402.00
28	100 mm	1.5	23	100	1.8	32	Each	19747.00
29	100 mm	1.5	25	110	1.8	32	Each	20206.00
30	100 mm	1.5	12	68	1.8	32	Each	17981.00
31	100 mm	1.5	15	85	1.8	32	Each	18321.00
32	100 mm	1.5	12	58	3.0	38	Each	25683.00
33	100 mm	1.5	15	72	3.0	38	Each	26511.00
34	100 mm	1.5	10	65	2.5	38	Each	25219.00
35	100 mm	1.5	11	70	2.5	38	Each	25386.00
36	100 mm	1.5	12	78	2.5	38	Each	25547.00
37	100 mm	1.5	7	43	5	38/50	Each	17101.00
38	75 mm	1.5	30	86	1.8	32	Each	24623.00
39	75 mm	1.5	25	70	2.4	32	Each	23675.00
40	75 mm	1.5	18	48	3.0	32	Each	22059.00
41	75 mm	1.5	25	47	3.6	32	Each	24115.00
42	75 mm	1.5	18	36	4.2	32	Each	22879.00
43	100 mm	2	40	170	1.1	32	Each	32014.00
44	100 mm	2	45	195	1.1	32	Each	33894.00
45	100 mm	2	55	220	1.1	32	Each	35131.00
46	100 mm	2	27	120	1.8	32	Each	25188.00
47	100 mm	2	30	132	1.8	32	Each	26630.00
48	100 mm	2	21	118	1.8	32	Each	23439.00
49	100 mm	2	24	132	1.8	32	Each	24719.00
50	100 mm	2	18	86	3.0	38	Each	28885.00
51	100 mm	2	20	96	3.0	38	Each	29406.00
52	100 mm	2	14	90	2.5	38	Each	22320.00
53	100 mm	2	16	105	2.5	38	Each	22594.00
54	100 mm	2	15	78	3.5	38	Each	23532.00
55	100 mm	2	10	62	5.0	38/50	Each	22636.00
56	100 mm	2	7	34	9.0	50	Each	24280.00
57	100 mm	2	5	20	14.0	65	Each	23445.00
58	100 mm	3	33	145	1.8	32	Each	37378.00
59	100 mm	3	38	168	1.8	32	Each	38827.00
60	100 mm	3	45	200	1.8	32	Each	40981.00
61	100 mm	3	27	150	1.8	32	Each	31474.00
62	100 mm	3	30	168	1.8	32	Each	31965.00
63	100 mm	3	25	120	3.0	38	Each	32655.00
64	100 mm	3	29	139	3.0	38	Each	33656.00
65	100 mm	3	19	122	2.5	38	Each	30055.00
66	100 mm	3	22	142	2.5	38	Each	30483.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge(Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
67	100 mm	3	17	90	3.5	38	Each	30107.00
68	100 mm	3	19	100	3.5	38	Each	30618.00
69	100 mm	3	23	122	3.5	38	Each	31313.00
70	100 mm	3	12	73	5.0	38/50	Each	29366.00
71	100 mm	3	13	80	5.0	38/50	Each	29620.00
72	100 mm	3	15	92	5.0	38/50	Each	30099.00
73	100 mm	3	7	28	14.0	65	Each	31510.00
74	100 mm	3	8	32	14.0	65	Each	32068.00

- Pump should be selected as per required of Q & H.
- The pump should be selected on best efficiency points.
- Any changes in this parameter will be treated for selection of different pump series.
- The pump should be ISI Marked.
- The pump should be as per latest BIS.
- Preferably selected with less no. of stages.
- Sample graph is attached for ready reference.

- 1) Above rates are basic rates only
- 2) GST Extra as applicable

Three Phase Submersible Pump set As Per Latest BIS Without Panel Board

Sl No.	Item							
A	Supply and delivery of clear water vertical wet type submersible pump suitable for bore well conforming to IS : 8034 (and as amended thereafter) with standard MOC for potable clear cold water and BEE 3 Star Rated capable of discharging noted M ³ /hr against head of water column. The pump shall be directly coupled with a continuous rated 2- pole suitable wet type vertical squirrel cage induction motor conforming to IS : 9283 (and as amended thereafter), suitable for operation in AC Three phases 415 V, 50HZ (category B motor)							
	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge (Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
1	150 mm	3	6	46	9.5	50 mm	Each	38196.00
2	150 mm	3	7	55	9.5	50 mm	Each	39212.00
3	150 mm	3	6	46	9.5	50 mm	Each	42278.00
4	150 mm	3	7	54	9.5	50 mm	Each	43116.00
5	150 mm	3	3	31	11	50 mm	Each	39575.00
6	150 mm	3	4	41	11	50 mm	Each	40460.00
7	150 mm	3	3	30	17	50 mm	Each	39592.00
8	150 mm	3	5	64	8.5	50 mm	Each	46441.00
9	150 mm	3	4	48	8.5	50 mm	Each	44439.00
10	150 mm	3	3	37	13.5	50 mm	Each	42148.00
11	150 mm	3	2	27	17	65 mm	Each	41016.00
12	150 mm	3	2	25	20	65 mm	Each	41090.00
13	150 mm	3	2	22	22	65 mm	Each	43266.00
14	150 mm	3	2	18	33	100 mm	Each	43179.00
15	150 mm	5	15	118	5.5	50 mm	Each	49131.00
16	150 mm	5	8	62	9.5	50 mm	Each	45467.00
17	150 mm	5	9	70	9.5	50 mm	Each	46297.00
18	150 mm	5	10	78	9.5	50 mm	Each	47126.00
19	150 mm	5	11	85	9.5	50 mm	Each	47950.00
20	150 mm	5	6	61	11	50 mm	Each	44407.00
21	150 mm	5	4	40	17	50 mm	Each	42922.00
22	150 mm	5	5	50	17	50 mm	Each	43832.00
23	150 mm	5	8	100	8.5	50 mm	Each	54623.00
24	150 mm	5	6	70	8.5	50 mm	Each	49630.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge (Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
25	150 mm	5	5	63	12.5	50 mm	Each	47190.00
26	150 mm	5	4	52	17	65 mm	Each	45597.00
27	150 mm	5	3	38	20	65 mm	Each	43874.00
28	150 mm	5	3	29	22	65 mm	Each	45492.00
29	150 mm	5	4	39	22	65 mm	Each	46781.00
30	150 mm	5	5	38	28	100 mm	Each	50784.00
31	150 mm	5	4	32	50	100 mm	Each	48232.00
32	150 mm	5	3	26	33	100 mm	Each	46870.00
33	150 mm	5	2	15	65	100 mm	Each	40370.00
34	150 mm	7.5	20	158	5.5	50 mm	Each	56055.00
35	150 mm	7.5	23	180	5.5	50 mm	Each	58194.00
36	150 mm	7.5	15	115	9.5	50 mm	Each	54651.00
37	150 mm	7.5	17	132	9.5	50 mm	Each	56367.00
38	150 mm	7.5	10	102	11	50 mm	Each	51160.00
39	150 mm	7.5	6	60	17	50 mm	Each	47984.00
40	150 mm	7.5	7	60	17	50 mm	Each	48882.00
41	150 mm	7.5	12	156	8.5	50 mm	Each	69411.00
42	150 mm	7.5	10	120	8.5	50 mm	Each	65502.00
43	150 mm	7.5	8	100	13.5	50 mm	Each	61306.00
44	150 mm	7.5	6	80	17	65 mm	Each	55865.00
45	150 mm	7.5	5	65	20	65 mm	Each	53793.00
46	150 mm	7.5	4	47	30	65 mm	Each	51812.00
47	150 mm	7.5	6	60	22	65 mm	Each	57125.00
48	150 mm	7.5	8	60	28	100 mm	Each	62405.00
49	150 mm	7.5	6	48	30	100 mm	Each	56534.00
50	150 mm	7.5	4	35	33	100 mm	Each	52576.00
51	150 mm	7.5	3	22	53	100 mm	Each	49864.00
52	150 mm	7.5	4	28	53	100 mm	Each	52551.00
53	150 mm	7.5	4	30	54	100 mm	Each	53345.00
54	150 mm	7.5	3	22	65	100 mm	Each	49873.00
55	175 mm	7.5	2	22	65	100 mm	Each	49434.00
56	175 mm	7.5	2	20	80	100 mm	Each	49710.00
57	175 mm	7.5	3	22	75	100 mm	Each	53589.00
58	200 mm	7.5	2	23	70	100 mm	Each	60462.00
59	150 mm	10	25	195	5.5	50 mm	Each	62282.00
60	150 mm	10	20	157	9.5	50 mm	Each	61259.00
61	150 mm	10	13	132	11	50 mm	Each	56304.00
62	150 mm	10	8	80	17	50 mm	Each	52107.00
63	150 mm	10	9	90	17	50 mm	Each	53097.00
64	150 mm	10	10	100	17	50 mm	Each	53953.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge (Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
65	150 mm	10	16	205	8.5	50 mm	Each	85727.00
66	150 mm	10	13	155	8.5	50 mm	Each	77277.00
67	150 mm	10	10	125	13.5	50 mm	Each	70849.00
68	150 mm	10	8	105	17	65 mm	Each	67077.00
69	150 mm	10	7	90	20	65 mm	Each	65218.00
70	150 mm	10	5	58	30	65 mm	Each	59325.00
71	150 mm	10	8	80	22	65 mm	Each	63801.00
72	150 mm	10	10	75	28	100 mm	Each	69047.00
73	150 mm	10	7	56	30	100 mm	Each	61832.00
74	150 mm	10	6	53	33	100 mm	Each	61057.00
75	150 mm	10	4	28	53	100 mm	Each	54875.00
76	150 mm	10	5	37	54	100 mm	Each	58008.00
77	150 mm	10	4	30	65	100 mm	Each	55474.00
78	175 mm	10	3	31	65	100 mm	Each	56583.00
79	175 mm	10	3	27	80	100 mm	Each	56708.00
80	200 mm	10	2	31	70	100 mm	Each	62882.00
81	200 mm	10	1	20	90	125 mm	Each	59351.00
82	200 mm	10	1	15	130	150 mm	Each	58318.00
83	150 mm	12.5	34	265	5.5	50 mm	Each	73763.00
84	150 mm	12.5	24	185	9.5	50 mm	Each	76476.00
85	150 mm	12.5	26	200	9.5	50 mm	Each	78138.00
86	150 mm	12.5	16	164	11	50 mm	Each	62532.00
87	150 mm	12.5	12	120	17	50 mm	Each	59261.00
88	150 mm	12.5	20	255	8.5	50 mm	Each	100120.00
89	150 mm	12.5	15	180	8.5	50 mm	Each	89639.00
90	150 mm	12.5	12	150	13.5	50 mm	Each	80902.00
91	150 mm	12.5	10	132	17	65 mm	Each	77417.00
92	150 mm	12.5	8	100	20	65 mm	Each	73085.00
93	150 mm	12.5	6	70	30	65 mm	Each	67355.00
94	150 mm	12.5	10	100	22	65 mm	Each	75056.00
95	150 mm	12.5	12	90	28	100 mm	Each	77618.00
96	150 mm	12.5	10	80	30	100 mm	Each	72512.00
97	150 mm	12.5	8	62	33	100 mm	Each	70815.00
98	150 mm	12.5	5	36	53	100 mm	Each	57680.00
99	150 mm	12.5	6	45	54	100 mm	Each	64959.00
100	150 mm	12.5	5	37	65	100 mm	Each	61284.00
101	175 mm	12.5	3	38	65	100 mm	Each	60821.00
102	175 mm	12.5	2	26	85	100 mm	Each	56973.00
103	175 mm	12.5	3	30	90	100 mm	Each	60947.00
104	200 mm	12.5	2	34	70	100 mm	Each	67166.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge (Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
105	200 mm	12.5	2	30	90	100 mm	Each	69330.00
106	200 mm	12.5	1	16	130	150 mm	Each	63250.00
107	150 mm	15	28	219	9.5	50 mm	Each	82807.00
108	150 mm	15	30	233	9.5	50 mm	Each	84513.00
109	150 mm	15	20	205	11	50 mm	Each	68271.00
110	150 mm	15	14	140	17	50 mm	Each	63293.00
111	150 mm	15	23	290	8.5	50 mm	Each	114653.00
112	150 mm	15	19	220	8.5	50 mm	Each	104310.00
113	150 mm	15	15	190	13.5	50 mm	Each	95853.00
114	150 mm	15	12	160	17	65 mm	Each	87757.00
115	150 mm	15	10	130	20	65 mm	Each	83633.00
116	150 mm	15	8	95	30	65 mm	Each	79653.00
117	150 mm	15	12	120	22	65 mm	Each	82592.00
118	150 mm	15	15	113	28	100 mm	Each	87271.00
119	150 mm	15	12	96	30	100 mm	Each	79512.00
120	150 mm	15	10	78	33	100 mm	Each	78728.00
121	150 mm	15	6	43	53	100 mm	Each	66045.00
122	150 mm	15	7	52	54	100 mm	Each	69772.00
123	150 mm	15	6	45	65	100 mm	Each	66593.00
124	175 mm	15	4	44	65	100 mm	Each	66599.00
125	175 mm	15	4	40	90	100 mm	Each	66750.00
126	200 mm	15	3	46	70	100 mm	Each	75610.00
127	200 mm	15	2	36	90	125 mm	Each	72643.00
128	200 mm	15	2	21	130	150 mm	Each	73872.00
129	200 mm	15	3	43	65	100 mm	Each	109970.00
130	200 mm	15	2	34	80	125 mm	Each	107215.00
131	200 mm	15	2	22	120	150 mm	Each	108398.00
132	150 mm	17.5	35	272	9.5	50 mm	Each	102938.00
133	150 mm	17.5	23	235	11	50 mm	Each	86104.00
134	150 mm	17.5	17	170	17	50 mm	Each	81049.00
135	150 mm	17.5	22	260	8.5	50 mm	Each	119465.00
136	150 mm	17.5	18	220	13.5	50 mm	Each	108782.00
137	150 mm	17.5	14	185	17	65 mm	Each	100954.00
138	150 mm	17.5	12	155	20	65 mm	Each	94602.00
139	150 mm	17.5	9	105	30	65 mm	Each	88102.00
140	150 mm	17.5	14	140	22	65 mm	Each	103327.00
141	150 mm	17.5	17	128	28	100 mm	Each	107424.00
142	150 mm	17.5	15	120	30	100 mm	Each	101782.00
143	150 mm	17.5	10	86	33	100 mm	Each	92807.00
144	150 mm	17.5	8	168	53	100 mm	Each	86422.00

	Minimum Bore well Dia	HP	No of Stage	Head (H) in Metre	Discharge (Q) in M ³ /Hr	NRV Size in mm	Unit	Rate in Rs.
145	150 mm	17.5	8	59	54	100 mm	Each	87524.00
146	150 mm	17.5	7	50	65	100 mm	Each	84039.00
147	175 mm	17.5	4	50	65	100 mm	Each	78033.00
148	175 mm	17.5	3	38	90	100 mm	Each	74409.00
149	175 mm	17.5	5	45	80	100 mm	Each	81646.00
150	200 mm	17.5	4	56	70	100 mm	Each	90590.00
151	200 mm	17.5	2	24	125	150 mm	Each	83031.00
152	150 mm	20	26	265	11	50 mm	Each	94717.00
153	150 mm	20	18	180	17	50 mm	Each	87111.00
154	150 mm	20	20	200	17	50 mm	Each	94928.00
155	150 mm	20	30	380	8.5	50 mm	Each	142381.00
156	150 mm	20	25	295	8.5	50 mm	Each	132598.00
157	150 mm	20	20	250	13.5	50 mm	Each	119679.00
158	150 mm	20	16	210	17	65 mm	Each	112129.00
159	150 mm	20	13	165	20	65 mm	Each	105740.00
160	150 mm	20	10	120	30	65 mm	Each	96976.00
161	150 mm	20	15	150	22	65 mm	Each	110916.00
162	150 mm	20	16	128	30	100 mm	Each	109050.00
163	150 mm	20	12	105	33	100 mm	Each	103625.00
164	150 mm	20	8	58	53	100 mm	Each	91279.00
165	150 mm	20	9	65	53	100 mm	Each	94078.00
166	150 mm	20	10	74	54	100 mm	Each	98267.00
167	150 mm	20	8	58	65	100 mm	Each	91667.00
168	175 mm	20	5	63	65	100 mm	Each	87682.00
169	175 mm	20	5	50	90	100 mm	Each	87941.00
170	200 mm	20	3	52	70	100 mm	Each	91704.00
171	200 mm	20	2	29	130	150 mm	Each	89670.00
172	200 mm	20	5	88	35	100 mm	Each	116250.00

- Pump should be selected as per required of Q & H.
- The pump should be selected on best efficiency points.
- Any changes in this parameter will be treated for selection of different pump series.
- The pump should be ISI Marked.
- The pump should be as per latest BIS.
- Preferably selected with less no. of stages.
- Sample graph is attached for ready reference.

3) Above rates are basic rates only

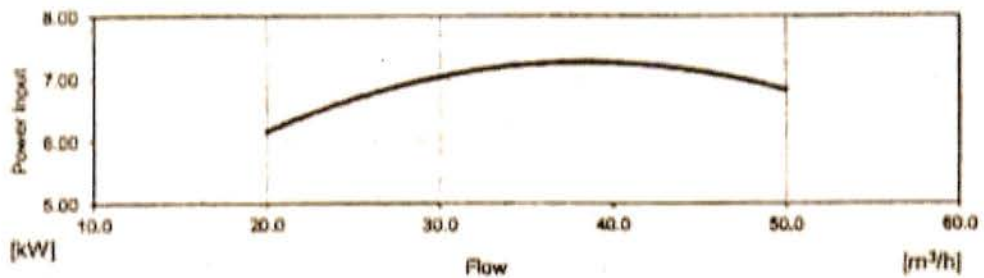
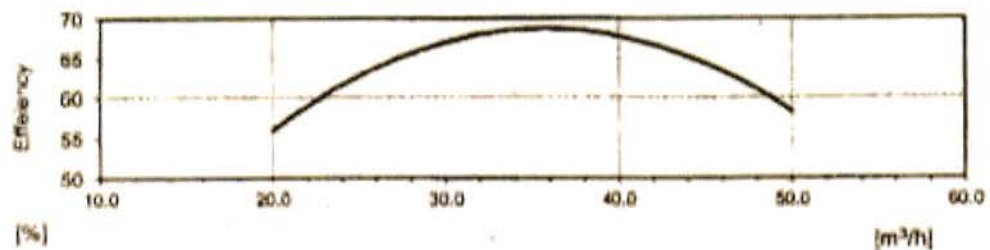
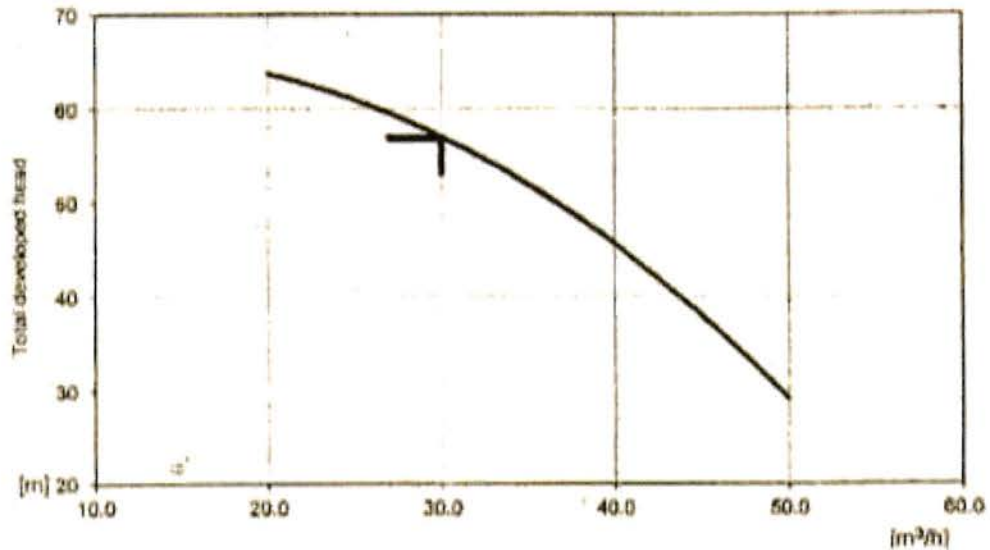
4) GST Extra as applicable

Sample Performance Curve

Head - 57 m
Discharge - 30 m³/hr

Performance Curve

Project
Client
S.Q No. / S.O No. 120385096401
S.Q / S.O Date
Dealer
Branch
Zone
BPD 273/7A / + UMA I 150 8/22
150



Curve data

Rated Speed (RPM)	2900	No. of stages	7
Specific Speed (RPM)	2900	Efficiency (%)	68.00
Fluid density (kg/m ³)		Power absorbed (kW)	6.85
Viscosity (mm ² /s)		Motor Rating (kW/hp)	7.5/10.0
Temperature (degree C)		Cable Size (mm ²)	2.5
Flow rate (m ³ /h)	30.00	Motor Starter	S/D
Head (meter)	57.00	Curve number	

DRAWN TEST1

Sample Performance Curve

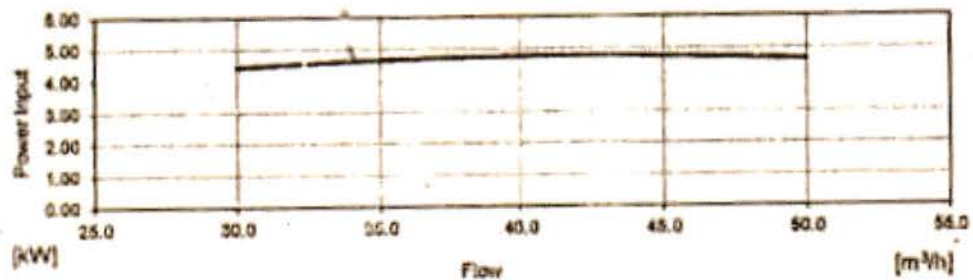
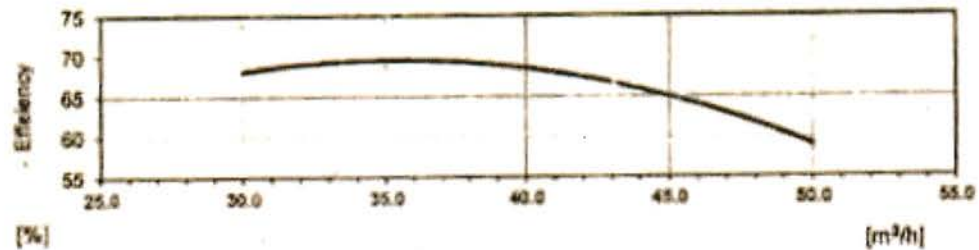
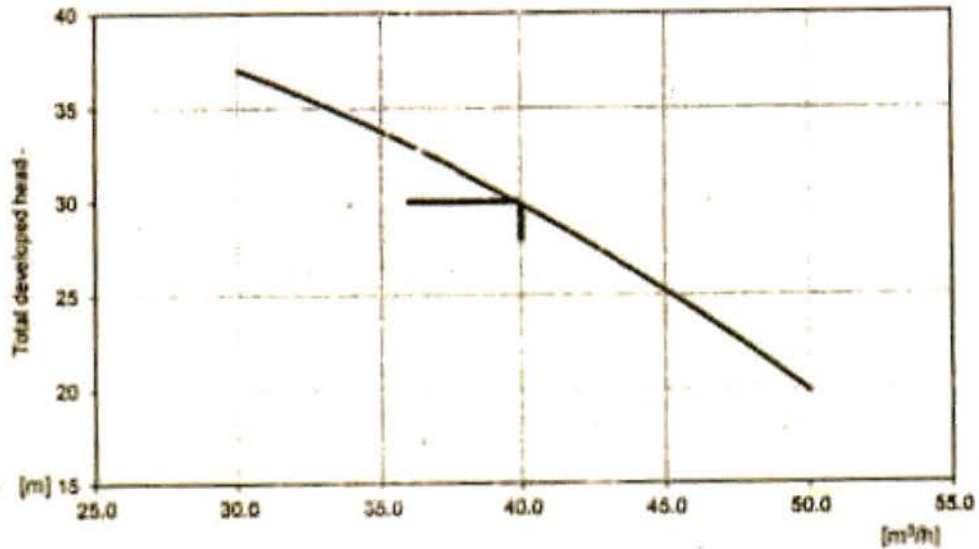
Head - 30 m
Discharge - 40 m³/hr

Performance Curve

Project
Client
S.Q No. / S.O No. 1203183395009
S.Q / S.O Date

Dealer
Branch
Zone

BPD 273/4 / + UMA I 150 150 MM
150 mm



Curve data

Rated Speed (RPM)	2900	No. of stages	4
Specific Speed (RPM)	2900	Efficiency (%)	68.00
Fluid density (kg/m ³)		Power absorbed (kW)	4.81
Viscosity (mm ² /s)		Motor Rating (kW/hp)	5.5/7.5
Temperature (degree C)		Cable Size (mm ²)	1.5
Flow rate (m ³ /h)	40.00	Motor Starter	S/D
Head (meter)	30.00	Curve number	5

DRAWN : test1