ANSI/APSP-7 2006 Specifies three methods for determining the maximum system flow rate. The following simplified TDH calculation is one of the methods specified.

Simplified Total Dynamic Head (TDH) Calculation Worksheet

Determine Maximum System Flow Rate:

Minimum Flow Rate Required: 35 gpm Per Skimmer (Required: 1 skimmer per 800 sf of surf. area)

1. Calculate Pool Volume: 608 (Surf. Area) x 4.5 (Avg. Depth) x 7.48 (gal./cubic foot) = 20,500 (Vol. in gal.) gal
2. Determine preferred Turnover Time in hours: 6 (Hours) x 60 (min. / hr.) = _____ (Turnover in Min.)
3. Determine Max Flow Rate: 20,500 (Vol. in gal.) / 360 (Turnover Mins.) = 56.9 (Pool Flow Rate) + 0 (Feature Flow Rate) = 56.9 (System Flow Rate)
4. Spa Jets: 6 (No. of Jets) x 10 (Jet Flow) gpm per jet = 60 (Total Jet Flow Rate) flow rate.

(For single pump pool/spa combo, use the higher of No. 3 or No. 4 in the following calculations for the pool & spa)

Determine Pipe Sizes:

Branch Piping to be [2] inch to keep velocity @ 6 fps max. at 62 gpm Maximum System Flow Rate.

Trunk Piping to be [2] inch to keep velocity @ 8 fps max. at 82 gpm Maximum System Flow Rate.

Return Piping to be [1.5] inch to keep velocity @ 10 fps max. at 62 gpm Maximum System Flow Rate.

Determine Simplified TDH:

1. Distance from pool to pump in feet: 75
2. Friction loss (in suction pipe) in 2 inch pipe per 1 ft. @ 82 gpm = 0.10 (from pipe flow/friction loss chart)
3. Friction loss (in return pipe) in 1.5 inch pipe per 1 ft. @ 62 gpm = _____ (from pipe flow/friction loss chart)
4. 75 (Length of Suct. Pipe) x 0.10 (Ft of head/1 ft of Pipe) = 7.5 (TDH Suct. Pipe)
5. 75 (Length of Return Pipe) x 0.21 (Ft of head/1 ft of Pipe) = 15.75 (TDH Return Pipe) 23.25 ft.

6 Valves 6 Tees 6 Elbows } Est. 20ft.
2 Grates 1 Skimmer }

TDH in Piping: 23.25

Filter loss in TDH (from filter data sheet): 3.47

Heater loss in TDH (from heater data sheet): 15

Total all other loss: 20

Total Dynamic Head (TDH): 61.72

Selected Pump and Main Drain Cover: 3hp

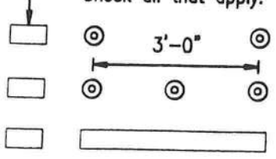
Pump selection [Intelliflo VS SVRS] (Pump model and size in Horsepower) using pump curve for TDH & System Flow Rate

Main Drain Cover [AquaStar 32CDFLFR 103] (Make and Model) (System Flow Rate must not exceed approved cover flow rates)

Notes: Minimum system flow based on min. flow per skimmer of 35 gpm.

Determine the Number and Type of Required In-Floor Suction Outlets:

Check all that apply.



- [Channel Drain] suction outlets @ [316] gpm max. flow (see note 2).
- [3] [ ] suction outlets @ [ ] gpm max. flow (see note 3).
- [ ] channel drain @ [ ] gpm w/ [ ] ports (see note 4).

TDH Calculation Options

For each pump — Check one.

- [x] Simplified Total Dynamic Head (STDH) — Complete STDH Worksheet – Fill in all blanks.
- [ ] Total Dynamic Head (TDH) — Complete Program or other calcs. Fill in required blanks on worksheet & attach calculations.
- [ ] Maximum Flow Capacity of the new or replacement pump.

Notes

1. If a variable speed pump is used, use the max. pump flow in calculations.
2. For side wall drains, use appropriate side wall drain flow as published by manufacturer.
3. Insert manufacturer's name and aproved maximum flow
4. See installation instructions for number of ports to be used.
5. In-Floor suction outlet cover/grate must conform to most recent edition of ASME/ANSI A112.19.8 and be embossed with that edition approval.
6. Pump, Filter & Heater make and model cannot changed, and equipment location cannot be moved closer to pool without submitting a revised plan and TDH calculation worksheet for approval.

Flow and Friction Loss Per Foot

Schedule 40 PVC Pipe

Pipe Size	Velocity – Feet Per Second					
	6 fps		8 fps		10 fps	
1"	16 gpm	0.14'	21 gpm	0.23'	26 gpm	0.35'
1.5"	37 gpm	0.08'	50 gpm	0.14'	62 gpm	0.21'
2"	62 gpm	0.06'	82 gpm	0.10'	103 gpm	0.16'
2.5"	88 gpm	0.05'	117 gpm	0.09'	146 gpm	0.13'
3"	136 gpm	0.04'	181 gpm	0.07'	227 gpm	0.10'
4"	234 gpm	0.03'	313 gpm	0.05'	392 gpm	0.07'
6"	534 gpm	0.02'	712 gpm	0.03'		

Total Head In Feet Conversion Chart

PSI (Pressure Gauge)	Inches Mercury (Vacuum Gauge)									
	0	2	4	6	8	10	12	14	16	18
0	0.0	2.3	4.5	6.8	9.0	11.3	13.6	15.8	18.1	20.3
1	2.3	4.6	6.8	9.1	11.4	13.8	15.9	18.1	20.4	22.7
2	4.6	6.9	9.1	11.4	13.7	15.9	18.2	20.4	22.7	25.0
3	6.9	9.2	11.5	13.7	16.0	18.2	20.5	22.8	25.0	27.3
4	9.2	11.5	13.8	16.0	18.3	20.5	22.8	25.1	27.3	29.6
5	11.5	13.8	16.1	18.3	20.6	22.8	25.1	27.4	29.6	31.9
6	13.9	16.1	18.4	20.6	22.9	25.2	27.4	29.7	31.9	34.2
7	16.2	18.4	20.7	23.0	25.2	27.5	29.7	32.0	34.3	36.5
8	18.5	20.7	23.0	25.3	27.5	29.8	32.0	34.3	36.6	38.8
9	20.8	23.1	25.3	27.6	29.8	32.1	34.3	36.6	38.9	41.1
10	23.1	25.4	27.6	29.9	32.1	34.4	36.7	38.9	41.2	43.4
11	25.4	27.7	29.9	32.2	34.5	36.7	39.0	41.2	43.5	45.8
12	27.7	30.0	32.2	34.5	36.8	39.0	41.3	43.5	45.8	48.1
13	30.0	32.3	34.6	36.8	39.1	41.3	43.6	45.9	48.1	50.4
14	32.3	34.6	36.9	39.1	41.4	43.6	45.9	48.2	50.4	52.7
15	34.6	36.9	39.2	41.4	43.7	45.9	48.2	50.5	52.7	55.0
16	37.0	39.2	41.5	43.7	46.0	48.3	50.5	52.8	55.0	57.3
17	39.3	41.5	43.8	46.1	48.3	50.6	52.8	55.1	57.4	59.6
18	41.6	43.8	46.1	48.4	50.6	52.9	55.1	57.4	59.7	61.9
19	43.9	46.2	48.4	50.7	52.9	55.2	57.4	59.7	62.0	64.2
20	46.2	48.5	50.7	53.0	55.2	57.5	59.8	62.0	64.3	66.5
21	48.5	50.8	53.0	55.3	57.6	59.8	62.1	64.3	66.6	68.9
22	50.8	53.1	55.3	57.6	59.9	62.1	64.4	66.6	68.9	71.2
23	53.1	55.4	57.7	59.9	62.2	64.4	66.7	69.0	71.2	73.5
24	55.4	57.7	60.0	62.2	64.5	66.7	69.0	71.3	73.5	75.8
25	57.8	60.0	62.3	64.5	66.8	69.1	71.3	73.6	75.8	78.1
26	60.1	62.3	64.6	66.8	69.1	71.4	73.6	75.9	78.1	80.4
27	62.4	64.6	66.9	69.2	71.4	73.7	75.9	78.2	80.5	82.7
28	64.7	66.9	69.2	71.5	73.7	76.0	78.2	80.5	82.8	85.0
29	67.0	69.3	71.5	73.8	76.0	78.3	80.5	82.8	85.1	87.3
30	69.3	71.6	73.8	76.1	78.3	80.6	82.9	85.1	87.4	89.6
31	71.6	73.9	76.1	78.4	80.7	82.9	85.2	87.4	89.7	92.0
32	73.9	76.2	78.4	80.7	83.0	85.2	87.5	89.7	92.0	94.3
33	76.2	78.5	80.7	83.0	85.3	87.5	89.8	92.0	94.3	96.6
34	78.5	80.8	83.1	85.3	87.6	89.8	92.1	94.4	96.6	98.9
35	80.9	83.1	85.4	87.6	89.9	92.2	94.4	96.7	98.9	101.2

NOTE: FIELD TDH MUST BE EQUAL TO OR HIGHER THAN THE CALCULATED TDH.

Catalog Cut Sheets

Pump
Filter
Heater
Drain Grate

Date

Contractors Signature

Contractors Printed Name

Contractors Cert. No.

Contractors Telephone No.

5/5/11
Date

Swimming Pool Specification For:

Enver Sakini
Lot 25 NW Milo Terrace
Lake City Fl. 32055

Scale: None