cpac, INC. Equipment Division

DNS-100

Developer Neutralizing System

A system for treating CTP Plate Developers

(115 VAC, single phase, 60 Hz)

USER'S MANUAL

- **INSTALLING**
- **OPERATING**
- **MAINTAINING**

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11/02

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RECOMMENDATIONS

Read the entire instruction manual *before* installation or operation of the Neutralization System. It will help you to understand the operation of the system, how various sub assemblies work together, and the operating sequence of the controls.

WARNING: NEVER ATTEMPT TO PERFORM ANY ELECTRICAL TROUBLESHOOTING ADJUSTMENT(S) OR SERVICE(S) UNLESS YOU ARE A QUALIFIED ELECTRICIAN, ELECTRONICS TECHNICIAN OR FACTORY TRAINED SERVICE TECHNICIAN.

IMPORTANT SAFEGUARDS

When using your ANS system, these basic safety precautions should be followed:

1. Read and understand all instructions.
2. Care must be taken to avoid burns from touching hot parts.
3. Do not operate this appliance with a damaged cord or if the appliance has been dropped or damaged until it has been examined by a qualified service technician.
4. Do not let power cord hang over edge of table or counter or touch hot surfaces.
5. An extension cord should not be used with this unit. The unit should be plugged directly into a power outlet.
6. To protect against electrical shock hazard, do not immerse this appliance in water or other liquids.
7. To avoid electrical shock hazard, do not disassemble this appliance. Call a qualified service technician when service or repair work is required. Incorrect reassembly can cause electric shock hazard when the appliance is switched on.

SAVE THESE INSTRUCTIONS

Neutralization System

This system is designed to neutralize plate developer by combining it with a special neutralizing agent. Please refer to the flow diagram on drawing 699237 (found on page 11). The system includes:

1. Developer collection tank
2. Neutralizing agent collection tank
3. Metering pump (for developer and neutralizing agent)
4. Wash water transfer tank with transfer pump and static mixer
5. Electrical control box

Optional items are:
1. pH Probe and Controller
2. Neutralizing agent mixer (recommended for mixing neutralizing agent from powder concentrate)
3. Single bellows neutralizing pump

The Neutralization Process

Wash Water
Rinse water from the processor overflow will enter the wash water transfer tank. It is recommended that developer overflow be diverted from the wash water. If this is done, wash water will require no neutralization. If the developer is allowed to overflow into the wash, all the wash water may require treatment. In this case, please consult with CPAC or the processor manufacturer to review the treatment options.

To neutralize developer

One holding tank will collect the neutralizing agent. A separate tank will collect developer. The neutralization control system will monitor the level of these two tanks. When both tanks have solution to be neutralized and the wash water transfer tank is full, wash water will be pumped from the transfer tank. The control system will automatically inject developer and neutralizing agent into the wash water as it is discharged from the transfer tank.

A single metering pump will inject both developer and neutralizing agent. Developer flow rate is adjustable between 225 and 450 milliliters per minute. Neutralizing agent flow rate is also adjustable between 225 and 450 milliliters per minute. As long as wash water is being pumped, the metering pump will operate in a pulsed mode. The operator can control the duty cycle by programming both the on time and the pump off time for the metering pump. If developer is not being treated fast enough, the operator can program a longer on time or reduce the off time. Programming instructions are provided on page 9.

Alarm Conditions

The neutralization controller monitors tank levels and triggers an alarm if the system detects a fault condition.

Alarm Conditions
Three conditions can trigger the alarm system:
1. Developer tank overflow.
2. Neutralizing tank empty.
3. pH controller is signaling an alarm. This is an optional alarm that is active only if a pH controller has been installed with the system.

Developer Tank overflow
The top liquid level switch in the developer tank initiates this alarm. The alarm alerts the operator that developer is being added to the collection tank too quickly or not being treated fast enough. The controller will display D-OF.

Low level alarm for the Neutralizing Agent Holding Tank
Neutralizing agent is required to neutralize the developer concentrate. If the neutralizing agent holding tank is empty, a level switch will trigger an alarm. The controller will display F-LO and the metering pump will be disabled.

pH Alarm (optional)
A pH monitor can be connected to the neutralization controller. The monitor will provide a dry contact output to indicate an alarm condition. The neutralization controller will display pH and the metering pump will be disabled during a pH alarm condition. The factory installed pH alarm system includes both a high pH alarm (for pH above 10.5) and low pH alarm (for pH below 5.5). For more information on the pH controller, please refer to the manual for that system.

Audible alarm
When an alarm condition occurs, the alarm light will flash and an audible alarm sounds. An alarm mute switch is provided to silence the audible alarm. When the switch is activated, the audible alarm will be silent for fifteen minutes. If the alarm condition still exists after fifteen minutes, the audible alarm will restart.

Components of Neutralization System

Developer Collection Tank

Collects all developer overflow and holds it until it is treated.

Neutralizing agent collection tank

Collects gum and finisher that must be treated before it can be discharged. When no gum or finisher is available, a special neutralizing agent can be added to this tank. CPAC recommends a powder concentrate (part number 900349) and a powder mixer to automatically mix and transfer the solution.

Wash water transfer tank

Wash water from the processor flows into this tank. During the neutralization process, water is drawn from this tank and mixes with developer and neutralizing agent. Water is needed to ensure that the concentrates do not react together.

Electrical Control Box

The electrical control box is powered from a standard 115 VAC, 4 Amp outlet. The electrical schematic for the neutralization system is on page 14.

Mode of Operation

Manual/Automatic Mode of operation for the Neutralization Controller

A switch on the circuit board is used to select between the manual and automatic modes of operation. The automatic mode is the normal mode of operation. In this mode, the metering pump is active and all alarm systems are active.

In the manual mode the metering pump will be disabled but all alarm systems will be active. This should only be used when alarm monitoring is needed but concentrate metering is not.

Electrical Connections

During installation, all wiring connections are made inside the neutralization control box. Connections are shown on schematic #500370 (page 14).

For typical installation, the following connections must be made:

Low Voltage inputs

TB2 (1)-Developer tank low level switch (Normally open)
TB2 (2)

TB2(3)-Neutralizer (finisher/gum) tank low level switch (Normally open)
TB2(4)

TB2(5)-Developer tank high level switch (Normally closed)
TB2(6)

TB2(7)-Wash water transfer tank full switch (Normally open)
TB2(8)

TB2(9)-pH alarm (optional)(closed contact indicates alarm)
TB2(10)

TB2(11)-Wash water transfer tank empty (Normally open)
TB2(12)

High Voltage outputs

TB1(1) Hot-Metering Pump
TB1(2) Ground
TB1(3) Neutral
TB1(4) Hot-Wash water pump
TB1(5) Ground
TB1(6) Neutral

Operator Interface

The operator interface will consist of a membrane keypad, status lights and a digital display. The interface is shown on drawing #699615 (page 15).

Status Lights

1. **Standby**- will be on when the developer and neutralizer metering pump is off.
2. **Automatic**- will be on when the unit is in automatic mode.
3. **Manual**- will be on when the unit is in the manual mode.
4. **Low Level**- will be on when the neutralizer holding tank is empty.
5. **Alarm**- will be on during an alarm condition.

Keys

1. **Pump On Time**- allows the operator to View/Program the length of time the metering pump runs. Programmable between one second and four minutes.
2. **Pump Off Time**- allows the operator to View/Program the length of time the metering pump is off. Programmable between one second and four minutes.
3. **Alarm Mute**- this key is active only if the audible alarm is on. Activating this key will silence the alarm for fifteen minutes. If the alarm condition exists at the end of fifteen minutes, the alarm is reactivated.
4. **Water Flow (optional)**- displays the flow of wash water (gallons per minute). An optional flow meter must be purchased for this feature to be used.
5. **Set**- this key must be activated before changes can be made to the Pump On Time and Pump Off Time. When the set mode is active, a light will illuminate behind the SET key. An internal switch is provided to disable the SET mode. If this switch is set to the lock position, the operator will not be able to change the Pump On Time or the Pump Off Time.

To change pump run times

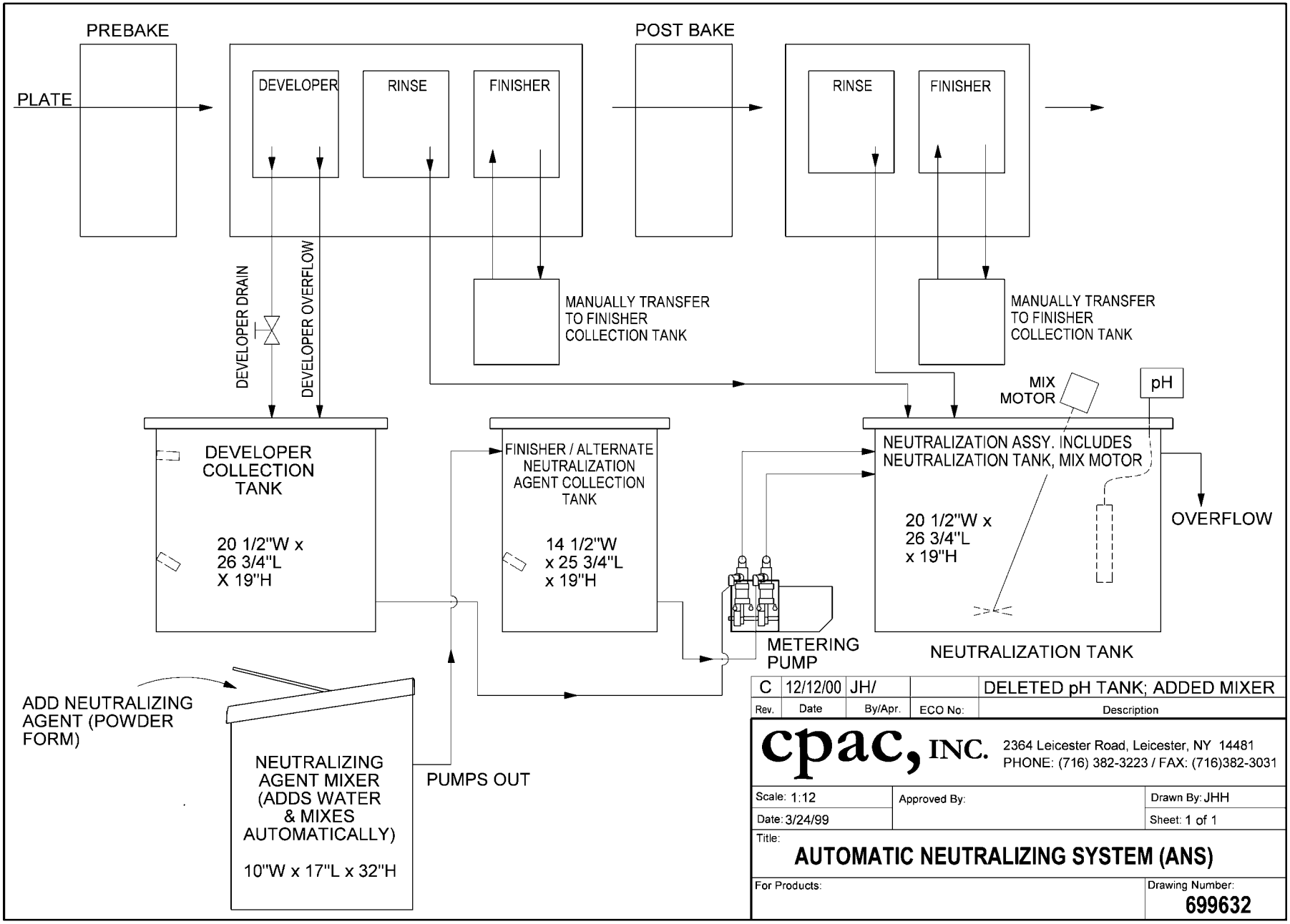
1. Set the internal switch (on the circuit board) to the set position. (This is the factory default).
2. Press the SET key. A light behind the key should illuminate.
3. Press the PUMP OFF TIME key. The pump off time should flash on the display.
4. Use the INCREASE and DECREASE keys to change the time.
5. Repeat steps 3 and 4 for the PUMP ON TIME.
6. Press the SET key to exit the set mode. The light behind the key should switch off.

Adjusting pH

The objective of the neutralization system is to ensure that the pH of effluent being discharged to drain is within acceptable limits. “Acceptable limits” are defined by local authorities. It is the operator’s responsibility to ensure that the discharge from the neutralization system meets local requirements.

pH should be measured at the discharge of the static mixer. If the pH is too low, the operator should either decrease the flow of neutralizing agent or increase the flow of developer. Refer to the bellows flow adjustment procedure on page 12 to adjust flow rates.

If the pH is too high, the operator should either increase the flow of neutralizing agent or decrease the flow of developer.


PREBAKE
PLATE
DEVELOPER
RINSE
FINISHER
POST BAKE
RINSE
FINISHER
DEVELOPER DRAIN
DEVELOPER OVERFLOW
MANUALLY TRANSFER TO FINISHER COLLECTION TANK
MANUALLY TRANSFER TO FINISHER COLLECTION TANK
MIX MOTOR
pH
DEVELOPER COLLECTION TANK
20 1/2"W x 26 3/4"L X 19"H
FINISHER / ALTERNATE NEUTRALIZATION AGENT COLLECTION TANK
14 1/2"W x 25 3/4"L x 19"H
NEUTRALIZATION ASSY. INCLUDES NEUTRALIZATION TANK, MIX MOTOR
20 1/2"W x 26 3/4"L x 19"H
OVERFLOW
METERING PUMP
NEUTRALIZATION TANK
ADD NEUTRALIZING AGENT (POWDER FORM)
NEUTRALIZING AGENT MIXER (ADDS WATER & MIXES AUTOMATICALLY)
10"W x 17"L x 32"H
PUMPS OUT
C | 12/12/00 | JH/ | | DELETED pH TANK; ADDED MIXER
Rev. | Date | By/Apr. | ECO No: | Description
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Scale: 1:12
Approved By:
Drawn By: JHH
Date: 3/24/99
Sheet: 1 of 1
Title:
AUTOMATIC NEUTRALIZING SYSTEM (ANS)
For Products:
Drawing Number:
699632

BELLOWS PUMP FLOW ADJUSTING INSTRUCTIONS

1. Do not attempt to adjust flow while pump is running.

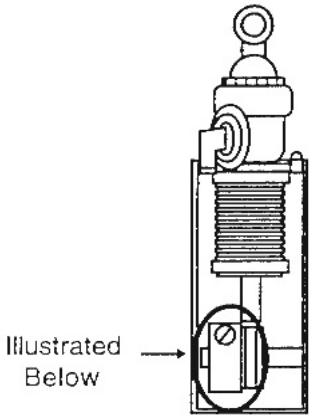
2. Clockwise rotation of the adjusting screw increases pump stroke until achieving 100% stroke. Do **not** attempt forced rotation of the adjusting screw after indicator reaches 100% and a “bottoming “ resistance is experienced.

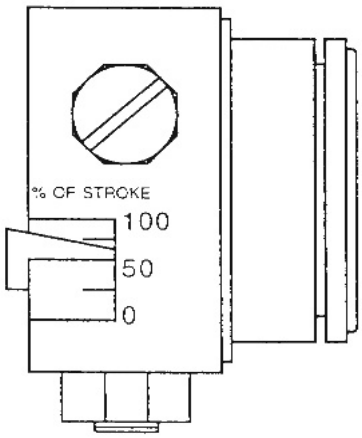
3. Counter-clockwise rotation of adjusting screw decreases stroke.

4. Only eight clockwise revolutions adjust stroke from 0% to 100%. One-half inch bellows pump requires only four revolutions.

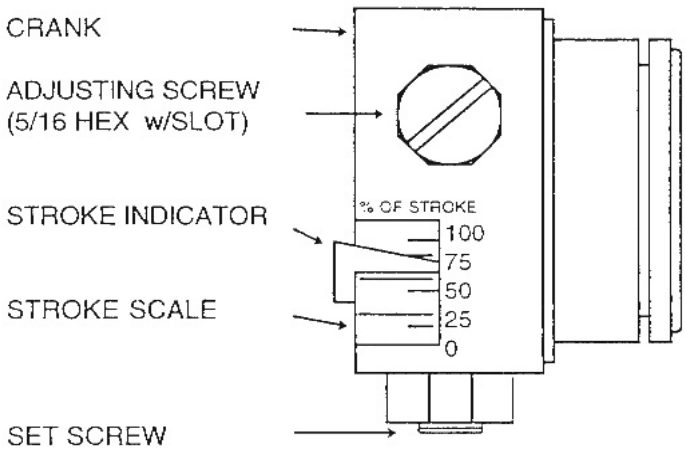
5. It is not necessary to loosen set screw.

NOTE: Do not add lubricants to any pump mechanism.





1/2" BELLOWS



S 1" to 1-1/2" BELLOWS

BELLOWS PUMP VALVE REMOVAL, CLEANING, AND INSTALLATION PROCEDURES

1. Pinch off tubes near the pump's hose connectors.

2. Unscrew connector nuts; pull off tubing and nut connector assemblies.

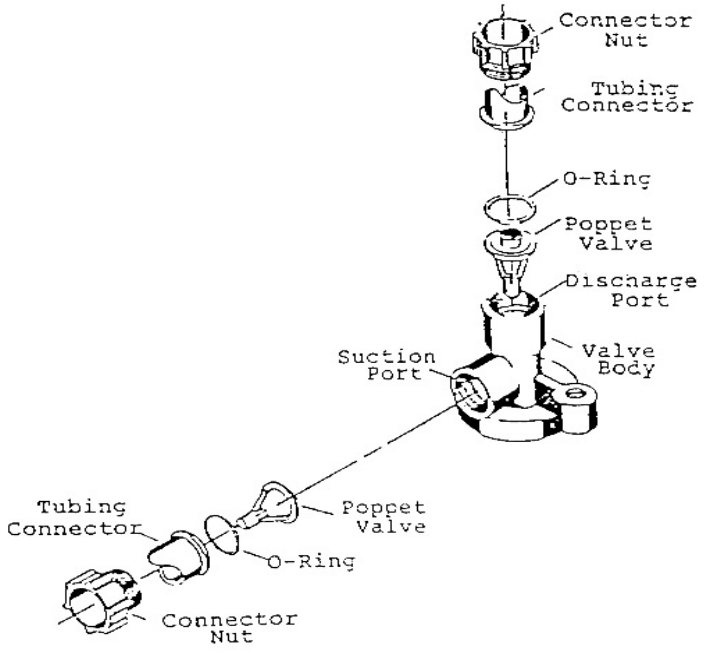
3. Remove valves form valve body;

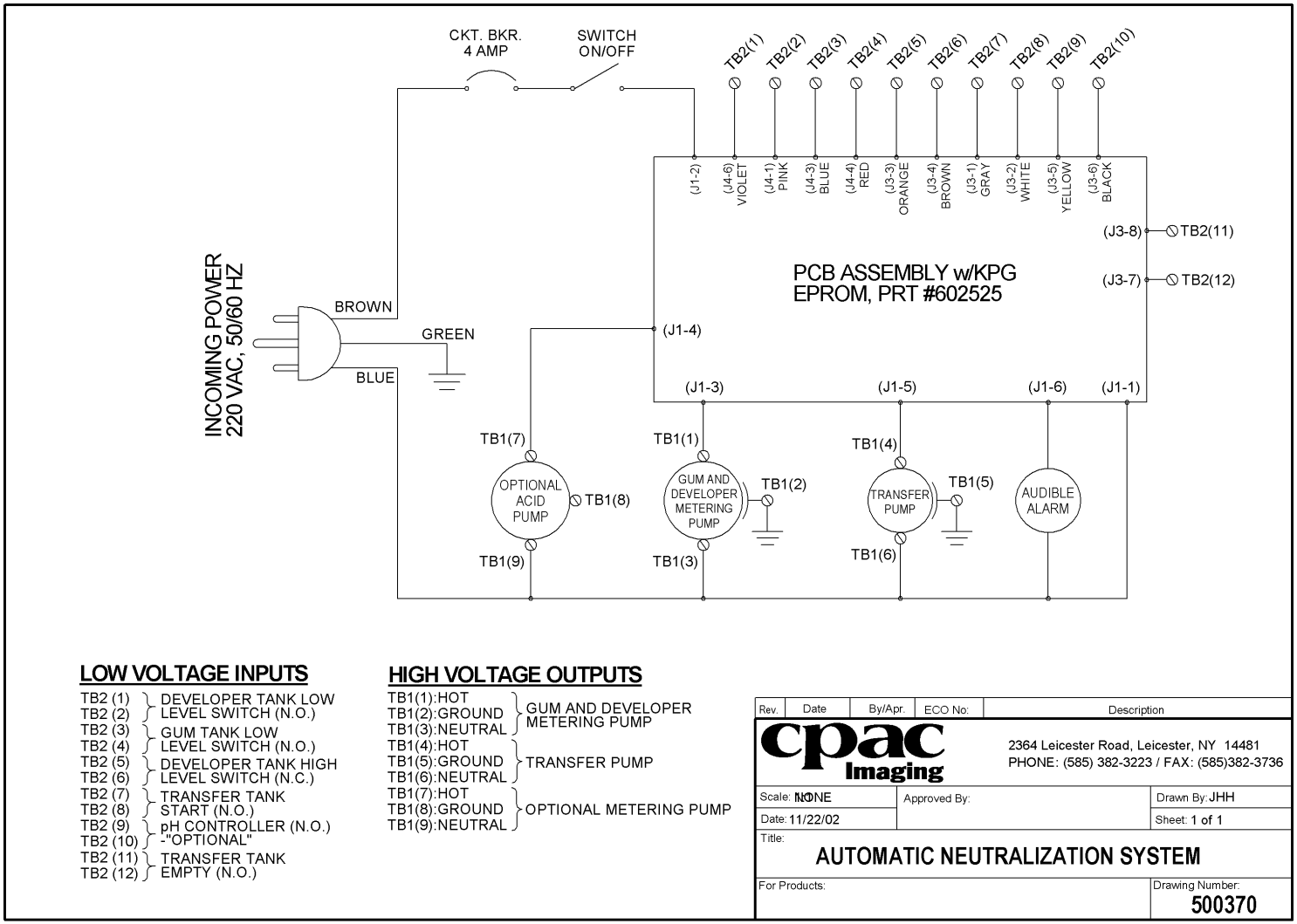
    a) Suction side – Pull valve out by the stem, the o-ring will come out with the valve
    b) Discharge side – Use a small flat screwdriver to remove the o-ring. With o-ring removed, pull valve out of the valve body with needle nose pliers

4. Wash poppet valve assemblies or discard and replace.

5. Reinstall in reverse order of removal. Suction and discharge valves are interchangeable. Valves are always installed before the o-ring.

VALVE ASSEMBLY PROCEDURE





LOW VOLTAGE INPUTS

TB2 (1)	DEVELOPER TANK LOW
TB2 (2)	LEVEL SWITCH (N.O.)
TB2 (3)	GUM TANK LOW
TB2 (4)	LEVEL SWITCH (N.O.)
TB2 (5)	DEVELOPER TANK HIGH
TB2 (6)	LEVEL SWITCH (N.C.)
TB2 (7)	TRANSFER TANK
TB2 (8)	START (N.O.)
TB2 (9)	pH CONTROLLER (N.O.)
TB2 (10)	-"OPTIONAL"
TB2 (11)	TRANSFER TANK
TB2 (12)	EMPTY (N.O.)

HIGH VOLTAGE OUTPUTS

TB1(1):HOT	GUM AND DEVELOPER METERING PUMP
TB1(2):GROUND	
TB1(3):NEUTRAL	
TB1(4):HOT	TRANSFER PUMP
TB1(5):GROUND	
TB1(6):NEUTRAL	
TB1(7):HOT	OPTIONAL METERING PUMP
TB1(8):GROUND	
TB1(9):NEUTRAL	

Rev.	Date	By/Apr.	ECO No:	Description

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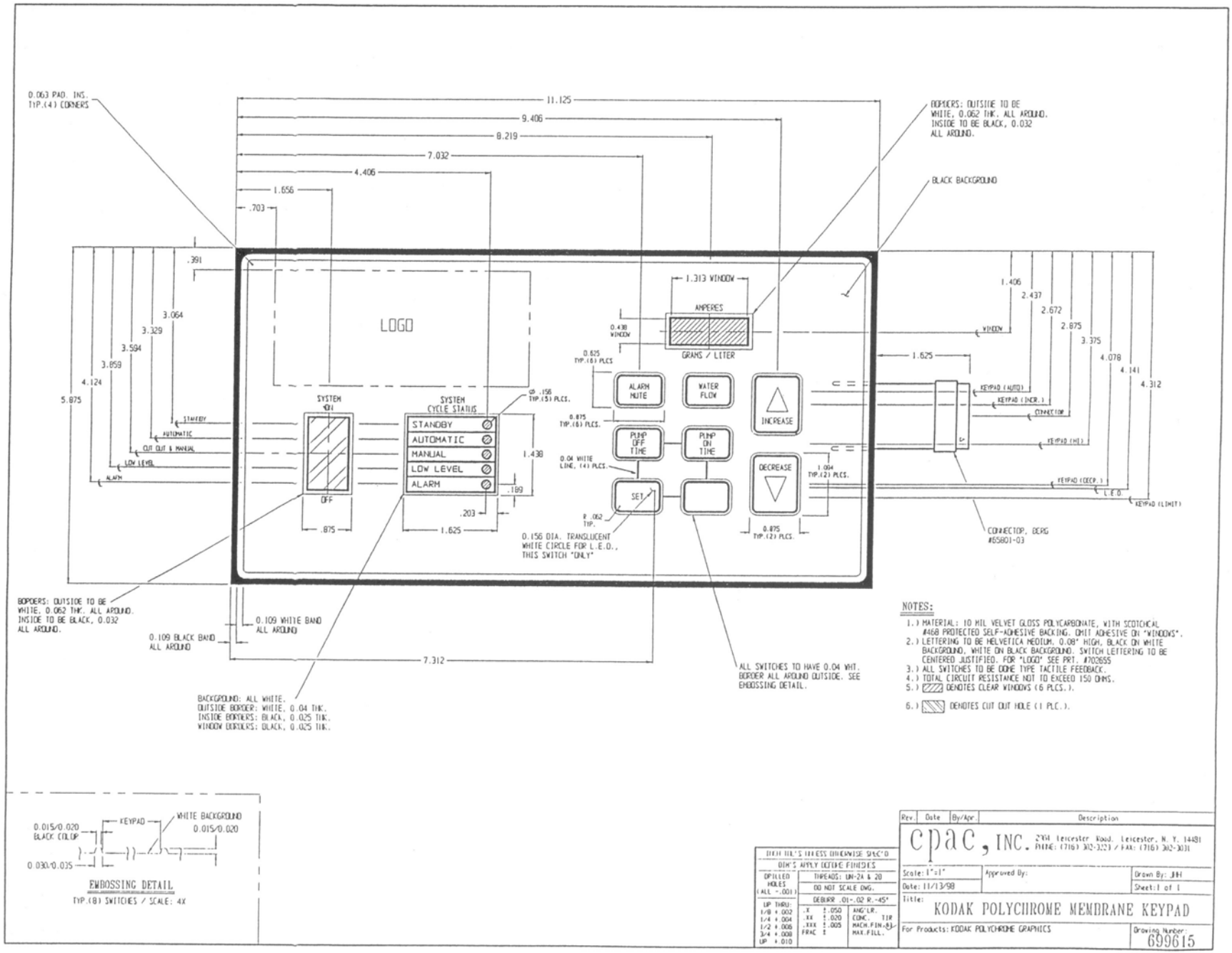
Scale: NONE	Approved By:	Drawn By: JHH
Date: 11/22/02		Sheet: 1 of 1

Title:

AUTOMATIC NEUTRALIZATION SYSTEM

For Products:	Drawing Number:
	500370



NOTES:

1.) MATERIAL: 10 MIL VELVET GLOSS POLYCARBONATE, WITH SCOTCHCAL #668 PROTECTED SELF-ADHESIVE BACKING. OMIT ADHESIVE ON "WINDOWS".
2.) LETTERING TO BE HELVETICA MEDIUM, 0.08" HIGH, BLACK ON WHITE BACKGROUND, WHITE ON BLACK BACKGROUND. SWITCH LETTERING TO BE CENTERED JUSTIFIED. FOR "LOGO" SEE PRT. #702655
3.) ALL SWITCHES TO BE DOME TYPE TACTILE FEEDBACK.
4.) TOTAL CIRCUIT RESISTANCE NOT TO EXCEED 150 OHMS.
5.) ▨ DENOTES CLEAR WINDOWS (6 PLCS.).
6.) ▧ DENOTES CUT OUT HOLE (1 PLC.).

EMBOSSING DETAIL
TYP.(8) SWITCHES / SCALE: 4X

UNLESS OTHERWISE SPEC'D DIM'S APPLY BEFORE FINISHES

DRILLED HOLES (ALL +.001)	THREADS: UN-2A & 2B	
	DO NOT SCALE DWG.	
UP THRU: 1/8 +.002, 1/4 +.004, 1/2 +.006, 3/4 +.008, UP +.010	DEBURR .01-.02 R.-45°	
	.X ±.050	ANG'LR.
	.XX ±.020	CONC. TIR
	.XXX ±.005	MACH.FIN.63
	FRAC ±	MAX.FILL.

Rev.	Date	By/Apr.	Description

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Scale: 1"=1" | Approved By: | Drawn By: JBH

Date: 11/13/98 | Sheet: 1 of 1

Title: KODAK POLYCHROME MEMBRANE KEYPAD

For Products: KODAK POLYCHROME GRAPHICS | Drawing Number: 699615

KPG Neutralization System

Spare Parts List

Part #	**DESCRIPTION**
602525D	PCB
703349	Pump, Metering
703208	pH Controller (optional)
703210	pH Electrode (optional)
703452	Wash water pump
703365	Flow Sensor
702729	Filter
24-113P2417	Poppet Valve Kit
15-143P2011	Switch, Float
703423	Membrane, Key Pad
700215	Audible Alarm
900349	Developer Neutralizing Agent

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