

## Installer Electrical Training

All electrical components of an onsite wastewater system are subject to the National Electrical code (NEC). The NEC is not updated often however it does get updated, it is your responsibility to stay current (no pun intended). The NEC in AR is enforced through the Labor Board.

The system Main Disconnect (the Disconnect), like an AC Unit disconnect, must be within sight of the external electrical components of any pumped effluent system. The wiring TO the Disconnect must be made by a licensed electrician but the wiring FROM the Disconnect to the system may be made by the Installer.

The Disconnect must be large enough to handle the total ampacity of the system. That is the amperage of the pump circuit (**see note #1**) plus the amperage of the Alarm circuit. **Note #1** in demand dose systems the DR rarely if ever recommends the amperage rating for the pump circuit. In this case the pump circuit must be 125% of the normal load rating this is NOT required for the alarm circuit. When using a control panel this is usually taken into consideration however it would be best to consult the manufacturer.

A minimum of 2 circuits are required (as mentioned above) 1 circuit will be for the Alarm and 1 will be for the pump. The pump circuit will usually be the one that is higher in amperage. When wiring these components all pump connections on a wiring diagram will be labeled with a **T** (motor connection) all incoming power will be listed with an **L** (for Line) or an **N** (neutral).

All circuits must be encased in PVC electrical conduit (**see note #2**) (not PVC water pipe) from the main disconnect to the control panel and anchored for every 3 feet of rise. **Note #2** the conduit is required to be buried at least 18 inches and once it breaks the plane of natural ground it must be in schedule 80. There seems to be some confusion among inspectors as to how far up and how far below ground this must extend. Some inspectors only require a schedule 80 sweep others are more restrictive you may want to consult with the inspector in your area concerning this matter. The wire inside the conduit must be burial rated.

The Control Panel may be mounted on the side of the structure (NOT mobile homes) or on a post near the system, again within sight of the Disconnect. The minimum elevation of the control panel will be determined by the manufacturer specifications.

The wire gauge will be determined by the distance and the ampacity of the system. Remember to include the pump elevation as part of that distance. \*See Chart

All connections inside the riser must be made in a corrosive proof water tight junction box. The actual connections must be made with either encapsulated wire nuts (not the same as used inside a house) or butt splicers with heat shrink.

The conduit from the junction box to the control panel must be sealed using an electrical seal off kit. This will prevent any gases from getting into the control panel in case the seal around the junction box should fail.

Make sure you use an Effluent quality pump. They are specifically designed to handle anaerobic wastewater. A sump pump will disintegrate over time in this environment.

# WIRE SIZE CHART

WIRE SIZE	LOAD	AMPS --	120 volts	SINGLE	PHASE	
*AWG	10 AMPS	15 AMPS	20 AMPS	25 AMPS	30 AMPS	40 AMPS
14	58	39	29	N/A	N/A	N/A
12	80	60	45	36	N/A	N/A
10	150	100	75	60	50	58
8	230	154	115	92	77	92
6	367	245	184	147	123	145
4	581	387	290	232	194	225

\*American Wire Gage

(DISTANCE IN FEET)

**Example:** An Onsite Wastewater System's control panel requiring 30 amps that is 20 feet from the power source will require a minimum 10 gauge wire.

## Important Information:

Fuses and circuit breakers are needed to protect circuits, power components and loads. Fuses and circuit breakers have one main purpose to break the electrical circuit if the current (amps) flowing in that circuit exceed the rating of the device. Any size fuse may be used safely with the fuse rating being lower than the maximum ampacity of the smallest wire in the circuit. Fuses and circuit breakers are typically able to allow three times their rated current for a few seconds, this is for handling the surge necessary for the starting of motors. In the event of a short circuit, which can cause the sudden draw of hundreds or even thousands of amps through the circuit, the fuse will melt or the circuit breaker will open before the wire catches on fire.

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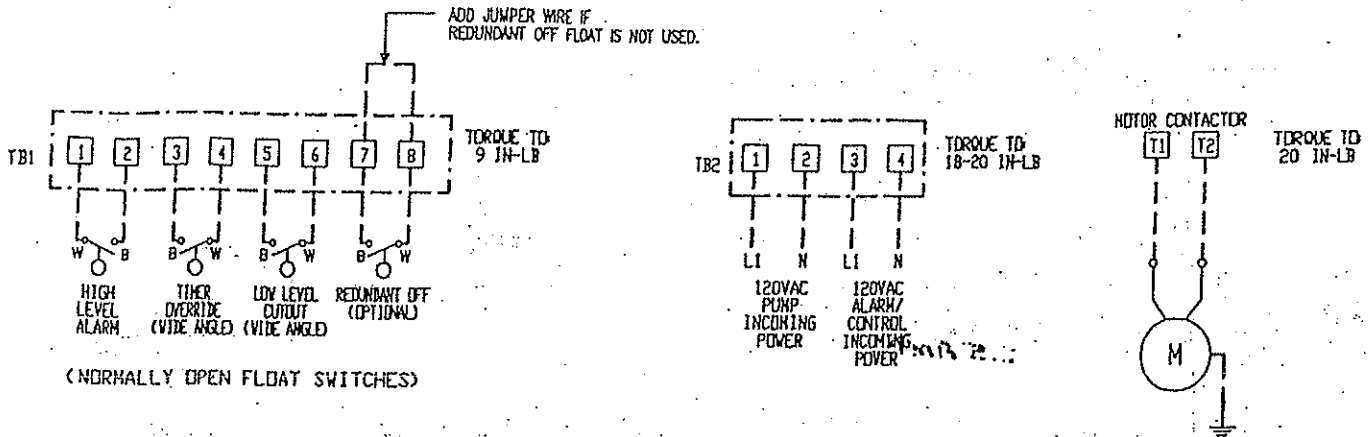
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MAIN DISCONNECT AND OVERLOAD PROTECTION PROVIDED BY OTHERS AND MUST BE SIZED ACCORDING TO PUMP/MOTOR MANUFACTURING SPECIFICATIONS.

THE USE OF SEPARATE POWER SOURCES FOR PUMP AND ALARM ARE RECOMMENDED



TEMPERATURE RATING OF FIELD INSTALLED CONDUCTORS MUST BE AT LEAST 140 DEG. F. (60 DEG. C.). TERMINAL STRIPS AND GROUND LUG USE COPPER CONDUCTORS ONLY.

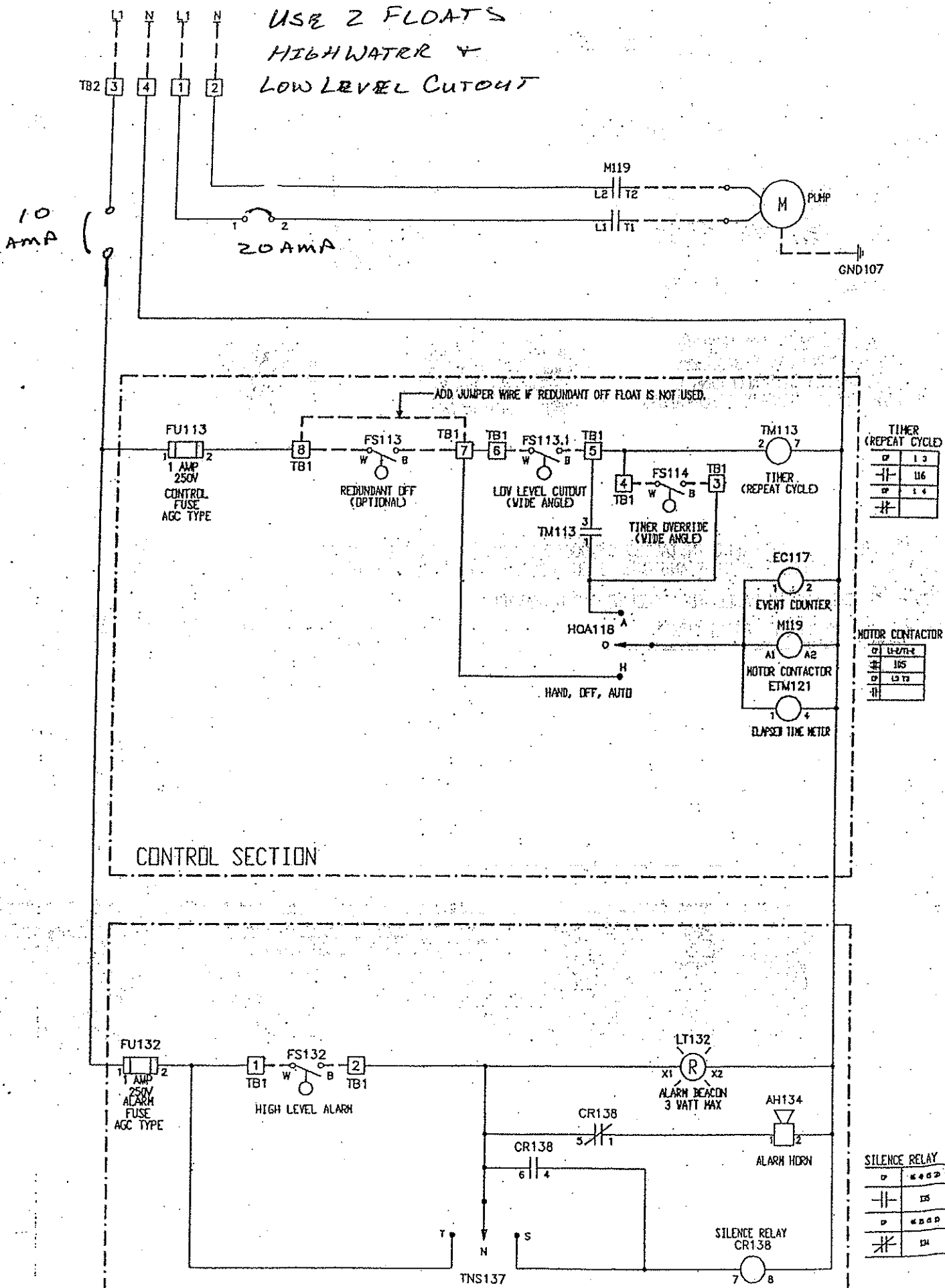
CONNECT GROUND LUG IN PANEL TO A SECURE EARTH GROUND

DASHED LINES REPRESENT FIELD WIRING

FIELD WIRING SECTION

REV. CONTROL FOR 1010547	F	C002684	10/05	GDV	KLC	NOTICE: THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND IT SHALL NOT BE USED OR REPRODUCED OR ITS CONTENTS DISCLOSED IN WHOLE OR IN PART, WITHOUT PRIOR WRITTEN CONSENT.						<b>SJE-Rhombus</b>		
	E	C001714	5/03	GDV	KLC									
	D	C001444	6/02	GDV	RNS	DRN BY	DATE	CHKD BY	DATE	APPD BY	DATE	PROJECT NO.	QUOTE NO.	
	C	C001090	9/01	GDV	RNS	CRM	01/10/01	RHS	01/10/01	DPH	01/10/01	1010547	N/A	
	B	C000939	6/01	GDV	RHS	DEM NAME		DEM P/N		PAGE	SCALE	DWG SIZE	TITLE	
	A	C000689	01/01	CRM		N/A	N/A	N/A	1 of 1	NONE	D	LIT. RH. SCHEM T01WSAHBAC10E17A18A		
REV	ECO NL		DATE	DRWN	APPD									

\*



# Product Performance Chart

