



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF WATER RESOURCES
20653 DUPONT BLVD
UNIT 5
GEORGETOWN, DE 19947

February 11, 2016

Ben Miller
Green Technology, LLC
PO Box 270
Ellendale, DE 19941

RE: Approval of the Clarus/Zoeller Model 5041-0009 ½ horsepower lift package

Dear Mr. Miller,

The Division of Water Resources has received and reviewed your request to approve the Clarus/Zoeller Model 5041-0009 ½ horsepower lift package; to be used in conjunction with Class B or other gravity fed on-site wastewater treatment and disposal systems designed in Delaware. We are pleased to inform you that we are able to approve the lift package referenced above, provided that it are installed in accordance with the manufacturer's requirements and specific permit conditions.

Additionally, specific components (brands, model numbers, etc...) should be listed on permit insert sheet. As a condition of this approval, no substitution of components is allowed without written approval from the Department. The lift package referenced in this approval is readily available at Aquaflo Plumbing Supply Company.

If you have any other questions please contact me at 856-4561.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jim Cassidy".

James Cassidy
Program Manager I
Ground Water Discharges Section

Cc: file

Delaware's good nature depends on you!

Turbine STEP System

SIMPLEX OR DUPLEX

Designed for simplex and duplex (2 pumps) applications in a single polyethylene pump vault. All components selected to withstand the septic tank environment.

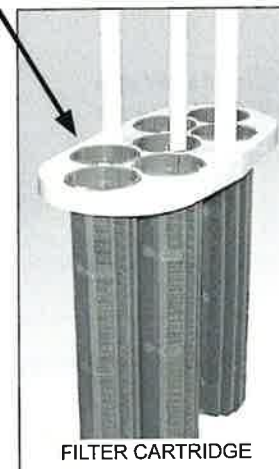
Exceptionally large unobstructed area for float placement reduces risk of hang ups.

Inlet is available precut from the factory or blank for field customization.

Low seated filter cartridge provides more vertical room within the vault, allowing for greater versatility when setting floats.

Pipe hangers for suspended applications or flat bottom for setting on tank floor.

Over 924 linear feet of 1/16" filtration. Large filter area protects effluent pumps in even the dirtiest septic tank. Deep pleated design is easy to clean.



FILTER CARTRIDGE

Covered by US Patent No. 5,985,139; others pending.

Large selection of effluent turbine pumps.

fits in any 18"
septic tank opening

- Custom heights available in 51", 60", 66", 72", 78", 84", 90", 96", 108", and 120".
- Pumps available in 11, 19, 27, 35, 55 and 85 GPM models with variable cord length, and extended warranties.

Prepackaged Systems (unassembled)

½ HP MODEL WITH FLOAT SWITCH CONTROL

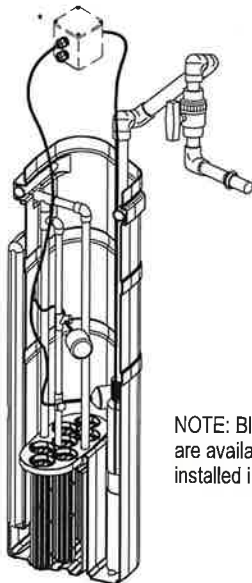
- ☐ 5041-0003 ½ HP (11 GPM) Package
- ☐ 5041-0004 ½ HP HH (11 GPM) Package
- ☐ 5041-0005 ½ HP (19 GPM) Package
- ☐ 5041-0006 ½ HP (27 GPM) Package

Patent No.
5,985,139

System Includes:

- Filter and pump chamber.
- ½ HP effluent rated turbine pump.
- 115V rated system.
- Double piggyback float switch control and float tree.
- 1¼" flexible discharge pipe assembly.

Note: All on/off alarm settings must comply with all state and local codes.



NOTE: Blank tanks are available for field installed inlet hole.

SK2408

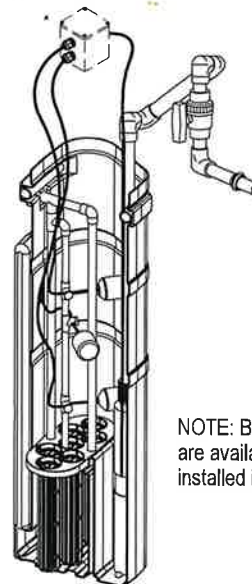
* Order prewired conduit, junction box or check valve separately if required.

½ HP MODEL WITH FLOAT SWITCH CONTROL & ALARM

- ☐ 5041-0007 ½ HP (11 GPM) w/ Alarm Package
- ☐ 5041-0008 ½ HP HH (11 GPM) w/ Alarm Package
- ☒ 5041-0009 ½ HP (19 GPM) w/ Alarm Package
- ☒ 5041-0010 ½ HP (27 GPM) w/ Alarm Package

System Includes:

- Filter and pump chamber.
- ½ HP effluent rated turbine pump.
- 115V rated system.
- Double piggyback float switch control and float tree.
- 1¼" flexible discharge pipe assembly.
- Indoor/outdoor alarm and float.



NOTE: Blank tanks are available for field installed inlet hole.

SK2409

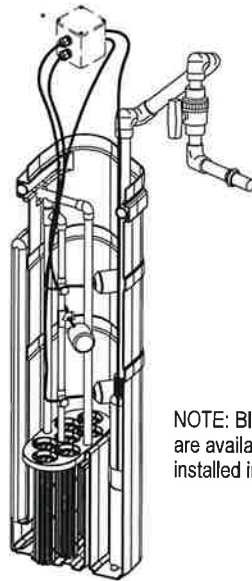
* Order prewired conduit, junction box or check valve separately if required.

½ HP MODEL WITH SIMPLEX CONTROL PANEL

- ☐ 5041-0011 ½ HP (11 GPM) w/ Simplex Control Package
- ☐ 5041-0012 ½ HP HH (11 GPM) w/ Simplex Control Package
- ☐ 5041-0013 ½ HP (19 GPM) w/ Simplex Control Package
- ☐ 5041-0014 ½ HP (27 GPM) w/ Simplex Control Package

System Includes:

- Filter and pump chamber.
- ½ HP effluent rated turbine pump.
- 115V rated system.
- Simplex control and alarm panel.
- 3 variable level float switches and float tree.
- 1¼" flexible discharge pipe assembly.



NOTE: Blank tanks are available for field installed inlet hole.

SK2410

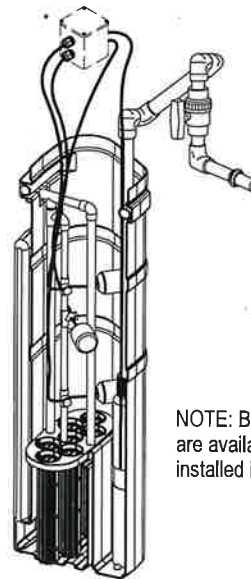
* Order prewired conduit, junction box or check valve separately if required.

½ HP MODEL WITH TIMED DOSE PANEL

- ☐ 5041-0015 ½ HP (11 GPM) w/ Timed Dosing Package
- ☐ 5041-0016 ½ HP HH (11 GPM) w/ Timed Dosing Package
- ☐ 5041-0017 ½ HP (19 GPM) w/ Timed Dosing Package
- ☐ 5041-0018 ½ HP (27 GPM) w/ Timed Dosing Package

System Includes:

- Filter and pump chamber.
- ½ HP effluent rated turbine pump.
- 115V rated system.
- Time dosing single pump control panel.
- 3 variable level float switches and float tree.
- 1¼" flexible discharge pipe assembly.



NOTE: Blank tanks are available for field installed inlet hole.

SK2411

Note: It is the responsibility of the installer & designer to assure all state and local codes are met.

* Order prewired conduit, junction box or check valve separately if required.

Custom Applications

FILTER AND PUMP CHAMBER

Patent No.
5,985,139

Includes filter pack with handle and pump chamber preassembled at factory.

- ☐ 5041-0034 51" Field Cut
- ☒ 5041-0001 60" Factory Cut
- ☐ 5041-0025 66" Field Cut
- ☐ 5041-0026 72" Field Cut
- ☐ 5041-0027 78" Field Cut
- ☐ 5041-0028 84" Field Cut
- ☐ 5041-0029 90" Field Cut
- ☐ 5041-0030 96" Field Cut
- ☐ 5041-0056 108" Field Cut
- ☐ 5041-0049 120" Field Cut



SK2413

(B) TURBINE EFFLUENT PUMPS

11 GPM Turbine Effluent Pump - 1.25" Discharge

- ☐ 5030-0005 .5 Hp, 115V/1Ph, 12 Amp, 5-Stage, 10' cd
- ☐ 5030-0006 .5 Hp, 230V/1Ph, 6 Amp, 5-Stage, 10' cd
- ☐ 5030-0007 .5 Hp, 115V/1Ph, 12 Amp, 7-Stage, 10' cd
- ☐ 5030-0008 .5 Hp, 230V/1Ph, 6 Amp, 7-Stage, 10' cd
- ☐ 5030-0009 .75 Hp, 230V/1Ph, 8 Amp, 10-Stage, 10' cd
- ☐ 5030-0012 1 Hp, 230V/1Ph, 9.8 Amp, 13-Stage, 10' cd

19 GPM Turbine Effluent Pump - 1.25" Discharge

- ☒ 5031-0005 .5 Hp, 115V/1Ph, 12 Amp, 5-Stage, 10' cd
- ☐ 5031-0006 .5 Hp, 230V/1Ph, 6 Amp, 5-Stage, 10' cd
- ☐ 5031-0007 .75 Hp, 230V/1Ph, 8 Amp, 7-Stage, 10' cd
- ☐ 5031-0008 1 Hp, 230V/1Ph, 9.8 Amp, 9-Stage, 10' cd

27 GPM Turbine Effluent Pump - 1.25" Discharge

- ☐ 5032-0005 .5 Hp, 115V/1Ph, 12 Amp, 4-Stage, 10' cd
- ☐ 5032-0006 .5 Hp, 230V/1Ph, 6 Amp, 4-Stage, 10' cd
- ☐ 5032-0007 .75 Hp, 230V/1Ph, 8 Amp, 6-Stage, 10' cd
- ☐ 5032-0008 1 Hp, 230V/1Ph, 9.8 Amp, 7-Stage, 10' cd
- ☐ 5032-0009 1.5 Hp, 230V/1Ph, 13.1 Amp, 10-Stage, 10' cd

35 GPM Turbine Effluent Pump - 2" Discharge

- ☐ 5033-0005 .5 Hp, 115V/1Ph, 12 Amp, 2-Stage, 10' cd
- ☐ 5033-0006 .5 Hp, 230V/1Ph, 6 Amp, 2-Stage, 10' cd
- ☐ 5033-0007 .75 Hp, 230V/1Ph, 8 Amp, 3-Stage, 10' cd
- ☐ 5033-0008 1 Hp, 230V/1Ph, 9.8 Amp, 4-Stage, 10' cd
- ☐ 5033-0009 1.5 Hp, 230V/1Ph, 13.1 Amp, 5-Stage, 10' cd

55 GPM Turbine Effluent Pump - 2" Discharge

- ☐ 5034-0005 .5 Hp, 115V/1Ph, 12 Amp, 1-Stage, 10' cd
- ☐ 5034-0006 .5 Hp, 230V/1Ph, 6 Amp, 1-Stage, 10' cd
- ☐ 5034-0007 .75 Hp, 230V/1Ph, 8 Amp, 2-Stage, 10' cd
- ☐ 5034-0008 1 Hp, 230V/1Ph, 9.8 Amp, 3-Stage, 10' cd
- ☐ 5034-0009 1.5 Hp, 230V/1Ph, 13.1 Amp, 4-Stage, 10' cd
- ☐ 5034-0010 2 Hp, 230V/1Ph, 13.2 Amp, 5-Stage, 25' cd
- ☐ 5034-0011 3 Hp, 230V/1Ph, 14.5 Amp, 7-Stage, 25' cd

85 GPM Turbine Effluent Pump - 2" Discharge

- ☐ 5035-0005 .75 Hp, 230V/1Ph, 8 Amp, 1-Stage, 10' cd
- ☐ 5035-0006 1 Hp, 230V/1Ph, 9.8 Amp, 2-Stage, 10' cd
- ☐ 5035-0007 1.5 Hp, 230V/1Ph, 13.1 Amp, 3-Stage, 10' cd
- ☐ 5035-0008 2 Hp, 230V/1Ph, 13.2 Amp, 4-Stage, 25' cd
- ☐ 5035-0009 3 Hp, 230V/1Ph, 14.5 Amp, 6-Stage, 25' cd

Turbine Effluent Pump Extended Warranties

- ☐ 021392 .5 - 1.5 Hp, 5-Year Extended Warranty
- ☐ 021393 2 - 3 Hp, 5-Year Extended Warranty

11, 19, 27
GPM Models



35 GPM
Models

(C) DISCHARGE ASSEMBLIES & CHECK VALVES

Discharge pipe assembly consists of a male adapter, PVC piping, elbows, PVC pipe, union/ball valve, pipe seal, and stub to extend outside of riser. Preassembled and welded at the factory.

Flexible Discharge Assemblies for Simplex Systems

- ☐ 170-0158 1" SCH 40 PVC (185' TDH Max.)
- ☐ 170-0172 1" SCH 40 PVC for 96" system (185' TDH Max.)
- ☐ 170-0082 1 1/4" SCH 40 PVC (185' TDH Max.)
- ☐ 170-0174 1 1/4" SCH 40 PVC for 96" system (185' TDH Max.)
- ☐ 170-0148 1 1/4" SCH 40 PVC (185' TDH Max.)
- ☐ 170-0159 2" SCH 40 PVC (130' TDH Max.)
- ☐ 170-0161 2" SCH 40 PVC for 96" system (130' TDH Max.)
- ☐ 170-0178 2" SCH 40 PVC for 120" system (130' TDH Max.)

Rigid Discharge Assemblies for Simplex Systems

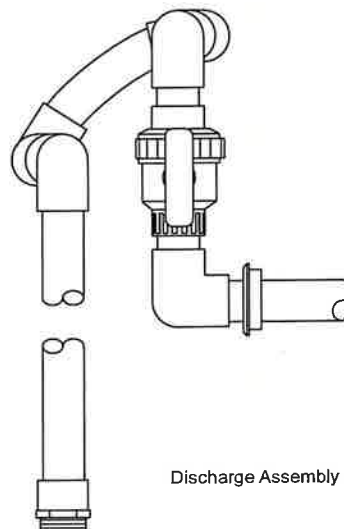
- ☐ 170-0181 1" SCH 40 PVC
- ☐ 170-0182 1 1/4" SCH 40 PVC
- ☐ 170-0184 1 1/4" SCH 40 PVC for 96" system
- ☐ 170-0186 1 1/4" SCH 40 PVC for 120" system
- ☐ 170-0183 2" SCH 40 PVC
- ☐ 170-0190 2" SCH 40 PVC for 84" system
- ☐ 170-0185 2" SCH 40 PVC for 96" system
- ☐ 170-0187 2" SCH 40 PVC for 120" system
- ☐ 170-0177 2" SCH 40 PVC 3' cold weather extension kit

Rigid Discharge Assemblies for Duplex Systems

- ☐ 170-0197 1 1/4" SCH 40 PVC, dual discharge
- ☐ 170-0195 2" SCH 40 PVC, dual discharge
- ☐ 170-0206 2" SCH 40 PVC, 3' cold weather extension kit, dual discharge

Check Valves

- ☐ 30-0187 1 1/4" brass threaded check valve
- ☐ 30-0189 2" brass threaded check valve



Discharge Assembly

NOTE: Turbine effluent pumps are available with 25', 50', and 100' cord lengths.

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Custom Applications, continued

(D) CONTROL/ALARM

Double Piggyback Variable Level Pump Control Switches

- ☒ 10-1966 115V, 13 Amps (7" max. pumping range)
- ☐ 10-1967 230V, 13 Amps (7" max. pumping range)

High Water Alarm Assembly

- ☐ 10-1494 Indoor Alarm assembly
- ☒ 10-0623 Outdoor Alarm assembly, NEMA 3R with 15' mechanical switch
- ☐ 10-3067 C-Pak Alarm, Touch Panel, NEMA 4X, w/o float

Demand Dose Control Panels

Simplex panel with pull out disconnect, motor contactor, and high water alarm circuit.

- ☐ 10-1355 Simplex panel, NEMA 4X, 115/230V, 1 phase, 0-20 Amps, 3 mechanical float switches
- ☐ 10-0093 Duplex panel, NEMA 4X, 115/230V, 1 phase, 0-20 Amps, 3 mechanical float switches

Timed Dose Control Panels (includes float switches)

Timed dose panel for single pump control with alarm circuit, elapsed time meter, event counter, circuit breaker, motor contactor, and float switches (see FM1559).

- ☐ 10-1021 Simplex panel, NEMA 4X, 115V, 0-20 Amps, 1 phase, 2 float switches
- ☐ 10-0684 Simplex panel, NEMA 4X, 115V, 0-20 Amps, 1 phase, 3 float switches
- ☐ 10-0697 Simplex panel, NEMA 4X, 230V, 0-20 Amps, 1 phase, 3 float switches
- ☐ 10-1430 Duplex panel, NEMA 4X, 115/230V, 0-20 Amps, 1 phase, 3 float switches

Note: All variable level float switches in this section are mechanically activated and do not contain mercury.

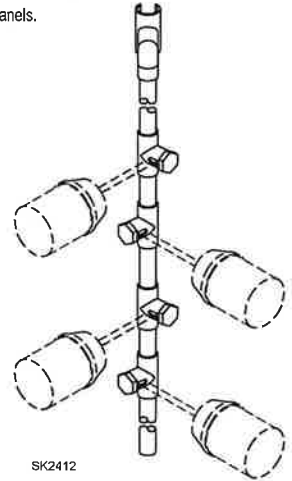
(F) FLOAT TREE

Float trees are selected based on the number of float switches in each assembly.

- ☒ 10-1672 2 - Hanger Float Tree (for use with 2-float applications) ←
- ☐ 10-1673 3 - Hanger Float Tree (for use with 3-float applications)
- ☐ 10-1674 4 - Hanger Float Tree (for use with 4-float applications)
- ☐ 10-1726 5 - Hanger Float Tree (for use with 5-float applications)

Adders are available for 72", 84", 96", 108", and 120" float tree lengths.

Floats ordered separately, also may be included with panels.



SK2412

(E) PREWIRED CONDUIT/JUNCTION BOX

Prewired conduit is designed to make the electrical wiring easier. Assemblies come with the correct numbers of wires of the correct gauge for the application. Junction box is included.

For Simplex Demand or Timed Dose Control Panels (up to 3 floats) - 1/2" Conduit

- ☐ 5100-0001 25' long w/ J-Box (4 cord seals, 1 plug) wt. 10 lbs.
- ☐ 5100-0002 35' long w/ J-Box (4 cord seals, 1 plug) wt. 14 lbs.
- ☐ 5100-0003 50' long w/ J-Box (4 cord seals, 1 plug) wt. 18 lbs.
- ☐ 5100-0004 75' long w/ J-Box (4 cord seals, 1 plug) wt. 26 lbs.
- ☐ 5100-0005 100' long w/ J-Box (4 cord seals, 1 plug) wt. 33 lbs.

For Duplex Demand or Timed Dose Control Panels (up to 3 floats) - 3/4" Conduit

- ☐ 5100-0026 25' long w/ J-Box (5 cord seals, 1 plug) wt. 10 lbs.
- ☐ 5100-0027 35' long w/ J-Box (5 cord seals, 1 plug) wt. 14 lbs.
- ☐ 5100-0028 50' long w/ J-Box (5 cord seals, 1 plug) wt. 18 lbs.
- ☐ 5100-0029 75' long w/ J-Box (5 cord seals, 1 plug) wt. 26 lbs.
- ☐ 5100-0030 100' long w/ J-Box (5 cord seals, 1 plug) wt. 33 lbs.

NEMA 4X Junction Boxes

Select Junction Box based on number of cords present in riser.

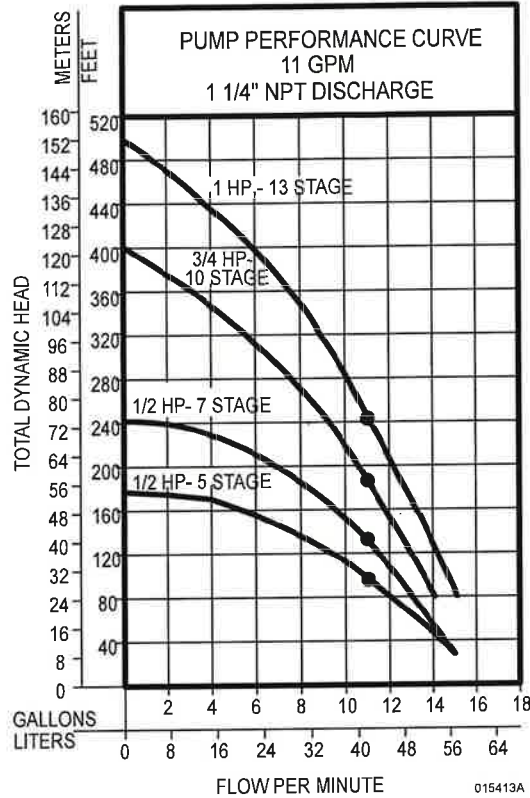
- ☐ 10-1399 4"L x 4"W x 4"H, 4 round cord seals, 1 1/2" hub (assembled), wt. 1.0 lb.
- ☐ 10-0777 4"L x 4"W x 2"H, 4 round cord seals, 3/4" hub (assembled), wt. 1.0 lb.
- ☐ 10-0778 4"L x 4"W x 2"H, 5 round cord seals, 3/4" hub (assembled), wt. 1.0 lb.



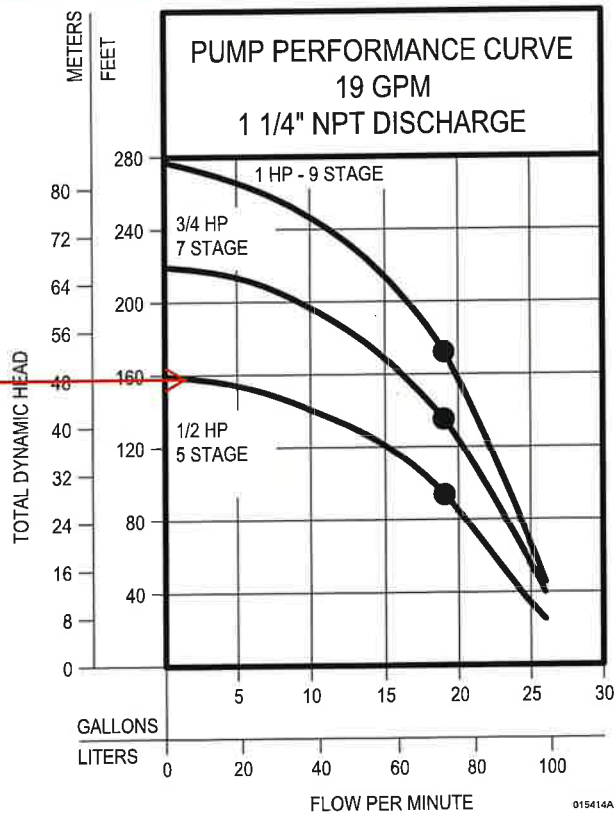
Clarus Turbine STEP System has 6 basic components:

- (A) Filter and pump chamber _____
- (B) Pump _____
- (C) Discharge Assembly _____
- (D) Control/Alarm System _____
- (E) Prewired Conduit/Junction Box _____
- (F) Float Tree _____

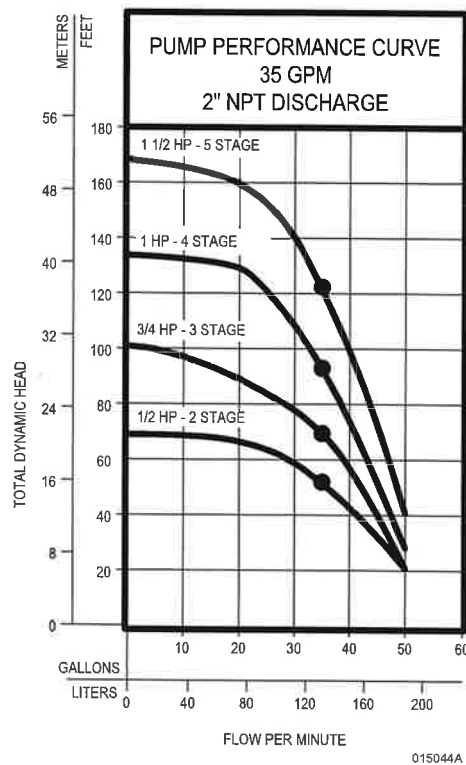
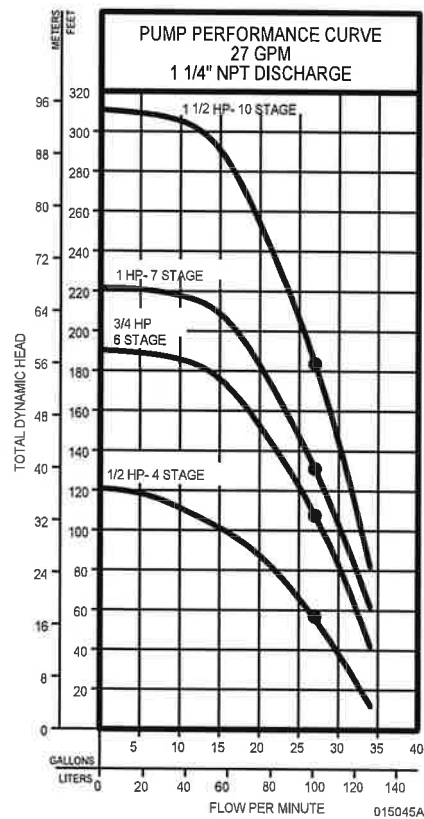
Turbine STEP System Performance



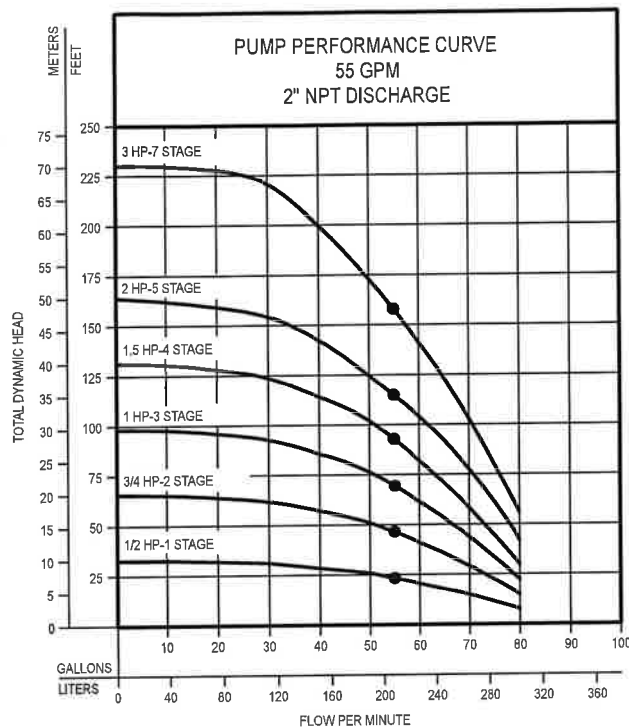
Pump
Curve



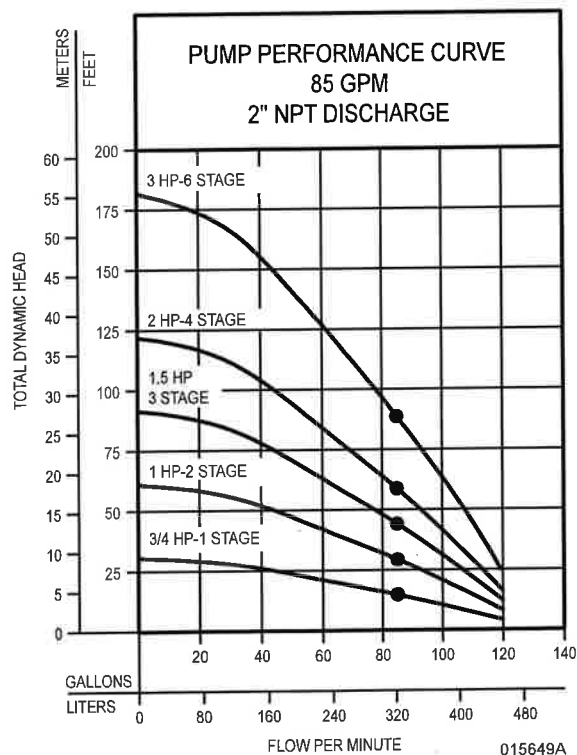
Turbine STEP System Performance, *continued*



Turbine STEP System Performance, *continued*

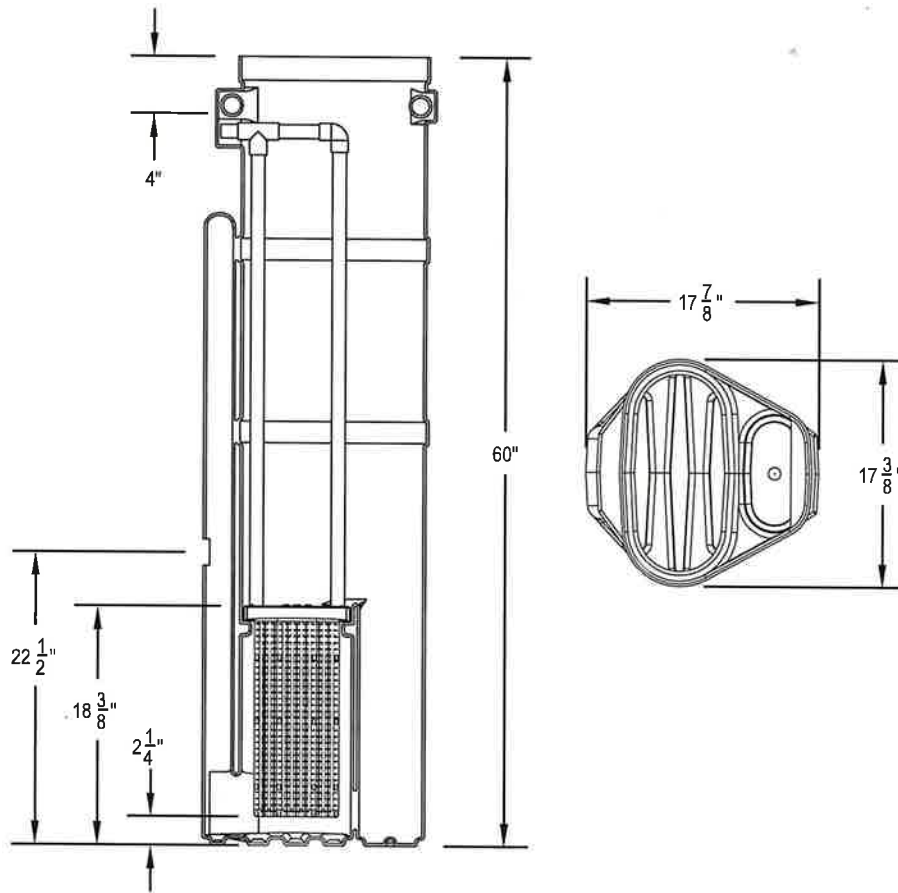


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Turbine STEP System Specifications



60" STANDARD VAULT

SK2396

| Materials of Construction | |
|---------------------------|----------------------------|
| Tank | Polyethylene |
| Filter Cartridge | Polypropylene / PVC |
| Float Tree | PVC |
| Hanger Pipe | PVC |
| Drain Valve | Neoprene / Stainless Steel |

Your Peace of Mind is Our Top Priority®

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www.clarusenvironmental.com

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