

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

August 18, 2014

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

RE: Approval of the SSLLC-FRALO-RMT500-EP05 Pre-Engineered Lift Station

Dear MS. Yanaitis,

The Division of Water Resources has received and reviewed your request to approve your SSLLC-FRALO-RMT500-EP05 pre-engineered lift station; to be used in conjunction with Class B designed or other gravity fed 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. The tank manufacturer's anti-bouyancy protocol must be adhered to

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,

James Cassidy

Program Manager I

Ground Water Discharges Section

Cc: file

SEPTIC SOLUTIONS, LLC

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

August 6, 2015

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

RE: PRE-ENGINEERED LIFT STATION SSLLC-FRALO RMT500-EP05

Dear Jim,

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

The station has been designed for a 4 Bedroom house with a maximum static head of 20'. The transmission line ranges from 300 lf to 800 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. Yanatis, P.E.

PIPE AND FITTING SCHEDULE

PIPEA	ND FIT	5	EDULE	,			Date: Design:	8/5/2015 KAY
	1-1/2	1-1/2" STEEL	1-1/2" PVC (S	PVC (SDR-21)			Page:	2 of 2
Q (GPM)	V^2 / 2G	Q (GPM) V^2 / 2G Hf (ft/100 ft)	V^2 / 2G	Hf (ft/100 ft)	FITTING	K-VALUE		
20	0.154	2.94	0.124	1.89	1-1/2" CHECK VALVE 1-1/2" GATE VALVE	0.04		
-		-			1-1/2" 90 BEND 1-1/2" 45 BEND	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

1-1/2" GATE VALVE (STEEL) 1-1/2" 90 BEND (STEEL) 1-1/2" 45 BEND (PVC) 1-1/2" STEEL FM 1-1/2" PVC FM STATIC HEAD 1-1/2" GATE VALVE (STEEL) 1
5 * 0.124 * 4 * 2.94 (/100) 300 * 1.89 (/100)
300 * 2.94 (
1.89 (/100)
= 20.

WET WELL VOLUME (FRALO RMT-500)

	GAL
5,	18
11	
PUMP OFF	
UMP ON TO	OLUME =
P	>

(Per Fralo Specifications)



PROJECT NAME:

SSLLC -Fraio LIFT PUMP PACKAGE

8/5/2015 KAY 1 of 2

Date: Design: Page:

300 LF TRANSMISSION LINE, 20' STATIC HEAD

AVERAGE FLOW:

(0.33 GPM) 480 GPD

FORCE MAIN SIZE

Dmax = 0.404 * SQRT(Q peak) Dmax = 0.404 * SQRT(0.33 GPM) Dmax = 0.23"

Use 1-1/2" SCHD 40 PVC

1-1/2" FM Inv Out. -27" Bottom -67" GRADE 0" 500 Gal Fralo Pump Tank

> Inv In. -24" 4" PVC

-46 # -52 " -57 " -67 " PUMP ON PUMP OFF BOTTOM H.W.L.

Ma. 111.05

SH = HIGH POINT - PUMP OFF SH = 20 STATIC HEAD:

H

PIPE AND FITTING SCHEDULE

יבניספו	1-1/2" PVC (SDR-21) Page: 2 of 2	V^2 / 2G Hf (ft/100 ft) FITTING K-VALUE	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
1001	1-1/2" PVC (SDR-21)	V^2 / 2G Hf (ft/100 f	
THE AND THE WAS SOUTHOUT	1-1/2" STEEL	Q (GPM) V^2 / 2G Hf (ft/100 ft)	0.154 2.94
TLUE		Q (GPM)	20

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)	_		0.154	*	0.04	āl	0.00616
	1-1/2" GATE VALVE (STEEL)	-		0.154	*	0.18	П	0.02772
	1-1/2" 90 BEND (STEEL)	_	*	0.154	*	1.25	II	0.19250
	1-1/2" 45 BEND (PVC)	5	*	0.124	*	0.65	Н	0.40300
	1-1/2" STEEL FM	4	٠	2.94	(/100)		II	0.1176
	1-1/2" PVC FM	800	٠	1.89	(/100)		11	15.12000
	STATIC HEAD						11	10.00
	TOTAL							25.87

WET WELL VOLUME (FRALO RMT-500)

	GAL
5,	18
PUMP ON TO PUMP OFF =	VOLUME =

(Per Fralo Specifications)



PROJECT NAME

SSLLC -Fraio RMT 500 LIFT PUMP PACKAGE

8/5/2015 KAY 1 of 2

Date: Design: Page:

800 LF TRANSMISSION LINE, 10' STATIC HEAD

AVERAGE FLOW:

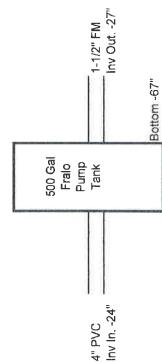
(0.33 GPM) 480 GPD

FORCE MAIN SIZE:

Dmax = 0.404 * SQRT(Q peak)
Dmax = 0.404 * SQRT(0.33 GPM)
Dmax = 0.23"

Use 1-1/2" SCHD 40 PVC

GRADE 0"

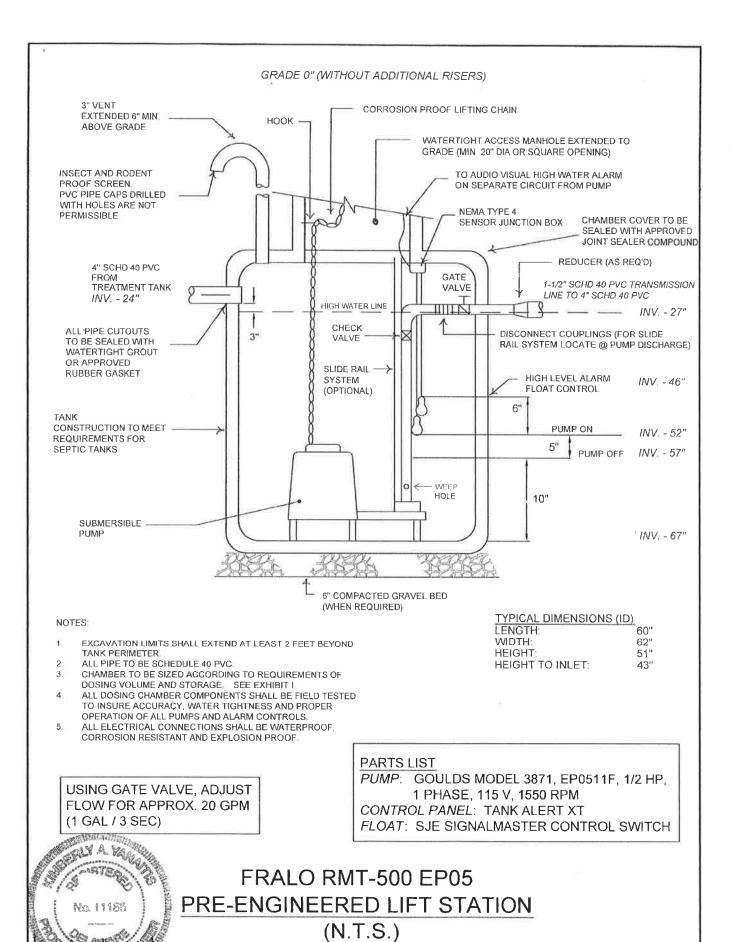


-46 " H.W.L.

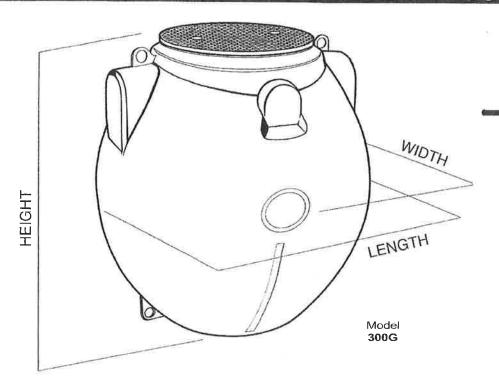
-52 " -57 " -67 " PUMP ON PUMP OFF BOTTOM A A TO

STATIC HEAD:

F SH = HIGH POINT - PUMP OFF SH =



TANK SPECIFICAT



3	0	0	G	S	P	E	C	1	F	C	A	T	Į	O	ı	Ų,	S	1

MODEL	DESIGN CAPACITY US Gallons (Liters)	TOTAL CAPACITY US Gallons (Liters)	HEIGHT	WIDTH	LENGTH	WEIGHT Pounds
300G	300 (1136)	300 (1136)	54"	45"	50"	120

OTHER SEPTECH[™] TANKS AVAILABLE

MODEL	RATED CAPACITY US Gallons (Liters)	TOTAL CAPACITY US Gallons (Liters)	HEIGHT	WIDTH	LENGTH	WEIGHT Pounds
ST-500	400 (1515)	500 (1893)	51"	62"	60"	225
S1-750	750 (2840)	1007 (3812)	51"	62"	103"	360
ST-900	900 (3405)	1147 (4340)	51"	62"	118"	450
ST-1000E	1000 (3405)	1147 (4340)	51"	62"	118"	450
ST-1060	1060 (4012)	1311 (4962)	51"	62"	133"	520
ST-1250	1250 (4730)	1464 (5541)	51"	62"	148"	560
ST-1500	1500 (5678)	1768 (6692)	51"	62"	177"	640

WARRANTY FRALO Plastech Mfg. warranties the FRALO SEPTECH™ tank for a period of fifty years from date of purchase against any manufacturing defects, providing the tank has been used and installed in accordance with manufacturer's written instructions. FRALO will, at its option, repair or replace any tank it deems to be defective and FRALO's obligations under this warranty are strictly limited to the repair and/or replacement of the defective tank. FRALO assumes no liability in cases of improper installation or misuse. FRALO is not responsible for any resulting contingent

Access at or above grade level must be secured against unauthorized access Not rated for vehicular traffic loading

liabilities or charges. This warranty applies only to the original tank installation. parmer in business. Our products are engineered for performance over the long term. We welcome your comments and look forward to meeting your future engineered LIQUID

plastic product needs.

M ROTH MultiTank® PRODUCT DETAILS

MODEL (MultiTank)	DESIGN CAPACITY US Gallons (Liters)	TOTAL CAPACITY US Gallons (Liters)	ACTUAL CAPACITY US Gallons (Liters) 40"/42" Liquid level	HEIGHT Inches (mm)	WIDTH Inches (mm)	LENGTH Inches (mm)	WEIGHT Pounds (kilogram)
RMT-300 (single layer)	300 (1136)	325 (1230)	273 (1033)/284 (1075)	54 (1372)	45 (1143)	50 (1270)	120 (54.43)
RMT-500	500 (1893)	535 (2025)	452 (1710)/474 (1794)	51 (1295)	62 (1575)	60 (1524)	225 (102.06)
RMT-750	750 (2840)	1000 (3785)	853 (3229)/898 (3399)	51 (1295)	62 (1575)	103 (2616)	360 (163.29)
RMT-900	900 (3407)	1161 (4394)	990 (3747)/1028 (3891)	51 (1295)	62 (1575)	118 (2997)	450 (204,12)
RMT-1000E	1000 (3785)	1161 (4394)	990 (3747)/1028 (3891)	51 (1295)	62 (1575)	118 (2997)	450 (204.12)
RMT-1060	1060 (4012)	1337 (5061)	1177 (4455)/1227 (4645)	51 (1295)	62 (1575)	133 (3378)	520 (235.87)
RMT-1250	1250 (4730)	1469 (5560)	1259 (4766)/1319 (4992)	51 (1295)	62 (1575)	148 (3759)	560 (254.01)
RMT-1500	1500 (5678)	1771 (6703)	1540 (5830)/1601 (6060)	51 (1295)	62 (1575)	177 (4496)	640 (290,30)

Call 1.866-943-7256 or visit www.roth-america.com for additional information and product lines.



Roth, a family-owned business established in Germany 60 years ago, now operates in 29 countries worldwide with \$250 million in sales and 1,100 employees. The North American division operates two manufacturing plants in upstate New York. Roth specializes in environmentally-friendly products that produce, distribute and store energy for the finest homes.



Solar and Heat Pump Systems

Septic, Cistern, Rainwater Collection and Oil Storage Tanks

EMERGY OF TREE TO COM

Roth Global Plastics Corporate Office P.O. Box 245, Syracuse, NY 13211 Toll Free US: 866.943.7256 P: 315.475.0100 F: 315.475.0200 sales@roth-usa.com www.roth-america.com

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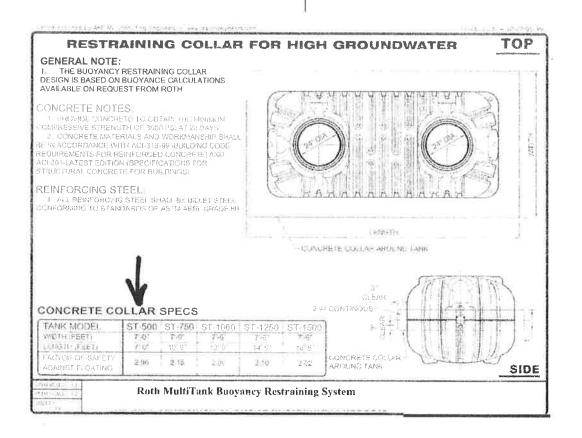
Roth MultiTank Certified Installers Handbook 2011



INSTALLATION TRAINING MATERIAL

It is highly recommended that all tanks be filled with water immediately after installation or immediately after pumping for existing tanks.

Roth tanks can be "anchored" by pouring a concrete apron around the midpoint of the tank using the excavation as a form. This detail is shown below.



TECHNICAL BROCHURE

B3871 R1



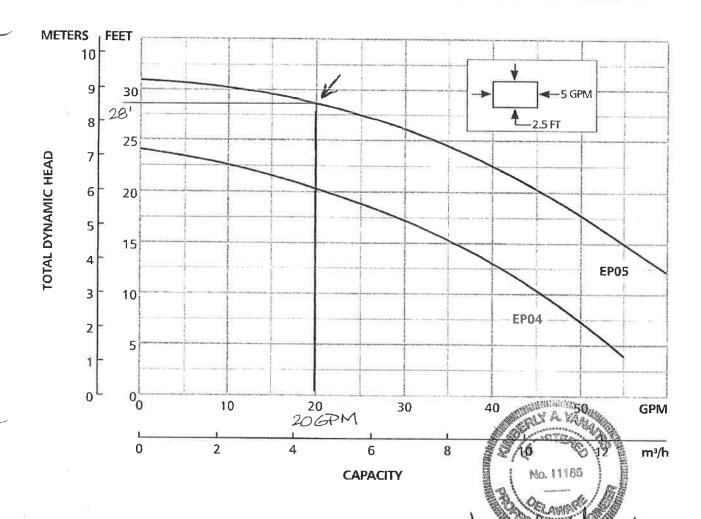
EP04 & EP05 Series Model 3871

SUBMERSIBLE EFFLUENT PUMPS



Goulds Water Technology

Wastewater



MODEL INFORMATION

Order No.	НР	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style		Discharge Connection	0 1	Minimum Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
EP0411						Plug / No Switch	10'	1½"	Manual	Manual	15"		20 / 9.1
EP0411A		115	12	20		Piggyback / Wide-Angle	10'	1½"	12°	6"	15"		21 / 9.5
EP0411F	.4	112	12	20		Plug / No Switch	20'	1½"	Mänual	Manual	15"		20 / 9.1
EP0411AC	. '					Piggyback / Wide-Angle	20'	1½"	12"	6*	15"		21 / 9.5
EP0412		230	6	10	1	Plug / No Switch	10'	1½"	Manual	Manual	15*	3/4"	20 / 9.1
EP0412F		230	Ü	10		Plug / No Switch	20'	11/5"	Manual	Manual	15"		20 / 9.1
EP0511F		115	13	20		Plug / No Switch	20'	1½"	Manual	Manual	15*		22 / 10
EP0511AC	.5	113	13	20		Piggyback / Wide-Angle	20'	1½"	12"	6"	15"		23 / 10.4
EP0512F		230	6.5	10		Plug / No Switch	20'	1%"	Manual	Manual	15"		22 / 10

Goulds Water Technology

Wastewater

FEATURES

EP04 Impeller: Thermoplastic semi-open design with pump out vanes for mechanical seal protection.

EP05 Impeller: Thermoplastic enclosed design for improved performance.

Casing and Base: Rugged thermoplastic design provides superior strength and corrosion resistance.

Motor Housing: Cast iron for efficient heat transfer, strength, and durability.

Motor Cover: Thermoplastic cover with integral handle and float switch attachment points.

Power Cable: Severe duty rated oil and water resistant

Bearings: Upper and lower heavy duty ball bearing construction.

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:

- Effluent systems
- Homes
- Farms
- Heavy duty sump
- Water transfer
- Dewatering

SPECIFICATIONS

Solids handling capability: ¾" maximum.

• Capacities: up to 60 GPM.

• Total heads: up to 31 feet.

• Discharge size: 11/2" NPT.

• Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers.

• Temperature: 104° F (40° C) continuous 140° F (60° C) intermittent.

Class B Insulation

• Fasteners: 300 series stainless steel.

 Capable of running dry without damage to components.

Motor:

- EP04 Single phase: 0.4 HP, 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- EP05 Single phase: 0.5 HP, 115 V or 230V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug (standard on EP05).
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation.

Automatic models include Mechanical Float Switch assembled and preset at the factory.

PERFORMANCE RATINGS

Total Head (ft. of water)	Gallons Per Minute	
	EP04	EP05
5	53	-
10	46	- 62
15	36	55
20	21	46
25	0	33
30		11

TANK ALERT® XT Alarm System

Versatile, indoor or outdoor liquid level alarm system.

This alarm system monitors liquid levels in lift pump chambers, sump pump basins, holding tanks, sewage, agricultural, and other water applications.

The Tank Alert® XT indoor/outdoor alarm can serve as a high or low level alarm depending on the float switch model used.

The alarm hom sounds and the red beacon illuminates when a potentially threatening liquid level condition occurs. The hom can be silenced, but the alarm light remains on until the condition is remedied. Once the condition is cleared, the alarm will automatically reset.

A "power on" light on the switch indicates power to the alarm panel.

FEATURES

- Enclosure meets Type 3R water-tight standard.
- Automatic alarm reset, horn silence switch, and alarm test switch.
- Alarm horn sounds at 85 decibels at 10 feet (3 meters).
- Alarm system (when installed on separate circuit) operates even if pump circuit fails.
- Complete package includes standard SJE SignalMaster® control switch with 15 feet (4.57 meters) of cable (other lengths available) and mounting clamp.
- UL Listed for indoor or outdoor use.
- CSA Certified.
- Five-year limited warranty.



OPTIONS

When ordered with the alarm, the system is available with:

- alternate float switch models for high or low liquid level warning.
- auxiliary dry normally open contacts for easy attachment of remote devices.
- premounted terminal block so enclosure can also be used as a junction box for splicing pump, pump switch, and pump power. Meets NEC standard for junction boxes.
- 6 foot (1.8 meter) power cord and liquid-tight connectors.

SEE BACKSIDE FOR ORDERING INFORMATION.



SPECIFICATIONS

VOLTAGE: 120 VAC, 50/60 Hz

ALARM ENCLOSURE: 6.5 x 4.5 x 3.0 inch (16.51 x 11.43 x 7.62 cm), indooroutdoor, weatherproof, thermoplastic meets Type 3R water-tight standard

ALARM HORN: 85 decibels at 10 feet (3 meters), meets Type 3R water-tight standard as installed by factory

ALARM BEACON: UL Listed, Type 4x beacon assembly

TEST/SILENCE SWITCH: certified to IP66 and IP68 standards

AUXILIARY ALARM CONTACTS
(OPTIONAL): 120 VAC, 5 amps max.,
50/60 Hz

PRE-MOUNTED TERMINAL BLOCK (OPTIONAL): 20 amps, 120/230 VAC

POWER CORD (OPTIONAL): 6 foot (1.8 meter) cord with 120 VAC plug

FLOAT SWITCH: SJE SignalMaster® control switch with mounting clamp
Cable: 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)

Float: 2.74 inch diameter x 4.83 inch long (7 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and non-potable water up to 140°F (60°C)



PO Box 1708, Detroit Lakes, MN 56502 1-888-DIAL-SJE • 1-218-847-1317 1-218-847-4617 Fax

SJE SIGNALMASTER® Control Switch

Mechanically-activated, narrow-angle float switch designed to activate pump control panels and alarms.

This narrow-angle sensing device is used to accurately monitor liquid levels in:

- potable water
- water
- sewage applications

The SJE SignalMaster® control switch is not sensitive to rotation.

Normally Open Model (high level)

The control switch turns on (closes) when the switch tips slightly above horizontal signaling a high level, and turns off (opens) when the switch drops slightly below horizontal.

Normally Closed Model (low level)

The control switch turns on (closes) when the switch tips slightly below horizontal signaling a low level, and turns off (opens) when the switch tips slightly above horizontal.

FEATURES

- Passed NSF Standard 61 protocol by an approved Water Quality Association laboratory.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant, polypropylene float housing.
- Not sensitive to rotation.
- Control differential of 1.5 inches (4 cm) above or below horizontal.
- Yellow colored cap for easy identification of normally open control switch.
- White colored cap for easy identification of normally closed control switch.
- UL Listed for use in water and sewage.
- CSA Certified.
- Three-year limited warranty.





OPTIONS

This switch is available:

- CE certified unit available upon request.
- for normally open (high level) applications or normally closed (low level) applications.
- in standard cable lengths of 10, 15, 20, or 30 feet and 3, 5, 6, or 10 meters (longer lengths available)
- with two mounting options that allow for flexibility in installation:

Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

Externally Weighted: for applications where the switch can be suspended from above.

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 x 12.3 cm) high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90 kPa)

ELECTRICAL: 5 amp, 125/250 VAC, 50/60 Hz

NOTE: This switch is not recommended for controlling:

- electric loads less than 100 milliamps, 12 VAC
- non-arcing electric loads

CONTROL



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