BOZZETTO
DRAFTING & DESIGN

SIMPLIFIED TOTAL DINAMIC HEAD (TDH) CALCULATION WORKSHEET

PER ANSI/APSP-7, 2006

TDH Calculation for:
Feature Pump

Swimming Pool Specifications for:

SCOTT ROBERT EHLER AND AMY ELIZABETH EHLER
Owner

5977 BERWICK LANE
Address

AVE MARIA, FL 34142
City, State, Zip

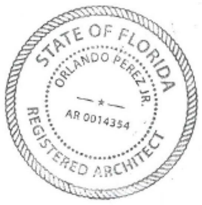
6/2/2022
Date

Contractor's signature

Print Name

Certification number

Telephone number



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DETERMINE MINIMUM & MAXIMUM SYSTEM FLOW RATES:

Minimum flow rate required: 35 gpm per skimmer (required 1 skimmer per 800 sf of srf. Area)

1. Calculate Pool Volume: 0 (Surface area) x 1.00 (Avg. Depth) x 7.48 (gal / cf) = 0 (Volume in Gallons)

2. Determine min. flow rate: 0 (Volume in Gallons) / 360 (Turnover in Min.) = 0.0 (Turnover rate) < 35 gpm (Min. flow rate req.)

System lower speed: N/A gpm

3. Determine preferred turnover in hours: 1.00 (Hours) x 60 (min./hr) = 60 (Minutes)

Water Feature Cascade

4. Determine max. flow rate: 0 (Volume in Gallons) / 60 (Turnover in Min.) = 0.0 (Pool flow rate) + 60 (Feature flow rate) = 60.00 (System flow rat

5. Spa jets: (No. of Jets) x (Jet flow) gpm per jet = 0 (Total Jets flow rate) gpm (Spa flow rate)

For Single Pump pool/spa combo, use the higher of No. 4 or No. 5 in the following calculations for the pool & Spa

Minimum System Flow rate:	N/A	gpm
Maximum System Flow rate:	60	gpm

DETERMINE PIPE SIZES:

Branch pipe to be 2" inch to keep velocity @ 6 fps max. at 60 gpm Maximum System Flow Rate

Suction pipe to be 2" inch to keep velocity @ 8 fps max. at 60 gpm Maximum System Flow Rate

Return pipe to be 1-1/2" inch to keep velocity @ 10 fps max. at 60 gpm Maximum System Flow Rate

FLOW AND FRICTION LOSSES PER FOOT - SCH. 40 PVC PIPE

Pipe size	Velocity - Feet per second					
	6 ft/sec		8 ft/sec		10 ft/sec	
1-1/2"	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'
2-1/2"	88 gpm	0.05'	117 gpm	0.08'	148 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'	890 gpm	0.05'

DETERMINE SIMPLIFIED TDH:

1. Distance from pool, to pump: 100 ft

2. Friction loss (in suction pipe) in 2" pipe per 1 ft @ 60 gpm = 0.10' (from pipe flow/friction loss chart)

3. Friction loss (in return pipe) in 1-1/2" pipe per 1 ft @ 60 gpm = 0.16' (from pipe flow/friction loss chart)

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4. Length of suction pipe	100 (ft)	x	0.10' (ft of head / 1 ft of pipe)	=	10	TDH suction pipe
5. Length of return pipe	100 (ft)	x	0.16' (ft of head / 1 ft of pipe)	=	16	TDH return pipe

TDH in piping =	26	(add 4 and 5 from above)
Filter loss in TDH =		(from filter data sheet)
Heather loss in TDH =		(from heather data sheet)
Total other loss =	19	(additional est. losses in fittings)
Total Dynamic Head (TDH) =	**45**	

SELECTED PUMP AND MAIN DRAIN COVER:

Pump selection:	Jandy (Manufacturer)	-	FloPro (Model)	-	1.0 (Size / HP)	Using pump curve for TDH & System Flow Rate
Main drain cover:	Waterway (Manufacturer)	-	640-19XX V (Model)	-	200 gpm (Max. cover flow rate)	System Flow Rate must no exceed approved cover flow rates

DETERMINE THE NUMBER AND TYPE OF REQUIRED SUCTION OUTLETS:

X (N.E.)	Dual outlets in parallel to one pump	2 suction outlets @ 200 gpm	gpm max. flow. (See note 2)
	Dual outlets in parallel to dual pumps in parallel		
	Parallel dual outlets to two pumps		
	Dual outlets on different planes		
	Three or more outlets in parallel symmetric piping	3 suction outlets @	gpm max. flow. (See note 3)
	Three or more outlets in parallel eccentrically tapped piping		
	Three or more outlets in parallel looped piping		
	Single un-blockable channel outlet to single pump (Channel Drain @ 316 gpm max. flow rate).		
	Single un-blockable channel outlet to two pumps (Channel Drain @ 217 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.
7. Pump curve for pump specified shall be attached to theses sheets.

SYSTEM DESIGNED FOR:

60 gpm @ 45 TDH

ATTACHMENTS

Compact, Versatile, Powerful

The Jandy® FloPro single- and two-speed pumps are designed with an innovative adjustable base, allowing for simple installation on new construction, or quick and easy replacement of existing pumps. With the FloPro, minimal plumbing adjustments are required, thereby enabling cost effective pump replacement.

- Medium-head, high-flow pump in an ultra compact body. Excellent choice for tight equipment areas.
- Adjustable base options allow for easy replacement of select Hayward®, Pentair®, Sta-Rite®, and Jandy pumps.
- Ergonomic cam-lock lid with easy alignment indicators.
- Equipped with 2" unions & 2" internal threads.
- Quiet operation.

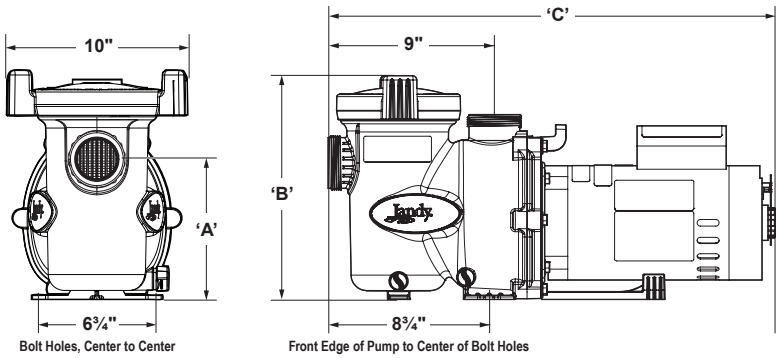
- **Easy to Use**
  Innovative pump equipped with ergonomic cam-lock lid for easy alignment and strainer basket cleaning, handle brackets, and 2" pump unions.
- **Energy and Cost Efficient**
  DOE compliant energy-efficient two-speed model provides uncompromising power to filter and recirculate pool and spa water while keeping costs down.
- **Easy to Install**
  The included adjustable base, 2" unions and 2" threaded ports enable easy drop-in replacement of most existing pumps. FloPro makes it easy to replace popular pump models including Hayward® Super Pump® or Pentair® WhisperFlo® and SuperFlo® pumps.

BASE OPTIONS

Type of Base	Components	Fits
Option 1	No base required	Hayward® Super Pump®, Pentair® SuperFlo®, Sta-Rite® SuperMax®
Option 2	Small base	Hayward Super II™, Jandy PlusHP and Max HP
Option 3	Small base with spacers	Pentair WhisperFlo®, Sta-Rite Dyna-Glas™
Option 4**	Small base + large base	Sta-Rite Max-E-Pro®, Sta-Rite Dura-Glas®, Sta-Rite Dura-Glas II, Sta-Rite Max-E-Glas®

**Optional: Part # R0546400

DIMENSIONS



SPECIFICATIONS

Residential FloPro Pumps, DOE Compliant

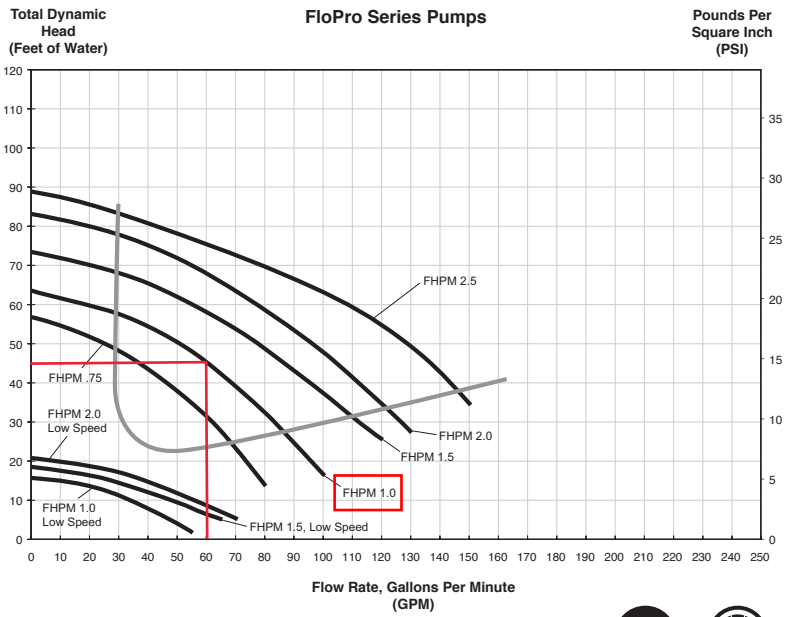
Model No.	THP	WEF	Voltage	Amps	Recommended Pipe Size	Carton weight	Overall Length 'A'
FHPM.75	0.95	4.1/4.3	230/115	5.4/10.8	1½–2"	40.6 lbs.	23⅜"
FHPM1.0	1.24	3.5	230/115	7.1/14.2	2-2½"	41.2 lbs.	23⅜"
FHPM1.0-2	1.14	5.6	230	7.1/2.3	2-2½"	46.5 lbs.	24¼"

Residential FloPro Pumps, Not DOE Compliant*

Model No.	THP	WEF	Voltage	Amps	Recommended Pipe Size	Carton weight	Overall Length 'A'
FHPM1.5	1.65	-	230/115	8.0/16	2–2½"	42.6 lbs.	23¾"
FHPM2.0	2.26	-	230/115	11.2/22.4	2–2½"	54.6 lbs.	25⅜"
FHPM2.5	2.60	-	230	11.5	2½-3"	48.6 lbs.	24⅜"
FHPM1.5-2	1.65	-	230	8.0/3.0	2½-3"	48.0 lbs.	24⅜"
FHPM2.0-2	2.22	-	230	11.2/3.5	2½-3"	52.9 lbs	24⅞"

*Pumps not meeting DOE compliance standards will cease manufacturing on or before July 18, 2021. Specifications are being provided for historical reference.

PERFORMANCE

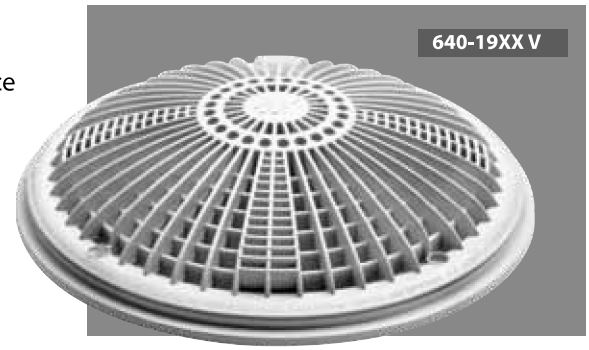


60 GPM @ 45' TDH

640-19XX V

10" Round Tru Flo Drain and Frame

Waterway drain covers are compliant to the latest Consumer Safety Product Commission requirements (CPSC). Listed and Certified and Tested in strict accordance to the requirements of ASME A112.19.8-2007and ASME A112.19.8a-2008 as defined in CPSC letter dated April 8, 2011. Certified by: Underwriters Laboratories, Inc., 2929 E. Imperial Highway, Suite 100, Brea, CA 92821-6729.



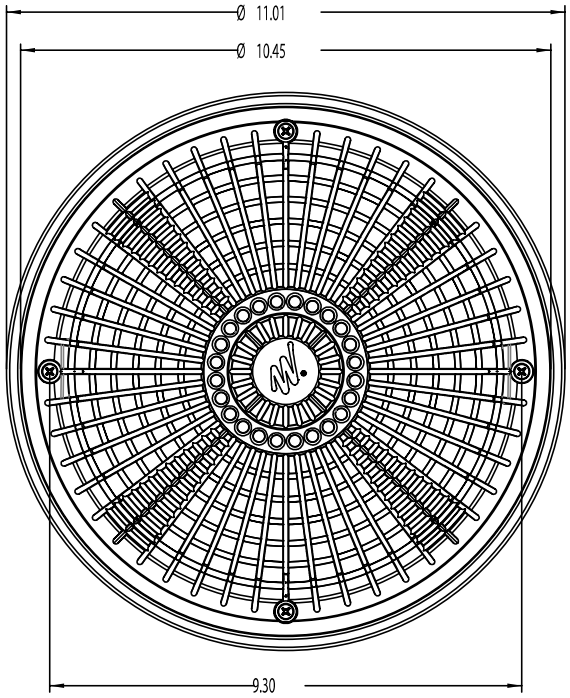
Waterway 640-19XX V series covers and frames are available in:

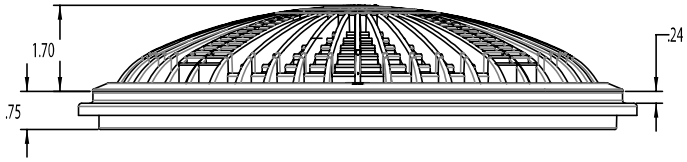
❑ White ■ Black ❑ Gray ❑ Dark Gray ❑ Beige

WARNING!

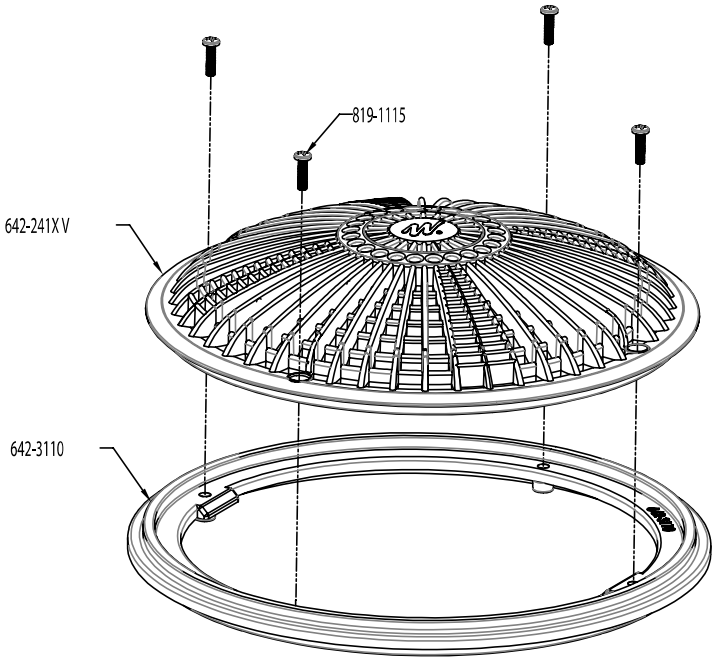
- A minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor to wall) must be installed a minimum of three feet (1 meter) apart, as measured from near point to near point.
- Dual suction shall be placed in such locations and distances to avoid "dual blockage" by a user.
- Dual suction fittings shall not be located on seating areas or on the backrest for seating areas.
- The maximum system flow rate shall not exceed the flow rate of any listed suction outlet cover installed (per ASME/ANSI A112.19.8-2007).
- Never use pool or spa if any suction outlet component is damaged, broken, cracked, missing or not securely attached.
- Replace damaged, broken, cracked, missing or not securely attached suction outlet components immediately.
- In addition, two or more suction outlets per pump installed in accordance with the latest APSP, IAF Standards and CPSC guidelines must follow all applicable National, State and Local codes.

Model No.	Description	Size	Total Open Area Square Inches	Floor Flow Rate GPM	Wall Flow Rate GPM	Flow Rate GPM @ 1.5 ft/sec
640-19XX V	**Tru Flo**	**10"**	**30.9**	**200**	**136**	**143**





Part No.	Description
819-1115	#8 Stainless Steel Screw - 32 x 5/8
642-241X V	10" Tru Flo Drain Cover
642-311X	10" Tru Flo Drain Frame



Made in the USA