

No.1401 U.L. LISTED SAFE ALARM

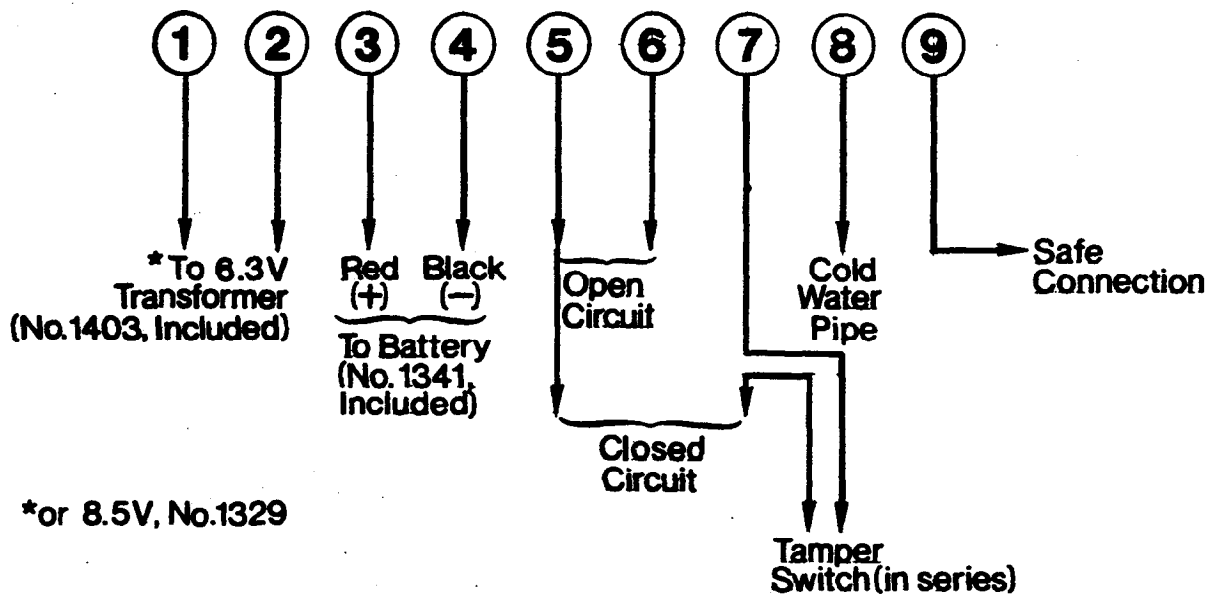
INSTALLATION:

1. LOCATE THE SAFE ALARM within 10 feet of the safe to be protected. Plastic insulated blocks are provided on the safe alarm to fasten it to the wall.
2. A NICAD BATTERY (No. 1341) is supplied with the safe alarm.
 - a. Connect the red lead (+) of the battery to terminal No. 3 of the alarm.
 - b. Connect the black lead (-) of the battery to terminal No. 4 of the safe alarm.
 - c. Short circuiting the battery must be avoided.
3. A GOOD GROUND IS ESSENTIAL:
 - a. Locate a nearby cold water pipe and clean it so that the bare metal is exposed.
 - b. When a cold water pipe is not available, drive a 6 foot conductive metal pipe into the earth and use this instead of the cold water pipe.
 - c. Never use a radiator or hot water pipe.
 - d. Attach the ground clamp supplied with the unit to the exposed area of the ground pipe and connect it to terminal No.8, using insulated 14 gauge wire.
4. PREPARING THE SAFE:
 - a. A door switch (e.g. Ademco No. 46) must be installed on the safe so that its contacts open whenever the safe door is opened.
 - b. The top of the safe should be kept free and not used as a storage area.
 - c. The safe should be as far away from nearby metal objects as possible. Connect any metal objects within several feet of the safe to the cold water ground clamp.
 - d. MAKE CERTAIN THAT THERE ARE NO METAL OBJECTS ON THE OTHER SIDE OF ANY WALL ADJACENT TO THE SAFE, AS THESE OBJECTS MAY BECOME PROTECTED BY THE SAME PROTECTIVE FIELD AS THE SAFE. False alarms may result from people approaching or touching these objects. If you cannot ground any adjacent metal objects, this condition can be rectified by first fastening metal screening or aluminum foil between the common wall and the safe and then connecting the shielding to a cold water pipe ground. Make certain that the shielding does not touch the safe. Consider shielding also, if large, moving metal objects pass close to the safe on the other sides of the adjacent walls. For example, an automobile may be an offender or shipping clerks passing by with metal objects, etc.
 - e. AS IT IS ESSENTIAL TO INSULATE THE SAFE FROM THE FLOOR, 4 INSULATING BLOCKS (CAT. NO. 1405) ARE SUPPLIED FOR THIS PURPOSE.
5. CONNECT THE SAFE via the door switch to the safe alarm. Solder a well insulated No. 16 wire securely to any part of the safe. If you wish, you may drill and tap the safe and make the connection with a machine

screw. NOTE: If the safe is fire listed, it may be drilled ONLY in the legs. Connect the No. 16 wire from the safe via the door switch to terminal No. 9 on the safe alarm as shown on page 4.

6. TO CONNECT THE SAFE ALARM TO THE PROTECTIVE CIRCUIT:
 - a. Use terminal Nos. 5 and 7 for closed circuit alarm.
 - b. Use terminal Nos. 5 and 6 for open circuit alarms.
 - c. Connect the 2 leads from the tamper switch into the protective circuit alarm.
7. A No. 1403, 6.3.V. (or No. 1329, 8.5 V) TRANSFORMER is supplied with the safe alarm.
 - a. Locate a convenient outlet that is ON at all times. Do not plug the transformer in yet.
 - b. Connect the 2 terminals on the transformer to terminals 1 and 2 of the safe alarm with twisted pair No. 18 wire.
 - c. Now plug the transformer in. The batteries will now start charging and it may be a minute (or two) before the batteries receive sufficient charge to operate the safe alarm properly.

TERMINAL STRIP FOR No. 1401



TUNING PROCEDURE

1. Set the sensitivity switch on the printed circuit on "LOW".
2. Close the front panel. Remove the chrome plug from the front panel.
3. With an insulated handle screwdriver, rotate the trimmer fully counterclockwise until the pointer of the meter lies at the extreme left side of the scale.

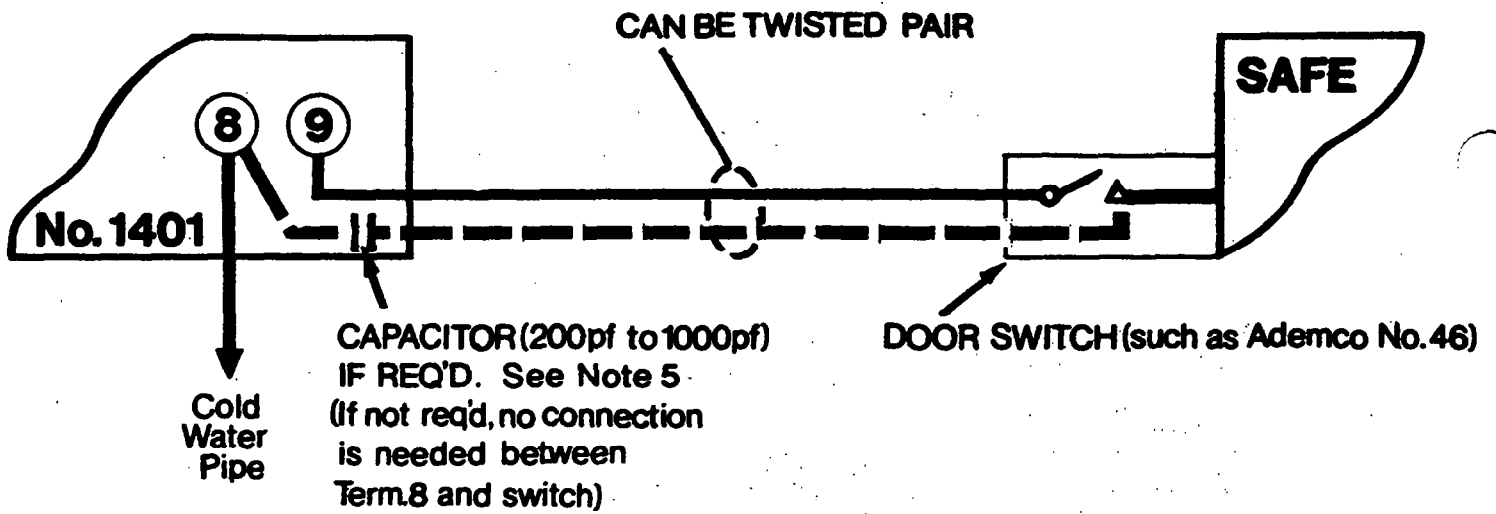
NOTE: Take care not to touch the safe alarm cabinet while making the following adjustments. In addition, stay as far away from the safe as possible. THESE ARE CRITICAL ADJUSTMENTS. The slightest movement of the screwdriver makes a difference in the meter reading.

4. Adjust the trimmer in the clockwise direction until the needle reaches the center of the green band. Continue rotating the trimmer clockwise until the needle reaches a maximum (it may go off scale) and continue the adjustment in the same direction until the needle comes down midway between the two black marks in the green band.
5. Touch the instrument case. The meter needle should drop.
6. Walk away from the safe alarm for a couple of minutes, then touch the safe. The meter needle should drop if the adjustment was made correctly.
7. IMPORTANT: After tuning the meter to the correct position, THE SAFE ALARM MAY TAKE ABOUT A MINUTE OR EVEN MORE TO SETTLE DOWN BEFORE OPERATING NORMALLY. IF THE SAFE IS TOUCHED FOR ANY LENGTH OF TIME, IT MAY AGAIN TAKE A MINUTE OR MORE FOR THE SAFE ALARM TO RETURN TO NORMAL, even after the needle has returned to the correct position. This is normal. As the safe is approached, an audible click will be heard from the relay in the unit, indicating that the safe alarm is functioning. The safe alarm cabinet is insulated from ground and will give an alarm if touched, as it is internally connected to the electronic circuit.

NOTES

1. IF THE METER CANNOT BE TUNED TO THE CORRECT POSITION, THIS MAY BE DUE TO THE SIZE OF THE SAFE AND THE CAPACITY LOAD BEING TOO GREAT. Move the jumper lead coming from the panel, from terminal 9 to 8, which provides for larger safes and greater capacity loads.
2. Make certain that when you leave the area of the safe that the meter needle is centered on the green band. The meter will not require retuning if the safe is well insulated, and a good secure ground used.
3. The safe alarm should never be tuned so that the meter needle lies above or below the 2 inner black marks. If tuned below the mark, it will not give the same degree of protection.
4. The slide switch on the printed circuit may be put into the LOW position for most installations and in the HIGH position where additional sensitivity may be desirable. THE LOW POSITION IS RECOMMENDED AS THE PROTECTION IS THE SAME AND YET MIGHT NOT BE AS SUBJECT TO FALSE ALARMS FROM EXTRANEIOUS SOURCES.
5. CHECK THE INSTALLATION TO INSURE THAT THE SAFE ALARM DOES NOT STAY WITHIN THE GREEN BAND ON THE METER WITH THE SAFE DOOR OPEN OR THE WIRE TO THE SAFE DISCONNECTED.

If the meter stays within the green band area with the doors (and its switch) open or the wire to the safe disconnected (this can occur in some installations depending on the size of the safe, the location of objects near it, the location of the door when open, etc.), a capacitor must be added to the circuit between terminal 8 of the No. 1401 and the safe, as shown on the next page. Retune the safe alarm and check again.



GENERAL SPECIFICATIONS:

1. Physical:

- a. Dimensions: Width: 10" (25.1 cm)
 Height: 8-1/8" (20.6 cm)
 Depth: 4-3/4" (12.1 cm)
- b. Weight: (Aprox.) 10 lbs. (4.5 kg)

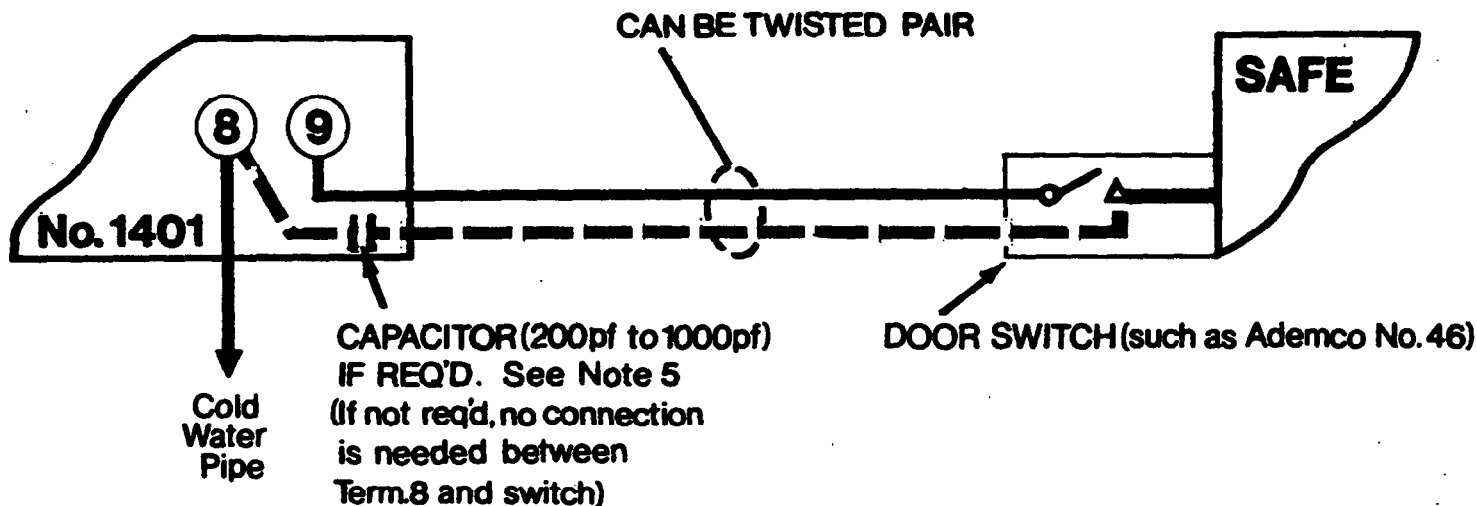
2. Electrical:

- a. Battery: No. 1341 (2.5 V., 1.2 AH) Rechargeable *
- b. *Transformer: No. 1403 (6.3 V., 1.27 A) Plug-in
 or No. 1329 (8.5 V., 1.5A) Plug-in
- c. Standby Capacity: up to 40 hours

* included

No.1401 INSTALLATION...DO IT THE U.L. WAY

When installing a safe alarm, it is a must to test the system with the safe door closed and then again (after a few minutes--to let the No. 1401 settle down) with the safe door open. Also test the system with the wire to the safe disconnected.



If the meter stays within the green band (no alarm) with the safe door open and the wire to the safe connected, a door switch must be installed on the safe to interrupt the safe connection whenever the safe door is opened. This switch should be wired between terminal 9 of the No. 1401 and the connection to the safe as shown in the diagram and explained in the Installation Instructions. The switch must open as the safe door opens. Retune the safe alarm and check again.

If the meter stays within the green band area with the door (and its switch) opened or the wire to the safe disconnected (this can occur in some installations depending upon the size of the safe, location of objects near it, the location of the door when opened, etc.), a capacitor must be added to the circuit between terminal 8 of the No. 1401 and the safe, as shown above. This procedure is explained in the instructions and again in the Troubleshooting Section. Once the capacitor is installed, retune the safe and check again.

The information and procedures contained here are a MUST in U.L. installations.

TROUBLESHOOTING No.1401

BEFORE TRYING ANY TROUBLESHOOTING, KEEP THESE FACTORS IN MIND:

1. Do not try to protect safes or file cabinets whose dimensions exceed 144 square feet (6 ft. x 6 ft. x 4 ft). Trying to do so will cause the safe alarm to work improperly and be the cause of false alarms.
2. Never try to adjust trimmers on the rear of the 1401 Printed Circuit Board; they are factory adjustments only.

TROUBLE: 1. FALSE ALARMS RESULT REGULARLY.

PROBABLE CAUSE

- A. Surrounding metal objects are influencing safe alarm operation.

REMEDY

- A. Relocate metal furniture (e.g. file cabinets, metal office supplies, steel shelving, an additional safe, etc.) no closer than 10 feet from the safe to be protected. Be aware of fixed metal objects, such as a radiator, etc.

NOTES: 1. Adjacent metal objects that cannot be relocated should be grounded to a cold-water pipe ground. See STEP 4c of the Installation Instructions.

2. If grounding is impractical, the safe can be shielded by installing the same size metal copper mesh screening or builders' insulating paper as the safe or file cabinet(s) being protected. If builders' insulating paper is being used, which is silver on one side and brown paper bag type (kraft) paper on the reverse side, the silver foil side must face the safe. The silver foil side must be grounded to a cold water pipe using insulated 14 gauge wire. The paper must be located between 1/2 inch minimum to 3 feet maximum from the safe or cabinet(s) being protected. This type of paper is available at most lumber yards.

In the case of metal (copper) mesh screening, the same considerations of distance and grounding apply as mentioned above.

- B. Poor connection of safe alarm to cold water pipe ground.

- B. The ground clamp supplied with the unit must be fastened securely to the exposed area of the grounded cold-water pipe. For good grounding techniques, see INSTALLATION, Section 3, parts a. through d. ALSO, check to see if the cold-water pipe you attached to is NOT part of combination pipe and plastic water service. If so, find solid ground to cold-water service, or see Installation Instructions, Section 3 b.

- C. The No. 1401 is not mounted within 10 feet of the safe to be protected.

- C. For the safe alarm to work properly and consistently, the 10 foot wiring distance must NOT be exceeded.

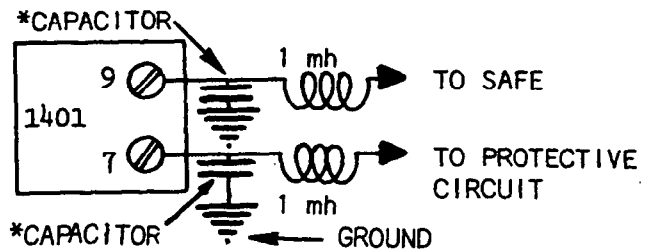
PROBABLE CAUSE

REMEDY

- D. The safe is not properly insulated from the floor.
- E. Items are placed on top of safe for storage purposes.
- F. Telephone lines or protective circuit wires run too close to safe.
- G. The antenna lead (the lead from terminal 9 of the safe alarm to the safe) is crossing metal on a wall or structural element.
- H. The unit is running off NiCad batteries for extended periods.
- I. Radio transmission signals from police, fire, emergency bands, etc., are interfering with proper safe alarm operation.

- D. Use the four No. 1405 insulating blocks supplied with the unit. In areas where plush carpeting is utilized, use more than one No. 1405 block for each leg or use a piece of two-by-four under each insulator to boost the safe above the level of the carpet.
- E. Remove all items from the top of the safe.
- F. Have telephone company reroute lines away from the safe. Reroute protective circuit wires as required.
- G. Ground out all such metal objects (see Installation Instructions, Section 3 and/or reroute the path of the antenna lead. The proper gauge antenna lead and its attachment to the safe are very important (see Section 5).
- H. Be sure that the use of a 24 hour AC supply is provided for the plug-in transformer.
- I. Use filter network described below to "trap out" unwanted signals.

*not part of U.L. Installation



TROUBLE: 2. FALSE ALARMS RESULT INTERMITTENTLY.

PROBABLE CAUSE

REMEDY

- A. Large moving metal objects pass close to safe on other side of adjacent walls.
- B. Dirty contacts on sensitivity slide switch.
- C. Dirty sensitive relay contacts (Relay Part No. 90503).

- A. Use shielding described in TROUBLE 1, NOTE 2, above, if automobiles or shipping carts pass close to safe during weekends or "quiet" times when alarm system is armed.
- B. Clean slide switch contacts with spray cleaner (Ademco No. 317).
- C. Clean relay contacts with spray cleaner (Ademco No. 317).

TROUBLE: 3. THE SAFE ALARM IS NOT SENSITIVE ENOUGH AND THE METER DOES NOT CHANGE ITS POSITION WHEN THE SAFE IS APPROACHED OR THE SAFE DOOR IS OPENED.

PROBABLE CAUSE

REMEDY

A. The capacitor installed between terminal 8 and the safe is of the wrong value.

A. Choose a capacitor of about 600 pf at first, and through a process of trial and error, substitute various capacitor values ranging between 200 pf and 1000 pf (1 ufd), until the meter responds properly. Retune the instrument each time a substitution is made.

NOTE: In the tuning procedure, be sure to use an insulated screwdriver and rotate the trimmer carefully with the screwdriver used as a "knob" mechanism and not as a "tightening" mechanism. If a pressing motion is employed, damage to the trimmer may result.

TROUBLE: 4. FALSE ALARMS RESULT AFTER A LONG PERIOD OF TROUBLE-FREE OPERATION.

PROBABLE CAUSE

REMEDY

A. A low or poorly charged battery may result in an alarm indication (if unit has worked properly for a long period and suddenly develops swingers resulting in false alarms, suspect a low battery).

A. Substitute battery temporarily with two 1-1/2 volt dry cells wired in series, and placed at terminals 3 (+) and 4 (-). Remove the AC transformer from the wall. If the tendency to false alarm ceases, replace rechargeable battery with No. 1341.

TROUBLE: 5. METER DRIFTS TO LEFT REQUIRING CONSTANT READJUSTMENT.

A. An electrical path exists from the safe to ground.

A. Be sure the safe is properly insulated from the floor or carpeted surface. See TROUBLE 1, REMEDY D.

TROUBLE: 6. RELAY IN SAFE ALARM UNIT VIBRATES OR CHATTERS.

PROBABLE CAUSE

REMEDY

A. Improper ground to safe alarm unit.

A. Use cold water pipe ground only. See procedures for grounding in Section 3 of INSTALLATION, parts a. - d.

B. Battery installed improperly.

B. Make sure polarity is correct when attaching battery. Terminal 3 is (+); terminal 4 is (-).