



**SUBMITTAL**  
**DIVISION: 33**  
**NO.: 330000-19**

**Title:** Explosion Proof Sewage Pumps and Pump Station Level Controller

**PRIORITY:** High

**Division:** 33

**No.:** 330000-19

**Contract No.:** E6L38

**LEAD Project No.:** 18-04

**DESIGN TEAM REVIEW**

Rev. Description	Received	From	Sent	To	Returned	Forwarded	Status	Days Held
A Explosion Proof Sewage Pumps and Pump Station Level Controller	15-Oct-19	Integ	16-Oct-19	APCTE			OUT FOR REVIEW	

**FDOT REVIEW**

Rev. Description	Received	From	Sent	To	Returned	Forwarded	Status	Days Held

**LEAD**  
ENGINEERING CONTRACTORS

Review is for general conformance with the Contract Documents. Comments shall not be construed as relieving the supplier/subcontractor from strict compliance with such documents. The supplier/subcontractor remain responsible for details and accuracy, for complying with standards of the industry regarding fabrication, assembly, erection, and installation procedures.

REVIEWED       REVISED & RESUBMIT  
 REVIEWED AS NOTED       REJECTED

By: Richard Galindo      Date: 10/16/2019

**A&P**  
ENGINEERS

**PROJECT: GGMTF-Lift Station**  
**DATE REC'D: 10/18/2019**

CONFORMS WITH CONTRACT DOCUMENTS  
 MAKE CORRECTIONS NOTED  
 AMEND AND RESUBMIT  
 NOT REVIEWED  
 REJECTED

THIS REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. THIS REVIEW, NOTATIONS, OR COMMENTS DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE PLANS AND SPECIFICATIONS, THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE APPLICABLE LAWS, CODES OR REGULATIONS, AND DOES NOT ALTER ANY CONTRACTUAL OBLIGATIONS OF THE ENGINEER. THE CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR DETAIL AND ACCURACY, QUANTITIES, DIMENSIONS, SELECTING FABRICATION PROCESSES, FOR MEANS AND METHODS OF CONSTRUCTION AND PERFORMING WORK IN A SAFE MANNER IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

REVIEWED BY: A.A., E.L.M.      DATE: 10/16/2019

## Submittal # #50



FO-INTEG-PROJECT-PO0001-REV.03 Gestión de Control de Calidad / Quality Management

### Information

Status: In Review

Task/tareas condition

Legend

Overdue Issue On Time Delayed Start Inactive

Project (CDC) - Empresa/  
COMPANY:

Project (CDC) - CDC ( Centro  
de Costo ) I-PLUMBING-GGMTF-021919

Project (CDC) - Customer  
Name Kaufman Lynn Construction

Project (CDC) - Ubicacion 15890 Northwest 7th Avenue, Miami, Florida 33169

### Submittal

Title: Submersible pumps - Pump Station

Spec Section: TSP01 T3.12, T3.20

Description: Explosion-Proof Sewage Pumps, Pump Station Level Controller

Submittal Type : Product Data

Submitted On: 15-10-2019

Responsible Integ Miami LLC  
Contractor:

Submittal Manager: Eduardo Pereira  
Manager:

Issue Date: 15-10-2019 12:00 AM

Final Due Date: 25-10-2019

Lead Time: 10

Ball in Court: Kaufman

### Attachment

Attachment: 50 Submittal Explosion-Proof Sewage Pumps and Pump Station Level Controller.pdf

Linked Drawings:

Notes:

### Stamp Info

Stamp Date:

Other Name:

Show Stamp on PDF:

### Submittal logs

Add Submittal LOG

Revision #	Date Submittal REV	Attachment Document:	Comments:
No submittal logs found			

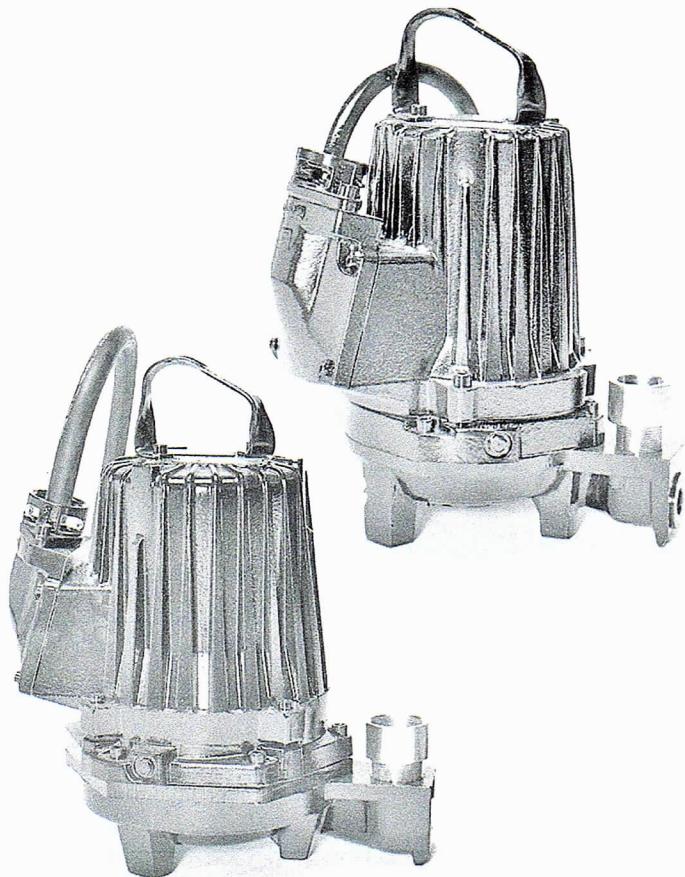
## Submittal Approval

Approval

Name/Title:

Signature \_\_\_\_\_

Created today at 1:23 PM (PDT). Last updated by [pma@integca.com](#), [PMA](#) today at 1:29 PM (PDT). Owned by [pma@integca.com](#), [PMA](#).



**TECHNICAL BROCHURE**

B1GA2GA R9

## FEATURES

**Design:** Capable of grinding municipal, commercial and industrial sewage.

**Cutter System:** Designed to reduce sewage to a fine slurry.

**Impeller:** Cast iron, semi-open, non-overloading multi-vane design with pump-out vanes for mechanical seal protection.

**Casing:** Cast iron, volute type for high efficiency. Adaptable for slide rail system.

**Paint:** Two coat paint system for superior surface protection.

**Float Leakage Sensor (FLS):** a small internal float switch is used to detect the presence of water in the stator chamber. Standard on all models.

**Leakage Sensor Detector Circuit:** The FLS, when activated, will cause the patented 24 volt MiniCAS monitoring relay to signal an alarm and, if desired, stop the pump. The MiniCAS 24 volt relay can be ordered separately for installation in a control panel by a UL or CSA certified panel shop or as a built-in option in our control panel.

# 1GA(X) & 2GA(X)

1½" AND 2" DISCHARGE SUBMERSIBLE GRINDER PUMPS



Reviewed for general conformance to the contract documents. This review does relieve the vendor of the responsibility of making the work conform to the plans and the **FDOT Design Standards**.

Submittal #:	50
CDC:	I-PLUMBING-GGMTF-021919
Job #:	424
Reviewed by:	EDUARDO PEREIRA
Date:	10/15/2019
Vendor:	REVISION
Product	Explosion-Proof Sewage Pumps &
Description:	Pump Station Level Controller



### APPLICATIONS

High head and pressure sewage systems for:

- Municipal ←
- Commercial
- Industrial

### PUMP SPECIFICATIONS

#### 1GA:

- Discharge Size: 1½"
- Maximum Capacity: 92 GPM.
- Maximum Total Head: 117' TDH.

#### 2GA:

- Discharge Size: 2"
- Maximum Capacity: 198 GPM.
- Maximum Total Head: 178' TDH.
- Maximum temperature rating: 104° F (40° C) continuous duty
- Tandem mechanical seals: see Application Data for details.
- Fasteners: 300 series stainless steel.
- Rotating cutter: chrome alloyed cast iron.
- Cutter ring: hardened 316L stainless steel.
- Cast iron parts are ASTM A-48, Class 35B.

### MOTOR SPECIFICATIONS

- Air-filled design
- NEMA type B
- Class F insulation
- 60 Hertz
- Shaft: 431 series stainless steel, taper collet design.
- Ball bearings: oversized, pre-greased upper and lower ball bearings.
- Power cord: 30 feet standard, single jacket, 6 conductor combination power and control cable. Optional 100 foot lead is available.

### Single Phase:

- 3 HP @ 3450 RPM
- 5.4 HP @ 3450 RPM
- 9.4 HP @ 3450 RPM
- 230 Volts

**Notice:** Single phase pumps require a capacitor pack and start relay for proper operation.

### Three Phase:

- 4 HP @ 3450 RPM ←
- 6 HP @ 3450 RPM
- 11 HP @ 3450 RPM
- 200, 230, 460 and 575 Volts

### MOTOR FEATURES

- Air-filled, NEMA type B squirrel cage induction motor
- Class F, 311° F (155° C) insulated stator winding
- Designed for a maximum of 15 evenly spaced starts per hour.
- Built-in thermal sensors provide an over temperature signal to the Mini CAS (Control and Status) monitoring relay mounted in the control panel. The Mini CAS can be ordered separately or ordered as an option in our control panel.
- Common pump motor shaft and compact seal design permit short overhang minimizing shaft deflection.
- Motor casings have integral cooling ribs for maximum heat dissipation.
- Shaft mounting is a robust maintenance free design featuring pre-greased ball bearings.
- The junction chamber is completely sealed off from the surrounding liquid and incorporates a separate gland assembly with a strain relief clamp.
- Also available in optional Explosion Proof construction. Explosion Proof motor listed Class 1, Division 1, Groups C and D. These units are FM approved.

### CONTROLS

- SINGLE PHASE UNITS require capacitors. See panels BCP5 R13 for Standard Construction and Explosion Proof.
- THREE PHASE UNITS can use standard panel selections with option added for minicas device (i.e. options O, simplex and P, duplex).

### MODEL INFORMATION

Order Number	HP	Phase	Volts	RPM	Discharge Size	Impeller Code	Max. Amps	Start Amps	Locked Rotor Amps	Power Cable Size	Pump Wt. (Lbs.)			
1GA71G1HD	3	1	230	3450	1½"	H	13.0	74.0	52.0	14/7	117			
1GA71G1LD						L								
1GA81H1GD						G	22.0	120.0	100.0	12/7	172			
2GA81H1KD				3430	2"	K								
2GA31J1FD						F	38.0	134.0	170.0	8/4 & 10/3*	241			
2GA31J1JD						J								
1GA71H2CD	4	3	200 230 460 575	3450	1½"	C	12.0	63.0	62.0	14/7	117			
1GA71H3CD							10.0	60.0	54.0					
1GA71H4CDX							5.0	30.0	27.0					
1GA71H5CD							4.0	20.0	22.0					
1GA81J2BD			200 230 460 575			B	17.0	133.0	79.0	12/7	172			
1GA81J3BD							15.0	144.0	75.0					
1GA81J4BD							7.6	77.0	41.0					
1GA81J5BD							6.0	53.0	30.0					
2GA81J2ED						E	17.0	133.0	79.0					
2GA81J3ED							15.0	144.0	75.0					
2GA81J4ED							7.6	77.0	41.0					
2GA81J5ED							6.0	53.0	30.0					
2GA31K2AD	11	3	200 230 460 575	3475	2"	A	30.0	258.0	189.0	8/4 & 10/3*	241			
2GA31K3AD							26.0	229.0	164.0					
2GA31K4AD							13.0	113.0	82.0					
2GA31K5AD							11.0	84.0	66.0					
2GA31K2DD						D	30.0	258.0	189.0					
2GA31K3DD			460 575				26.0	229.0	164.0					
2GA31K4DD							13.0	113.0	82.0					
2GA31K5DD							11.0	84.0	66.0					

\* Single cable

## NOMENCLATURE

### 1st, 2nd and 3rd Characters -

#### Discharge Size and Type

→ 1GA = 1½" discharge, grinder, dual seal  
2GA = 2" discharge, grinder, dual seal

### 4th Character - Mechanical Seals

3 = tungsten carbide/tungsten carbide lower, carbon/  
ceramic upper  
→ 7 = ceramic/ceramic lower, carbon/ceramic  
upper  
8 = tungsten carbide/ceramic lower, carbon/  
ceramic upper

### 5th Character - Cycle/RPM

1 = 60 Hz/3500 RPM

### 6th Character - Horsepower

G = 3 HP, 1Ø  
→ H = 5 HP, 1Ø; 4 HP 3Ø ←  
J = 9.4 HP, 1Ø; 6 HP 3Ø  
K = 11 HP, 3Ø

### 7th Character - Phase and Voltage

1 = single phase, 230 volt  
2 = three phase, 200 volt  
3 = three phase, 230 volt  
→ 4 = three phase, 460 volt  
5 = three phase, 575 volt

### 8th Character - Performance Curve

A = 11 HP / 3Ø / 2GA  
B = 6 HP / 3Ø / 1GA  
C = 4.0 HP / 3Ø / 1GA  
D = 11 HP / 3Ø / 2GA  
E = 6 HP / 3Ø / 2GA  
F = 9.4 HP / 1Ø / 2GA  
G = 5.4 HP / 1Ø / 1GA  
H = 3 HP / 1Ø / 1GA  
J = 9.4 HP / 1Ø / 2GA  
K = 5.4 HP / 1Ø / 2GA  
L = 3 HP / 1Ø / 1GA

Impeller trims not available.

### 9th Character - Cord Length

D = 30' (standard)  
J = 100'

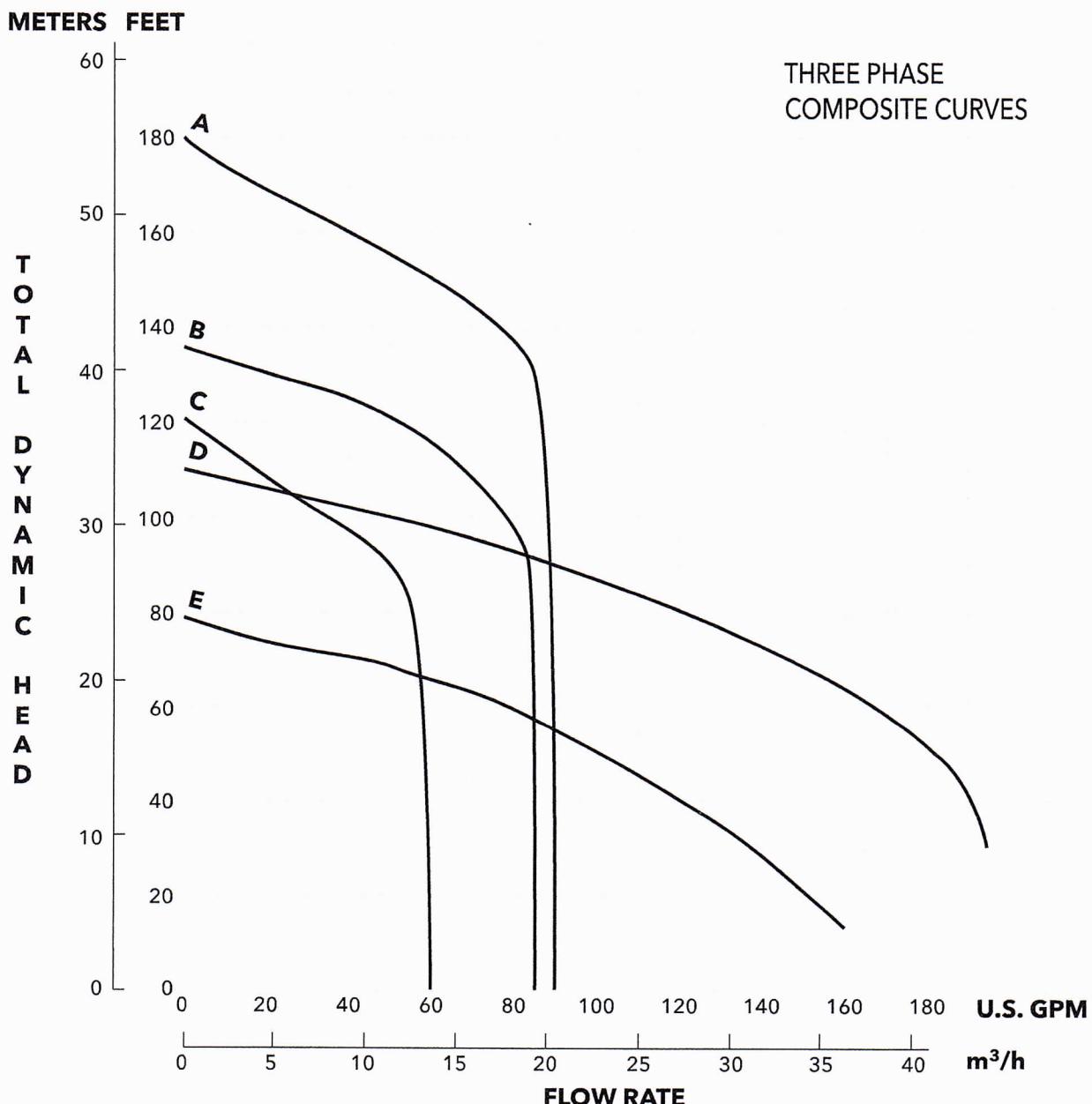
### 10th Character - Explosion Proof Option

X = Explosion Proof



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**3Ø Composite Curves**

Impeller Code	Order Number	HP
A	2GA-1K-AD	11
B	1GA-1J-BD	6
C	1GA-1H-CDX	4
D	2GA-1K-DD	11
E	2GA-1J-ED	6

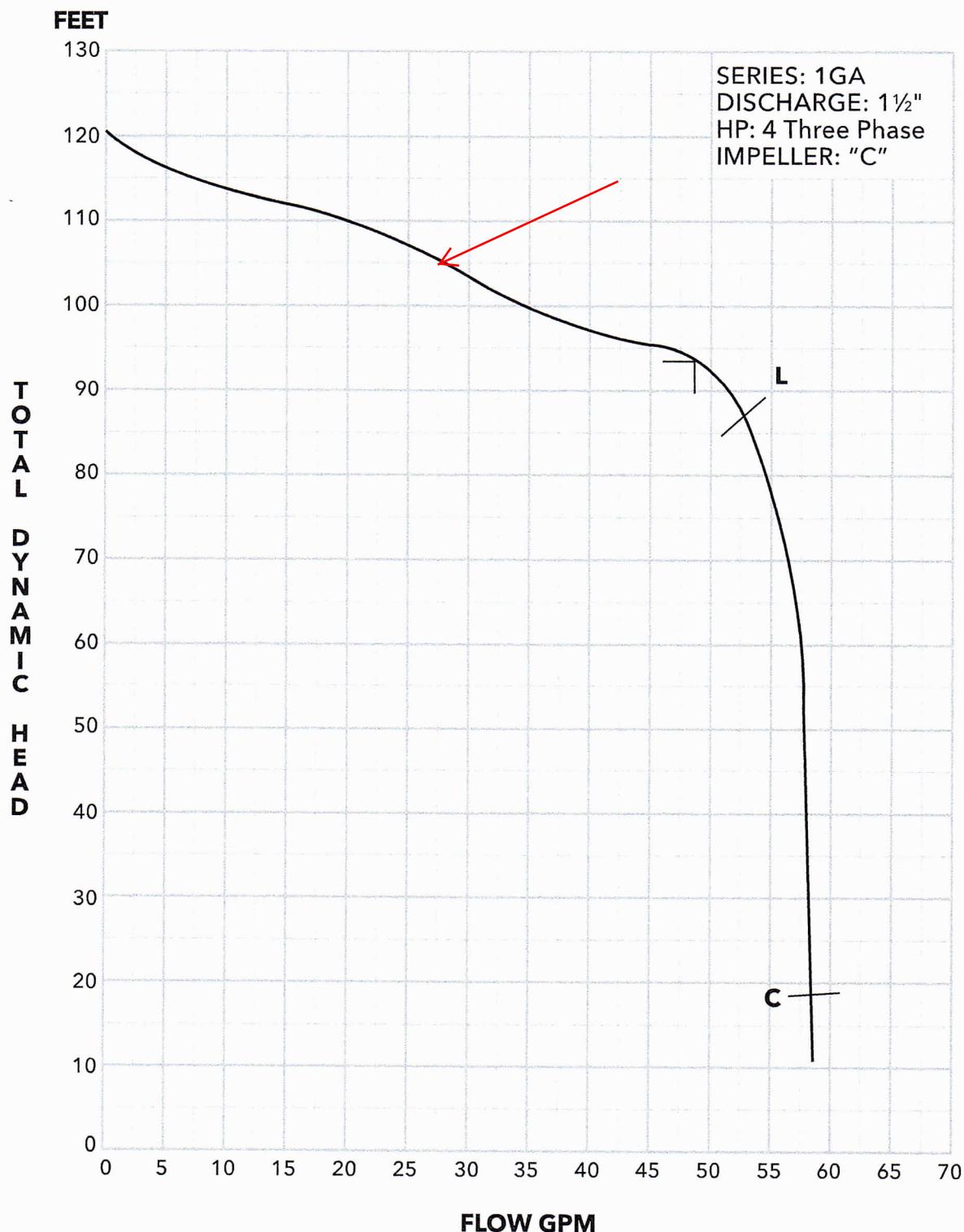
Customer \_\_\_\_\_

Pump Item \_\_\_\_\_

Condition of Service    Impeller Diameter \_\_\_\_\_  
**27** GPM **105** TDH \_\_\_\_\_ EFF% \_\_\_\_\_

Certified for: \_\_\_\_\_ Approval

By \_\_\_\_\_ Date \_\_\_\_\_ Record

**1GA 4 HP Three Phase "C" Curve**

⊟ = Best Efficiency

L = Limited to intermittent duty below this point

C = Cavitation limit



## FEATURES

NEMA 4X, 30 watt, flashing red light and alarm horn - 95db.

NEMA 4X, fiberglass enclosure with gasketed, hinged door and stainless steel hardware.

Entire unit is UL and CUL listed.

### Single Phase

Field adjustable for 115, 208 or 230V, 60 Hz.

2 pump circuit breakers.

### Three Phase

Field adjustable for 208/230 /460/575V, 60 Hz.

115V control circuit transformer.

2 adjustable motor overload protectors.

Heaters not required.

Provides fully automatic operation for two pumps.

Solid state pump alternator circuit displays float status for ease of installation and trouble shooting.

# DUPLEX NEMA 4X WEATHERPROOF PANELS

SINGLE AND THREE PHASE CONTROL PANELS



**CentriPro**  
a **xylem** brand

## Wastewater

### APPLICATIONS

Superior quality duplex liquid-level controller, automatically controls alternation for two pump operation. High-level alarm warning designed for a variety of sump, effluent, sewage and water transfer applications.

### SPECIFICATIONS

- Accepts single or dual power feed.
- 2 hand-off-automatic (H-O-A) pump switches.
- On-off control circuit switch.
- 2 oversized magnetic contactors.
- Numbered terminal strip-screw type.
- **Float Switches - Note: Please order float switches separately.** We offer several types and models. See the Float Switch bulletin for available options. The type selected determines the quantity needed. The basin depth and panel location determine the required cord length. Contact your distributor or Customer Service for additional information.
- Electronic pump alternator.
- Alternator selector switch.
- Lag pump start delay.

### FEATURES

- Rugged, NEMA 4X construction withstands even the most severe weather conditions and prevents corrosion.
- Provides fully automatic operation for two pumps. Alternates pump starting to distribute operating time. Provides extra pumping capacity in times of high inflow by energizing both pumps.
- Alternator selector toggle for maintenance on one or both pumps.

- Hinged door with lockable stainless steel latch for safe operation indoors or out.
- High-level alarm circuit includes through-door mounted silence switch for manual silence of alarm horn.
- Through-door mounted alarm test switch insures proper operation of the alarm circuit without the need to open the panel.
- Two through-door mounted pump run lights.
- Top-mounted high intensity flashing red light provides 360° visibility.
- Pulsating, corrosion proof alarm horn.
- These duplex controls are factory wired for operation with three float bulbs. An easy field modification for four float bulb operation using separate "lag-on" and "alarm bulbs" is provided.
- Alternator selector switch allows a choice of automatic alternation or operation of only pump 1 or pump 2. Typically used if one pump is down for maintenance.
- Lag pump-start delay built-in. Delays starting lag pump for 5 seconds if both pumps attempt to start simultaneously as after a power outage.
- Panel can be wired for a single power feed for pumps and control circuit or the control circuit can be wired to a separate power supply to insure alarm integrity in case of a tripped main breaker.
- Auxiliary alarm contacts provided for remote alarm connection.
- Color coded wiring, screw type terminals and plug in sockets, ensure ease of field servicing.
- Field wiring diagram, panel schematic and installation instructions included.
- Requires three float switches or with optional fourth lag float, order separately.

### PANEL MODEL INFORMATION

SINGLE PHASE PANELS		THREE PHASE PANELS	
ORDER NUMBER	AMP / HP RANGE	ORDER NUMBER	AMP RANGE
D10020	0-20 AMPS	D31625	1.6 - 2.5
D12127	3 HP	D32540	2.5 - 4.0
D12836	5 HP	<del>D34063</del> BF3CDPET	4.0 - 6.3
		D36310	6.3 - 10
		D31016	10 - 16
		D31620	16 - 20
		D32025	20 - 25
		D32232	22 - 32

**ADDITIONAL OPTIONS****Code** (add as required)

A = Guaranteed pump submergence circuit  
 C = 115V condensation heater  
 D = Single phase lightning arrestor  
 E = Three phase lightning arrestor  
 G = Elapsed time meter (2) - Duplex  
 J = Seal fail circuit (2) - Duplex  
 L = Cycle counter (2) - Duplex  
 N = High temp. indicator with pump shutdown - Duplex

For Explosion Proof 

P = Special duplex Mini CAS seal fail and high temperature circuit for use on only three phase 15/20GD, 15/20GX, 1GA/2GA, GV Plus and Impact pumps. For single phase, see CentriPro single phase grinder control panels bulletin BCP1PGP for standard, BCP1PC1P for explosion proof.

T = 4 intrinsically safe relays in duplex panel

V = Duplex 3SDX/4SDX/4NS/4XD Seal Fail

YY= Duplex dry contact for seal failure interface to building management system.

ZZ= Duplex dry contact for pump running interface to building management system.

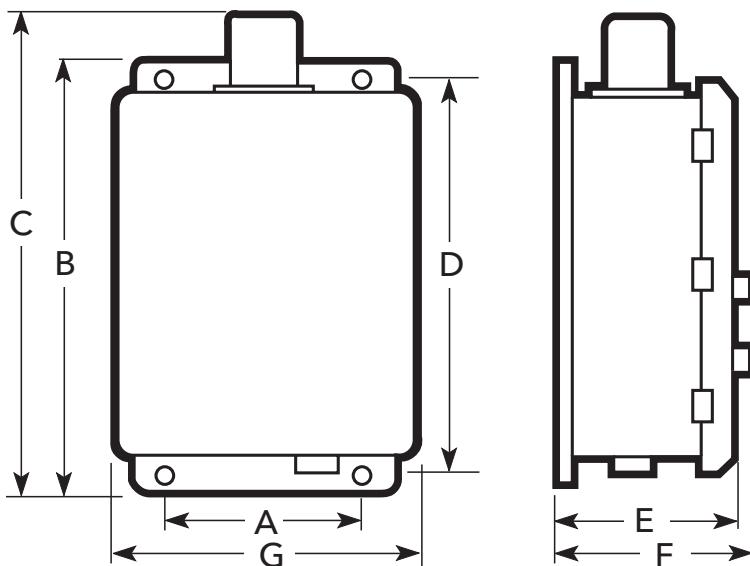
When ordering options, add the appropriate code number as a suffix to the panel order number.

Example...D31625CG adds a condensation heater and (2) elapsed time meters.

**ENCLOSURE DIMENSIONS** (in inches)

Single Phase						
A	B	C	D	E	F	G
10.1	15.5	18.3	14.8	6.8	7.2	13.3
Three Phase						
A	B	C	D	E	F	G
12.1	17.5	20.3	16.8	6.8	7.2	15.3

**NOTE:** Mounting holes are  $\frac{3}{8}$ ".

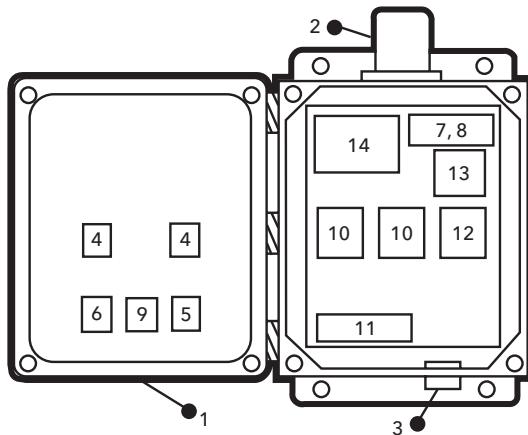
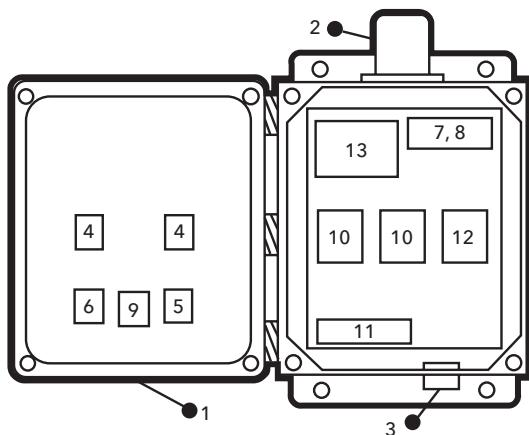


**SINGLE PHASE COMPONENTS**

1. NEMA 4X enclosure
2. Flashing alarm light
3. Alarm horn
4. Pump run light
5. Alarm silence button
6. Alarm test button
7. Control power on/off switch
8. H-O-A switch
9. Alarm reset button
10. Contactor
11. Terminal strip
12. Alternator circuit
13. Motor circuit breakers

**THREE PHASE COMPONENTS**

1. NEMA 4X enclosure
2. Flashing alarm light
3. Alarm horn
4. Pump run light
5. Alarm silence button
6. Alarm test button
7. Control power on/off switch
8. H-O-A switch
9. Alarm reset button
10. Contactor
11. Terminal strip
12. Alternator circuit
13. Control transformer
14. Motor circuit protectors

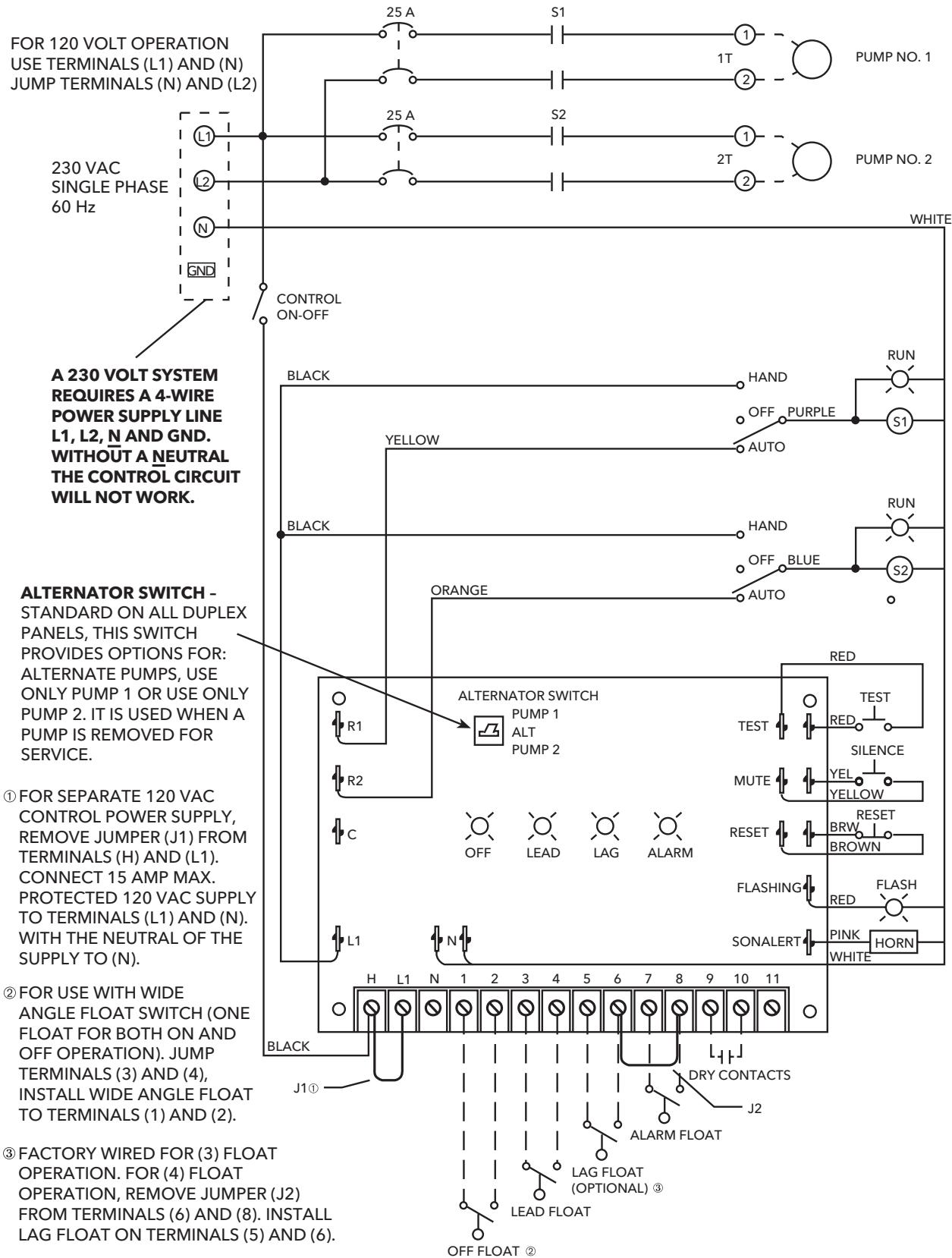
**Comments for proposed control panel:**

- The float switches only work as backup, prime pump station level operation is based on the pressure transducer as indicated on sheet E-03. Pressure transducer and associated electrical devices are missing.
- Lighting arrester & surge capacitor in side the Pump Control Panel is missing.
- Receptacle for emergency operation and manual transfer switch are missing.
- Control transformer shall be outside the control panel.
- Confirm if all devices inside the proposed control panel comply with UL and NEMA codes.
- Control panel does not have inside the panel M with 1 PH Circuit breaker as indicated on E-03.
- The Minicas motor protection are not shown on electrical schematic in page 6.

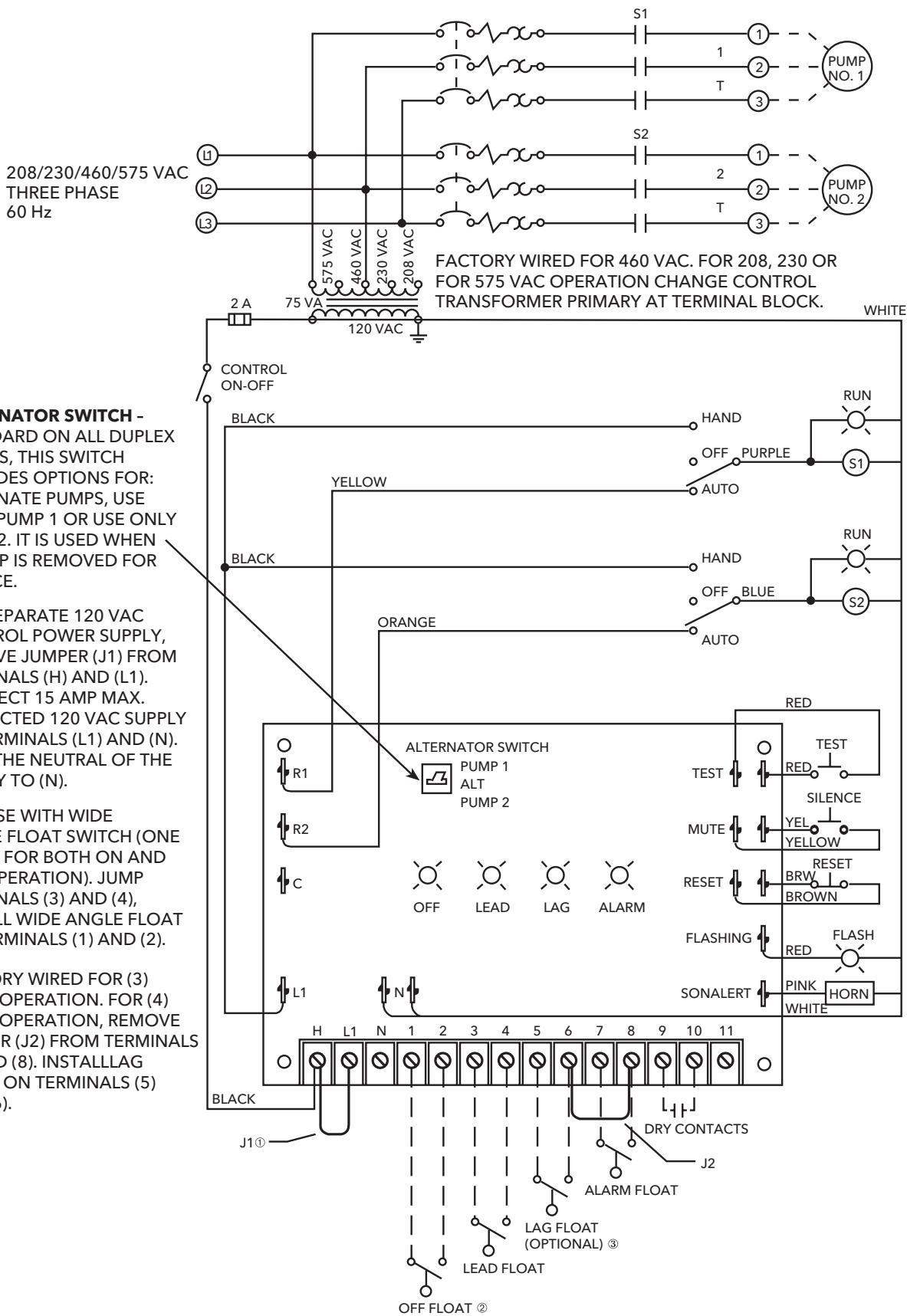
Based on these comments, please follow the RFC electrical plans.

**DUPLEX SINGLE PHASE WIRING DIAGRAM - D10020**

**NOTE:** The standard panels shown in this book are not designed to be used with pumps requiring external capacitors. See the catalog for panels with built-in capacitor packs.



## DUPLEX THREE PHASE WIRING DIAGRAM - D3 -----



**NOTES**

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services, and agricultural settings. With its October 2016 acquisition of Sensus, Xylem added smart metering, network technologies and advanced data analytics for water, gas and electric utilities to its portfolio of solutions. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

**For more information on how Xylem can help you, go to [www.xyleminc.com](http://www.xyleminc.com)**



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**MODELS A10-12 (1¼"), A10-2015 (1½") AND A10-20 (2")**

Provide an easy means of removing pump from a wet-well by utilizing a quick disconnect and guide rail system.

Connect directly to 1¼", 1½" or 2" vertical discharge Effluent, Wastewater and Grinder pumps.

Adaptable to 1¼", 1½" and 2" threaded, horizontal discharge pumps by using a street elbow.

Two piece 96" long fabricated SS rail assembly (2 easily coupled 48" long pieces for shipping convenience and ease of handling).

Corrosion resistant design

**STANDARD GUIDE RAIL COMPONENTS**

SS Guide rails, base, cross braces and pump brackets.

SS Lifting cable, 96" long x ¾" cable.

Brass quick disconnect with o-ring seal.

Schedule 40 galvanized discharge pipe.

Optional stainless steel pipe nipples are available (contact factory).

Cast iron check valve with BUNA ball.

SS Tee handle for shut-off valve is supplied  
(it is for use with the optional discharge pipe assemblies).

# GUIDE RAIL SYSTEMS AND DISCHARGE PIPE ASSEMBLIES

STAINLESS STEEL



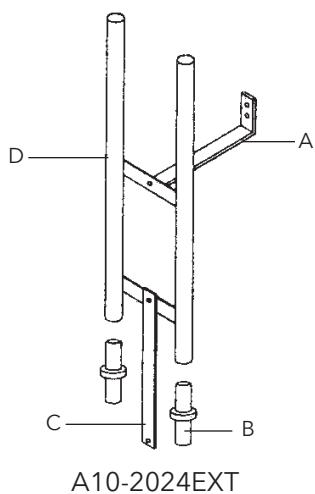
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**ORDER NUMBERS / QUANTITY REQUIRED**

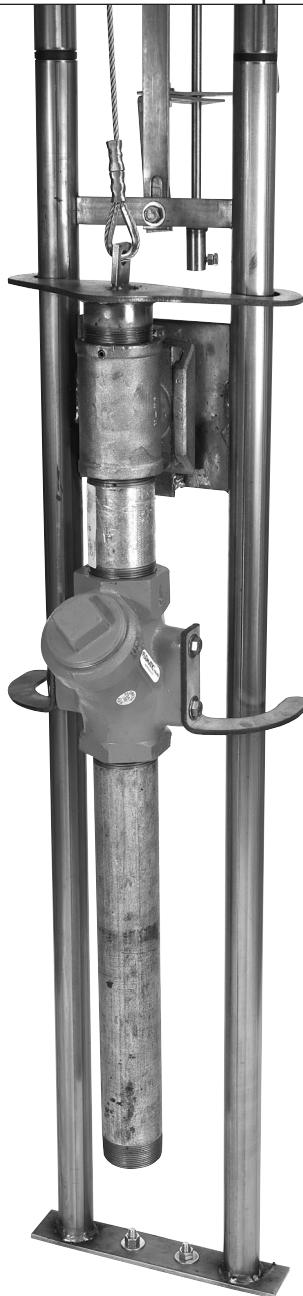
Slide Rail Order Number	Pump Discharge	Discharge Size (Inches)	Standard Discharge From Bottom
A10-12	1 1/4"	1 1/4"	36"
<b>A10-2015</b>	1 1/2"	2"	36"
A10-20	2"	2"	36"

**EXTENSION KITS INCLUDE:**

	<u>Quantity</u>	<u>Item #</u>
• Stainless steel wall bracket	1	A
• Guide rail connectors	2	B
• Stainless steel attachment brace	1	C
• Stainless steel rail extension	1	D
• Stainless steel nuts, bolts and washers		
• Cable extension - not shown		



Order Number	Length
A10-2012 EXT	12"
A10-2024 EXT	24"
<b>A10-2048 EXT</b>	48"

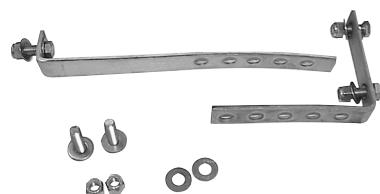
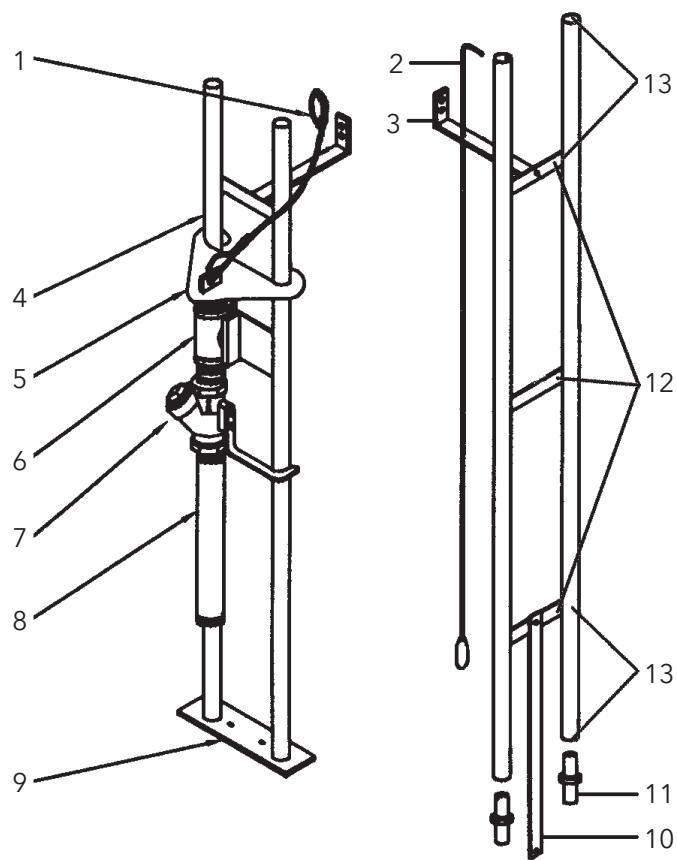


**View of Lower Guide Rail showing Brass Disconnect, Ball Check Valve/Lower Pump Bracket Assembly, Lifting Cable and Upper Pump Bracket.**



**SYSTEM COMPONENTS AND DIMENSION CHART FOR A10-12, A10-2015 AND A10-20**

Item No.	Dimension	Descriptions and Quantities
1	3/16" x 96" long	Stainless steel lifting cable
2	47" long	Stainless steel valve extension handle
3	11" min. - 14" max.	Adjustable stainless steel wall (support) brackets (qty. 2) includes (5) 3/8" SS bolts, nuts and washers
4	1 1/2" O.D.	Stainless steel guide rail tubing, 304 SS, 16 gauge
5	N/A	Stainless steel upper pump/guide bracket
6	1 1/4" (A10-12), 2" (A10-2015 & A10-20)	1 1/4" Brass quick disconnect assembly, 2" Brass quick disconnect assembly Discharge is 36" up from base to discharge centerline
7	1 1/4" (A10-12), 2" (A10-2015 & A10-20)	Cast iron ball check valve and lower pump bracket assembly with BUNA ball and clean-out port
8	1 1/4" (A10-12), 1 1/2" x 2" (A10-2015), 2" (A10-20)	Schedule 40 galvanized discharge pipe (SS discharge pipes are available as a special order option)
9	11" wide (2) 1/2" holes	Base or stud mounting plate
10	11 1/2" long, 1/2" hole and 1/2" x 1 1/2" slot	SS attachment brace - connects the (2) 48" guide rail halves, includes (2) 3/8" SS bolts, nuts and washers
11	N/A	Plastic guide rail connectors (2) fit inside SS rails
12	18 1/2" - 19" spacing	Stainless steel intermediate braces (3) on upper rail assembly
13	4 1/2" - 5 1/2" end to C/L	Upper and lower cross brace dimensions from end of rail

**Stainless Steel Attachment Brace****Stainless Steel Wall Bracket Assembly****Valve End of Shut-Off Valve Handle**

## DISCHARGE PIPE ASSEMBLIES H12S, H20S, H12D, H20D

### FEATURES

- Simplex discharge piping includes a union and a shut-off valve:  
**H12S** (1¼") discharge - use with **A10-12**;  
**H20S** (2") discharge - use with **A10-2015 or A10-20**.
- Duplex discharge piping includes (2) unions, (2) shut-off valves and a tee assembly; **H12D** (1¼") discharge - use with **A10-12**; **H20D** (2") discharge - use with **A10-2015 or A10-20**.

Items in bold type are product Order Numbers.

All pipe and fitting galvanized steel. Contact factory for stainless steel option.

### Simplex Discharge Assemblies H12S and H20S

Assembled kits contain a brass gate valve, union and galvanized pipe nipples. Ready for connection to the appropriate guide rail assembly.

### Duplex Discharge Piping Assemblies

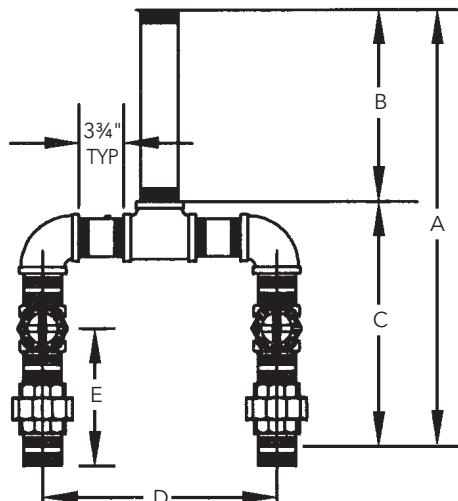
#### H12D and H20D

Assembled kits contain (2) brass gate valves, (2) unions, a tee and (2) elbows. Ready for connection to the appropriate guide rail (2) assemblies.

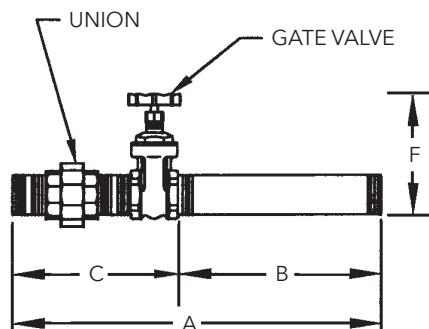
Dimension	Discharge Piping Order Number (dimensions in inches)			
	H12S	H20S	H12D	H20D
A	20	20	24	26
B	12	12	12	12
C	8	8	12	14
D	NA	NA	14	18
E	NA	NA	6	7
F	5.5	8	5.5	8

\* Stainless steel option available. Consult factory.

Discharge Pipe	Rail System	Configuration
H12S	A10-12	Simplex
H12D	A10-12	Duplex
H20S	A10-15, 20	Simplex
H20D	A10-15, 20	Duplex



**Duplex Discharge Kit**



**Simplex Discharge Kit**



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**TECHNICAL BROCHURE**

BCPFS R11



# PUMP / CONTROL PANEL SWITCHES



**CentriPro**  
a **xylem** brand

## TERMS TO KNOW

**Pump Switches** are used to directly control the operation of a pump. They are normally wide-angle switches which means they operate over a range of approximately 70° to 90°. Pump switches are available with piggyback plugs and with bare leads. Some can also be used with control panels.

**Control Switches** are designed to only control pumps when used with a control or alarm panel. They cannot handle the high starting amps and running amperage of a pump, only signal or control amperage.

**NO or Normally Open** is a switch with contacts that are open in the hanging position. They are used to pump down or empty a tank.

**NC or Normally Closed** is a switch with contacts that are closed in the hanging position. They are used to pump up or fill a tank.

## A2T SERIES

### SJE Double Float® Master Pump Switch

#### Features

- Mechanically activated, wide-angle switch designed to control pumps up to 15 FLA, 90 LRA, 120 VAC or 240 VAC.
- This switch consists of two mechanical floats and a splice tube. The splice tube contains a holding relay which eliminates pump chatter in turbulent conditions.
- Includes standard mounting clamps and boxed packaging.
- Cable attached to float housing: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE).
- Cable above splice: flexible 14 gauge, 3 conductor (UL, CSA) SJTW, water-resistant, thermoplastic.
- Floats: 2.74" diameter x 4.83" long (7.0 x 12.3 cm) high impact, corrosion resistant, PP housing for use in sewage and non-potable water up to 140° F (60° C).
- Not sensitive to rotation or turbulence.
- Pumping range: 3" to 48"
- Available for pump up or pump down applications.
- For confined applications requiring an accurate pumping range.
- CSA Certified
- See chart for data and order numbers.



## A2X SERIES

### MilliAmpMaster™ Mechanical Float Switch

#### Features

- Mechanically activated, snap-action, sealed gold cross-point contacts are designed to activate low current control panels and alarms.
- Narrow angle Control for Low Voltage AC or DC applications.
- Electrical Load - low current non-arching applications
  - 125 VAC - Max. Load .1 amps (Min. Load .16 millamps)
  - 30 VDC - Max. Load .1 amps (Min. Load .16 millamps)
  - 5 VDC - Minimum Load 1 millamp
- UL Listed for use in non-potable water and sewage.
- CSA Certified
- Mounting clamp for attaching to discharge pipe is standard.
- Not sensitive to rotation.
- Maximum submergence or water depth, 30' (9 meters), 13 psi.
- Flexible 18 gauge, 2 conductor SJOW water resistant cable.
- Impact and corrosion resistant, polypropylene float housing for use in sewage and water up to 140 ° F.
- Float comes with blue cap for easy identification.



## Wastewater

**A2D SERIES****SJE PumpMaster® Pump Switch****Features**

- Mechanically activated, heavy duty contacts, wide angle operation.
- Controls pumps up to 1/2 HP at 120 VAC and 1 HP at 230 VAC.
- Non-corrosive PVC housing for use in liquids up to 140° F (60° C).
- Not sensitive to rotation or turbulence.
- Pumping range: 7" to 36".
- 16 AWG, SJOW cord is available with or without piggyback plug.
- Available as pump up, pump down and SPDT models, see Nomenclature Chart.
- For non-potable water, water or sewage applications.
- UL Recognized for use in water and sewage.
- CSA Certified.
- See chart for amperage range and other data.

**A2HT SERIES****High Temperature Float Switch****Features**

- Temperature Rating: 221° F (105° C)
- Wide Angle Switch: contacts open @ 45° below horizontal and close at 45° above horizontal
- Float Material: PC/ABS (Polycarbonate ABS)
- Cord Material: Teflon coating
- Ratings: 13 Maximum Amps, 1/2 HP, 115/230 V
- Float Dimensions: 4.63" Long x 2.63" Diameter
- Nomenclature: see page 9
- Available lengths: 20', 30' and 50' \*



**NOTE:** A2HTL High Temperature Rating: 185° F

\* No other lengths available in this Series.

**A2E SERIES****SJE PumpMaster Plus® Pump Switch****Features**

- Controls pumps up to 3/4 HP at 120 VAC and 2 HP at 230 VAC.
- 14 AWG, SJOW cord is available with or without piggyback plug.
- **All other features are the same as A2D PumpMaster Series above.**

**A2G SERIES****SJE AmpMaster® Pump Switch****Features**

- Mechanically activated, heavy duty contacts, wide angle operation.
- Controls pumps up to 1 1/2 HP at 115 VAC and 3 HP at 250 VAC.
- Non-corrosive PVC housing for use in liquids up to 140° F (60° C).
- Maximum pump running current of 20 amps.
- Not sensitive to rotation or turbulence.
- Pumping range: 9" to 24".
- 12 AWG, SJOW cord is available only with bare leads.
- Available for pump down applications only.
- UL Recognized for use in non-potable water and sewage.
- CSA Certified
- See chart for amperage range and other data.



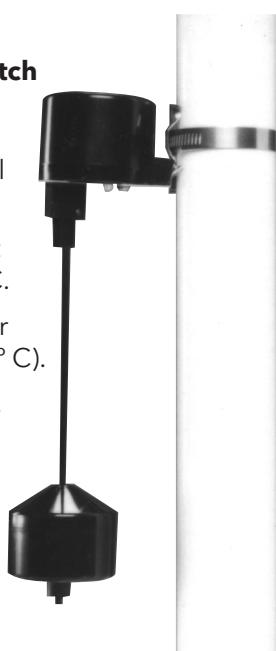
## Wastewater

**A2R SERIES****SJE MicroMaster®****Features**

- Mechanically activated, snap action contacts, wide angle.
- Pump down operation (optional pump up available)
- UL Recognized for use in non-potable water and sewage.
- CSA Certified
- See chart for amperage range and other data.
- Controls pump up to 70 amps at 115 VAC and 10 amps at 230 VAC
- 16 AWG, SJOW cord on 230 V; 18 AWG, SJOW cord on 115 V
- Pumping range: 8" to 36"
- Not sensitive to rotation or turbulence

**A2H SERIES****SJE VerticalMaster® Pump Switch****Features**

- Mechanically activated vertical operation.
- Controls pumps up to ½ HP at 120 VAC and 1 HP at 230 VAC.
- Non-corrosive PVC housing for use in liquids up to 125° F (52° C).
- Overall Dimensions: 12" High, 5" Deep, 3" Wide.
- Not sensitive to rotation.
- Pumping range: .75" to 6.5".
- 16 AWG, SJOW cord is available with or without piggyback plug.
- Available for pump down applications only.
- For confined applications requiring an accurate pumping range.
- Stainless steel mounting bracket and hose clamp.
- UL Recognized for use in non-potable water and sewage.
- CSA Certified
- See chart for amperage range and other data.

**A2N SERIES****SJE SignalMaster® Control Switch****Features**

- Mechanically activated, narrow angle, designed to activate pump control panels or alarms.
- Not designed for direct connection to pump.
- Non-corrosive PVC housing for use in liquids up to 140° F (60° C).
- Not sensitive to rotation.
- Control differential: 1.5" above or below horizontal.
- Available as NO (pump down), NC (pump up) or SPDT model, see Nomenclature page.
- For non-potable water, water or sewage applications.
- Supplied with a pipe clamp for mounting to pipe.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- See chart for amperage range and other data.
- Normally open - comes with yellow cap for easy identification.
- Normally closed - comes with white cap for easy identification.
- Single pole double throw - comes with green cap for easy identification.

**A2WT SJ ELECTRO WEIGHT**

- Adjustable snap in design.
- Works with all float switches shown.
- PVC

**A2WTC CONERY WEIGHT**

- Zinc plated cord weight
- Works with all float switches



## Wastewater

**PUMP SWITCHES (WIDE ANGLE)** can be connected directly to a pump

**CONTROL SWITCHES (NARROW ANGLE)** can only be used with control panels or alarm panels

Order Number	Maximum Running Amps	Maximum Starting Amps	Cord Length (Feet)	Bare Leads	Pump Switch	Control Switch	(1) N.O.	(2) N.C.	Mounting	
							N.O.	N.C.	Strap	Weight
A2D13	13	85	10	X	X	-	X		X	
A2D14			15	X	X	-	X		X	
A2D23U			X	X	-			X	X	
A2D23W			X	X	-	X		X	X	
A2D33			20	X	X	-	X		X	
A2D33U			X	X	-	X		X	X	
A2D33W			30	X	X	-	X		X	X
A2D63W			50	X	X	-	X		X	X
A2D83W			100	X	X	-	X		X	X
A2E03			4	X	X	-	X			X
A2E23	15	85	15	X	X	-	X		X	
A2E23U			X	X	-		X	X		
A2E33			20	X	X	-	X		X	
A2E53			30	X	X	-	X		X	
A2E53U			X	X	-		X	X		
A2E63			50	X	X	-	X		X	
A2E63U			X	X	-		X	X		
A2E73			75	X	X	-	X		X	
A2E83			100	X	X	-	X		X	
A2E83U			X	X	-			X	X	
A2G23	20	120	15	X	X	-	X		X	
A2G33			20	X	X	-	X		X	
A2G43			25	X	X	-	X		X	
A2G53			30	X	X	-	X		X	
A2G63			50	X	X	-	X		X	
A2H33	12	60	20	X	X	-	X		X	
A2HTL13			10	X				X		
A2HTL33			20	X	X	X	X		X	
A2HTL53			30	X	X	X	X		X	
A2HT13			10	X	X	X	X		X	
A2HT33			20	X	X	X	X		X	
A2HT53			30	X	X	X	X		X	
A2HT63			50	X	X	X	X		X	
A2N03	5	N/A	3	X	-	X	X		X	
A2N13			10	X	-	X	X		X	
A2N23			X	-	X	X		X		
A2N23W			15	X	-	X	X		X	
A2N23WB			X	-	X	X				X
A2N23WU			X	-	X			X		X
A2N33			X	-	X	X			X	
A2N33U			X	-	X		X	X		X
A2N33W			X	-	X	X				X
A2N33WB			X	-	X	X				X
A2N33WU			X	-	X			X		X
A2N43W			25	X	-	X	X			X
A2N43WU			X	-	X			X		X
A2N53			30	X	-	X	X			X
A2N53W			X	-	X	X				X
A2N53WU			X	-	X			X		X
A2N63			50	X	-	X	X			X
A2N63W			X	-	X	X				X
A2N73			75	X	-	X	X			X
A2N73W			X	-	X	X				X
A2N83			100	X	-	X	X			X
A2N83U			X	-	X			X	X	
A2N93			125	X	-	X	X			X
A2T33	15	90	20	X	-	X	X			X
A2X03	See Description	N/A	7	X	-	X	X			X
A2X13			10	X	-	X	X			X
A2X13U			X	-	X			X	X	
A2X23			15	X	-	X	X			X
A2X23U			X	-	X			X	X	
A2X33			20	X	-	X	X			X
A2X33U			X	-	X	X				X
A2X33W			X	-	X	X				X
A2X53			30	X	-	X	X			X
A2X53U			X	-	X	X			X	
A2X63W			X	-	X	X				X

N.O. (1) = PUMP DOWN

N.C. (2) = PUMP UP

**WIDE ANGLE 115 VOLT PIGGYBACK FLOAT SWITCHES TO DIRECTLY CONTROL PUMPS**

Order Number	Maximum Amps	Start Amps	115 V Plug	Cord Length (Feet)	(1)	(2)	Mounting Strap
					N.O.	N.C.	
A2D11	13	85	X	10	X		X
A2D11B			X		X		
A2D11C			X		X		X
A2D31			X		X		X
A2D31B			X	20	X		
A2D31C			X		X		X
A2D31U			X		X	X	X
A2D51			X	30	X		X
A2D51C			X		X		X
A2D61			X	50	X		X
A2E21	15	20	X	15	X		X
A2E31			X	20	X		X
A2E31C			X		X		X
A2E31U			X			X	X
A2E51			X	30	X		X
A2E61			X	50	X		X
A2H11	13	60	X	10	X		X
A2H11B			X		X		
A2H11C			X		X		X
A2H21			X	15	X		X
A2H31			X	20	X		X
A2HTL11			X	10	X		X
A2HTL31			X	20	X		X
A2HTL51			X	30	X		X
A2HT11			X	10	X		X
A2HT31			X	20	X		X
A2HT51			X	30	X		X
A2J11	10	60	X	10	X		X
A2J21			X	15	X		X
A2J31			X	20	X		X
A2R11			X	10	X		X
A2R11B			X		X		
A2R31			X	20	X		X
A2R31B			X		X		
A2T21	15	90	X	15	X		X
A2T31			X	20	X		X
A2T51			X	30	X		X

N.O. (1) = PUMP DOWN

N.C. (2) = PUMP UP

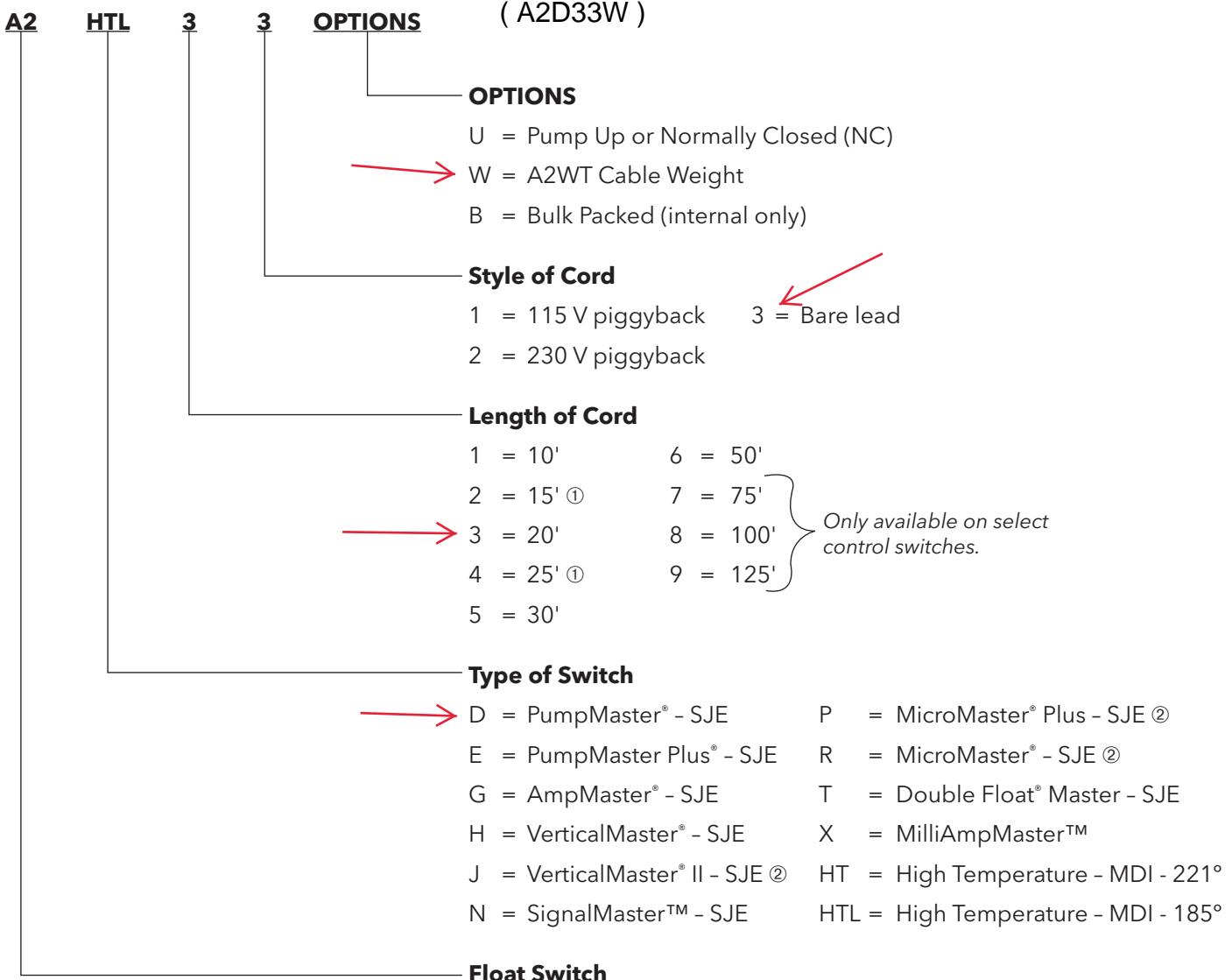
**WIDE ANGLE 230 VOLT PIGGYBACK FLOAT SWITCHES TO DIRECTLY CONTROL PUMPS**

Order Number	Maximum Amps	Start Amps	230 V Plug	Cord Length (Feet)	(1)	(2)	Mounting Strap
					N.O.	N.C.	
A2D12	13	85	X	10	X		X
A2D12B			X		X		
A2D12C			X		X		X
A2D32			X	20	X		X
A2D32B			X		X		
A2D32C			X		X		X
A2D32U			X			X	X
A2D52			X	30	X		X
A2D52C			X		X		X
A2D62			X	50	X		X
A2E22	15	60	X	15	X		X
A2E32			X	20	X		X
A2E32C			X		X		X
A2E32U			X			X	X
A2E52			X	30	X		X
A2E62			X	50	X		X
A2H12	13	60	X	10	X		X
A2H12B			X		X		
A2H12C			X		X		X
A2H22			X	15	X		X
A2H32			X	20	X		X
A2HTL12			X	10	X		X
A2HTL32			X	20	X		X
A2HTL52			X	30	X		X
A2HT12			X	10	X		X
A2HT32			X	20	X		X
A2HT52			X	30	X		X
A2J12	10	60	X	10	X		X
A2J22			X	15	X		X
A2J32			X	20	X		X
A2R12			X	10	X		X
A2R12B			X		X		
A2R32			X	20	X		X
A2R32B			X		X		
A2T22	15	90	X	15	X		X
A2T32			X	20	X		X
A2T52			X	30	X		X

N.O. (1) = PUMP DOWN

N.C. (2) = PUMP UP

## NOMENCLATURE



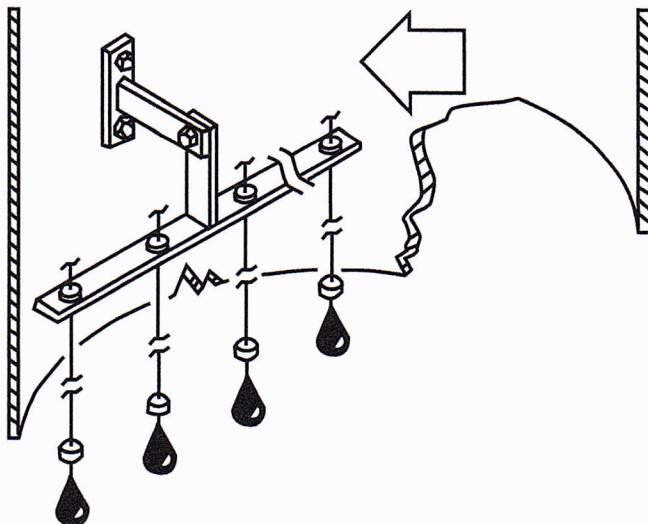
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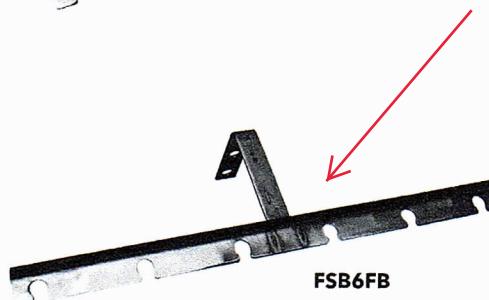
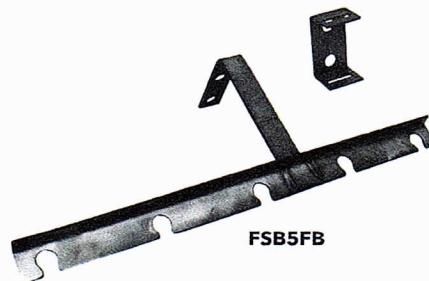
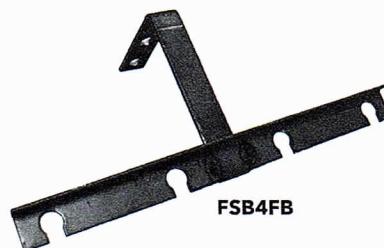
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## Wastewater

## STAINLESS STEEL FLOAT BRACKETS



- T-type brackets are designed to keep multiple float switches organized within the basin. All brackets are made of Type 304 stainless steel and come with black cord snubbers to securely attach float cables.
- The T-shaped bracket styles are supplied with a mounting piece so that the bracket itself may be easily removed from the basin with the floats still attached.



Cord Snubbers



FSB6AHB is a 6-float hook-type bracket.

