

# Waste Water & Drainage Pumps Installation Guide



These are the pumps designed for use in the evacuation of fluids and drain water that are polluted and contain solid particles (paper, textile fragments, plastic-added wastes etc.) created in residences and/or industrial facilities.

### **Usage**

- Cesspit pumps are installed in the cesspit built on the lowest floor of the building. There they transfer the waste water to the municipal sewage system or put them in water collectors made of covered fiberglass materials or the wastewater collected in the box is sent to the sewage network.
- Cesspit pumps are in general manufactured with blades (for grinding). This blade is a cutter placed on the suction line of the pump and it rotates when the pump is commissioned. It destructs the solid particles that are to reach the suction orifice and enables the pump's suction. As a result, the problem of the pump clogging with solid substances shall be removed.

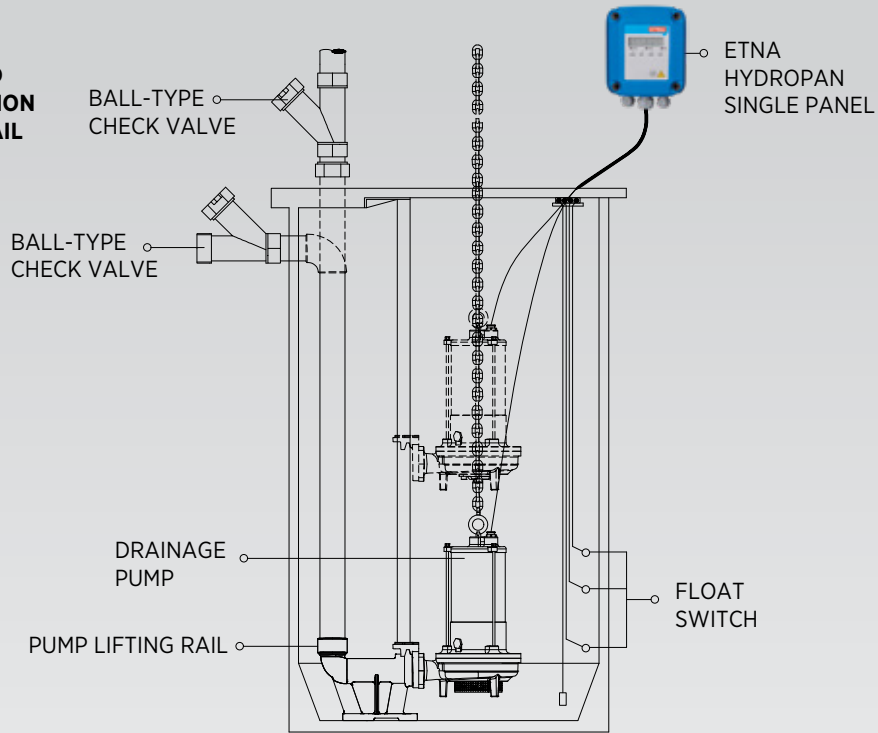
### **Attention Should be Paid to the Following During Installation**

- First examine the detailed drawing related with the installation of the device.
- Waste water and rain pumps are recommended to be used with the sledge system for ease of maintenance & repair in general. The sledge system is an interconnection item that fixes the pump to the ground when the pump is required to run at a center. In the cases of a failure or in cases that require lowering and raising the pump, this kit facilitates the operation and installation is carried out faster and more safely. Discharging the compartment of the pump is not required when installing with the guide pipes.
- A ball type check valve must be installed on the pipe line of the pumps. Ball type check valves have a structure that prevents the return of the water back to the pump by means of an inserted ball while allowing for full passage. Thanks to these check valves, the waste waters that are discharged from the pump and filled in the outlet line shall not return to the cesspit.
- Another product required to be used with the pumps is the protection-control boards manufactured for pumps. The thermal protection switches on the boards prevent the pump coils from getting burned due to extreme flow. The boards can also be connected with two floater switches. One of these floater switches functions in a manner to stop the pump when the cesspit is filled by the level set and when the waste water level required to run the pump decreases to the minimum level. The other one is set slightly over the maximum operation setting, thus if the pump does not run for any reason, this switch sends a signal to the alarm and indicates the danger of an overflow.

### **Attention Should be Paid to the Following During Commissioning**

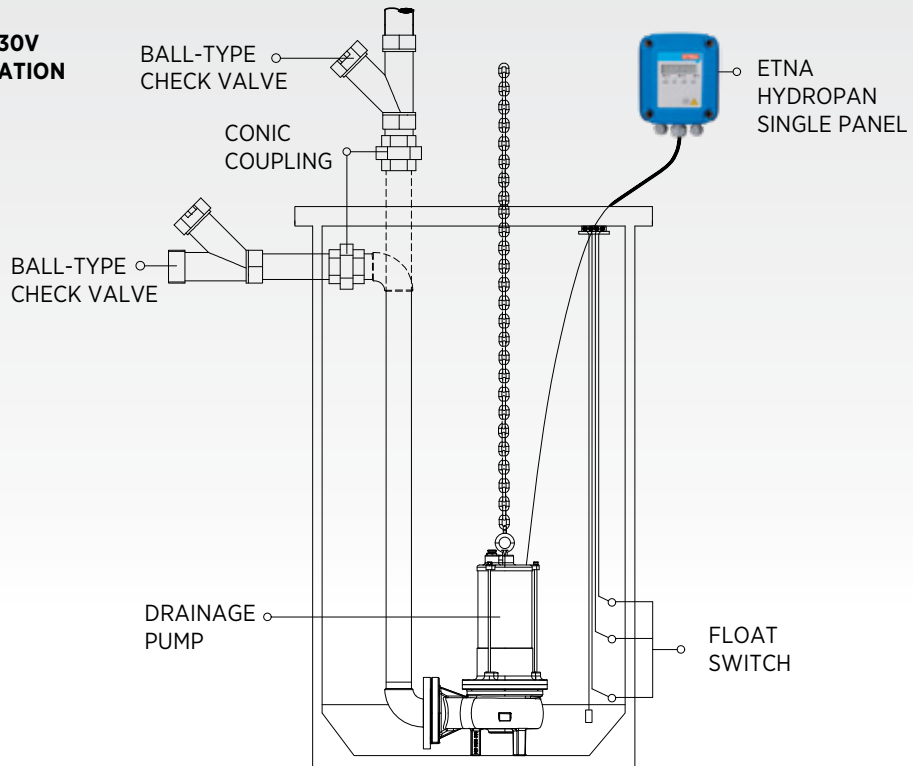
- Before the pump is installed in the cesspit, first its rotation in the direction of arrow on the engine must be checked.
- Both the first floater and the second alarm floater must be adjusted.
- If the cesspit is empty and the pump is to be inserted in the pit, then the main switch on the board must be closed and the dry running of the pump must be prevented.

**EFP30/EFP30D  
FIXED INSTALLATION  
WITH LIFTING RAIL**



Fixed Installation with Lifting Rail  
(Pump can be removed for easy maintenance and repair)

**EFP30T/EFP30V  
FIXED INSTALLATION**



Fixed Installation  
(Pump can be detached from the conic coupling for easy maintenance)

# FLAT PIPE FRICTION LOSS TABLE

FLOW			Galvanized Steel New Pipe									
			Nominal Diameter									
1/ ms	1/min	m³/h	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"	2" 1/2	3"	3" 1/2	4
0,17	10	0,6	15,75	21,25	27	35,75	41,25	52,5	68	80,25	92,5	105
			0,856	0,470	0,291							
0,25	15	0,9	9,01	2,09	0,65							
			1,284	0,705	0,437	0,249						
0,33	20	1,2	19,07	4,43	1,38	0,35						
			1,712	0,940	0,582	0,332	0,250					
0,42	25	1,5	32,47	7,55	2,35	0,60	0,30					
			2,140	1,175	0,728	0,415	0,310					
0,5	30	1,8	49,08	11,41	3,55	0,91	0,45					
			2,568	1,411	0,874	0,498	0,370	0,230				
0,58	35	2,1	68,74	15,98	4,98	1,27	0,63	0,20				
			2,996	1,646	1,019	0,581	0,440	0,270				
0,67	40	2,4	91,42	21,26	6,62	1,69	0,84	0,26				
			1,881	1,165	0,664	0,500	0,310					
0,83	50	3,0	27,22	8,48	2,16	1,08	0,33					
			2,351	1,456	0,831	0,620	0,390	0,230				
1	60	3,6	41,13	12,81	3,27	1,63	0,50	0,14				
			2,821	1,747	0,997	0,750	0,460	0,280				
1,17	70	4,2	57,63	17,95	4,58	2,28	0,70	0,20				
			3,291	2,039	1,163	0,870	0,540	0,320	0,230			
1,33	80	4,8	76,64	23,88	6,08	3,03	0,94	0,27	0,19			
			2,330	1,329	1,000	0,620	0,370	0,260				
1,5	100	5,4	30,57	7,79	3,88	1,20	0,34	0,15				
			2,621	1,495	1,120	0,690	0,410	0,300				
1,67	125	6,0	38,01	9,69	4,83	1,49	0,42	0,19				
			2,912	1,161	1,250	0,770	0,460	0,330	0,250			
2,08	150	7,5	46,19	11,77	5,86	1,81	0,51	0,23	0,11			
			3,641	2,077	1,560	0,960	0,570	0,410	0,310	0,240		
2,5	150	9,0	69,79	17,79	8,86	2,74	0,78	0,35	0,17	0,09		
			2,492	1,870	1,160	0,690	0,490	0,370	0,290			
2,92	175	10,5	24,92	12,41	3,84	1,09	0,49	0,24	0,13			
			2,907	2,180	1,350	0,800	0,580	0,430	0,340			
			33,15	16,51	5,10	1,45	0,65	0,32	0,17			

Formula used:  
Hazen Williams  
(UNI 9489 13.3.3.6)

FLOW			Galvanized Steel New Pipe									
			Nominal Diameter									
1/ s	1/min	m³/h	1" 1/4	1" 1/2	2"	2" 1/2	3"	3" 1/2	4"	5"	6"	8"
3,33	200	12,0	35,75	41,25	52,5	68	80,25	92,5	105	130	155	206
			3,322	2500	1540	0,920	0,660	0,500	0,390	0,250		
4,17	250	15,0	42,43	21,14	6,53	1,85	0,83	0,41	0,22	0,08		
			4,153	3,120	1,930	1,150	0,820	0,620	0,480	0,310		
5	300	18,0	64,12	31,94	9,84	2,80	1,25	0,63	0,34	0,12		
			3,740	2,310	1,380	0,990	0,740	0,580	0,380	0,270		
6,67	400	24,0	44,75	13,83	3,92	1,75	0,88	0,47	0,17	0,07		
			4,990	3,080	1,840	1,320	0,990	0,770	0,500	0,350		
8,33	500	30,0	76,20	23,55	6,68	2,98	1,49	0,80	0,28	0,12		
			3,850	2,300	1,650	1,240	0,960	0,630	0,440			
10	600	36,0	35,58	10,09	4,51	2,26	1,22	0,60	0,26	0,18		
			4,620	2,750	1,980	1,490	1,160	0,750	0,530	0,300		
11,67	700	42,0	49,85	14,14	6,31	3,16	1,70	0,60	0,26	0,06		
			3,210	2,310	1,740	1,350	0,880	0,620	0,350			
13,33	800	48,0	18,81	8,40	4,20	2,27	0,80	0,34	0,09			
			3,670	2,640	1,990	1,540	1,010	0,710	0,400			
15	900	54,0	24,08	10,75	5,38	2,90	1,03	0,44	0,11			
			4,130	2,970	2,230	1,730	1,130	0,800	0,450			
16,67	1000	60,0	29,94	13,37	6,69	3,61	1,28	0,54	0,14			
			4,590	3,300	2,480	1,930	1,260	0,880	0,500			
20,83	1250	75,0	36,39	16,24	8,13	4,39	1,55	0,66	0,16			
			4,120	3,100	2,410	1,570	1,100	0,630	0,25			
25	1500	90,0	24,54	12,29	6,63	3,24	1,28	0,54	0,14			
			4,950	3,720	2,890	1,880	1,330	0,750	0,35			
29,17	1750	105,0	34,39	17,22	9,29	4,34	1,55	0,66	0,16			
			4,950	3,720	2,890	1,880	1,330	0,750	0,35			
33,33	2000	120,0	22,90	12,35	6,17	3,08	1,18	0,48	0,15			
			4,960	3,850	2,510	1,770	1,000	0,680	0,38			
41,67	2500	150,0	29,31	15,81	8,13	4,39	1,55	0,66	0,16			
			29,31	15,81	8,13	4,39	1,55	0,66	0,16			
50	3000	180,0	4,810	3,140	2,210	1,250	0,800	0,500	0,300			
			23,89	8,44	3,59	1,90	1,26	0,80	0,50	0,30		
66,67	4000	240,0	3,770	2,650	1,500	1,000	0,650	0,400	0,250			
			11,83	5,02	3,12	2,00	1,26	0,80	0,50	0,30		
83,33	5000	300,0	5,030	3,530	2,000	1,300	0,850	0,500	0,300			
			20,15	8,55	2,14	1,26	0,80	0,50	0,30	0,17		
			12,93	3,23								

Formula used:  
Hazen Williams  
(UNI 9489 13.3.3.6)

The rows shown in the table in **white color** :  
**Pressure loss (mSS) / 100 m pipe**

The rows shown in the table in **gray color** :  
**Water speed (m/sec)**

Data listed in the table is for galvanized steel pipe.  
**For different pipe materials, multiply the values in the table by the following coefficients.**

- For 0.6 PVC pipes
- For 0.7 aluminum pipes
- For 0.8 rolled steel or stainless steel pipes

MOTOR POWER & CABLE SELECTION TABLE															
Power		Voltaj	CABLE DIMENSION 3 X ...mm2												
HP	KW		1,5	2,5	4	6	10	16							
MAX. CABLE DIMENSIONS (m)															
0,5	0,37	220 V	80	130											
0,75	0,55		55	90	140										
0,1	0,75		40	80	105	160									
1,5	1,10		30	50	75	115	190								
2	1,50		20	35	60	90	145	235							
3	2,20			30	50	70	120	185							

\* The table above shows required cable dimensions from electrical control panel to electric motor.

Power		Voltaj	CABLE DIMENSION 3 X ...mm2											
HP	KW		2,5	4	6	10	16	25	35	50	70	95	120	150
MAX. CABLE DIMENSIONS (m)														
3	2,2		190	300	460									
4	3		150	240	360									
5,5	4		110	170	260	450								
7,5	5,5		80	130	190	340	540							
10	7,5		60	100	150	250	410							
12,5	9,2		50	80	120	205	330	510						
15	11			60	100	170	280	440						
17,5	13				90	150	245	385						
20	15				80	130	210	330	460	660				
25	18,5					100	170	260	370	530				
30	22					90	140	220	310	440				
35	26						120	190	270	380	540			
40	30						100	170	230	330	460			
50	37							130	190	270	380	520		
60	45							110	160	230	320	440	550	
70	52								140	200	280	385	480	
75	55								120	170	240	330	410	530
80	59								115	160	230	310	390	500
90	66								110	150	220	290	370	470
100	75								96	140	190	270	330	425
110	81									125	175	245	300	380
125	92									110	160	220	275	340
150	110										130	180	220	290
180	132											150	190	240
200	150												130	170
225	165												125	150
250	185													170
275	200													160

\* The table above can use to specify cable dimension where is from power source to the electrical control panel according to motor power.

\* The cable length specified according to %3 voltage reduce at 25 C temperature.



Dudullu Organize Sanayi Bölgesi 2. Cadde No: 14  
34775 Ümraniye İstanbul / Turkey  
Tel : +90 216 561 47 74 (Pbx) • Fax : +90 216 561 47 50  
[www.etna.com.tr/en](http://www.etna.com.tr/en) • [info@etna.com.tr](mailto:info@etna.com.tr)



**ETNA®**

**0850 455 38 62**  
customer service