



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

July 31, 2014

Kim Yanaitis.  
Septic Solutions, LLC  
13 Charles Point  
Newark, DE 19702-2227

RE: Approval of the SSLLC-3BED Pre-Engineered Lift Station

Dear MS. Yanaitis,

The Division of Water Resources has received and reviewed your request to approve your SSLLC-3BED pre-engineered lift station; to be used in conjunction with Class B designed on-site wastewater treatment and disposal systems in Delaware. We are pleased to inform you that we are able to **approve** the lift station referenced above, provided that they are installed in accordance with the designers proposed components 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 design engineer and pre-approval from the Department.

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

Sincerely,

A handwritten signature in blue ink that reads "James Cassidy".

James Cassidy  
Program Manager I  
Ground Water Discharges Section

Cc: file

*Delaware's good nature depends on you!*

**SEPTIC SOLUTIONS, LLC**

13 Charles Pointe  
Newark, DE 19702-2227  
(302) 438-7498  
Fax (302) 738-5616  
kyanaitis@comcast.net

June 8, 2014

James Cassidy  
DNREC  
20653 DuPont Boulevard  
Unit 5  
Georgetown, DE 19947

RE: PRE-ENGINEERED LIFT STATION  
SSLLC-3BED

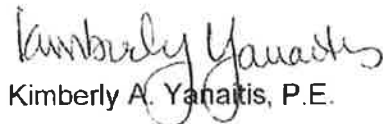
Dear Jim,

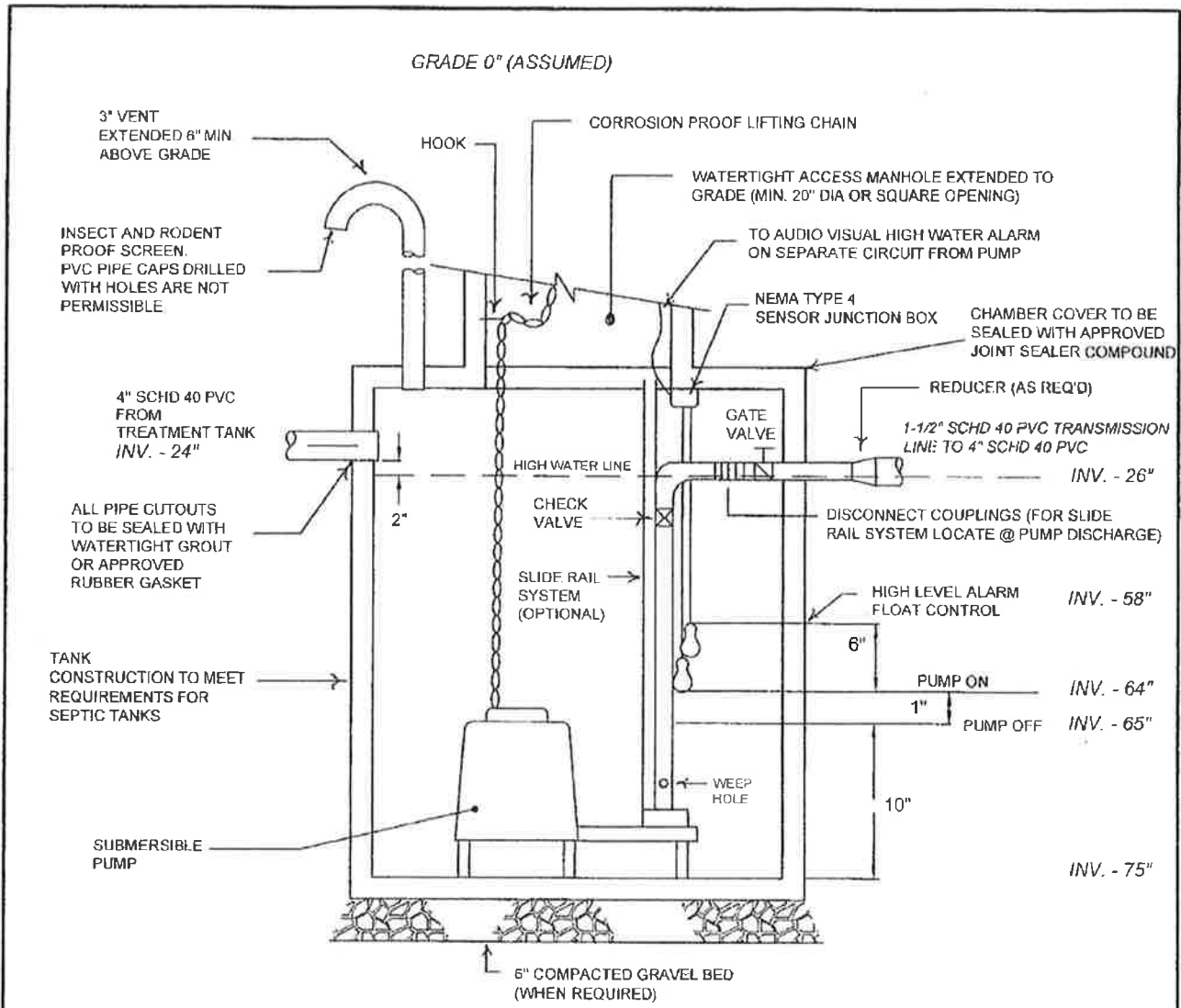
Enclosed please find the design package for a pre-engineered lift station.

The station has been designed for a 3 Bedroom house with a maximum static head of 10'. The transmission line ranges from 1 lf to 300 lf.

Please review the design at your earliest convenience. If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

  
Kimberly A. Yanaitis, P.E.



NOTES:

1. EXCAVATION LIMITS SHALL EXTEND AT LEAST 2 FEET BEYOND TANK PERIMETER.
2. ALL PIPE TO BE SCHEDULE 40 PVC.
3. CHAMBER TO BE SIZED ACCORDING TO REQUIREMENTS OF DOSING VOLUME AND STORAGE. SEE EXHIBIT I.
4. ALL DOSING CHAMBER COMPONENTS SHALL BE FIELD TESTED TO INSURE ACCURACY, WATER TIGHTNESS AND PROPER OPERATION OF ALL PUMPS AND ALARM CONTROLS.
5. ALL ELECTRICAL CONNECTIONS SHALL BE WATERPROOF, CORROSION RESISTANT AND EXPLOSION PROOF.

TYPICAL DIMENSIONS (ID):

LENGTH:	60"
WIDTH:	60"
HEIGHT:	60"
HEIGHT TO INLET:	51"

USING GATE VALVE, ADJUST FLOW FOR APPROX. 20 GPM (1 GAL / 3 SEC)



**5' X 5'**  
**LIFT PUMP TANK**  
**(N.T.S.)**

SSLLC-3BED

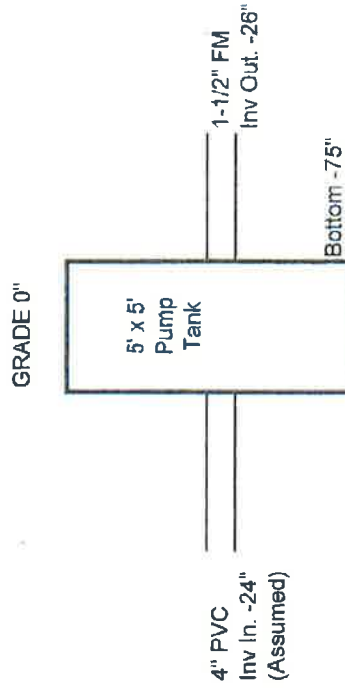
PROJECT NAME: SLLC-3BED-1 LIFT PUMP PACKAGE  
 Date: 7/7/2014  
 Design: KAY  
 Page: 1 of 2

1 LF TRANSMISSION LINE, 10' STATIC HEAD (MAX)

AVERAGE FLOW: 360 GPD (0.25 GPM)

FORCE MAIN SIZE:  
 $D_{max} = 0.404 * \sqrt{Q \text{ peak}}$   
 $D_{max} = 0.404 * \sqrt{Q \text{ (0.25 GPM)}}$   
 $D_{max} = 0.20"$

Use 1-1/2" SCHD 40 PVC



STATIC HEAD: SH = HIGH POINT - PUMP OFF  
 SH = 10 FT



**PIPE AND FITTING SCHEDULE**

Date: 7/7/2014  
 Design: KAY  
 Page: 2 of 2

Q (GPM)	V <sup>2</sup> / 2G	Hf (ft/100 ft)	1-1/2" STEEL	1-1/2" PVC (SDR-21)	V <sup>2</sup> / 2G	Hf (ft/100 ft)	FITTING	K-VALUE
20	0.154	2.94	0.124	1.89			1-1/2" CHECK VALVE	0.04
							1-1/2" GATE VALVE	0.18
							1-1/2" 90 BEND	1.25
							1-1/2" 45 BEND	0.65 ASSUMED

Note: K-values per Supplement to NCC Std. Spec  
 Construction Section 35.16, Part 5  
 Sample Designs for Sewage Pumping Stations

**LOSSES**

20 GPM	1-1/2" CHECK VALVE (STEEL)	1	*	0.154	0.04	=	0.00616
	1-1/2" GATE VALVE (STEEL)	1	*	0.154	0.18	=	0.02772
	1-1/2" 90 BEND (STEEL)	1	*	0.154	1.25	=	0.19250
	1-1/2" 45 BEND (PVC)	0	*	0.124	0.65	=	0.00000
	1-1/2" STEEL FM	4	*	2.94	(/100)	=	0.1176
	1-1/2" PVC FM	1	*	1.89	(/100)	=	0.01890
	STATIC HEAD					=	10.00
	TOTAL						10.36

**WET WELL VOLUME (5' x 5' TANK)**

DIMENSIONS OF WET WELL (ID) = 5' x 5' = SF  
 PUMP ON TO PUMP OFF = 1" 25  
 VOLUME = 25 SF \* (1" / 12") FT \* 7.48 GAL/CF = 15.6 GAL



PROJECT NAME: SLLC -3BED-1  
LIFT PUMP PACKAGE

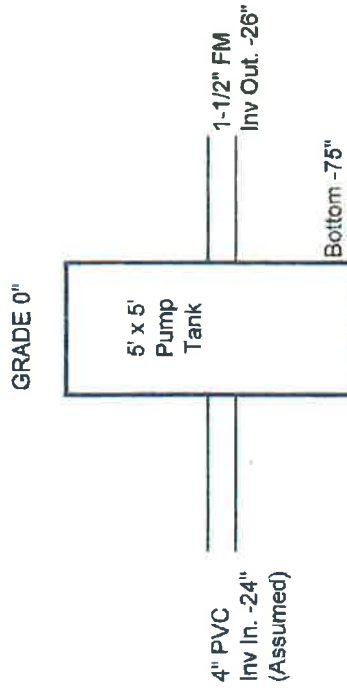
Date: 7/7/2014  
Design: KAY  
Page: 1 of 2

**300 LF TRANSMISSION LINE, 10' STATIC HEAD (MAX)**

AVERAGE FLOW: 360 GPD (0.25 GPM)

FORCE MAIN SIZE:  
 $D_{max} = 0.404 \cdot \sqrt{Q \text{ peak}}$   
 $D_{max} = 0.404 \cdot \sqrt{QRT(0.25 \text{ GPM})}$   
 $D_{max} = 0.20"$

Use 1-1/2" SCHD 40 PVC



H.W.L. -58"  
PUMP ON -64"  
PUMP OFF -65"  
BOTTOM -75"

STATIC HEAD SH = HIGH POINT - PUMP OFF  
SH = 10 FT



**PIPE AND FITTING SCHEDULE**

Date: 7/7/2014  
 Design: KAY  
 Page: 2 of 2

Q (GPM)	1-1/2" STEEL		1-1/2" PVC (SDR-21)		FITTING	K-VALUE
	V <sup>2</sup> / 2G	Hf (ft/100 ft)	V <sup>2</sup> / 2G	Hf (ft/100 ft)		
20	0.154	2.94	0.124	1.89	1-1/2" CHECK VALVE	0.04
					1-1/2" GATE VALVE	0.18
					1-1/2" 90 BEND	1.25
					1-1/2" 45 BEND	0.65 ASSUMED

Note: K-values per Supplement to NCC Std. Spec  
 Construction Section 35.16, Part 5  
 Sample Designs for Sewage Pumping Stations

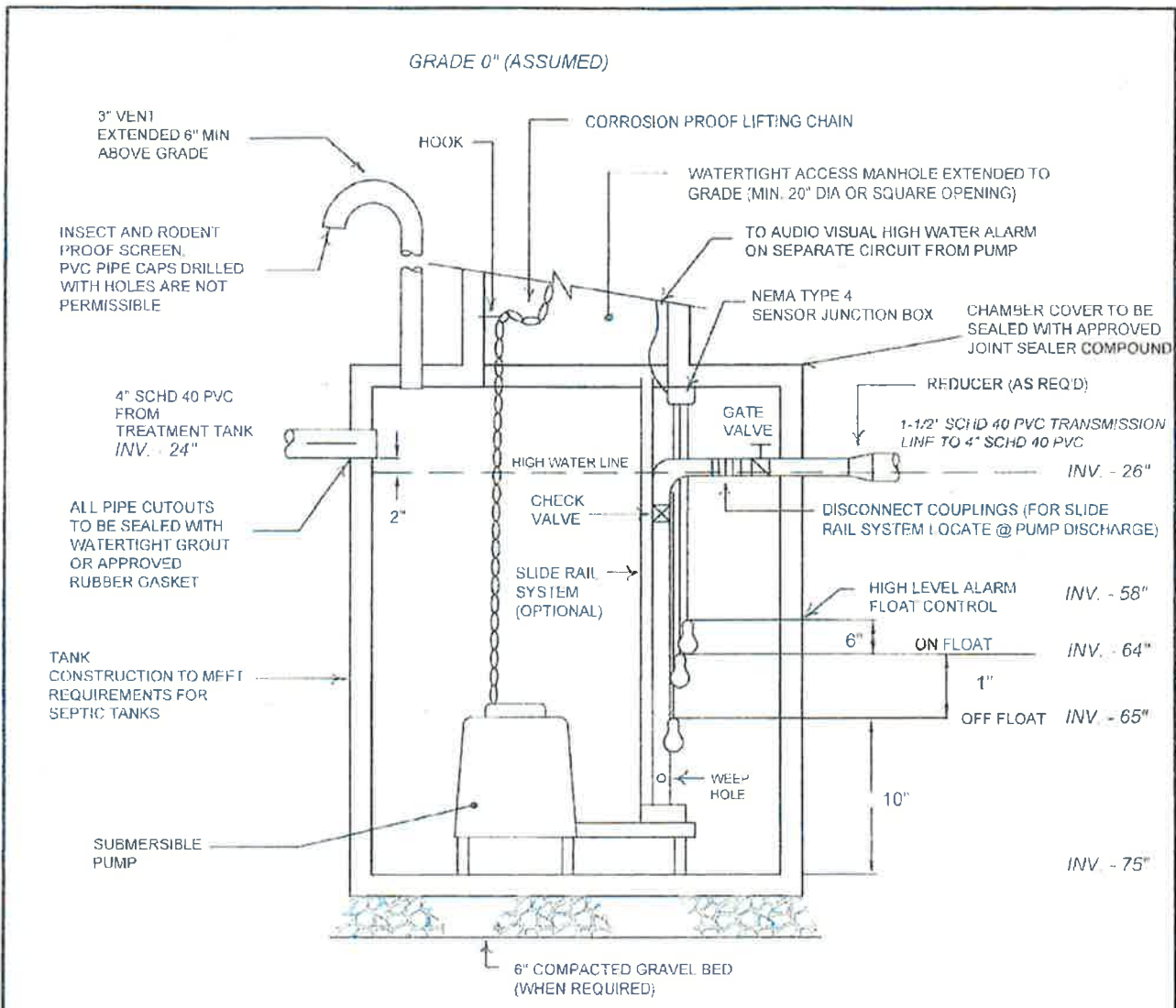
**LOSSES**

20 GPM	1-1/2" CHECK VALVE (STEEL)	1	0.154	*	0.04	=	0.00616
	1-1/2" GATE VALVE (STEEL)	1	0.154	*	0.18	=	0.02772
	1-1/2" 90 BEND (STEEL)	1	0.154	*	1.25	=	0.19250
	1-1/2" 45 BEND (PVC)	0	0.124	*	0.65	=	0.00000
	1-1/2" STEEL FM	4	2.94	*	(/100)	=	0.1176
	1-1/2" PVC FM	300	1.89	*	(/100)	=	5.67000
	STATIC HEAD					=	10.00
	TOTAL						16.01

**WET WELL VOLUME (5' x 5' TANK)**

DIMENSIONS OF WET WELL (ID) = 5' x 5' = SF  
 PUMP ON TO PUMP OFF = 1" 25 SF  
 VOLUME = 25 SF \* (1" / 12") FT \* 7.48 GAL/CF = 15.6 GAL





3" VENT  
EXTENDED 6" MIN  
ABOVE GRADE

INSECT AND RODENT  
PROOF SCREEN.  
PVC PIPE CAPS DRILLED  
WITH HOLES ARE NOT  
PERMISSIBLE

4" SCHD 40 PVC  
FROM  
TREATMENT TANK  
INV. - 24"

ALL PIPE CUTOUTS  
TO BE SEALED WITH  
WATERTIGHT GROUT  
OR APPROVED  
RUBBER GASKET

TANK  
CONSTRUCTION TO MEET  
REQUIREMENTS FOR  
SEPTIC TANKS

SUBMERSIBLE  
PUMP

GRADE 0" (ASSUMED)

HOOK

CORROSION PROOF LIFTING CHAIN

WATERTIGHT ACCESS MANHOLE EXTENDED TO  
GRADE (MIN. 20" DIA OR SQUARE OPENING)

TO AUDIO VISUAL HIGH WATER ALARM  
ON SEPARATE CIRCUIT FROM PUMP

NEMA TYPE 4  
SENSOR JUNCTION BOX

CHAMBER COVER TO BE  
SEALED WITH APPROVED  
JOINT SEALER COMPOUND

REDUCER (AS REQ'D)

1-1/2" SCHD 40 PVC TRANSMISSION  
LINE TO 4" SCHD 40 PVC

HIGH WATER LINE

INV. - 26"

CHECK VALVE

DISCONNECT COUPLINGS (FOR SLIDE  
RAIL SYSTEM LOCATE @ PUMP DISCHARGE)

SLIDE RAIL  
SYSTEM  
(OPTIONAL)

HIGH LEVEL ALARM  
FLOAT CONTROL

INV. - 58"

ON FLOAT

INV. - 64"

OFF FLOAT

INV. - 65"

WEEP  
HOLE

10"

INV. - 75"

6" COMPACTED GRAVEL BED  
(WHEN REQUIRED)

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USING GATE VALVE. ADJUST  
FLOW FOR APPROX. 20 GPM  
(1 GAL / 3 SEC)



5' X 5'  
LIFT PUMP TANK  
(N.T.S.)

SSLLC-3BED



**TECHNICAL BROCHURE**

B3886



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# WS\_B Series

## Model 3886

SUBMERSIBLE SEWAGE PUMP

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 **GOULDS**

a xylem brand

## Wastewater

### FEATURES

**Impeller:** Cast iron, semi-open, dynamically balanced, non-clog with pump out vanes for mechanical seal protection. Optional Silicon bronze impeller available.

**Casing:** Cast iron volute type for maximum efficiency. Designed for easy installation on A10-20 guide rail or base elbow rail systems.

**Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces for superior abrasive resistance, stainless steel metal parts, BUNA-N elastomers

**Shaft:** Corrosion-resistant stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.

**Fasteners:** 300 series stainless steel.

Capable of running dry without damage to components.

Designed for continuous operation when fully submerged.

**EXTENDED WARRANTY AVAILABLE FOR RESIDENTIAL APPLICATIONS.**

### AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards  
By Canadian Standards Association  
File #LR38549

### APPLICATIONS

Specifically designed for the following uses:

- Homes
- Sewage systems
- Dewatering/Effluent
- Water transfer

### SPECIFICATIONS

#### Pump

- Solids handling capabilities: 2" maximum
- Discharge size: 2" NPT
- Capacities: up to 185 GPM
- Total heads: up to 38 feet TDH
- Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent

### MOTORS

- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer. All ratings are within the working limits of the motor.
- Class B insulation

#### Single phase (60 Hz):

- All single phase models feature capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ½ - 1 HP models have NEMA three prong grounding plugs.

#### Three phase (60 Hz):

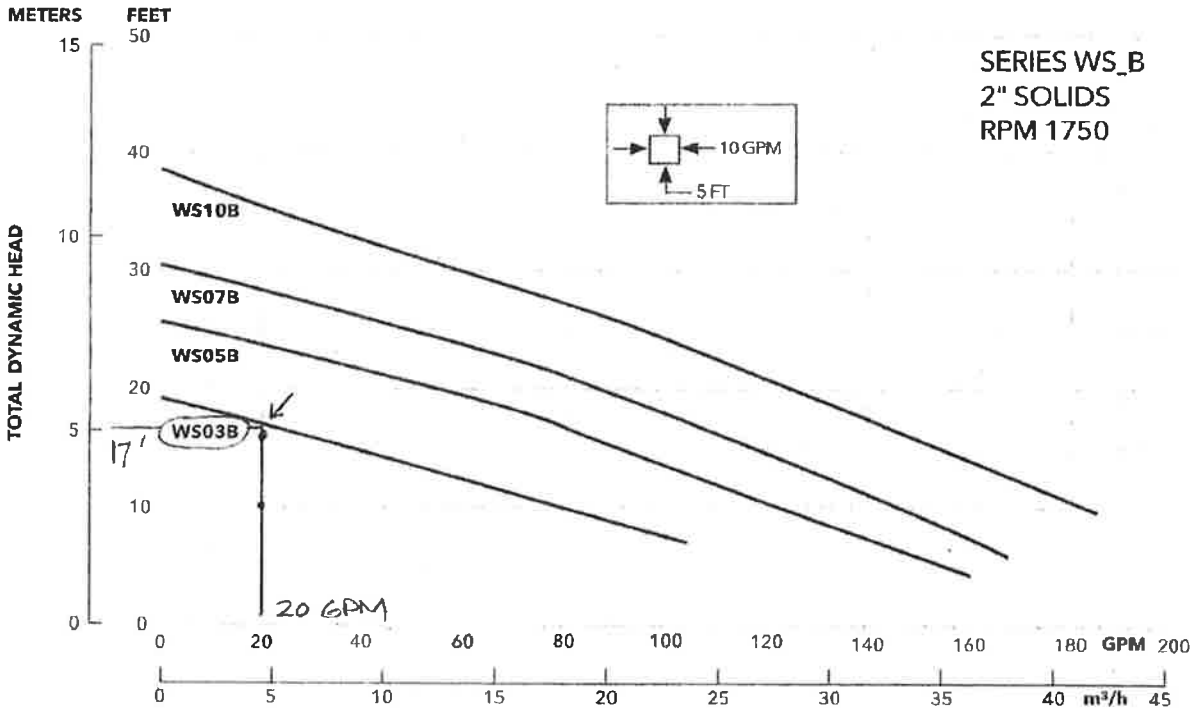
- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends
- **Bearings:** Upper and lower heavy duty ball bearing construction.
- **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
- **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.
- **Motor Cover O-ring:** Assures positive sealing against contaminants and oil leakage.

# Goulds Water Technology

## Wastewater

### MODELS

Order Number	HP	Phase	Volts	RPM	Impeller Dia. (In.)	Max. Amps	LRA	KVA Code	Full Load Motor Eff.	Resistance		Wt. (Lbs.)		
										Start	Line-Line			
WS0311B	0.33	1	115	1750	4.69	10.7	30.0	M	54	11.9	1.7	63		
WS0318B			208			6.8	19.5	K	51	9.1	4.2			
WS0312B			230			4.9	14.1	L	53	14.5	8.0			
WS0511B	0.5	1	115		5.00	5.00	14.5	31.1	J	55	9.3	1.4	65	
WS0518B			208				8.0	19.5	K	51	9.1	4.2		
WS0512B			230				7.3	16.5	J	54	11.7	5.6		
WS0538B			3				200	3.8	12.3	K	75	NA		6.7
WS0532B							230	3.3	9.7	K	75	NA		9.9
WS0534B							460	1.7	4.9	K	75	NA		39.4
WS0537B		575	1.4		4.3	K	68	NA	47.8					
WS0718B	0.75	1	208		5.38	5.38	11.0	39.0	K	65	2.6	1.4	85	
WS0712B			230				9.4	24.8	J	57	4.8	2.3		
WS0738B			3				200	4.1	21.2	H	74	NA		4.3
WS0732B		230					3.6	17.3	J	76	NA	5.6		
WS0734B		460					1.8	8.9	J	76	NA	22.4		
WS0737B			575	1.5			7.3	J	71	NA	29.2			
WS1018B	1	1	208	5.75	5.75	14.0	39.0	K	65	2.6	1.4	85		
WS1012B			230			12.3	30.5	H	60	4.3	1.8			
WS1038B			3			200	6.0	21.2	H	74	NA		4.3	
WS1032B		230				5.8	17.3	J	76	NA	5.6			
WS1034B		460				2.9	8.9	J	76	NA	22.4			
WS1037B			575			2.4	7.3	J	71	NA	29.2			



**PERFORMANCE RATINGS** (gallons per minute)

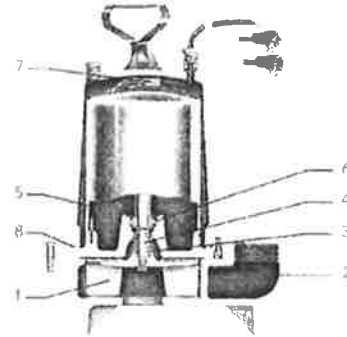
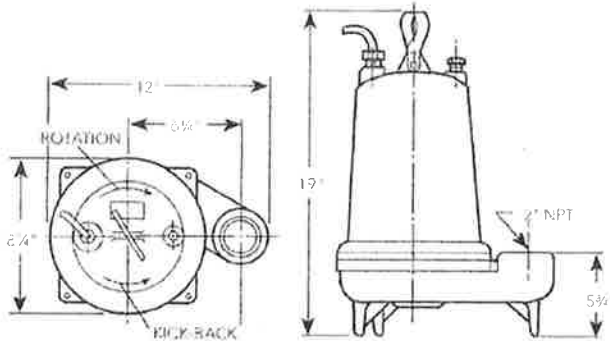
Order No.	WS03B	WS05B	WS07B	WS10B
HP ▶	¾	½	¾	1
RPM ▶	1750	1750	1750	1750
Total Head Feet of Water	10 ▶	80	122	145
	15	36	90	116
	20	-	50	86
	25	-	-	48
	30	-	-	58
	35	-	-	20

**COMPONENTS** (for reference only)

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring

**DIMENSIONS**

(All dimensions are in inches. Do not use for construction purposes.)



NOTE: For specific parts breakdown, see repair parts.



Xylem, Inc.  
 2881 East Bayard Street Ext., Suite A  
 Seneca Falls, NY 13148  
 Phone: (866) 325-4210  
 Fax: (888) 322-5877  
[www.xylem.com/brands/gouldswatertechnology](http://www.xylem.com/brands/gouldswatertechnology)

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# ITT

BCPS120 R3

Wastewater

## CentriPro S12015FR 1Ø Simplex Control Panel



### FEATURES

- Rugged NEMA 4X construction withstands even the most severe weather conditions and prevents corrosion.
- Hinged door with lockable stainless steel latch for safe operation indoors and out.
- Dead front, full inner door for operator safety-access provided for H-O-A switch, pump run light, alarm test switch, ETM and pull-out service disconnect.
- High level alarm circuit with external alarm horn silence switch.
- Alarm test switch on inner door insures proper operation of the alarm circuit without the need to actuate the alarm float.
- Inside mounted pump run light.
- Top mounted high intensity red light provides 360° visibility.
- Corrosion proof alarm horn.
- Color coded wiring, screw type terminals, ensure ease of field servicing.
- Field wiring diagram, panel schematic and installation instructions included.
- Entire unit is UL and CUL listed.
- Non-modifiable – no options available.



CentriPro is a brand of ITT Corporation.

[www.centripro.com](http://www.centripro.com)

*Engineered for life*

# CentriPro

S12015FR, 1Ø Simplex Control Panel

## APPLICATIONS

Simplex liquid level controller, automatically maintains pump operation, includes high level alarm warning for a variety of sump, effluent, sewage and water transfer applications.

## SPECIFICATIONS

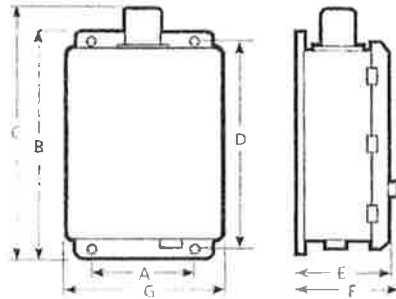
- Single-phase, 115 volt, 60 hertz
- NEMA 4X Fiberglass Deadfront Enclosure
- Full Inner Door
- Elapsed Time Meter
- Service Disconnect inside enclosure, pull-out type
- Float Switches – included with panel:
  - (1) A2E33, 20' SJE Pump Master Plus\*
  - (1) A2N33, 20' SJE Sensor Float\* control switch
- Hand-Off-Automatic (H-O-A) pump selection switch on inner door
- Accepts single or dual power feed
- Numbered Terminal Strip – screw type
- NEMA 4X, 30 watt Red Alarm Light
- NEMA 4X Alarm Horn – 95 db. with external silence switch
- Alarm Test Switch on inner door
- Pump Run Light on inner door
- Auxiliary Alarm Contacts

Order No.	Maximum Running Amps	Float Switches (Model and Quantity)
S12015FR	15	(1) A2E33 pump switch
		(1) A2N33 high level switch

## ENCLOSURE DIMENSIONS (IN INCHES)

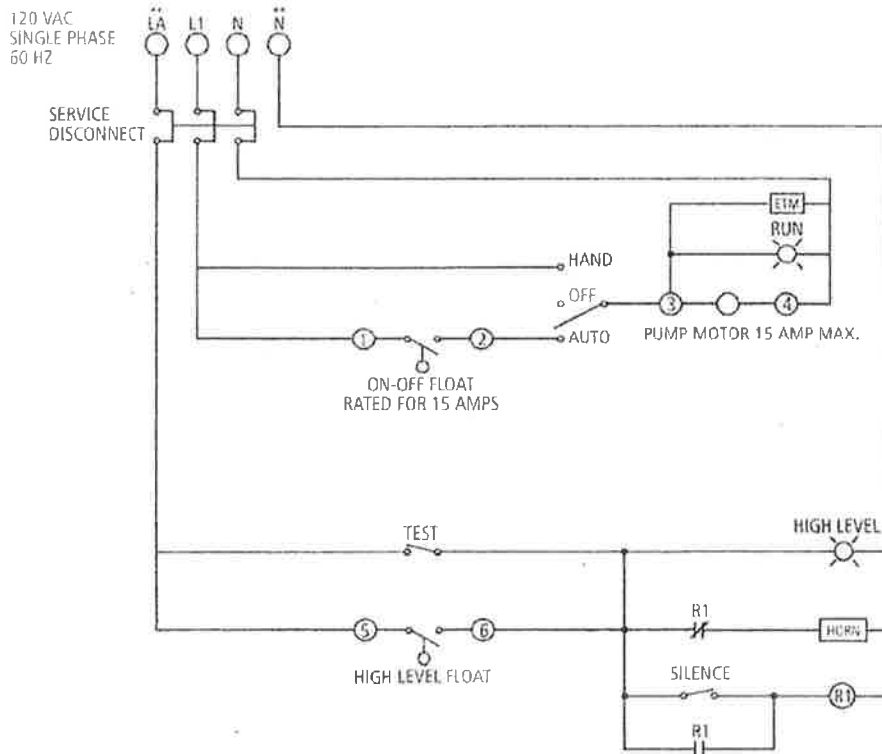
Single Phase

A	B	C	D	E	F	G
6.3	11.5	14.3	10.8	5.5	6.0	9.3



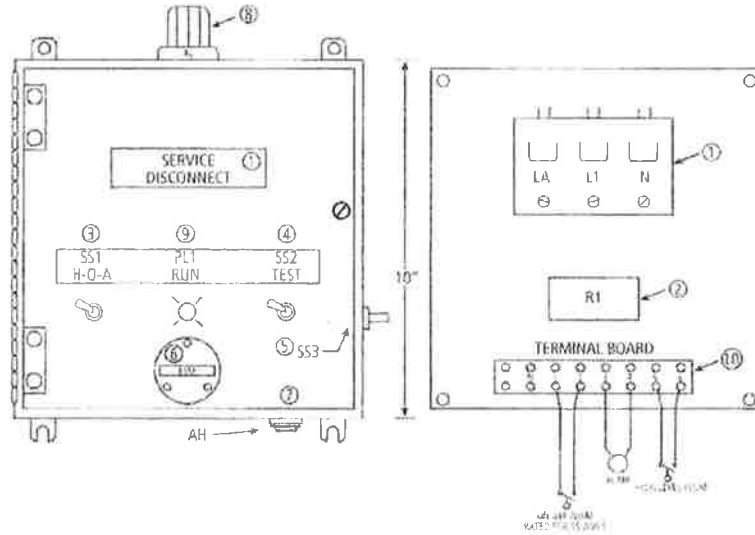
## WIRING DIAGRAM

\* INSTALL JUMPER BETWEEN LA AND L1, N AND N IF A SEPARATE ALARM CIRCUIT IS NOT REQUIRED  
 \*\* CONNECT 120 VAC CIRCUIT TO TERMINAL LA AND N FOR SEPARATE ALARM POWER.



## COMPONENTS

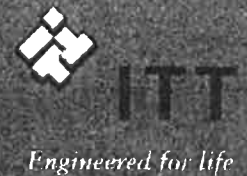
No.	Item	Description
1	DISC	Service Disconnect
2	R1	Control Relays
3	SS1	Switch H-O-A
4	SS2	Switch Alarm Test
5	SS3	Switch Alarm Silence
6	ETM	Running Time Meter
7	AH	Alarm Horn
8	AL	Alarm Light
9	PL1	Pump Run Light
10	TB	Wiring Terminal Board



ITT  
 2881 East Bayard Street, Seneca Falls, NY 13148  
 Phone: (315) 568-7123 • Fax: (315) 568-7973  
[www.centripro.com](http://www.centripro.com)

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 SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.





## A2H SERIES

### SJE VerticalMaster<sup>®</sup> Pump Switch

#### Features

- Mechanically activated vertical operation.
- Controls pumps up to ½ HP at 120 VAC and 1 HP at 230 VAC.
- Non-corrosive PVC housing for use in liquids up to 125° F (52° C).
- Overall Dimensions: 12" High, 5" Deep, 3" Wide.
- Not sensitive to rotation.
- Pumping range: .75" to 6.5".
- 16 AWG, SJOW cord is available with or without piggyback plug.
- Available for pump down applications only.
- For confined applications requiring an accurate pumping range.
- Stainless steel mounting bracket and hose clamp.
- UL Recognized for use in non-potable water and sewage.
- CSA Certified
- See chart for amperage range and other data.

