

# HALLOWEN & ASSOCIATES, INC.

SOIL & ENVIRONMENTAL SCIENTISTS

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Lillington, NC 27546  
Phone (910) 893-8743 / Fax (910) 893-3594  
E-mail: halowen@intrstar.net

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3 November 2003

Mr. Tony Spada  
Spada Homes, LLC  
7124 Asheway Drive  
Holly Springs, NC 27540

Reference: Site Investigation & Septic System Design  
Lot 7, The Plantation at Vineyard Green

Dear Mr. Spada,

A site investigation was conducted for the above referenced property on October 28<sup>th</sup> and 29<sup>th</sup> of 2003. The site is located at the end of Trellis Court in Vineyard Green Subdivision off the south side of Tripp Road (S.R. 1435), Neill's Creek Township, Harnett County, North Carolina. The purpose of the investigation was to determine the ability of this lot to support a subsurface sewage waste disposal system and 100 % repair area for a three-bedroom home. Public water supplies will be utilized for this lot. A foundation drain will not be possible with the present location of the home relative to the proposed drainfields. A pump to 300-ft of ultra-shallow innovative drainlines utilizing serial distribution is proposed for the initial septic system. The repair system consists of three 100-ft ultra-shallow innovative drainlines that would require a pump to the front of the home. Attached is the septic system design and supporting information that you will need to submit to the Harnett County Health Department for review and the permitting process. This report represents my professional opinion but does not guarantee or represent permit approval for this lot by the local Health Department.

The septic system has been demonstrated with various colored pin flags that are located on the lot. It is important that you do not disturb the septic system area. It is recommended that a staked line or protective fence be placed around the system prior to construction to eliminate any potential damage to the soil or the layout of the system.

I appreciate the opportunity to provide this service and hope to be allowed to assist you again in the future. If you have any questions or need additional information, please contact me at your convenience.

Sincerely,



Laura J. Fortner  
Licensed Soil Scientist



Lot 7, Vineyard Green

## Pump System Design Criteria

Applicant: Mr. Tony Spada Phone #: (919) 524-1280  
 Mailing Address: Spada Homes, LLC, 7124 Asheway Drive, Holly Springs, NC 27540

PIN: 0651-82-5434 & 0651-93-1308 S/D: Vineyard Green Lot#: 7  
 Site Address: Trellis Court, Lillington, NC 27546

# BDR: 3 Daily Flow: 360 Square Ft: 900.00 Linear Feet: 300  
 LTAR: 0.3 gpd/sqft LTAR w/ innov: 0.4 gpd/sqft  
 Septic Tank (gal): 1000 Pump Tank (gal): 1000

Length of Trenches (ft): 300 Trench Depth (in): 12 Stone Depth (in): Ø 12.0

Supply Line Length (ft): 210 Diameter: 2" sch 40 pvc

Pump Tank Elevation: 94.81 Pump Elevation (ft): 89.81

Simplex Control Panel (SJE Rhombus 112 or equal) with elapsed time meter, cycle counter, alarm, and pump on separate circuits is recommended. Floats to be determined by type of pump tank used. A septic filter (Polylok PL-122 or equal) is required.

Possible Pumps Include:

Hydromatic: SW 25 Zoeller: Flow-Mate 98 Series

Friction Head (ft): 3.05 (supply line length + 70' for fittings in pump tank)  
 Elevation Head (ft): 8.39 Design Head (ft): 2 Total Head (ft): 13.44

Dose Volume (gal): 146.93 with Pipe Volume at % 75

Pump to Deliver: 23.00 gpm @ 13.44 ft head

Dose PRT(min): #DW/0! 639 min Daily PRT(min): 15.65

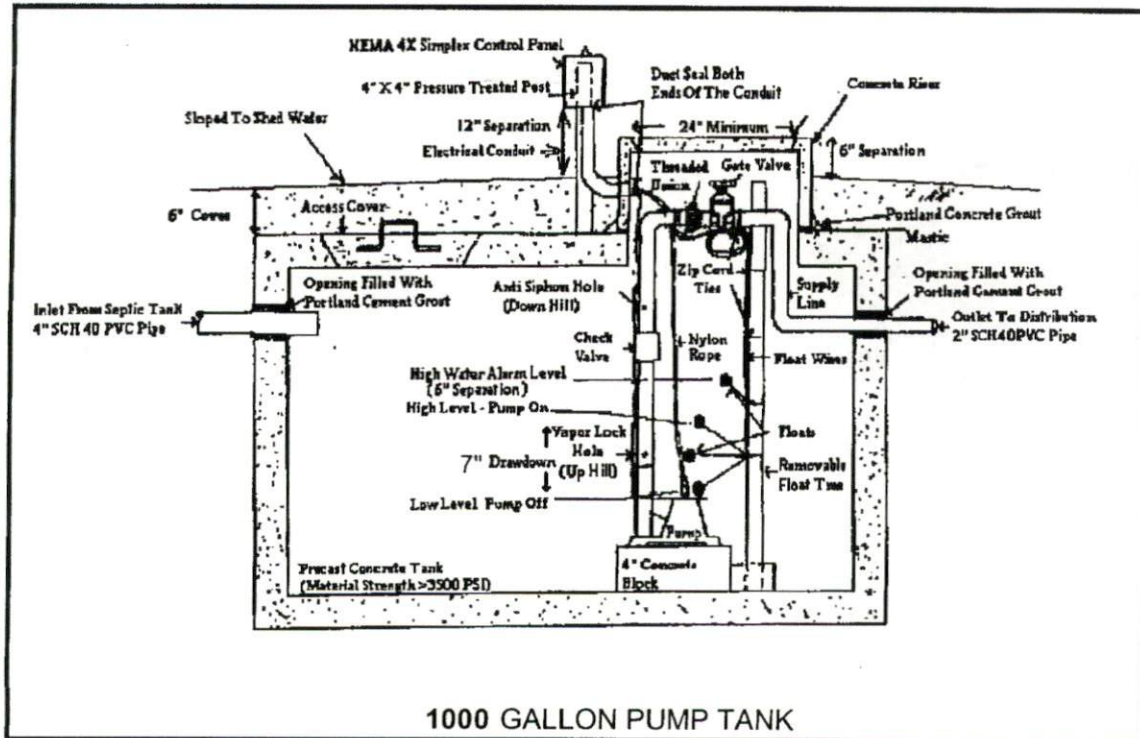
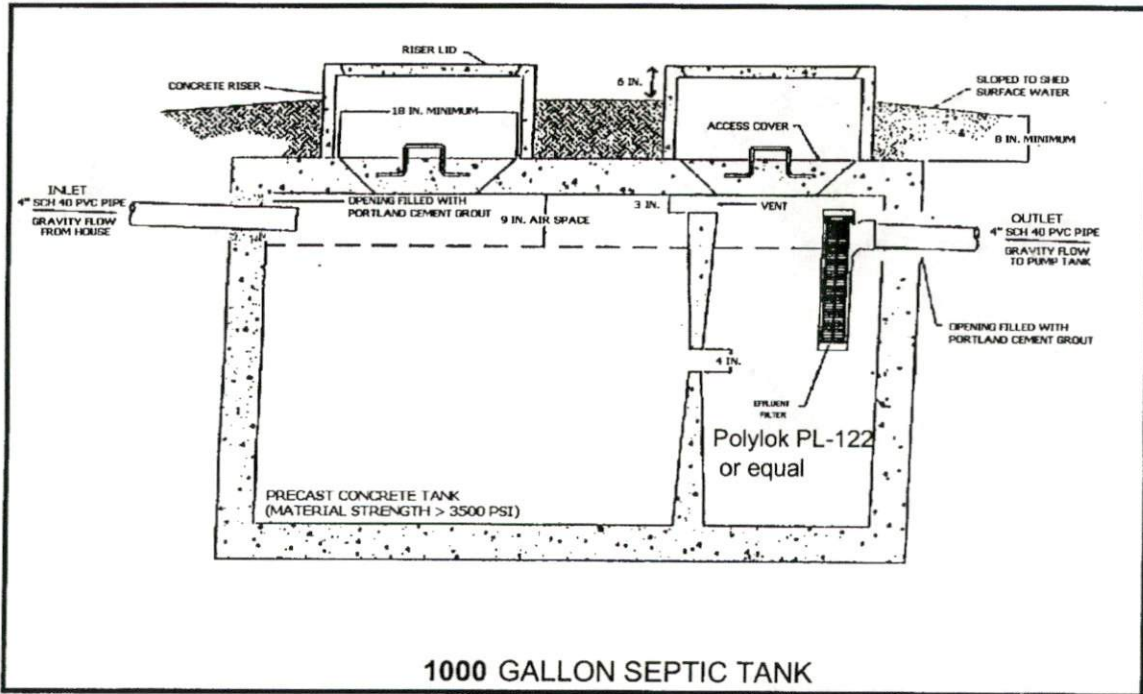
Drawdown: 146.93 gallons divided by 21 gal/ inch = 7.00 inches

Lines flagged at site on 9-ft centers.

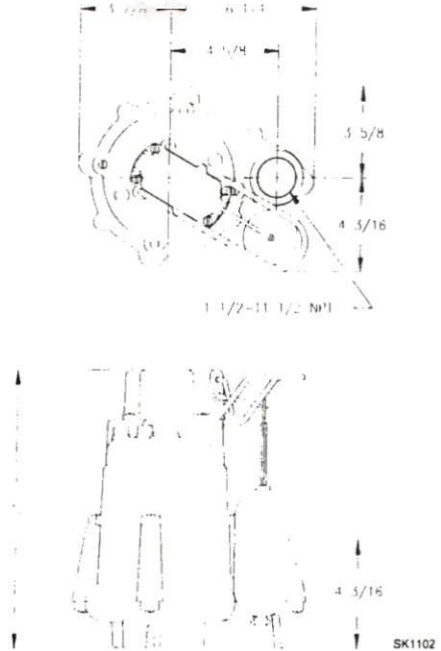
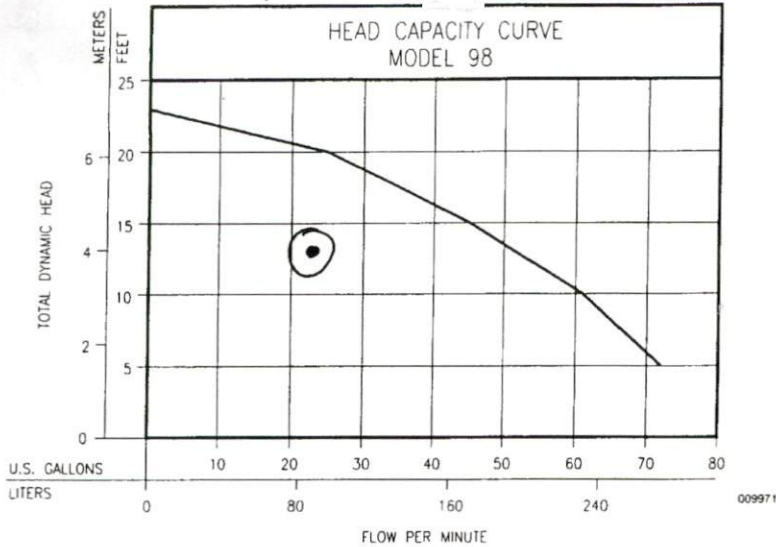
Initial/Repair	Line #	Color	Drainline Length(ft)	Measured Field Line Length (ft)	Relative Elevation (ft)
Repair	1	B	100	107	98.29
Repair	2	W	100	111	97.86
Repair	3	Y	100	133	97.28
N/A	4	R	0	80	96.83
Initial	5	W	40	47	97.20
Initial	6	B	40	45	96.66
Initial	7	R	50	56	96.2
Initial	8	W	55	58	95.85
Initial	9	B	65	75	95.39
Initial	10	R	50	51	95.02
<b>Pump Tank:</b>					94.81
<b>Total:</b>			<b>600</b>	<b>763</b>	<b>EIP = 100</b>



Lot 7, Vineyard Green



Lot 7, Vineyard Gr



**CONSULT FACTORY FOR SPECIAL APPLICATIONS**

- Electrical alternators, for duplex systems, are available and supplied with an alarm.
- Mechanical alternators, for duplex systems, are available with or without alarm switches.
- Variable level float switches are available for controlling single and three phase systems.
- Double piggyback variable level float switches are available for variable level long cycle controls.

Standard all models - Weight 39 lbs. - 1/2 H.P.

Model	Volts-Ph	Mode	Amps	Control Selection		
				Simplex	Duplex	
M98	115	1	Auto	9.4	1	—
N98	115	1	Non	9.4	2	3 or 4 & 5
D98	230	1	Auto	4.7	1	—
E98	230	1	Non	4.7	2	3 or 4 & 5

**SELECTION GUIDE**

1. Integral float operated 2-pole mechanical switch, no external control required.
2. Single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. Mechanical alternator 10-0072 or 10-0075.
4. See FM0712, for correct model of Electrical Alternator.
5. Control switch 10-0225 used as a control activator, specify duplex (3) or (4) float system.

For information on additional Zoeller products refer to catalog on Piggyback Variable Level Switches, FM0477, Electrical Alternator, FM0486, Mechanical Alternator, FM0495, Sump/Sewage Basins, FM0487, Single Phase Simplex Pump Control, FM1596, Alarm Systems, FM0732.

**CAUTION**  
All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electric Code (NEC) and the Occupational Safety and Health Act (OSHA).

**RESERVE POWERED DESIGN**

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.



<http://www.zoeller.com>

**ZOELLER**  
PUMP CO.

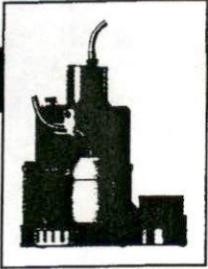
MAIL TO: P.O. BOX 16347  
Louisville, KY 40256-0347  
SHIP TO: 3649 Cane Run Road  
Louisville, KY 40211-1961  
(502) 778-2731 • 1 (800) 928-PUMP  
FAX (502) 774-3624

Manufacturers of...

"QUALITY PUMPS SINCE 1939"

Lot 7, Vineyard Green

# ENGINEERING DETAILS - SW25/33



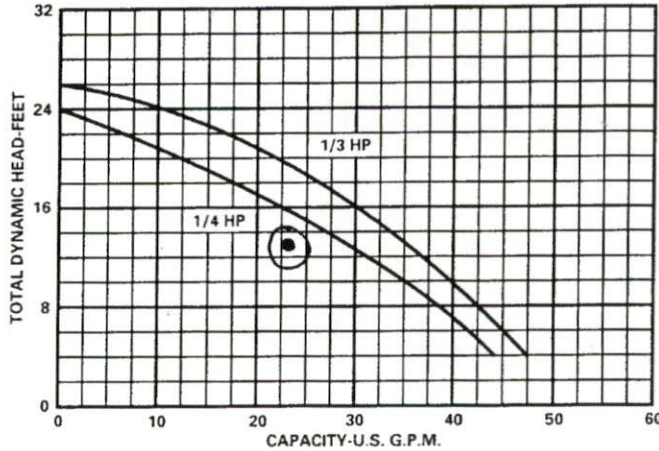
## Pump Characteristics

Pump/Motor Unit	Submersible	
Manual Models	SW25M1	SW33M1
Automatic Models	SW25A1	SW33A1
Horsepower	1/4	1/3
Full Load Amps	8.0	10.0
Motor Type	Shaded Pole (4 pole)	
R.P.M.	1550	
Phase Ø	1	
Voltage	115	
Hertz	60	
Operation	Intermittent	
Temperature	120°F Ambient	
NEMA Design	A	
Insulation	Class A	
Discharge Size	1-1/2" NPT	
Solids Handling	1/2"	
Unit Weight	30 lbs.	
Power Cord	18/3, SJTW, 10' std. (20' optional)	

## Materials of Construction

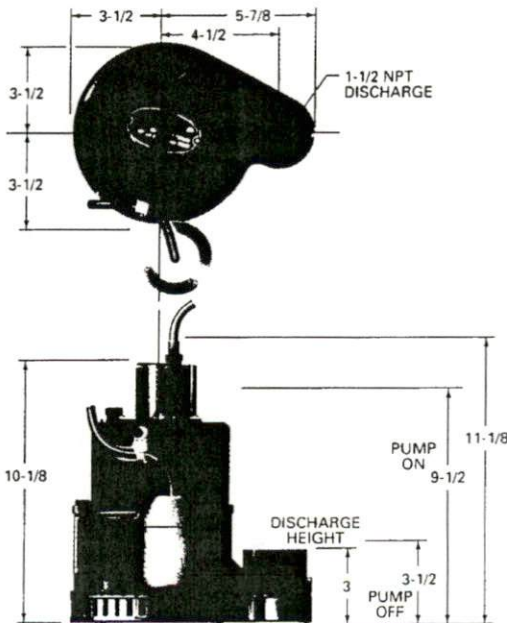
Handle	Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Casing	Cast Iron
Shaft	Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Anodized Steel Spring: Stainless Steel Bellows: Buna-N
Impeller	Thermoplastic
Upper Bearing	Bronze Sleeve Bearing
Lower Bearing	Single Row Ball Bearing
Strainer/Base	Plastic
Fasteners	Stainless Steel

## Performance Data



Total Head (feet)	4	6	8	10	12	14	16	18	20	22	24
1/4 HP	44	41	36	33	29	26	23	18	12	6	0
1/3 HP	47	45	43	40	37	34	30	26	22	16	10

## Dimensional Data



1. All dimensions in inches
2. Component dimensions may vary  $\pm 1/8$  inch
3. Not for construction purpose unless certified
4. Dimensions and weights are approximate
5. On/Off level adjustable
6. We reserve the right to make revisions to our products and their specifications without notice

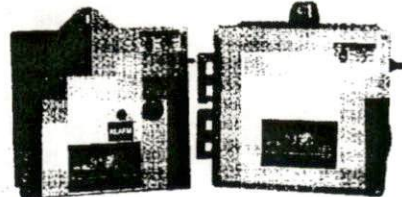
**AURORA/HYDROMATIC Pumps, Inc.**  
 1840 Baney Road, Ashland, Ohio 44805  
 (419) 289-3042



# MODEL 112 Control Panel

## Single phase, simplex motor contactor control.

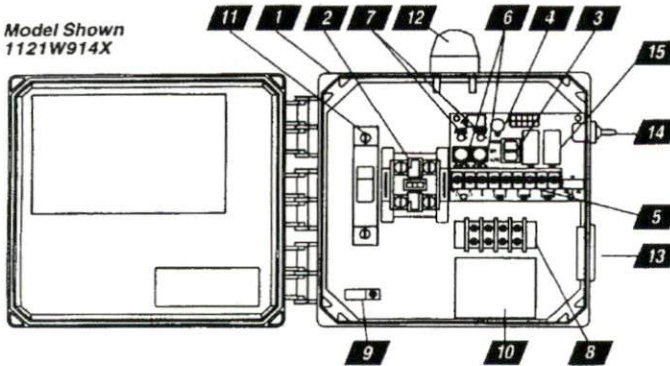
The Model 112 control panel provides a reliable means of controlling one 120, 208, or 240 VAC single-phase pump in pump chambers, sump pump basins, irrigation systems and lift stations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system.



Indoor

Indoor/outdoor

Model Shown  
1121W914X



1. Enclosure measures 8 x 8 x 4 inches (20.32 X 20.32 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable flanges for outdoor or indoor use).  
\* Options selected may increase enclosure size and change component layout.
2. Magnetic Motor Contactor controls pump by switching hot electrical lines.
3. HOA Switch for manual pump control (mounted on circuit board).
4. Green Pump Run Indicator Light (mounted on circuit board).
5. Float Switch Terminal Block (mounted on circuit board).
6. Alarm and Control Fuses (mounted on circuit board).
7. Alarm and Control Power Indicators (mounted on circuit board).
8. Pump Input Power and Pump Connection Terminal Block
9. Ground Lug
10. Terminal Block Installation Label
- ☆ 11. Circuit Breaker (optional) provides pump disconnect and branch circuit protection. required (2X)

### STANDARD ALARM PACKAGE (other options available)

12. Red Alarm Beacon provides 360° visual check of alarm condition.  
Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
13. Alarm Horn provides audio warning of alarm condition (83 to 85 decibel rating).  
Note: NEMA 1 style utilizes an internally mounted buzzer (83 to 85 decibel) in lieu of horn.
14. Exterior Horn Test/Normal/Silence Switch allows alarm horn to be silenced and testing of horn and light to ensure proper operation of alarm system.
15. Horn Silence Relay automatically resets alarm after alarm condition has been resolved (mounted on circuit board).

## 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 three 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty



**SJE Rhombus**  
S J ELECTRO SYSTEMS, INC.

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](http://www.sjerhombus.com)

- 1C Horn only / no visual  
must select 1E if floats included
- 1E Alarm float
- 3A Alarm flasher
- ★ 4A Low level cutout

- 15A Control / alarm circuit breaker  
Does not include the circuit board as in standard.
- 16A 10' cord in lieu of 20'
- 16B 15' cord in lieu of 20'
- 16C 30' cord in lieu of 20'

Lot 7, Vineyard Cree

"QUALITY PUMPS SINCE 1939"

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



SECTION: 2.20.035  
FM0973  
1101  
Supersedes  
0700

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347  
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961  
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<http://www.zoeller.com>

### COMPARE THESE FEATURES

- Non-clogging engineered plastic vortex impeller design.
- Corrosion resistant powder coated epoxy finish.
- Durable cast construction. Cast switch case, motor and pump housing and base. No sheet metal parts to rust or corrode.
- Castings - All cast iron class 25-30 25000# tensile strength.
- Bearings - Upper & lower oil fed cast iron.
- Stainless steel screws, guard, handle and arm and seal assembly.
- Float operated submersible (NEMA 6) 2-pole mechanical switch.
- Oil-filled motor—hermetically sealed.
- Permanent split capacitor motor.
- Entire unit pressure tested after assembly.
- Automatic reset thermal overload protection.
- Carbon and ceramic shaft seal.
- Watertight neoprene "□" ring between motor and pump housing.
- Maximum temperature for effluent or dewatering 130° F. - 54° C.
- 60 Hz, 1725 RPM.
- Passes 1/2 inch solids (sphere).
- No screens to clog.
- Standard cord length 15' (UL listed).
- 1 1/2" NPT Discharge (1 1/2" X 2" PVC Adapter included with BN & BE Models).
- On point - 9 1/2"
- Off point - 3"
- Major width - 10 1/8"
- Height - 12"

**SIMPLEX AND DUPLEX SYSTEMS AVAILABLE**

**PACKAGED SYSTEMS AVAILABLE**

**Note:** The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.



## 98 Cast Iron Series "FLOW-MATE"



(FOR PUMP PREFIX IDENTIFICATION SEE NEWS & VIEWS 0052)

FOR SEPTIC TANK  
LOW PRESSURE PIPE (LPP)  
AND ENHANCED FLOW STEP SYSTEMS



## EFFLUENT

OR DEWATERING PUMP  
SUBMERSIBLE  
1 1/2" NPT DISCHARGE



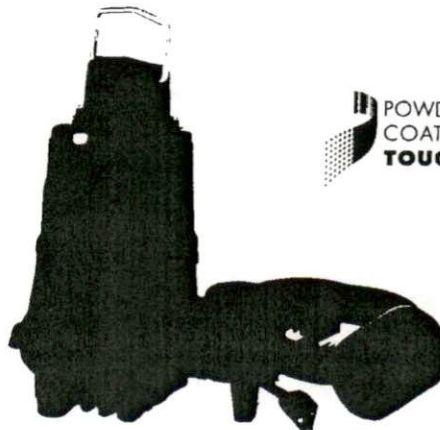
### MODELS AVAILABLE

- Automatic or Nonautomatic
- 1/2 H.P., 1 Ph., 115V or 230V
- Available with Piggyback Variable Level Float Switch.

MODEL 98



**POWDER COATED TOUGH**



MODEL BN98





# HYDROMATIC SW25/33

Submersible Sump/Effluent Pump

- Basement Sumps
- Septic Tank Effluent
- Industrial Circulators
- Transfer Tanks



1990 AURORA PUMP, NORTH AURORA, ILLINOIS

Hydromatic v1.20 1

AURORA PUMP **GS**  
A UNIT OF GENERAL SIGNAL