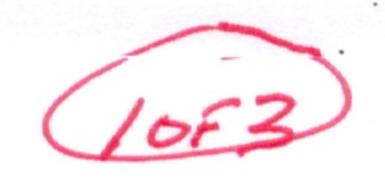
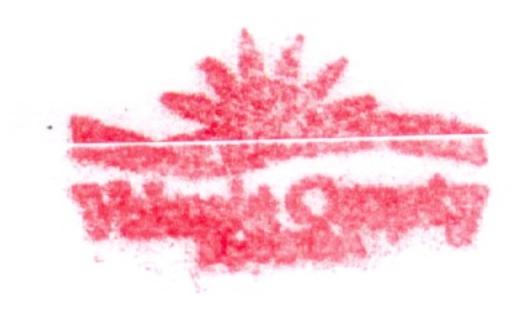
VOLUSIA COUNTY BUILDING & ZONING

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 Skim | mer (Required: 1 skimmer per 800 sf of surf. area) |
| 1. Calculate Pool Volume: X (Surf. Area) X (Avg. Depth) | X 7.48 (gal./cubic foot) = |
| 2. Determine preferred TurnoverTime in hours: | x 60 (min. / Hr.) = |
| 3. Determine Max Flow Rate / # | ours) (Tumover in Min.) = + ff = |
| 4. Spa Jets: x gpm per jet = | , (e) |
| (No. of Jets) (Jet Flow) | (Total Jet Flow Rate) f No. 3 or No. 4 in the following calculations for the pool & spa.) |
| Determine Pipe Sizes: | |
| Branch Piping to be inch to keep veloc | city @ 6 fps max. at gpm Maximum System Flow Rate. |
| | city @ 8 fps max. at gpm Maximum System Flow Rate. |
| | ity @ 10 fps max. at gpm Maximum System Flow Rate. |
| Determine Simplified TDH: | gpin maximum cyclem i low mate. |
| 1. Distance from pool, to pump in feet: 99 | |
| 0 - ' ' ' ' ' ' | per 1 ft. @ gpm = (from pipe flow/friction loss chart) |
| 3. Friction loss (in return pipe) in inch pipe | per 1 ft. @ gpm = (from pipe flow/friction loss chart) |
| 4 x = | |
| (Length of Suct. Pipe) (Ft of head/1 ft of Pipe) (TDH Suct. Pipe) 5. X | |
| (Length of Return Pipe) (Ft of head/1 ft of Pipe) (TDH Return Pipe) low and Friction Loss Per Foot | |
| Schedule 40 PVC Pipe | TDH in Piping: |
| Velocity – Feet Per Second pe Size 6 fps 6 fps 10 fps | Filter loss in TDH (from filter data sheet): |
| 1.5° 37 gpm 0.08' 50 gpm 0.14' 62 gpm 0.21' | Heater loss in TDH (from heater data sheet): |
| 2° 62 gpm 0,06' 82 gpm 0,10' 103 gpm 0,16' 2,5' 88 gpm , 0,05' 117 gpm 0,08' 148 gpm 0,13' | Total all other loss: |
| Selected Pump and Main Drain Cover: | Total Dynamic Head (TDH): |
| D | using pump curve for TDH & System Flow Rate |
| (Pump model and size in Horsepower) | |
| Main Drain Cover | (System Flow Rate must not exceed approved cover flow rates) |
| (Pump model and size in Horsepower) | |
| Notes: Minimum system flow based on min. flow per Determine the Number and Type of Required In-Floor | |
| Check all that apply. | Touchon ounets. |
| ⊙ 3'-0" ⊙ 2 | suction outlets @ gpm max. flow (see note 2). |
| | Sustion outlots @ |
| | suction outlets @ gpm max. flow (see note 3) |
| | channel drain @ gpm w/ ports (see note 4 |
| | |





TDH Calculation Options For each pump Check one. 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 approved 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 change, 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 Velocity - Feet Per Second 10 fps 6 fps 8 fps Pipe Size 0.21' 0.08 0.14' 50 gpm 62 gpm 37 gpm

0.06

0.05

0.04

0.03

0.02

62 gpm

88 gpm

136 gpm

234 gpm

534 gpin

2.5

82 gpm

117 gpm

181 gpm

313 gpm

712 gpm

| Swimming Pool Energy Efficiency Compliance Information | |
|--|--------|
| NOTE: These Requirements Apply ONLY to the Filtration Pump | |
| Maximum Filtration flow rate calculations | |
| Pool water volume ÷ 360 = gpm = filtration flow rat | е |
| Is there an Auxiliary load on the filtration pump? Yes No | |
| If so, what is the auxiliary flow rate gpm | |
| Maximum Flow Rate gpm (maximum auxiliary pool loads or the filtration flow rate, whichever is greater). The pool filtration flow rate shall not be greater than the rate needed to turn over the pool water volume in 6 hours or 36 whichever is greater. This means that for pools of less than 13000 gallons, the pump shall be sized to a have a flow rate 36gpm or less. | 6 gpm |
| Suction pipe size @ 6 fpsin. | |
| Return pipe size @ 8 fpsin. | |
| Filter Factors: (Cartridge .375) or (D.E. 2) or (Sand 15) | |
| ÷ | |
| Flow rate filter factor minimum filter size | |
| Filter Make/Size | |
| Backwash valve? Yes No (If yes, must be 2 inch minimu | m) |
| Pump Selection from APSP database on Curve A (less than 17000 | |
| gallons) or C (greater than 17000 gallons) (circle one) | |
| Model | |
| Flow Rate (low speed) gpm @ rpm. | iroc |
| Flow Rate (high speed) gpm @ rpm. (not required if no auxiliary load on filtration pump) | II e C |
| Pump Controls | |
| standard time clock / 2 speed time clock or other | |
| Heater Model | |
| Notes: suction piping in front of pump inlet must be 4 pipe diameters in | |
| length. Must have 18" of straight pipe after the filter for solar. | |
| longth. Widoc no or other graph and a second | |
| | |
| | |
| | |

ANSI/APSP/ICC 15 Worksheet

| Date |
|---------------------------|
| |
| |
| |
| Contractors Signature |
| |
| Contractors Printed Name |
| • |
| Contractors Cert. No. |
| |
| Cantrastan Talanhana Na |
| Contractors Telephone No. |
| |

0.10

0.08

0.07

0.05

0.03

103 gpm

146 gpm

227 gpm

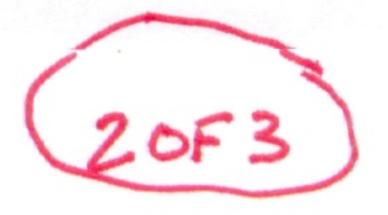
392 gpm

0.13

0.10'

0.07

| Swimming Pool Specification For: |
|----------------------------------|
| |
| |
| |
| |
| 4 |
| Scale: None |





| Total Head In Feet Conversion Chart | | | | | | | | | | | |
|-------------------------------------|------------------------------|--|--|--|------|------|------|-------|------|------|-------|
| Inches Mercury (Vacuum Gauge) | | | | | | | | | | | |
| | | 0 | 2 | 4, | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| 1 | 0 | 0.0 | 2.3 | 4.5 | 6.8 | 9.0 | 11.3 | 13.6 | 15.8 | 18.1 | 20.3 |
| | 1 | 23 | 4.6 | 6.8 | 9.1 | 11.4 | 13.6 | 15.9 | 18.1 | 20.4 | 22.7 |
| 1 | 2 | 4.6 | 6.9 | 9.1, | 11.4 | 13.7 | 15.9 | 18.2 | 20.4 | 22.7 | 25.0 |
| 1 | 3 | 6.9 | 9.2 | 11.5 | 13.7 | 16.0 | 18.2 | 20.5 | 22.8 | 25.0 | 27.3 |
| 1 . | 4 | 9.2 | 11.5 | 13.8 | 16.0 | 18.3 | 20.5 | 22.8, | 25.1 | 27.3 | 29.6 |
| 1 | 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 |
| 1 | 7 | 16.2 | 18.4 | 20.7 | 23.0 | 25.2 | 27.5 | 29.7 | 32.0 | 34.3 | 36.5 |
| 1 | 8 | 18.5 | 20.7 | 23.0 | 25.3 | 27.5 | 29.8 | 32.0 | 34.3 | 36.6 | 38.8 |
| 1 | 9 | 20_8 | 23.1 | 25.3 | 27.6 | 29.8 | 32.1 | 34.3 | 36.6 | 38.9 | 41.1 |
| 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 | 35.8 | 39.0 | 41.3 | 43.5 | 45.8 | 48.1 |
| ge | 13 | 30.0 | 32:3- | 34.5 | 36.8 | 39.1 | 41.3 | 43.6 | 45.9 | 48.1 | 50.4 |
| 12 | 14 | 32.3 | 34.6 | 36.9 | 39.1 | 41.4 | 43.6 | 45.9 | 48.2 | 50.4 | 52.7 |
| Gau | 15 | 34.6 | 36.9 | 39.2 | 41.4 | 43.7 | 45.9 | 48.2 | 50.5 | 52.7 | 55.0 |
| 0 | 16 | 37.0 | 39.2 | 41.5 | 43.7 | 46.0 | 48.3 | 50.5 | 52.8 | 55.0 | 57.3 |
| 5 S. | 17 | 39.3 | 41.5 | 43.8 | 46.1 | 48.3 | 50.6 | 52.8 | 55.1 | 57.4 | 59.6 |
| 188 | 18 | 41.6 | 43.8 | 46.1 | 48.4 | 50.6 | 52.9 | 55.1 | 57.4 | 59.7 | 51.9 |
| 88 | 19 | 43.9 | 46.2 | 48.4 | 50.7 | 52.9 | 55.2 | 57.4 | 59.7 | 62.0 | 64.2 |
| 0 | 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 | 54.3 | 66.6 | 68.9 |
| PS | 22 | 50.8 | 53.1 | 55.3 | 57.6 | 59.9 | 62.1 | 64.4 | 55.6 | 58.9 | 71.2 |
| | 23 | 53.1 | 55.4 | 57.7 | 59.9 | 62.2 | 64.4 | 65.7 | 69.0 | 71.2 | 73.5 |
| | 24 | 55.4 | 57.7 | 60.0 | 62.2 | 64.5 | 56.7 | 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 |
| | www.computereditophytimogra- | 62.4 | 64.6 | 66.9 | 69.2 | 71.4 | 73.7 | 75.9 | 78.2 | 80.5 | 82.7 |
| | 27 | 64.7 | 66.9 | 69.2 | 71.5 | 73.7 | 76.0 | 78.2 | 80.5 | 82.8 | 85.0 |
| | 28 | - Comment of the Comm | The same of the sa | 71.5 | 73.8 | 76.0 | 78.3 | 80.5 | 82.8 | 85.1 | 87.3 |
| | 29 | 67.0 | 69.3 | 73.8 | 76.1 | 78.3 | 80.6 | 82.9 | 85.1 | 87.4 | 89.6 |
| | 30 | 69.3 | 71.6 | 76.1 | 78.4 | 80.7 | 82.9 | 85.2 | 87.4 | 89.7 | 92.0 |
| | 31 | 71.0 | 73.9 | and the second s | 80.7 | 83.0 | 85.2 | 87.5 | 89.7 | 92.0 | 94.3 |
| | 32 | 73.9 | 76.2 | 78.4 | | 85.3 | 87.5 | 89.8 | 92.0 | 94.3 | 96.6 |
| | 33 | 76.2 | 78.5 | 80.7 | 83.0 | 87.6 | 89.8 | 92.1 | 94.4 | 96.6 | 98.9 |
| | 34 | 78.5 | 80.8 | 83.1 | 85.3 | 89.9 | 92.2 | 94.4 | 96.7 | 98.9 | 101.2 |
| 1 | 35 | 80.9 | 83.1 | 85.4 | 87.5 | 03.3 | 34.4 | 37.7 | 1 | 30.3 | 1 |

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



