

The **NORCHEM POWDERCAT MODEL NP-4250** automatic dry polymer system is designed to process 1000 to 5000 lbs/day of dry polymer at 0.1 to 0.5 % solution concentrations. The NP-4250 system is modular in design consisting of polymer wetting module, control panel, volumetric feeder and booster assembly.

**POWDERCAT MODEL NP-4250 DRY POLYMER SYSTEM SPECIFICATIONS**

<b>FRAME:</b>	<b>BASE:</b> <b>CONSTRUCTION:</b>	<b>36" W x 50" L x 38" H</b> <b>304SS BASE</b>
<b>DRY FEEDER:</b>	<b>TYPE:</b> <b>DRIVE / MOTOR:</b>	<b>VOLUMETRIC w/FLEXLINER AGITATION, 0.0 TO 30.0 CU/FT HR</b> <b>1/2 HP AC DRIVE, 1/2 HP, 0-160 RPM TENV MOTOR</b>
<b>PROCESS MODULE:</b>	<b>PPM:</b> <b>MOTOR RATING:</b>	<b>STAINLESS STEEL UPPER / LOWER HOUSING, ROTOR AND DRIVE</b> <b>STAINLESS STEEL HERMETICALLY SEALED CHEMICAL SERVICE</b> <b>1 1/2 HP, 3450 RPM, STAINLESS STEEL ROTOR AND HOUSING</b>
<b>SYSTEM CAPACITY:</b>	<b>WETTING RATE:</b> <b>DRY LBS/DAY:</b> <b>PRIMARY FILL:</b> <b>SECONDARY FILL:</b> <b>TOTAL FILL RATE:</b>	<b>0 TO 30.0 LBS/MIN</b> <b>1000 LBS @ 0.1% / 5000 LBS @ 0.5% SOLUTION CONCENTRATION</b> <b>250 GPM</b> <b>NONE</b> <b>250 GPM</b>
<b>PANEL/CONTROLS:</b>	<b>NEMA 12:</b>	<b>ALLEN-BRADLEY 1500 PLC, CONTACTORS, SWITCHES, RELAYS;</b> <b>CONDUCTIVITY LEVEL CONTROL, WATER PRESSURE SWITCH</b>
<b>UTILITIES:</b>	<b>ELECTRICAL:</b> <b>WATER:</b>	<b>480/3/60 60 AMP</b> <b>50 – 100 PSI, 300 GPM CLEAN SOURCE</b>
<b>OPTIONS:</b>	<b>PANEL:</b> <b>LEVEL:</b> <b>STORAGE:</b>  <b>LOW POLYMER:</b>	<b>NEMA 4X, PANELVIEW INTERFACE, LOCAL/REMOTE STATIONS</b> <b>ANALOG 4-20 mA, NON-CONTACT LEVEL CONTROLLERS</b> <b>1.0 THRU 10.0 CU/FT EXTENTION HOPPERS, DUSTLESS BAG</b> <b>LOADERS, FBIC INTERFACE HOPPER W/ IRIS VALVE, BAG FRAME</b> <b>CAPACITANCE SENSOR WITH SS HOPPER PROBE</b>

Dry capacities are based on a polymer hydration time of 50 minutes. This processing model achieves 24 cycles within a 24-hour period. Increased mix times will decrease daily capacities. Factors affecting polymer solubility (mix time) are water temperature, molecular weight/charge and particle rheology.

**ENGINEERING SPECIFICATIONS:**

**POWDERCAT** Model NP-4250 shall be provided to meter, dynamically wet and transfer dry form polymer using a motorized disperser capable of processing 0-30 lbs/min of dry polymer and transferring the mixture at 250 gpm to an agitated mix tank. The NP-4250 shall be modular in design consisting of a volumetric feeder, motorized polymer processing module, secondary motive dilution header, inlet water valve and pressure sensor all of which is integrally mounted to a stainless steel frame. The volumetric polymer feeder shall be modular in design with a stainless steel exterior frame and a mechanically agitated flex liner. The system shall be designed to feed and transfer polymer/polymer mixture without the use of reserve pumps or pneumatic blowers. The polymer-processing module shall consist of an all stainless steel housing with an upper and lower flow chamber. The lower chamber shall contain a hermetically sealed stainless steel motor and housing assembly designed for chemical duty service. The upper chamber shall contain a flow divider, weir and induced air scrubber to contain small polymer dust particles. The polymer shall fall directly into the center of the rotor for rapid dispersion and wetting. No pre-wetting of the polymer is permitted. At no time shall the rotor become hydraulically enveloped. The control panel shall include a programmable logic controller, contactors for all motors, agitators and transfer devices, circuit breakers, phase loss monitors, motor drives, relays, timers and level control circuits necessary for the proper operation of the system.

**PLAN &  
ELEVATION**

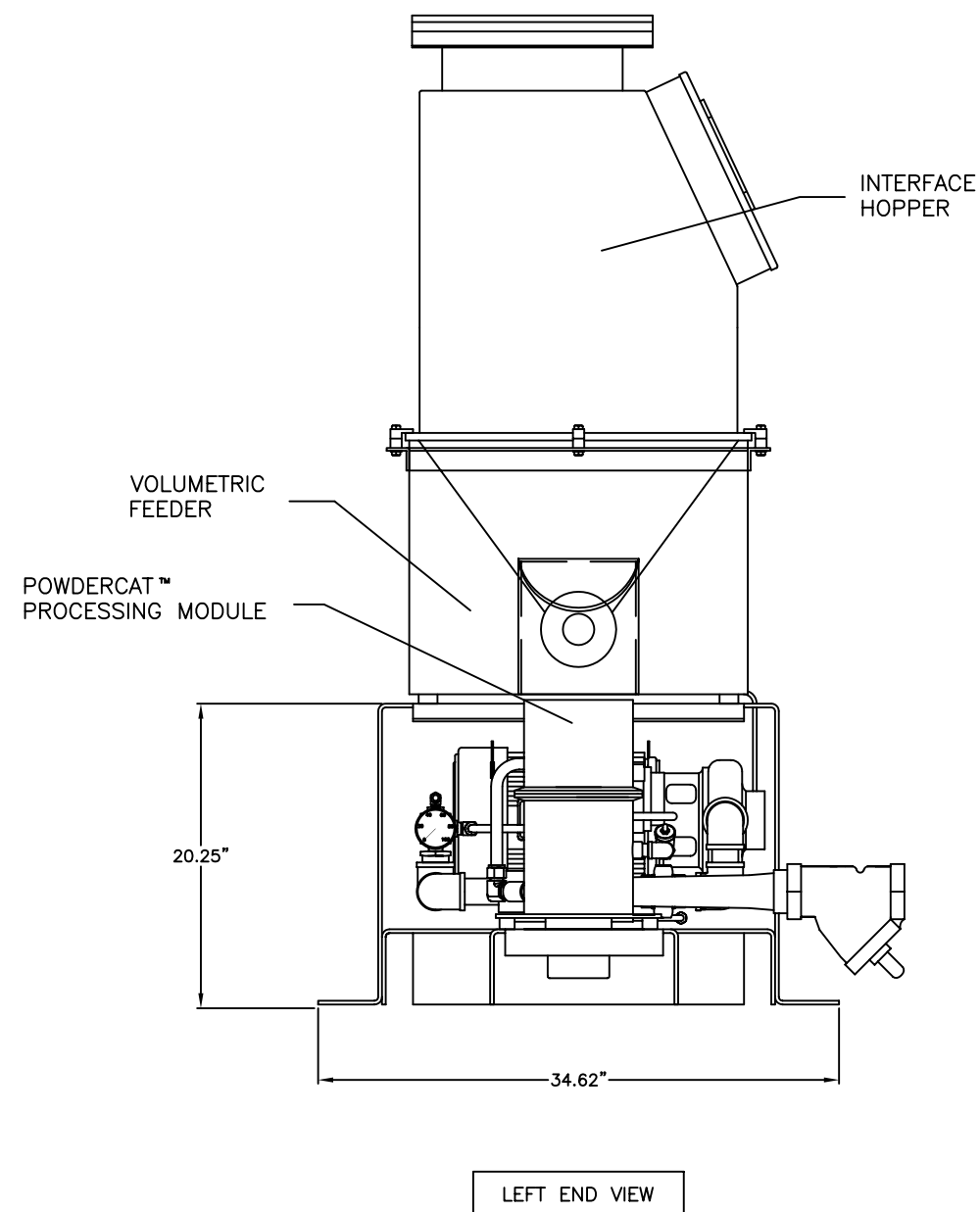
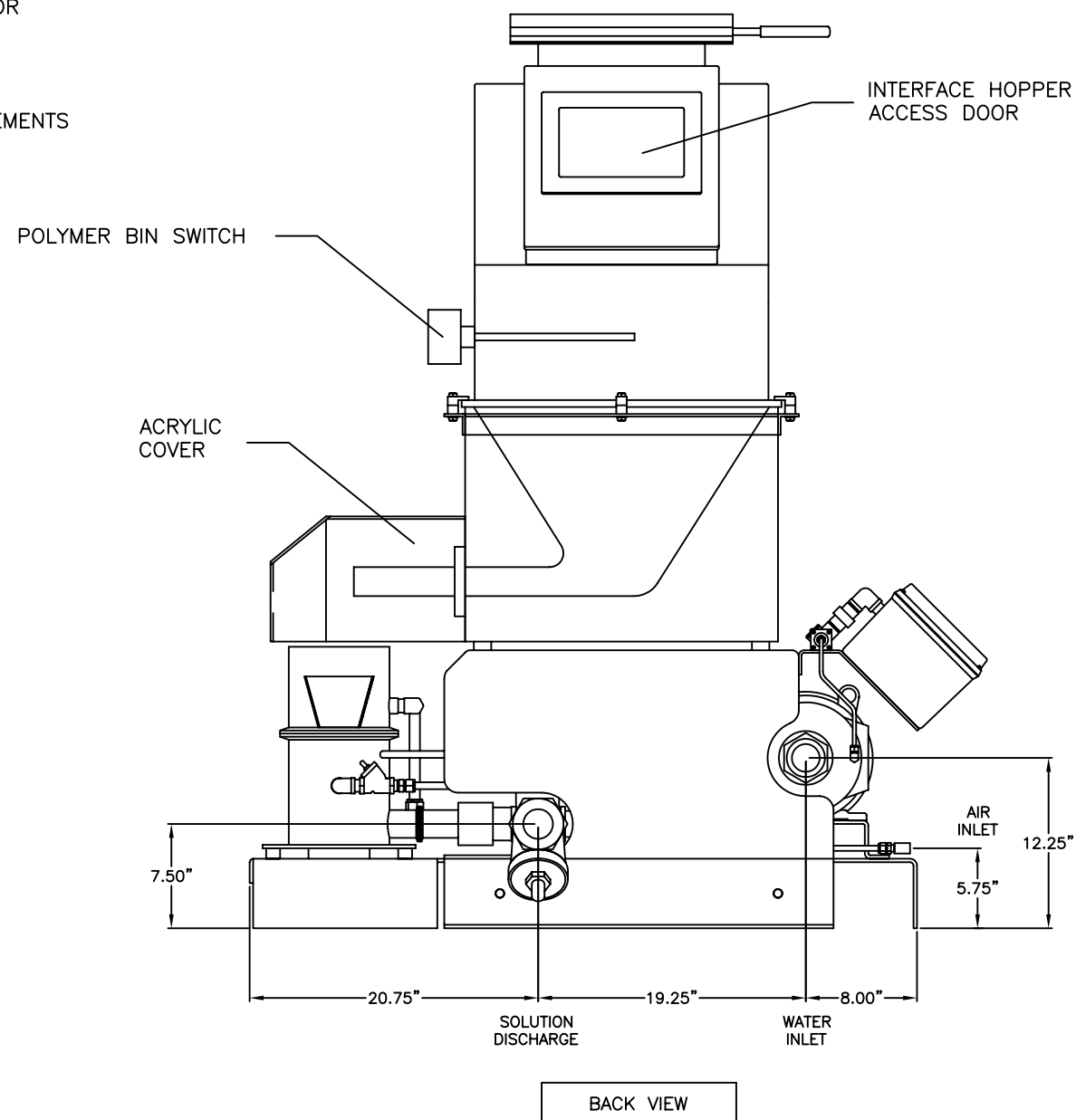
NP4000\_SPEC\_A

**POWDERCAT SERIES  
NP-4000**

ELECTRICAL CONDUITS NOT SHOWN

ALL DIMENSIONS +/- 1/4"  
CHANGES IN LAYOUT OR DIMENSIONING MAY  
VARY DUE TO MODIFICATIONS AND/OR  
DESIGN UPGRADE

EXTENSION HOPPER ORIENTATION  
CAN BE ROTATED 90 DEGREE INCREMENTS



**PLAN &  
ELEVATION**

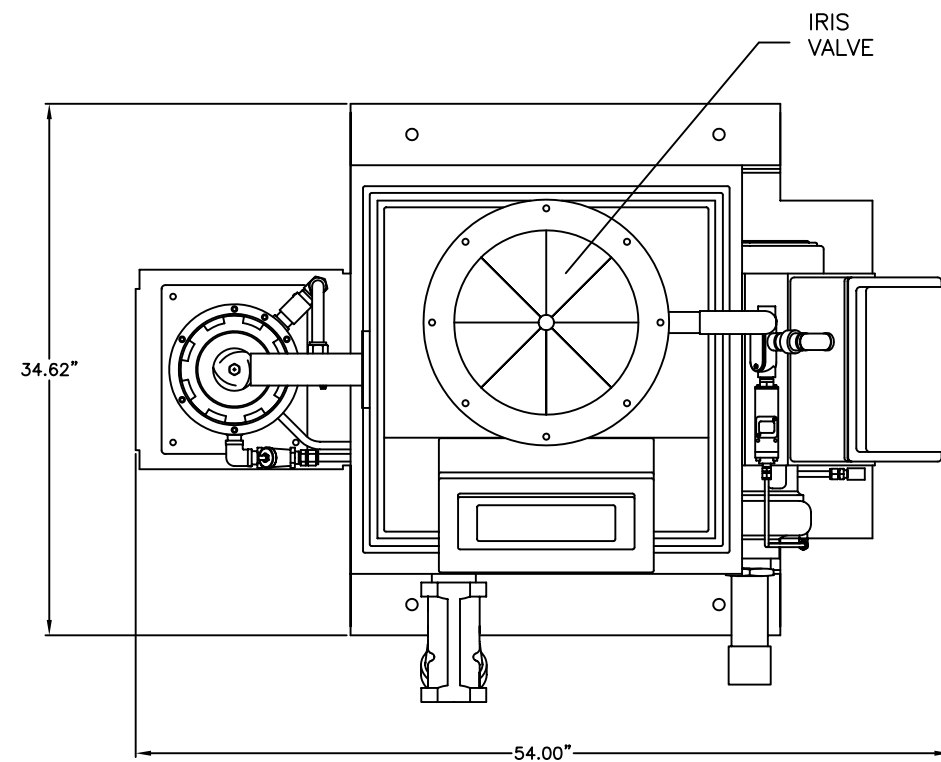
NP4000\_SPEC\_B

**POWDERCAT SERIES  
NP-4000**

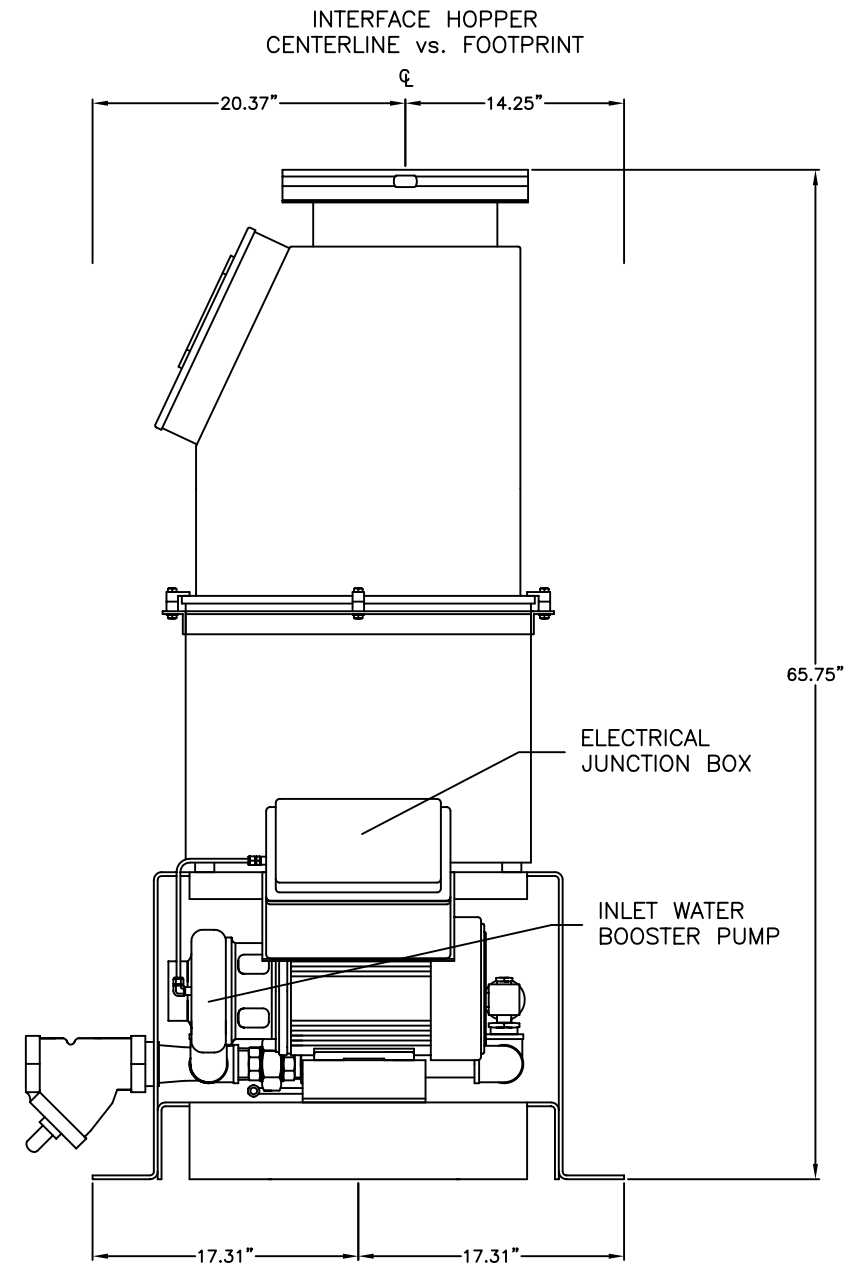
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TOP VIEW

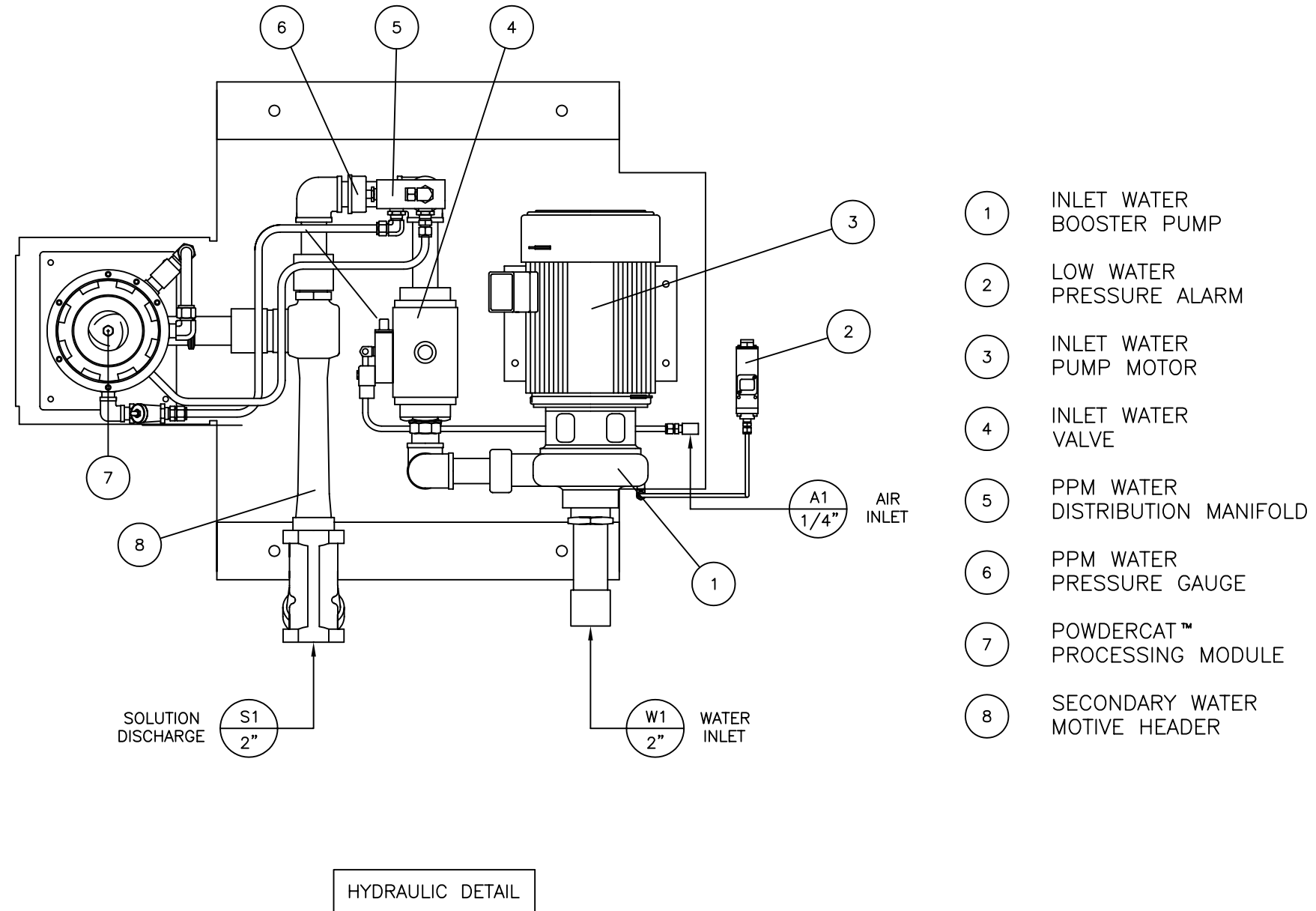


RIGHT END VIEW

# POWDERCAT SERIES NP-4000

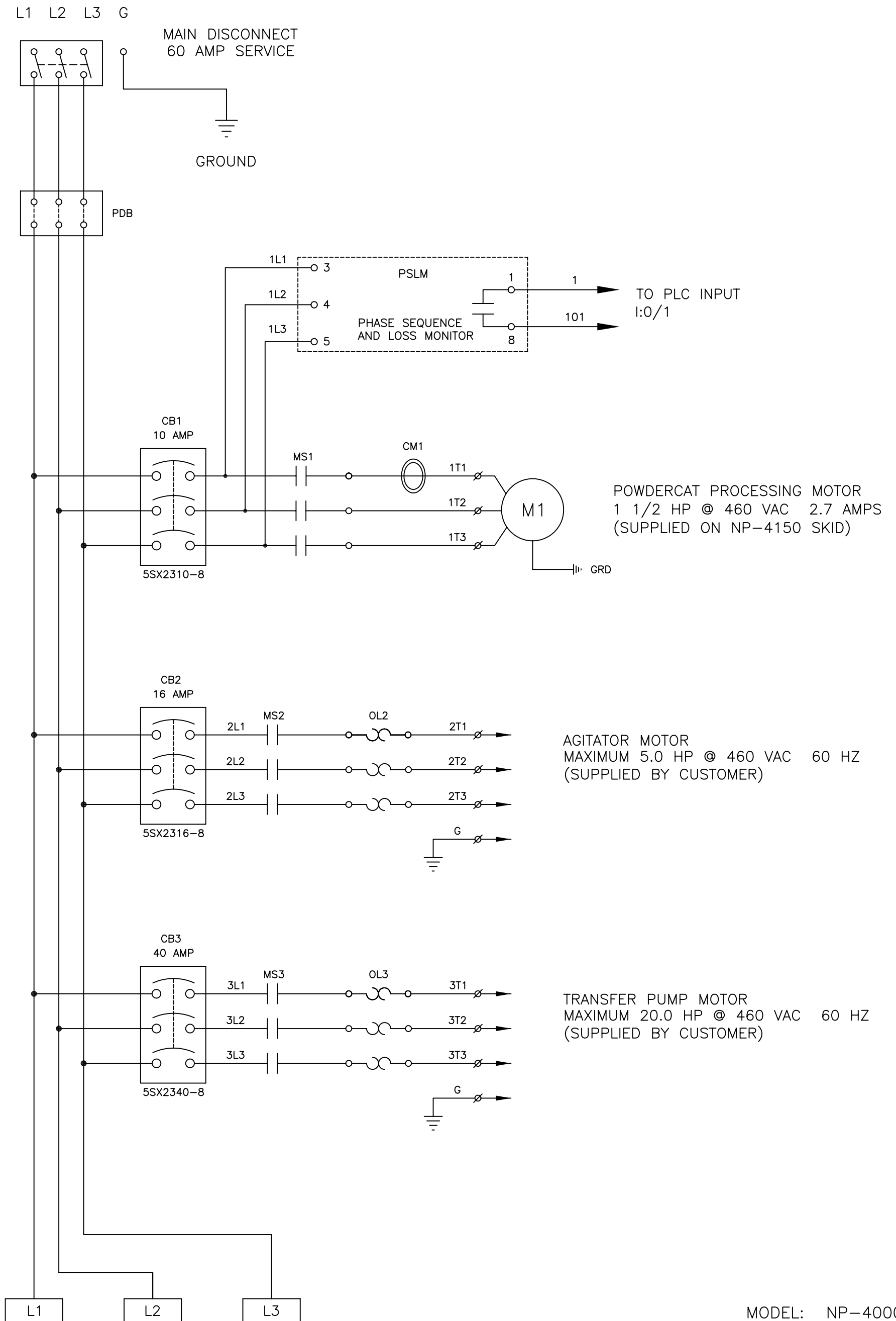
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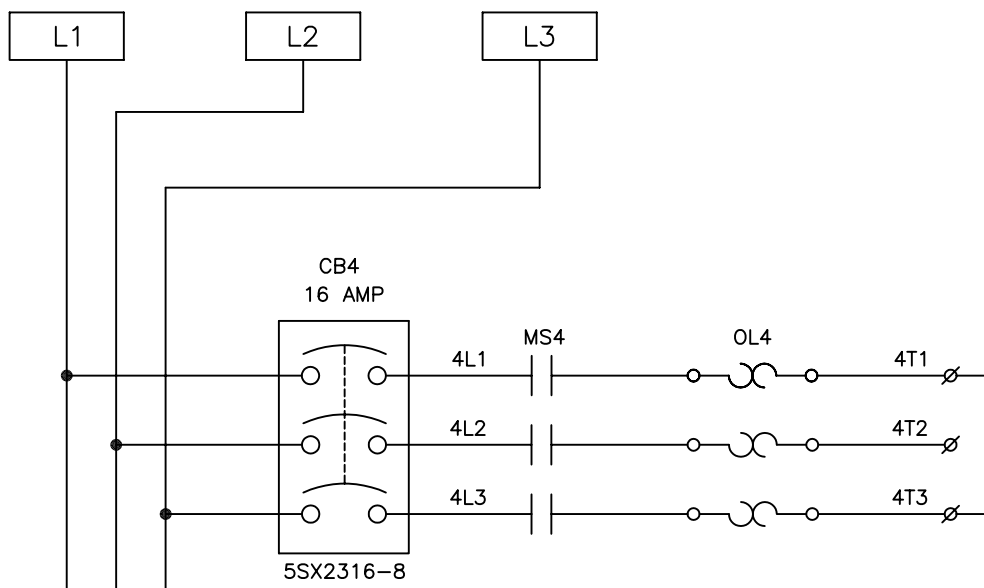


INCOMING POWER (A) POWDERCAT PROCESSING SYSTEM CONTROL PANEL

460 VAC/3 PH/60 HZ

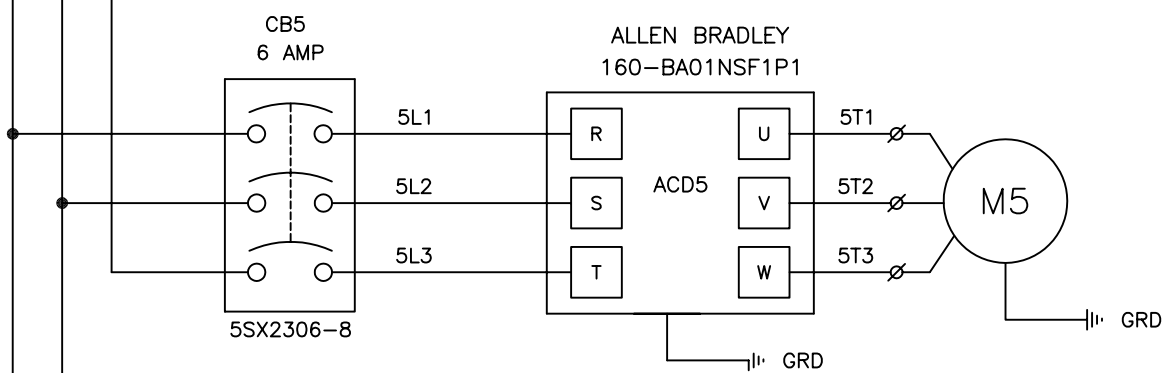


MODEL: NP-4000  
 CUSTOMER: NORCHEM INDUSTRIES  
 CUSTOMER P.O. NO.: xxxxx  
 NCI PROJECT: xxxxx  
 SCHEMATIC NO.: NCI-040203-1A REV. A  
 SHEET 1 OF 8



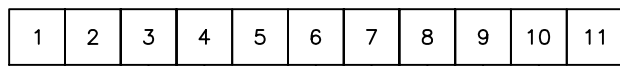
INLET WATER BOOSTER PUMP MOTOR  
5.0 HP @ 460 VAC 6.4 AMPS  
(SUPPLIED BY CUSTOMER)

BIOCIDE PUMP  
START CONTACT

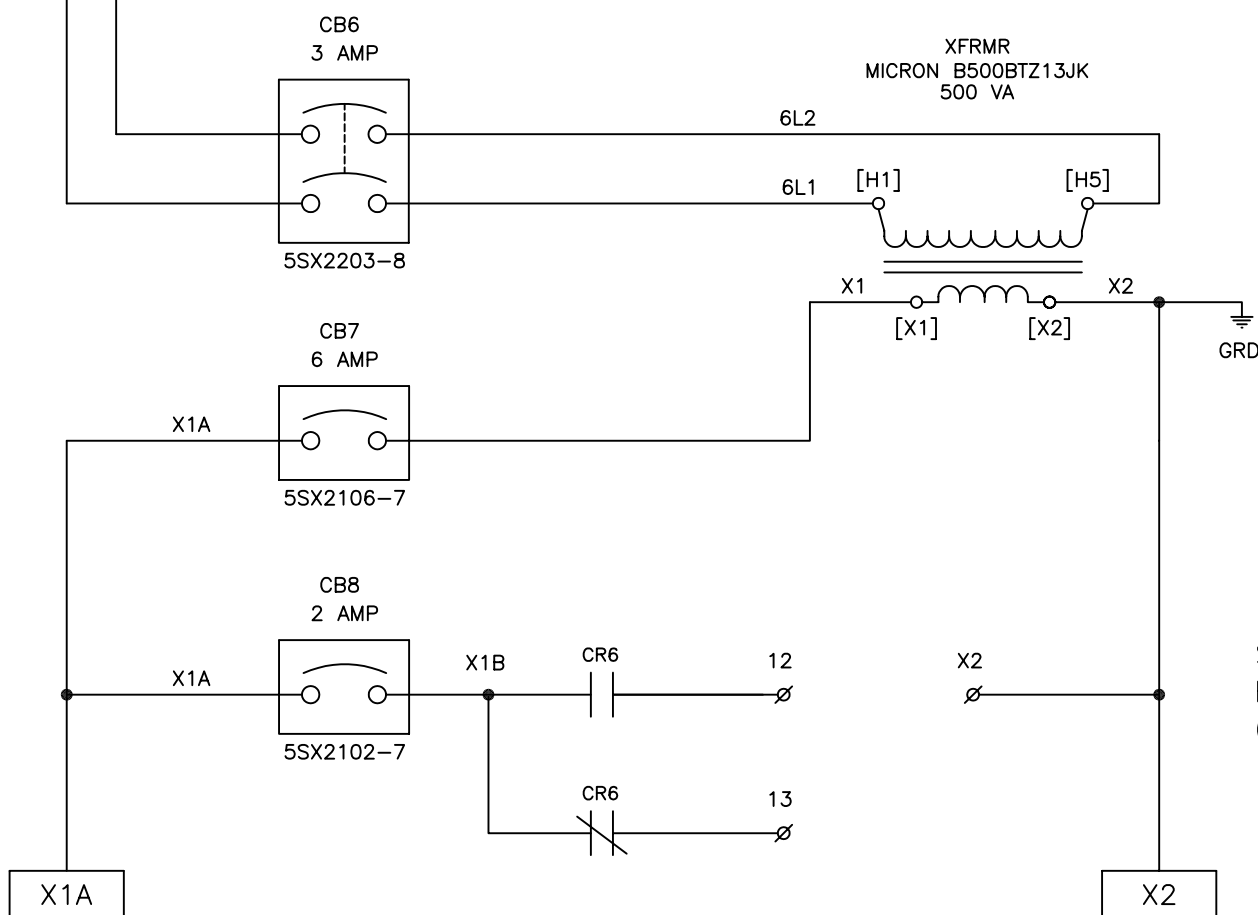


VOLUMETRIC FEEDER MOTOR  
1/2 HP @ 460 VAC .75 AMPS  
(SUPPLIED ON NP-4150 SKID)

DRIVE CONNECTION DETAILS



- 1 AC COM
- 110 DRIVE FAULT I:0/10
- 4 DRIVE RESET (FROM RELAY R7)
- 7 DRIVE COMMON
- 6 DRIVE RUN (FROM RELAY R5)
- 400+ VOLUMETRIC FEEDER SPEED REFERENCE  
4-20 mA OUTPUT FROM 0:2.0/0  
4 mA = 0.0 %  
20 mA = 100.0 %
- 400- SHLD GROUND

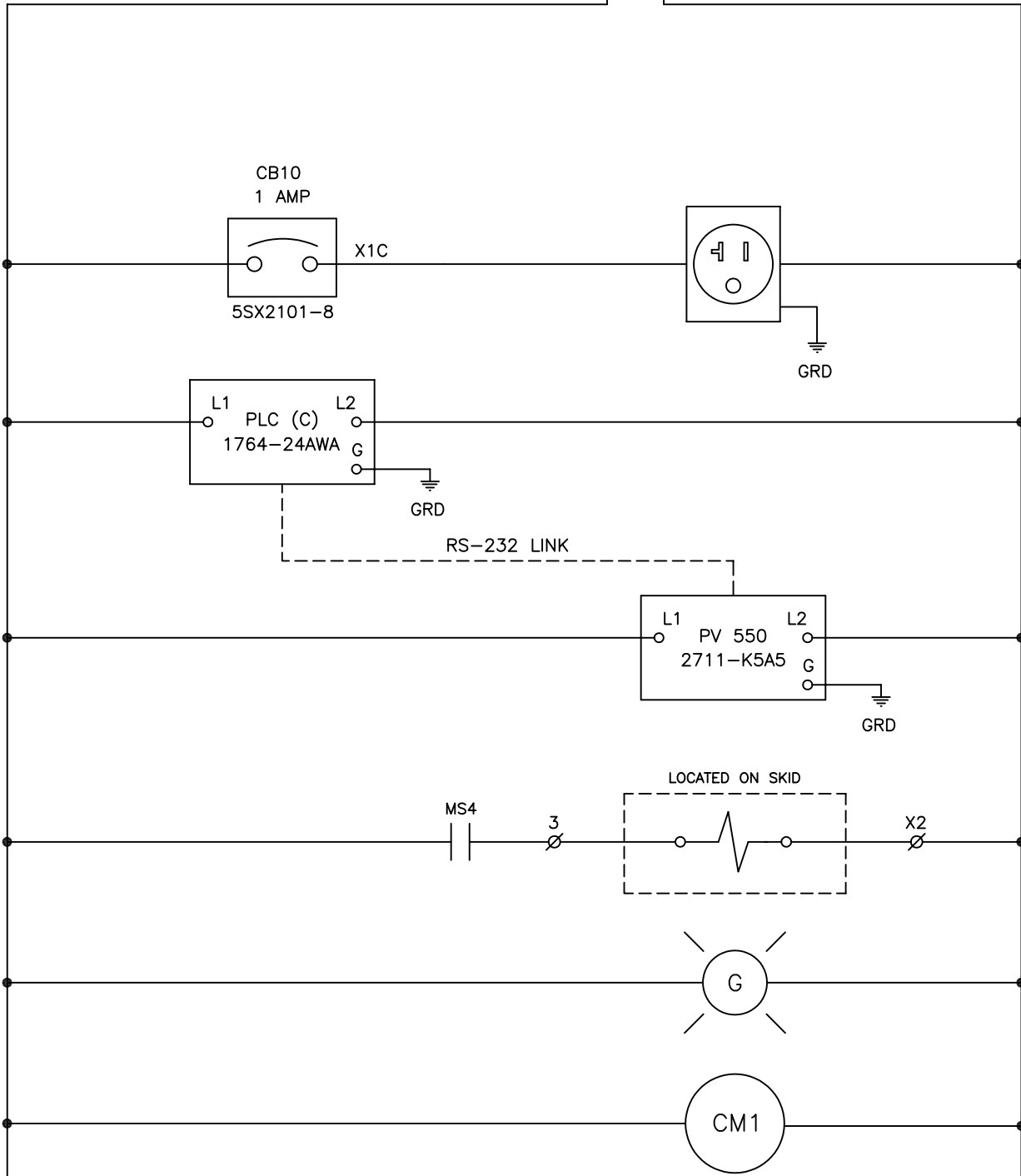


SECONDARY FILL VALVE  
RUN CONTACT(S)  
(OPTIONAL)

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SHEET 2 OF 8

X1A

X2



COMPUTER POWER INTERFACE TERMINAL

PROGRAMMABLE CONTROLLER

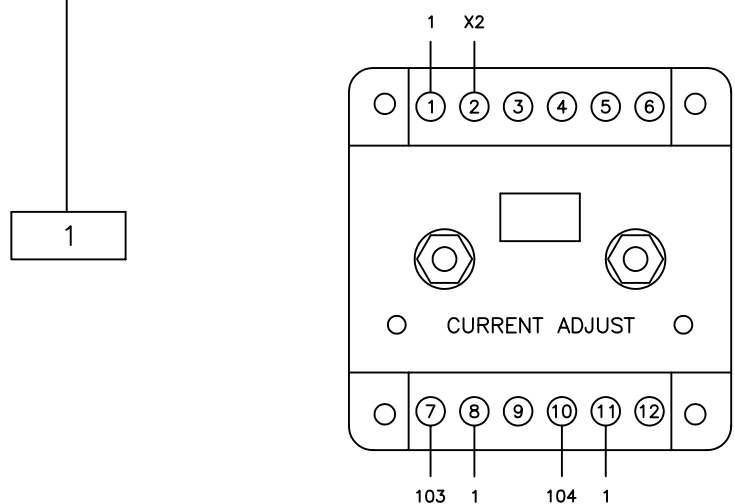
PROGRAMMABLE CONTROLLER

INLET WATER VALVE AIR ACTUATOR VALVE

"POWER ON" INDICATOR

PROCESSING MODULE CURRENT MONITOR

PROCESSING MODULE CURRENT MONITOR (CM1)

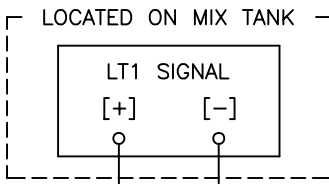
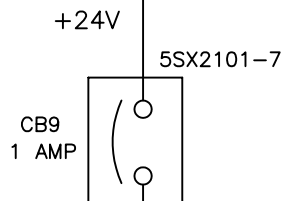
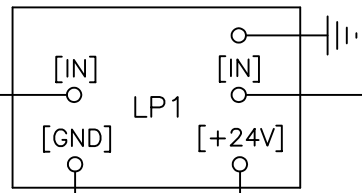


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 SCHEMATIC NO.: NCI-040203-1A REV. A  
 SHEET 3 OF 8

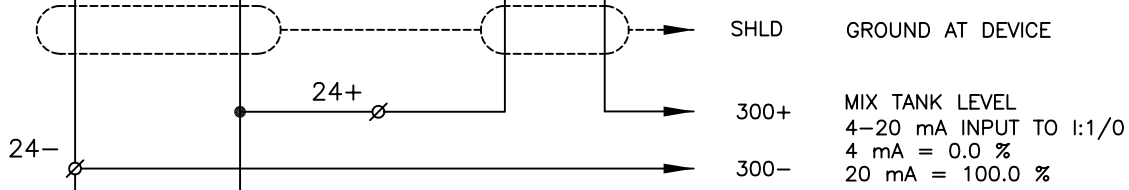
1

X2

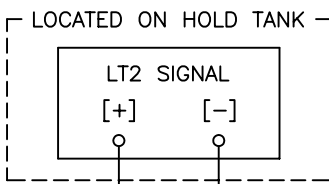
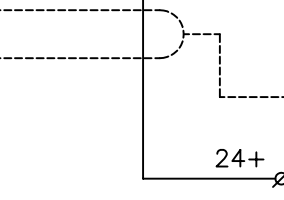
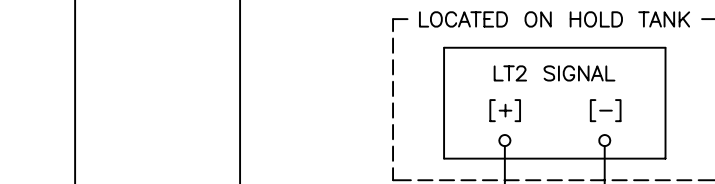
TANK LEVEL CONTROLS  
LOOP-POWER SUPPLY  
(LOCATED IN CONTROL PANEL)



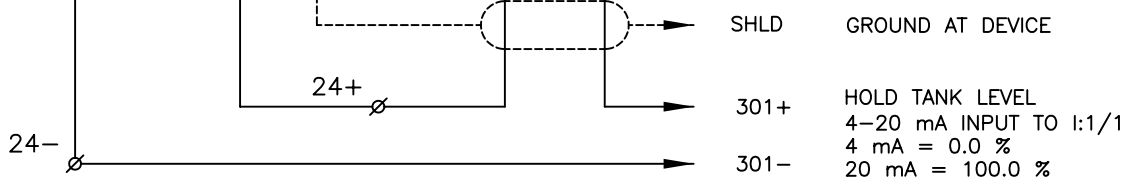
POLYMER MIX TANK  
LEVEL TRANSMITTER



HOLD TANK TRANSMITTER  
POWER SUPPLY  
(LOCATED IN CONTROL PANEL)



POLYMER HOLD TANK  
LEVEL TRANSMITTER



NOTES: ANALOG LEVEL PROBE WIRING

FOR LOOP-POWERED LEVEL TRANSMITTERS  
CONNECT AS SHOWN ON SCHEMATIC

- + TERMINAL OF TRANSMITTER TO PANEL TERMINAL 24+
- TERMINAL OF TRANSMITTER TO PANEL TERMINAL 300+ (OR 300-)

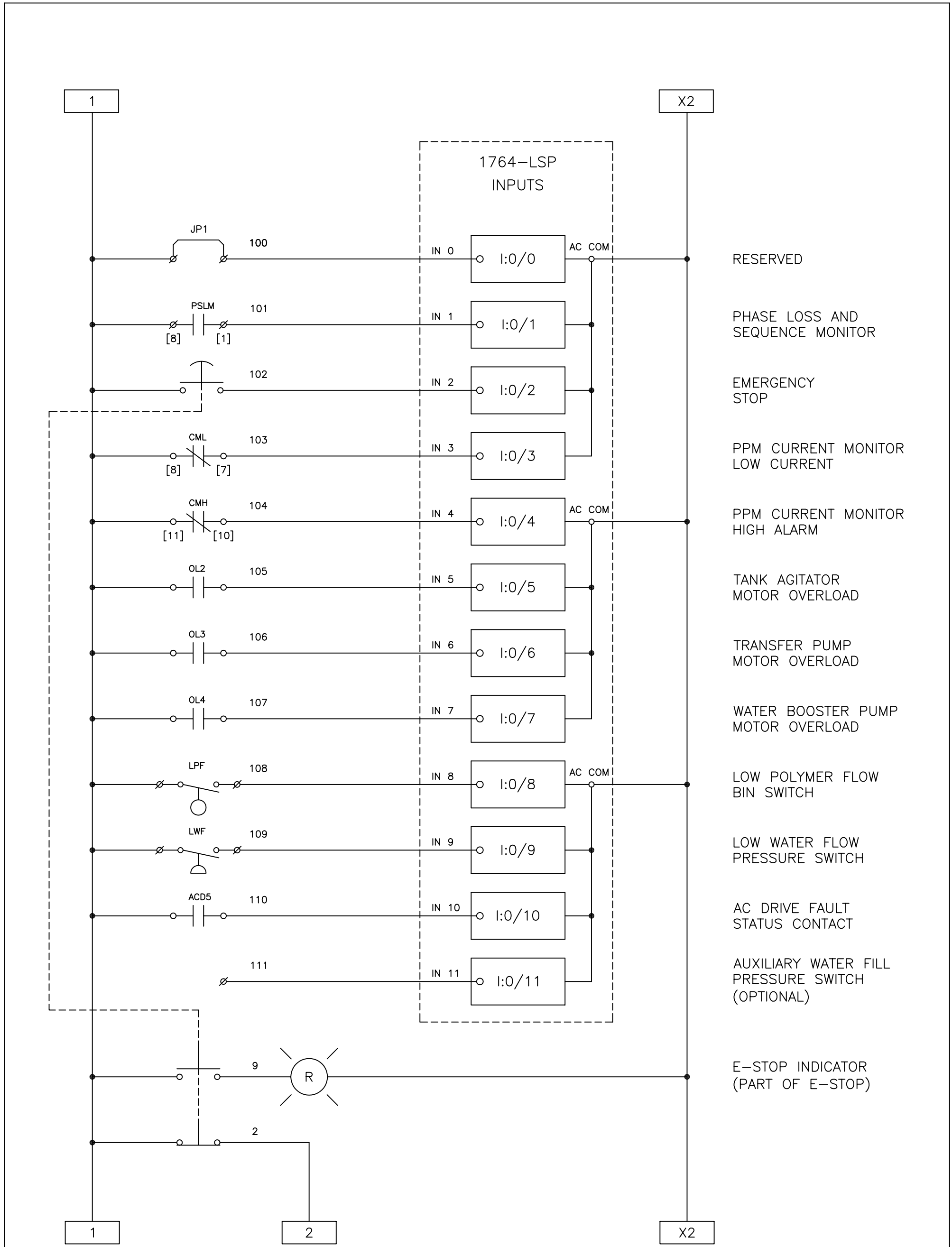
FOR TRANSMITTERS GENERATING 4-20 mA  
SWITCH CIRCUIT BREAKER CB9 OFF

- + TERMINAL OF TRANSMITTER TO PANEL TERMINAL 300+ (OR 301+)
- TERMINAL OF TRANSMITTER TO PANEL TERMINAL 300- (OR 301-)

1

X2

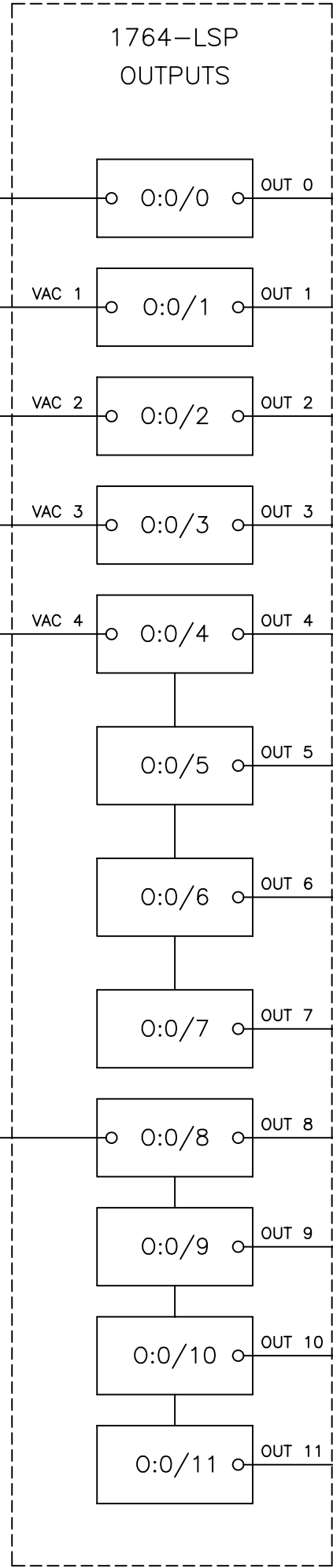




MODEL: NP-4000  
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 CUSTOMER P.O. NO.: xxxxx  
 NCI PROJECT: xxxxx  
 SCHEMATIC NO.: NCI-040203-1A REV. A  
 SHEET 5 OF 8

2

X2



200



VOLUMETRIC FEEDER  
DRIVE RESET RELAY  
(TO ACD5)

201



VOLUMETRIC FEEDER  
DRIVE RUN CONTACT  
(AT ACD5)

202



SECONDARY FILL VALVE  
CONTROL RELAY

203



AUXILIARY PPM FILL  
SOLENOID VALVE  
(OPTIONAL)

204



PROCESSING MODULE  
MOTOR CONTACTOR [5 HP]

205



205A



MIX TANK AGITATOR  
MOTOR STARTER [5 HP]

206



206A



TRANSFER PUMP  
MOTOR STARTER [20 HP]

207



207A



WATER BOOSTER PUMP  
MOTOR STARTER [5 HP]

208



DCS INPUT  
COMMON FAULT

209



DCS INPUT  
COMMON ALARM

210



DCS INPUT  
PLC POWER OK

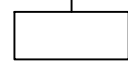
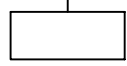
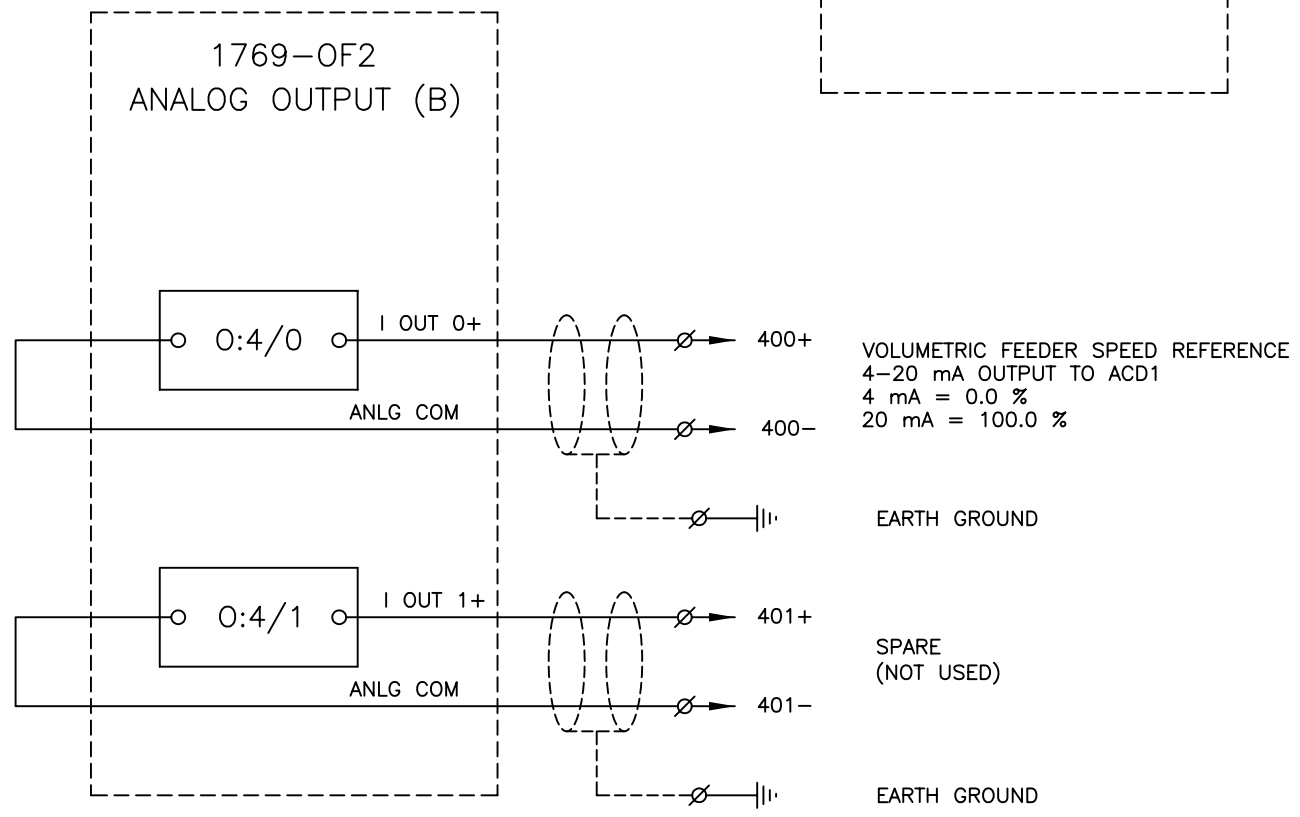
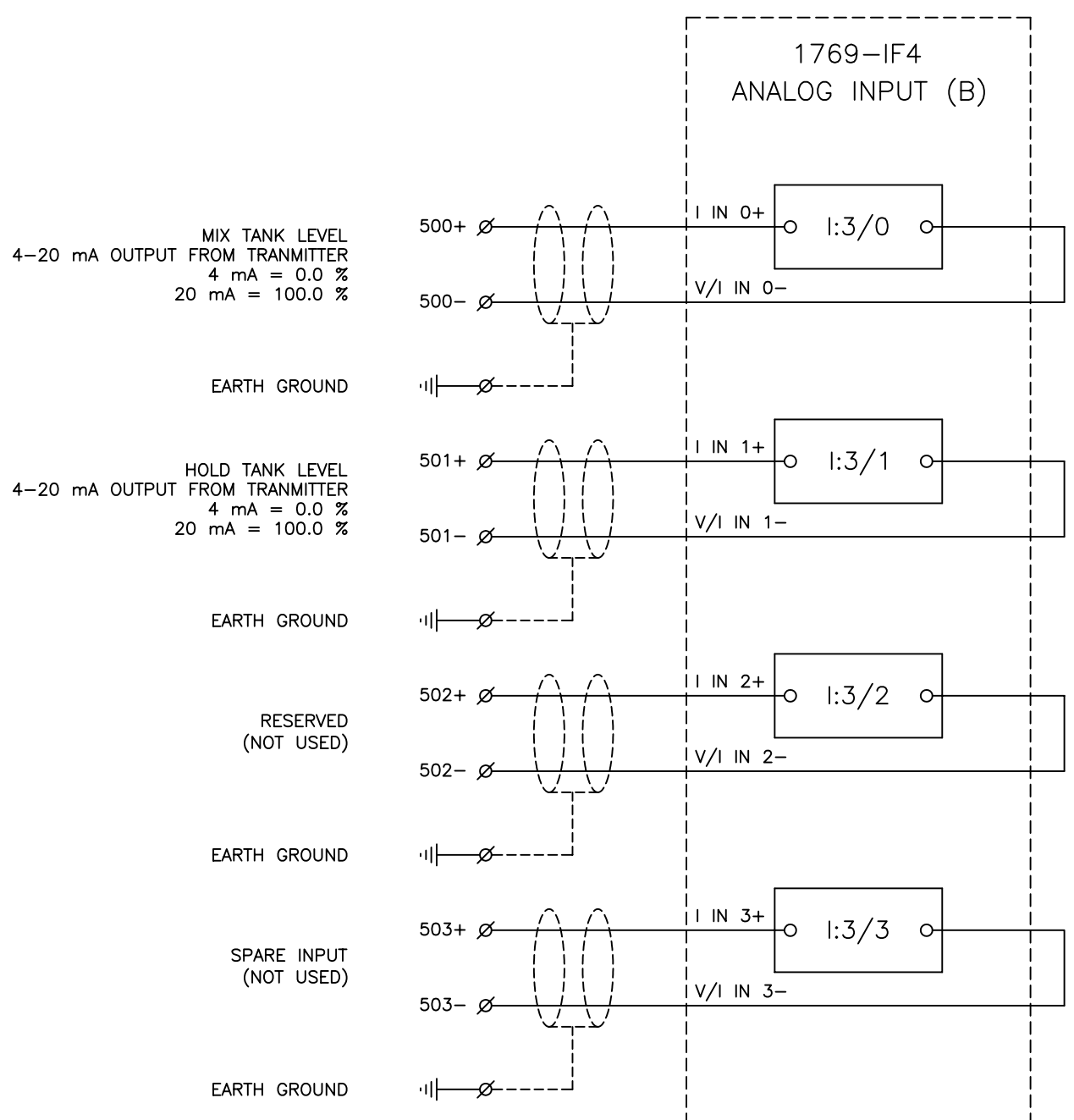
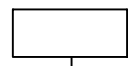
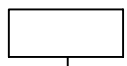
211



DCS INPUT  
LOW HOLD TANK LEVEL

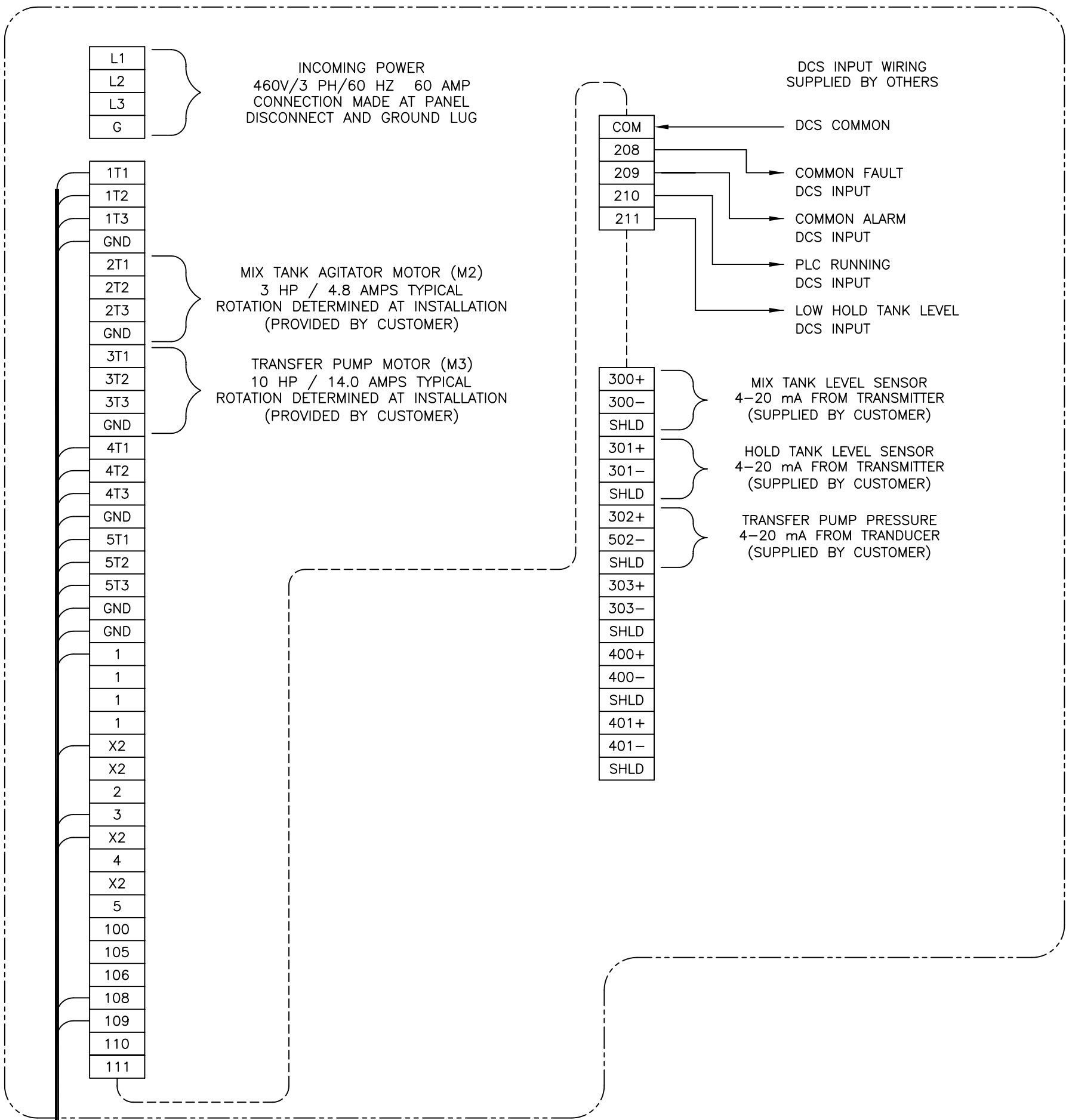
2

X2

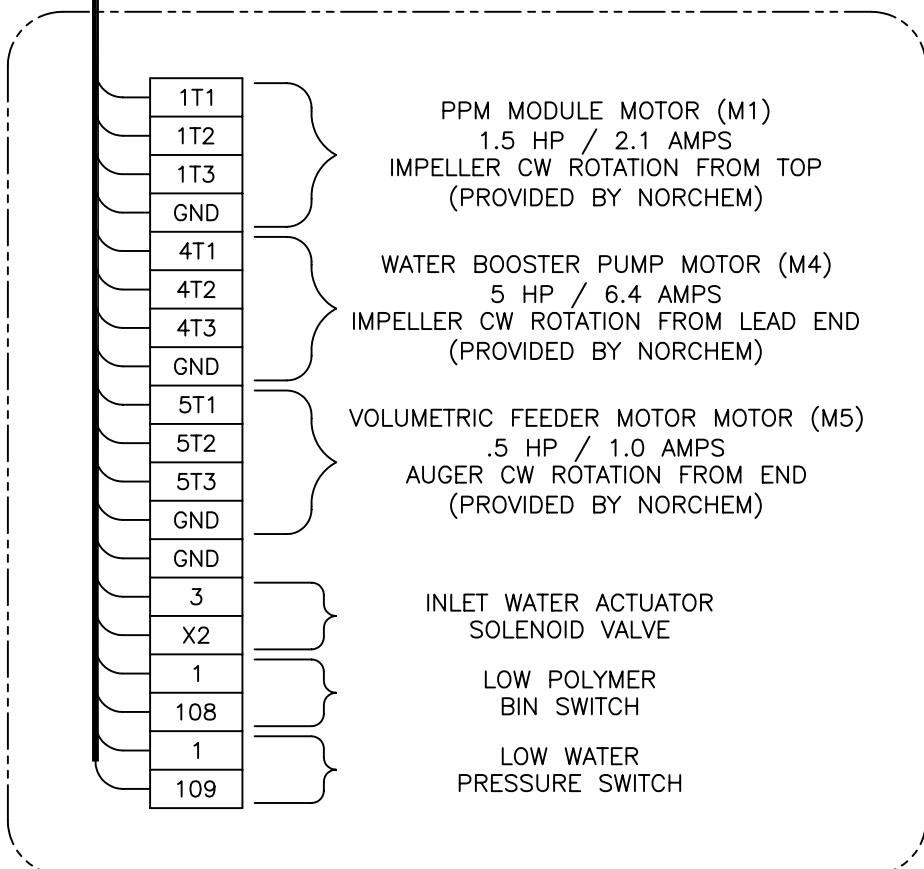


MODEL: NP-4000  
 CUSTOMER: NORCHEM INDUSTRIES  
 CUSTOMER P.O. NO.: xxxxx  
 NCI PROJECT: xxxxx  
 SCHEMATIC NO.: NCI-040203-1A REV. A  
 SHEET 7 OF 8

TERMINAL LAYOUT FOR NP-4000 SERIES MAIN CONTROL PANEL

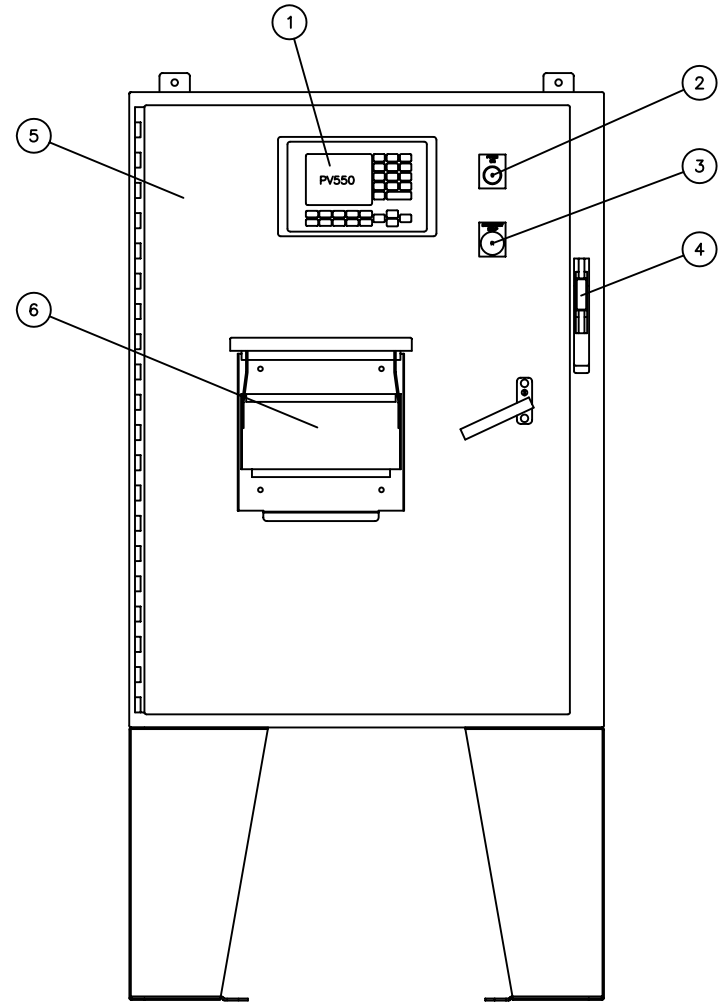


TERMINAL LAYOUT FOR NP-4000 SERIES PROCESSING MODULE



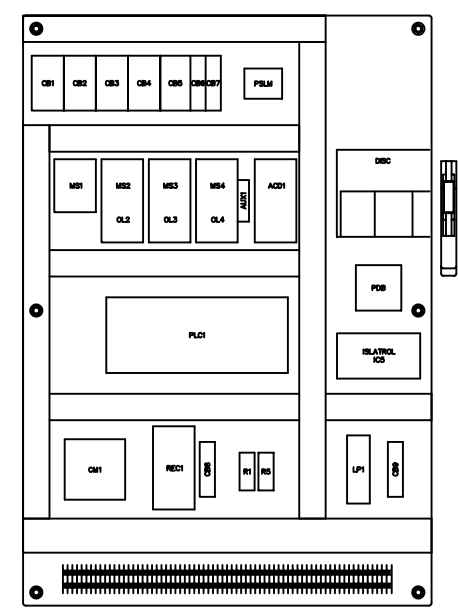
MODEL: NP-4000  
 CUSTOMER: NORCHEM INDUSTRIES  
 CUSTOMER P.O. NO.: xxxxx  
 NCI PROJECT: xxxxx  
 SCHEMATIC NO.: NCI-040203-1A REV. A  
 SHEET 8 OF 8

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DOOR LAYOUT  
(NORCHEM CUSTOM 42" x 31" x 12" ENCLOSURE)  
NEMA 12  
OPERATOR AND DISPLAY LISTING

- |                               |   |
|-------------------------------|---|
| ① OPERATOR INTERFACE          | ④ SYSTEM PANEL DISCONNECT 600 VOLTS/60 AMPS     |
| ② "POWER ON" INDICATOR        | ⑤ CONTROL PANEL ENCLOSURE RATED NEMA 12 w/PAINT |
| ③ "EMERGENCY STOP" PUSHBUTTON | ⑥ PROGRAMMER COMPUTER TABLE                     |




SUBPANEL LAYOUT

NORCHEM NP-4150 SERIES DRY POLYMER SYSTEM CONTROL PANEL FACE & SUBPANEL LAYOUT		
ITEM	DESCRIPTION	DESCRIPTION
MS1	PROCESSING MODULE CONTACTOR	100-C09D10
MS2	MIX TANK AGITATOR MOTOR STARTER	100-C16D10
MS3	TRANSFER PUMP MOTOR STARTER	100-C23D10
MS4	WATER BOOSTER PUMP MOTOR STARTER	100-C16D10
OL2	MIX TANK AGITATOR MOTOR OVERLOAD	193-EA2FB
OL3	TRANSFER PUMP MOTOR OVERLOAD	193-EA2GB
OL4	WATER BOOSTER PUMP MOTOR OVERLOAD	193-EA2FB
CB1	CIRCUIT BREAKER - PROCESSING MODULE	SIEMENS 5SX2110-8
CB2	CIRCUIT BREAKER - MIX TANK AGITATOR	SIEMENS 5SX2310-8
CB3	CIRCUIT BREAKER - TRANSFER PUMP	SIEMENS 5SX2320-8
CB4	CIRCUIT BREAKER - BOOSTER PUMP	SIEMENS 5SX2310-8
CB5	CIRCUIT BREAKER - SECONDARY DISCONNECT	SIEMENS 5SX2201-8
CB6	CIRCUIT BREAKER - VOLUMETRIC FEEDER	SIEMENS 5SX2110-8
CB7	CIRCUIT BREAKER - CONTROL LOGIC	SIEMENS 5SX2106-8
CB8	CIRCUIT BREAKER - 115V COMPUTER RECEPTACLE	SIEMENS 5SX2101-7
CB9	CIRCUIT BREAKER - MIX TANK LEVEL 24 VDC	SIEMENS 5SX2101-7
SPD	SURGE PROTECTION DEVICE	ISOLATROL IC+105
PSLM	PHASE SEQUENCE & LOSS MONITOR	DIV SLA-440-ASA
PDB	POWER DISTRIBUTION BLOCK	A-B 1492-PD3141
CM1	PROCESSING MODULE CURRENT MONITOR	CBA-120-ALE-5
ACD1	VOLUMETRIC FEED AC DRIVE	A-B 160-BA01NSF1P1
R1	AUXILIARY FILL CONTROL RELAY	A-B 700-HK32A1
R5	VOLUMETRIC FEED DRIVE RESET RELAY	A-B 700-HK32A1
LP1	MIX TANK LEVEL CONTROLLER POWER SUPPLY	SCP30S24B-DN
PLC1	PROGRAMMABLE LOGIC CONTROLLER	MICROLOGIX 1500
PV550	PANELVIEW 550 OPERATOR TERMINAL	A-B 2711-K5A5
CABLE	PLC TO PANELVIEW CABLE	A-B 1761-CBL-PM02
DISC	SYSTEM DISCONNECT 60 AMP	A-B 1494V-DS60
TB1	INTERFACE TERMINAL BLOCKS	A-B 1492-W10 SERIES
LT1	GREEN LIGHT LENS	A-B 800EP-PL3
LT1	LIGHT ASSEMBLY WITH NAME TAG	A-B 800E-3DL5
LT1	LIGHT BULB	A-B 800E-N130
AUX1	AUXILIARY CONTACT BLOCK	A-B 100-SA10
REC1	RECEPTACLE - 115V COMPUTER POWER	PHOENIX 5600461
PB1	EMERGENCY STOP PUSHBUTTON WITH NAME TAG	A-B 800H-FRXTQ10RA

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OWN	RWD
CHK'D	RWD
APP'D	RWD
CAD FILE	CTL_4150_TYP1
SHT. OF	1 1
SCALE	NONE

 <b>NORCHEM INC.</b> 8910 W. 192nd STREET MOKENA, ILLINOIS 60448		
A	CONTROL PANEL LAYOUT	04-XX-03
SYM. REVISIONS		DATE
CUSTOMER: NORCHEM INDUSTRIES, MOKENA, IL 60448		
DESCRIPTION: NORCHEM NP-4150 DRY POLYMER SYSTEM CONTROL PANEL & SUBPANEL LAYOUT		
CONTRACT NUMBER: .		
PROJECT NUMBER: SPEC	DRAWING NUMBER: NCI-04XX03-2	REV: A