



Luizzi Bros.

PETER LUIZZI & BROS. CONTRACTING, INC.
ASPHALT PAVING AND SITE WORK

49 Railroad Avenue, Albany, NY 12205
(518) 482-8954 • Fax (518) 482-4847

APPROVED
APPROVED AS CORRECTED
REVISE AND RESUBMIT
NOT APPROVED

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(X)
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Project Name: TOWN OF CATSKILL WASTEWATER COLLECTION SYSTEM
CONTRACT 3: SANITARY SEWER COLLECTION SYSTEM

Transmittal #: 011

Date Sent: 06/27/2016

Date Due: 07/11/2016

Checking is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and corrected at the job site; for information that pertains solely to fabrication processes or to techniques of construction; and for coordination of the work of all trades.

Project Number: 16-017

To:

Travis Smigel
Designer
Delaware Engineering, D.P.C.
28 Madison Avenue Ext.
Albany, New York 12203

From:

Joe J. Miskewicz Jr.
Project Manager/Estimator
Peter Luizzi & Bros. Contracting Inc.
jmisk@luizzibros.com
Cell: (518) 641-8341

Subcontractor:

Peter Luizzi & Bros. Contracting, Inc.
49 Railroad Avenue
Albany, New York 12205
(518) 482-8954

DELAWARE ENGINEERING, D.P.C.

Submittal

Description

Date 6/27/16 By TRL

002 Rev. 1

Section 11217 - Grinder Pump Systems

Item No.	Type	Description	Rev	Copies	Action
1.03	O	Shop Drawing: Simplex Grinder Pumps	1	Electronic	<u>Approved</u>
1.03	O	Shop Drawing: Duplex Grinder Pumps	1	Electronic	<u>AN</u>

ACTION: NE = NO EXCEPTIONS AN = APPROVED AS NOTED RR = REVISE AND RESUBMIT RV = REVIEWED RJ = REJECTED

Remarks:

See Attached

X

Signature

Date

Review Comments:

X

Signature

Date

CC:

Company:

Contact:

E-mail:

Copies:

Notes:

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Luizzi Bros

Delaware Engineering

Doug Spoor

Alan Tavenner

DSpoor@luizzibro.com

ATavenner@delawareengineering.com

E Contractor

E Engineer



Delaware Engineering, DPC

28 Madison Avenue Extension
Albany, New York 12203

Tel: 518.452.1290
Fax: 518.452.1335

June 27, 2016

Delaware Engineering has reviewed the attached submittal(s). Please note the following comments:

1. Submittal #2.1 – 11217-2 – Grinder Pump Systems
 - 2.02 – Simplex/Duplex Pumps Grinder Pump – **Approved as Noted**
 - Duplex Pump- 4 Float Operation to be used
 - Shop drawing shows 4 float set up with lead, lag, stop and alarm floats.

Please contact me with any questions or comments you may have at 518-452-1290.

Tucker Lewis,
Engineer



EMMONS PUMP & CONTROL, INC.

453 N. PEARL ST.

ALBANY, NY 12204

PHONE: 518-694-0404 * FAX: 518-694-0405

kemmons@emmonspump.com * www.emmonspump.com

SUBMITTAL RESPONSE

PROJECT

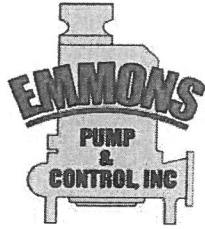
TOWN OF CATSKILL

WASTEWATER COLLECTION SYSTEM

CONTRACT 3

SANITARY SEWER COLLECTION SYSTEM

1. SUBMITTAL #2 -- 11217.2 -- GRINDER PUMP SYSTEMS
 - 2.02 SIMPLEX/DUPLEX GRINDER PUMP SYSTEMS
 - 240 AND 230 VOLT IS THE SAME.
 - THE FIBERGLASS COVER IS 30-3/16" OD. IT IS CALLED A 24" COVER AS THIS IS THE INSIDE DIAMETER OF SIMPLEX TANK SYSTEMS.
 - THE JUNCTION BOX CONDUIT COUPLING HAS BEEN CHANGED TO 2". DRAWING HAS BEEN CHANGED AS WELL.
 - THE LIMITED WARRANTY FOR LIBERTY PUMPS IS 3 YEARS. THE LIMITED WARRANTY FOR SJE/RHOMBUS CONTROLS IS 5 YEARS. THE LIMITED WARRANTY FOR TOPP TANKS IS 3 YEARS.
 - 3.02 SUBMERSIBLE PUMPSS
 - THE PIPE FOR GUIDE RAILS HAS BEEN CHANGED TO 1". THE RAILS ARE 304 SST, SCHEDULE 40. DRAWINGS HAVE BEEN CHANGED TO 1" GUIDE RAILS.



EMMONS PUMP & CONTROL, INC.
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ALBANY, NY 12204
PHONE: 518-694-0404 * FAX: 518-694-0405
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SUBMISSION FOR APPROVAL

RE-SUBMISSION A

ITEMS

SIMPLEX AND DUPLEX GRINDER PUMP SYSTEMS

PROJECT

TOWN OF CATSKILL
GRAVITY SEWER-FORCE MAIN CONSTRUCTION

CUSTOMER

PETER LUIZZI & BROTHERS
49 RAILROAD
ALBANY, NY 12205

DATE

06/23/16

EQUIPMENT LISTING

SIMPLEX GRINDER PUMP STATIONS BASE BID

QTY

- 34 SIMPLEX GRINDER PUMP STATION EACH CONTAINING:
- (1) LIBERTY MODEL LSG202, 2 HP, 230/1/60, 3450 RPM GRINDER PUMP WITH 25' CORD AND G90 1.25" DISCHARGE ELBOW.
 - (1) SJE/RHOMBUS MODEL 1121W124H6A10E17B
 - NEMA 4X ENCLOSURE, LOCKABLE
 - FLASHING ALARM LIGHT AND BUZZER
 - DRY AUXILARY ALARM CONTACTS
 - CONTACTOR AND BREAKER PER PUMP
 - RUN LIGHT AND H/O/A SWITCH PER PUMP
 - (3) 20' FLOAT SWITCHES WITH EXTERNAL WEIGHTS
 - (1) 24" X 84" FIBERGLASS TANK WITH:
 - 24" (30-3/16" OD) FIBERGLASS COVER
 - JUNCTION BOX WITH 2" CONDUIT HUB AND (4) CORD GRIPS
 - CONERY BERS-CV GUIDE RAIL PACKAGE EACH CONSISTING OF DUCTILE IRON BASE ELBOW WITH INTEGRAL BALL CHECK VALVE, 1.25" SST PUMP ADAPTOR FLANGE, SST UPPER GUIDE BRACKET, SST CHAIN WITH SHACKLES, (2) LENGTHS OF 1" SST PIPE FOR RAILS
 - 1.25" DISCHARGE COUPLING, 48" FROM TOP OF TANK
 - 2" CONDUIT COUPLING 12" FROM TOP OF TANK
 - SST FLOAT BRACKET
 - 1.25" SCH 80 PVC DISCHARGE PIPING AND FITTINGS
 - 1.25" SCH 80 PVC BALL VALVE WITH SST EXTENSION HANDLE
 - 4" COMPOSITE INLET HUB (SHIPPED LOOSE FOR FIELD INSTALLATION)

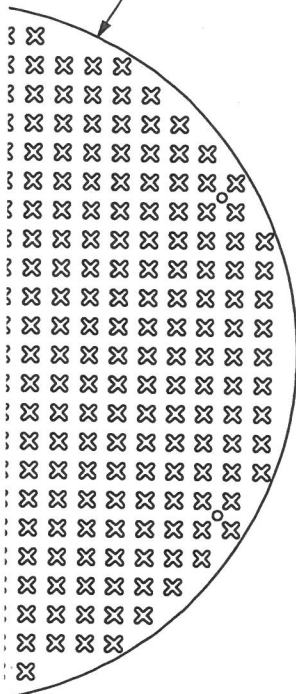
DUPLEX GRINDER PUMP STATIONS BASE BID

QTY

- 6 DUPLEX GRINDER PUMP STATION EACH CONTAINING:
- (2) LIBERTY MODEL LSG202, 2 HP, 230/1/60, 3450 RPM GRINDER PUMP WITH 25' CORD AND G90 1.25" DISCHARGE ELBOW.
 - (1) SJE/RHOMBUS MODEL 1221W124H6A10E17B19B
 - NEMA 4X ENCLOSURE, LOCKABLE
 - FLASHING ALARM LIGHT AND BUZZER
 - DRY AUXILARY ALARM CONTACTS
 - CONTACTOR AND BREAKER PER PUMP
 - RUN LIGHT AND H/O/A SWITCH PER PUMP
 - (3) 20' FLOAT SWITCHES WITH EXTERNAL WEIGHTS
 - (1) 36" X 84" FIBERGLASS TANK WITH:
 - 36" (42-1/2" OD) FIBERGLASS COVER
 - JUNCTION BOX WITH 1.5" CONDUIT HUB AND (5) CORD GRIPS
 - (2) CONERY BERS-CV GUIDE RAIL PACKAGE EACH CONSISTING OF DUCTILE IRON BASE ELBOW WITH INTEGRAL BALL CHECK VALVE, 1.25" SST PUMP ADAPTOR FLANGE, SST UPPER GUIDE BRACKET, SST CHAIN WITH SHACKLES, (4) LENGTHS OF 1" SST PIPE FOR RAILS
 - 1.25" DISCHARGE COUPLING, 48" FROM TOP OF TANK
 - 2" CONDUIT COUPLING 12" FROM TOP OF TANK
 - SST FLOAT BRACKET
 - 1.25" SCH 80 PVC DISCHARGE PIPING AND FITTINGS
 - (2) 1.25" SCH 80 PVC BALL VALVE WITH SST EXTENSION HANDLES
 - 6" COMPOSITE INLET HUB (SHIPPED LOOSE FOR FIELD INSTALLATION)
-

S OF BASINS ARE ALL I.D.,
 VISE SPECIFIED.

3



A
B
C
D
E
F
G

OUTER DIAMETER
 BOLT CIRCLE
 INNER DIAMETER
 CLEAR ACCESS



P.O. BOX 420 A HWY. 25 N.
 ROCHESTER, IN. 46975
 (800) 354-4534 FAX: (574) 223-6106

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		PUMP & DISCONNECT: RAIL: PUMP: LIBERTY LSG202		DO NOT SCALE DRAWING		REVISION 02	
SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		SO: 277596		PO#: TOWN OF CATSKILL			
NAME		DATE		TITLE:			
DRAWN	GH	04/14/2016		EMMONS PUMP & CONTROL			
CHK'D	DG	06/24/2016					
APP'VD							
MFG							
G.A.				MATERIAL:		DWG NO.	
						277596 C	
						A2	

5' OF BASINS ARE ALL I.D.,
 VISE SPECIFIED.

		ITEMS SHIPPED LOOSE	
	H402FG2430	4" FG HUB FOR 24" & 30" TANKS	1
	H400R	4" RUBBER GROMMET HUB	1
	CHNSS10	3/16" X 10' 316 SS CHAIN, W/2 SHACKLES	2

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		PUMP & DISCONNECT: RAIL: PUMP: LIBERTY LSG202 SO: 277596 PO:		DO NOT SCALE DRAWING	REVISION 02
TITLE: EMMONS PUMP & CONTROL				PO#: TOWN OF CATSKILL	
DWG NO. 277596 D		MATERIAL:		A2	



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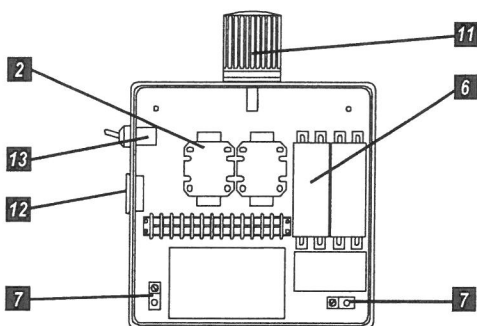
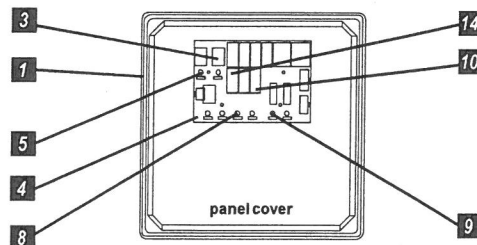
MODEL 122 Control Panel

Single phase, duplex alternating pump control with override.

The Model 122 control panel is designed to alternately control two 120, 208, or 240 VAC single phase pumps in water and sewage installations. The alternating action equalizes pump wear. In addition to the alternating pump control, this system provides override control should either pump fail. If an alarm condition occurs, an 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 10 X 10 X 6 inches (25.4 X 25.4 X 15.24 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use). **Note:** Options selected may increase enclosure size and change component layout.
 2. **Magnetic Motor Contactors** control pumps by switching electrical lines.
 3. **HOA Switches** for manual pump control (mounted on circuit board).
 4. **Control Circuit Board** provides pump control and alternation.
 5. **Green pump Run Indicator Lights** (mounted on circuit board).
 6. **Circuit Breakers** (optional) provide pump disconnect and branch circuit protection.
 7. **Ground Lugs**
 8. **Float Status Indicator Lights** (mounted on circuit board).
 9. **Control and Alarm Power Indicator Lights** (mounted on circuit board)
 10. **Auxiliary Alarm Contact**, form C (mounted on circuit board).
- NOTE:** Schematic is located inside the panel on enclosure cover.



Model Shown 1221W114X6A

STANDARD ALARM PACKAGE

11. **Red Alarm Beacon** provides 360° visual check of alarm condition. **Note:** NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
12. **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 horn.
13. **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.
14. **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 three 20' SJE SignalMaster® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty

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

Liberty Pumps®

LSG200-Series



U.S. Patent # 7,159,806

Omnivore®
Grinders
By Liberty Pumps

2 hp

1-1/4" Discharge

Features:

- New Patented V-Slice® cutter technology
- One-piece uni-body casting
- Stainless steel impeller
- Quick-disconnect power cord
- Internal or external capacitor models available
- 300 Series SS Rotor Shaft

innovate. evolve.



Omnivore[®]

Grinders
By Liberty Pumps

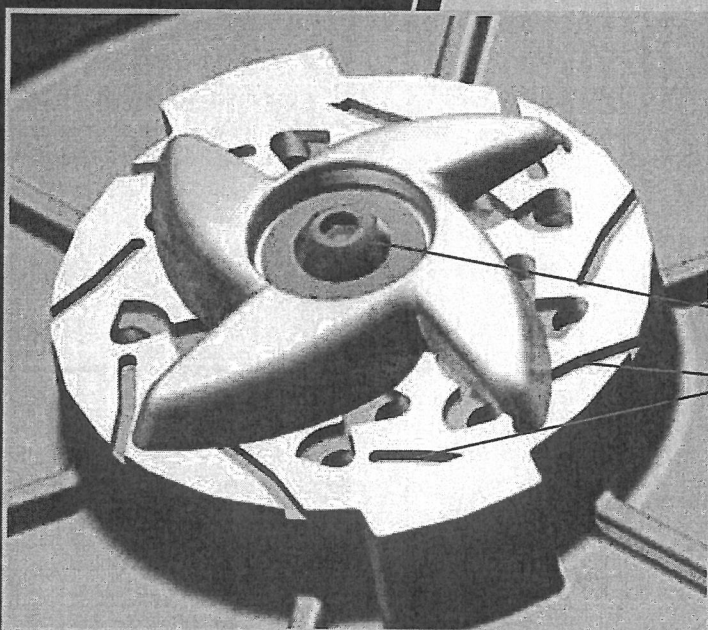
Liberty's LSG200-Series Grinder Pumps meet the demanding needs of commercial and residential sewage applications where difficult solids-handling ability is crucial. The LSG200-Series features a superior cutting system made of hardened 440 stainless steel – Rockwell C 58, for shearing solids into small particles prior to being passed to the discharge by the impeller under high pressure. Applications include individual or groups of homes, motels, schools, shopping centers, lakefront developments and systems requiring high pressure sewage pumping.

LSG200-Series Grinder Pumps

Features:

- 2 hp, heavy-duty motor – oil filled, thermally protected
- Upper and lower ball bearings
- One-piece uni-body cast iron housing
- 300 Series SS Rotor Shaft
- 316 Stainless steel impeller
- Dual seals – Upper seal is unitized durable silicon carbide. Lower seal is Viton[®] double-lip. (Lower seal ensures that all debris is kept away from main seal)
- Motor windings insulated to Class B (130°C)
- Advanced V-Slice[®] cutting system made of hardened 440 stainless steel – Rockwell C 58
- Horizontal 1-1/4" FNPT Discharge
- Back vanes on impeller and spiraled bottom plate for superior solids clearing
- All stainless steel fasteners
- Clog-free volute design
- Designed for maximum heat dissipation and cool motor operating temperatures
- Solid state starting circuit - no mechanical relay coil
- 25' power cord with Quick-Disconnect
- Piggy back plug with wide angle float (on automatic model) eliminates need for expensive panel

Viton[®] is a registered trademark of DuPont Dow Elastomers LLC.



V-Slice[®] Technology

Superior cutting system provides improved shredding performance over radial cutters. V-pattern provides up to 108 alternated cuts per revolution. Entire cutting system made of 440 stainless steel hardened to 58Rc.

Recessed cutter bolt eliminates wadding

Exclusion cleanout slots and back relief clears debris from under cutter

U.S. Patent # 7,159,806

in 2000

Stainless steel clasp for
lift-out chain

Large stainless steel
handle with rubber grip

Dependable solid state
starting circuit

Quick-disconnect
power cord

Thermal overload
(single phase only)

Internal start/run capacitors
on single phase models.
"C" models have external caps
and require a control panel

2 hp motor

Unique one-piece
unibody casting

Wide angle float with
piggy-back plug

316 SS impeller

Silicon carbide upper seal

300 Series SS
Rotor Shaft

Viton® double-lip lower seal

440 SS cutter plate
spiraled for solids
clearing

Robust motor plate

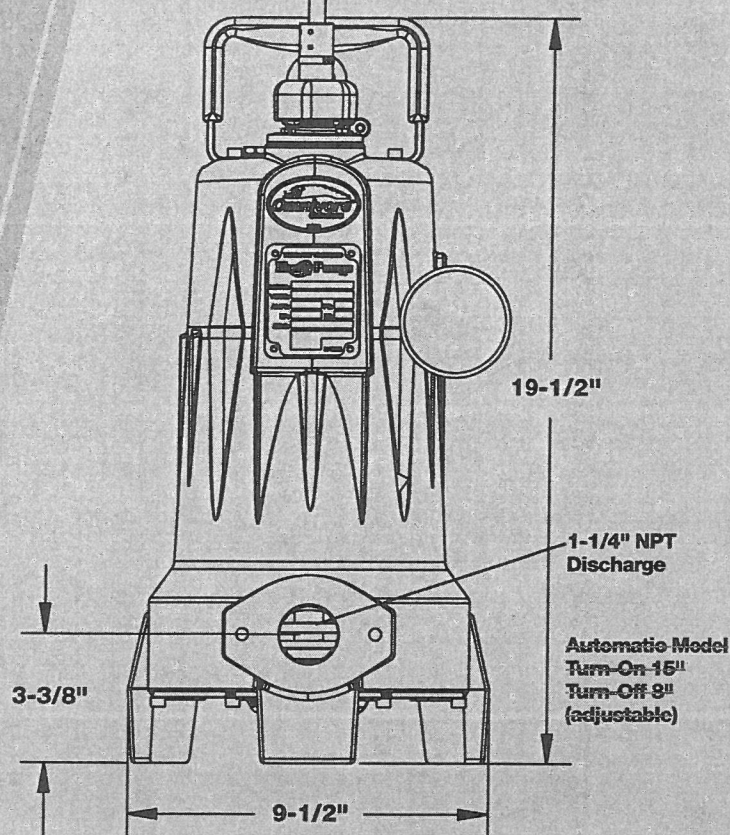
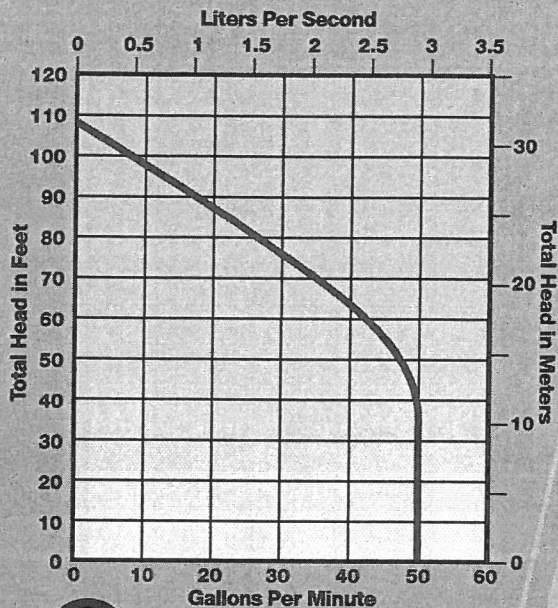
1-1/4" NPT Discharge

440 SS rotary cutter
hardened to 58Rc

Improved clog-free
volute design

water. evolve.

LSG200-Series Specifications



Model	HP	Volts	Phase	HZ	Amps	Locked Rotor Amps	Speed (RPM)	Discharge	Switch	Weight
LSG202A	2	208-230	1	60	15	53	3450	1-1/4"	Yes	86
LSG202M	2	208-230	1	60	15	53	3450	1-1/4"	No	84
LSG202M-C	2	208-230	1	60	15	53	3450	1-1/4"	No	84
LSG203M	2	208-230	3	60	10.6	62	3450	1-1/4"	No	84
LSG204M	2	440-460	3	60	5.3	31	3450	1-1/4"	No	84
LSG205M	2	575	3	60	4.9	31	3450	1-1/4"	No	84

Single phase models are thermally protected. 3-phase models require a properly sized control panel. Maximum fluid temperature 140° F

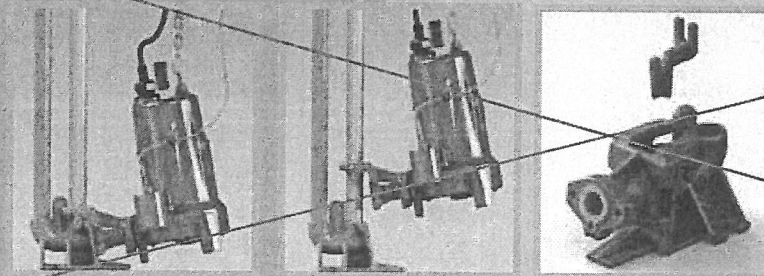
LSG202M and LSG202A feature internal capacitors and do not require a separate control panel for operation. LSG202M-C features external capacitors, requiring a panel with appropriately sized start and run capacitors.

Options for LSG202M-C: External Cap Grinder

Model	Description
K001316	Start/Run Capacitor Kit (for retrofit in existing panels)
SXHC24=3	Simplex NEMA 4X Panel with start/run capacitors
AE24HC=3	Duplex NEMA 4X Panel with start/run capacitors

For complete panel specifications, see SX or AE-series literature.
25' cord standard on all models. LSG202M-C features 35' cord standard.

GR20 Guide Rail Base



- Cast Iron construction
- Single 1-1/4" guide rail pipe design
- Auto alignment feature (GR20 works only with LSG-Series pumps)
- Upper-rail support bracket (GR20 option sold separately)

WWW.
libertypumps
.com

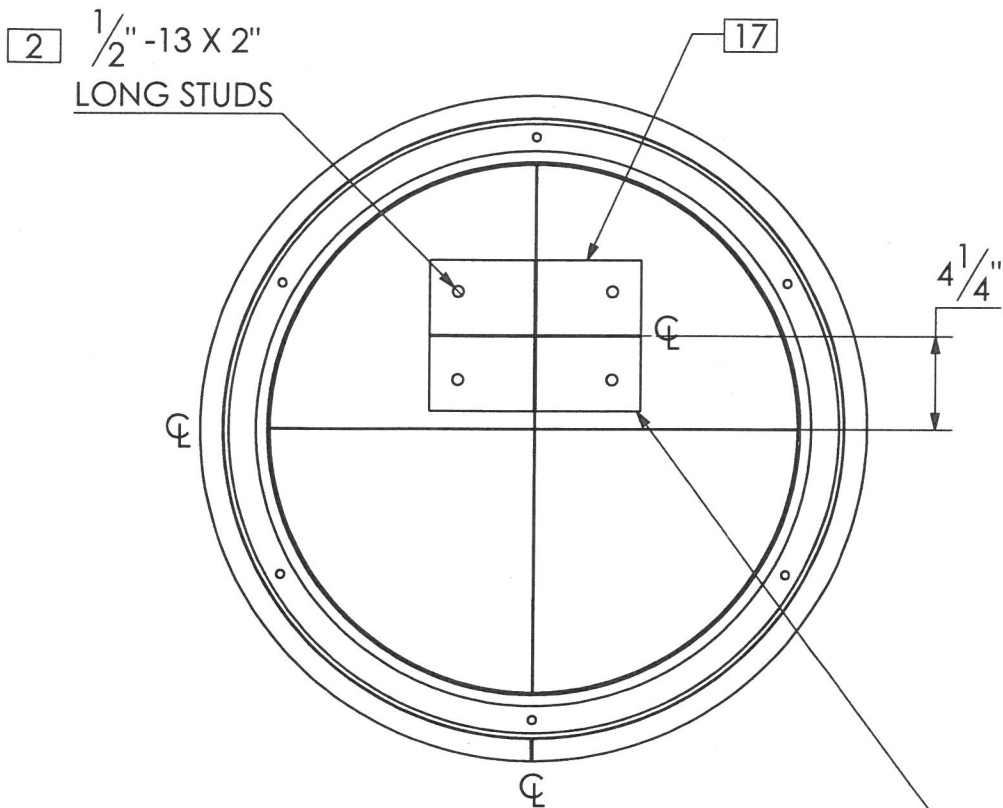


Liberty Pumps • 7000 Apple Tree Avenue • Bergen, New York 14416
Phone 800-543-2550 Fax (585) 494-1839

Specifications are subject to change without notice. Copyright © Liberty Pumps, Inc. 2011 All rights reserved. LLIT3200 R3/11

SIMPLEX GRINDER PACKAGES

3" OF BASINS ARE ALL I.D.,
/ISE SPECIFIED..



NOTE: TO BE GLUED ON TOP OF THE BOTTOM BOARD—
W/ 1/8" TO 1/4" BEAD OF GLUE SHOWING AROUND ALL
SIDES OF PAD.

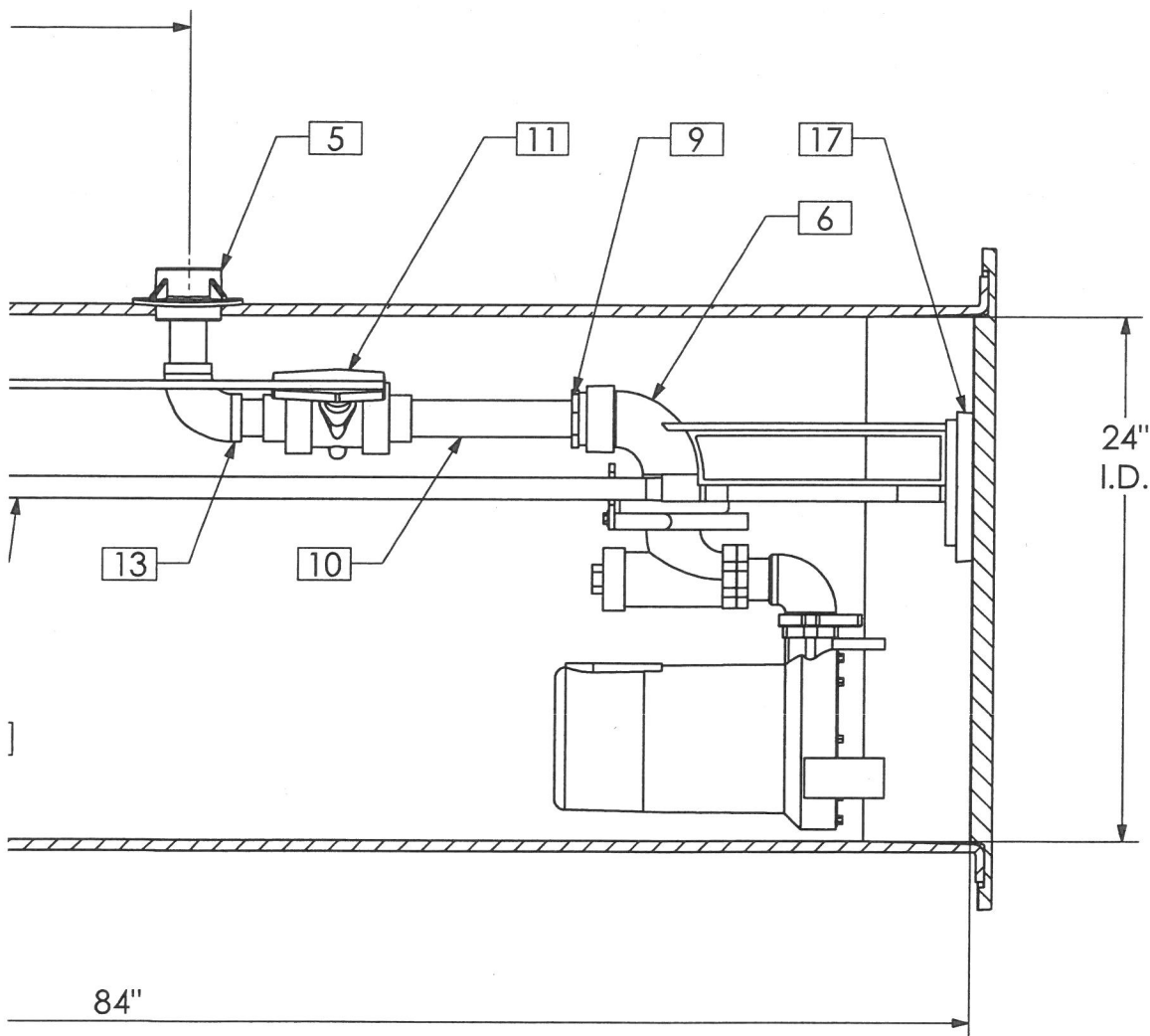
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SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		SO: 277584 PO:		PO#: TOWN OF CATSKILL			
DRAWN: GH		DATE: 04/15/2016		TITLE:			
CHKD: DG		06/24/2016		EMMONS PUMP & CONTROL			
APPVD:							
MFG:							
Q.A:				DWG NO. 277584 A			
		MATERIAL:		A2			

ALL DIMENSIONS ARE ALL I.D.,
UNLESS SPECIFIED.



OUTER DIAMETER
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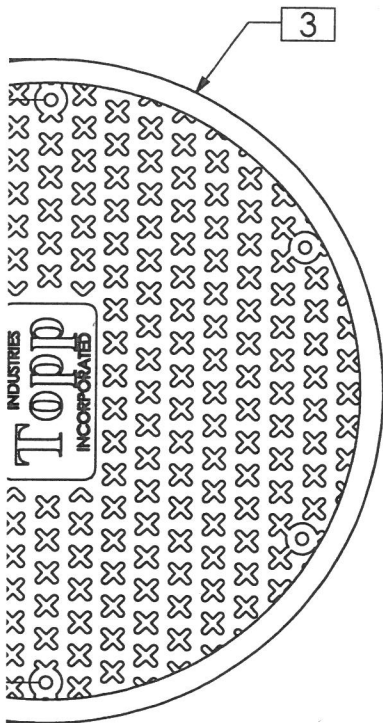


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APPRD	DG	06/24/2016	
MFG			
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		MATERIAL:	

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PO#: TOWN OF CATSKILL		
TITLE:		
EMMONS PUMP & CONTROL		
DWG NO.	277584 B	A2

S OF BASINS ARE ALL I.D.,
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OLT CIRCLE
NER DIAMETER
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SURFACE FINISH:		PUMP: LIBERTY LSG202		PO#: TOWN OF CATSKILL			
TOLERANCES:		SO: 277584		TITLE:			
LINEAR:		PO:		EMMONS PUMP & CONTROL			
ANGULAR:				DWG NO. 277584 C			
NAME	DATE			A2			
DRAWN GH	04/15/2016						
CHK'D DG	06/24/2016						
APP'VD							
MFG							
Q.A.		MATERIAL:					

S OF BASINS ARE ALL I.D.,
 VISE SPECIFIED.

		ITEMS SHIPPED LOOSE	
	H402FG2430	4" FG HUB FOR 24" & 30" TANKS	1
	H400R	4" RUBBER GROMMET HUB	1
	CHNSS10	3/16" X 10' 316 SS CHAIN, W/2 SHACKLES	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS		PUMP & DISCONNECT: RAIL:	
SURFACE FINISH:		PUMP: LIBERTY LSG202	
TOLERANCES:		SO: 277584	PO:
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	NAME	DATE	
DRAWN	GH	04/15/2016	
CHKD	DG	06/24/2016	
APPVD			
MFG			
Q.A			
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TITLE:		
EMMONS PUMP & CONTROL		
DWG NO.	277584 D	A2



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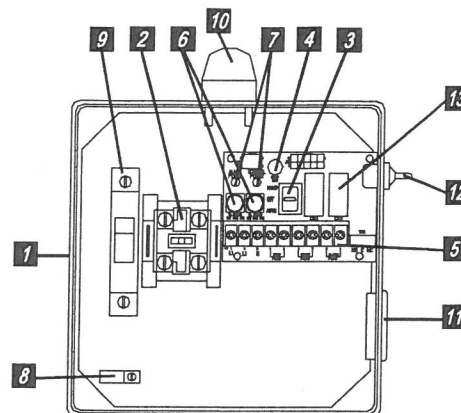
MODEL 112 Control Panel

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.

PANEL COMPONENTS

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 mounting feet for outdoor or indoor use).
* Options selected may increase enclosure size and change component layout.
2. **Magnetic Motor Contactor** controls pump by switching 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. **Ground Lug**
9. **Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.



Model Shown 1121W914X

STANDARD ALARM PACKAGE

10. **Red Alarm Beacon** provides 360° visual check of alarm condition.
Note: NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
11. **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 horn.
12. **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 has been cleared.
13. **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 three 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty



SJE Rhombus

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

SEE BACKSIDE FOR COMPLETE LISTING OF AVAILABLE OPTIONS.

Single Phase Simplex Control Panel

1.01 GENERAL

- A. Contractor shall furnish all labor, materials, equipment and incidentals required to provide a simplex motor control panel as specified herein.
- B. The motor control panel shall be assembled and tested by a controls system manufacturer (SJE-Rhombus or pre-approved equal) meeting the Standards of UL 508A for industrial controls and be UL labeled and serialized accordingly. The motor control panel shall be assembled and tested by the manufacturer so as to insure suitability in matching controls to motors and to insure single source responsibility for the equipment.
- C. The panel shall contain all components required by the pump manufacturer for starting and protecting the motor as well as features required by the pump manufacturer for warranty of the pumps. Items such as thermal overload detection or seal failure detection shall be included when required.
- D. Incoming pump power shall be single-phase, 60 Hz, 240 volts AC.
- E. Incoming control/alarm power shall be single-phase, 60 Hz, 120 volts AC.
- F. The control panel shall incorporate three (3) normally open, mechanically-activated control switches with external weights. Floats shall be labeled in the panel as stop, start, and alarm. Floats shall be SJE-Rhombus control switches or approved equal.

2.01 CONSTRUCTION

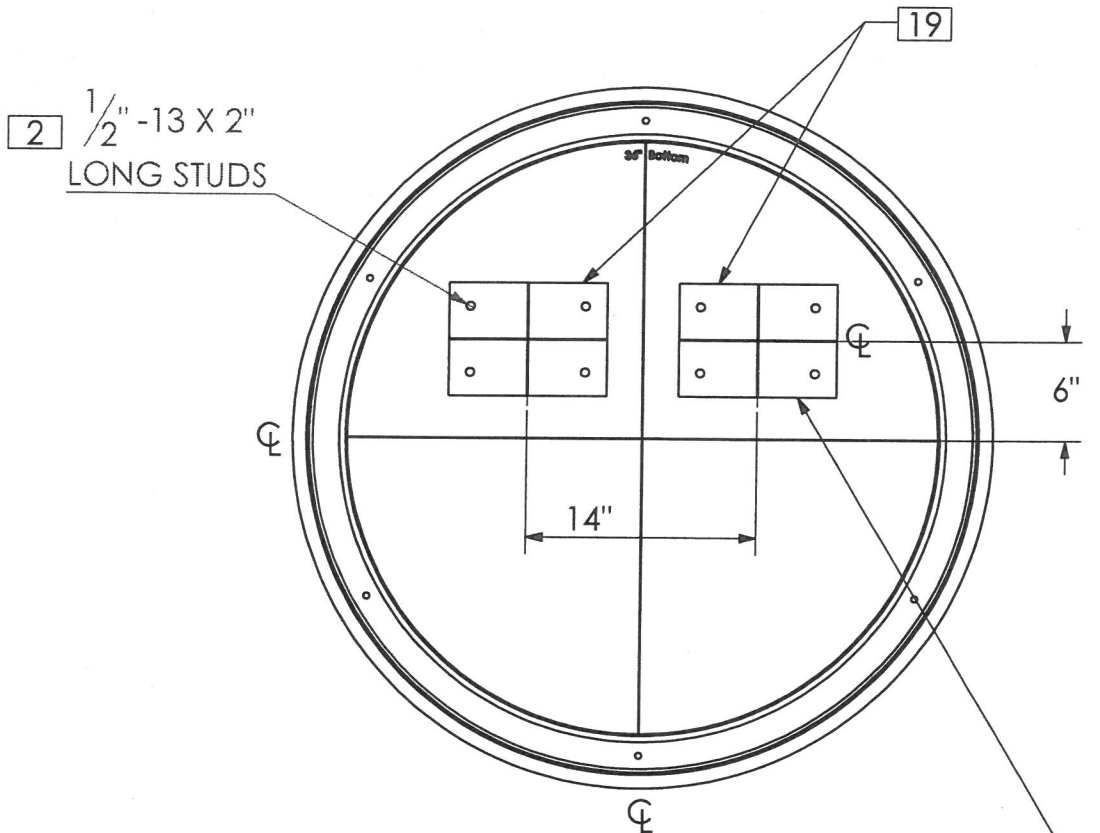
- A. The controls for the pump shall be housed in an engineered thermoplastic enclosure meeting NEMA 4X requirements with a hinged door and neoprene gasket. The enclosure shall have provisions for a padlock.
- B. A nameplate shall be permanently affixed to the panel. A ratings label shall include the model number, voltage, phase, frequency, ampere rating and horsepower rating and shall be affixed to the inside of the enclosure. A warning label against electric shock shall be permanently affixed to the outer door. The interior of the enclosure shall have a clear envelope with "as built" schematics located within.
- C. A removable aluminum back plate shall be provided for mounting all circuit breakers, motor starters, etc. All components mounted to the back plate shall be secured by type 25, self-tapping screws in extruded holes. Rivets shall not be acceptable for securing any component to the back-plate.
- D. A simplex pump controller shall be provided for control logic. The controller shall utilize a printed circuit board to avoid conventional wiring. The printed circuit board of the pump controller shall be manufactured using UL listed materials. There shall be separately fused control and alarm circuit protection. A run light and hand-off-auto switch shall be provided for the pump circuit. The run light and hand-off-auto switch shall be mounted on the printed circuit board. The run light shall be green.
- E. A circuit breaker shall be used as branch circuit protection for the pump. The circuit breaker shall be thermal magnetic and sized to meet NEC requirements for interrupt capacity and amp rating.
- F. The magnetic motor starter shall be general purpose type rated for the pump horsepower and include a contactor with a minimum mechanical life of 500,000 operations and a minimum contact life of

100,000 operations. Pump overloads, if not included in the pump, shall provide overload protection for the pump circuit and shall be sized to meet NEC requirements for the pump full load ampere rating specified.

- G. A high-level alarm condition shall activate the main alarm light (red, mounted on the top of the panel) and alarm horn. The alarm light shall remain illuminated until the problem is corrected. The alarm horn shall be rated 83-85 dB minimum. A Test-Normal-Silence toggle switch labeled and placed adjacent to the horn, shall be included.
- H. Wire ties shall be used to maintain panel wiring in neat bundles for maintenance and to prevent interference with operating devices. All grounding conductors shall be securely connected to assure a proper ground.
- I. The control panel shall be a 112 series panel as manufactured by SJE-Rhombus or approved equal.

DUPLEX GRINDER PACKAGES

5' OF BASINS ARE ALL I.D.,
/ISE SPECIFIED.



NOTE: TO BE GLUED ON TOP OF THE BOTTOM BOARD—
W/ 1/8" TO 1/4" BEAD OF GLUE SHOWING AROUND ALL
SIDES OF PAD.

OUTER DIAMETER
OLT CIRCLE
NER DIAMETER
LEAR ACCESS



P.O. BOX 420 ^ HWY. 25 N.
ROCHESTER, IN. 46975
(800) 354-4534 FAX: (574) 223-6106

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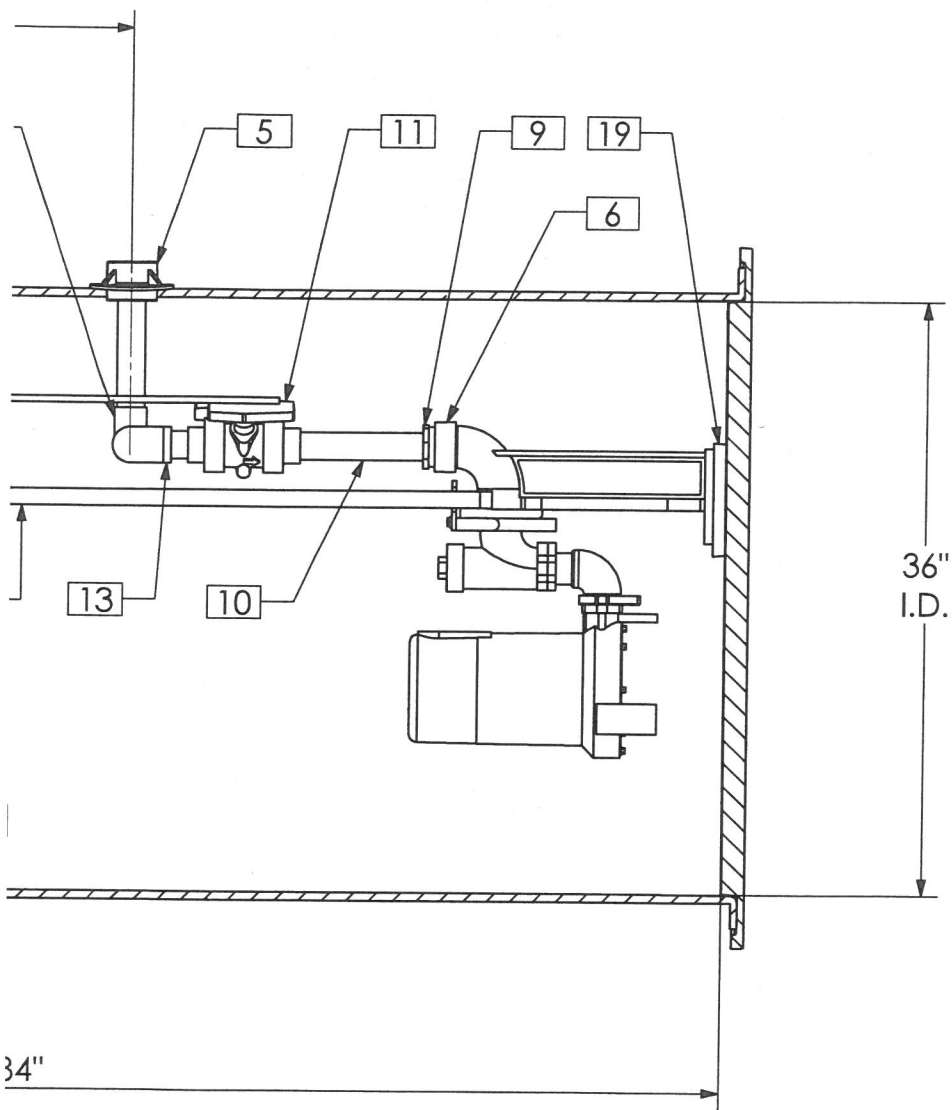
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OUTER DIAMETER
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REVISION

02

PO#: TOWN OF CATSKILL

TITLE:

EMMONS PUMP & CONTROL

DWG NO.

277596 B

A2

Single Phase Duplex Control Panel

1.01 GENERAL

- A. Contractor shall furnish all labor, materials, equipment and incidentals required to provide a duplex motor control panel as specified herein.
- B. The motor control panel shall be assembled and tested by a controls system manufacturer (SJE-Rhombus or pre-approved equal) meeting the Standards of UL 508A for industrial controls and be UL labeled and serialized accordingly. The motor control panel shall be assembled and tested by the manufacturer so as to insure suitability in matching controls to motors and to insure single source responsibility for the equipment.
- C. The panel shall contain all components required by the pump manufacturer for starting and protecting the motor as well as features required by the pump manufacturer for warranty of the pumps. Items such as thermal overload detection or seal failure detection shall be included when required.
- D. Incoming pump power shall be single-phase, 60 Hz, 240 volts AC.
- E. Incoming control/alarm power shall be single-phase, 60 Hz, 120 volts AC.
- F. The control panel shall incorporate three (3), normally open, mechanically-activated control switches with pipe clamps. Floats shall be labeled in the panel as stop, lead, and lag/alarm. Floats shall be SJE-Rhombus control switches or approved equal.

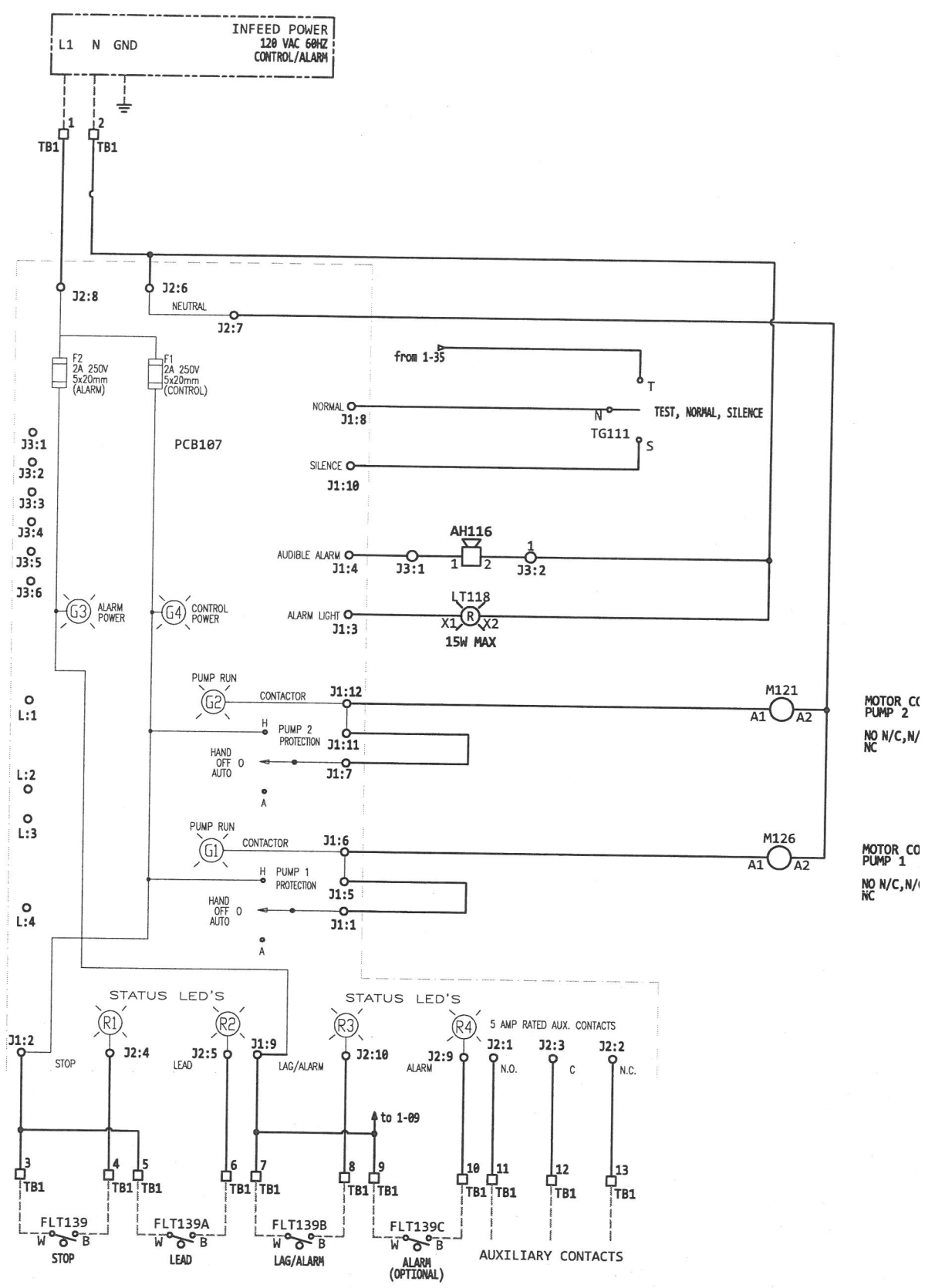
2.01 CONSTRUCTION

- A. The controls for the pump shall be housed in an engineered thermoplastic enclosure meeting NEMA 4X requirements with a hinged door and neoprene gasket. The enclosure shall have provisions for a padlock.
- B. A nameplate shall be permanently affixed to the panel. A ratings label shall include the model number, voltage, phase, frequency, ampere rating and horsepower rating and shall be affixed to the inside of the enclosure. A warning label against electric shock shall be permanently affixed to the outer door. The interior of the enclosure shall have a clear envelope with "as built" schematics located within.
- C. A removable aluminum back plate shall be provided for mounting all circuit breakers, motor starters, etc. All components mounted to the back plate shall be secured by type 25, self-tapping screws in extruded holes. Rivets shall not be acceptable for securing any component to the backplate.
- D. A duplex pump controller shall be provided for control logic. The controller shall utilize a printed circuit board to avoid conventional wiring. The printed circuit board of the pump controller shall be manufactured using UL listed materials. There shall be separately fused control and alarm circuit protection. The pump controller shall indicate control and alarm power utilizing green LED indicator lights. The pump controller shall indicate float circuit operation utilizing red LED indicator lights. Indicator lights shall provide adequate information so that they can be used for diagnosis in troubleshooting problems located in the float circuits. Each LED shall be permanently labeled on the pump controller as to the function. For each pump a run light and hand-off-auto switch shall be provided. Run lights and hand-off-auto switches shall be mounted on the printed circuit board. Run lights shall be green.
- E. Circuit breakers shall be used as branch circuit protection for each pump. Circuit breakers shall be

thermal magnetic and sized to meet NEC requirements for interrupt capacity and amp rating.

- F. The magnetic motor starters shall be general purpose type rated for the pump horsepower and include a contactor with a minimum mechanical life of 500,000 operations and a minimum contact life of 100,000 operations. Pump overloads, if not included in the pump, shall provide overload protection for the pump circuit and shall be sized to meet NEC requirements for the pump full load ampere rating specified.
- G. A high-level alarm condition shall activate the main alarm light (red, mounted on the top of the panel) and alarm horn. The alarm light shall remain illuminated until the problem is corrected. The alarm horn shall be rated 85 dB minimum. A Test-Normal-Silence toggle switch labeled and placed adjacent to the horn, shall be included.
- H. Wire ties shall be used to maintain panel wiring in neat bundles for maintenance and to prevent interference with operating devices. All grounding conductors shall be securely connected to assure a proper ground.
- I. The alternator shall consist of an alternating circuit which alternately switches pumps upon the next pumping cycle. The alternation circuitry shall be integrated into the pump controller.
- J. The control panel shall be a 122 series panel as manufactured by SJE-Rhombus or approved equal.

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REV CNTR FOR:
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