

The **NORCHEM POWDERCAT MODEL NP-4150** automatic dry polymer system is designed to process 600 to 3000 lbs/day of dry polymer at 0.1 to 0.5 % solution concentrations. The NP-4150 system is modular in design consisting of polymer wetting module, control panel, volumetric feeder and booster assembly.

POWDERCAT MODEL NP-4150 DRY POLYMER SYSTEM SPECIFICATIONS

FRAME:	BASE: CONSTRUCTION:	36" W x 50" L x 38" H 304SS BASE
DRY FEEDER:	TYPE: DRIVE / MOTOR:	VOLUMETRIC w/FLEXLINER AGITATION, 0.0 TO 15.0 CU/FT HR 1/2 HP AC DRIVE, 1/2 HP, 0-160 RPM TENV MOTOR
PROCESS MODULE:	PPM: MOTOR RATING:	STAINLESS STEEL UPPER / LOWER HOUSING, ROTOR AND DRIVE STAINLESS STEEL HERMETICALLY SEALED CHEMICAL SERVICE 1 1/2 HP, 3450 RPM, STAINLESS STEEL ROTOR AND HOUSING
SYSTEM CAPACITY:	WETTING RATE: DRY LBS/DAY: PRIMARY FILL: SECONDARY FILL: TOTAL FILL RATE:	0 TO 15.0 LBS/MIN 600 LBS @ 0.1% / 3000 LBS @ 0.5% SOLUTION CONCENTRATION 150 GPM NONE 150 GPM
PANEL/CONTROLS:	NEMA 12:	ALLEN-BRADLEY 1500 PLC, CONTACTORS, SWITCHES, RELAYS; CONDUCTIVITY LEVEL CONTROL, WATER PRESSURE SWITCH
UTILITIES:	ELECTRICAL: WATER:	480/3/60 60 AMP 50 – 100 PSI, 200 GPM CLEAN SOURCE
OPTIONS:	PANEL: LEVEL: STORAGE: LOW POLYMER:	NEMA 4X, PANELVIEW INTERFACE, LOCAL/REMOTE STATIONS ANALOG 4-20 mA, NON-CONTACT LEVEL CONTROLLERS 1.0 THRU 10.0 CU/FT EXTENTION HOPPERS, DUSTLESS BAG LOADERS, FBIC INTERFACE HOPPER W/ IRIS VALVE, BAG FRAME CAPACITANCE SENSOR WITH SS HOPPER PROBE

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-4150 shall be provided to meter, dynamically wet and transfer dry form polymer using a motorized disperser capable of processing 0-15 lbs/min of dry polymer and transferring the mixture at 150 gpm to an agitated mix tank. The NP-4150 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**

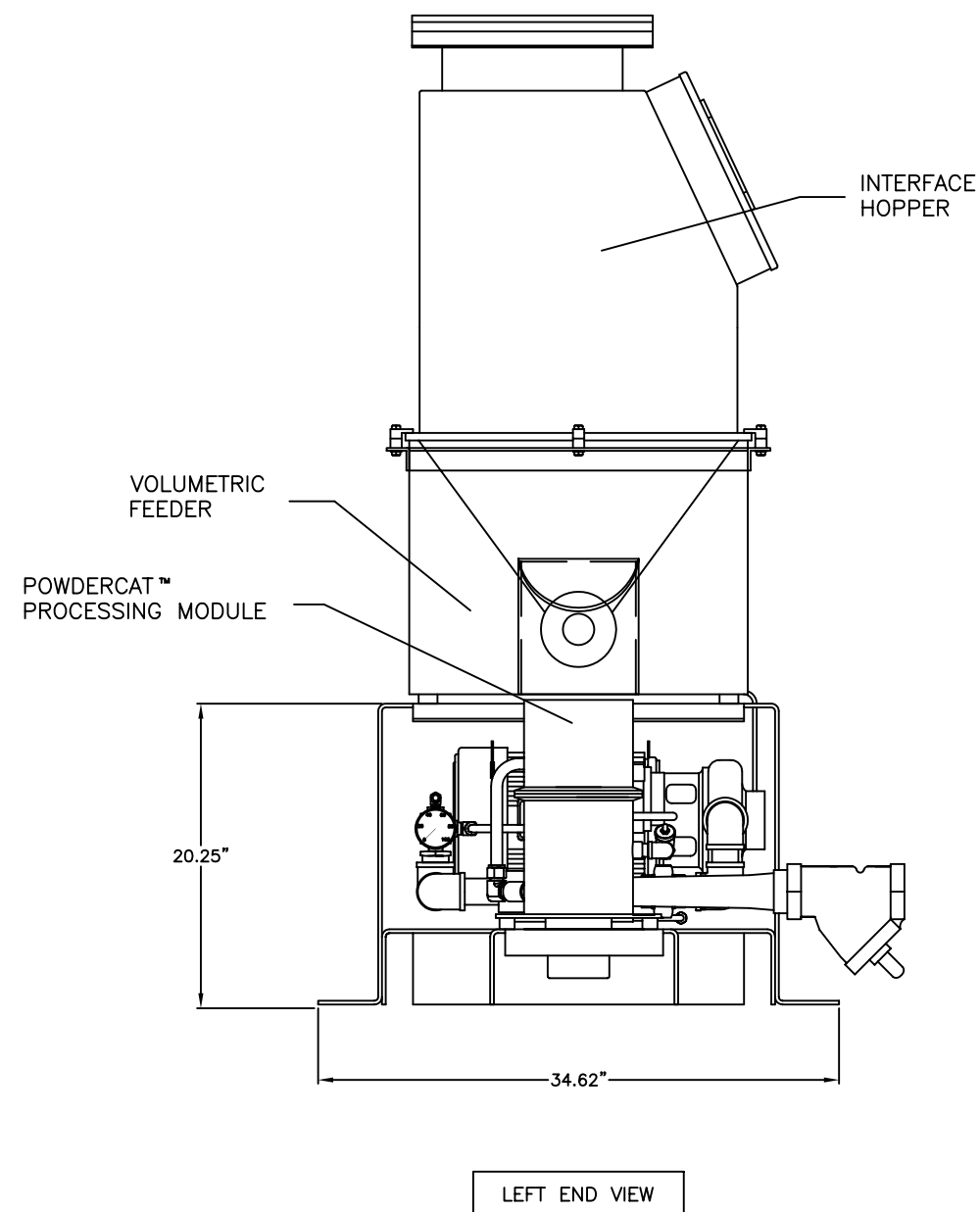
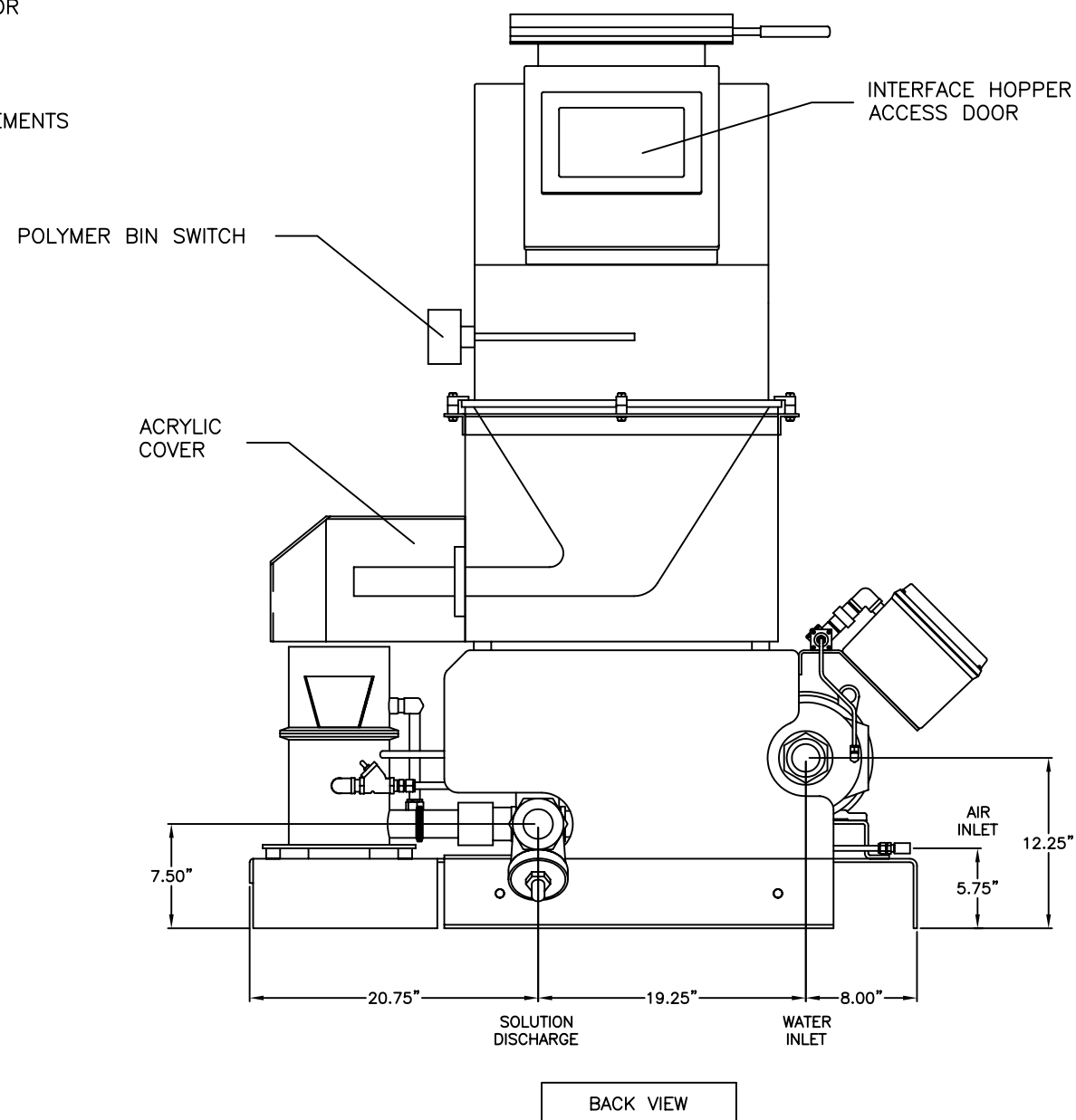
NP4000_SPEC_A

**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**

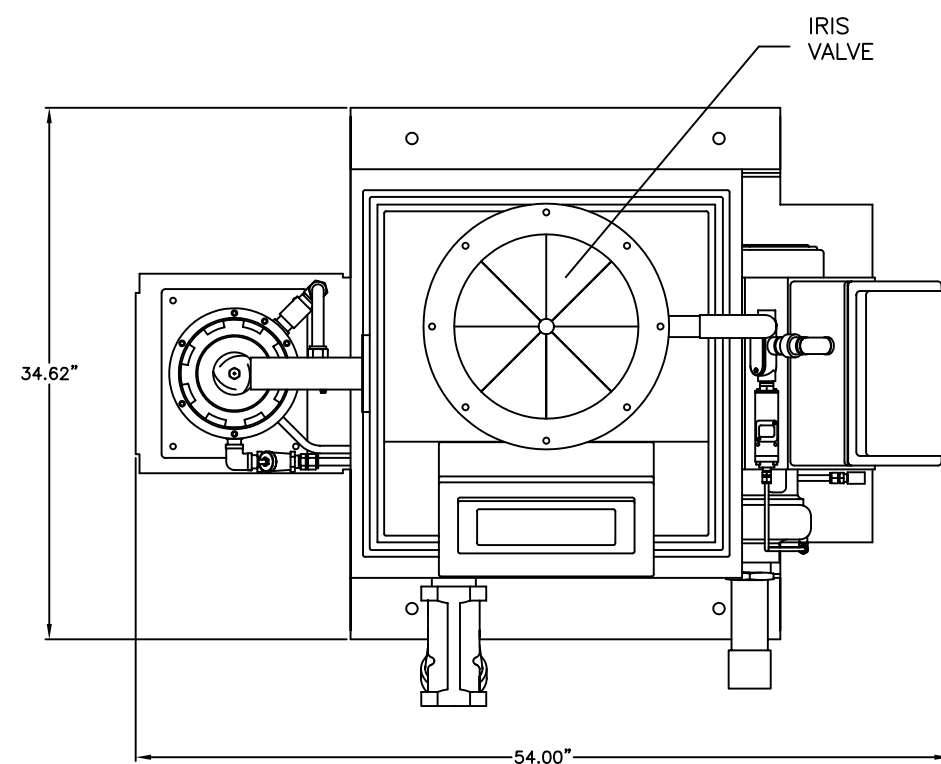
NP4000_SPEC_B

**POWDERCAT SERIES
NP-4000**

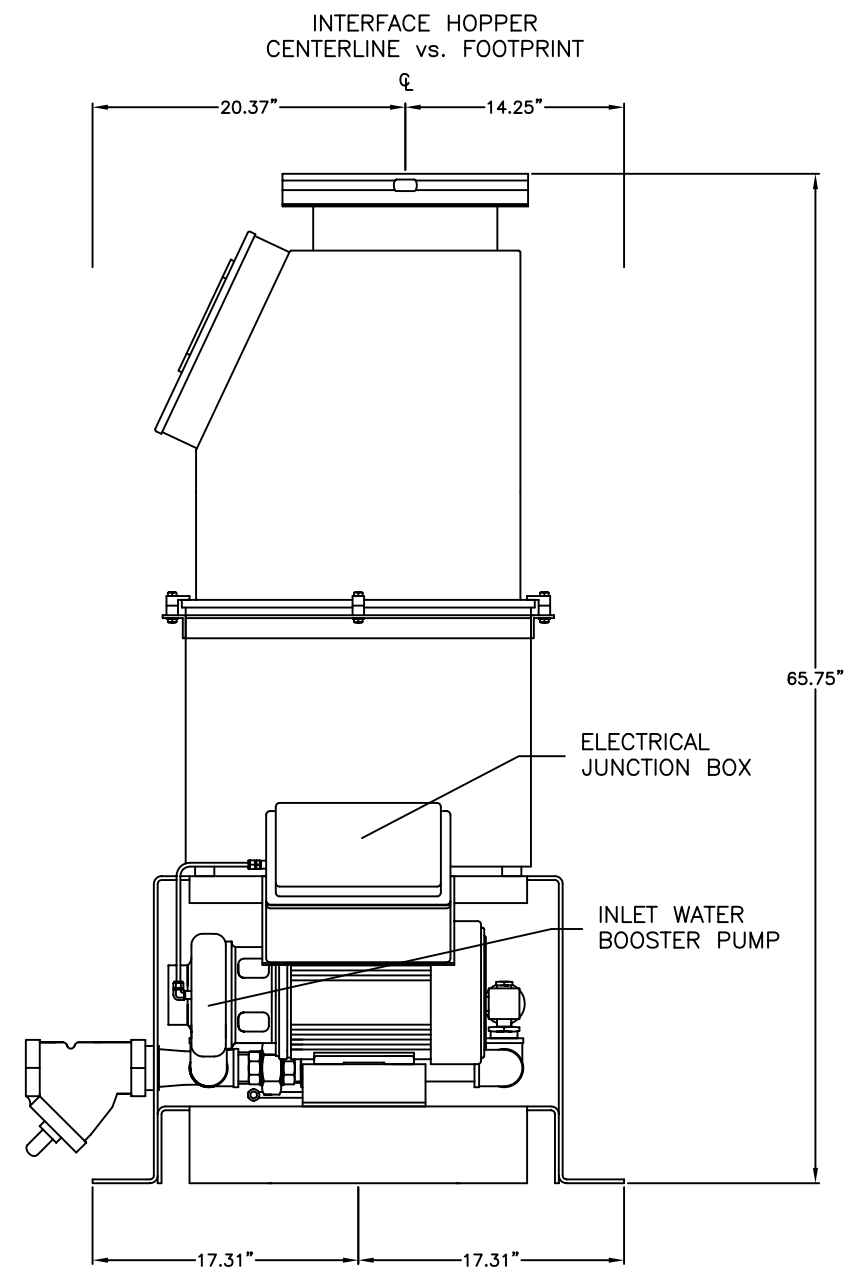
ELECTRICAL CONDUITS NOT SHOWN

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TOP VIEW



RIGHT END VIEW

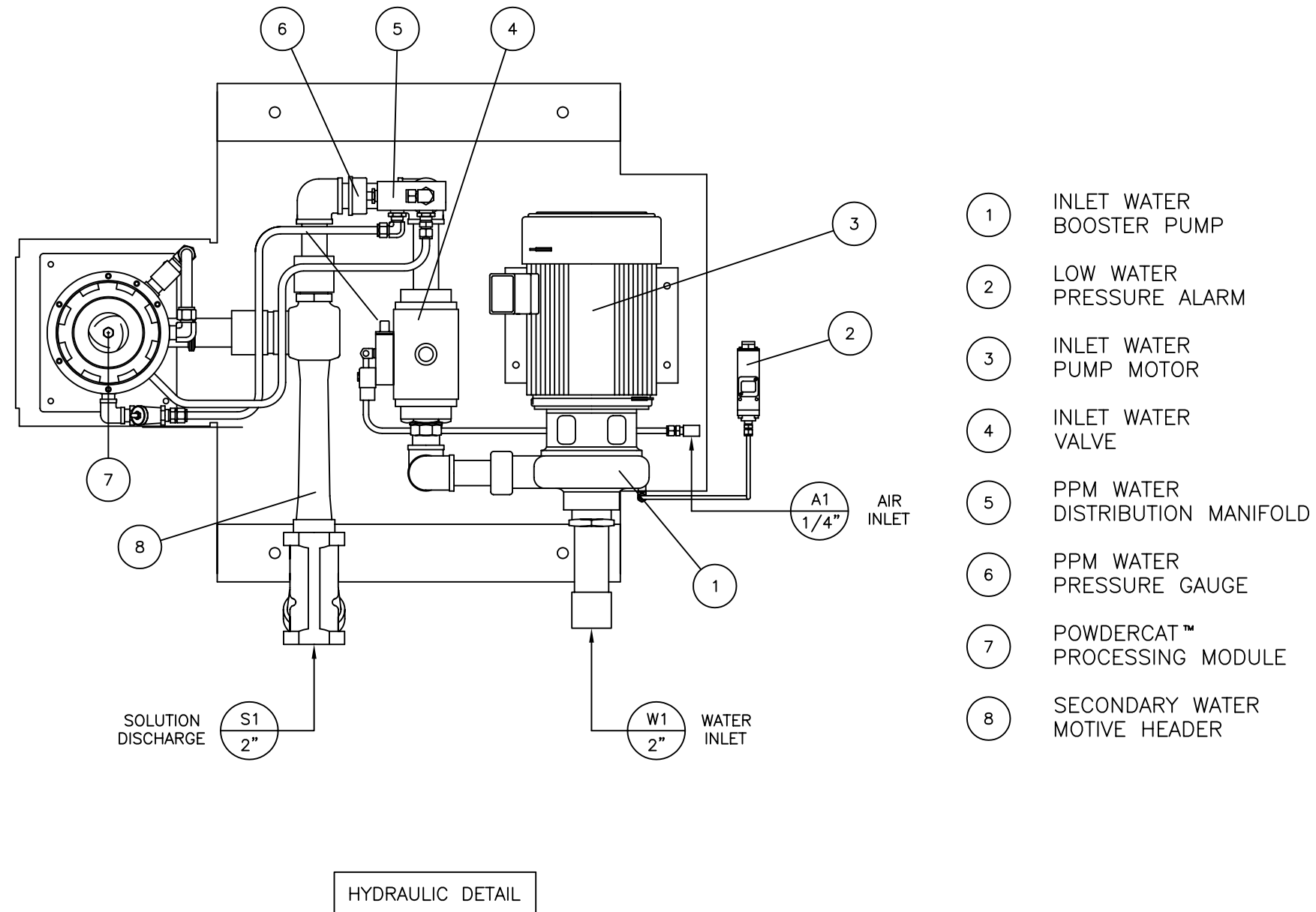
**PLAN &
ELEVATION**

NP4000_SPEC_C

**POWDERCAT SERIES
NP-4000**

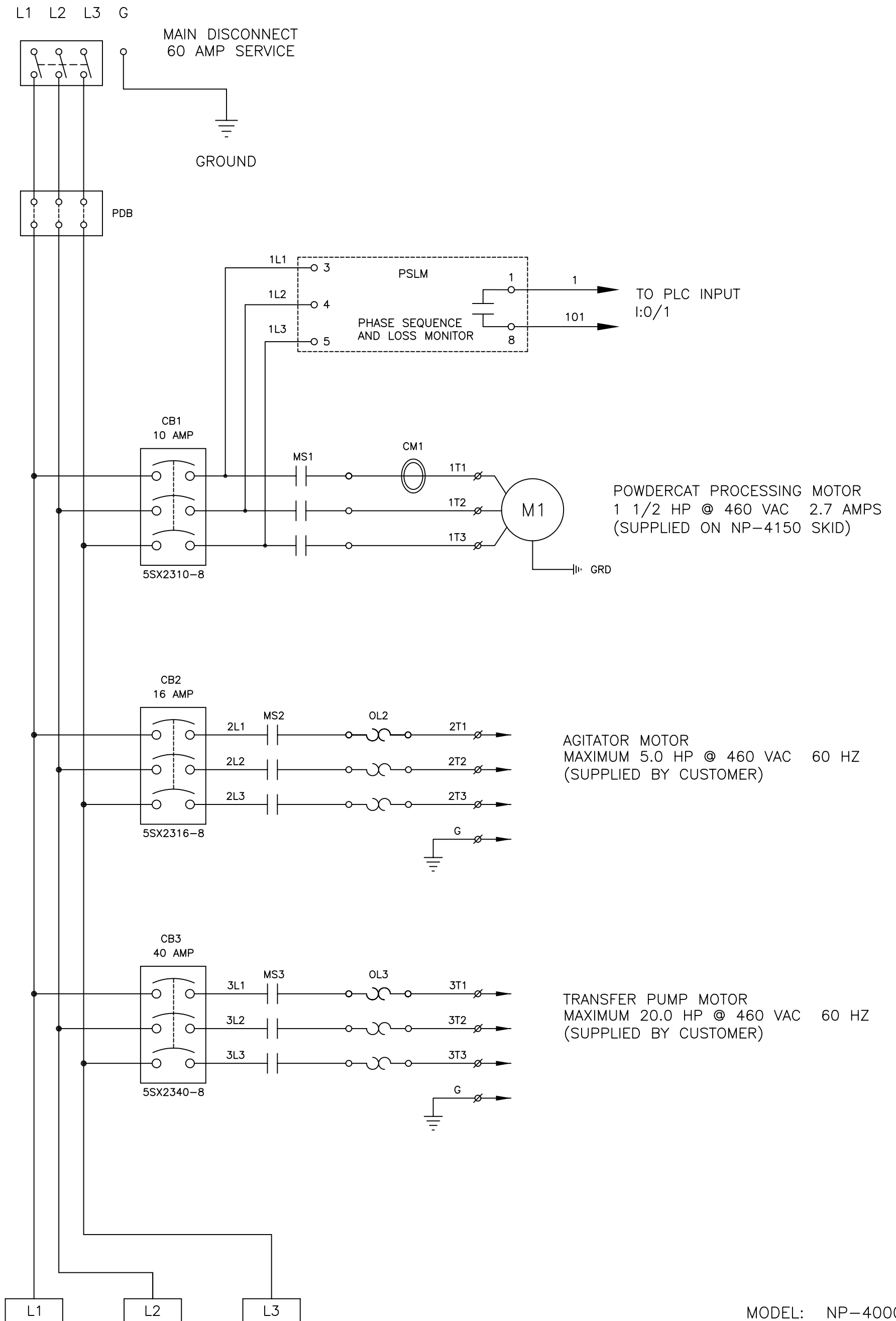
ELECTRICAL CONDUITS NOT SHOWN

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CHANGES IN LAYOUT OR DIMENSIONING MAY
VARY DUE TO MODIFICATIONS AND/OR
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INCOMING POWER (A) POWDERCAT PROCESSING SYSTEM CONTROL PANEL

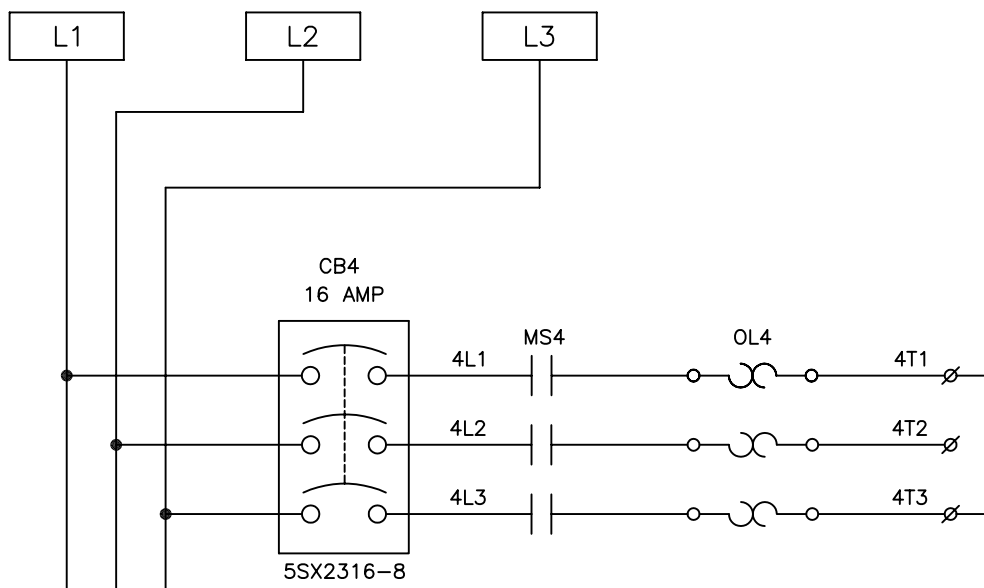
460 VAC/3 PH/60 HZ



POWDERCAT PROCESSING MOTOR
1 1/2 HP @ 460 VAC 2.7 AMPS
(SUPPLIED ON NP-4150 SKID)

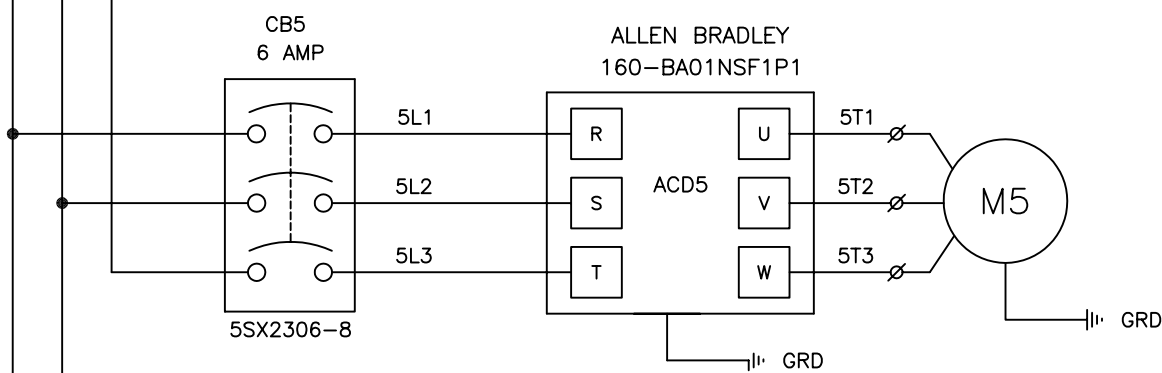
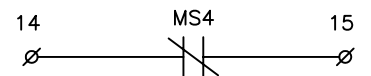
AGITATOR MOTOR
MAXIMUM 5.0 HP @ 460 VAC 60 HZ
(SUPPLIED BY CUSTOMER)

TRANSFER PUMP MOTOR
MAXIMUM 20.0 HP @ 460 VAC 60 HZ
(SUPPLIED BY CUSTOMER)



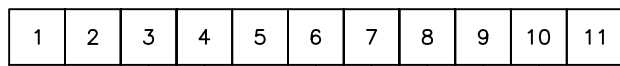
INLET WATER BOOSTER PUMP MOTOR
5.0 HP @ 460 VAC 6.4 AMPS
(SUPPLIED BY CUSTOMER)

BIOCIDE PUMP
START CONTACT

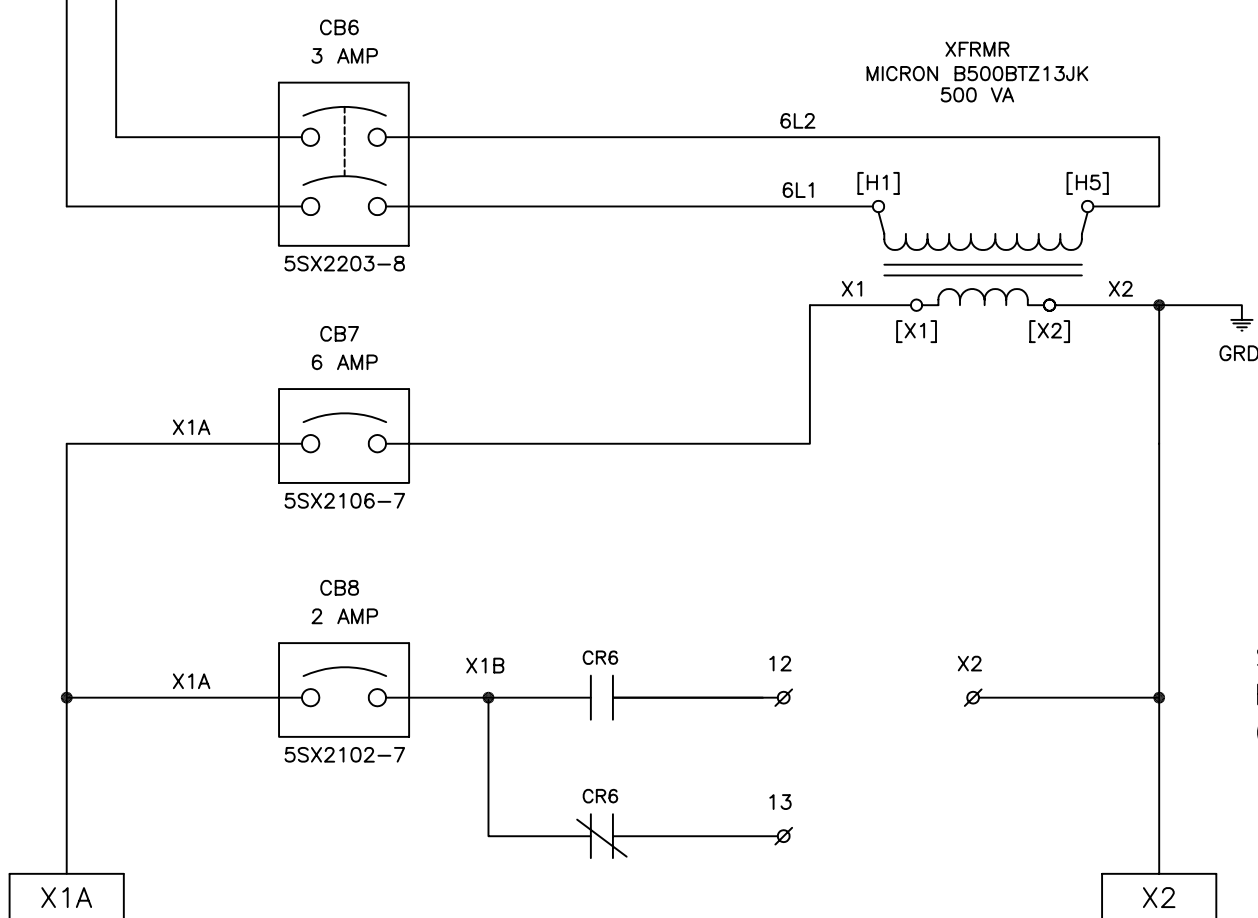


VOLUMETRIC FEEDER MOTOR
1/2 HP @ 460 VAC .75 AMPS
(SUPPLIED ON NP-4150 SKID)

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

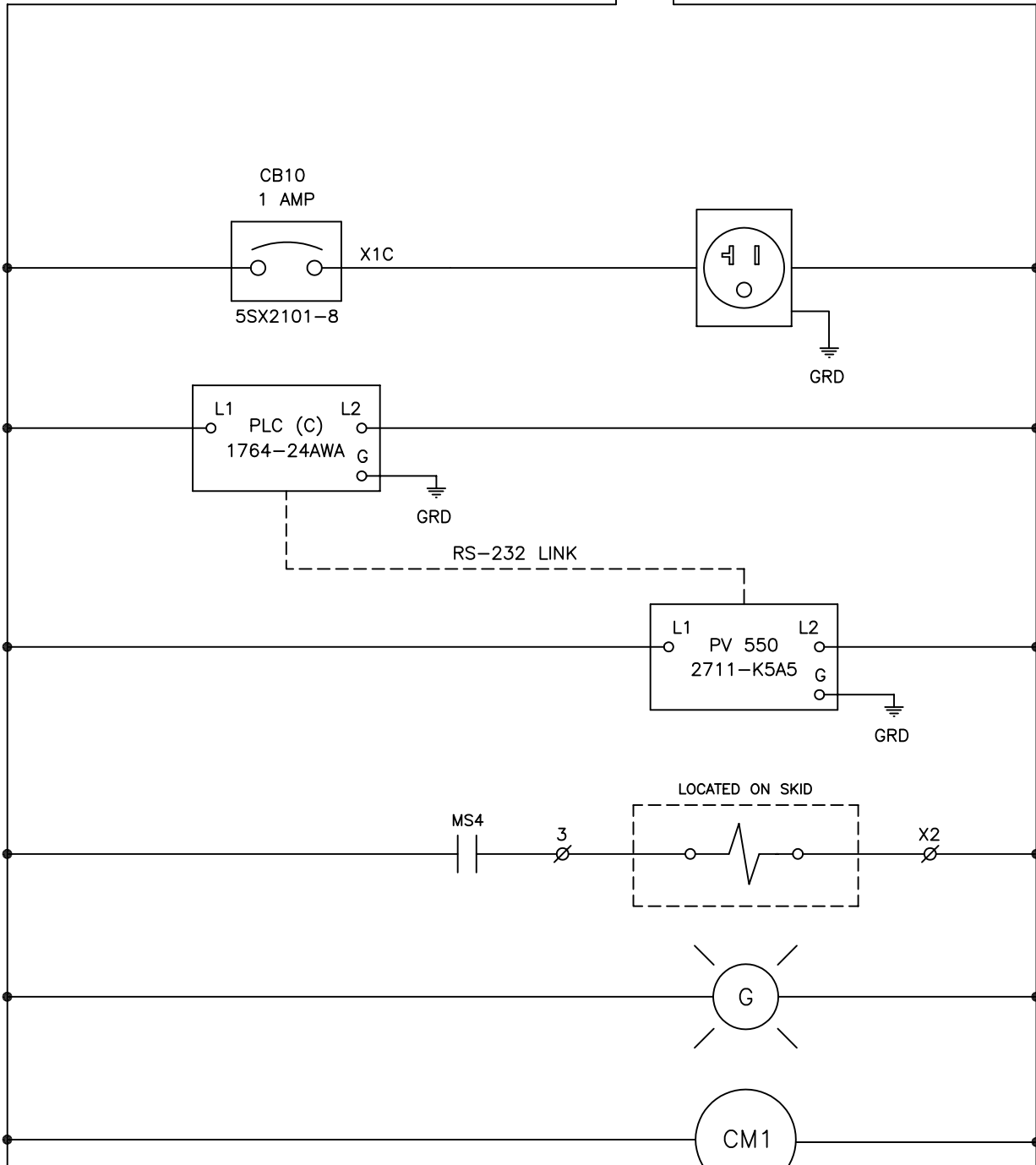


SECONDARY FILL VALVE
RUN CONTACT(S)
(OPTIONAL)

MODEL: NP-4000
CUSTOMER: NORCHEM INDUSTRIES
CUSTOMER P.O. NO.: xxxxx
NCI PROJECT: xxxxx
SCHEMATIC NO.: NCI-040203-1A REV. A
SHEET 2 OF 8

X1A

X2



COMPUTER POWER INTERFACE TERMINAL

PROGRAMMABLE CONTROLLER

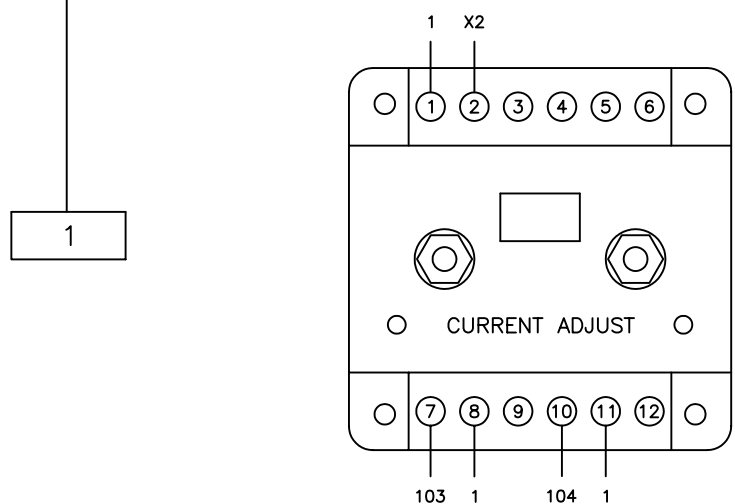
PROGRAMMABLE CONTROLLER

INLET WATER VALVE AIR ACTUATOR VALVE

"POWER ON" INDICATOR

PROCESSING MODULE CURRENT MONITOR

PROCESSING MODULE CURRENT MONITOR (CM1)

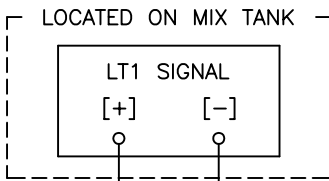
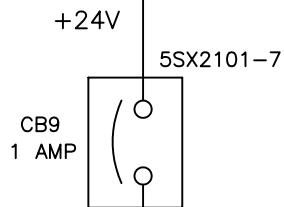
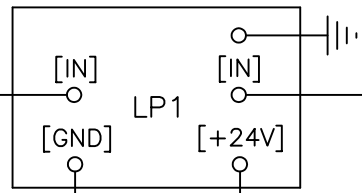


MODEL: NP-4000
 CUSTOMER: NORCHEM INDUSTRIES
 CUSTOMER P.O. NO.: xxxxx
 NCI PROJECT: xxxxx
 SCHEMATIC NO.: NCI-040203-1A REV. A
 SHEET 3 OF 8

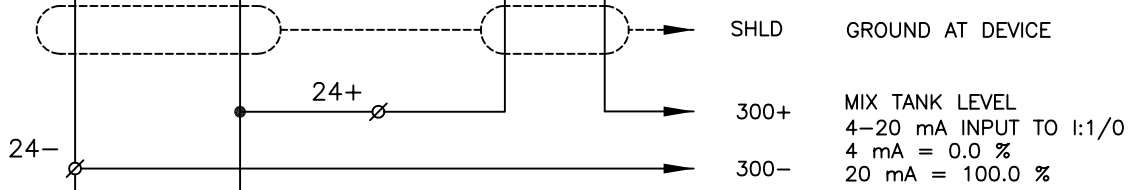
1

X2

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



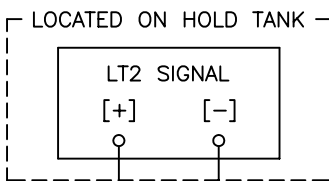
POLYMER MIX TANK
LEVEL TRANSMITTER



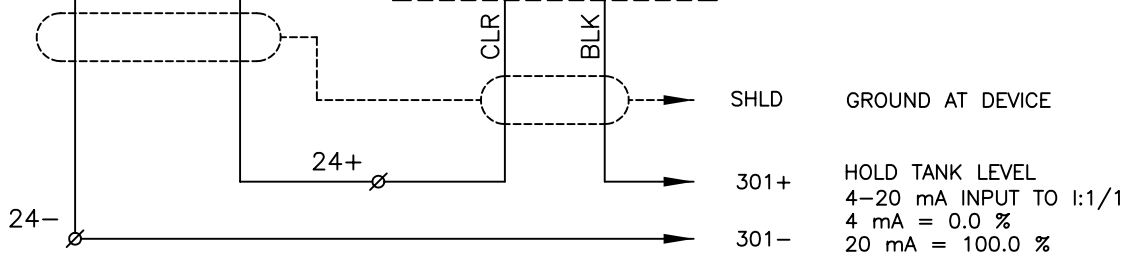
SHLD GROUND AT DEVICE

300+ MIX TANK LEVEL
4-20 mA INPUT TO I:1/0
4 mA = 0.0 %
20 mA = 100.0 %

HOLD TANK TRANSMITTER
POWER SUPPLY
(LOCATED IN CONTROL PANEL)



POLYMER HOLD TANK
LEVEL TRANSMITTER



SHLD GROUND AT DEVICE

301+ HOLD TANK LEVEL
4-20 mA INPUT TO I:1/1
4 mA = 0.0 %
20 mA = 100.0 %

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-)

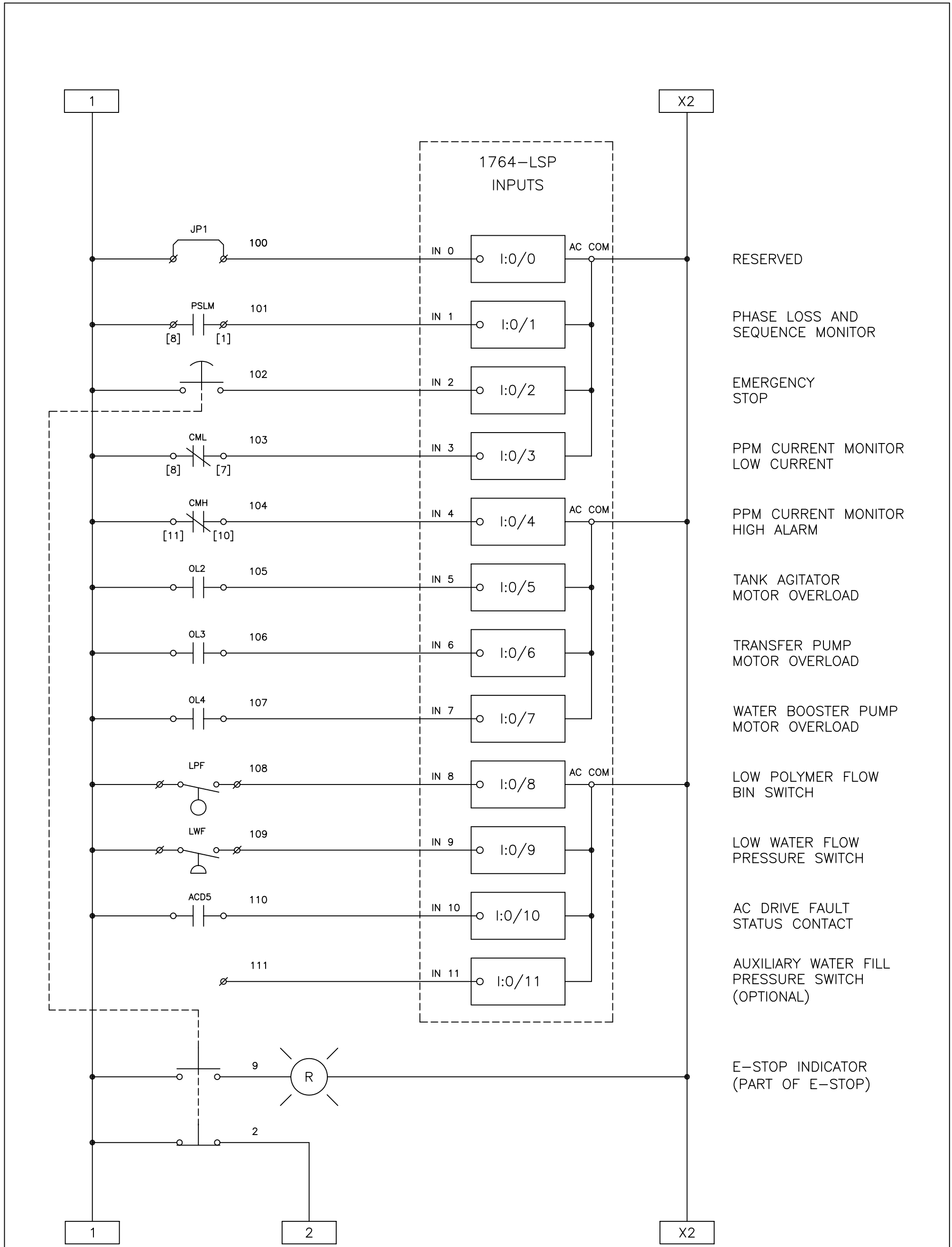
FOR TRANSMITTERS GENERATING 4-20 mA
SWITCH CIRCUIT BREAKER CB9 OFF

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

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

1

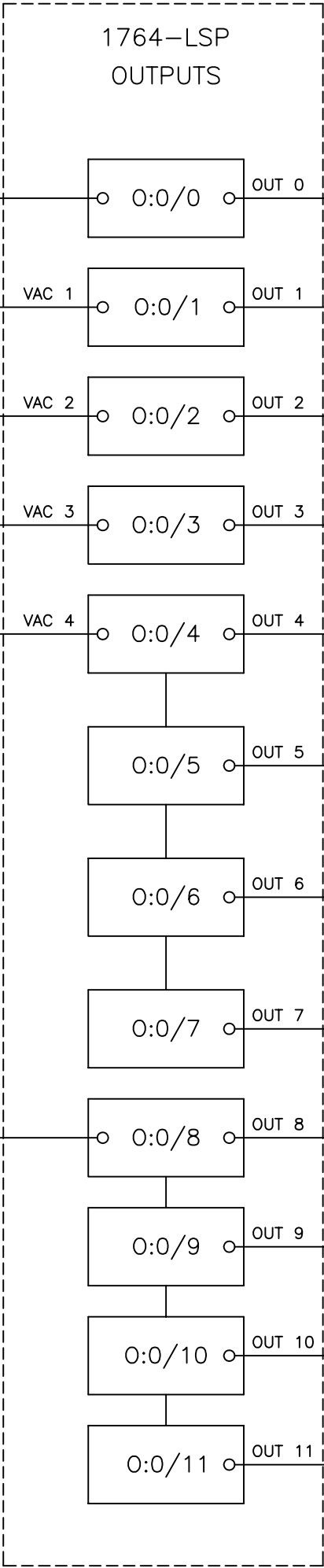
X2



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

2

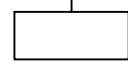
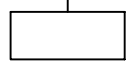
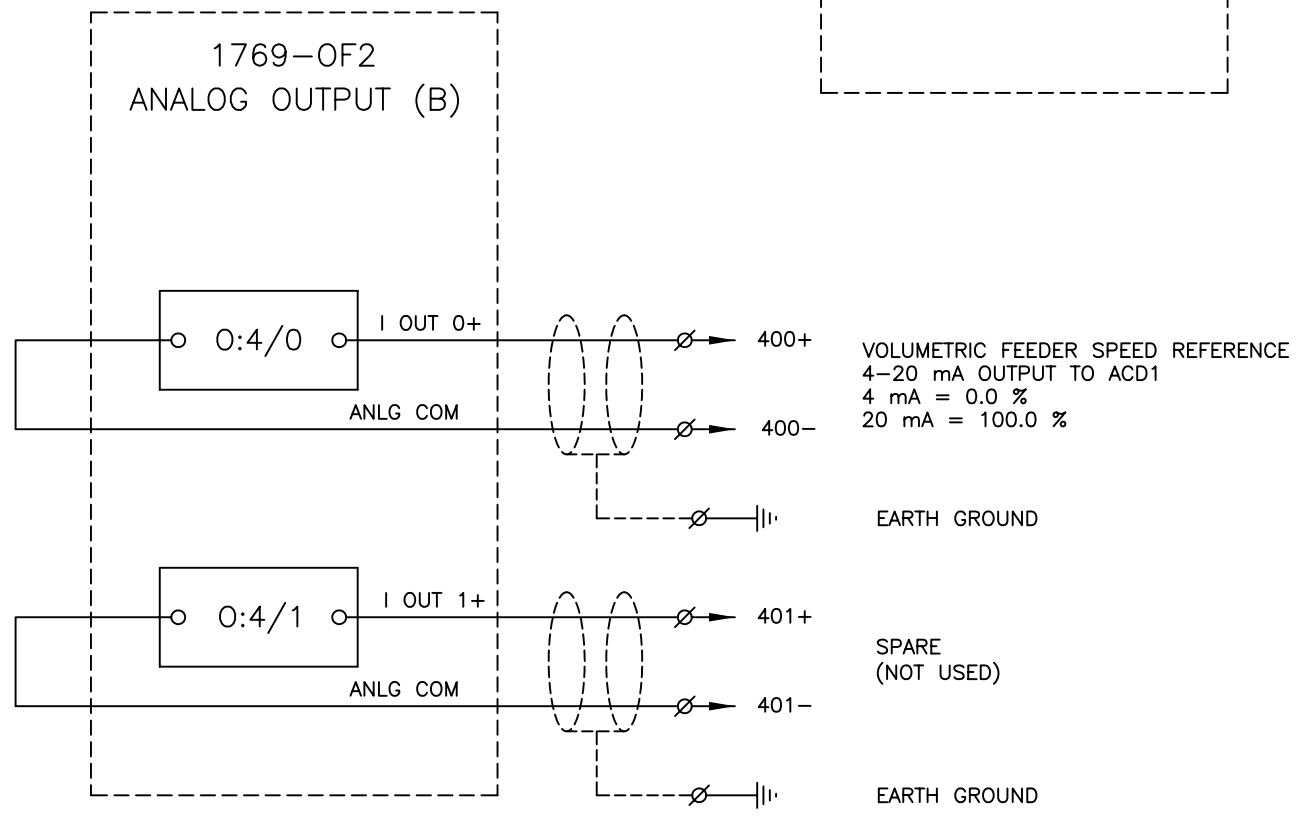
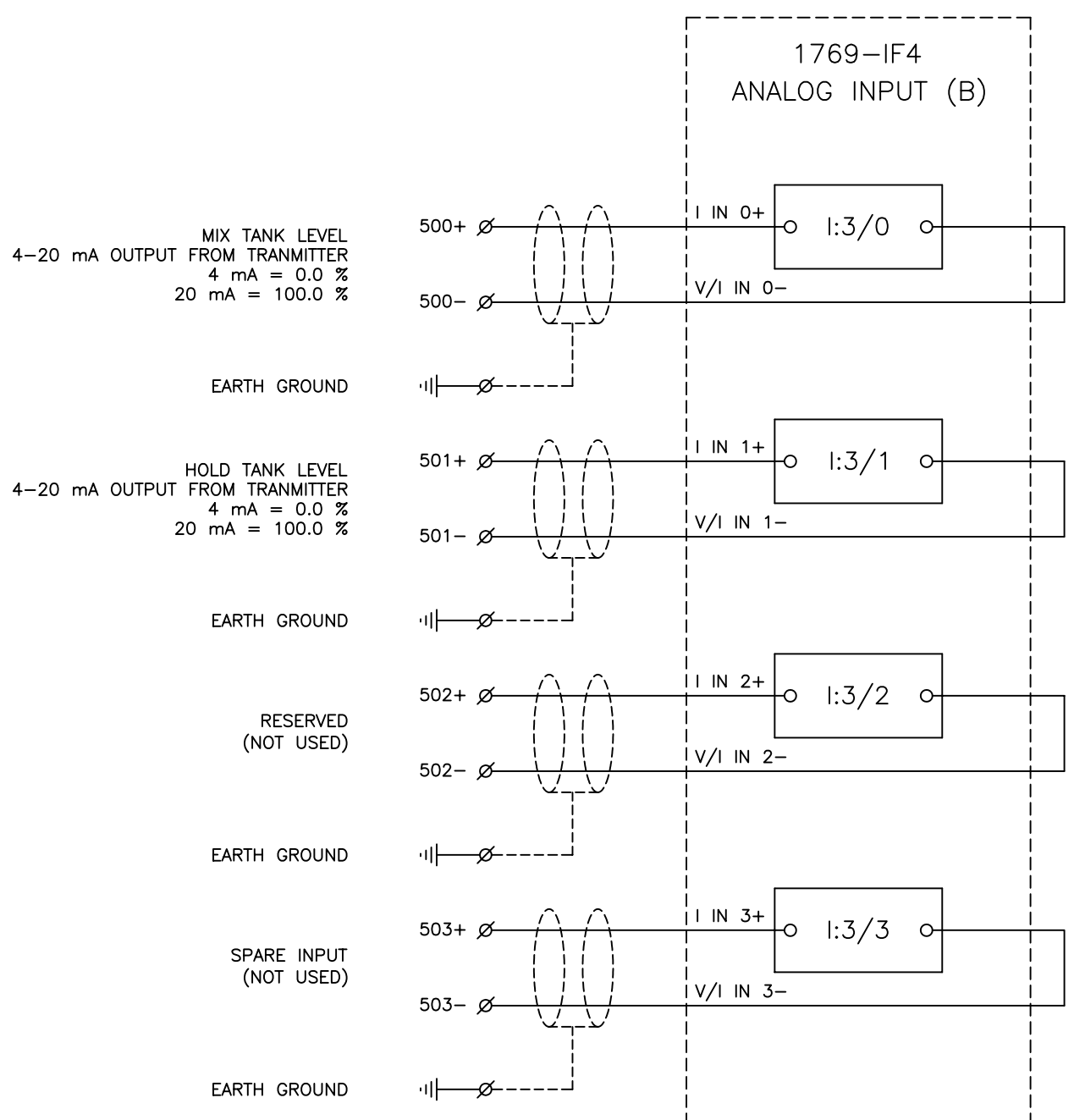
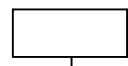
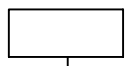
X2



- 200 VOLUMETRIC FEEDER DRIVE RESET RELAY (TO ACD5) (CR7)
- 201 VOLUMETRIC FEEDER DRIVE RUN CONTACT (AT ACD5) (CR5)
- 202 SECONDARY FILL VALVE CONTROL RELAY (CR6)
- 203 AUXILIARY PPM FILL SOLENOID VALVE (OPTIONAL) (Ø)
- 204 PROCESSING MODULE MOTOR CONTACTOR [5 HP] (MS1)
- 205 OL2 205A MIX TANK AGITATOR MOTOR STARTER [5 HP] (MS2)
- 206 OL3 206A TRANSFER PUMP MOTOR STARTER [20 HP] (MS3)
- 207 OL4 207A WATER BOOSTER PUMP MOTOR STARTER [5 HP] (MS4)
- 208 DCS INPUT COMMON FAULT (Ø)
- 209 DCS INPUT COMMON ALARM (Ø)
- 210 DCS INPUT PLC POWER OK (Ø)
- 211 DCS INPUT LOW HOLD TANK LEVEL (Ø)

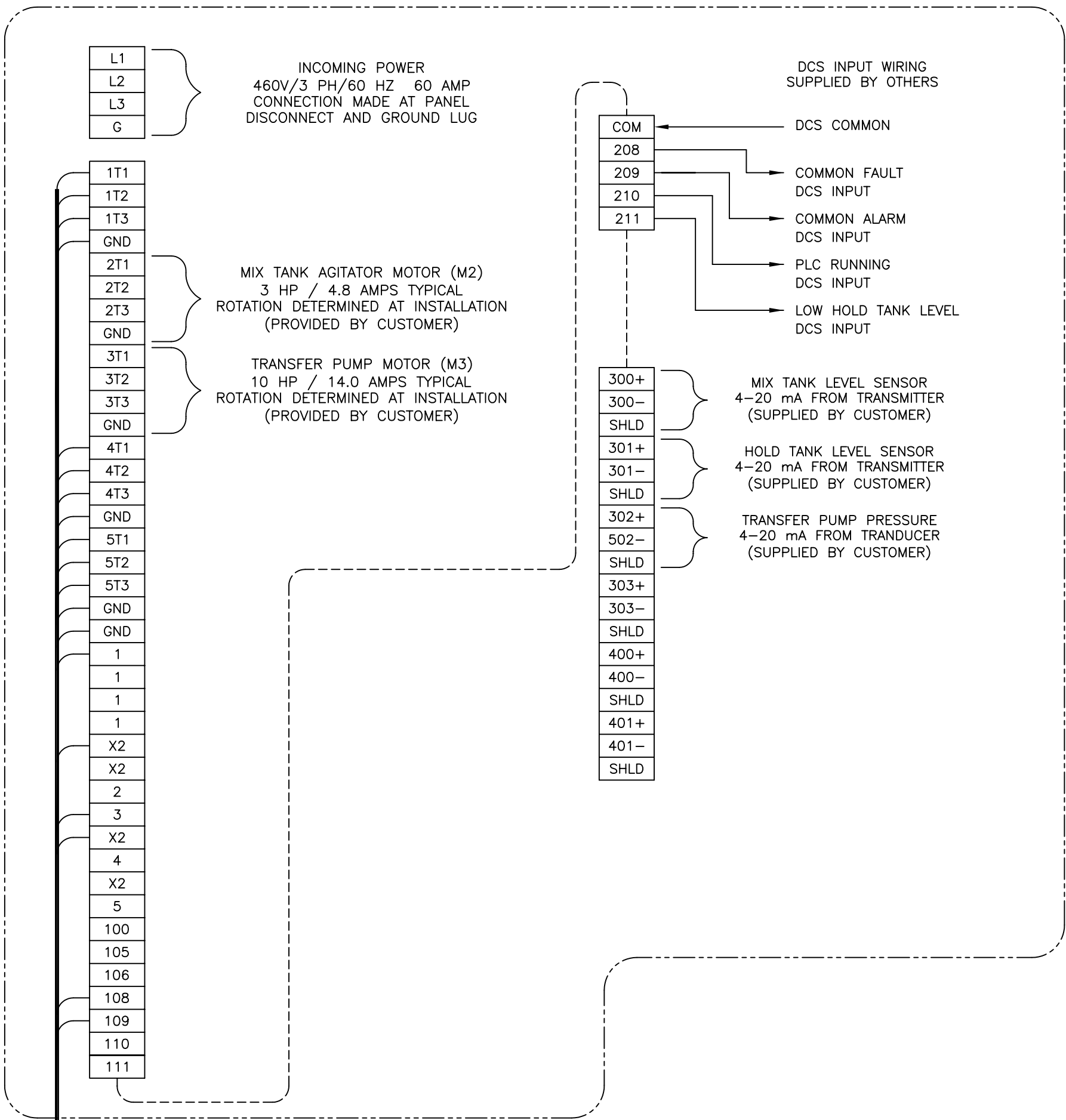
2

X2

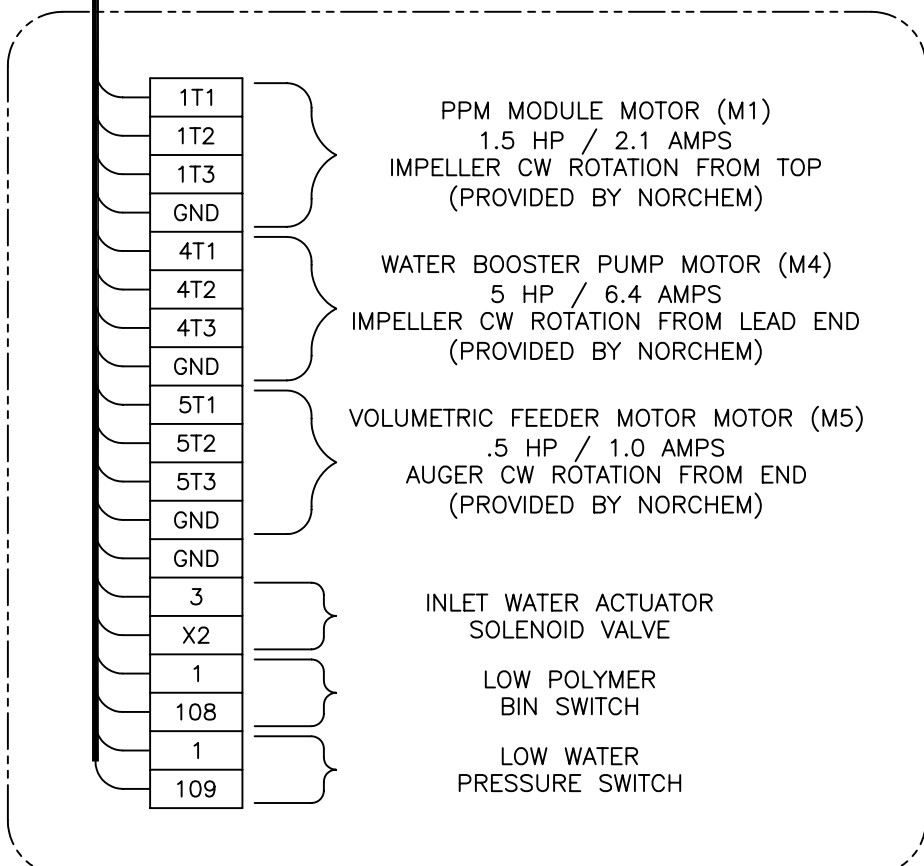


MODEL: NP-4000
 CUSTOMER: NORCHEM INDUSTRIES
 CUSTOMER P.O. NO.: xxxxx
 NCI PROJECT: xxxxx
 SCHEMATIC NO.: NCI-040203-1A REV. A
 SHEET 7 OF 8

TERMINAL LAYOUT FOR NP-4000 SERIES MAIN CONTROL PANEL

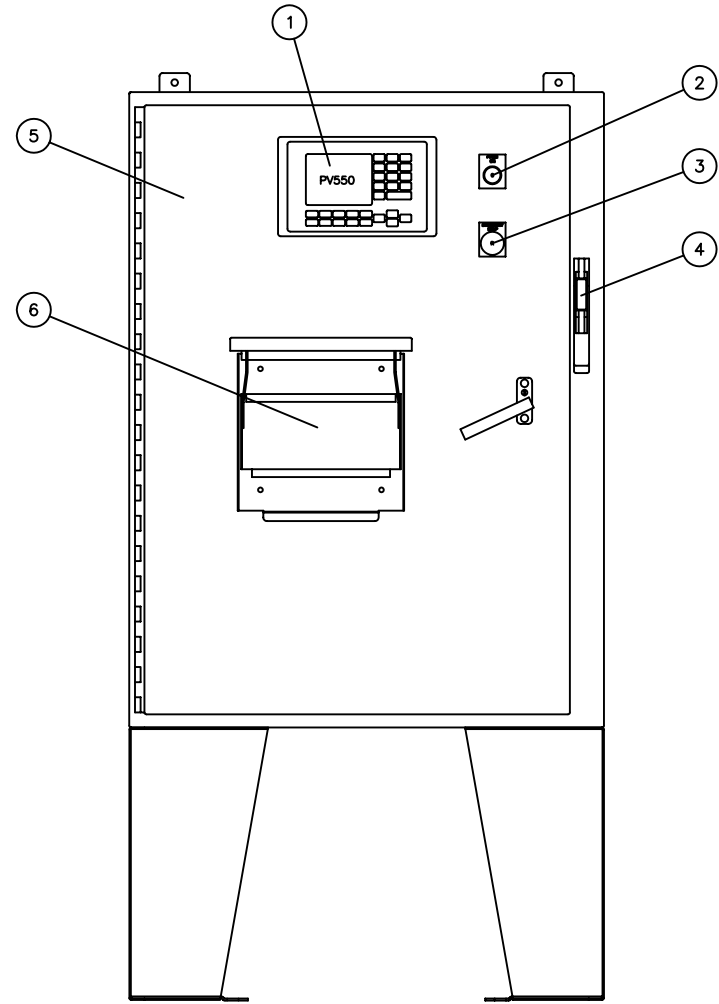


TERMINAL LAYOUT FOR NP-4000 SERIES PROCESSING MODULE



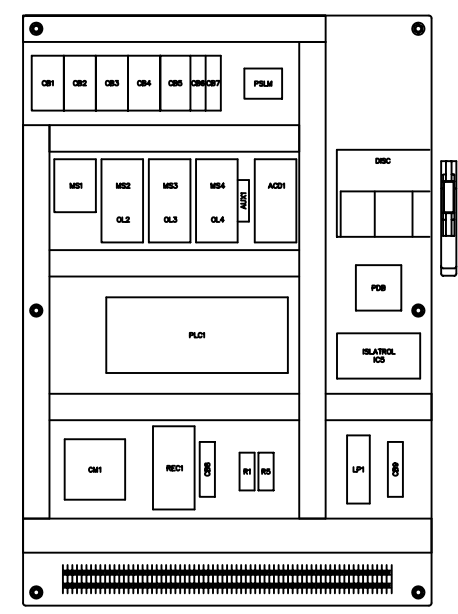
MODEL: NP-4000
 CUSTOMER: NORCHEM INDUSTRIES
 CUSTOMER P.O. NO.: xxxxx
 NCI PROJECT: xxxxx
 SCHEMATIC NO.: NCI-040203-1A REV. A
 SHEET 8 OF 8

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
CDR FILE	CTL_4150_TYP1
SHT. OF	1 1
SCALE	NONE

 NORCHEM INC. 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