



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

May 4, 2016

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

RE: Approval of the SSLLC-3BED-RHOMBUS115 Pre-Engineered Lift Station

Dear Ms. Yanaitis,

The Division of Water Resources has received and reviewed your request to approve your SSLLC-3BED-RHOMBUS115 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, appearing to read "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

April 18, 2016

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

RE: PRE-ENGINEERED LIFT STATION
SSLLC-3BED-RHOMBUS115

Dear Jim,

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

This design is identical to the previously approved pre-engineered lift station SSLLC-3Bed with the exception of the control panel. A SJR Rhombus Model 115 panel is proposed instead of the CentriPro panel.

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.

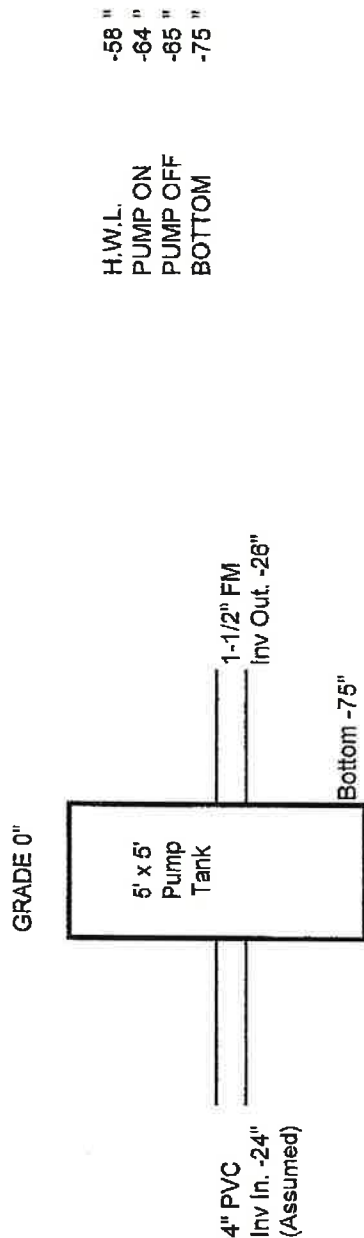
PROJECT NAME:	SLLC-3BED-1 LIFT PUMP PACKAGE	Date:	7/7/2014
		Design:	KAY
		Page:	1 of 2

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

AVERAGE FLOW: 360 GPD (0.25 GPM)

FORCE MAIN SIZE:
 $D_{max} = 0.404 \cdot \sqrt[4]{Q \text{ peak}}$
 $D_{max} = 0.404 \cdot \sqrt[4]{0.25 \text{ GPM}}$
 $D_{max} = 0.20"$

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)	1-1/2" STEEL		1-1/2" PVC (SDR-21)		FITTING	K-VALUE
	V ² / 2G	Hf (ft/100 ft)	V ² / 2G	Hf (ft/100 ft)		
20	0.154	2.94	0.124	1.89	1-1/2" CHECK VALVE 1-1/2" GATE VALVE 1-1/2" 90 BEND 1-1/2" 45 BEND	0.04 0.18 1.25 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" GAL
VOLUME = 25 SF * (1"/12") FT * 7.48 GAL/CF = 15.6

Kennedy Associates

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

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

DATE: 7/7/2014

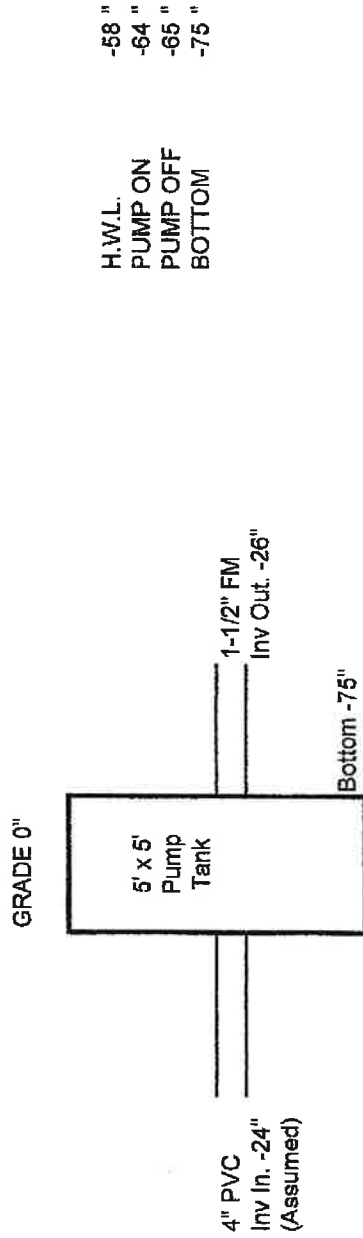
DESIGN: KAY

PAGE: 1 of 2

AVERAGE FLOW: 360 GPD (0.25 GPM)

FORCE MAIN SIZE: $D_{max} = 0.404 \cdot \sqrt[4]{Q \cdot peak}$
 $D_{max} = 0.404 \cdot \sqrt[4]{0.25 \cdot GPM}$
 $D_{max} = 0.20"$

Use 1-1/2" SCHD 40 PVC



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

Kennedy Yavapai

PIPE AND FITTING SCHEDULE

Q (GPM)	1-1/2" STEEL		1-1/2" PVC (SDR-21)		FITTING	K-VALUE
	V ² / 2G	Hf (ft/100 ft)	V ² / 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

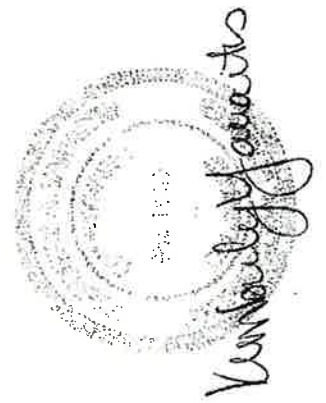
Note: K-values per Supplement to NCC Std. Spec
 Construction Section 35.16, Part 5
 Sample Designs for Sewage Pumping Stations

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

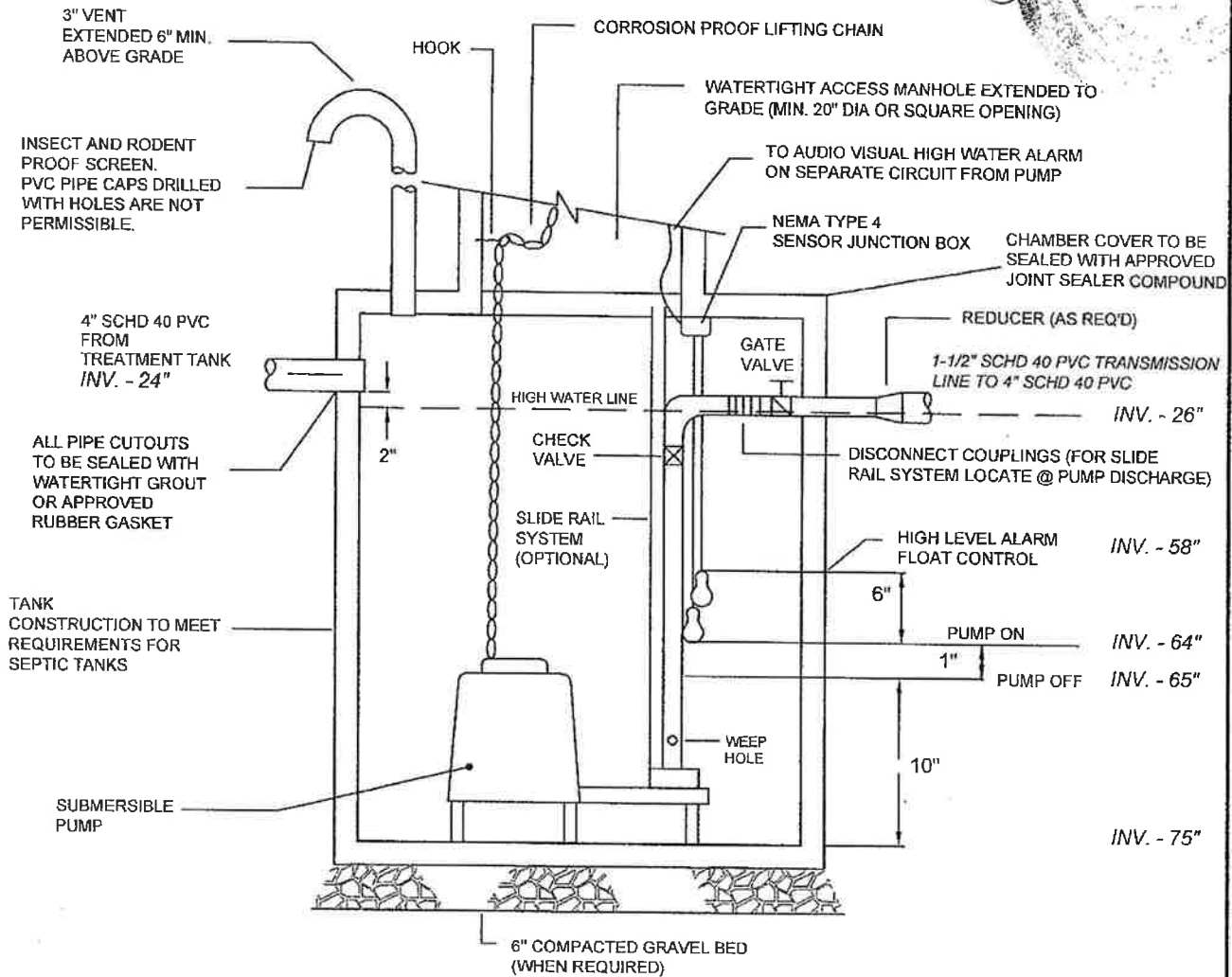
WET WELL VOLUME (5' X 5' TANK)

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





GRADE 0" (ASSUMED)



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)

PARTS LIST

PUMP: GOULDS MODEL 3886, WS0311B, 1/3 HP,
1 PHASE, 115 V, 1750 RPM
CONTROL PANEL: SJE RHOMBUS MODEL 115
SIMPLEX CONTROL PANEL
FLOAT: CENTRIPRO A2H SERIES,
SJE VERTICALMASTER PUMP SWITCH

5' X 5'

PRE-ENGINEERED LIFT STATION
(N.T.S.)

SSLLC-3BED-Rhombus115
Approved by DNREC
7/31/2014

TECHNICAL BROCHURE

B3886



WS_B Series

Model 3886

SUBMERSIBLE SEWAGE PUMP

 **GOULDS**
WATER TECHNOLOGY
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):

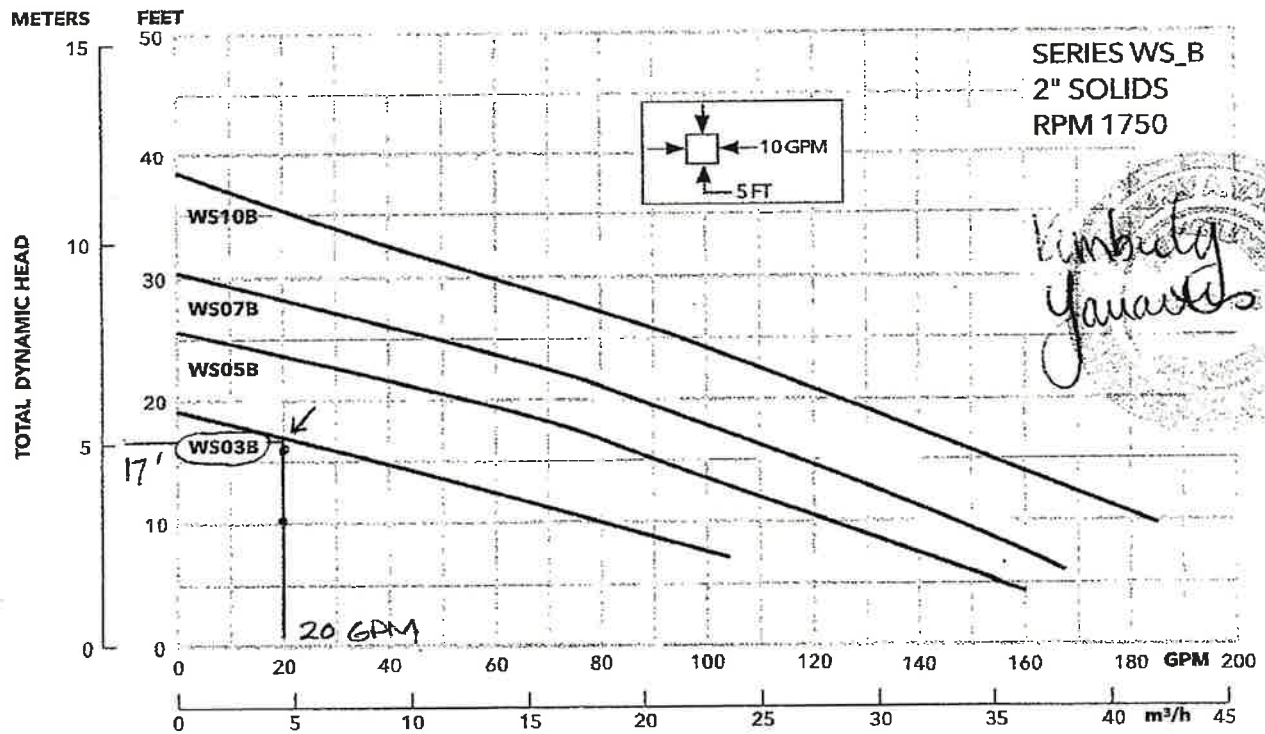
- All single phase models feature capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ½ - 1 HP models have NEMA three prong grounding plugs.

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.

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	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	0.75	1	575		5.38	1.4	4.3	K	68	NA	47.8	85
WS0718B			208			11.0	39.0	K	65	2.6	1.4	
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		1	575			1.5	7.3	J	71	NA	29.2	
WS1018B			208		5.75	14.0	39.0	K	65	2.6	1.4	
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		1	575			2.4	7.3	J	71	NA	29.2	

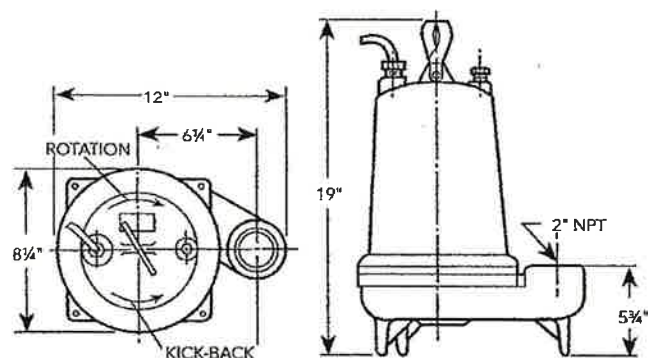


PERFORMANCE RATINGS (gallons per minute)

Order No.	WS03B	WS05B	WS07B	WS10B
HP ▶	1/8	1/4	3/8	1
RPM ▶	1750	1750	1750	1750
Total Head Feet of Water	10 ▶	80	122	145
	15	36	90	116
	20	-	50	86
	25	-	48	95
	30	-	-	58
	35	-	-	20

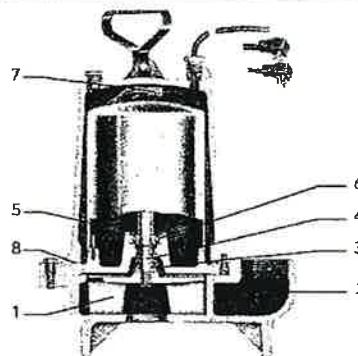
DIMENSIONS

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



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



NOTE: For specific parts breakdown, see repair parts.

xylem
Let's Solve Water

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

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MODEL 115 Control Panel

Single phase, simplex pump switch control.

The Model 115 control panel provides customers with a reliable means of controlling one 120, 208, or 240 VAC single phase pump in water and wastewater installations. A pump float switch turns the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system. Common applications include pump chambers, sump pump basins, irrigation systems, and lift stations.

PANEL COMPONENTS

1. **Enclosure** measures 8 x 6 x 4 inches (20.32 X 15.24 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use).
2. **HOA Switch** for manual pump control.
3. **Green Pump Run Indicator Light**
4. **Pump Circuit Terminal Block**
5. **Alarm Circuit Terminal Block** (mounted on circuit board).
6. **Alarm Fuse** (mounted on circuit board).
7. **Alarm Power Indicator** (mounted on circuit board).
8. **Ground Lug**

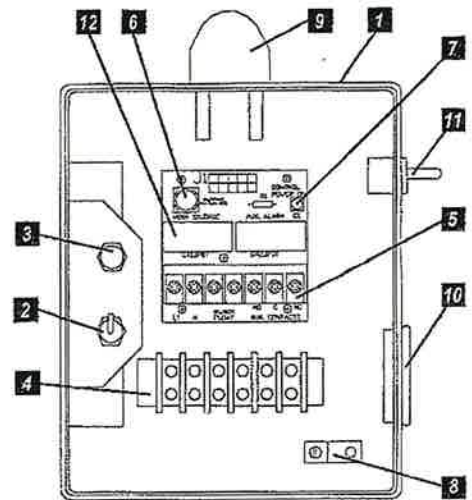
STANDARD ALARM PACKAGE

9. **Red Alarm Beacon** provides 360° visual check of alarm condition
Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
10. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating) **Note:** NEMA 1 style utilizes an internally mounted buzzer in lieu of a horn.
11. **Exterior Alarm Test/Normal/Silence Switch** allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition is cleared.
12. **Horn Silence Relay** (mounted on circuit board).

NOTE: other options available.

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes float switches
- Complete, step-by-step installation instructions
- Three-year limited warranty



Model Shown 1151W600X



SEE BACKSIDE FOR COMPLETE LISTING OF AVAILABLE OPTIONS.
SEE PRICE BOOK FOR LIST PRICE.

SJE Rhombus

PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

MODEL 115	1	W	5	1	0	H	17J	See List Price
ALARM PACKAGE								
☐	0 = select options or no alarm package						- \$35.00	
☒	1 = alarm package (includes test/normal/silence switch, fuse, red light, horn, & float)						Base	
ENCLOSURE RATING								
☐	I = Indoor, NEMA 1 (metal)						- \$50.00	
☒	W = Weatherproof, NEMA 4X (engineered thermoplastic)						Base	
STARTING DEVICE								
☐	2 = SJE PumpMaster® Plus pump switch (0-15 FLA)						- \$10.00	
☐	3 = 120 VAC Double Float® pump switch (0-15 FLA)						\$40.00	
☐	4 = 240 VAC Double Float® pump switch (0-12 FLA)						\$40.00	
☒	5 = Super Single® pump switch (120V = 0-15 FLA) (208/240V = 0-12 FLA)						Base	
☐	6 = No pump switch						- \$40.00	
PUMP FULL LOAD AMPS								
☐	0 = 0-7 FLA						Base	
☒	1 = 7-15 FLA						Base	
PUMP DISCONNECTS								
☒	0 = no pump disconnect						Base	
☐	4 = circuit breaker						\$70.00	
FLOAT SWITCH APPLICATION								
☒	H or L = pump down or pump up (select 17 option)						Base	
☐	X = no floats						- \$25.00	
OPTIONS <i>Listed below</i>								

Total Options _____
TOTAL LIST PRICE _____

CODE	DESCRIPTION	LIST PRICE
☐ 1A	Red beacon only / no audio (must select 1E if floats included)	\$15.00
☐ 1C	Horn only / no visual (must select 1E if floats included)	\$15.00
☐ 1E	Alarm float	\$25.00
☐ 3A	Alarm flasher	\$45.00
☐ 3B	Manual alarm reset	\$90.00
☐ 6A	Auxiliary alarm contact, form C	\$15.00
☐ 8A	Elapsed time meter (120V)	\$85.00
☐ 8B	Elapsed time meter (240V)	\$140.00
☐ 10E	Lockable latch - NEMA 4X	\$20.00
☐ 10E	Lockable latch - NEMA 1	\$30.00

CODE	DESCRIPTION	LIST PRICE
☐ 11C	NEMA 1 alarm panel (must select option 6A)	\$80.00
☐ 11D	NEMA 4X alarm panel (must select option 6A)	\$250.00
☐ 16A	10' cord in lieu of 20' (per float) (Does not apply for Double Float® pump switch)	- \$2.00
☐ 16B	15' cord in lieu of 20' (per float)	- \$1.00
☐ 16C	30' cord in lieu of 20' (per float)	\$5.00
☐ 16D	40' cord in lieu of 20' (per float)	\$15.00
☐ 17A	SJE SignalMaster® / pipe clamp ● (alarm float only)	- \$2.00
☐ 17E	Sensor Float® Mini / pipe clamp ▲ (alarm float only)	- \$2.00
☒ 17J	Sensor Float® / pipe clamp ▲ (alarm float only)	\$0.00
☐ 19U	HOA (Hand/Off Automatic) switch and pump run light through door mounted	\$60.00
☐ 19X	Door mounted pump run indicator	\$30.00

● Mechanically-activated ▲ Mercury-activated

If additional features are required, call the factory for a quote on an Engineered Custom control panel.

SAMPLE

MODEL	115	1	W	6	0	0	X	8A
Alarm Package								
Enclosure Rating								
Starting Device								
Pump Full Load Amps								
Pump Disconnect								
Float Switch Application								
Options: Elapsed time meter								

115 ... See List Price
 1 Base
 W Base
 6 - \$40.00
 0 Base
 0 Base
 X - \$25.00
 8A \$85.00

TOTAL LIST PRICE \$XXX.XX