
Instruction Manual -
Series T17CA4000 CHLORALERT™
Chlorine Gas Leak Detector



Instrumentation Products



These instructions describe the installation, operation and maintenance of the subject equipment. Failure to strictly follow these instructions can lead to an equipment rupture that may cause significant property damage, severe personal injury and even death. If you do not understand these instructions, please call Severn Trent Water Purification for clarification before commencing any work at 215-997-4000 and ask for a Field Service Manager. Severn Trent Water Purification, Inc. reserves the rights to make engineering refinements that may not be described herein. It is the responsibility of the installer to contact Severn Trent Water Purification, Inc. for information that cannot be answered specifically by these instructions.

Any customer request to alter or reduce the design safeguards incorporated into Severn Trent Water Purification equipment is conditioned on the customer absolving Severn Trent Water Purification from any consequences of such a decision.

Severn Trent Water Purification has developed the recommended installation, operating and maintenance procedures with careful attention to safety. In addition to instruction/operating manuals, all instructions given on labels or attached tags should be followed. Regardless of these efforts, it is not possible to eliminate all hazards from the equipment or foresee every possible hazard that may occur. It is the responsibility of the installer to ensure that the recommended installation instructions are followed. It is the responsibility of the user to ensure that the recommended operating and maintenance instructions are followed. Severn Trent Water Purification, Inc. cannot be responsible deviations from the recommended instructions that may result in a hazardous or unsafe condition.

Severn Trent Water Purification, Inc. cannot be responsible for the overall system design of which our equipment may be an integral part of or any unauthorized modifications to the equipment made by any party other than Severn Trent Water Purification, Inc.

Severn Trent Water Purification, Inc. takes all reasonable precautions in packaging the equipment to prevent shipping damage. Carefully inspect each item and report damages immediately to the shipping agent involved for equipment shipped "F.O.B. Colmar" or to Severn Trent Water Purification for equipment shipped "F.O.B Jobsite". Do not install damaged equipment.

**SEVERN TRENT SERVICES, COLMAR OPERATIONS
COLMAR, PENNSYLVANIA, USA
IS ISO 9001: 2000 CERTIFIED**

READ THE ENTIRE MANUAL BEFORE OPERATING

USE ONLY IN ACCORDANCE WITH INSTRUCTION MANUAL

WARNING: HAZARDOUS VOLTAGES.

**INSTRUCTION BULLETIN
CHLORINE GAS LEAK DETECTOR
"CHLORALERT"
Model T17CA4000
Rev. 1.2
IMPORTANT**

The instructions given herein cover generally the description, installation, operation and maintenance of subject equipment.

STWP reserves the right to make engineering refinements that may not be reflected in this Bulletin.

Should any question arise which may not be answered specifically by these instructions, they should be directed to Severn Trent Water Purification for further detailed information and technical assistance.

STWP takes all possible precautions in packing each equipment item to prevent damage during shipment.

Carefully inspect each item and if damage has occurred report it immediately.

Do not install any equipment if damage is such that faulty operation is likely to result.

If plant engineering drawing are available at the installation site , locate, mount , pipe and wire the subject equipment in accordance with these drawings.

If plant engineering drawings are not available, refer to the Installation section for information concerning these requirements.

Carefully inspect all packing material before discarding it to prevent loss of mounting hardware , accessories, spare parts or instructions.

All instructions given on any attached tag should be followed.

WARNING
To assure safe operation this equipment carefully follow use and installation instructions and recommendations illustrated in this Manual. Improper use of the equipment may damage the equipment and endanger the safety of the operating personnel.

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1 INTRODUCTION

1.1 General Description

The Severn Trent Water Purification chlorine gas leak detector, CHLORALERT T17CA4000, continually monitors air samples for the presence of chlorine. It is usually installed in chlorine usage and storage areas to protect personnel and equipment.

A small internal air blower continually draws a sample of air into the Chloralert. The flowmeter and valve enable a fixed amount of air to be passed over the surface of the special electrolyte, where the chemical reaction takes place in presence of chlorine. Two platinum electrodes, half immersed in the electrolyte, pick up the electrochemical current thus generated which is measured by the electronic circuit and used to trigger an alarm system.

The trip point may be factory set to 1 or 3 ppm chlorine in air by volume. The power on/alarm lamp commences flashing in the alarm condition.

In the Model T17CA4100, a relay is also energized to enable external alarms, extractor fans etc. to be activated. The alarm condition is generated, in addition to the presence of chlorine in air, also by power failures, when the power is returned to the system.

In the Model T17CA4200, a relay is also de-energized to enable external alarms, extractor fans etc. to be activated.

The electrical circuits are designed such that power supply failure causes the alarm relay to go into the alarm state.

A flow sensor detects when there is no sample flow and causes the alarm relay to go into the alarm state. The sample fan is stopped when the alarm condition is actuated, to prevent saturation of electrolyte with chlorine and contaminated air to be discharged in safe area through the Chloralert itself

The unit has an integral electrical test facility.

The alarm needs operator's acknowledgment to be reset.

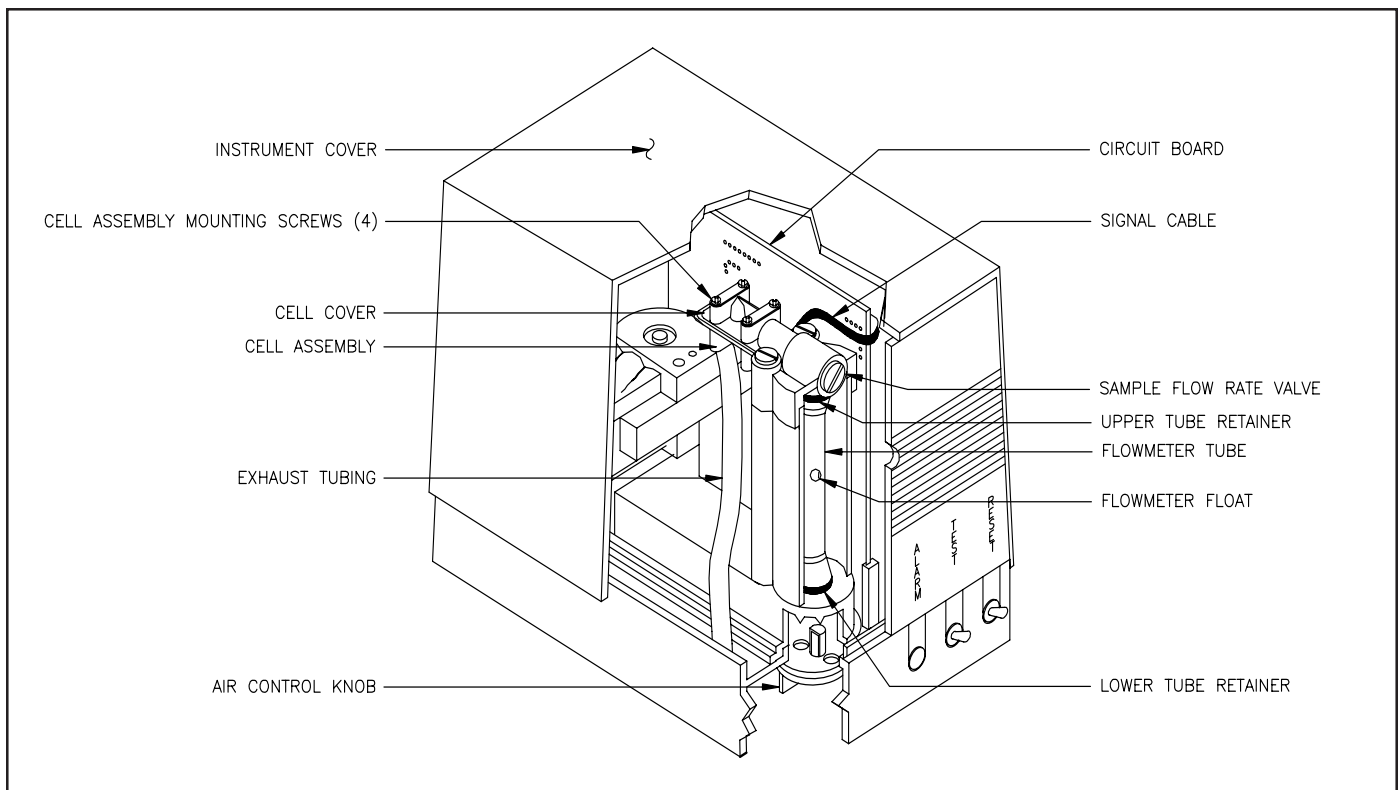


Figure 1 - CHLORALERT Internal View

2 TECHNICAL SPECIFICATIONS

Power supply:	115Vac ± 10 % 50/60 Hz, 25 VA 230Vac ± 10 % 50/60 Hz, 12 VA
Detection level:	1 ppm (3 mg/m ³), or 3 ppm (9 mg/m ³)
Relay contacts:	DPDT, 10 A. 240 Vac, resistive load or 28 Vdc
Cell response time:	instantaneous
Warm up time:	max 3 minutes
Sampling rate:	0.05 m ³ /min
Ambient temperature:	-20°C (-4°F) to +65 °C (149°F)
Sample inlet connection:	1" NPT
Weight:	approx. 2.8 kg
Mounting:	wall
Dimensions:	215 H x 162 W x 235 D (mm)
Material of construction:	Housing: ABS Cell: ABS Electrodes: platinum

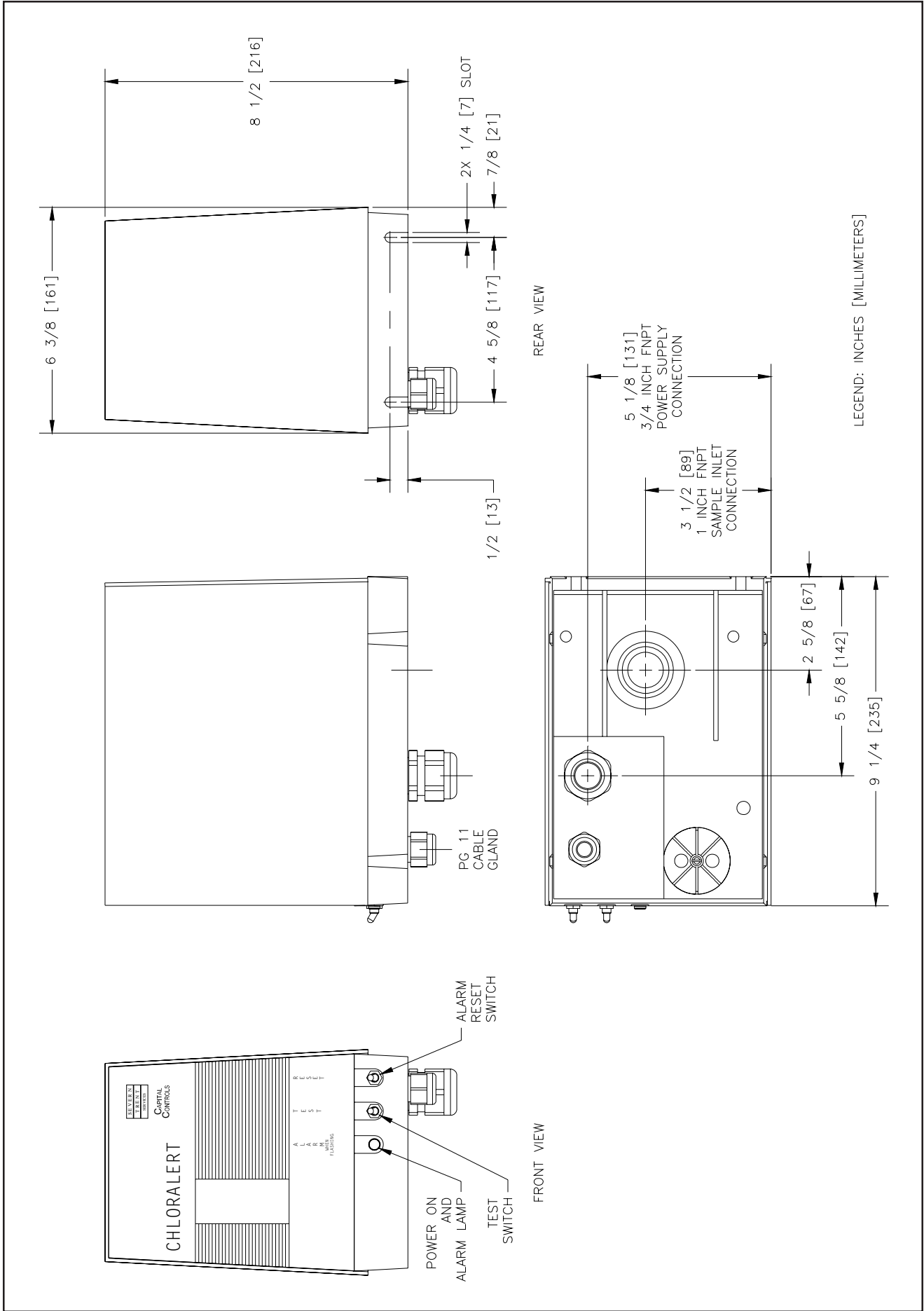


Figure 2 - Mounting and Outline Dimensions in inches (mm)

3 MODEL NUMBER BREAKDOWN

T17CA	4			A	
Chlorine gas leak detector					
Series of production					
Fixed code					
Standard					
Fail safe design					
Power supply					
115 Vac+10%, 50/60Hz					
230 Vac +10%, 50/60 Hz					
Design Level					
Alarm level					
Reserved					
Reserved					
Reserved					
Fixed at 1 ppm Cl2 in air					
Fixed at 3 ppm Cl2 in air					

3.1 Standard accessories

1 kit P/N 614S071U0I including:

- 1 electrolyte bottle
- 1 spare float
- 1 set of spare O-Ring
- 1 insect screen

4 INSTALLATION

4.1 Location

The Chloralert should ideally be mounted outside the area to be monitored. However it can be mounted in the contaminated area if it is considered absolutely necessary. The location should be such that the ambient temperature never falls below $-20\text{ }^{\circ}\text{C}$ (-4°F) nor rises above $65\text{ }^{\circ}\text{C}$ (149°F).

It should never be mounted in direct sunlight and should be protected from the weather if mounted outside.

4.2 Mounting

Securely mount the Chloralert at a convenient working height (approx. 1.3 - 1.5 m from the floor).

4.3 Sampling line

As the Chlorine weight is higher than the air, we recommend that the sample inlet point is located at about 200 mm (8") from the floor. Use of rigid or flexible 1" PVC tubing is recommended. It is recommended to install the proper insect screen (supplied) at the terminal point of the sample line to avoid dust suction.

Warning
Never use tubes with a diameter lower than 1" when the sample pipe length exceeds 4 m

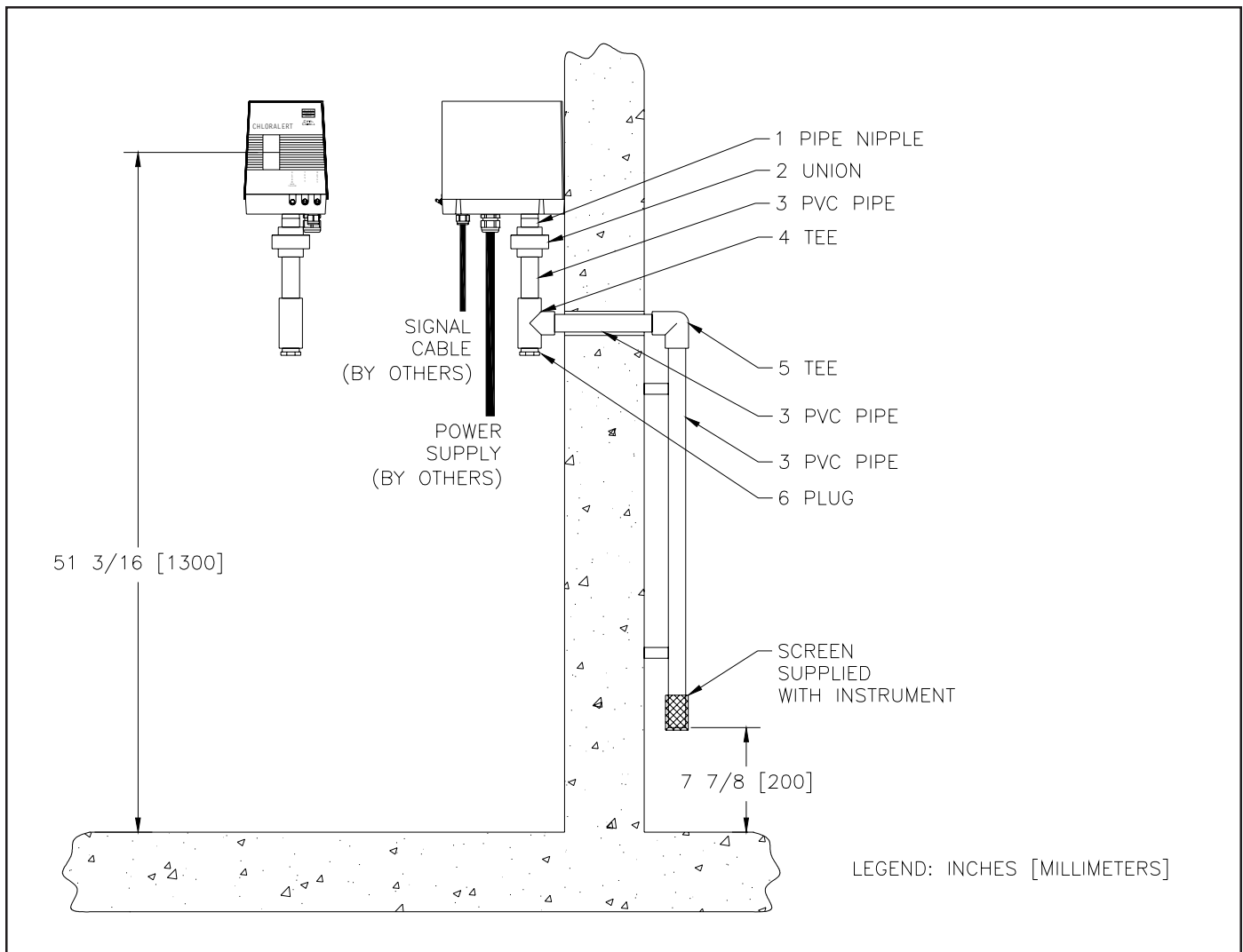


Figure 3 - Typical Installation

4.4 Electrical wiring

Cable gland on the Chloralert will accept a cable of diameter between 5 to 10 mm. Refer to the following drawings to connect the power supply and the external signals to the Chloralert.

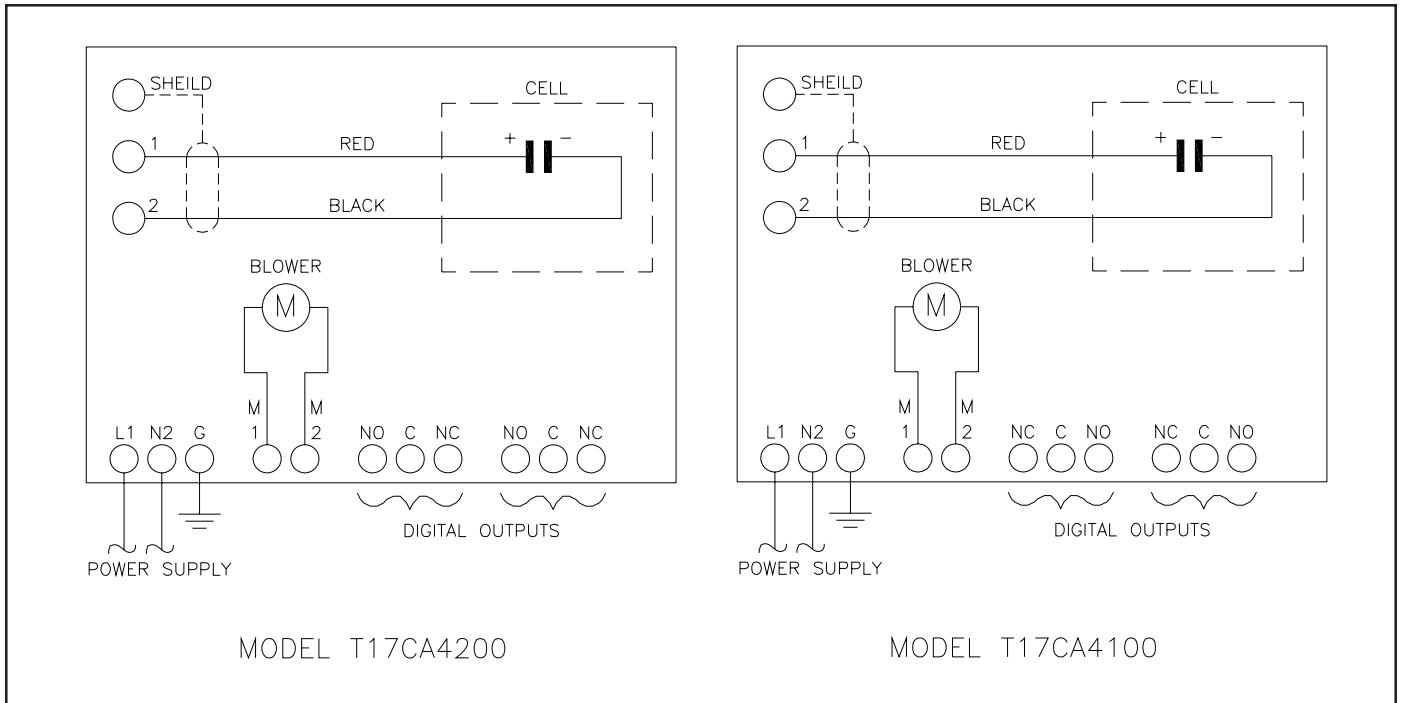


Figure 4 - Electrical Wiring

5 START-UP, OPERATION AND MAINTENANCE

5.1 Electrolyte filling at start up

Refer to figure 5.

Switch off power supply or unplug instrument.

Remove cover rising it.

Disconnect cell cable from terminal block noting carefully position of each cable.

Disconnect exhaust tubing from the cell.

Unscrew the four retaining screws and drop bottom half of cell from the upper for filling.

The electrolyte bottle contains a dropper. Fill dropper stem to mark 1 ml- Carefully transfer electrolyte from dropper to cell, taking care not to allow it to touch the top surface of the cell.

Remove any electrolyte on this surface with a tissue then reassemble cell together taking care not to tilt the bottom half too much.

Reassemble exhaust tubing, reconnect the cell cable, replace lid and finally reconnect supply cable and switch on.

Hold RESET switch down until alarm lamp ceases to flash then wait further 5-10 sec. before releasing switch (this operation can take up to 3 minutes.)

The unit is now in operation.

5.2 Electrolyte renewal after operation

Approximately once a year or as necessary the electrolyte should be renewed.

Proceed as for start up but wash the electrolyte thoroughly from the cell with water and gently clean the electrode faces with a non abrasive chlorine-free cleaner.

Again thoroughly wash cell with water, dry with a clean tissue and refill with electrolyte as described under Section 5.1.

5.3 Sample flow rate

At start up set the sample flow so that the flow indicator sits between the two graduation marks on the flowmeter tube.

The flow may be adjusted by inserting a broad bladed screwdriver in the rate valve and gently twisting until the float is properly positioned.

This should be done with the air control knob in the wide open position.

If the required cell flow cannot be obtained, the air control knob should be gradually closed, until the adjustment of the float position is possible.

The position of the float in the flowmeter tube should be checked from day to day (during the first week) and adjusted if necessary.

5.4 Gas test

Verify the instrument operation in presence of chlorine gas after the start up.

The test suggested hereafter is only qualitative and can be performed using solutions commonly available such as bleach and vinegar.

Mix 6 parts of bleach and one part of vinegar in a beaker.

Place the beaker under the sampling fan. The alarm LED should start flashing and any remote device connected to the alarm relay should be actuated.

The alarm is reset by pressing RESET switch till the alarm LED stops flashing (this operation may require up to 3 minutes).

5.5 Circuit performance check

Simultaneously press and hold down both TEST and RESET switches. The alarm LED must change from the steady condition to flashing and the sampling fan stays activated.

This checks that the electronic circuits are operating properly.

If it is desired to check external circuits the RESET switch must be released: any remote device connected to the relay will be actuated.

If it is required that external devices are not actuated during this test, release the TEST switch first wait for the LED to assume a steady state, (this operation may require up to 3 minutes), then release the RESET switch.

6 MAINTENANCE PROCEDURES

Note: disconnect power supply before removing the instrument cover.

6.1 Measuring cell maintenance

Refer to Section 5.1 and 5.2 of this manual.

6.2 Flowmeter

6.2.1 For Model T17CA4100

Clean tube and float whenever dirt has accumulated causing malfunction.

Using a screwdriver loosen and slide the top tube retainer ring towards the enter of the tube.

Remove tube by pulling forward.

WARNING
TAKE CARE NOT TO LOSE THE O-RING AND THE FLOATS!

Clean all parts in mild detergent, rinse and wipe dry using clean tissue paper.

To reassemble, place the tube retainer ring over the tube, replace the O-Ring, drop the float in the tube and re-position tube between inlet and outlet connections.

Gently slide the tube retainer ring back into position, making sure it is properly located by carefully rotating (red mark on the tube should be on the front side).

6.2.2 For Model T17CA4200

Clean tube and float whenever dirt has accumulated causing malfunction.

Remove the plastic flow tube retainer by unclipping from the flow tube.

Using a screwdriver loosen and slide the top tube retainer ring towards the enter of the tube, also lift the optical sensor housing towards the center of the tube.

Remove tube by pulling forward.

WARNING
TAKE CARE NOT TO LOSE THE O-RING AND THE FLOATS!

Clean all parts in mild detergent, rinse and wipe dry using clean tissue paper.

To reassemble, place the tube retainer ring and optical sensor over the tube, replace the O-Ring, drop the float in the tube and re-position tube between inlet and outlet connections.

Gently slide the tube retainer ring and sensor housing back into position, making sure they are properly located by carefully rotating (red mark on the tube should be on the front side).

6.3 Electronic circuit board

It is recommended that in the event of failure of the electronic board a replacement is fitted and the faulty board is returned to factory for repair.

6.4 Optical sensor (Only for Mod. T17CA4200)

The flow sensor is housed in a heat shrunk sleeve. For this reason it is recommended that the faulty unit is replaced with a spare item.

7 CE DECLARATION

Chlorine Gas Leak Detector Model T17CA4000 is in conformity with the following standards:



- **EN 56681-2** (Generic emission standard, industrial environment)
- **EN 56682-2** (Generic emission standard, industrial environment)

Following the provisions of directives:

"Electromagnetic compatibility 89/336/CEE, modified by directive 92/31/CEE".

Design improvements may be made without notice.

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