

**CITY OF JEFFERSON  
I-85 1.0 MGD WATER RECLAMATION FACILITY  
SUBMITTAL FOR APPROVAL**

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**DATE:** JULY 26, 2022

**PROJECT:** I-85 1.0 MGD WATER RECLAMATION FACILITY

**OWNER:** CITY OF JEFFERSON

**ENGINEER:** CIVIL ENGINEERING CONSULTANTS

**SECTION:** 43 23 31 VERTICAL DRY PIT CHOPPER PUMPS

**MANUFACTURER:** VAUGHAN / ESG

**MANUFACTURER'S REPRESENTATIVE:** WC EQUIPMENT SALES  
SUITE 200, 4324 BROGDON EXCHANGE  
SUWANEE, GA 30024  
678-730-0997 (PHONE)  
770-614-5992 (FAX)

CIVIL ENGINEERING CONSULTANTS, INC. MARIETTA, GEORGIA 30068			
No Exceptions Taken	No Exceptions Taken With Comment	Make Corrections Noted	Rejected
			
DATE <b>Aug 23, 2022</b>			
BY 			
APPROVED FOR DESIGN ONLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND QUANTITIES.			



## Shop Drawing Review

### REVIEW OF SUBMITTAL

REVIEWED ACCEPTED	X REVIEWED WITH COMMENT
REJECTED	RESUBMIT AS INDICATED

Review is for conformance with only the general concepts of design and information given, or noted and acknowledged as exceptions on the submittal. The contractor is responsible for compliance with all requirements of the specifications and drawings, including but not limited to, dimensions, ratings, features, methods of construction and fabrication and coordination and fit with the building and work of others as installed.

BY: David M. Zimmer, P.E.

Date: August 19, 2022

Project: Jefferson WRF

Submittal #

Submittal: Vertical Dry Pit Chopper  
Pumps - Vaughn

#### Comments:

1. Vaughn – **Reviewed with Comment**
  - a. Provide one low suction pressure switch for each set of pumps (two total).
  - b. Provide a low oil level switch in each pump.
2. Control Panel – **Reviewed with Comment**
  - a. Label control panels as follows:
    - i. “Final Clarifier No. 1 RAS Pumps Control Panel” and “Final Clarifier No. 2 RAS Pumps Control Panel”.
  - b. On the panel diagrams, label pumps as follows:
    - i. Final Clarifier #1 RAS Pump 1
    - ii. Final Clarifier #1 RAS Pump 2
    - iii. Final Clarifier #2 RAS Pump 1
    - iv. Final Clarifier #2 RAS Pump 2
  - c. Do not say typical for 2. Provide panel schematics for each panel.
  - d. Each panel will have one 4-20mA input (not 2) for the TSS signal – “Final Clarifier No. 1 TSS” and “Final Clarifier No. 2 TSS”.
  - e. Each panel will be fed with a 30A/3P breaker from Panel HA. Please change the 60A/3P on line 107 to 30A/3P.
  - f. The motor will be furnished with an integral thermostat only. A moisture/temperature sensor will NOT be provided. Please delete the thermal/sensor wiring and macromatic relays from lines 732 through 758.
  - g. Update the field connection (page 3 of 4) and show one TSS meter, delete the pump seal/thermal inputs, and show the motor thermostats.
  - h. Provide screen shots of the HMI and logic control description.



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**PROJECT INFORMATION**

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**CUSTOMER**  
CITY OF JEFFERSON

**SECTION**  
43 23 31

**EQUIPMENT**  
4 EA PE4K6CS-086

**ENGINEER**  
CIVIL ENGINEERING CONSULTANTS

**VAUGHAN COMPANY REPRESENTATIVE**  
WC EQUIPMENT  
4324 Brogdon Exchange  
Suwanee, GA 30024  
(678)730-0997  
(770)614-5992 fax

**MANUFACTURER**  
VAUGHAN COMPANY INC.  
364 MONTE-ELMA ROAD  
MONTESANO, WA 98563  
PHONE: 360-249-4042/ FAX: 360-249-6155  
WEBSITE: WWW.CHOPPERPUMPS.COM

**VAUGHAN CONTACT:**  
Regional Manager: Jeff Fairchild  
Phone: 360-249-4042 Ext: 726

**VAUGHAN COMPANY SERIAL NUMBER:**  
160915

# SUBMITTAL INDEX

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**TAB 1: VAUGHAN SUBMITTAL**

- List of equipment
- Warranty and Certification form
- Clarifications and Exceptions
- Drawings
- Spec sheets
- Performance sheets
- Motor data
- Storage instructions
- Paint Information
- Warranty

**TAB 2: CONTROL PANEL SUBMITTAL**

**TAB 3: PARTS & SERVICE CENTERS**

**TAB 1:**

**VAUGHAN SUBMITTAL**

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**LIST OF EQUIPMENT TO BE SUPPLIED**  
**LOCATION: CITY OF JEFFERSON**  
**PEDESTAL PUMP-SECTION 43 23 31**

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- 4 ea Vaughan Model PE4K6CS-086 Vertical Pedestal Chopper Pump  
Pump Performance: Primary: 520 GPM @ 15 FT. TDH  
Secondary: 120 GPM @ 8 FT. TDH

CONSISTING OF:

**CASING AND BACKPLATE**, cast ductile iron, with 4" ANSI CL 125 discharge flange.

**IMPELLER, CUTTER BAR CUTTER NUT AND UPPER CUTTER**, cast steel, heat treated to minimum Rockwell C60.

**SHAFT**, heat treated steel.

**BEARINGS**, oil bath lubricated with minimum 100,000 hour L-10 bearing life.

**BEARING HOUSING**, cast ductile iron.

**FLUSHLESS MECHANICAL SEAL**, cartridge type with stainless steel housing, integral stainless steel shaft sleeve, and silicon carbide faces.

**ELASTOMERS**, Buna N

**PEDESTAL BASE WITH INLET FLANGE**, 6" 90° steel elbow with cleanout, drain and ANSI CL 150 inlet flange pedestal mounted on a fabricated steel base plate.

**COUPLING**, elastomeric type by TB Woods.

**FACTORY TEST**, Pump Performance, on each pump using test facility rig.

**DRIVE**, 5 HP, 1165 RPM, 460 volt, 3 phase, 60 hertz, 1.15 SF, Inverter Duty Rated, "C" flanged, TEFC ABB/BALDOR electric motor. Includes drip cover over motor fan.

**MOTOR MOUNT**, fabricated steel, piloted for self-aligning mounting of a C-face flange mounted motor.

**PUMP FINISH**: Sandblast and coat with minimum 30 MDFT Tnemec Perma-Shield PL Series 431 epoxy. (Except Motor)

- 2 ea ESG Control Panels

**NOTE:**

THE ITEMS CONTAINED IN THIS LIST OF EQUIPMENT TO BE SUPPLIED ARE THE ONLY ITEMS BEING SUPPLIED BY VAUGHAN COMPANY, THE PUMP MANUFACTURER. OTHER SPECIFIC ITEMS WHICH MAY BE REQUIRED BY THE SPECIFICATION, INCLUDING, BUT NOT LIMITED TO THE ITEMS LISTED BELOW, MUST BE FURNISHED BY OTHERS.

LABOR AND EQUIPMENT TO INSTALL THE QUOTED PUMPS.

PRESSURE GAUGES, SWITCHES, VALVES AND OTHER SPECIALTIES NOT SPECIFICALLY CALLED OUT HEREIN.

SPECIAL COATINGS OTHER THAN THOSE LISTED.

FACTORY HYDROSTATIC PRESSURE, VIBRATION AND NOISE TESTS.

SPECIAL MOTOR SPECIFICATIONS OTHER THAN THOSE SPECIFICALLY CALLED OUT HEREIN.

FACTORY MOTOR TESTS.

INTRINSICALLY SAFE FEATURES.

SPARE PARTS.

ADDITIONAL LUBRICANTS OTHER THAN THOSE CONTAINED WITHIN THE PUMP.

ANCHOR BOLTS.

**EQUIPMENT WARRANTY AND CERTIFICATION FORM**  
**LOCATION: CITY OF JEFFERSON**

CITY OF JEFFERSON – I-85 1.0 MGD WATER RECLAMATION FACILITY  
MAJOR EQUIPMENT AND SERVICES

03/24/2022

**EQUIPMENT WARRANTY AND CERTIFICATION FORM**

PROJECT NAME: City of Jefferson I-85 1.0 MGD WATER RECLAMATION FACILITY  
PROJECT NO.: CEC 21093

THE UNDERSIGNED HEREBY ATTESTS THAT HE HAS EXAMINED ALL THE REFERENCED PROJECT DRAWINGS AND SPECIFICATIONS AND HEREBY WARRANTS AND CERTIFIES THAT THE EQUIPMENT, COMPONENT, OR SYSTEM HE PROPOSES TO FURNISH AND DELIVER MEETS OR EXCEEDS CONTRACT SECTION 43 23 31, IS SUITABLE FOR ITS INTENDED PURPOSE AND INSTALLATION, AND WILL PROVIDE SATISFACTORY PERFORMANCE AT THE DESIGN CRITERIA SPECIFIED. THIS WARRANTY SHALL BE IN ADDITION TO AND NOT IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

EQUIPMENT: 4 EA PE4K6CS-086  
MANUFACTURER: Vaughan Co., Inc.  
ADDRESS: 364 Monte-Elna Rd.  
Montesano, WA 98563



By: Stacie Vaughan, Secretary  
(Type Name and Title)  
*Stacie Vaughan* /s/ 5/20/22  
(Signature) (Date)

(SEAL)

EQUIPMENT WARRANTY AND CERTIFICATION MUST BE SIGNED BY A PRINCIPAL PERSON (PRESIDENT, VICE-PRESIDENT, ETC.) OF THE EQUIPMENT MANUFACTURER. IN THE EVENT THE MANUFACTURER IS NOT THE SUPPLIER, THEN A PRINCIPAL PERSON OF THE SUPPLIER MUST ALSO SIGN THIS FORM.

SUPPLIER:  
ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_  
(Type Name and Title) (SEAL)  
\_\_\_\_\_/s/ \_\_\_\_\_  
(Signature) (Date)

SUBMITTAL PROCEDURES  
SECTION 01 33 00  
Page 10 of 10



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## CLARIFICATIONS AND EXCEPTIONS

### CITY OF JEFFERSON

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#### **SECTION 43 23 31**

1.3.A: Control panels supplied by WC Equipment

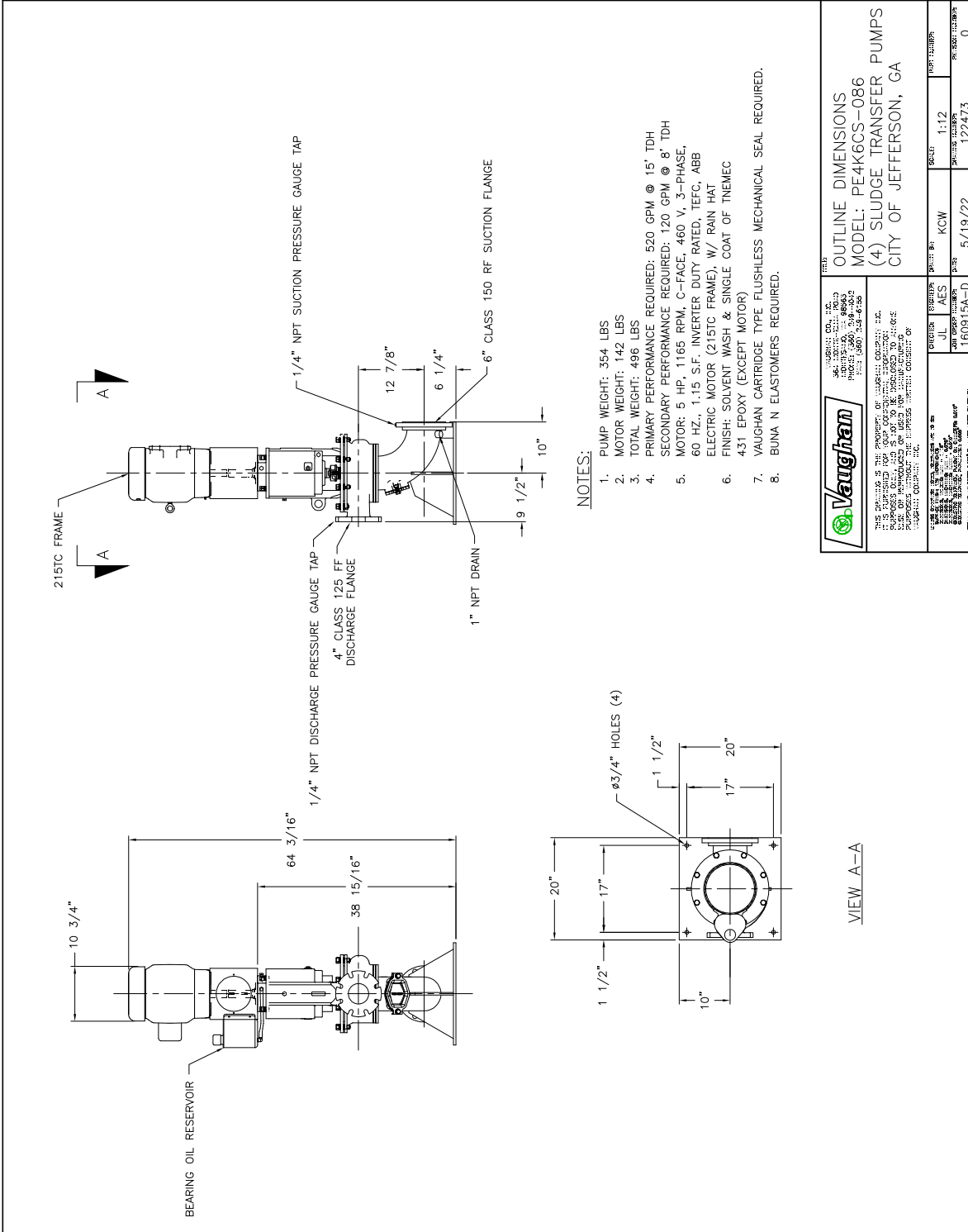
2.1.I: Stuffing box is eliminated with the use of the Vaughan flushless seal.

2.2.A: The quoted motor meets the intent of NEMA MG1 Part 31 except it is not capable of a 1000:1 turndown ratio. The quoted motor has a 2:1 turndown ratio on a base speed of 1165 RPM which results in a minimum motor speed of 582 RPM. The secondary duty point of 120 GPM @ 8' TDH requires a speed of 680 RPM which is well above the minimum 2:1 turndown speed of 582 RPM.

2.4: Control panels are being provided by WC Equipment.

No spare parts are recommended are being supplied for this contract.

# OUTLINE DRAWING 122473



# SPEC SHEET - PE4K6CS-086 PEDESTAL PUMP

## SPECIFICATION: PE4K PEDESTAL CHOPPER PUMPS

The vertical pedestal chopper pump shall be specifically designed to pump waste solids at heavy consistencies without plugging or dewatering of the solids. Materials shall be chopped and conditioned by the pump as an integral part of the pumping action. The pump must have demonstrated the ability to chop through and pump high concentrations of solids such as plastics, heavy rags, grease and hair balls, wood, paper products and stringy materials without plugging, both in tests and field applications. Pump shall be manufactured by Vaughan Co., Inc.

### DETAILS OF CONSTRUCTION

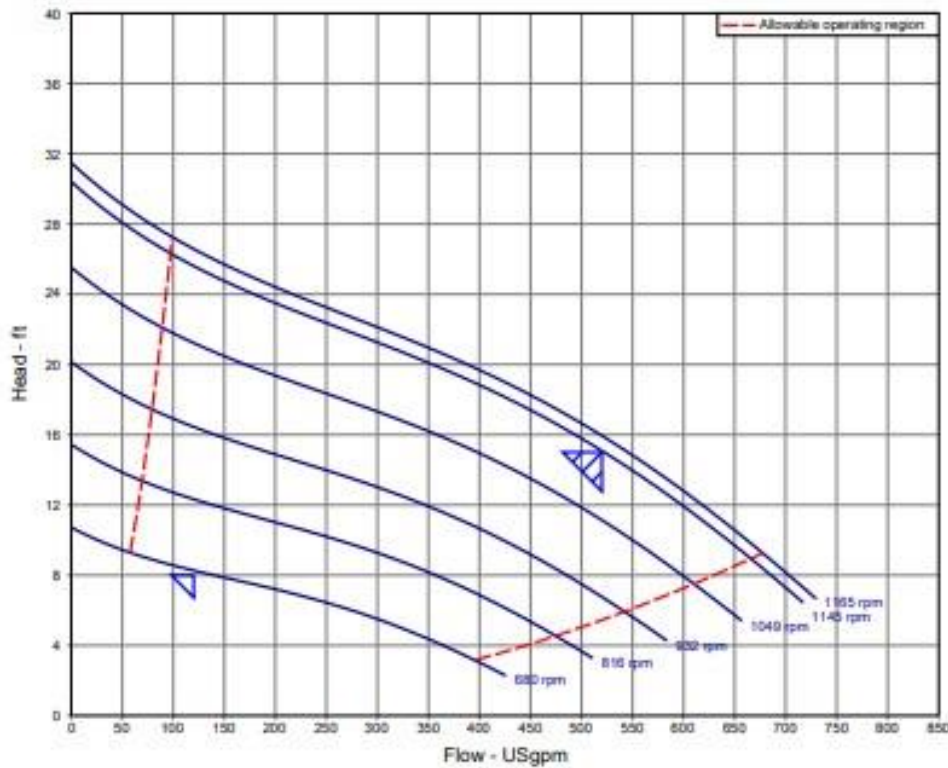
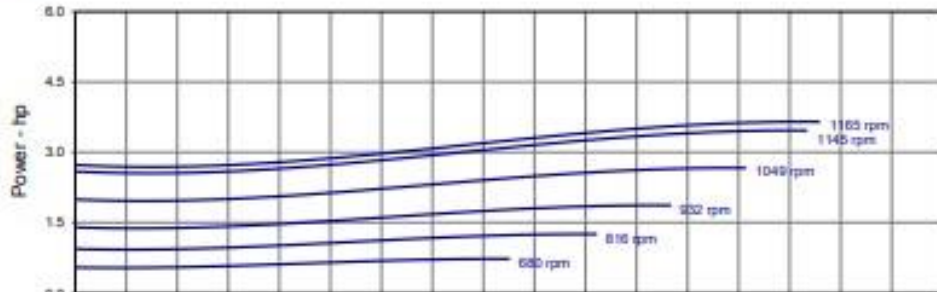
- A. Casing and Backplate:** The pump casing shall be of volute design, spiraling outward to the ANSI CL 125 flanged centerline discharge. Back pull-out design shall incorporate adjusting sleeves for accurate adjustment of impeller-to-cutter bar clearance, and shall allow removal of pump components without requiring disconnection of casing from inlet or discharge piping. Casing and backplate shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. A 1/4" NPT pressure tap shall be included on the discharge flange. The backplate shall include a replaceable Rockwell C60 alloy steel cutter adjustable for 0.005"–0.050" (0.015–1.25 mm) clearance to cut against the rotating impeller pump-out vanes for removing fiber and debris.
- B. Impeller:** Shall be 2 blade (4K) semi-open type with pump out vanes to reduce seal area pressure. Chopping of materials shall be accomplished by the action of the cupped and sharpened leading edges of the impeller blades moving across the cutter bar at the intake openings, with a set clearance between the impeller and cutter bar of 0.015"–0.025" (0.40–0.65 mm) cold. Impeller shall be cast alloy steel heat treated to minimum Rockwell C 60 and dynamically balanced. The impeller shall be keyed to the shaft and shall have no axial adjustments and no set screws.
- C. Cutter Bar:** Shall be recessed into the pump bowl and shall contain at least 2 shear bars extending diametrically across the intake opening to within 0.010"–0.030" (0.25–0.75 mm) of the rotating cutter nut tooth, for the purpose of preventing intake opening blockage and wrapping of debris at the shaft area. Cutter bar shall be cast alloy steel heat-treated to minimum Rockwell C60.
- D. Cutter Nut:** The impeller shall be secured to the shaft using a cutter nut, designed to cut stringy materials and prevent binding using a raised, rotating cutter tooth. The cutter nut shall be cast alloy steel heat treated to minimum Rockwell C60.
- E. Upper Cutter:** Shall be threaded into the backplate behind the impeller, designed to cut against the pump-out vanes and the impeller hub, reducing and removing stringy materials from the mechanical seal area. Upper cutter shall be cast alloy steel heat treated to minimum Rockwell C60. The upper cutter teeth are positioned as closely as possible to the center of shaft rotation to minimize cutting torque and nuisance motor tripping. The ratio of upper cutter cutting diameter to shaft diameter in the upper cutter area of the pump shall be 3.0 or less.
- F. Pump Shafting:** The pump shaft and impeller shall be supported by rolling element bearings. Shafting shall be heat treated alloy steel.
- G. Bearings:** Shall be oil-bath lubricated with ISO 46 hydraulic oil. Shaft thrust in both directions shall be taken up by two back-to-back mounted single-row angular contact ball bearings. Two adjacently mounted single-row radial bearings shall also be provided. L-10 bearing life shall be minimum 100,000 hours.
- H. Bearing Housing:** Shall be ductile cast iron and machined with piloted bearing fits for concentricity of all components. Bearing housing shall include a side-mounted oil reservoir. Viton® double lip seals riding on stainless steel shaft sleeves are to provide sealing at each end of the bearing housing. Thrust bearings are mounted in an adjustable cartridge to allow external upper cutter adjustment.
- I. Seal:**
  - Mechanical Seal system specifically designed to require no seal flush: The mechanical seal shall be located immediately behind the impeller hub to eliminate the stuffing box and maximize the flushing available from the impeller pump-out vanes. The seal shall be a cartridge-type mechanical seal with Viton O-rings and silicon carbide faces. This cartridge seal shall be pre-assembled, and pre-tested so that no seal settings or adjustments are required from the installer. Any springs used to push the seal faces together must be shielded from the fluid to be pumped. The cartridge shall also include a heat treated 17-4PH stainless steel seal sleeve and 316 stainless steel seal housing.
- J. Shaft Coupling:** Bearing housing and motor stool design is to provide accurate, self-aligning mounting for a C-flanged, or B5 flanged, electric motor. Pump and motor coupling shall be T.B. Woods Sureflex elastomeric type.
- K. Stainless Steel Nameplate:** Shall be attached to the pump giving the manufacturer's model and serial number, rated capacity, head, speed and all pertinent data.
- L. Motor Requirements:** Drive motor shall be 5 HP (KW), 1165 RPM, 460 volts, 3 phase, 60 hertz, 1.15 service factor, C or B5 flange mounted, TEFC enclosure. The motor shall be sized for non-overloading conditions.
- M. Surface Preparation:** Commercial sandblast (except motor), a prime coat of Tnemec 431 epoxy and a finish coat of Tnemec 431 epoxy for total finish of 30 MDFT minimum (except motor).

# PERFORMANCE CURVE - PE4K6CS-086



Customer :  
Reference :

Multi-Speed Performance Curve  
Vaughan Quotation System 22.1.0

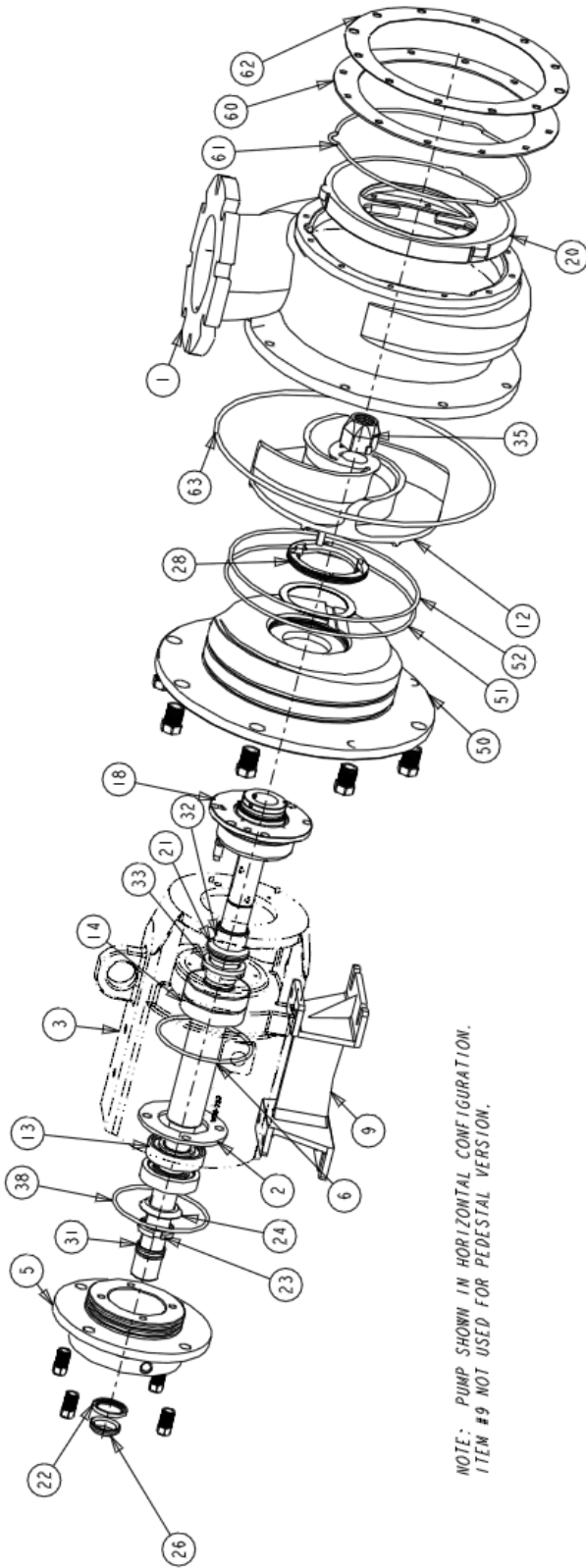


Item number	: 001	Size	: E4K - Trim Dia
Service	:	Stages	: 1
Quantity	: 1	Based on curve number	: E4K-1170-TD
Quote number	: 29013	Efficiency	: 60.70 %
Flow, rated	: 520.0 USgpm	Power, rated	: 3.45 hp
Differential head / pressure, rated	: 15.00 ft	NPSH required	: 12.89 ft
Speed, rated	: 1165 rpm	Fluid density, rated / max	: 1.000 / 1.000 SG
Impeller diameter, rated	: 8.60 in	Viscosity	: 1.00 cP
Site Supply Frequency	: 60 Hz	Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Nominal speed	: 1160 rpm	Date last saved	: 18 Apr 2022 10:30 AM

# EXPLODED ASSEMBLY - PE4K6CS-086

NO.	DESCRIPTION	STANDARD MATERIALS	NOTES
1	CASING	DUCTILE IRON	
2	THRUST BEARING CARTRIDGE CAP	STAINLESS STEEL	
3	BEARING HOUSING	DUCTILE IRON	
5	THRUST BEARING CARTRIDGE	DUCTILE IRON	
6	SHAFT	AISI 4140 HT alloy steel	
9	BEARING HOUSING SUPPORT	DUCTILE IRON	Horizontal pumps only
12	IMPELLER	Cast Steel, HT to Rc 60+	
13	THRUST BEARING	ANGULAR CONTACT BALL BEARING	2 Required
14	RADIAL BEARING	BALL BEARING	2 Required
18	VAUGHAN CARTRIDGE SEAL	S.S. WITH SiC FACES	
20	CUTTER BAR PLATE	8620 PLATE, HT to Rc 60+	
21	SLINGER	BUWA-N OR VITON	Bearing Housing O-Ring
22	LIP SEAL	STEEL & VITON	Thrust Brq Cartr Lip Seal
23	NUT, BEARING	STEEL	
24	RETAINER, BEARING	STEEL	
26	SLINGER	BUWA-N OR VITON	Thrust Brq Cartr O-Ring, PE only
28	UPPER CUTTER	H.T. STEEL	
31	SLEEVE	STAINLESS STEEL & CHROME	Thrust Brq Cartr Lip Seal Sleeve
32	LIP SEAL SLEEVE	STAINLESS STEEL & CHROME	INCLUDES O-RING 32A
33	LIP SEAL	STEEL & VITON	Bearing Housing Lip Seal
35	CUTTER NUT	CAST STEEL, HT TO RC 60+	
38	O-RING	BUWA-N OR VITON	Brq Hsq/Thrust Brq Cartr O-Ring

REV	DATE	CHANGE
7	2/16/13	RENAMED ITEM #2, ECM 2829, EPL
6	4/9/12	SIMPLIFIED DUCTILE IRON CALLOUTS IN BOM TABLE, ECM 2686, RAB
5	2/21/12	REMOVED ITEM 4; ECM 2663; AJC
4	9/21/09	ITEM #2 STAINLESS STEEL WAS A-36 STEEL; ITEM #20 8620 PLATE WAS 1-1 PLATE, CONVERT TO 2 SHEET DRAWING, ECM 2136, RAB
3	4/17/08	ITEM 31, 32 WAS 17-4PH SS; ITEM 1, 3, 9 & 50 WAS CAST DUCTILE IRON ECM1853 YCC
2	10/17/03	ADDED NOTE AND VIEW OF ABOUT EC2 EXTERNAL CUTTER OPTION
1	5/13/03	UPDATED NOTES & MATERIALS LIST, IMPELLER WAS A148 CAST STEEL BRG HSG WAS A536 DUCTILE CAST IRON, UPPER CUTTER & CUTTERNUT WERE 8620, MOVED XSC TO PAGE1, MOVED EXPL LOCATION OF ITEM #2

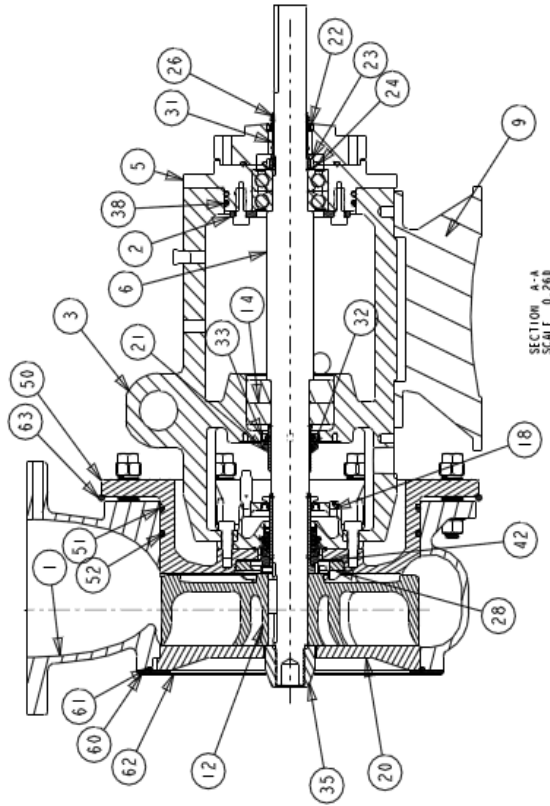


NOTE: PUMP SHOWN IN HORIZONTAL CONFIGURATION.  
ITEM #9 NOT USED FOR PEDESTAL VERSION.

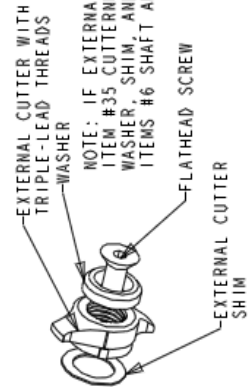
NO.	DESCRIPTION	STANDARD MATERIALS	NOTES
42	UPPER CUTTER SHIMS	FIBER GASKET MATERIAL	3 Required
50	BACKPLATE	DUCTILE IRON	
51	O-RING	BUWA-N OR VITON	Upper Backplate O-Ring
52	O-RING	BUWA-N OR VITON	Lower Backplate O-Ring
53	ADJUSTING SLEEVE	STEEL	Impeller/Cutterbar Adjustmenl
56	ADJUSTING SLEEVE	STEEL	Impeller/Upper Cutter Adjustm
60	SUCTION PLATE	A-36 Steel Plate	
61	O-RING	BUWA-N OR VITON	Suction Plate O-Ring
62	SUCTION PLATE GASKET	FIBER GASKET MATERIAL	some pumps may have O-Ring here
63	O-RING	BUWA-N OR VITON	Casing/Backplate O-Ring

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DATE: 12/16/02  
SCALE: N/A  
DRAWN BY: M. PINE  
CHECKED BY: N/A  
PART NUMBER: 108959  
SHEET 1 OF 2



SECTION A-A  
SCALE 0.25X



NOTE: IF EXTERNAL CUTTER EC2 OPTION IS USED, ITEM #35 CUTTERNUT IS REPLACED WITH EXTERNAL CUTTER, WASHER, SHIM, AND FLATHEAD SCREW. ITEMS #6 SHAFT AND #20 CUTTEBAR WILL BE CUSTOM FOR CUTTER

	VAUGHAN COMPANY 4001 S. 100th St., Suite 200 Omaha, NE 68148 TEL: 402.491.2400 FAX: 402.491.2401	DRAWN BY M. PINE	SCALE N/A	PART NUMBER N/A
	THIS DRAWING IS THE PROPERTY OF VAUGHAN COMPANY. IT IS TO BE USED FOR THE PROJECT ONLY, AND IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN CONSENT OF VAUGHAN COMPANY.	DATE 12/16/02	DRAWING NUMBER 108959	SHEET NUMBER N/A

# ABB/BALDOR MOTOR DATA

**BALDOR • RELIANCE** CUSTOMER INFORMATION PACKET CEC3768T - 5HP, 1160RPM, 3PH, 60HZ, 215TC, 0748M, TEFC, F1

**AC Induction Motor Performance Data**

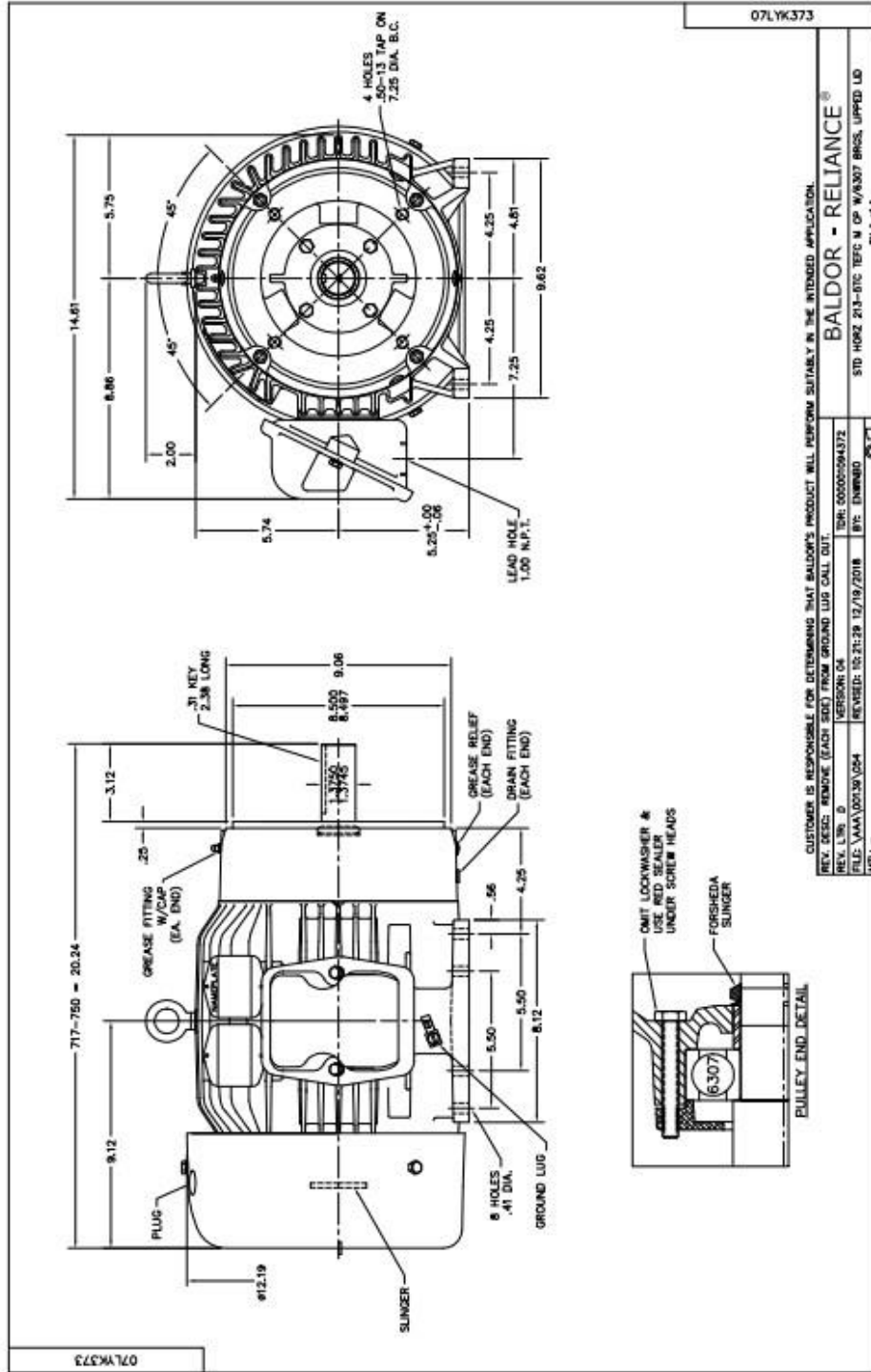
Record # 47060  
Typical performance - not guaranteed values

<b>Winding:</b> 07WGX823-R030	<b>Type:</b> 0748M	<b>Enclosure:</b> TEFC
<b>Nameplate Data</b>		
<b>Rated Output (HP)</b>	5	<b>460 V, 60 Hz: High Voltage Connection</b>
<b>Volts</b>	230/460	<b>Full Load Torque</b> 22.8 LB-FT
<b>Full Load Amps</b>	14.6/7.3	<b>Start Configuration</b> direct on line
<b>R.P.M.</b>	1160	<b>Breakdown Torque</b> 77.4 LB-FT
<b>Hz</b>	60 Phase	<b>Pull-up Torque</b> 46.7 LB-FT
<b>NEMA Design Code</b>	A KVA Code	<b>Locked-rotor Torque</b> 56.1 LB-FT
<b>Service Factor (S.F.)</b>	1.15	<b>Starting Current</b> 51.9 A
<b>NEMA Nom. Eff.</b>	90.2 Power Factor	<b>No-load Current</b> 3.7 A
<b>Rating - Duty</b>	40C AMB-CONT	<b>Line-line Res. @ 25°C</b> 1.58 Ω
<b>S.F. Amps</b>		<b>Temp. Rise @ Rated Load</b> 50°C
		<b>Temp. Rise @ S.F. Load</b> 62°C
		<b>Rotor inertia</b> 1.19 LB-FT <sup>2</sup>

**Load Characteristics 460 V, 60 Hz, 5 HP**

	25	50	75	100	125	150	S.F.
<b>% of Rated Load</b>	34	54	65	72	75	76	74
<b>Power Factor</b>	86.2	90.3	91	90.5	89.3	87.7	89.8
<b>Efficiency</b>	1190	1181	1173	1163	1151	1138	1156
<b>Speed</b>	4.01	4.79	5.88	7.29	8.77	10.44	8.18

**BALDOR • RELIANCE** CUSTOMER INFORMATION PACKET CECP3768T - 5HP, 1160RPM, 3PH, 60HZ, 215TC, 0748M, TEFC, F1



07LYK373

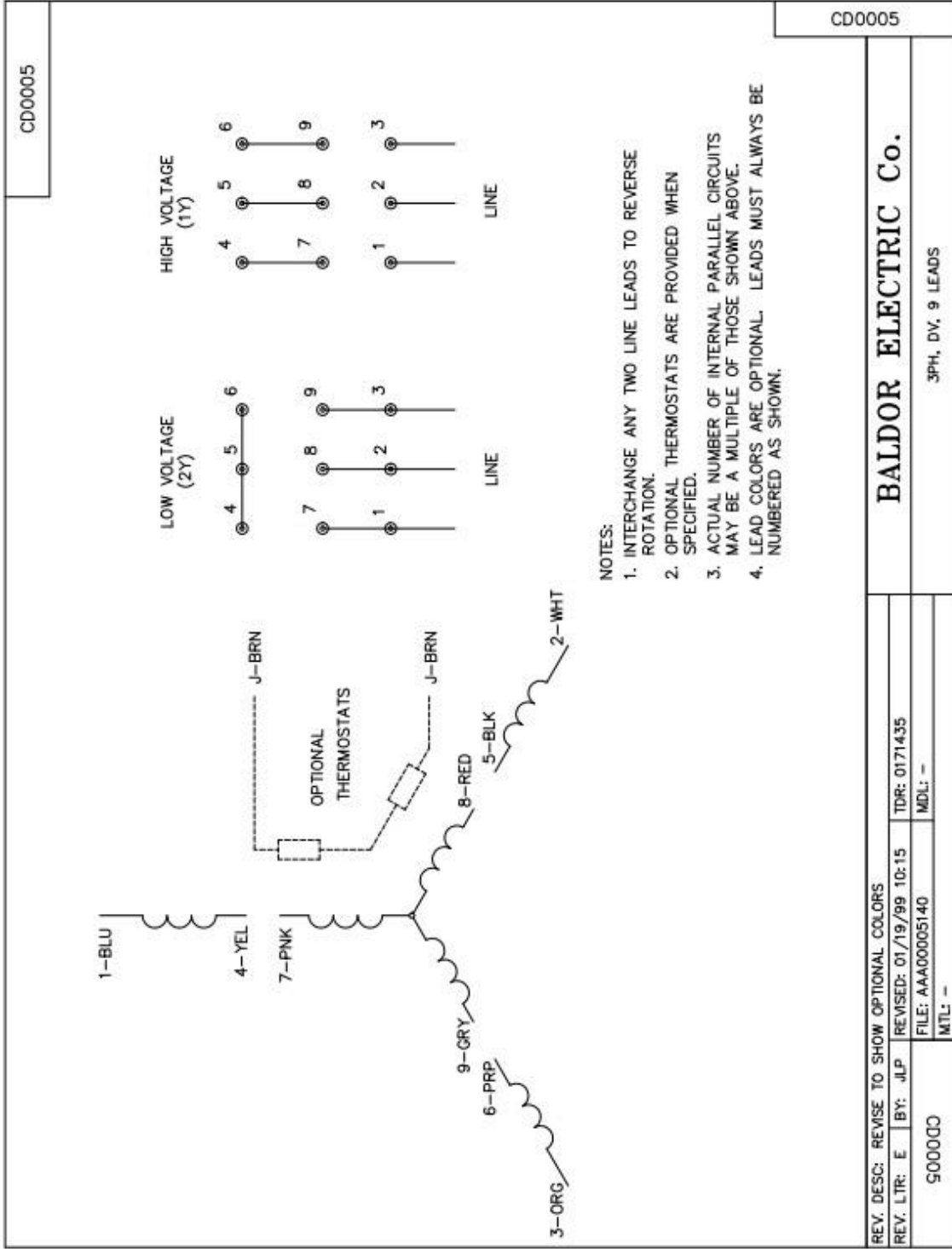
CUSTOMER IS RESPONSIBLE FOR DETERMINING THAT BALDOR'S PRODUCT WILL PERFORM SUITABLY IN THE INTENDED APPLICATION.

REV. 002	REMOVE (EACH END) FROM GROUND LUG CALL OUT	REV. 00000294372
REV. 001	VERSION 04	REV. 00000294372
FILE: VAA100139.024	REVISED: 10-21-20 12/19/2018	BY: ENRMBD
WFL -		31 of 31

**BALDOR • RELIANCE**

STD HOZE 213-8TC TFC # CP W/307 BRCS, UPRFD LD





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## VAUGHAN COMPANY OFF LOADING AND LONG-TERM STORAGE INSTRUCTIONS PEDESTAL PUMP

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### **OFF LOADING AND INSPECTION INSTRUCTIONS:**

Prior to shipment Vaughan pumps are carefully crated and inspected to ensure arrival at your site in good condition. On receiving your pump, examine it carefully to assure that no damaged crating or broken parts have resulted from mishandling during shipping. Turn the pump shaft by hand and verify that it turns over smoothly. If the shaft binds, look for debris (or paint) between impeller and cutter bar. Otherwise, shaft binding could indicate damage. If damage has occurred, report to your carrier immediately, and consult your local Vaughan representative.

### **STORAGE REQUIREMENTS TO BE UNDERTAKEN BY CONTRACTOR:**

If equipment is to be stored for longer than two weeks, take the following action:

1. Coat exposed steel with a light layer of grease to protect the equipment from corrosion.
2. Rotate the motor **1-¼ turn** once each week to keep the bearings from sitting in one position for extended periods of time.
3. Avoid storing rotating equipment near other vibrating equipment. The vibrations can cause damage to the ball bearings and cause premature failure once the equipment is started up.
4. Store rotating equipment in a clean, dry, heated area away from areas where it could be damaged from impact, smoke, dirt, vibration, corrosive fumes or liquids, or from condensation inside the motor or pump. It is helpful to cover equipment with plastic.

# PAINT INFORMATION



PRODUCT DATA SHEET

## PERMA-SHIELD® PL SERIES 431

### PRODUCT PROFILE

<b>GENERIC DESCRIPTION</b>	Modified Polyamine Ceramic Epoxy
<b>COMMON USAGE</b>	A 100% solids, abrasion-resistant lining specifically designed for wastewater immersion and fume environments. Provides low permeation to H <sub>2</sub> S gas, protects against MIC and provides chemical resistance to steel, ductile iron pipe and fittings for severe wastewater. A coal-tar free, resin-rich formulation with low pigment volume concentration (PVC) for maximum performance.
<b>COLORS</b>	5024 Sewer Pipe Green. <b>Note:</b> Epoxies chalk with extended exposure to sunlight.
<b>FINISH</b>	Gloss
<b>SPECIAL QUALIFICATIONS</b>	Contains 20% ceramic microspheres for increased abrasion resistance. Compatible with high-velocity jet sewer cleaning (hydrocleaning) with 0-degree tips (Reference Technical Bulletin No. 11-86). Meets the performance requirements of AWWA C 210 (not for potable water contact).

### COATING SYSTEM

<b>PRIMERS</b>	Self-priming, Series N69 or Series N140. <b>Note:</b> Series 431 must be applied to Series N69 or N140 within 7 days. Scarify the surface with fine abrasive before topcoating if exceeding this maximum recoat window.
----------------	---

### SURFACE PREPARATION

<b>STEEL</b>	Prepare surfaces by method suitable for exposure and service. SSPC-SP5/NACE 1/ISO Sa 3 White Metal Blast Cleaning with a minimum angular anchor profile of 3.0 mils (76.2 microns)
<b>DUCTILE IRON</b>	All internal surfaces of ductile iron pipe and fittings shall be delivered to the application facility without asphalt or any other protective lining on the interior surface. All oils, small deposits of asphalt paint, grease, and soluble deposits shall be removed in accordance with NAF 500-03-01 Solvent Cleaning prior to abrasive blasting. <b>Pipe:</b> Uniformly rotary-abrasive blast using angular abrasive to a NAF 500-03-04: Internal Pipe Surface condition, full removal of annealing oxide layer. When viewed without magnification, the interior surfaces shall be free of all visible dirt, dust, annealing oxide, rust, mold coating and other foreign matter. Any area where rust reappears before application shall be reblasted. The surface shall contain a minimum angular anchor profile of 3.0 mils (76.2 microns) (Reference NACE RP0287 or ASTM D 4417, Method C). <b>Fittings:</b> Uniformly abrasive blast using angular abrasive to a NAF 500-03-05: Fitting Blast Clean #1 condition, no staining. When viewed without magnification, the interior surfaces shall be free of all visible dirt, dust, annealing oxide, rust, mold coating and other foreign matter. Any area where rust reappears before application shall be reblasted. The surface shall contain a minimum angular anchor profile of 3.0 mils (76.2 microns) (Reference NACE RP0287 or ASTM D 4417, Method C).
<b>ALL SURFACES</b>	Must be clean, dry and free of oil, grease and other contaminants.

### TECHNICAL DATA

<b>VOLUME SOLIDS</b>	100% (mixed)																				
<b>RECOMMENDED DFT</b>	<b>Carbon Steel:</b> 30.0 to 50.0 mils (762 to 1270 microns) in one or more coats. <b>Ductile Iron:</b> 40 mils (1015 microns) (nominal) in one or more coats. <b>Note:</b> Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.																				
<b>CURING TIME</b>	<table border="1"> <thead> <tr> <th>Temperature</th> <th>Set to Touch</th> <th>Max. Recoat</th> <th>To Place in Service</th> </tr> </thead> <tbody> <tr> <td>90°F (32°C)</td> <td>1-2 hours</td> <td>7 days</td> <td>24 hours</td> </tr> <tr> <td>75°F (24°C)</td> <td>2-3 hours</td> <td>7 days</td> <td>2 days</td> </tr> <tr> <td>55°F (13°C)</td> <td>8-9 hours</td> <td>7 days</td> <td>3 days</td> </tr> </tbody> </table> <p><b>Note:</b> If more than 7 days have elapsed between coats, the Series 431 coated surface must be mechanically abraded (scarified) before topcoating. Curing time will vary with surface temperature, air movement, humidity and film thickness.</p>	Temperature	Set to Touch	Max. Recoat	To Place in Service	90°F (32°C)	1-2 hours	7 days	24 hours	75°F (24°C)	2-3 hours	7 days	2 days	55°F (13°C)	8-9 hours	7 days	3 days				
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75°F (24°C)	2-3 hours	7 days	2 days																		
55°F (13°C)	8-9 hours	7 days	3 days																		
<b>VOLATILE ORGANIC COMPOUNDS</b>	EPA Method 24: 0.19 lbs/gallon (23 grams/litre)																				
<b>HAPS</b>	0.00 lbs/gal solids																				
<b>THEORETICAL COVERAGE</b>	1,604 mil sq ft/gal (39.4 m <sup>2</sup> /L at 25 microns). See APPLICATION section for coverage rates.																				
<b>NUMBER OF COMPONENTS</b>	Two: Part A (amine) and Part B (epoxy)																				
<b>MIXING RATIO</b>	By volume: One (Part A) to one (Part B)																				
<b>PACKAGING</b>	<table border="1"> <thead> <tr> <th></th> <th>PART A (partially filled)</th> <th>PART B (partially filled)</th> <th>When Mixed</th> </tr> </thead> <tbody> <tr> <td>Drum Sets †</td> <td>55 gallon drum</td> <td>55 gallon drum</td> <td>100 gallons</td> </tr> <tr> <td>Large Kit †</td> <td>5 gallon pail</td> <td>5 gallon pail</td> <td>8 gallons (30.28 L)</td> </tr> <tr> <td>Small Kit</td> <td>1 gallon pail</td> <td>1 gallon pail</td> <td>1 gallon (3.78L)</td> </tr> <tr> <td>Touch-Up Kit †† (1 tube)</td> <td>4 ounces</td> <td>4 ounces</td> <td>8 ounces (236 mL)</td> </tr> </tbody> </table> <p>† Plural Component application only. †† Touch-Up Kit consists of six (6) tubes along with twelve (12) disposable static mixers.</p>		PART A (partially filled)	PART B (partially filled)	When Mixed	Drum Sets †	55 gallon drum	55 gallon drum	100 gallons	Large Kit †	5 gallon pail	5 gallon pail	8 gallons (30.28 L)	Small Kit	1 gallon pail	1 gallon pail	1 gallon (3.78L)	Touch-Up Kit †† (1 tube)	4 ounces	4 ounces	8 ounces (236 mL)
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Touch-Up Kit †† (1 tube)	4 ounces	4 ounces	8 ounces (236 mL)																		
<b>NET WEIGHT PER GALLON</b>	9.48 ± 0.25 lbs (4.3 ± .11 kg) (mixed)																				
<b>STORAGE TEMPERATURE</b>	Minimum 25°F (-4°C) Maximum 110°F (43°C) For optimal handling and application characteristics both material components should be conditioned to a minimum of 80°F (27°C) or higher 48 hours prior to use.																				
<b>TEMPERATURE RESISTANCE</b>	(Dry) Continuous 275°F (135°C) Intermittent 300°F (149°C) (Wet) Intermittent 150°F (65°C)																				

# PERMA-SHIELD® PL | SERIES 431

**SHELF LIFE** 24 months at recommended storage temperature.  
**FLASH POINT - SETA** Part A: N/A Part B: 200°F (93°C)  
**HEALTH & SAFETY** This product contains chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product.  
**Keep out of the reach of children.**

## APPLICATION

**COVERAGE RATES** Before commencing, obtain and thoroughly read the Series 431 Surface Preparation and Application Guide.

Dry MILS (Microns)	Wet MILS (Microns)	Sq Ft/Gal (m <sup>2</sup> /Gal)
30.0 (762)	30.0 (762)	53 (4.9)
40.0 (1016)	40.0 (1016)	40 (3.7)
50.0 (1270)	50.0 (1270)	32 (3.0)

**Note:** Recommended DFT will depend on substrate condition and system design. Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance.

**MIXING** **Drum Set:** For Plural Component Application. Place band heaters on drums. Remove the lid and insert the mixing blade shaft through the center two-inch bung; reinstall the lid. Mixing blade should be adequately sized to fully agitate material. The material should be 80°F-90°F (27°C-32°C) before the mixing blade is turned on. Insert 5:1 feed pumps into the outside two-inch bung. Place the recirculation line in the 3/4 inch outside bung. Recirculate the material through the primary heaters and heated hose bundle back into the containers. Continue recirculation under agitation until Component A reaches 110°F-120°F (43°C-49°C) and Component B reaches 100°F-110°F (38°C-43°C). Do not exceed 120°F (49°C) for either component. Consult Technical Services for specific details.

**Large Kit:** For Plural Component Application. Agitate Parts A & B separately making sure no pigment or solids remain on the bottom of the can. **DO NOT MIX PART A WITH PART B.** Use a 1 (Part A amine) to 1 (Part B epoxy) mix ratio heated plural component airless spray unit. **Note:** Product component A (amine) must be heated to 110°F to 120°F (43°C to 49°C) and component B (epoxy) must be heated to 100°F to 110°F (38°C to 43°C) prior to and during plural component application. Do not exceed 120°F (49°C) for either component. Keep containers tightly sealed prior to use. Consult Technical Services for specific details.

**Small Kit:** Agitate Parts A & B separately ensuring no pigment or solids remain on the bottom of the can. Scrape all of the Part B into Part A can using a flexible spatula. Use a variable speed drill with a PS Jiffy blade ad mix the blended components for a minimum of two minutes. During the mixing process, scrape the sides and bottom of the container to ensure complete blending of materials. Apply the mixed material within 15 to 20 minutes, or before the material reaches 100°F following agitation. **Note:** A large volume of material will gel quickly if not applied or reduced in volume.

**Touch-Up Kit:** Equipment: A dispensing gun with a thrust ratio of 26:1 is required (F100-TKAP). Material tube must be used in conjunction with provided disposable static mixer in order to ensure proper mixing.  
 Usage: Unscrew retaining ring and remove plug. Save plug in case entire tube is not used. Install static mixing element, replace retaining screw ring, and install tube in gun. Point assembly up and slowly pull the trigger to de-air the mixer. Dispense approximately 1 fluid ounce (29.8 mL) of material to waste and continue to pump until material is of uniform color with the Part A completely blended with the Part B. Use a putty knife, brush or spatula to ensure adequate coverage and repair.

For complete instructions on application, please refer to the Series 431 *Surface Preparation & Application Guide*.

**THINNING** **DO NOT THIN**  
**APPLICATION EQUIPMENT**

**PLURAL COMPONENT AIRLESS EQUIPMENT.** The preferred application method for Series 431 Perma-Shield PL is using plural component equipment. Plural component equipment reduces material waste, solvent consumption and reduces material viscosity. Contact Tnemec Technical Service for complete Series 431 Plural Component Recommendations.

**Airless:**

Pump Size	Rotary Gun †	Mat'l Hose ID	Manifold Filter
45:1 or 56:1	Model 712-216	3/8" (9.5mm)	30 Mesh

† **Rotary Spray Gun:** Series 431 shall be applied to the interior surfaces of pipe or fittings using a rotary coater pistol spray gun. Spray-Quip (Houston, TX), Model 712-216, or similar rotary lance, to produce a monolithic and level film. Contact Tnemec Technical Services for additional information.

**Note:** Pump assembly should include a moisture trap and oiler, air regulator with gauge and fluid outlet drain valve and outfitted with a gravity fed material hopper (material will not feed through a suction tube).

**Brush:** Recommended for bell sockets, spigot ends, and small repairs.

**SURFACE TEMPERATURE** Minimum of 50°F (10°C) Maximum of 130°F (54°C).  
 The surface temperature should be dry and at least 5°F (3°C) above the dew point. The coating will not cure properly below minimum surface temperature.

**HOLIDAY TESTING** High Voltage Discontinuity (spark) testing shall be performed in accordance with ASTM D 5162, 100 to 125 V/mil voltage setting.

**CLEANUP** Flush and clean all equipment immediately after use with Tnemec's No. 4 Thinner or MEK.

WARRANTY & LIMITATION OF SELLER'S LIABILITY: Tnemec Company, Inc. warrants only that its coatings represented herein meet the formulation standards of Tnemec Company, Inc. THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPH SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The buyer's sole and exclusive remedy against Tnemec Company, Inc. shall be for replacement of the product in the event a defective condition of the product should be found to exist and the exclusive remedy shall not have failed its essential purpose as long as Tnemec is willing to provide comparable replacement product to the buyer. NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, ENVIRONMENTAL INJURIES OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO THE BUYER. Technical and application information herein is provided for the purpose of establishing a general profile of the coating and proper coating application procedures. Test performance results were obtained in a controlled environment and Tnemec Company makes no claim that these tests or any other tests, accurately represent all environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection and use of the coating.

Tnemec Company Inc. 6800 Corporate Drive Kansas City, Missouri 64120-1372 1-800-TNEMEC1 Fax: 1-816-483-3969 www.tnemec.com

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# VAUGHAN CO., INC. PRODUCT WARRANTY

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## CITY OF JEFFERSON-S/N: 160915

Vaughan Company, Inc. (Vaughan Co.) warrants to the original purchaser/end user (Purchaser) all pumps and pump parts manufactured by Vaughan Co. to be free from defects in workmanship or material for a period of one (1) year from date of startup or eighteen (18) months from the date of shipment from Vaughan Co., whichever occurs sooner. Startup data must be submitted to Vaughan Co. within 30 days of startup. If Purchaser fails to submit startup data within 30 days of startup, then Vaughan, in its sole discretion, may elect to void this warranty at any time. Purchaser must contact Vaughan Co. prior to commencing any repair attempts, or removing pump or parts from service. If Purchaser fails to contact Vaughan Co. prior to commencing any repair attempts or removing pumps or parts from service, then Vaughan, in its sole discretion, may elect to void this warranty at any time.

If during said warranty period, any pump or pump parts manufactured by Vaughan Co. prove to be defective in workmanship or material under normal use and service, and if such pump or pump parts are returned to Vaughan Co.'s factory at Montesano, WA, or to a Vaughan authorized Service Facility, as directed by Vaughan Co., transportation charges prepaid, and if the pump or pump parts are found to be defective in workmanship or material, they will be replaced or repaired by Vaughan Co. free of charge. Products repaired or replaced from the Vaughan Co. factory or a Vaughan authorized Service Facility under this warranty will be returned freight prepaid. Vaughan Co. shall not be responsible for the cost of pump or part removal and/or re-installation.

All warranty claims must be submitted in writing to Vaughan Co. not later than thirty (30) days after warranty breach occurrence. The original warranty length shall not be extended with respect to pumps or parts repaired or replaced by Vaughan Co. under this Warranty. This Warranty is voided as to pumps or parts repaired/replaced by other than Vaughan Co. or its duly authorized representatives.

Vaughan Co. shall not be liable for consequential damages of any kind, including, but not limited to, claims for property damage, personal injury, attorneys' fees, lost profits, loss of use, liability of Purchaser to customers, loss of goodwill, interest on money withheld by customers, damages related to third party claims, travel expenses, rented equipment, third party contractor's fees, or unauthorized repair service or parts. The Purchaser, by acceptance of delivery, assumes all liability for the consequences of the use or misuse of Vaughan Co. products by the Purchaser, its employees or others.

Equipment and accessories purchased by Vaughan Co. from outside sources which are incorporated into any Vaughan pump or any pump part are warranted only to the extent of and by the original manufacturer's warranty or guarantee, if any, which warranty, if appropriate, will be assigned by Vaughan Co. to the Purchaser. It is Purchaser's responsibility to consult the applicable product documentation for specific warranty information. Specific product documentation is available upon request.

Any warranty shall be void if the total contract amount is not paid in full.

Vaughan Co. neither assumes, nor authorizes any person or company to assume for it, any other obligation in connection with the sale of its equipment with the exception of a valid Vaughan "Performance Guarantee" or "Extended Warranty," if applicable. Any other enlargement or modification of this warranty by a representative or other selling agent shall not be legally binding on Vaughan Co.

Warranty eligibility determination is at Vaughan Co.'s sole discretion.

### Warranty Limitations:

This warranty shall not apply to any pump or pump part which has been subjected to or been damaged by any of the following non-exclusive list of causes:

- Misuse
- Abuse
- Accident
- Negligence
- Operated in the dashed portion of the published pump curves
- Used in a manner contrary to Vaughan's printed instructions
- Defective power supply
- Improper electrical protection
- Faulty installation, maintenance, or repair
- Wear caused by pumping abrasive or corrosive fluids or by cavitation
- Dissatisfaction due to buyer's remorse
- Damages incurred during transportation
- Damages incurred during installation or maintenance

***THIS IS VAUGHAN CO.'S SOLE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WHICH ARE HEREBY EXCLUDED INCLUDING IN PARTICULAR ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.***

**TAB 2:**

**CONTROL PANEL SUBMITTAL**



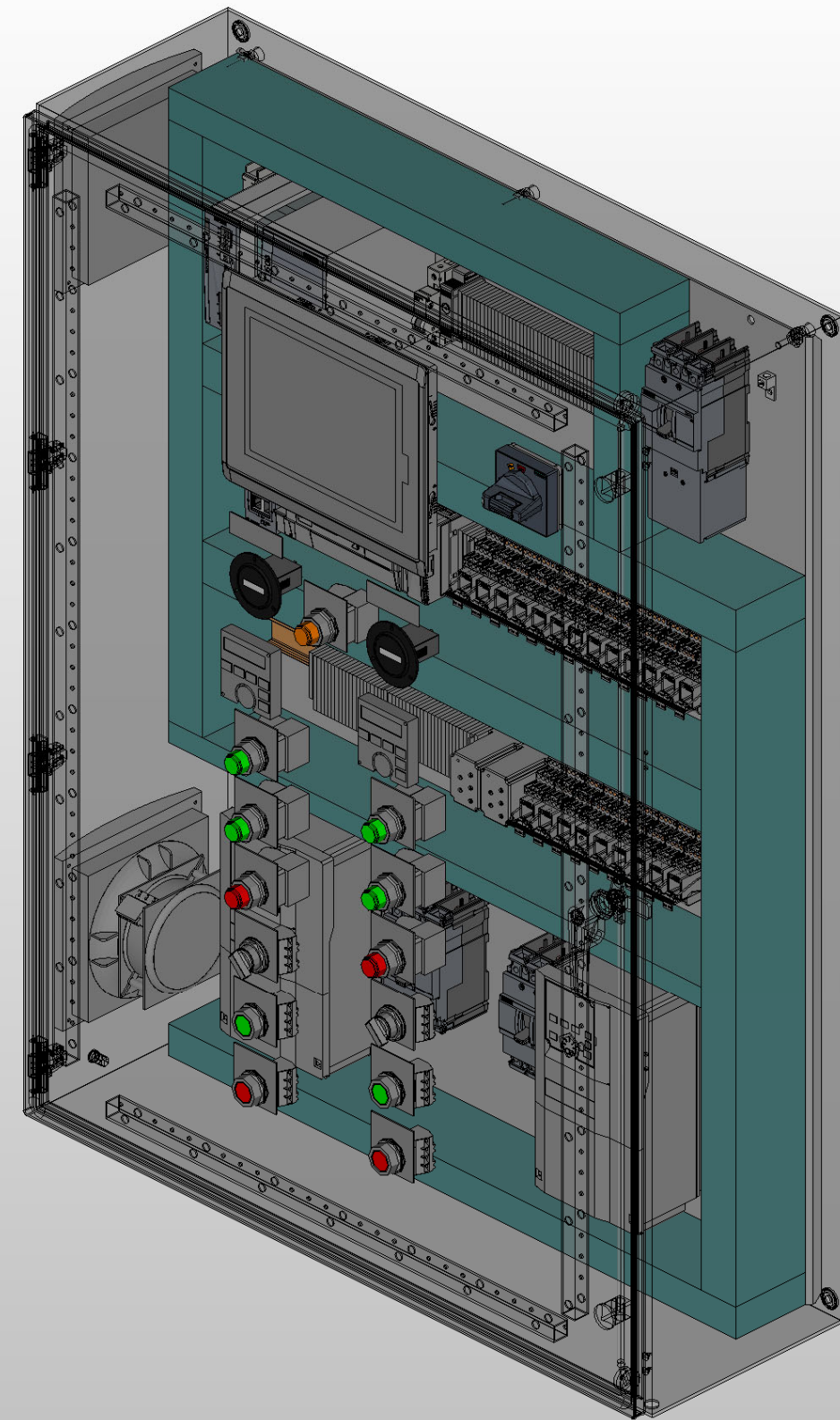
Control Panel (ISO SE)

Control Panel Data	
Identifier:	SYS1
Description:	DUPLEX CHOPPER PUMP CP
Project #:	12419
Supply Voltage:	480VAC
Phase:	3Ø
Frequency:	60Hz
Total FLA:	15.6A
FLA of Largest Motor:	7.6A
Number of Motors:	2
Short Circuit Current Rating:	5kAIC
Enclosure Rating:	12

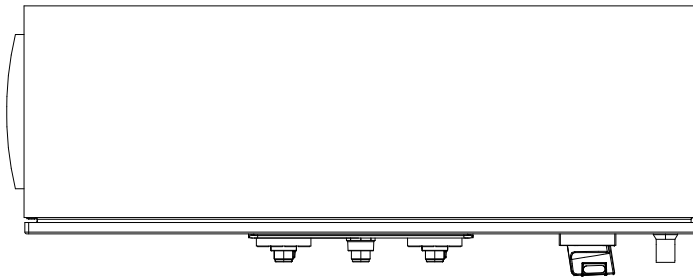
Quantity of 2



UL508A for Industrial Control Panel  
File# -E345960

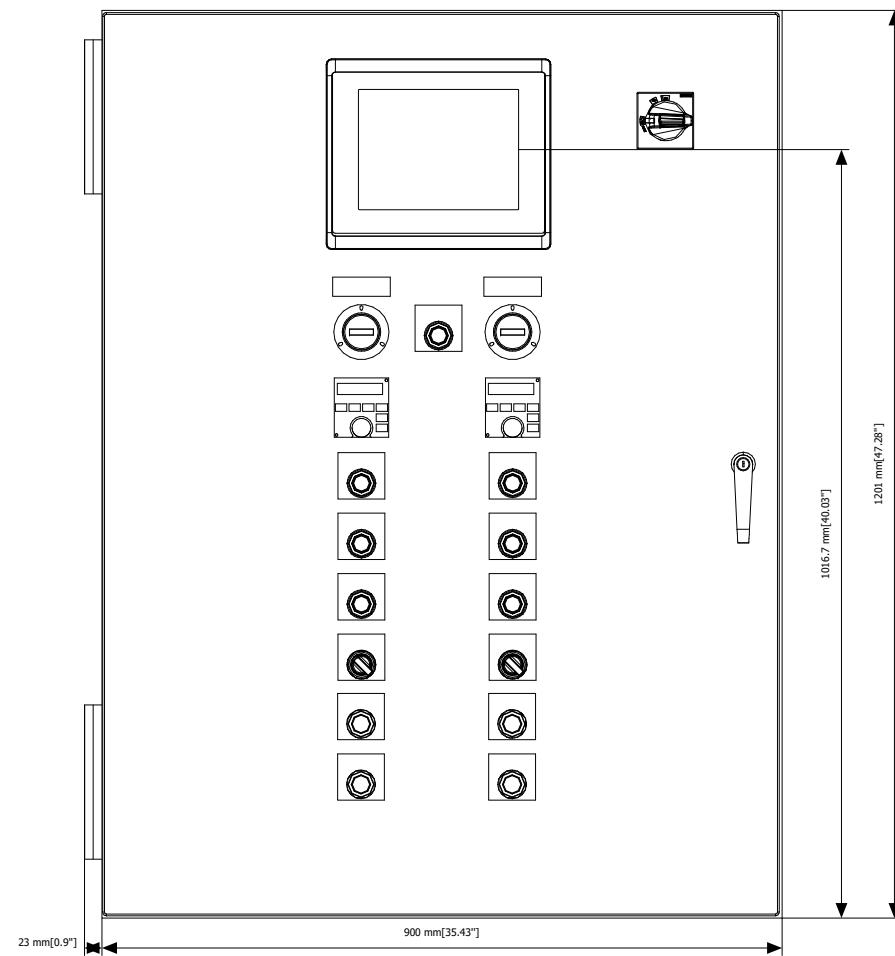


Top View

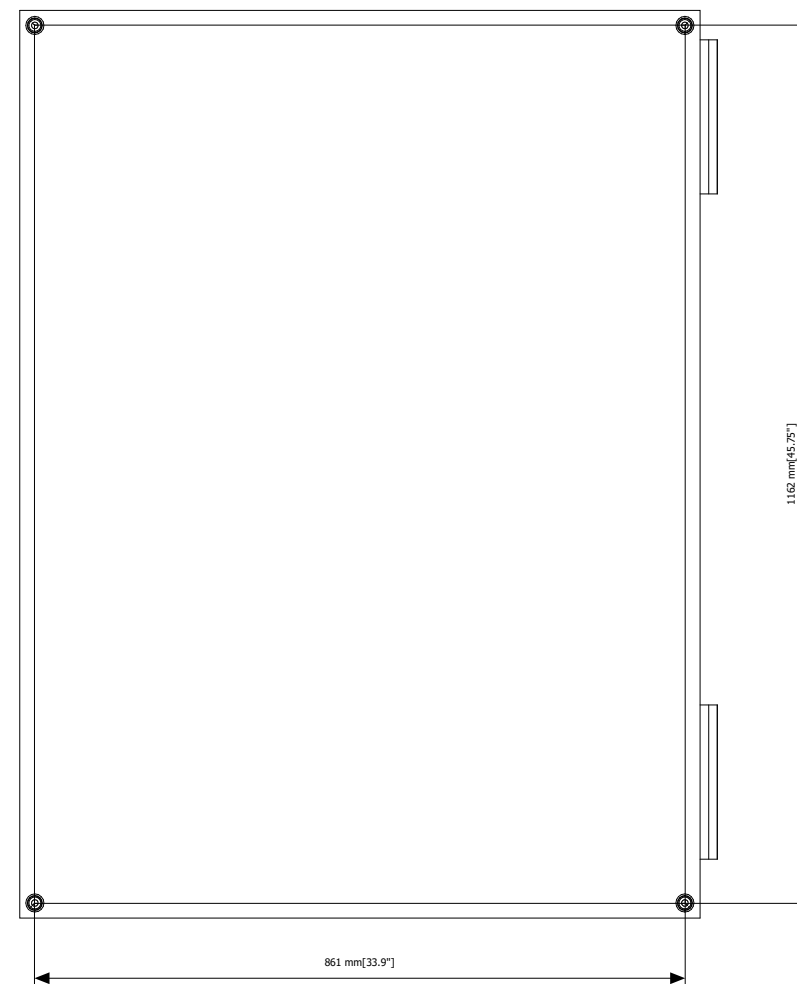


RITTAL 8017588, 36"x48"x12"  
 Housing: CARBON STEEL, RAL 7035 POWDER COAT  
 Door: CARBON STEEL, RAL 7035 POWDER COAT  
 Mounting plate finish: CARBON STEEL, ZINC PLATED  
 Protection category: UL Type 12

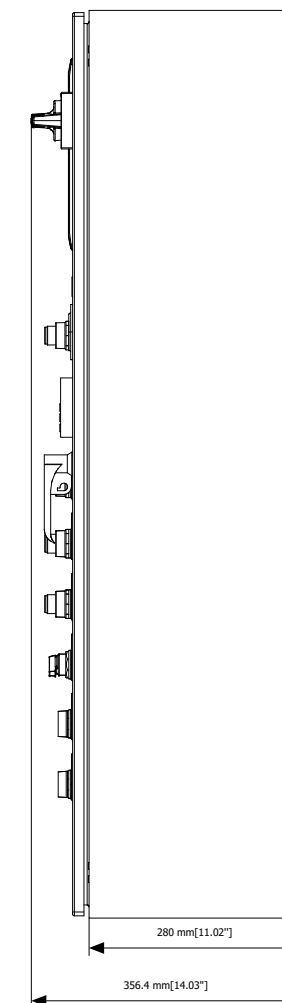
Front View



Rear View



Right Side View



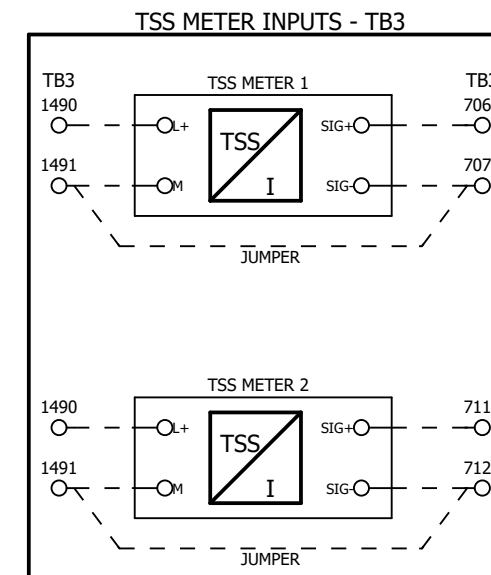
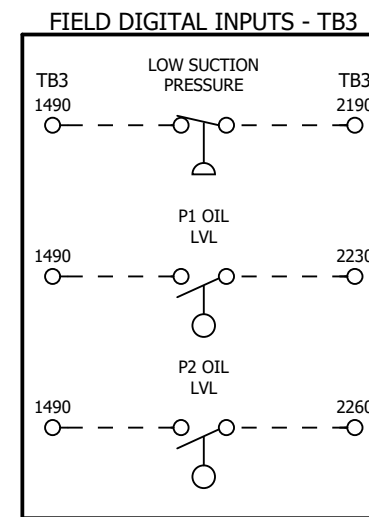
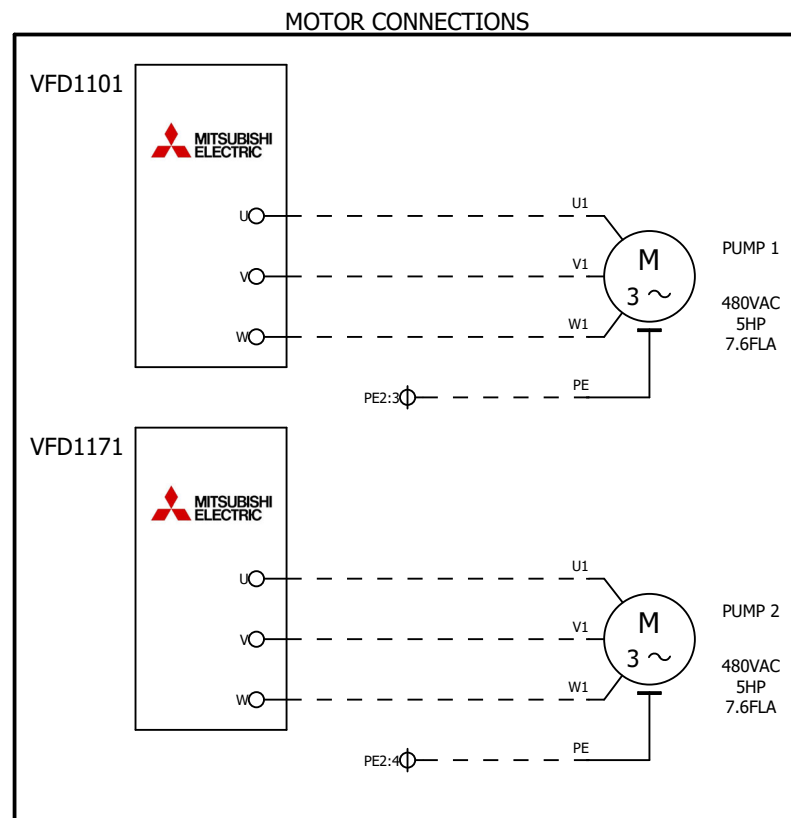
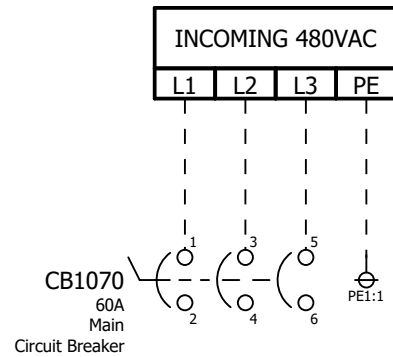


480 Power Feed Terminals		
Terminal	Range	Tightening Torque
CB1070 1,3,5	#8-10AWG	45 in-lb
PE	#8-10 AWG	35 in-lb

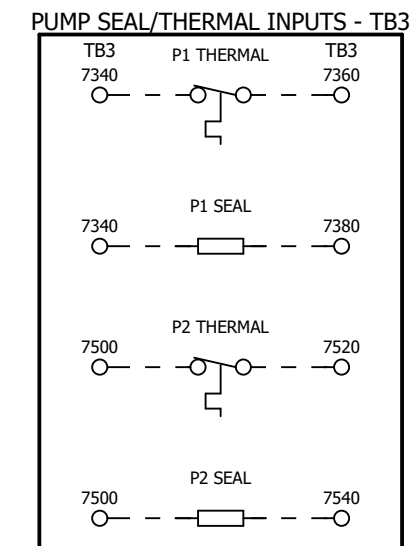
Motor Connections		
Terminal	Range	Tightening Torque
VFD1101, VFD1171 U, V, W	#10-14 AWG	13 in-lb
Ground	#10-14 AWG	35 in-lb

**Note:**  
 Use Copper Conductors Only for all connections  
 Use wires rated minimum 75°C for all power connections  
 Use wires rated minimum 60°C for all control connections

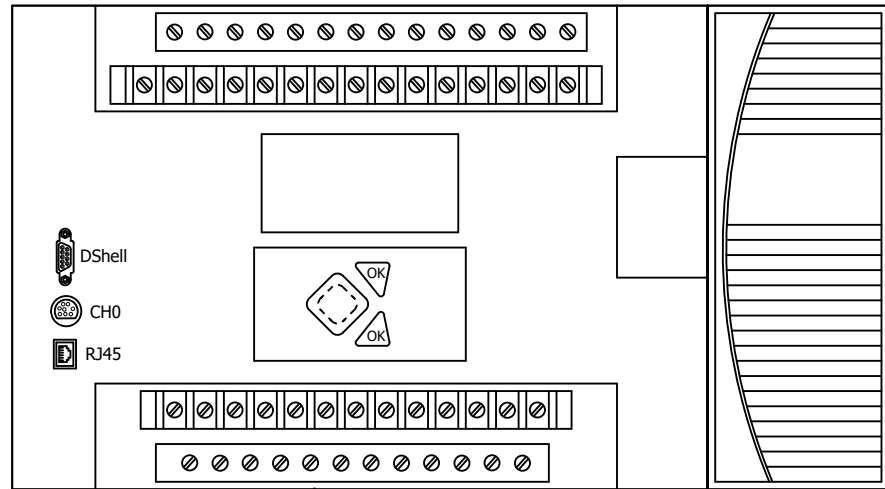
**Control Contacts**  
 Pilot Duty Rated Only  
 250 VAC, 30 VDC-6A Max. Load



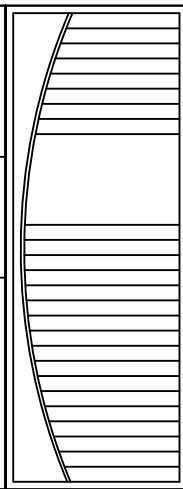
**NOTE:**  
 INSTALL JUMPERS AS SHOWN  
 TO USE LOOP POWERED DEVICES



PLC1  
(EC400)  
(EC430)  
(EC500)  
(EC530)  
(EC600)  
(EC632)  
(EC644)  
(EC200)



PLC2  
(EC703)

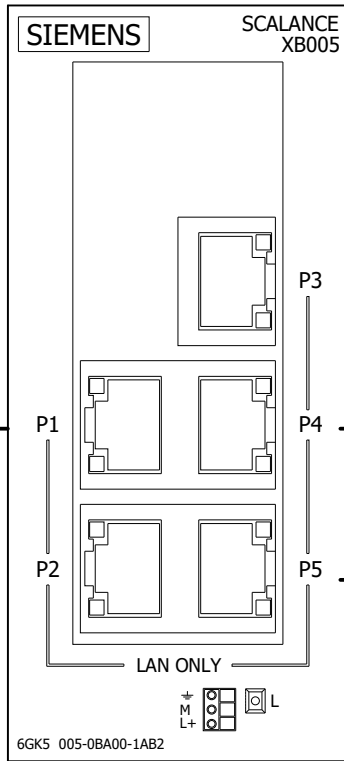


1766-L32BXBA  
MicroLogix 1400  
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1762-IF4  
MicroLogix 4 Point Analog Input Module

CAT6A  
CBL1

ENS1  
(EC210)



6GK5005-0BA00-1AB2  
SCALANCE XB005

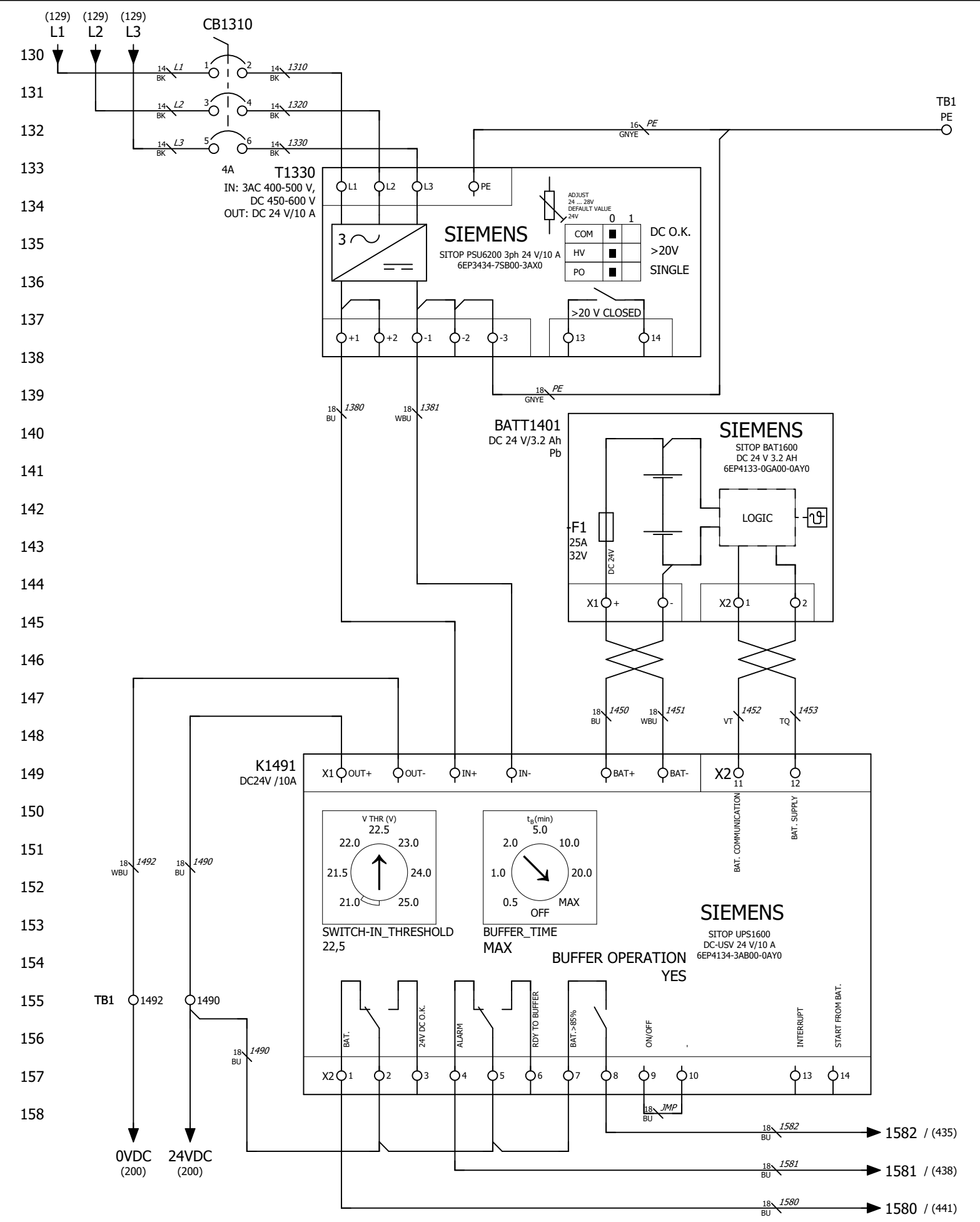
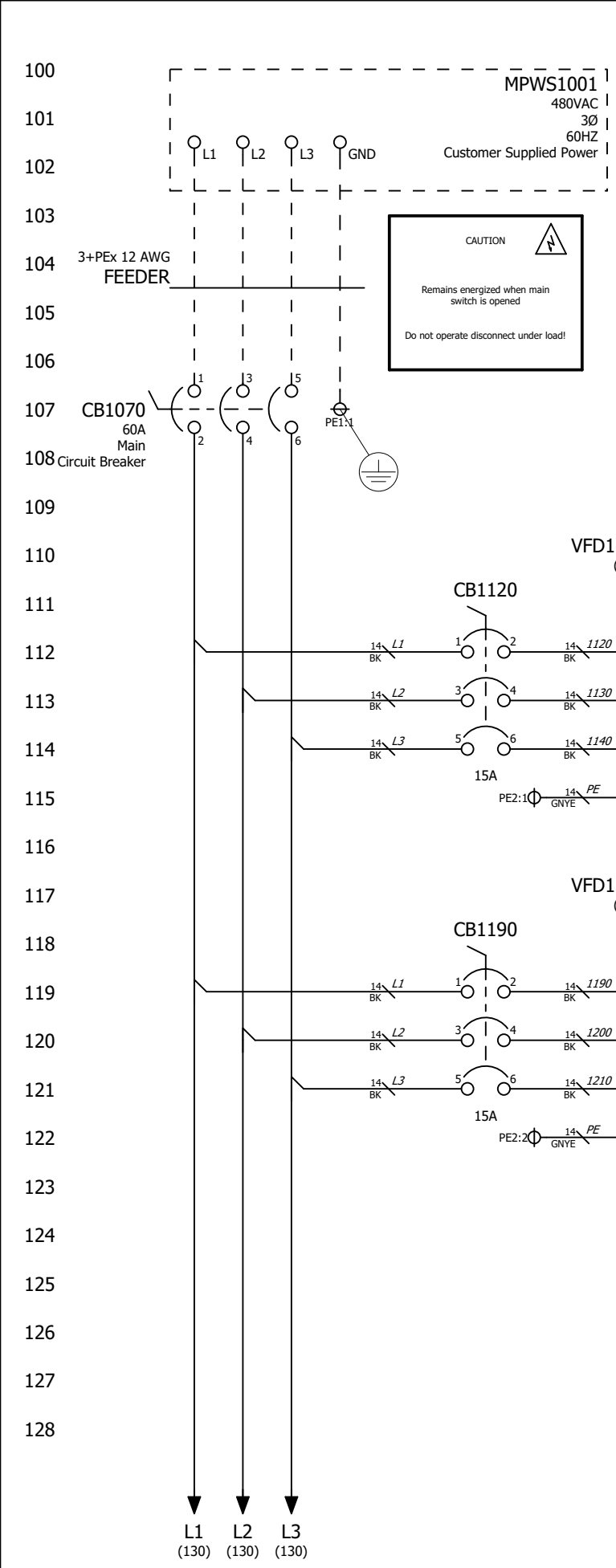
HMI1  
(EC205)



2711P-T10C22D9P  
PanelView Plus 7 Graphic Terminal  
192.168.80.2

CAT6  
CBL2

SITE NETWORK



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**Project # 12419**  
Duplex Chopper Pump CP

**Customer number**  
Customer  
Templeton

**Revision**  
0.1  
SUBMITTAL

Date	Name
Created 05/25/22	akaduck
Edited 06/07/22	akaduck
App. 05/25/22	JSD

**Engineered Systems Group, LLC.**  
4485 Commerce Dr, Suite 107  
Buford, GA 30518  
+1-678-765-0985

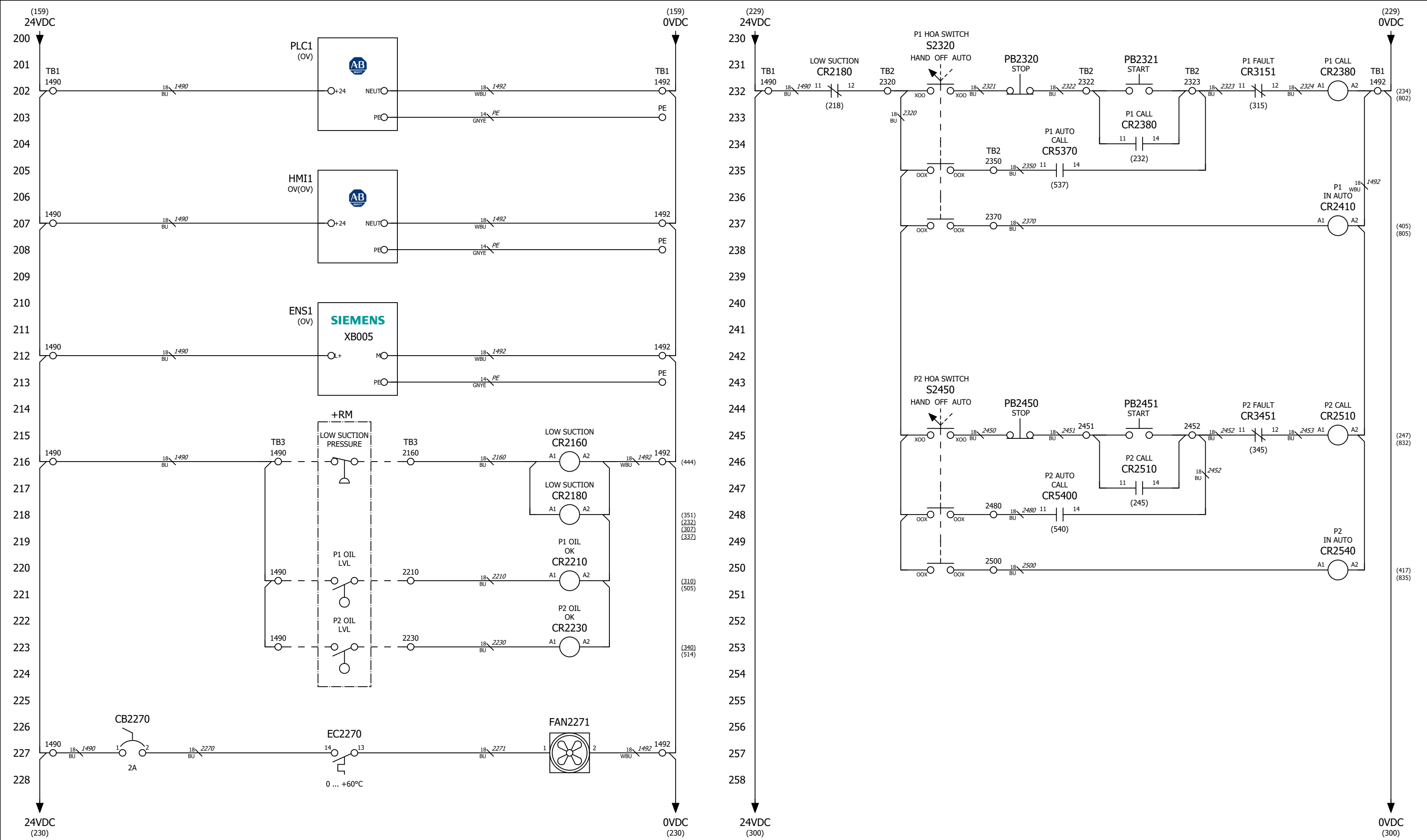
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DUPLIX CHOPPER PUMP CP  
Control Panel  
Wiring Schematics

**Function Code**  
=SYS1

**Location Code**  
+CP

**Drawing Number:** 12419SYS1CPEC

**Document Code & EC**  
Page 1 / 8



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**Project # 12419**  
 Duplex Chopper Pump CP

**Customer number**  
 Customer  
 Templeton

**Revision**  
 0.1  
 SUBMITTAL

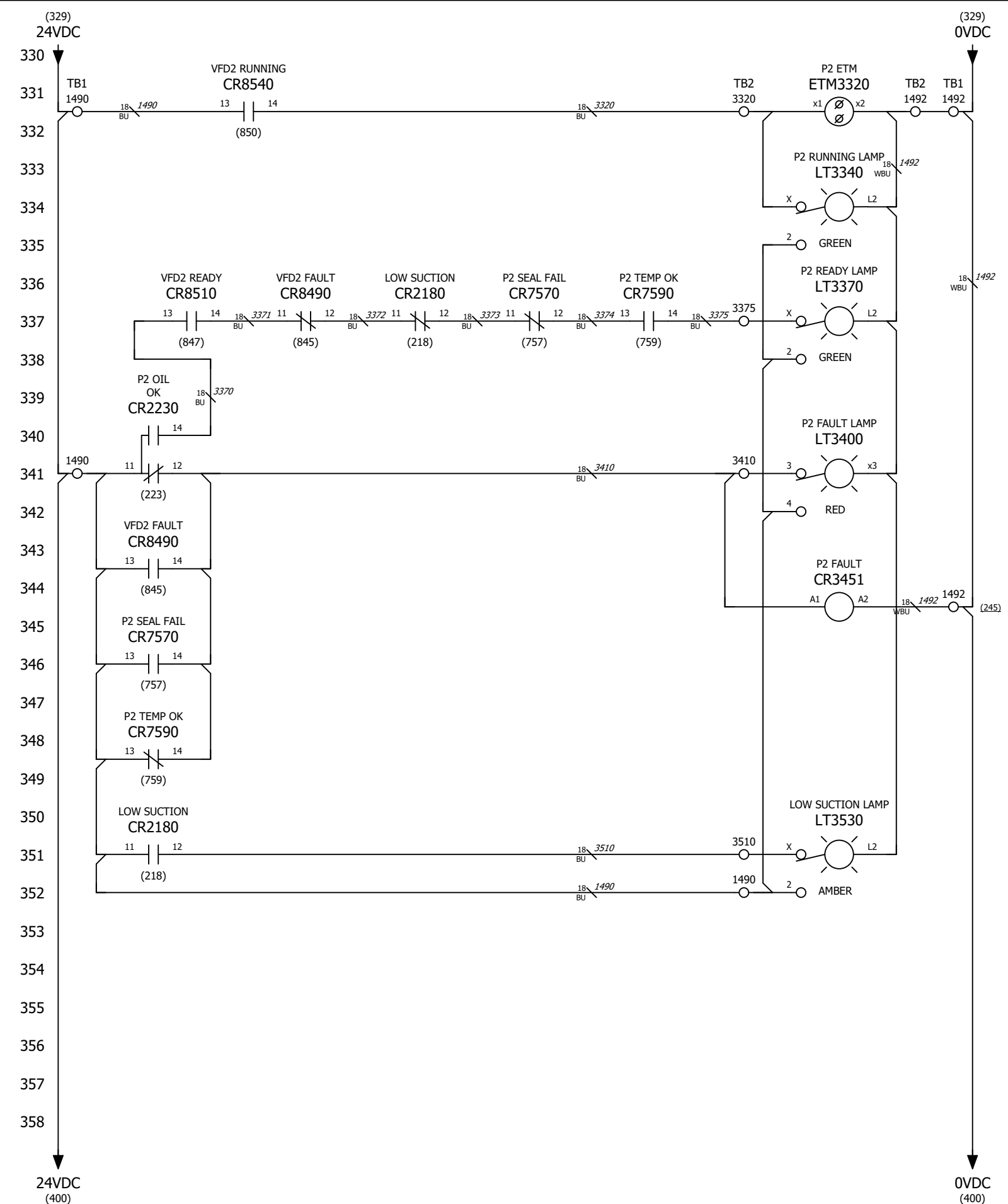
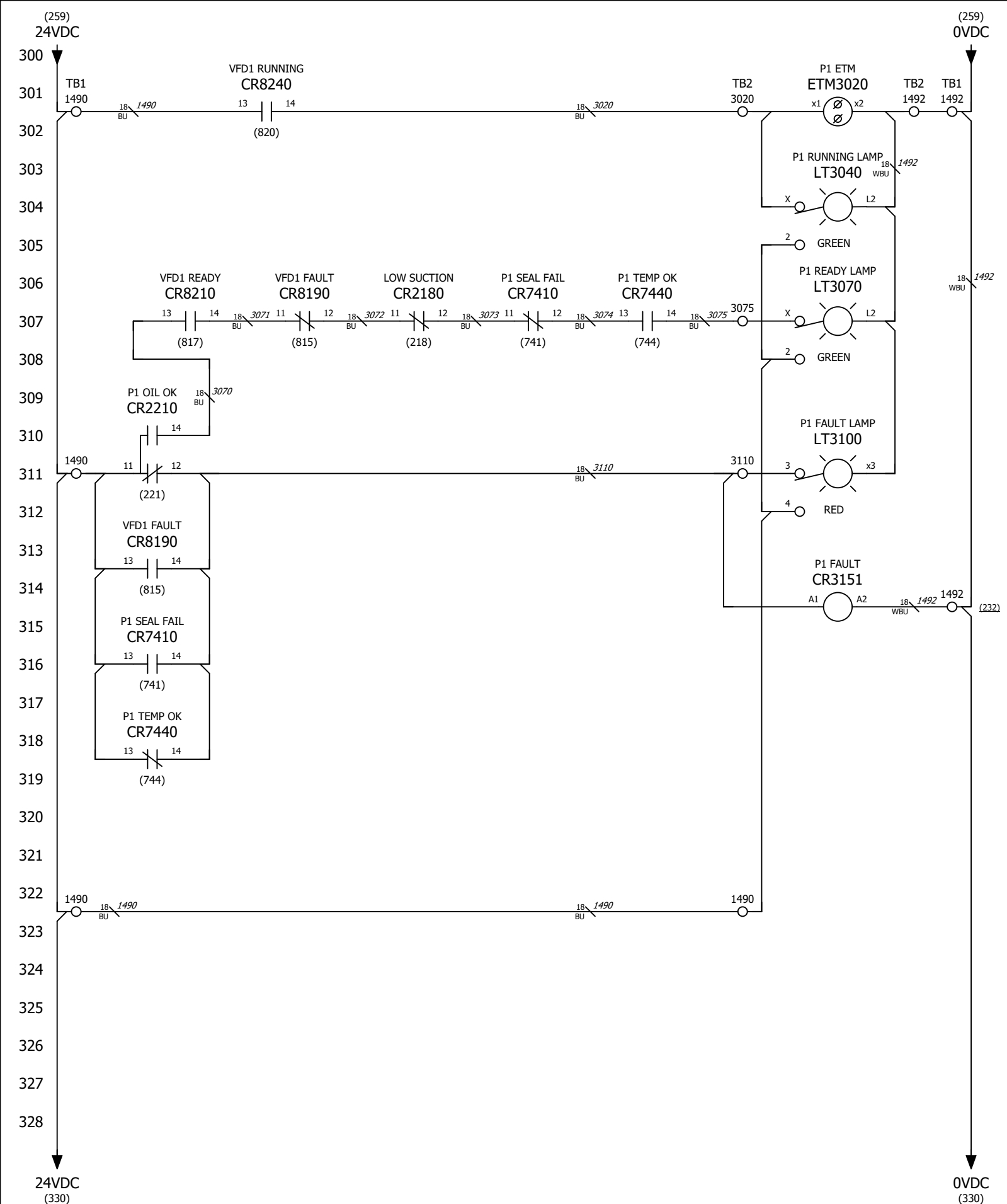
Date	Name
Created 05/25/22	akaduck
Edited 06/07/22	akaduck
App. 05/25/22	JSD

**Engineered Systems Group, LLC.**  
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**Page Description**  
 DUPLEX CHOPPER PUMP CP  
 Control Panel  
 Wiring Schematics

Function Code	Location Code	Document Code
=SYS1	+CP	&EC
Drawing Number: 12419SYS1CPEC		Page 2 / 8



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**Project # 12419**  
Duplex Chopper Pump CP

Customer number  
Customer  
Templeton

Revision  
0.1  
SUBMITTAL

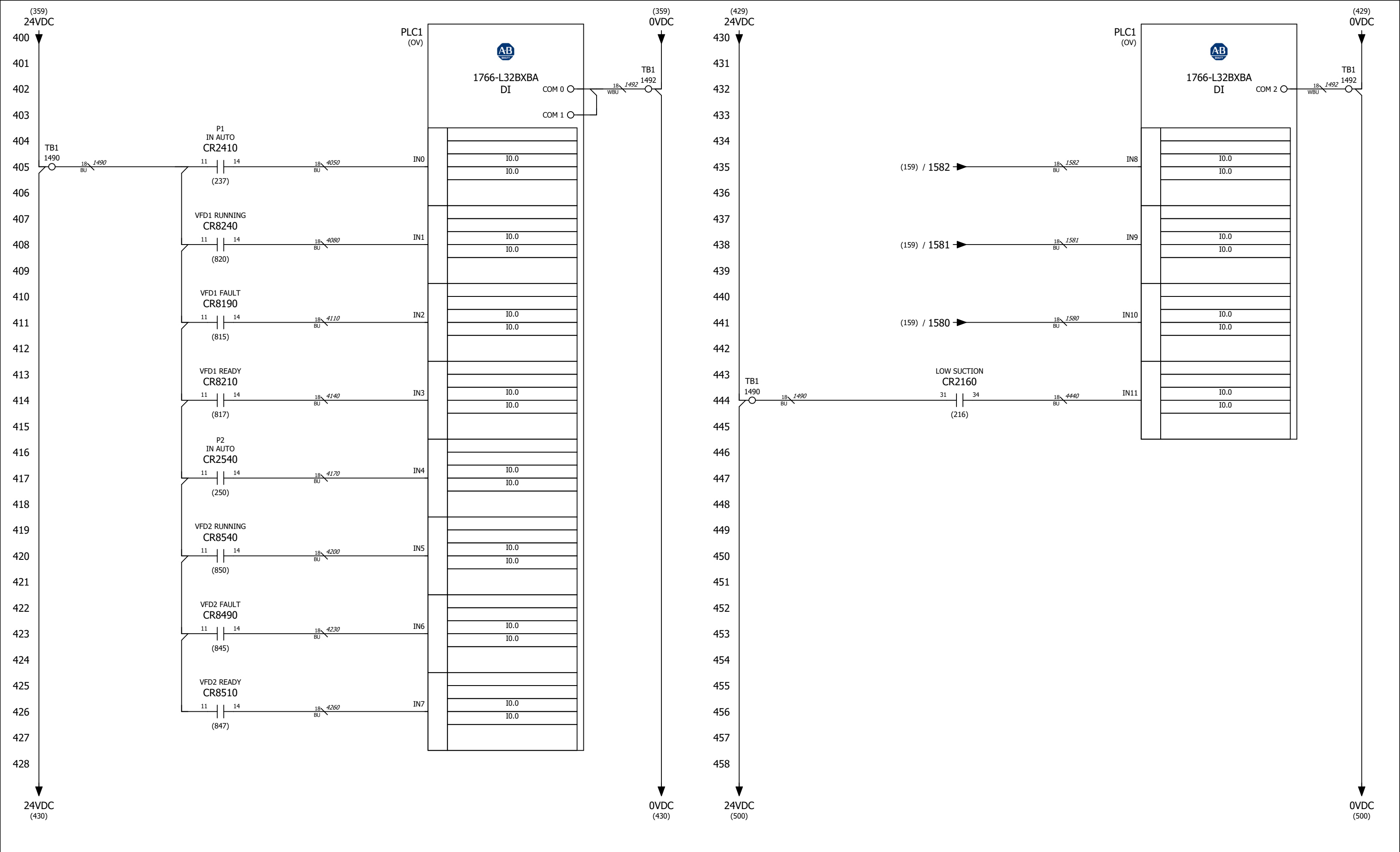
Date	Name
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Edited 06/07/22	akaduck
App. 05/25/22	JSD

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Buford, GA 30518  
+1-678-765-0985



Page Description  
DUPLEX CHOPPER PUMP CP  
Control Panel  
Wiring Schematics

Function Code =SYS1	Location Code +CP	Document Code &EC
Drawing Number: 12419SYS1CPEC		Page 3 / 8



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**Project**  
# 12419  
Duplex Chopper Pump CP

**Customer number**  
Customer  
Templeton

**Revision**  
0.1  
SUBMITTAL

	Date	Name
Created	05/25/22	akaduck
Edited	06/07/22	akaduck
App.	05/25/22	JSD

**Engineered Systems Group, LLC.**  
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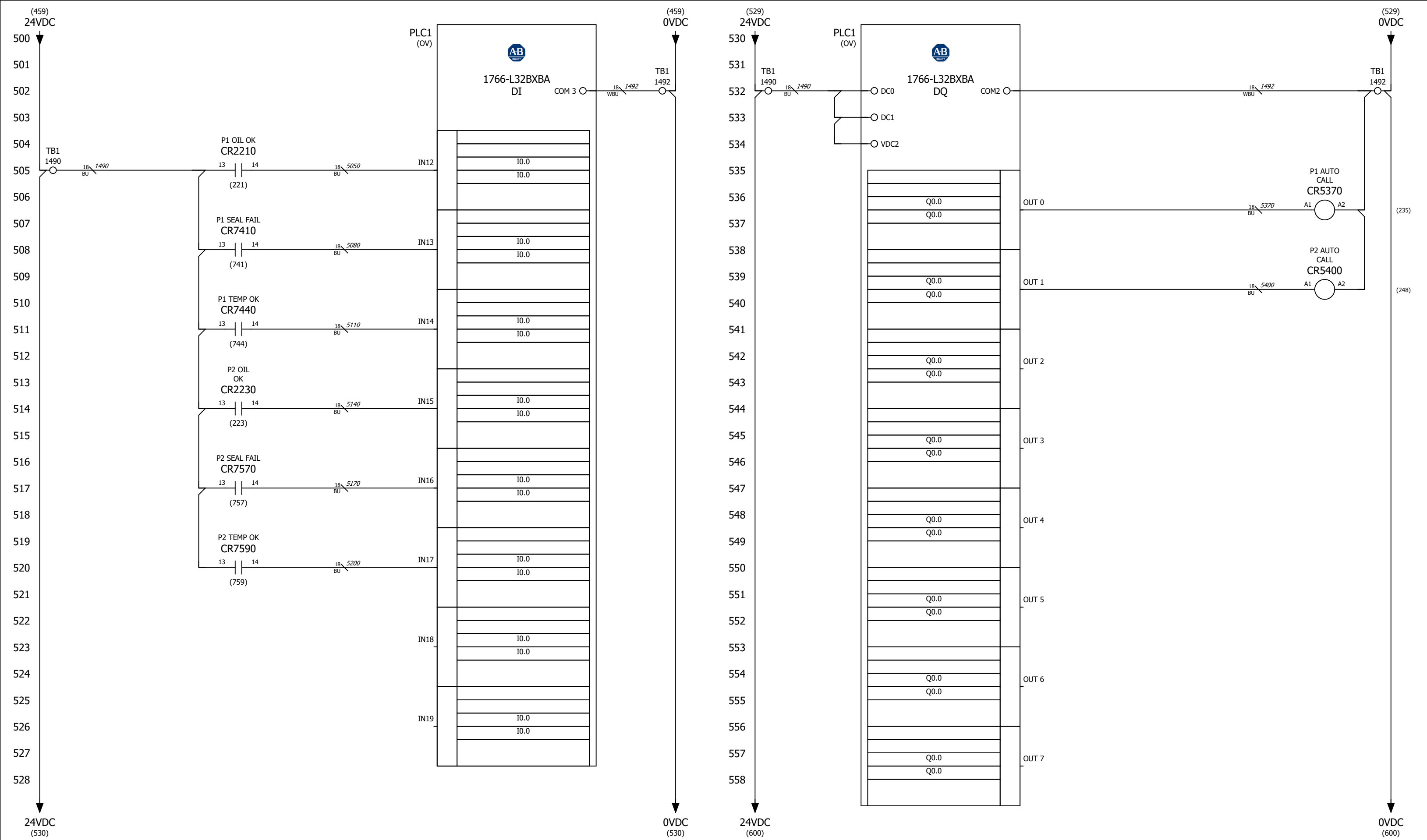


**Page Description**  
DUPLEX CHOPPER PUMP CP  
Control Panel  
Wiring Schematics

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Drawing Number: 12419SYS1CPEC  
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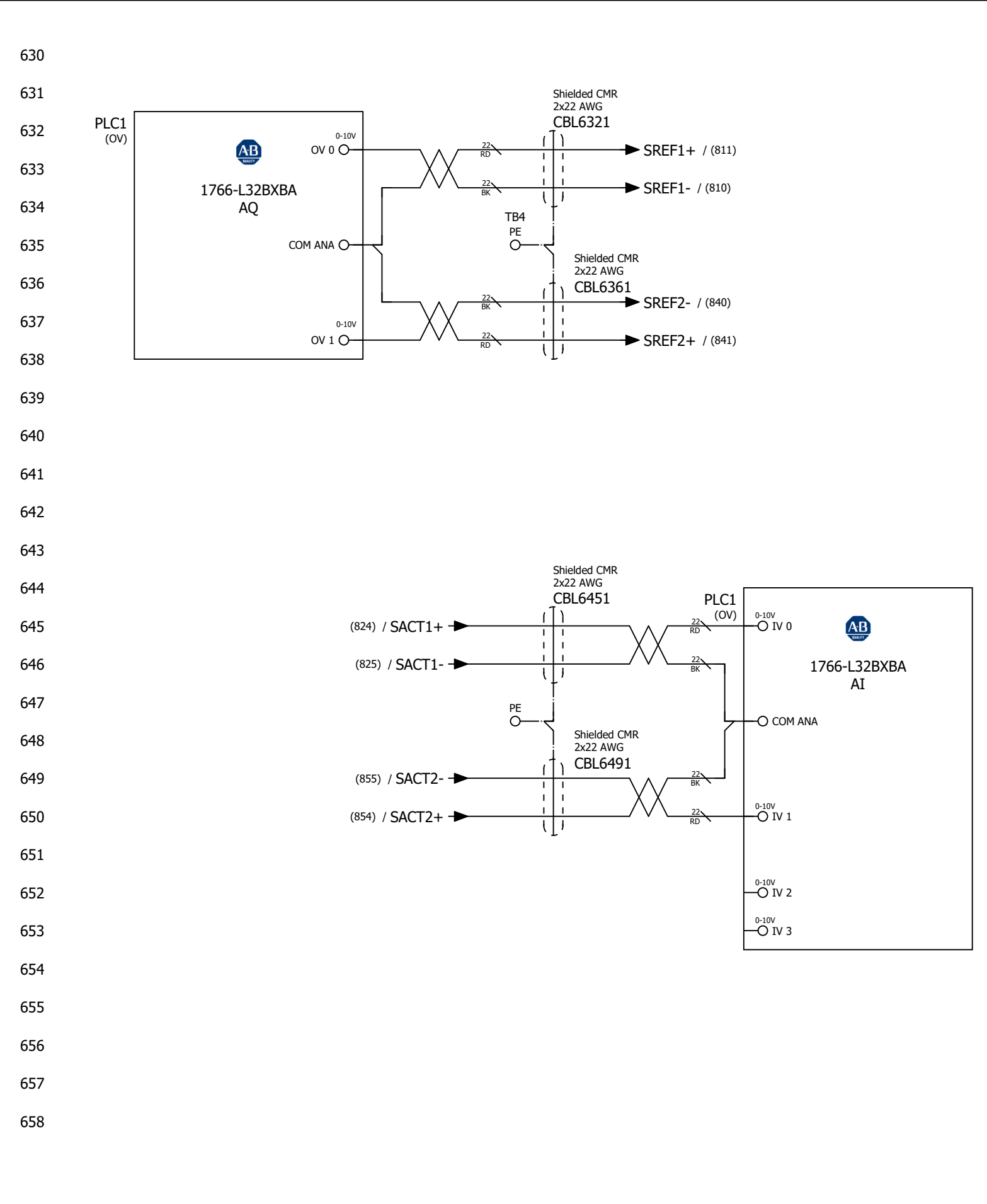
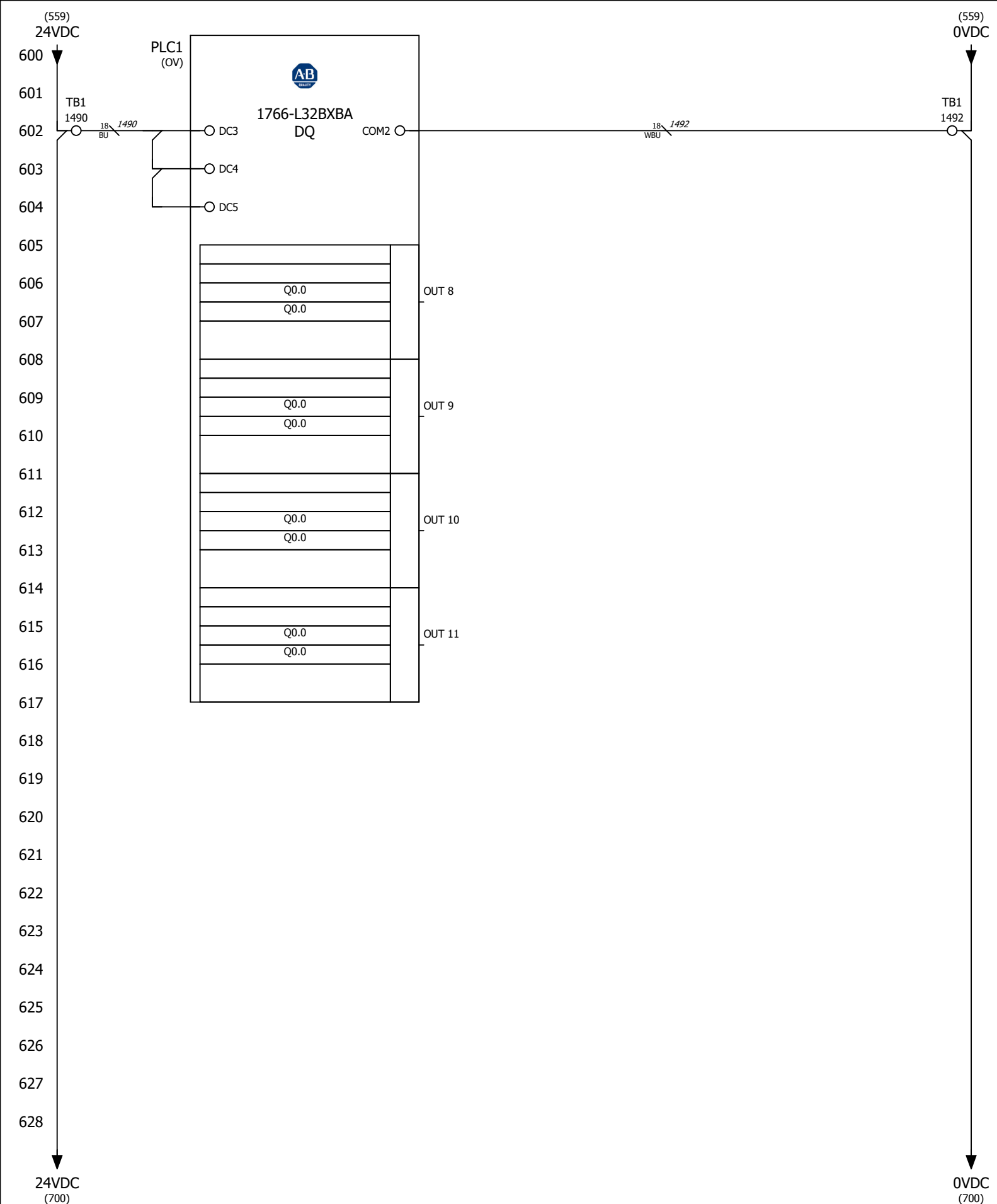
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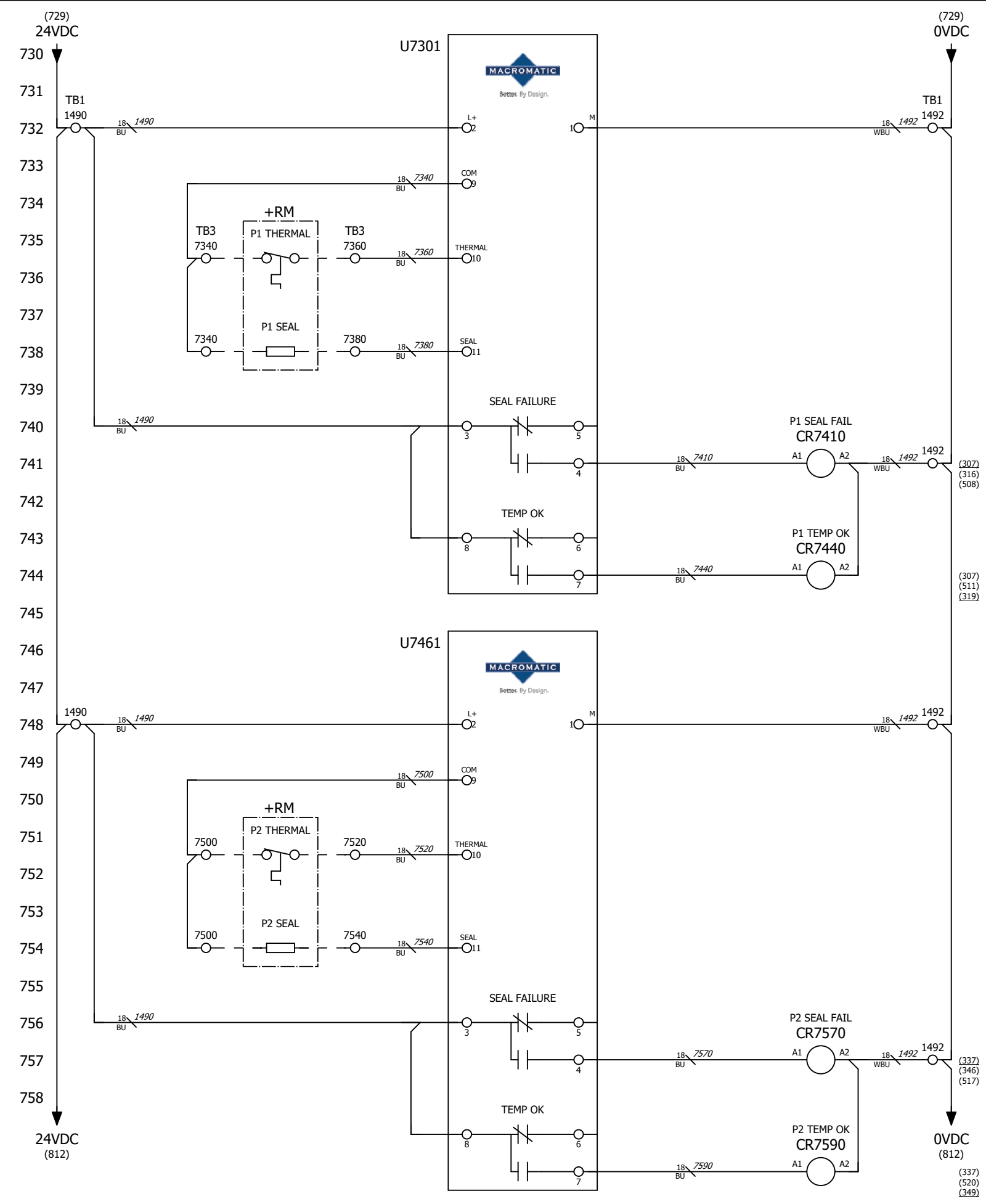
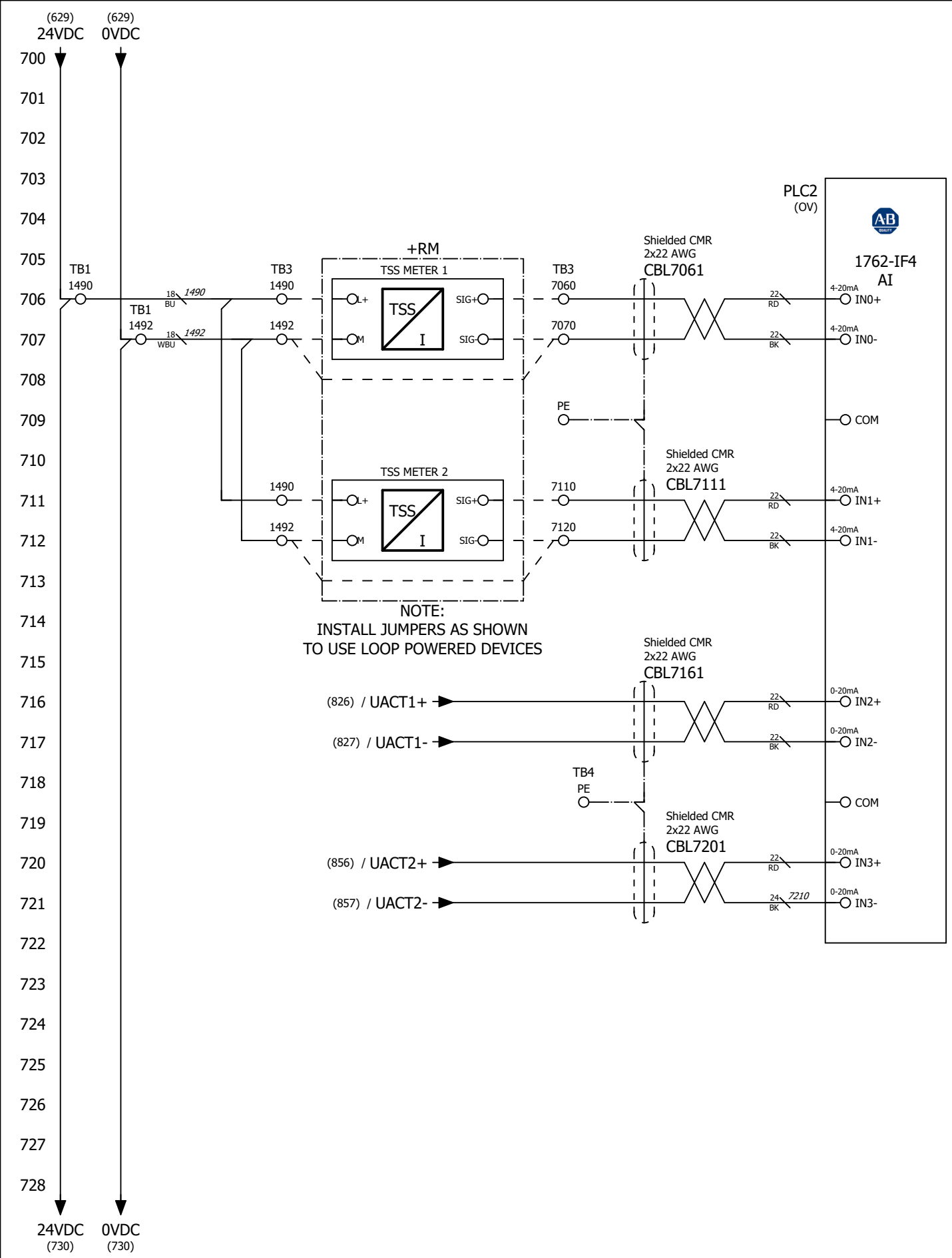
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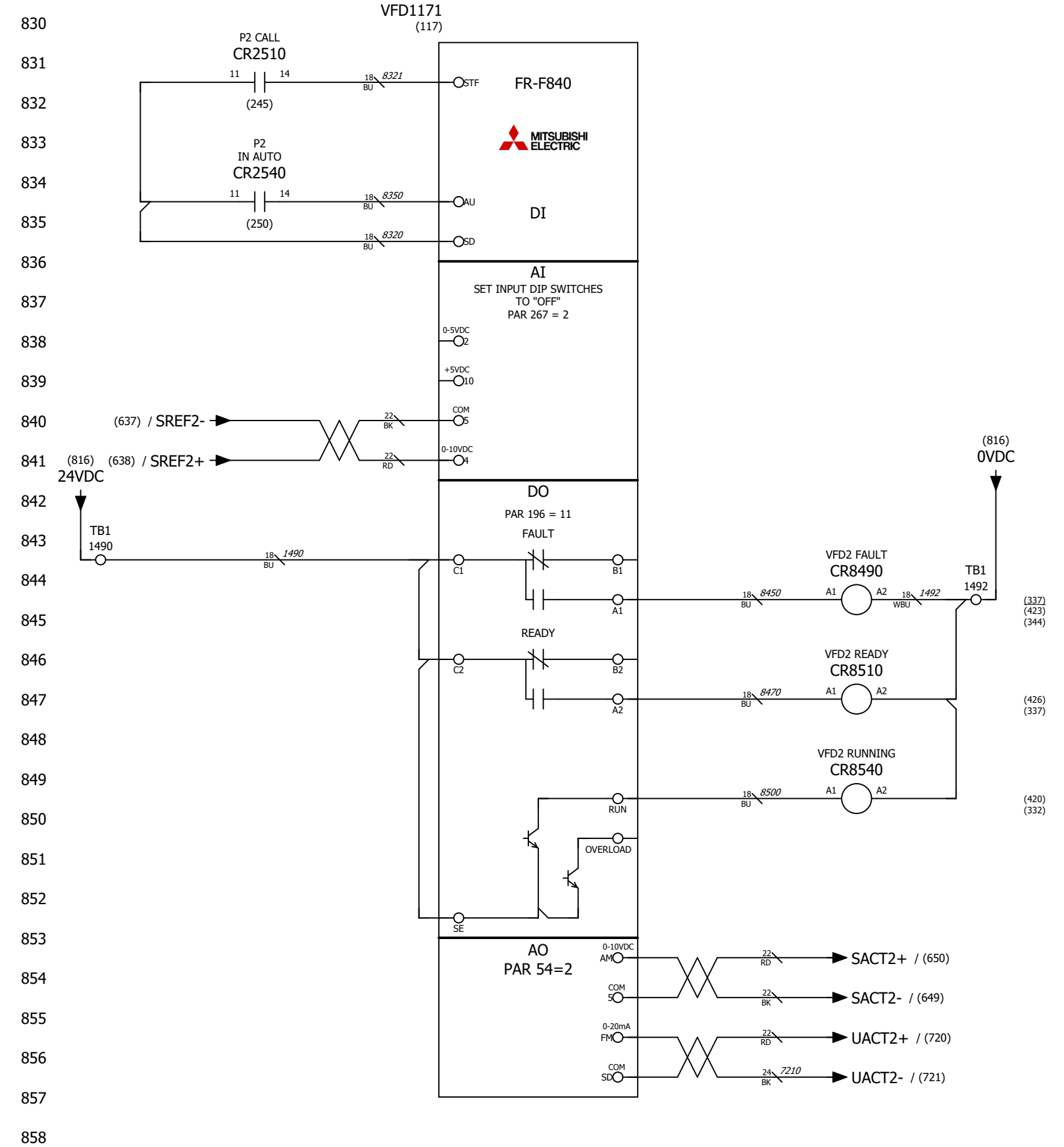
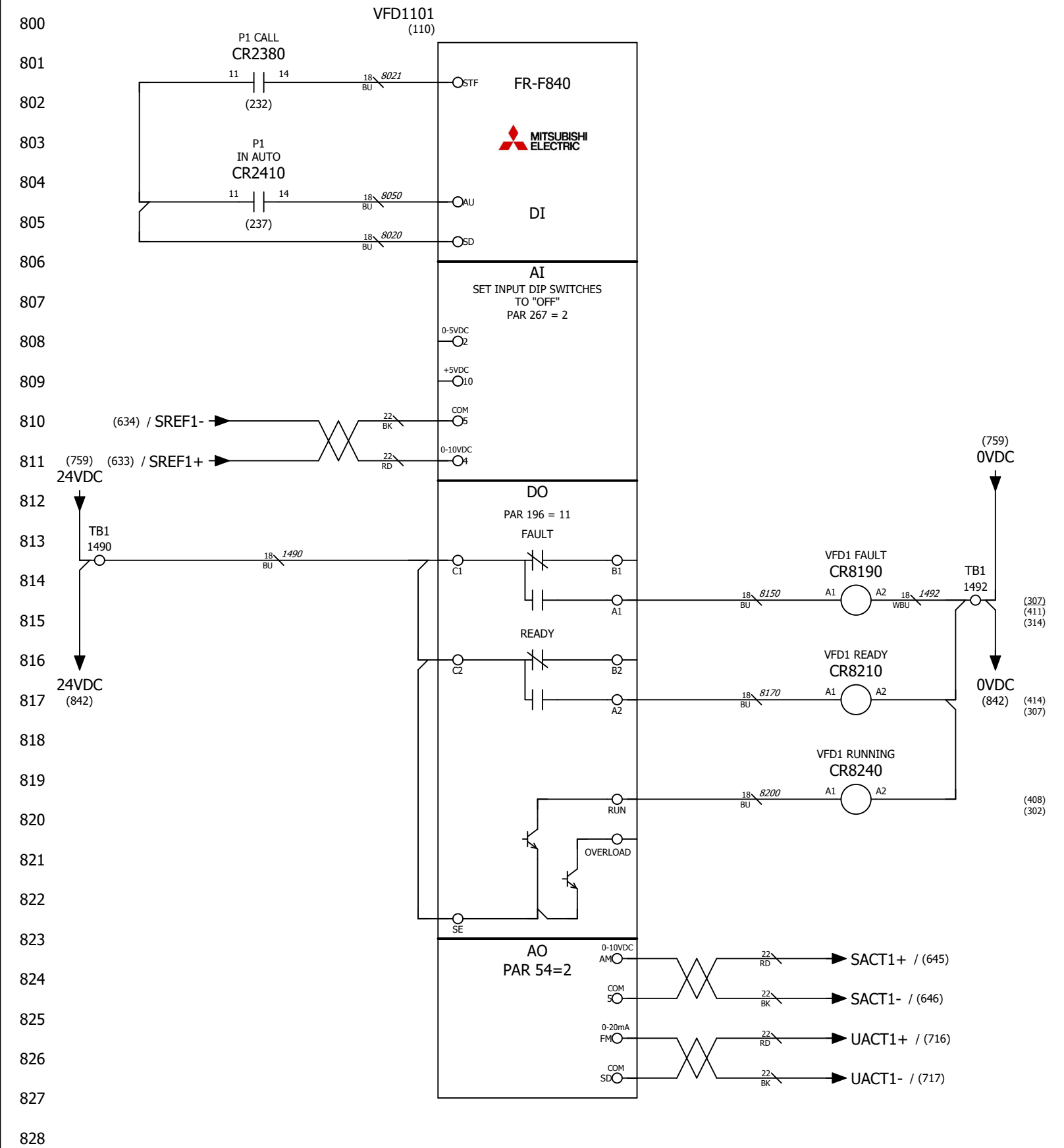
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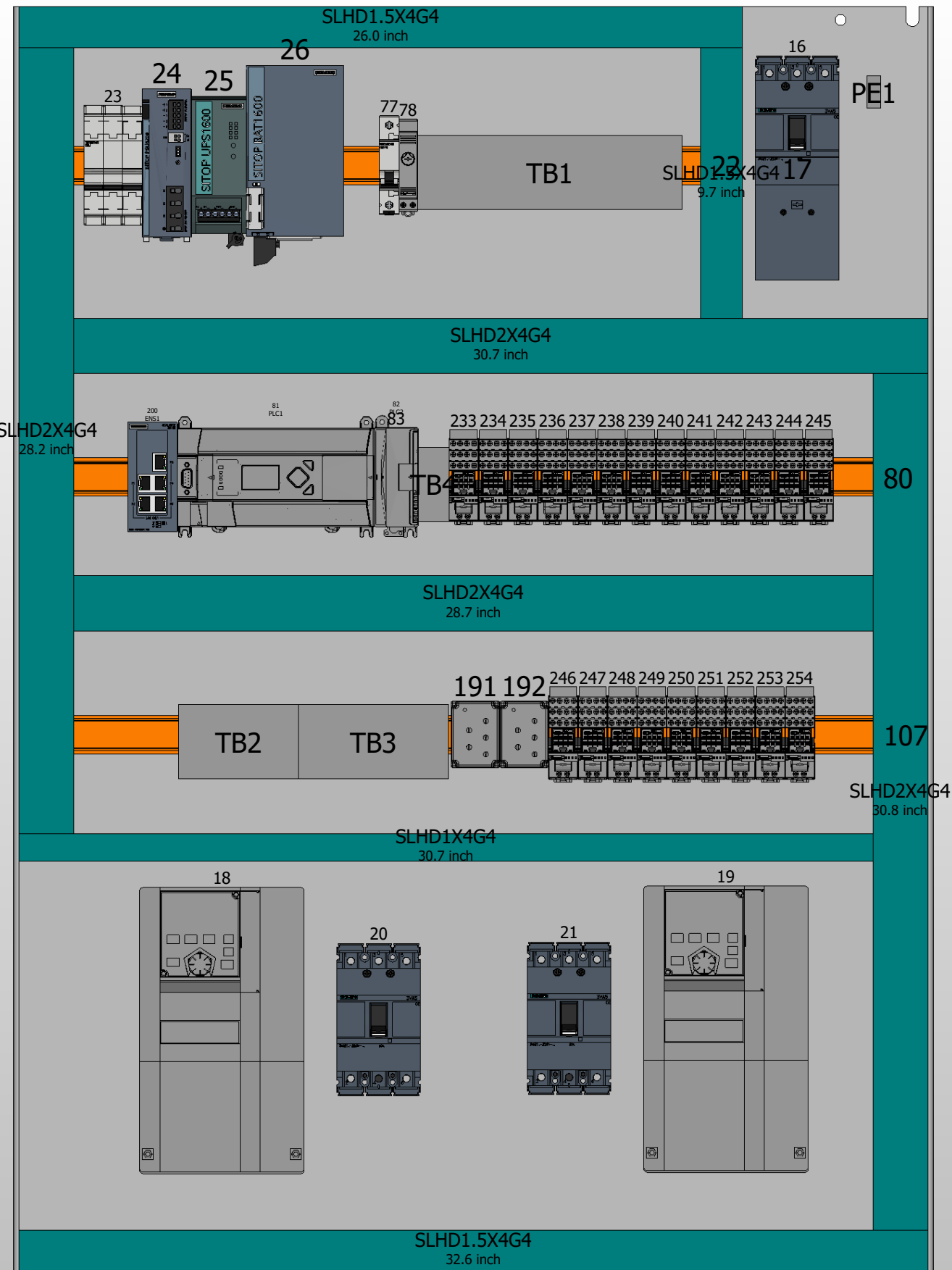
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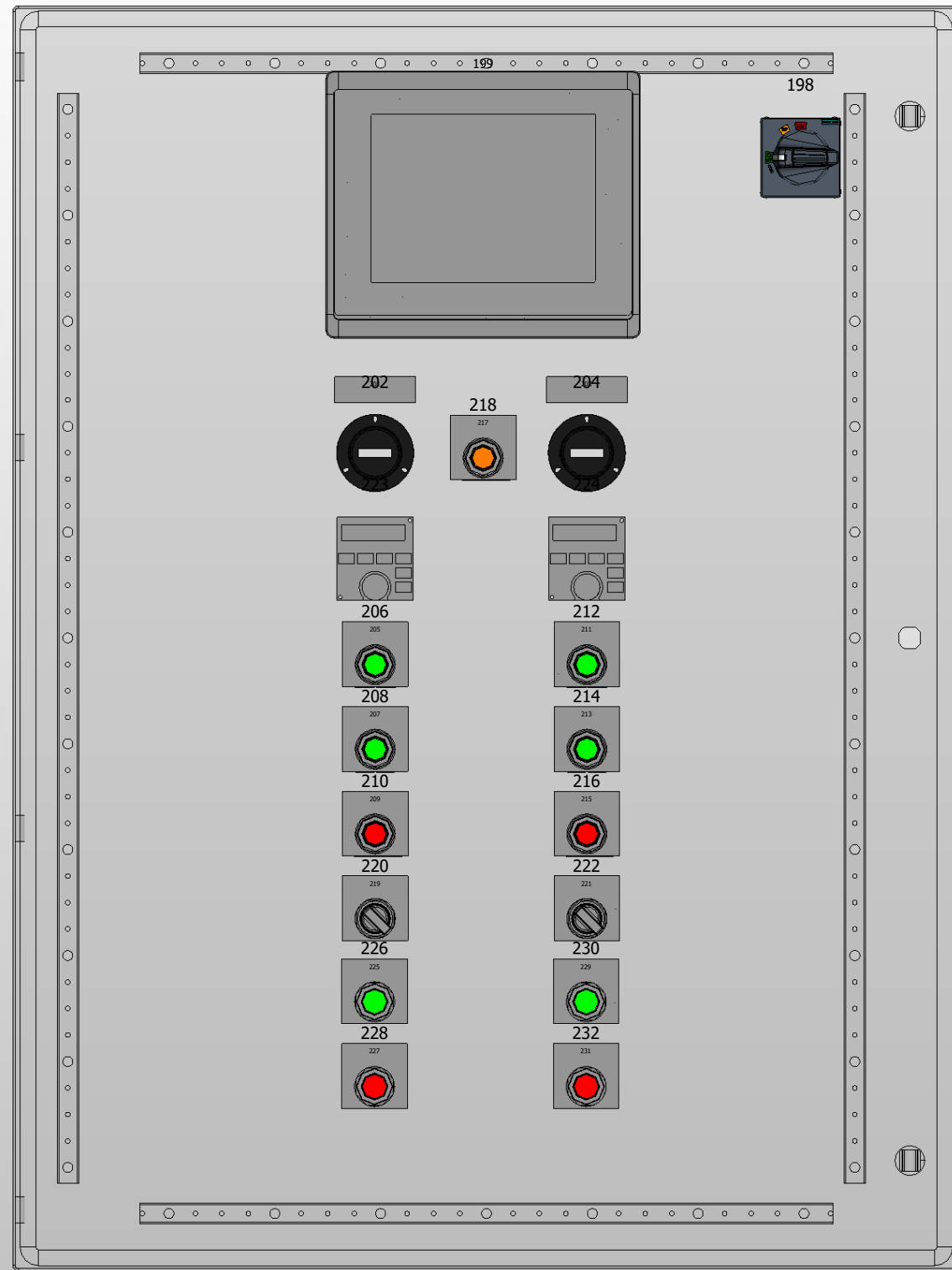
# Mounting Panel



# Enclosure legend

Item number	Device tag	Type number	Function Text
16	CB1070	3VA5160-4ED31-0AA0	Main Circuit Breaker
17	CB1070	3VA9133-0JF60	Main Circuit Breaker
18	VFD1101	FR-F840-00083-3-N6	VFD 1 CONTROL PANEL
19	VFD1171	FR-F840-00083-3-N6	VFD 2 CONTROL PANEL
20	CB1120	3VA5195-4ED31-0AA0	MCCB_UL_FS125_15A_3P_25KA_TM_FTFM
21	CB1190	3VA5195-4ED31-0AA0	MCCB_UL_FS125_15A_3P_25KA_TM_FTFM
23	CB1310	5SJ4304-7HG42	CIRCUIT BREAKER 10KA, 3POLE, C, 4A
24	T1330	6EP3434-7SB00-3AX0	SITOP PSU6200 3ph 24 V/10 A
25	K1491	6EP4134-3AB00-0AY0	SITOP UPS1600
26	BATT1401	6EP4133-0GA00-0AY0	SITOP BAT1600
77	CB2270	5SY4102-7	CIRCUIT BREAKER 230/400V 10KA, 1-POLE, C, 2A, D=70MM
78	EC2270	7T.81.0.000.2303	Thermostat
81	PLC1	1766	MicroLogix 1400
82	PLC2	1762	MicroLogix 4 Point Analog Input Module
83			
156	=SYS1+CP-TB4	BAZ1	End Stops - 5.2 mm 0.205 in spacing
191	U7301	TCP7G250	Rail Mount Seal/Thermal Pump Protection Module 24VDC
192	U7461	TCP7G250	Rail Mount Seal/Thermal Pump Protection Module 24VDC
200	ENS1	6GK5005-0BA00-1AB2	SCALANCE XB005
233	CR2160	58.34.9.24.0050	LOW SUCTION
234	CR2180	58.34.9.24.0050	LOW SUCTION
235	CR2210	58.34.9.24.0050	P1 OIL OK
236	CR2230	58.34.9.24.0050	P2 OIL OK
237	CR2380	58.34.9.24.0050	P1 CALL
238	CR2410	58.34.9.24.0050	P1 IN AUTO
239	CR2510	58.34.9.24.0050	P2 CALL
240	CR2540	58.34.9.24.0050	P2 IN AUTO
241	CR3151	58.34.9.24.0050	P1 FAULT
242	CR3451	58.34.9.24.0050	P2 FAULT
243	CR5370	58.34.9.24.0050	P1 AUTO CALL
244	CR5400	58.34.9.24.0050	P2 AUTO CALL
245	CR7410	58.34.9.24.0050	P1 SEAL FAIL
246	CR7440	58.34.9.24.0050	P1 TEMP OK
247	CR7570	58.34.9.24.0050	P2 SEAL FAIL
248	CR7590	58.34.9.24.0050	P2 TEMP OK
249	CR8190	58.34.9.24.0050	VFD1 FAULT
250	CR8210	58.34.9.24.0050	VFD1 READY
251	CR8240	58.34.9.24.0050	VFD1 RUNNING
252	CR8490	58.34.9.24.0050	VFD2 FAULT
253	CR8510	58.34.9.24.0050	VFD2 READY
254	CR8540	58.34.9.24.0050	VFD2 RUNNING
255	=SYS1+CP-TB1	BAZ1	End Stops - 5.2 mm 0.205 in spacing
302	=SYS1+CP-TB2	BAZ1	End Stops - 5.2 mm 0.205 in spacing
323	=SYS1+CP-TB3	BAZ1	End Stops - 5.2 mm 0.205 in spacing

## Door Layout



## Enclosure legend

Item number	Device tag	Type number	Function Text
198	CB1070	3VA9137-0FK21	Main Circuit Breaker
199	HMI1	2711	PanelView Plus 7 Graphic Terminal
202	ETM3020	732-0001	P1 ETM
204	ETM3320	732-0001	P2 ETM
206	LT3040	52PT6D3AB	P1 RUNNING LAMP
208	LT3070	52PT6D3AB	P1 READY LAMP
210	LT3100	52PT6D2AB	P1 FAULT LAMP
212	LT3340	52PT6D3AB	P2 RUNNING LAMP
214	LT3370	52PT6D3AB	P2 READY LAMP
216	LT3400	52PT6D2AB	P2 FAULT LAMP
218	LT3530	52PT6D9AB	LOW SUCTION LAMP
220	S2320	52SA2BAB	P1 HOA SWITCH
222	S2450	52SA2BAB	P2 HOA SWITCH
223	VFD1101	FR-DU08_PANEL_MOUNT	VFD 1 CONTROL PANEL
224	VFD1171	FR-DU08_PANEL_MOUNT	VFD 2 CONTROL PANEL
226	PB2321	52PA8A3K	P1 START PB
228	PB2320	52PM8A2J	P1 STOP PB
230	PB2451	52PA8A3K	P2 START PB
232	PB2450	52PM8A2J	P2 STOP PB

# Control Panel Parts

Order number	Devices	Description	Quantity	Supplier	Order number	Devices	Description	Quantity	Supplier
2711P-T10C22D9P	HMI1	PanelView Plus 7 Performance Terminal, Touch Screen,10 SVGA, TFT Color, Ethernet DLR, 24V DC, Windows CE OS License Pro, Performance Model	1		5898	CBL1	CAT6ACable-1ft Blue	1	MON
1766-L32BXBA	PLC1	MicroLogix 1400, 12 digital fast 24V dc inputs, 8 digital 24V dc inputs, 6 relay outputs, 3 fast 24V dc outputs, 3 normal 24V dc outputs, 4 Analog (12 bits) inputs, 2 Analog (12 bits) outputs, 24V dc power	1	A-B	2307	CBL2	CAT6 Cable-7ft Purple	1	MON
1762-IF4	PLC2	1762 MicroLogix 1200 System, 4 Channel Current/Voltage Analog Input Module	1	A-B	2/OT	PE1	Dual Rated Mechanical Lug- #14-2/0	2	NSI
TS 35_7,5	2; 7; 11	DIN Rail	3	ABB	732-0001	ETM3020; ETM3320	Hour Meter, Electromechanical	2	RED
1SNK900002R0000	TB1...TB4	Terminal Block Accessory - End Stops BAZ1 Width: 5.2 mm, 0.205 in Color: Dark Grey	7	ABB	8017588	1	Compact enclosures WM	1	RIT
1SNK705011R0000	TB1...TB3	Feed-through Terminal Blocks Feed-through with 3 connections Connection type: PI-Spring Cross section: 0.22 ... 2.5 mm² Width: 5.2 mm, 0.205 in Color: Grey Assembly: TH 35-7.5, TH 35-15	84	ABB	3239124	FAN2271	24 V -8"x 8", 61.8 cfm	1	RIT
1SNK705151R0000	TB1; TB3; TB4	Feed-through Terminal Blocks Connection type: Screw Clamp Cross section: 0.22-4 mm² Width: 5.2 mm, 0.205 in Color: Grey Assembly: TH 35-7.5, TH 35-15	7	ABB	3239200	FAN2271	SK Outlet filter, for fan-and-filter units, WHD: 204x204x24 mm	1	RIT
1SNK705911R0000	TB1; TB3; TB4	Terminal Block Accessory - End Sections Width: 2 mm, 0.079 in Color: Dark grey	3	ABB	6EP4133-0GA00-0AY0	BATT1401	SITOP BAT1600 BATTERY MODULE WITH MAINTENANCE-FREE CLOSED LEAD-ACID BATTERY DC 24 V 3.2 Ah Pb battery module for SITOP UPS1600	1	
5500FE 008U1000	CBL6321; CBL6361; CBL6451; CBL6491; CBL7061; CBL7111; CBL7161; CBL7201	22 AWG bare copper conductors, PP insulation, cabled, Beldfoil® shield tape (foil side out) with drain wire, PVC jacket with ripcord. Sequential footage marking every two feet.	8	BEL	3VA5160-4ED31-0AA0	CB1070	CIRCUIT BREAKER 3VA5 UL FRAME 125 BREAKING CAPACITY CLASS S 25KA 480 V 3-POLE, LINE PROTECTION TM230, FTFM, IN=60A OVERLOAD PROTECTION IR=60A FIXED SHORT CIRCUIT PROTECTION II=5...10 X IN W/O CONNECTION	1	SIE
Cust.Leg.1x3	ETM3020; ETM3320	Custom Legend Plate, 1x3	2	ESG	3VA9133-0JB11	CB1070	WIRE CONNECTOR/ 3 PCS. ACCESSORY FOR: 3VA4/5 125	1	SIE
Cust.Leg.30mm	LT3040; LT3070; LT3100; LT3340; LT3370; LT3400; LT3530; PB2320; PB2321; PB2450; PB2451; S2320; S2450	Custom Legend 30mm	13	ESG	3VA9133-0JF60	CB1070	DISTRIBUTION WIRE CONNECTOR 6 CABLES 3 PCS. ACCESSORY FOR: PLUG-IN / DRAW-OUT 3VA5 125	1	SIE
58.34.9.24.0050	CR2160; CR2180; CR2210; CR2230; CR2380; CR2410; CR2510; CR2540; CR3151; CR3451; CR5370; CR5400; CR7410; CR7440; CR7570; CR7590; CR8190; CR8210; CR8240; CR8490; CR8510; CR8540	Modular interface relay, screw terminal - 4 pole, 7 A - DC - 24 V - AgNi - Standard for DC: green LED + diode (polarity +A1)	22	FIN	3VA9137-0FK21	CB1070	DOOR MOUNTED ROTARY OPERATOR STANDARD IEC IP65 WITH DOOR INTERLOCKING ACCESSORY FOR: 3VA4/5 125	1	SIE
7T.81.0.000.2303	EC2270	Cooling Thermostat	1	FIN	3VA5195-4ED31-0AA0	CB1120; CB1190	CIRCUIT BREAKER 3VA5 UL FRAME 125 BREAKING CAPACITY CLASS S 25KA 480 V 3-POLE, LINE PROTECTION TM210, FTFM, IN=15A OVERLOAD PROTECTION IR=15A FIXED SHORT CIRCUIT PROTECTION II=10 X IN W/O CONNECTION	2	SIE
TCP7G250	U7301; U7461	Macromatic Pump Protecton / Monitoring Module 24VDC	2	MAC	3VA9133-0JB10	CB1120; CB1190	CONNECTOR LUG TERMINAL KIT FOR 3VA5 BREAKERS, 14-8AWG	4	SIE
70170-D	U7301; U7461	11-pin Socket	2	MAC	5SJ4304-7HG42	CB1310	CIRCUIT BREAKER 10KA, 3POLE, C, 4A ACC. TO UL 489 - 480Y/277V	1	SIE
FR-F840-00083-3-N6	VFD1101; VFD1171	Product Series: F800	2	MIT	5SY4102-7	CB2270	CIRCUIT BREAKER 230/400V 10KA, 1-POLE, C, 2A, D=70MM	1	SIE
					6GK5005-0BA00-1AB2	ENS1	SCALANCE XB005 UNMANAGED INDUSTRIAL ETHERNET SWITCH FOR 10/100MBIT/S; WITH 5 X 10/100MBIT/S TWISTED PAIR- PORTS WITH RJ45-SOCKETS; FOR CONFIGURING SMALL STAR- AND LINE TOPOGRAPHIES; LED-DIAGNOSIS, IP20, 24 V DC POWER SUPPLY, INCL. MANUAL	1	SIE
					6EP4134-3AB00-0AY0	K1491	SITOP UPS1600 10A UNINTERRUPTIBLE POWER SUPPLY INPUT: 24 V DC OUTPUT: 24 V/10 A DC	1	SIE

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Page Description  
DUPLEX CHOPPER PUMP CP  
Control Panel  
Control Panel Parts List

Function Code  
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Location Code  
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Drawing Number: 12419SYS1CPPRT

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Page 1 / 2

# Control Panel Parts

Order number	Devices	Description	Quantity	Supplier
52PT6D3AB	LT3040; LT3070; LT3340; LT3370	30mm Command/52, Chrome Finish Heavy Duty, Watertight/Oiltight Complete Metal Unit PTT / Illuminated Pushbutton Full Voltage, 24V AC/DC LED Lamp Extended Button Plastic Lens, Green 2 Position Momentary with 1 N.O. - 1 N.C. Heavy Duty Contacts, A600/P600 UL Listed, CSA Certified NEMA 1,3,3R,4,4X,12,13 & Automotive Standards	4	SIE
52PT6D2AB	LT3100; LT3400	30mm Command/52, Chrome Finish Heavy Duty, Watertight/Oiltight Complete Metal Unit PTT / Illuminated Pushbutton Full Voltage, 24V AC/DC LED Lamp Extended Button Plastic Lens, Red 2 Position Momentary with 1 N.O. - 1 N.C. Heavy Duty Contacts, A600/P600 UL Listed, CSA Certified NEMA 1,3,3R,4,4X,12,13 & Automotive Standards	2	SIE
52PT6D9AB	LT3530	30mm Command/52, Chrome Finish Heavy Duty, Watertight/Oiltight Complete Metal Unit PTT / Illuminated Pushbutton Full Voltage, 24V AC/DC LED Lamp Extended Button Plastic Lens, Amber 2 Position Momentary with 1 N.O. - 1 N.C. Heavy Duty Contacts, A600/P600 UL Listed, CSA Certified NEMA 1,3,3R,4,4X,12,13 & Automotive Standards	1	SIE
52PM8A2J	PB2320; PB2450	Class 52, Metal Pushbutton 2 pos, Flush, Red, 1NO	2	SIE
52PA8A3K	PB2321; PB2451	Class 52, Metal Pushbutton 2 pos, Flush, Green, 1NO	2	SIE
ECGB5	PE2	Ground Bar	1	SIE
52SA2BAB	S2320; S2450	Class 52 Selector Switch, Maintained B CAM Short Lever	2	SIE
52BJK	S2320; S2450	Class 52 Contact Block NONC	6	SIE
6EP3434-7SB00-3AX0	T1330	SITOP PSU6200 3ph 24 V/10 A STABILIZED POWER SUPPLY INPUT: 3ph AC 400-500 V/DC 500-550 V OUTPUT: DC 24 V/10 A Signaling contact: DC o.k./Diagnostics interface	1	
SLHD1.5X4G4	3; 5; 13	High density Wire way 1.5X4	3	TYT
SLHD2X4G4	4; 8...10	High density Wire way 2X4	4	TYT
SLHD1X4G4	14	High density Wire way 1X4	1	TYT

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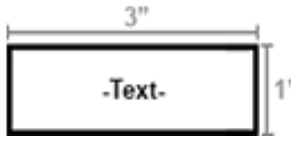
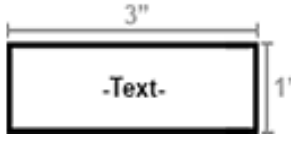
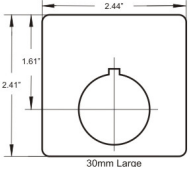
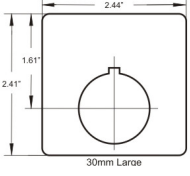
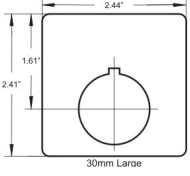
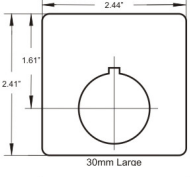
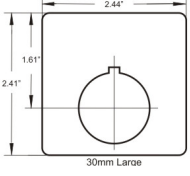
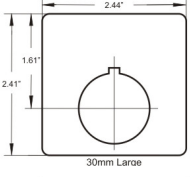
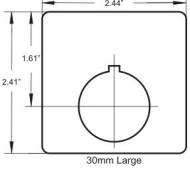
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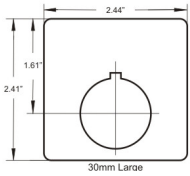
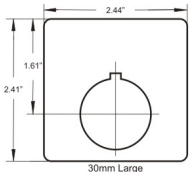
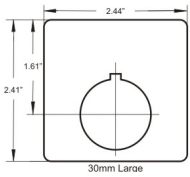
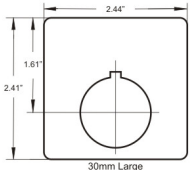
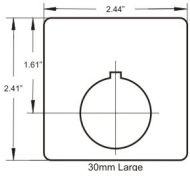
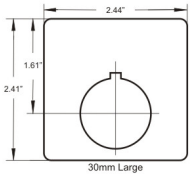
Function Code  
=SYS1  
Location Code  
+CP  
Drawing Number: 12419SYS1CPPRT

Document Code & PRT  
Page 2 / 2



# Device Legends Report

Device tag Function Text Part Number	Engraving Text Material & Color	X-Ref	Legend Size
-ETM3020 P1 ETM ESG.LegendRect1x3	PUMP 1 Phenolic/	(EC302)	
-ETM3320 P2 ETM ESG.LegendRect1x3	PUMP 2 Phenolic/	(EC332)	
-LT3040 P1 RUNNING LAMP ESG.Legend30mm	RUNNING Phenolic/	(EC304)	
-LT3070 P1 READY LAMP ESG.Legend30mm	READY Phenolic/	(EC307)	
-LT3100 P1 FAULT LAMP ESG.Legend30mm	FAULT Phenolic/	(EC311)	
-LT3340 P2 RUNNING LAMP ESG.Legend30mm	RUNNING Phenolic/	(EC334)	
-LT3370 P2 READY LAMP ESG.Legend30mm	READY Phenolic/	(EC337)	
-LT3400 P2 FAULT LAMP ESG.Legend30mm	FAULT Phenolic/	(EC341)	
-LT3530 LOW SUCTION LAMP ESG.Legend30mm	LOW SUCTION Phenolic/	(EC351)	

Device tag Function Text Part Number	Engraving Text Material & Color	X-Ref	Legend Size
-PB2320 P1 STOP PB ESG.Legend30mm	STOP Phenolic/	(EC232)	
-PB2321 P1 START PB ESG.Legend30mm	START Phenolic/	(EC232)	
-PB2450 P2 STOP PB ESG.Legend30mm	STOP Phenolic/	(EC245)	
-PB2451 P2 START PB ESG.Legend30mm	START Phenolic/	(EC245)	
-S2320 P1 HOA SWITCH ESG.Legend30mm	HAND OFF AUTO Phenolic/	(EC232)	
-S2450 P2 HOA SWITCH ESG.Legend30mm	HAND OFF AUTO Phenolic/	(EC245)	

**TAB 3:**

**PARTS & SERVICE CENTERS**



# **PARTS & SERVICE CENTERS**

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## **PARTS:**

**WC Equipment Sales  
Suite 200  
4324 Brogdon Exchange  
Suwanee, GA 30024  
Phone: 678-730-0997  
Fax: 770-614-5992**

## **SERVICE:**

**WC Equipment Sales  
Suite 200  
4324 Brogdon Exchange  
Suwanee, GA 30024  
Phone: 678-730-0997  
Fax: 770-614-5992**

## **MANUFACTURERS:**

**VAUGHAN COMPANY INC.  
364 MONTE-ELMA ROAD  
MONTESANO, WA 98563  
PHONE: 360-249-4042  
FAX: 360-249-6155**

**ENGINEERED SYSTEMS GROUP, LLC  
4485 COMMERCE DR, SUTE 107  
BUFORD, GA 30518  
PHONE: 678-765-0985**