



## Tips for pump cost savings on portable pumps

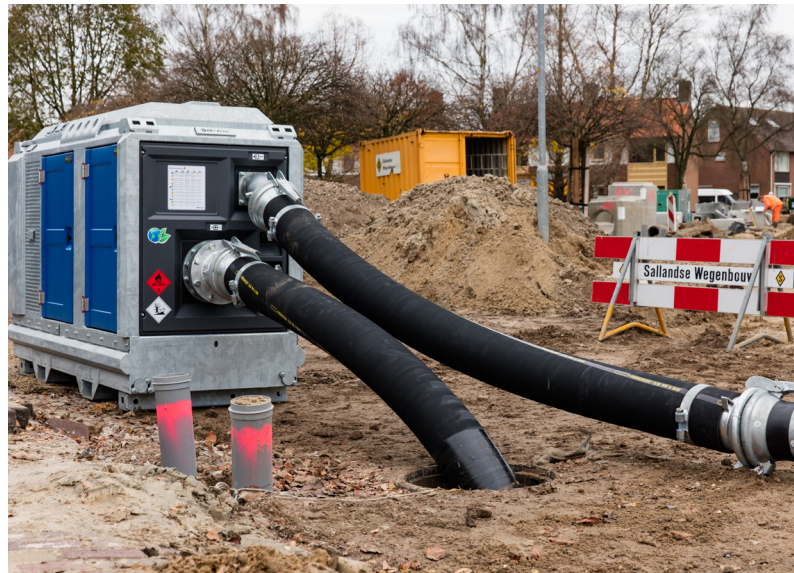
With permanent pump installations, a lot of attention and money is always spent on engineering. The goal is to make the system as cost-effective as possible. With **mobile pump systems** this is not usually the case. The attitude can be: *“Just unload a diesel pump at the construction site and provide some piping and everything will turn out fine...”* But then it doesn't, costing precious time and resources.

What a pity! With mobile—or portable—pumps, an unnecessarily large sum of money can be wasted on fuel or maintenance. Below are four simple tips for cost savings for mobile pump systems.

### Tip 1. Use the automatic start/stop function.

Mobile pumps from the BA series are supplied as standard with an automatic level control (start/stop function). This will allow users to save a lot of money during the life of the pump. Most install the included floats at the high/low level, and set the key switch to 'auto'. As a result, the pump will run completely automatically and pump only when necessary. Thus, no unnecessary energy and maintenance costs.

**Consider:** A BBA Pumps' [BA180E D315](#) diesel driven pump is designed to maintain the sewage level during refurbishment. Typical pumps of this kind can use up to 90 gallons of fuel per day (in 24 hours). Often, this heavy usage is not necessary. In refurbishments, there are peaks and troughs in the 24-hour cycle. The pump may only have to run for an hour during the night, and the same applies during the day, when few people are at home. In practice, the same pump with an automatic start/stop function will run for a few hours per day, so the fuel consumption will only be 13 to 16 gallons per day. This also results in savings on regular maintenance of the pump unit.



Engine-driven unit bypassing on automatic start/stop mode

## Tip 2. Extended maintenance intervals.

Extended maintenance intervals can save users money over time. For single-cylinder diesel driven pumps, the engine supplier suggests maintenance intervals after 250 operating hours. The BA100K wastewater pump and PT150 wellpoint pump have standard maintenance intervals of **1,500 operating hours**.

Advantages of the extended maintenance interval after 30,000 operating hours (average working lifetime of a diesel engine):

- Oil change is 100 times less often (20 times versus 120 times)
- 88 gallons (340 litres) less oil is consumed (52 gallons versus 140 gallons)
- Filter is replaced 100 times less often (20 times versus 120 times)

Therefore, operators benefit from heavily reduced labour costs, savings on the cost of engine oil and filters, and the production of less environmental pollution associated with the disposal of the old oil and filters.

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With the DriveOn® feature only 20 oil changes are required during an engine lifetime an estimated (30,000 hours).



### Tip 3. Choose the right pipe diameter.

In every pump system savings can be made by using the optimal piping diameters. The diameter can be determined by using the manufacturer's tools.

On the **suction side**, it is important to keep the fluid velocity below 13 ft/s (4 m/s) to prevent pump damage by cavitation. Use the [Recommended Suction Pipe Diameter](#) table on page 4 to establish the appropriate size.

On the **discharge side**, it is important to keep the friction loss as low as possible. A high friction loss in the pipe means the pump will have to deliver a lot of pressure (TDH), which will result in unnecessarily high energy costs. One way to lower the chance of those higher costs is to optimise your pipe system. Use the [Pump Head Calculator tool](#) to assist with this decision making process.

**For example:** You need to pump 1,540 U.S. gpm over a horizontal distance of 330 feet with a height difference of 26.4 feet. A diesel driven BA150E D285 wastewater pump can perform this application. Now, a choice between 6-inch and 8-inch piping must be made. When using 6-inch HDPE piping, the resistance is 71 feet, according to the tool. When using 8-inch HDPE piping, the resistance is 37 feet, according to the tool. Option 1 will require the pump to run at maximum speed (1,750 rpm), with a fuel consumption of approximately 2.6 gallons (10 litres) per hour.

However, option 2 allows you to adjust the pump speed to 1,500 rpm, and in this case fuel consumption is around 1.5 gallons (6 litres) per hour.

In this example, using 8-inch pipes, operators could **save up to 1 gallon of fuel** each hour.



Savings can be made by using the optimal piping diameters

## Recommended Pipe ID vs Flow Rates by Pipe dimension

Recommendation based on maximum velocity = 4 m/s (13 ft/s)

US gallons	m <sup>3</sup> /h	FLOW (L/sec)	2" 50	3" 75	4" 100	5" 125	6" 150	8" 200	10" 250	12" 300	14" 350	16" 400	18" 450	20" 500
31.7	7.2	2	1.02	0.45	0.25	0.16	0.11	0.06	0.04	0.03	0.02	0.02	0.01	0.01
63.4	14.4	4	2.04	0.91	0.51	0.33	0.23	0.13	0.08	0.06	0.04	0.03	0.03	0.02
95.1	21.6	6	3.06	1.36	0.76	0.49	0.34	0.19	0.12	0.08	0.06	0.05	0.04	0.03
126.8	28.8	8	4.07	1.81	1.02	0.65	0.45	0.25	0.16	0.11	0.08	0.06	0.05	0.04
158.5	36	10	5.09	2.26	1.27	0.81	0.57	0.32	0.20	0.14	0.10	0.08	0.06	0.05
190.2	43.2	12	6.11	2.72	1.53	0.98	0.68	0.38	0.24	0.17	0.12	0.10	0.08	0.06
221.9	50.4	14	7.13	3.17	1.78	1.14	0.79	0.45	0.29	0.20	0.15	0.11	0.09	0.07
253.6	57.6	16	8.15	3.62	2.04	1.30	0.91	0.51	0.33	0.23	0.17	0.13	0.10	0.08
285.3	64.8	18	9.17	4.07	2.29	1.47	1.02	0.57	0.37	0.25	0.19	0.14	0.11	0.09
317	72	20	10.19	4.53	2.55	1.63	1.13	0.64	0.41	0.28	0.21	0.16	0.13	0.10
396.3	90	25	12.73	5.66	3.18	2.04	1.41	0.80	0.51	0.35	0.26	0.20	0.16	0.13
475.5	108	30	15.28	6.79	3.82	2.44	1.70	0.95	0.61	0.42	0.31	0.24	0.19	0.15
634	144	40	20.37	9.05	5.09	3.26	2.26	1.27	0.81	0.57	0.42	0.32	0.25	0.20
792.5	180	50	25.46	11.32	6.37	4.07	2.83	1.59	1.02	0.71	0.52	0.40	0.31	0.25
951	216	60	30.56	13.58	7.64	4.89	3.40	1.91	1.22	0.85	0.62	0.48	0.38	0.31
1109.5	252	70	35.65	15.84	8.91	5.70	3.96	2.23	1.43	0.99	0.73	0.56	0.44	0.36
1268	288	80	40.74	18.11	10.19	6.52	4.53	2.55	1.63	1.13	0.83	0.64	0.50	0.41
1426.5	324	90	45.84	20.37	11.46	7.33	5.09	2.86	1.83	1.27	0.94	0.72	0.57	0.46
1585	360	100	50.93	22.64	12.73	8.15	5.66	3.18	2.04	1.41	1.04	0.80	0.63	0.51
1775.2	403.2	112	57.04	25.35	14.26	9.13	6.34	3.57	2.28	1.58	1.16	0.89	0.70	0.57
1902	432	120	61.12	27.16	15.28	9.78	6.79	3.82	2.44	1.70	1.25	0.95	0.75	0.61
2060.5	468	130	66.21	29.34	16.55	10.59	7.36	4.14	2.65	1.84	1.35	1.03	0.82	0.66
2219	504	140	71.30	31.69	17.83	11.41	7.92	4.46	2.85	1.98	1.46	1.11	0.88	0.71
2337.6	540	150	76.39	33.95	19.10	12.22	8.49	4.77	3.06	2.12	1.56	1.19	0.94	0.76
2536	576	160	81.49	36.22	20.37	13.04	9.05	5.09	3.26	2.26	1.66	1.27	1.01	0.81
2694.6	612	170	86.58	38.48	21.65	13.85	9.62	5.41	3.46	2.41	1.77	1.35	1.07	0.87
2853.1	648	180	91.67	40.74	22.92	14.67	10.19	5.73	3.67	2.55	1.87	1.43	1.13	0.92
3011.6	684	190	96.77	43.01	24.19	15.48	10.75	6.05	3.87	2.69	1.97	1.51	1.19	0.97
3170.1	720	200	101.86	45.27	25.46	16.30	11.32	6.37	4.07	2.83	2.08	1.59	1.26	1.02
3328.6	756	210	106.95	47.53	26.74	17.11	11.88	6.68	4.28	2.97	2.18	1.67	1.32	1.07
3487.1	792	220	112.05	49.80	28.01	17.93	12.45	7.00	4.48	3.11	2.29	1.75	1.38	1.12
3645.6	828	230	117.14	52.06	29.28	18.47	13.02	7.32	4.69	3.25	2.39	1.83	1.45	1.17
3804.1	864	240	122.23	54.32	30.56	19.56	13.58	7.64	4.89	3.40	2.49	1.91	1.51	1.22
3962.6	900	250	127.32	56.59	31.83	20.37	14.15	7.96	5.09	3.54	2.60	1.99	1.57	1.27
4121.1	936	260	132.42	58.85	33.10	21.19	14.71	8.28	5.30	3.68	2.70	2.07	1.63	1.32
4279.6	972	270	137.51	61.12	34.38	22.00	15.28	8.59	5.50	3.82	2.81	2.15	1.70	1.38
4438.1	1008	280	142.60	63.38	35.65	22.82	15.84	8.91	5.70	3.96	2.91	2.23	1.76	1.43
4596.6	1044	290	147.70	65.64	36.92	23.63	16.41	9.23	5.91	4.10	3.01	2.31	1.82	1.48
4755.1	1080	300	152.79	67.91	38.20	24.45	16.98	9.55	6.11	4.24	3.12	2.39	1.89	1.53
4913.6	1116	310	157.88	70.17	39.47	25.26	17.54	9.87	6.32	4.39	3.22	2.47	1.95	1.58
5072.1	1152	320	162.97	72.43	40.74	26.08	18.11	10.19	6.52	4.53	3.33	2.55	2.01	1.63
5230.6	1188	330	168.07	74.70	42.02	26.89	18.67	10.50	6.72	4.67	3.43	2.63	2.07	1.68
5389.1	1224	340	173.16	76.96	43.29	27.71	19.24	10.82	6.93	4.81	3.53	2.71	2.14	1.73
5547.6	1260	350	178.25	79.22	44.56	28.52	19.81	11.14	7.13	4.95	3.64	2.79	2.20	1.78
5706.1	1296	360	183.35	81.49	45.84	29.34	20.37	11.46	7.33	5.09	3.74	2.86	2.26	1.83
5864.6	1332	370	188.44	83.75	47.11	30.15	20.94	11.78	7.54	5.23	3.85	2.94	2.33	1.88
6023.1	1368	380	193.53	86.01	48.38	30.97	21.50	12.10	7.74	5.38	3.95	3.02	2.39	1.94
6181.6	1404	390	198.63	88.28	49.66	31.78	22.07	12.41	7.95	5.52	4.05	3.10	2.45	1.99
6340.1	1440	400	203.72	90.54	50.93	32.59	22.64	12.73	8.15	5.66	4.16	3.18	2.52	2.04
6498.6	1476	410	208.81	92.81	52.20	33.41	23.20	13.05	8.35	5.80	4.26	3.26	2.58	2.09
6657.1	1512	420	213.90	95.07	53.48	34.22	23.77	13.37	8.56	5.94	4.37	3.34	2.64	2.14



#### Tip 4. Stay close to the Best Efficiency Point.

When using mobile pumps, often less attention is paid to the BEP. However, the same rules apply to portable pumps as to fully installed systems: you can save considerably by choosing the right pump based on efficiency.

For example: A temporary sewer pumping system requires a working point of 200 m<sup>3</sup>/h at 25 mwc. If you can't decide between a [BA100E D265](#) or a [BA150E D285](#) see the graph on page 2 of the spec sheets. The BA100E has a **BEP of exactly 70 percent**; with a power consumption of 26.8 horsepower (hp), the fuel consumption will be slightly less than 1.6 gallons per hour.

With the same working point, the BA150E is operates to the left of BEP, with an **efficiency of 62 percent**. As a

result, the power consumption is 29.5 hp, and the fuel consumption is more than 0.1 gallons per hour higher.

Selecting a pump on BEP will also have a positive impact on the life span of the pump and reduced maintenance costs.



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