VOLUSIA COUNTY
BUILDING & ZONING

12 APRIL 2012

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: _____ (Surf. Area) X _____ (Avg. Depth) X 7.48 (gal./cubic foot) = _____ (Vol. in gal.)
2. Determine preferred TurnoverTime in hours: _____ (Hours) x 60 (min. / Hr.) = _____ (Turnover in Min.)
3. Determine Max Flow Rate _____ (Vol. in gal.) / ff _____ (Turnover mins.) = _____ (Pool flow rate) + ff _____ Feature flow rate) = _____ (System flow rate)
4. Spa Jets: _____ (No. of Jets) x _____ (Jet Flow) gpm per jet = _____ (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 [ ] inch to keep velocity @ 6 fps max. at _____ gpm Maximum System Flow Rate.

Suction Piping to be [ ] inch to keep velocity @ 8 fps max. at _____ gpm Maximum System Flow Rate.

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

Determine Simplified TDH:

1. Distance from pool, to pump in feet: gg _____
2. Friction loss (in suction pipe) in _____ inch pipe 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. _____ (Length of Suct. Pipe) x _____ (Ft of head/1 ft of Pipe) = _____ (TDH Suct. Pipe)
5. _____ (Length of Return Pipe) x _____ (Ft of head/1 ft of Pipe) = _____ (TDH Return Pipe)

Flow and Friction Loss Per Foot
Schedule 40 PVC Pipe

Pipe Size	Velocity – Feet Per Second					
	6 fps		8 fps		10 fps	
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'

TDH in Piping: _____

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

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

Total all other loss: _____

Total Dynamic Head (TDH): [ ]

Selected Pump and Main Drain Cover:

Pump selection [ ] 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 skimmer of 35 gpm.

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

Check all that apply.

[ ] ◎ 3'–0" ◎ 2 [ ] suction outlets @ [ ] gpm max. flow (see note 2).

[ ] ◎ ◎ ◎ 3 [ ] suction outlets @ [ ] gpm max. flow (see note 3)

[ ] [ ] channel drain @ [ ] gpm w/ [ ] ports (see note 4).