

DRAWINGS

FOR

**INTUITECH  
PUMP MODULE P100  
PROJECT 1372**

FOR

**INSTALLATION**

RELEASE #1

October 22, 2014

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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DRAWING TITLE	DRAWING NAME	REVISION NUMBERS BY RELEASE																			
		1	2	3	4	5	6	7	8	9	10										
PROCESS & INSTRUMENTATION DIAGRAM SYMBOL LEGEND	0000-X1RL-100	7																			
DEVICE TAG LEGEND	0000-X1RL-110	4																			
ELECTRICAL & PNEUMATIC SYMBOL LEGEND	0000-X1RL-120	6																			
PROCESS & INSTRUMENTATION DIAGRAM	1372-P1PP-100	1																			
GENERAL ARRANGEMENT	1372-P1ML-100	1																			
GENERAL ARRANGEMENT - CRATED	1372-P1ML-101	0																			
POWER WIRING	1372-P1EP-100	1																			

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			



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**DIMENSIONAL TOLERANCES ARE AS FOLLOWS, UNLESS OTHERWISE SPECIFIED**

1/X: ± 1/8    0.0X: ± 0.01  
1/XX: ± 1/16    0.00X: ± 0.005

ANGLES: ± 1°

TITLE:		REVISION HISTORY	
CLIENT: INTUITECH		PROJECT: 1372	
DRAWN BY: TSB		DRAWN DATE: 1-10-11	
DRAWING NAME: 1372-P1RR-601.VSD		P.O.:	
SCALE: NONE		REVISION: 0	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>DEVICE SYMBOLS</b>				<b>INSTRUMENTATION</b>				<b>PROCESS EQUIPMENT</b>				<b>PUMPS/BLOWERS</b>				<b>VALVES</b>				<b>CONTROL PHILOSOPHY</b>			
FIELD-MOUNTED DEVICE PANEL-MOUNTED DEVICE DEVICE MOUNTED BEHIND PANEL PROGRAMMABLE OPERATOR INTERFACE (PANEL-MOUNTED) PROGRAMMABLE LOGIC CONTROLLER (MOUNTED BEHIND PANEL)				VARIABLE AREA FLOWMETER PADDLE WHEEL/ TURBINE FLOWMETER MAGNETIC FLOWMETER VORTEX SHEDDING FLOWMETER THERMAL DISPERSION FLOWMETER ULTRASONIC LEVEL DEVICE FLOAT LEVEL DEVICE SIGHT LEVEL DEVICE GUIDED WAVE RADAR LEVEL DEVICE PRESSURE DEVICE				ELECTRIC MIXER HEAT EXCHANGER HEATER STATIC MIXER PIPE WEIR WITH AIR BREAK EDUCTOR FILTER / STRAINER COALESCING FILTER ORIFICE PLATE RUPTURE DISK PRESSURE GAUGE ISOLATOR PIPE REDUCER				BLOWER CENTRIFUGAL PUMP DIAPHRAGM PUMP FLEXIBLE IMPELLER PUMP GEAR PUMP PERISTALTIC PUMP PROGRESSIVE CAVITY PUMP COMPRESSOR				NEEDLE VALVE BUTTERFLY VALVE BALL VALVE CHECK VALVE RELIEF VALVE GLOBE VALVE DIAPHRAGM VALVE GATE VALVE 3-WAY BALL VALVE 3-WAY GENERAL VALVE PLUG VALVE GENERAL VALVE AIR RELIEF VALVE VACUUM RELIEF VALVE PRESSURE / SAFETY RELIEF VALVE				SEQUENCER STEP DECISION OPERATOR INPUT PROCESS REFERENCE TO A DIFFERENT PAGE IF CONDITION IS TRUE CONTINUE			
<b>MISCELLANEOUS</b>				<b>CONTROL FUNCTIONS</b>																			
MINOR PROCESS LINE MAJOR PROCESS LINE ELECTRICAL SIGNAL WATER SURFACE MAJOR ARROW MINOR ARROW PROCESS VALUE POINT DRAIN WITH AIR BREAK				PROPORTIONAL, INTEGRAL & DERIVATIVE FLOW PACING SUBTRACTION PULSE WIDTH MODULATION CALCULATION																			
																<b>ACTUATORS</b>							
																PRESSURE REGULATING ACTUATOR AIR-TO-OPEN/ SPRING TO CLOSE ACTUATOR AIR-TO-OPEN/ AIR-TO-CLOSE ACTUATOR AIR-TO-CLOSE/ SPRING-TO-OPEN ACTUATOR ELECTRIC ACTUATOR SOLENOID ACTUATOR HAND ACTUATOR LEVEL ACTUATOR							

REV	DATE	BY	DESCRIPTION
4	10-31-08	AJB	SEPARATED VALVE & ACTUATOR SYMBOLS. ADDED AIRRELIEF VALVE, VACUUM RELIEF VALVE, PRESSURE / SAFETY RELIEF VALVE
5	09-04-09	EJH	CHANGED WEIR DESCRIPTION. ADDED PIPE REDUCER. CHANGED DRAIN SYMBOL.
6	12-17-09	EJH	ADDED GWR LEVEL DEVICE AND COMPRESSOR.
7	09-10-10	KDD	ADDED 3-WAY GENERAL VALVE. UPDATED FILTER/STRAINER SYMBOLS.

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 1/XX: ± 1/16    0.00X: ± 0.005

ANGLES: ± 1°

TITLE: PROCESS & INSTRUMENTATION DIAGRAM SYMBOL LEGEND	
CLIENT:	PROJECT:
DRAWN BY:	DRAWN DATE:
DRAWING NAME: 0000-X1RL-100.VSD	P.O.:
SCALE: NONE	REVISION: 7

INPUT DEVICE TAG PREFIXES						
PARAMETER	ELEMENT / SENSOR	INDICATOR	TRANSMITTER		SWITCH	
			BLIND	INDICATING	HIGH	LOW
AMMONIUM	AME	AMI	AMT	AMIT	AMSH	AMSL
ANALYTICAL (UNSPECIFIED)	AE	AI	AT	AIT	ASH	ASL
CHLORINE	CHE	CHI	CHT	CHIT	CHSH	CHSL
CONDUCTIVITY	CE	CI	CT	CIT	CSH	CSL
CURRENT	CUE	CUI	CUT	CUIT	CUSH	CUSL
FLOW RATE	FE	FI	FT	FIT	FSH	FSL
FLOW TOTALIZER	FQE	FQI	FQT	FQIT	FQSH	FQSL
HARDNESS	HE	HI	HT	HIT	HSH	HSL
LEVEL	LE	LI	LT	LIT	LSH	LSL
NITROGEN	NE	NI	NT	NIT	NSH	NSL
ORP	ORE	ORI	ORT	ORIT	ORSH	ORSL
OXYGEN	OXE	OXI	OXT	OXIT	OXSH	OXSL
OZONE	OZE	OZI	OZT	OZIT	OZSH	OZSL
PARTICLE	PCE	PCI	PCT	PCIT	PCSH	PCSL
PH	PHE	PHI	PHT	PHIT	PHSH	PHSL
POWER	PWE	PWI	PWT	PWIT	PWSH	PWSL
POWER TOTALIZER	PWQE	PWQI	PWQT	PWQIT	PWQSH	PWQSL
PRESSURE	PE	PI	PT	PIT	PSH	PSL
PRESSURE DIFFERENTIAL	PDE	PDI	PDT	PDIT	PDSH	PDSL
RESISTIVITY	RE	RI	RT	RIT	RSH	RSL
RELATIVE HUMIDITY	RHE	RHI	RHT	RHIT	RHSH	RHSL
SPEED	SE	SI	ST	SIT	SSH	SSL
STREAMING CURRENT	SCE	SCI	SCT	SCIT	SCSH	SCSL
SUSPENDED SOLIDS	SSE	SSI	SST	SSIT	SSSH	SSSL
TEMPERATURE	TE	TI	TT	TIT	TSH	TSL
TIME TOTALIZER	TQE	TQI	TQT	TQIT	TQSH	TQSL
TOTAL ORGANIC CARBON	TCE	TCI	TCT	TCIT	TCSH	TCSL
TURBIDITY	TUE	TUI	TUT	TUIT	TUSH	TUSL
UV ABSORPTION	UVE	UVI	UVT	UVIT	UVSH	UVSL
VOLTAGE	VE	VI	VT	VIT	VSH	VSL
WEIGHT / FORCE	WE	WI	WT	WIT	WSH	WSL

ALARM DEVICE TAG PREFIXES		
PARAMETER	HIGH	LOW
AMMONIUM	AMAH	AMAL
ANALYTICAL (UNSPECIFIED)	AAH	AAL
CHLORINE	CAH	CHAL
CONDUCTIVITY	CAH	CAL
CURRENT	CUAH	CUAL
FLOW RATE	FAH	FAL
FLOW TOTALIZER	FQAH	FQAL
HARDNESS	HAH	HAL
LEVEL	LAH	LAL
NITROGEN	NAH	NAL
OXYGEN	OXAH	OXAL
OZONE	OZAH	OZAL
PARTICLE	CAH	PCAL
PH	PHAH	PHAL
POWER	PWAH	PWAL
POWER TOTALIZER	PWQAH	PWQAL
PRESSURE	PAH	PAL
PRESSURE DIFFERENTIAL	PDAH	PDAL
RESISTIVITY	RAH	RAL
RELATIVE HUMIDITY	RHAH	RHAL
SPEED	SAH	SAL
STREAMING CURRENT	SCAH	SCAL
SUSPENDED SOLIDS	SSAH	SSAL
TEMPERATURE	TAH	TAL
TIME TOTALIZER	TQAH	TQAL
TOTAL ORGANIC CARBON	TCAH	TCAL
TURBIDITY	TUAH	TUAL
UV ABSORPTION	UVAH	UVAL
VOLTAGE	VAH	VAL
WEIGHT / FORCE	WAH	WAL

OUTPUT DEVICE TAG PREFIXES	
DESCRIPTION	TAG
CHECK VALVE	CV
DISCRETE VALVE (OPEN/CLOSED)	DV
INJECTION VALVE	IV
PILOT VALVE	YV
PRESSURE REGULATOR	PR
PROPORTIONAL VALVE (MODULATING)	PV
RELIEF VALVE	RV
SAMPLE VALVE	SV

CONTROL DEVICE TAG PREFIXES	
DESCRIPTION	TAG
FLOW CONTROLLER	FC
FLOW INDICATING CONTROLLER	FIC
PRESSURE CONTROLLER	PC
PRESSURE INDICATING CONTROLLER	PIC
SPEED CONTROLLER	SC
SPEED INDICATING CONTROLLER (VFD)	SIC
TEMPERATURE CONTROLLER	TC
TEMPERATURE INDICATING CONTROLLER	TIC

REV	DATE	BY	DESCRIPTION
1	05-01-08	REM	MODIFIED SRV TO PRV AND ADDED VRV.
2	09-05-08	DDB	ADDED ORP.
3	11-04-08	AJB	REMOVED VRV, & PRV, ADDED RV.
4	11-11-10	TSB	ADDED AMMONIUM PARAMETER AND PREFIXES.



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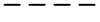

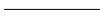



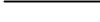

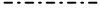



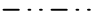






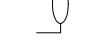
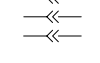


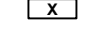
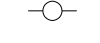
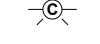
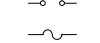
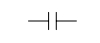
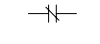
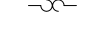
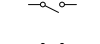
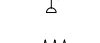
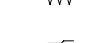
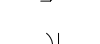
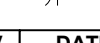
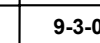
1/X: ± 1/8 0.0X: ± 0.01

1/XX: ± 1/16 0.00X: ± 0.005

ANGLES: ± 1°

TITLE: DEVICE TAG LEGEND	
CLIENT:	PROJECT:
DRAWN BY:	DRAWN DATE:
DRAWING NAME: 0000-X1RL-110.VSD	P.O.:
SCALE: NONE	REVISION: 4

**ELECTRICAL**

	WIRING PROVIDED BY OTHERS		HAND-OFF-AUTO SWITCH
	INTERNAL WIRING OR COMPONENTS		TWO POSITION SWITCH
	NON-WIRE JUMPERS		FLOW SWITCH
	STRANDED COPPER WIRE		LIQUID LEVEL SWITCH
	TWISTED PAIR CABLE WITH SHIELD & DRAIN		TEMPERATURE SWITCH
	MANUFACTURER SUPPLIED CABLE		NORMALLY OPEN PUSH-BUTTON
	CATEGORY 5 UNSHIELDED TWISTED PAIR		NORMALLY CLOSED PUSH-BUTTON
	PANEL BOUNDARY		LINE REACTOR
	DEVICE AND COMPONENT BOUNDARIES		
	MOTOR		
	TRANSFORMER		
	SHIELD		
	PLUG CONNECTOR		
	INLINE CONNECTOR (SPLICE, WIRE NUT, ETC)		
	GROUND		
	TERMINAL		
	COIL		
	LIGHT WITH COLOR		
	CIRCUIT BREAKER		
	FUSE		
	NORMALLY OPEN CONTACT		
	NORMALLY CLOSED CONTACT		
	OVERLOAD RELAY		
	SIGNAL POLE SWITCH		
	PRESSURE SWITCH		
	RESISTOR		
	VARISTOR		
	CAPACITOR		

REV	DATE	BY	DESCRIPTION
3	9-3-09	KDD	ADDED "WIRING PROVIDED BY OTHERS" AND VARISTOR SYMBOL.
4	10-19-09	KDD	DELETED PRESSURE GAUGE SYMBOL.
5	11-13-09	KDD	ADDED AIR DRYER SYMBOL.
6	9-14-10	KDD	DELETED PNEUMATIC SYMBOLS.

  
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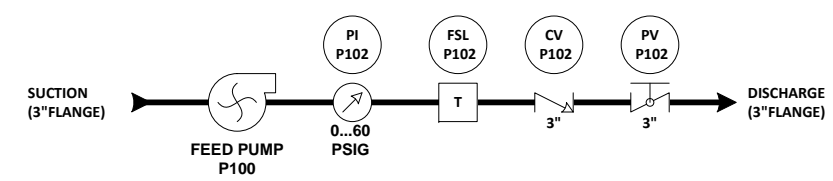
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1/XX: ± 1/16	0.00X: ± 0.005

ANGLES: ± 1°

TITLE: ELECTRICAL & PNEUMATIC SYMBOL LEGEND	
CLIENT:	PROJECT:
DRAWN BY:	DRAWN DATE:
DRAWING NAME: 0000-X1RL-120.VSD	P.O.:
SCALE: NONE	REVISION: 6

**SKID DIMENSIONS:** 31.75"L X 31.75"W X 48"H  
**CRATE DIMENSIONS:** 31.75"L X 31.75"W X 48"H  
**DRY WEIGHT:** 450 LB  
**WET WEIGHT:** 475 LB  
**CRATED WEIGHT:** 500 LB  
**VOLTAGE:** 208-230 / 460 VAC  
**CURRENT:** 21.5-21.0 / 10.8FLA



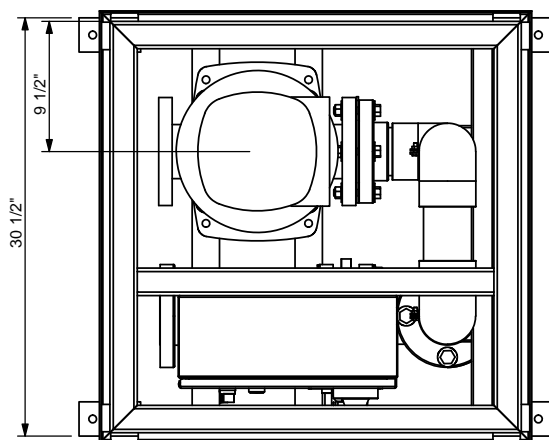
REV	DATE	BY	DESCRIPTION
1	10-08-13	TSB	UPDATED CRATE DIMENSIONS.
2			
3			
4			



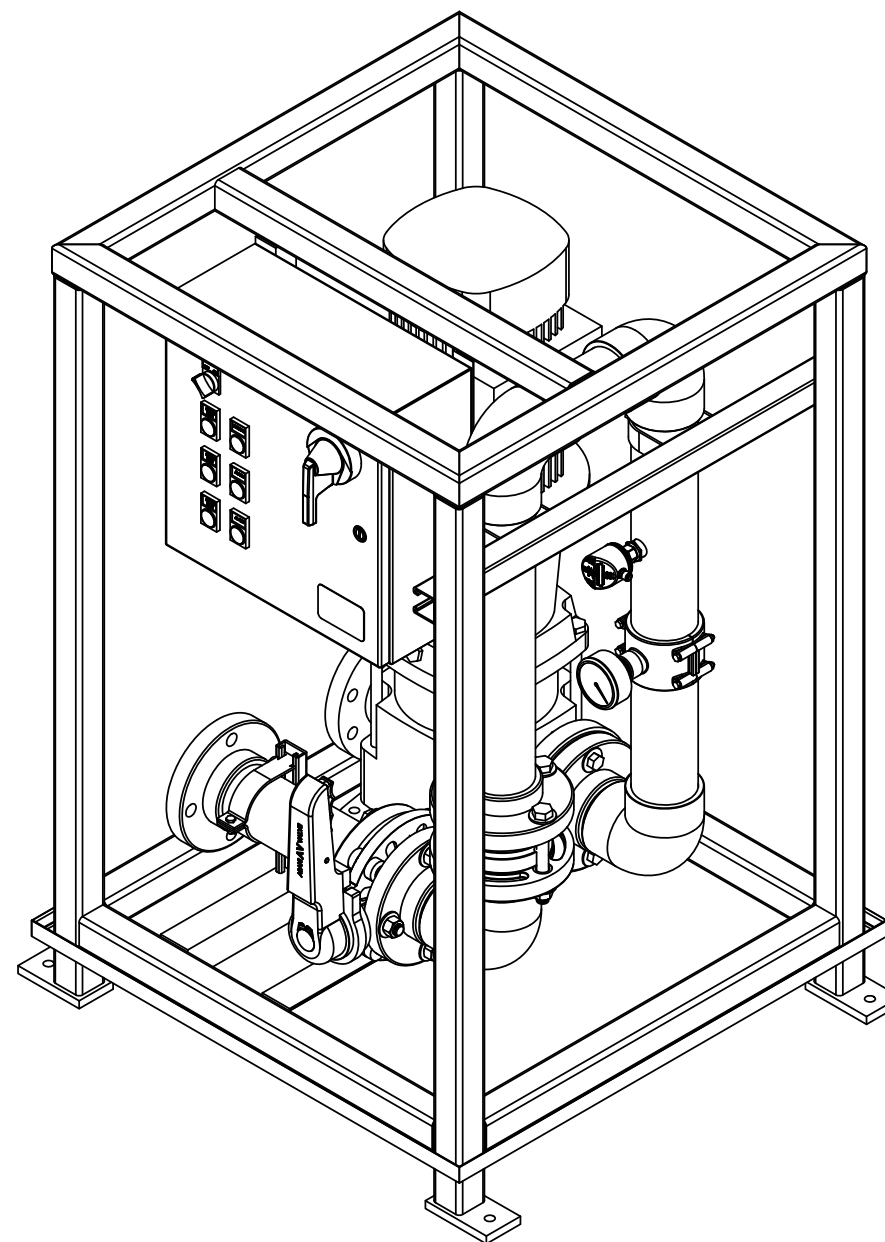
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 ANGLES: ± 1°

<b>TITLE:</b> PROCESS & INSTRUMENTATION DIAGRAM	
<b>CLIENT:</b> INTUITECH	<b>PROJECT:</b> 1372
<b>DRAWN BY:</b> AJB	<b>DRAWN DATE:</b> 01-05-11
<b>DRAWING NAME:</b> 1372-P1PP-100.VSD	<b>P.O.:</b>
<b>SCALE:</b> NONE	<b>REVISION:</b> 1

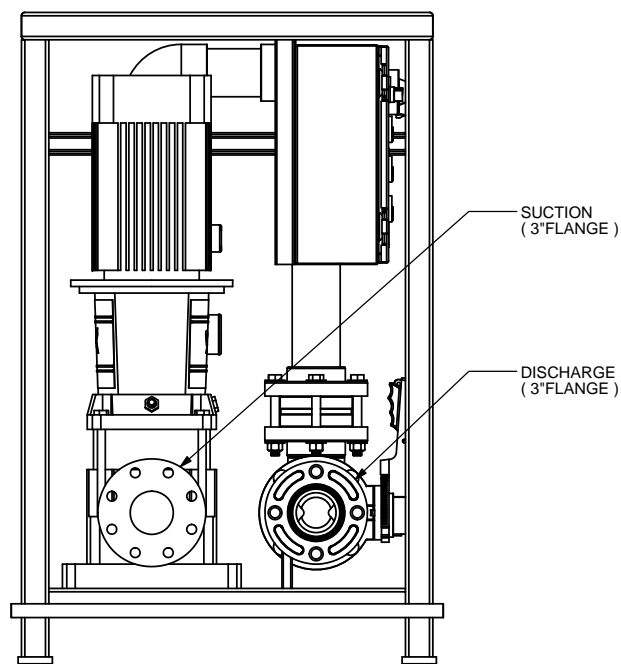


TOP VIEW

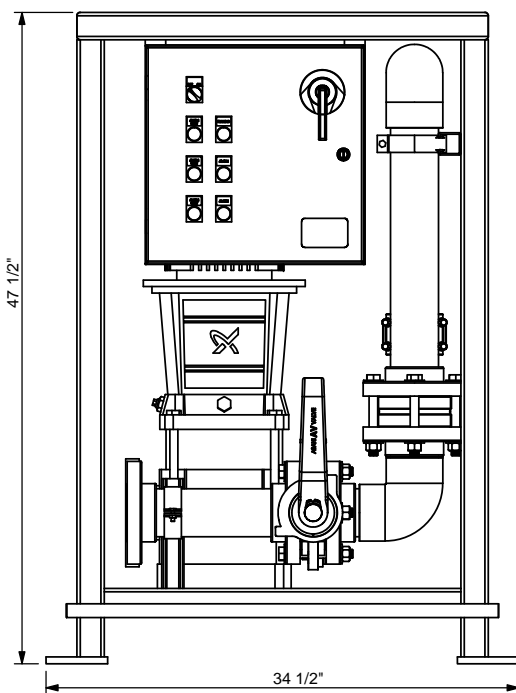


**NOTES:**

1. QUANTITY: 1
2. UNITS: INCHES



LEFT VIEW



FRONT VIEW

REV	DATE	BY	CHECKED	DESCRIPTION
1	02-24-11	AJB		UPDATED DRAWING TO REFLECT ALL AS BUILT MODIFICATIONS
2				
3				
4				

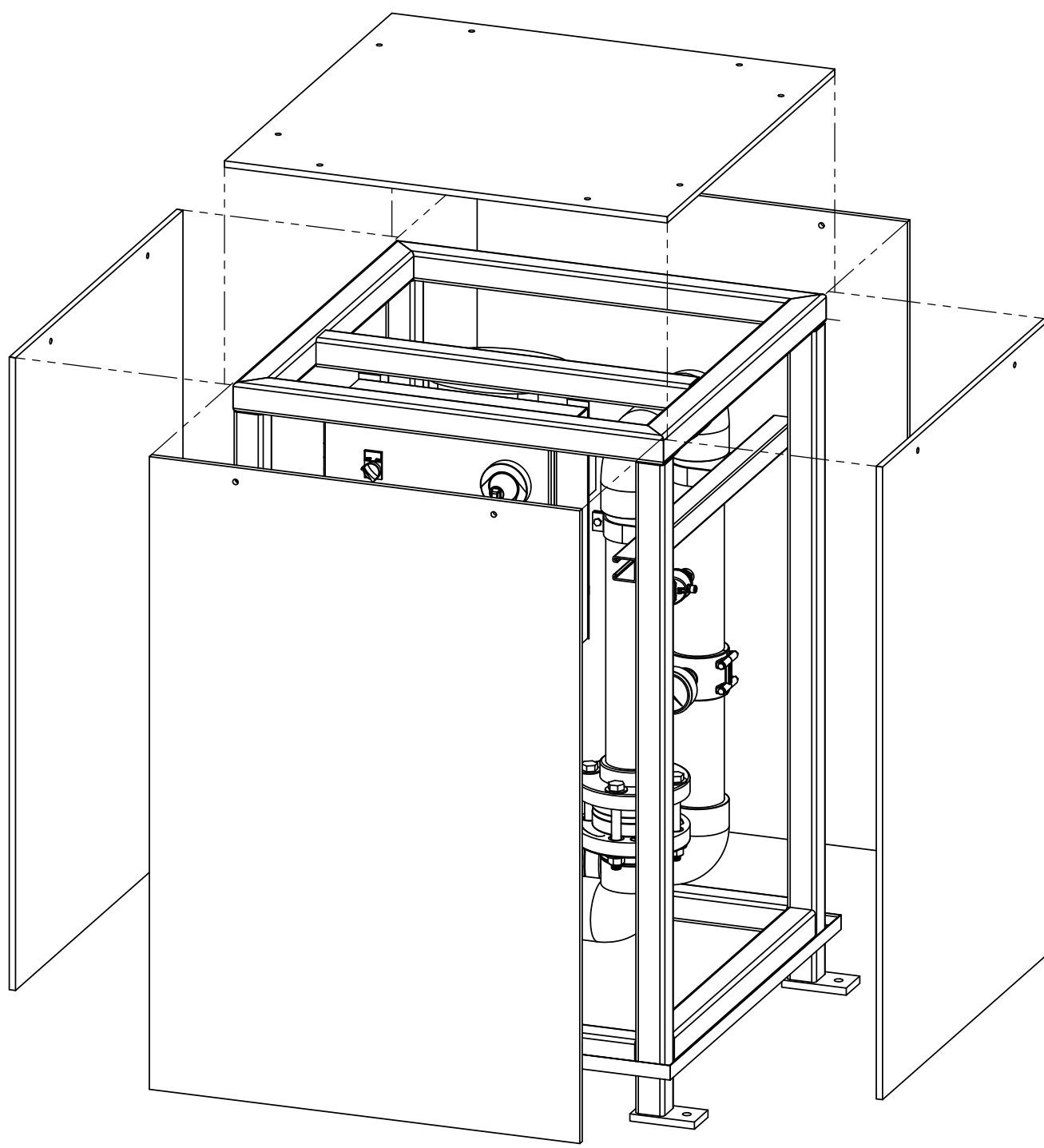


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 ANGLES: ±1°

<b>TITLE:</b> PUMP MODULE P100 GENERAL ARRANGEMENT	
<b>CLIENT:</b> INTUITECH	<b>PROJECT:</b> 1372
<b>DRAWN BY:</b> AJB	<b>DRAWN DATE:</b> 01-05-11
<b>DRAWING NAME:</b> 1372-P1ML-100	<b>P.O.:</b>
<b>SCALE:</b> NONE	<b>REVISION:</b> 1



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
P																								P
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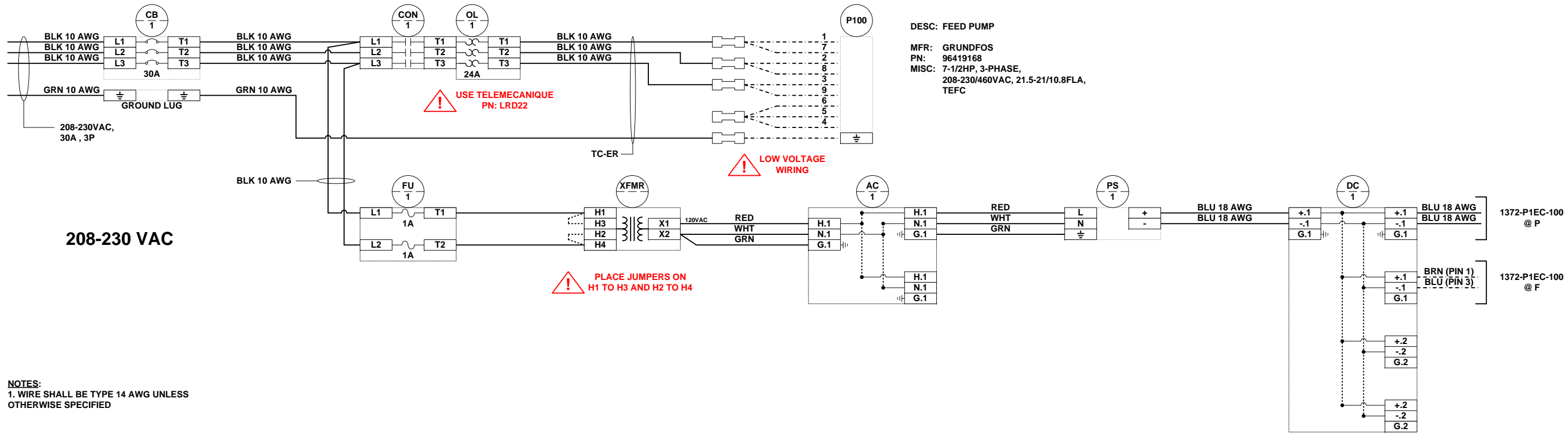
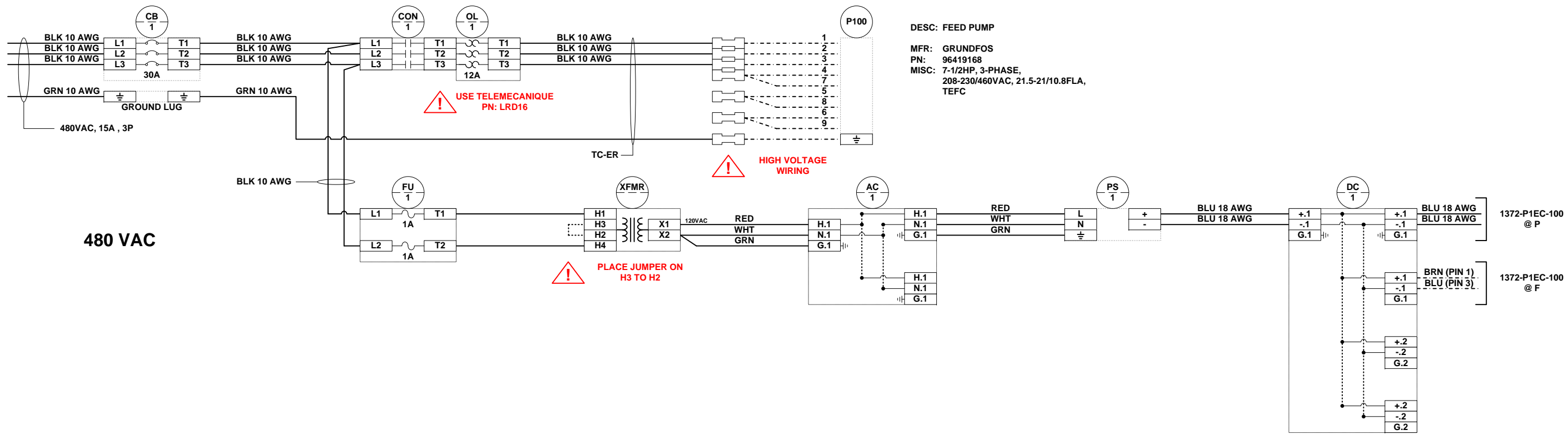
REV	DATE	BY	CHECKED	DESCRIPTION
1				
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<b>TITLE:</b>		<b>PUMP MODULE P100 GENERAL ARRANGEMENT - CRATED</b>	
<b>CLIENT:</b> INTUITECH		<b>PROJECT:</b> 1372	
<b>DRAWN BY:</b> AJB		<b>DRAWN DATE:</b> 02-24-11	
<b>DRAWING NAME:</b> 1372-P1ML-101		<b>P.O.:</b>	
<b>SCALE:</b> NONE		<b>REVISION:</b> 0	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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NOTES:  
1. WIRE SHALL BE TYPE 14 AWG UNLESS OTHERWISE SPECIFIED

REV	DATE	BY	DESCRIPTION
1	2-22-11	TSB	FIXED TEXT FORMAT.
2			
3			
4			

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DIMENSIONAL TOLERANCES ARE AS FOLLOWS, UNLESS OTHERWISE SPECIFIED

1/X: ± 1/8    0.0X: ± 0.01  
1/XX: ± 1/16    0.00X: ± 0.005

ANGLES: ± 1°

TITLE: PUMP MODULE P100 CONTROL PANEL - POWER WIRING	
CLIENT: INTUITECH	PROJECT: 1372
DRAWN BY: TSB	DRAWN DATE: 1-6-11
DRAWING NAME: 1372-P1EP-100.VSD	P.O.:
SCALE: NONE	REVISION: 1