ANSI/ASP-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

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.

ZUCKERMAN HOMES
LOT 17
SIENNA RESERVE
PUMP #1

Determine Maximum System Flow Rate:

Minimum Flow Rate Required: 35 gpm Per Skimmer

1. Calculate Pool Volume: 307 (Surf. Area) x 4.25 (Avg. Depth) x 7.48 (gal./cubic foot) = 9759 (Vol. in gal.)
2. Determine preferred Turnover Time in hours: 6 (Hours) x 60 (min./hr.) = 360 (Turnover in Min.)
3. Determine Max Flow Rate: 9759 (Vol. in gal.) / 360 (Turnover Mins.) = 27 (Pool Flow Rate) + N/A (Feature Flow Rate) = 27 (System Flow Rate)
4. Spa Jets: 6 (No. of Jets) x 17.5 (Jet Flow) gpm per jet = 105 (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 3.0" inch to keep velocity @ 6 fps max. at 113 gpm Maximum System Flow Rate.

Trunk Piping to be 2.5" inch to keep velocity @ 8 fps max. at 113 gpm Maximum System Flow Rate.

Return Piping to be 2.5" inch to keep velocity @ 10 fps max. at 113 gpm Maximum System Flow Rate.

Determine Simplified TDH:

1. Distance from pool to pump in feet: 45'
2. Friction loss (in suction pipe) in 2.5" inch pipe per 1 ft. @ 113 gpm = .09 (from pipe flow/friction loss chart)
3. Friction loss (in return pipe) in 2.5" inch pipe per 1 ft. @ 113 gpm = .13 (from pipe flow/friction loss chart)
4. 122' (Length of Suct. Pipe) x .09 (Ft of head/ 1 ft of Pipe) = 10.98 (TDH Suct. Pipe)
5. 200' (Length of Return Pipe) x .13 (Ft of head/ 1 ft of Pipe) = 26.00 (TDH Return Pipe)

Flow and Friction Loss Per Foot						
Schedule 40 PVC Pipe						
	Velocity – Feet Per Second					
Pipe Size	6 fps		8 fps		10 fps	
1''	16gpm	0.14'	21gpm	0.23'	26gpm	0.35'
1.5''	37gpm	0.08'	50gpm	0.14'	62gpm	0.21'
2''	62gpm	0.06'	82gpm	0.10'	103gpm	0.16'
2.5''	88gpm	0.05'	117gpm	0.09'	146gpm	0.13'
3''	138gpm	0.04'	181gpm	0.07'	227gpm	0.10'
4''	234gpm	0.03'	313gpm	0.05'	392gpm	0.07'
6''	534gpm	0.02'	712gpm	0.03'		

TDH in Piping: 36.98

Filter loss in TDH (from filter data sheet): 3.00

Heater loss in TDH (from heater data sheet): N/A

Fitting loss in TDH Total all other loss: N/A

Total Simplified TDH: 39.98

http://www.flaglercounty.org/doc/dpt/centprmt/build/headcalcsws-pools3-09.pdf
Revised 7/2009

Selected Pump and Main Drain Cover:

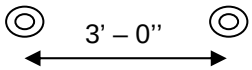
Pump selection JANDY 2.0 HP / 2 SPD FHPM FLO PRO (Pump Model and Size in Horsepower) using pump curve for Simplified TDH & System Flow Rate.

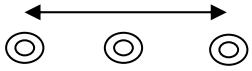
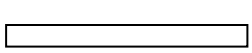
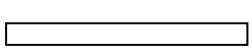
Main Drain Cover CMP 3" LARGE OUTLET (Make and Model) (System Flow Rate must not exceed approved cover flow rate)

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.

- [x] 

2 2 FLOOR suction outlets @ 150 EA gpm max. flow (see note 2).
- [ ] 
3 _____ suction outlets @ _____ gpm max. flow (see note 3).
- [ ] 
Channel Drain @ 316 gpm max. flow rate.
- [ ] 
Channel Drain @ 217 gpm w/ 2 ports & 278 gpm w/ 3 ports (see note 4).

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 make, model and location cannot change without submitting a revised plan and TDH worksheet.

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