

The **NORCHEM ProCAT P-20** automatic liquid polymer system is designed to process up to 24 GPH of neat liquid polymer and deliver up to 20 GPM (1200 GPH) of a nominal 0.2 to 2.0% aqueous polymer solution. The P-20 system is modular in design consisting of a liquid polymer injection module and booster module assembly.

ProCAT P-20 LIQUID POLYMER SYSTEM SPECIFICATIONS:

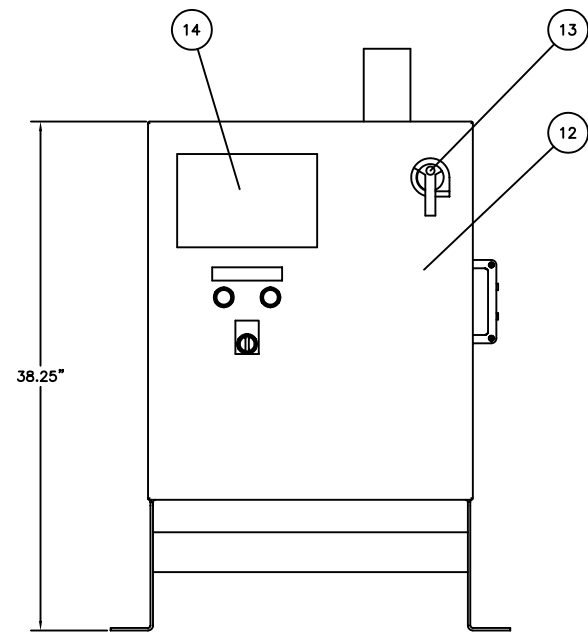
FRAME:	BASE:	28" W x 30" L x 42" H
	CONSTRUCTION:	304 STAINLESS STEEL
PANEL:	ENCLOSURE:	NEMA 4X
INJECTION MODULE:	PUMP:	ROTARY-GEAR-TYPE, 316 STAINLESS STEEL
	DRIVE:	POSITIVE TORQUE TRANSMISSION, 5:1 GEAR REDUCED
	MOTOR:	½ HP, 1725 RPM, TENV, WASHDOWN DUTY
	CAPACITY:	NEAT POLYMER FLOWRATE: 4 TO 24 GPH (96 TO 576 GPD)
BOOSTER MODULE:	PUMP:	CENTRIFUGAL-TYPE, STAINLESS STEEL, CHEMICAL SERVICE
	DRIVE:	CLOSE-COUPLED, DIRECT
	MOTOR:	3 HP, 3450 RPM, TEFC, WASHDOWN DUTY
	DISCHARGE:	20 GPM, 15 – 20 PSI BOOST TO INLET WATER PRESSURE
SOLUTION OUTPUT:	PRIMARY FLOW:	20 GPM (1200 GPH)
	SECONDARY FLOW:	NONE,
	TOTAL FLOW:	20 GPM (1200 GPH)
CONCENTRATION:	SOLUTION:	PRIMARY: 0.2 TO 2.0%, VOLUME ON VOLUME
		TOTAL: 0.2 TO 2.0%, VOLUME ON VOLUME
CONTROLS:	CONTROLLER:	NORCHEM FLOW PROPORTIONAL CONTROLLER
	WATER:	LOW WATER FLOW ALARM AND FAILSAFE, MANUAL RESET
	POLYMER (OPTIONAL):	LOW POLYMER FLOW ALARM AND FAILSAFE, MANUAL RESET
	LIQUID LEVEL:	CONDUCTIVITY-TYPE, 3-ROD STAINLESS STEEL PROBE ASSEMBLY
UTILITIES:	ELECTRICAL:	460 VAC, 3 PHASE, 60 HERTZ, 15 AMP
	WATER:	20 GPM @ 50 PSI, CLEAN SOURCE

ENGINEERING SPECIFICATIONS:

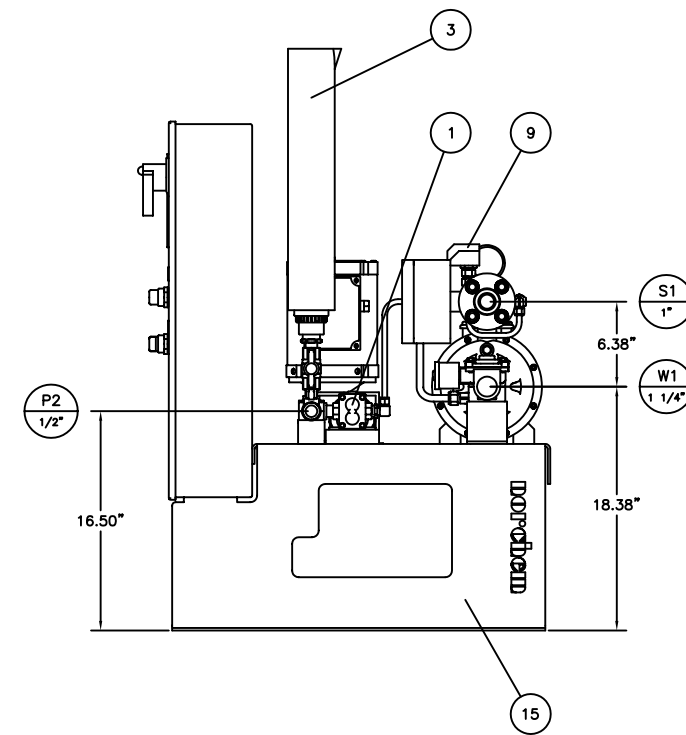
The **ProCAT Model P-20** shall be provided to rapidly dilute, activate and feed emulsion, dispersion, and solution polymers at 20 GPM of polymer solution at concentrations to 2%. The system shall contain a four-step, controlled-energy hydraulic circuit that instantaneously dilutes and blends the polymer to its most effective state for use in the process. The unit shall be designed with full pressure-controlled, inline-inversion capability and shall not be limited by a minimum retention time restriction. The polymer system shall be capable of providing a 15 to 20 PSI pressure boost and shall not rely on available inlet water pressure to discharge the polymer solution product. The system shall be modular in design and shall consist of a polymer injection module, booster module, premix manifold, inlet water solenoid valve, primary inlet water flow meter, and mixing pressure gauge. The ProCAT P-20 shall include a digital controller with LED displays for primary, secondary and total water flow, polymer concentration set point, selectable flow units (mL, liters, gallons, SPM, SPH) readout, percent polymer pump output display, automatic concentration ratio control, auto pump calibration, water alarm, optional polymer alarm. Controller shall be rated NEMA 4 with a membrane keypad and display.

PROCAT POLYMER PROCESSING SYSTEM
COMPONENT REFERENCE DETAILS

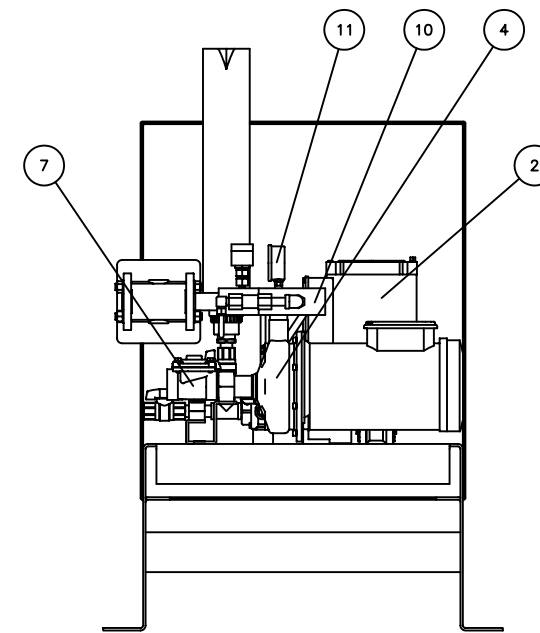
ITEM	DESCRIPTION	PART NUMBER
1	POLYMER INJECTION PUMP .60 GPM @ 360 RPM	ECO
2	POLYMER INJECTION PUMP MOTOR/DRIVE 1/2 HP @ 460 VAC	RELIANCE
3	2000 mL CALIBRATION ASSEMBLY	NORCHEM
4	BOOSTER MODULE PUMP 30 GPM @ 50 PSI	EBARA
5	BOOSTER MODULE PUMP MOTOR 3 HP @ 460 VAC	FRANKLIN
6	DILUTION WATER MAGNETIC FLOWMETER	SPARLING
7	DILUTION WATER SOLENOID VALVE	ASCO
8	POLYMER INJECTION CHECK VALVE 10 PSI	PARKER
9	LOW POLYMER FLOW SWITCH (OPTIONAL)	IFM EFECTOR
10	PREMIX MANIFOLD	NORCHEM
11	MIXING PRESSURE GAUGE 100 PSI	TEL-TRU
12	SYSTEM CONTROL PANEL	NORCHEM
13	600 VAC POWER DISCONNECT	CUTLER-HAMMER
14	FLOW PORPORTIONAL CONTROLLER	NORCHEM
15	304SS SUPPORT BASE	NORCHEM



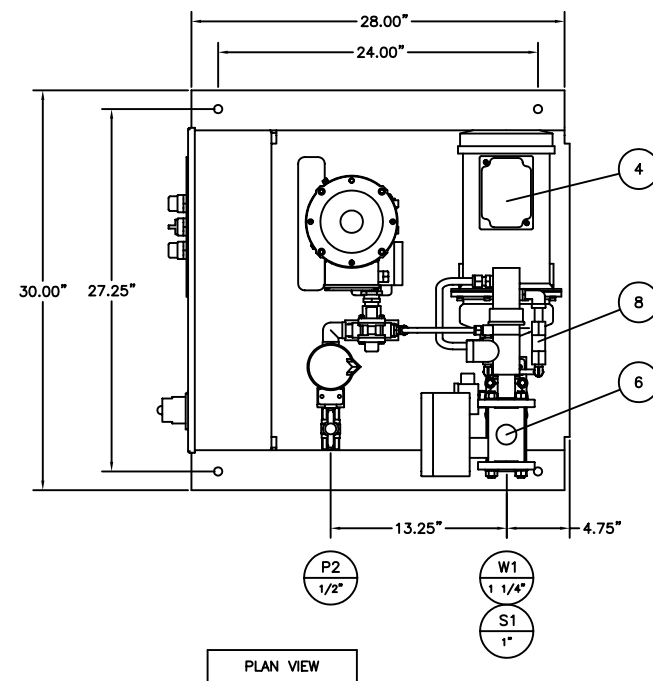
LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW



PLAN VIEW

NOZZLE CONNECTIONS

	NEAT POLYMER INLET 1/2" FNPT
	DILUTION WATER INLET 1 1/4" FNPT
	POLYMER SOLUTION DISCHARGE 1" FNPT

ELECTRICAL ENCLOSURE NOT SHOWN
IN PLAN VIEW FOR DRAWING CLARITY
ELECTRICAL CONDUITS NOT SHOWN

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

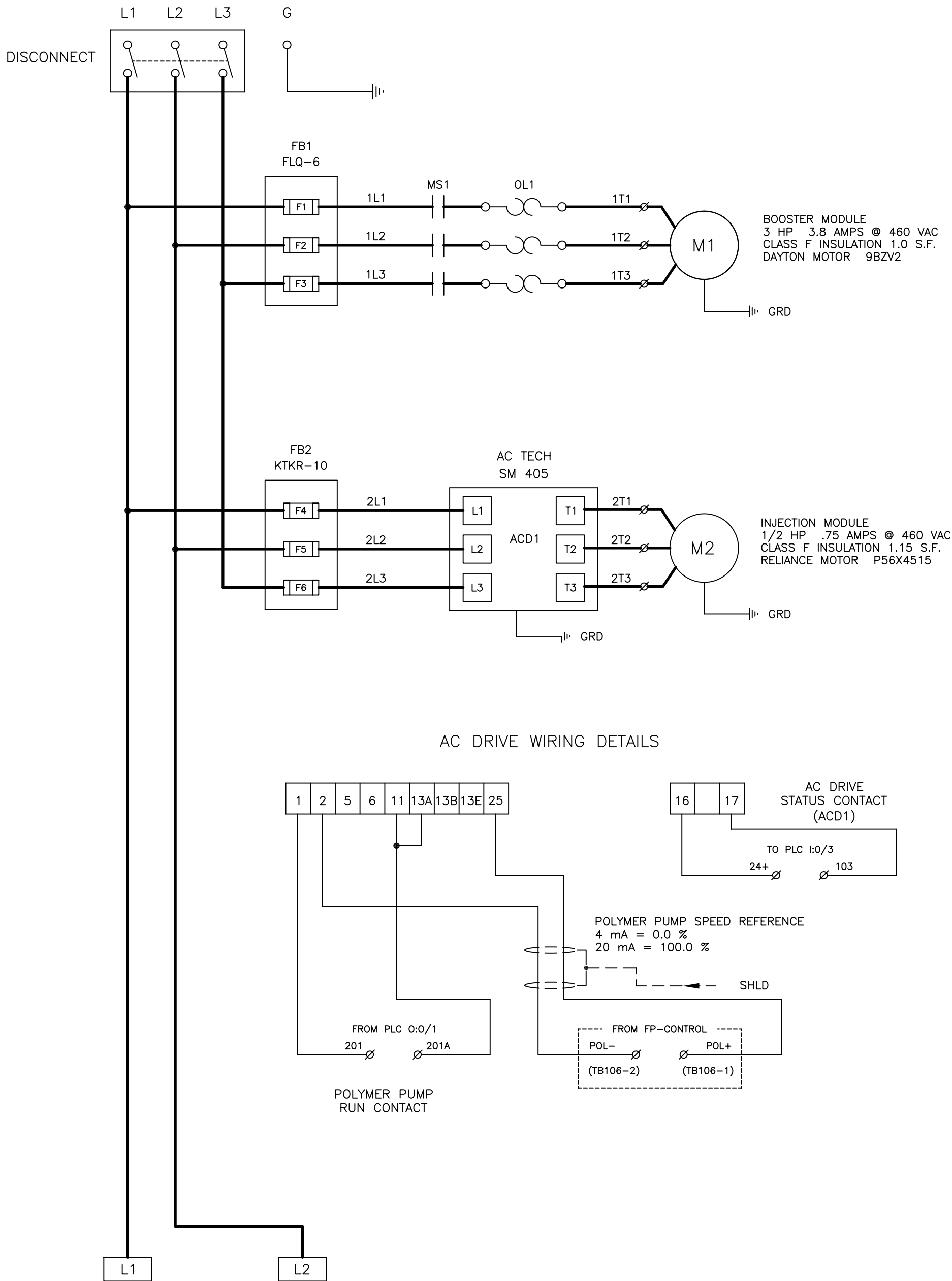
ESTIMATED EQUIPMENT WEIGHT: 850 LBS.




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COMPANY

DRAWN	RWD
CHECKED	RWD
APPROVED	RWD
CAD FILE	L2003_ASSBY_2D
SHT. OF	1 1
SCALE	NONE

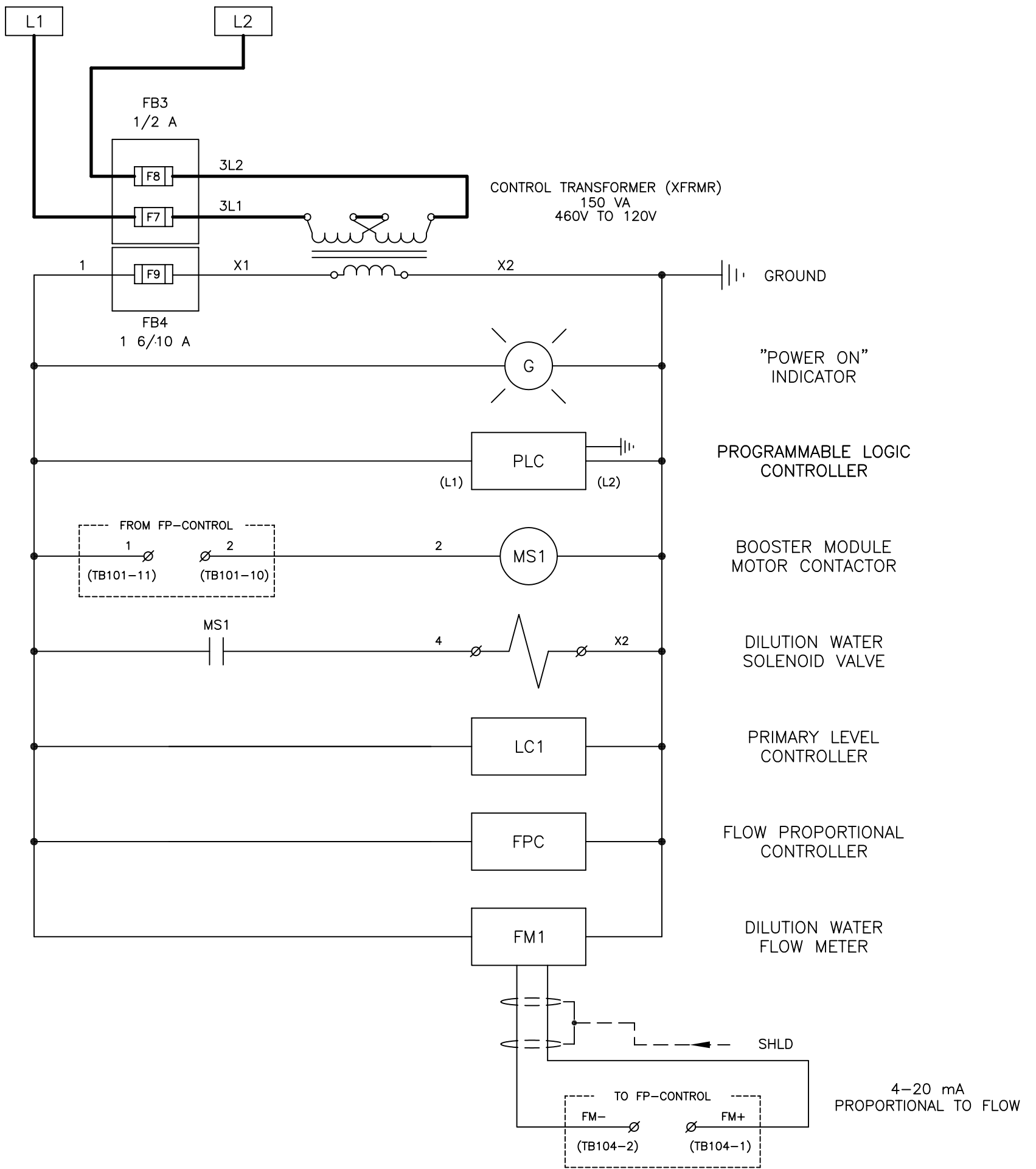
		NORCHEM INC. 8910 W. 192nd STREET MOKENA, IL 60448
CUSTOMER: NORCHEM INC. MOKENA, IL 60448		
DESCRIPTION: PROCAT POLYMER PROCESSING SYSTEM EQUIPMENT PLAN AND ELEVATION DETAILS		
CONTRACT NUMBER: .		
PROJECT NUMBER: .		
DRAWING NUMBER: NCI-020603-1		REV: A
SYM. A FOR INFORMATION ONLY		DATE: 11-30-00
REVISIONS:		DATE:

INCOMING POWER
480 VAC/3 PH/60 HZ
15 AMP SUPPLY

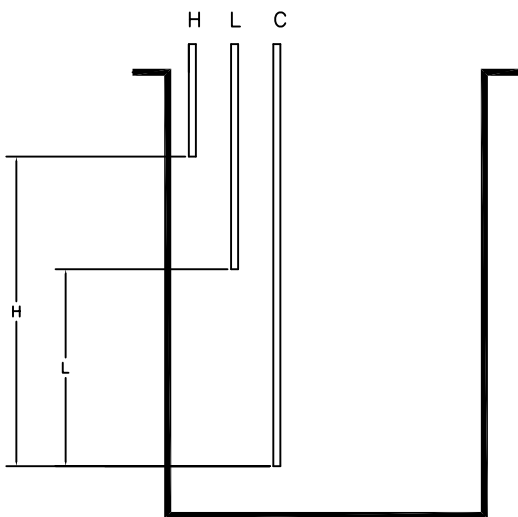


 #12 GAUGE WIRE CONNECTIONS
 #16 GAUGE WIRE CONNECTIONS
 TERMINAL BLOCK CONNECTIONS

MODEL: PROCAT P30
 CUSTOMER: NORCHEM INC.
 CUSTOMER P.O. NO.: xxxxx
 NCI PROJECT: xxxxx
 SCHEMATIC NO.: NCI-102902-1 REV. A
 SHEET 1 OF 5

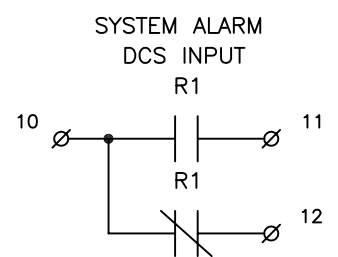
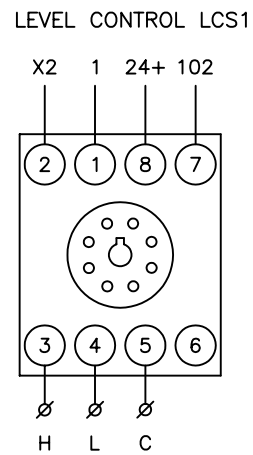


NOTES: PROBE INSTALLED USING
2 1/2" FNPT TANK FITTING
OR COUPLING MOUNTED TO
TANK COVER OR BRACKET
ON SIDE WALL OF TANK
(SUPPLIED BY CUSTOMER)

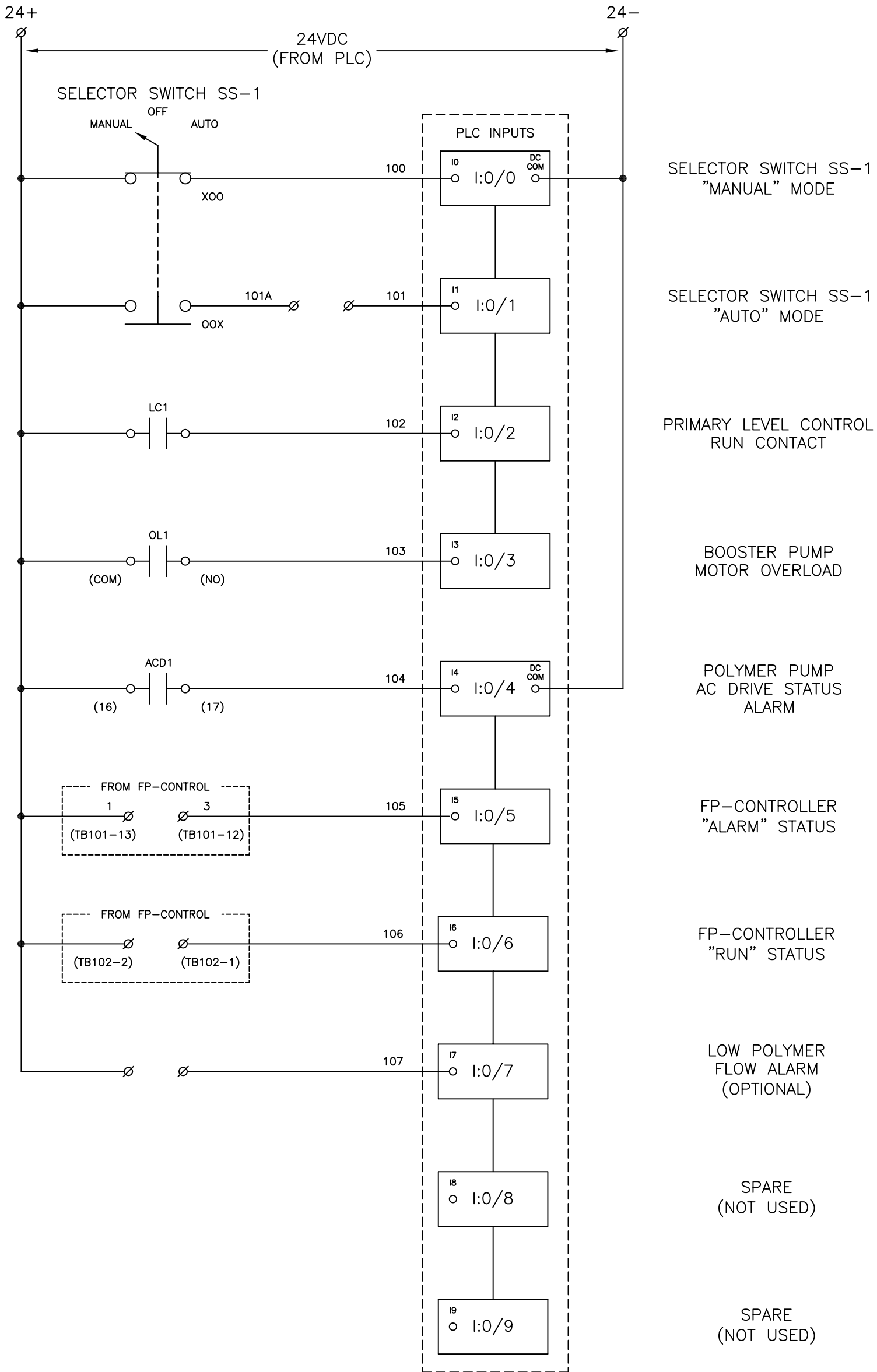


PROBE INSTALLATION

LEVEL CONTROL SOCKET WIRING



MODEL: PROCAT P30
CUSTOMER: NORCHEM INC.
CUSTOMER P.O. NO.: xxxxx
NCI PROJECT: xxxxx
SCHEMATIC NO.: NCI-102902-1 REV. A
SHEET 2 OF 5



SELECTOR SWITCH SS-1
"MANUAL" MODE

SELECTOR SWITCH SS-1
"AUTO" MODE

PRIMARY LEVEL CONTROL
RUN CONTACT

BOOSTER PUMP
MOTOR OVERLOAD

POLYMER PUMP
AC DRIVE STATUS
ALARM

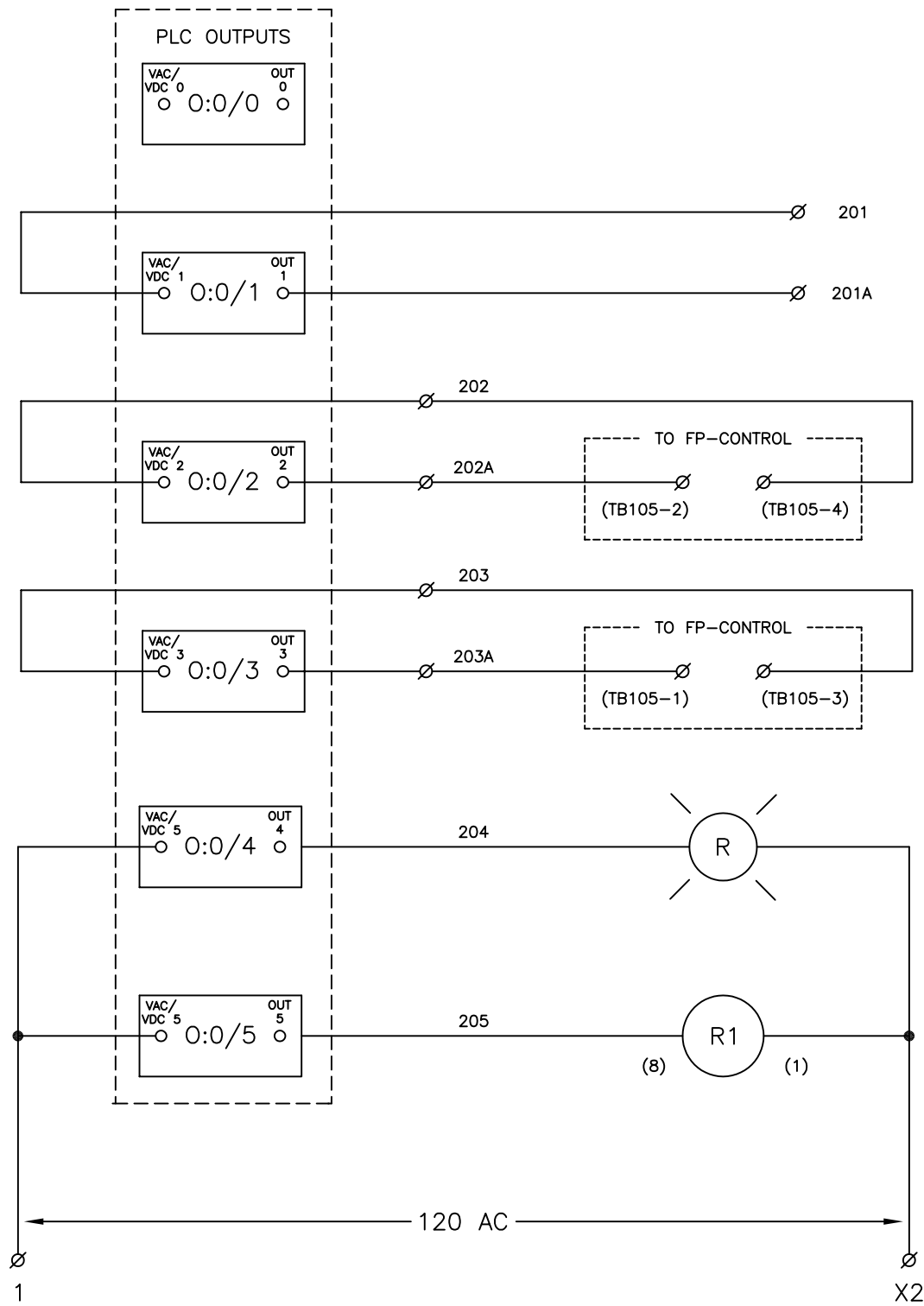
FP-CONTROLLER
"ALARM" STATUS

FP-CONTROLLER
"RUN" STATUS

LOW POLYMER
FLOW ALARM
(OPTIONAL)

SPARE
(NOT USED)

SPARE
(NOT USED)



SPARE
(NOT USED)

POLYMER PUMP
START/STOP

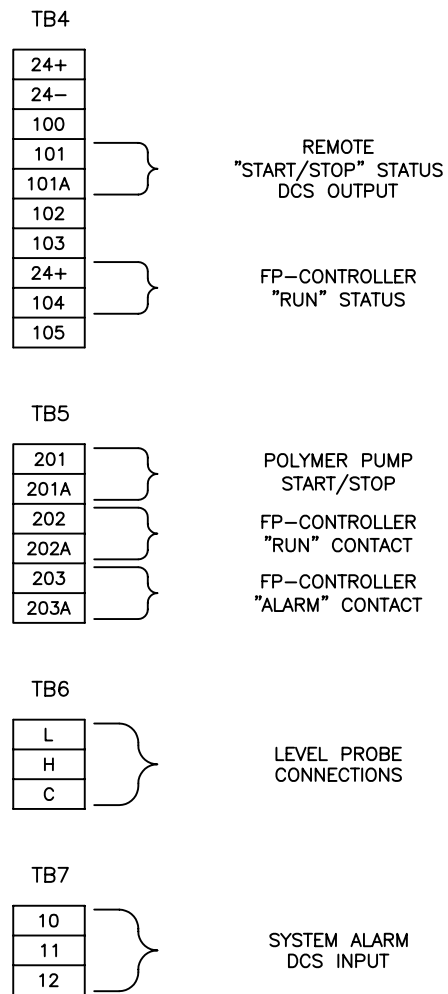
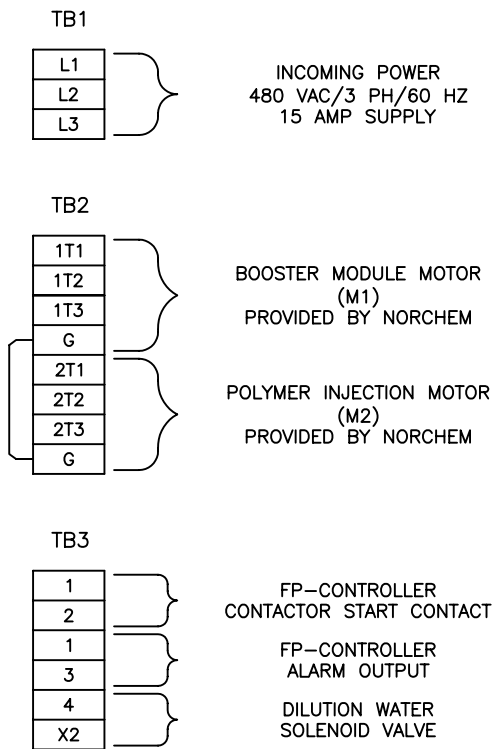
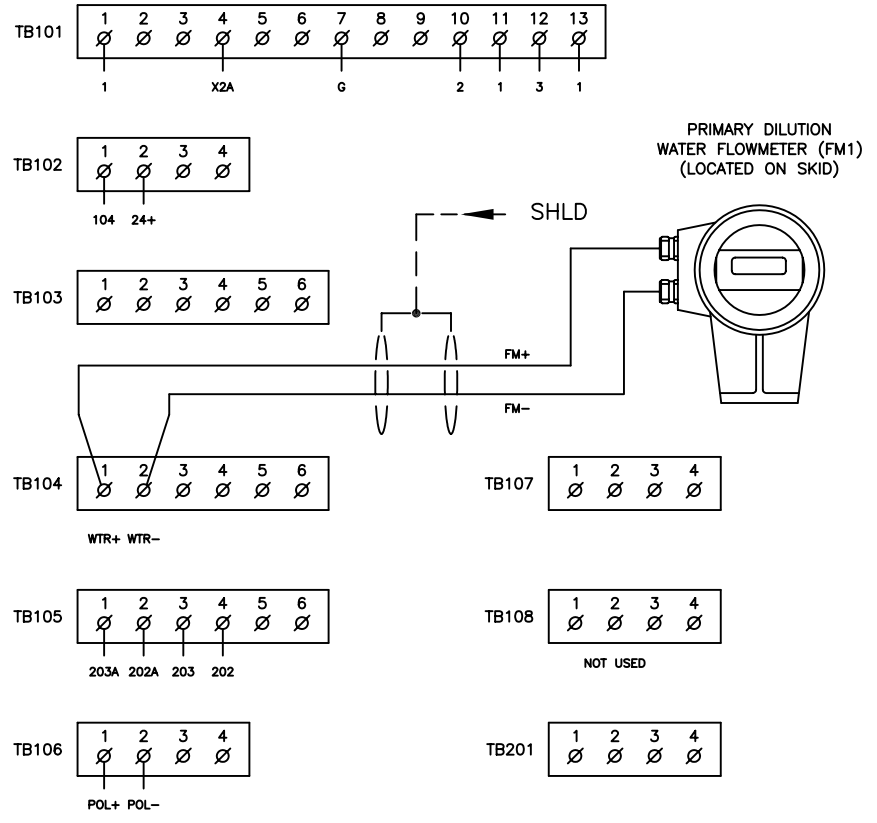
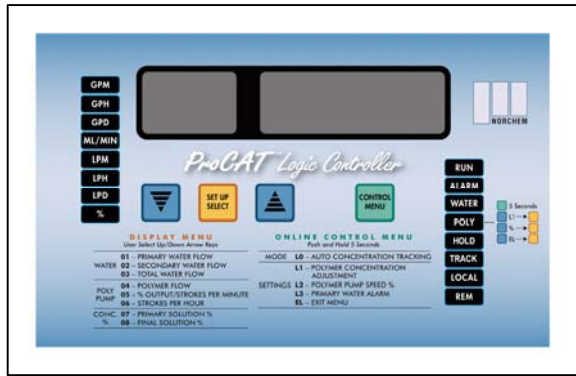
FP-CONTROLLER
"RUN" CONTACT

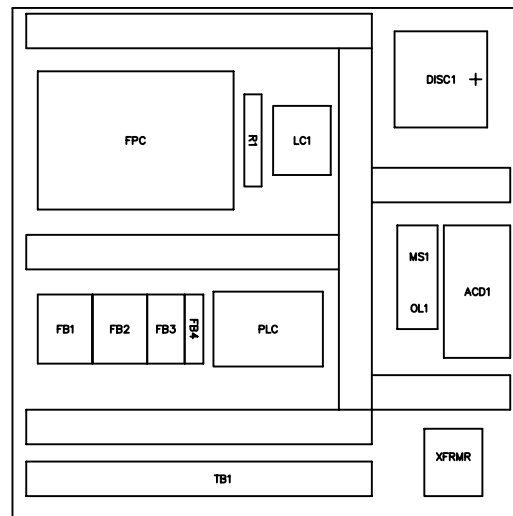
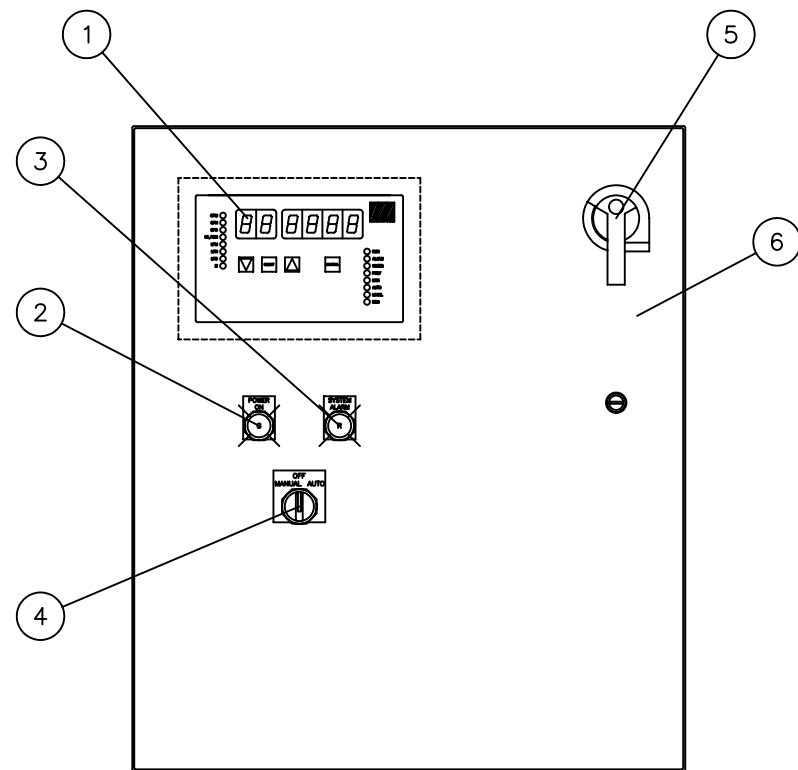
CONTROLLER
"ALARM" CONTACT

"SYSTEM ALARM"
INDICATOR

SYSTEM ALARM
CONTROL RELAY

PROCAT CONTROLLER






SUBPANEL COMPONENT LISTING		
ITEM	DESCRIPTION	PART NO.
DISC1	INCOMING POWER DISCONNECT w/OPERATOR	ALLEN-BRADLEY OR EQUAL
MS1	STARTER - BOOSTER PUMP MOTOR	ALLEN-BRADLEY
OL1	OVERLOAD - BOOSTER PUMP MOTOR	ALLEN-BRADLEY
FB1	FUSE BLOCK - BOOSTER PUMP MOTOR	BUSSMAN OR EQUAL
FB2	FUSE BLOCK - AC DRIVE	BUSSMAN OR EQUAL
FB3	FB3 - XFRMR PRIMARY	BUSSMAN OR EQUAL
FB4	FUSE BLOCK - XFRMR SECONDARY	BUSSMAN OR EQUAL
ACD1	AC DRIVE - POLYMER PUMP	AC TECH
PLC	SECONDARY LEVEL CONTROLLER (11 PIN SOCKET)	ALLEN-BRADLEY 1761-L10BWA
XFRMR	CONTROL TRANSFORMER 150 VA	MICRON OR EQUAL
FPC	FLOW PROPORTIONAL CONTROLLER	NORCHEM
R1	ALARM CONTROL RELAY	ALLEN-BRADLEY
LC1	PRIMARY LEVEL CONTROLLER	WARRICK
TB1	FLOW PROPORTIONAL CONTROLLER	ALLEN-BRADLEY

OPERATOR AND DISPLAY LISTING

- | | |
|------------------------------------|---|
| ① FLOW PROPORTIONAL CONTROLLER HIM | ④ SELECTOR SWITCH MANUAL-OFF-AUTO |
| ② "POWER ON" INDICATOR | ⑤ SYSTEM PANEL DISCONNECT 600 VOLTS/30 AMPS |
| ③ "SYSTEM ALARM" INDICATOR | ⑥ NEMA 4X 304SS ENCLOSURE |

		NORCHEM INC. 8910 W. 192nd STREET MOKENA, ILLINOIS 60448	
A	FOR INFORMATION ONLY	10-29-02	
SYM.	REVISIONS	DATE	
CUSTOMER NORCHEM INC. MOKENA, IL 60448 USA			
DESCRIPTION NORCHEM L-SERIES (VER. 2003) CONTROL PANEL & SUBPAN LAYOUT			
CONTRACT NUMBER -			
PROJECT NUMBER	-	DRAWING NUMBER	NCI-102902-2A
REV	A		

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DWN.	RWD
CHK'D	RWD
APP'D	RWD
CADFILE:	PROCAT_CTL_SPEC
SHT. OF	1 1
SCALE	NONE

LEGEND

DEVICES

- HV-1 POLYMER SUPPLY SHUTOFF HAND VALVE
- HV-2 CALIBRATION ASSEMBLY ISOLATION HAND VALVE
- CAL-1 CALIBRATION CYLINDER
- PI-101 MIXING PRESSURE GAUGE
- M-101 BOOSTER PUMP MOTOR
- M-102 POLYMER INJECTION PUMP MOTOR
- SOV-101 DILUTION WATER INLET SOLENOID VALVE
- FT-101 DILUTION WATER FLOW TRANSMITTER 0-35 GPM (4-20 mA)

CONTROLS

- SS-101 SELECTOR SWITCH "MANUAL-OFF-AUTO"
- LC-101 PRIMARY LEVEL CONTROLLER
- FPC-101 FLOW PROPORTIONAL CONTROLLER (NORCHEM)

INDICATORS

- PWR-101 "POWER ON" INDICATOR
- STA-101 "SYSTEM ALARM" INDICATOR

DCS INTERFACE

- S101 REMOTE "STOP/START" DCS OUTPUT (AUTO MODE ONLY)
- R101 "SYSTEM ALARM" DCS INPUT (FORM-C RELAY)
- L101 DILUTION WATER FLOW 4-20 mA DCS INPUT (0-35 GPM)
- L102 POLYMER PUMP SPEED 4-20 mA DCS INPUT (0-100%)

