

GENTEX
CORPORATION

8000 SERIES



A Smarter Vision®

PHOTOELECTRIC TYPE OPEN AREA SYSTEM DETECTORS

Installation Instructions - Owner's Information READ CAREFULLY AND SAVE

INTRODUCTION 8000 SERIES

The 8000 Series smoke detector is an open area photoelectric system smoke detector, engineered to provide reliable early warning against smoke. Each smoke detector is provided with a standard Form A/Form C relay for alarm and auxiliary functions.

Supplied with each detector is a quick-disconnect wiring harness and universal mounting bracket.

MODELS AVAILABLE

8240/8243.....24VDC
8100/8103.....120VAC, 60 HZ

OPTIONS, SELECTIONS

- * P.....BUILT-IN PIEZO HORN
- T.....INTEGRAL 135°F THERMAL SENSOR
- **H.....ISOLATED 135°F THERMAL SENSOR
- Y.....NON-LATCHING/SELF-CLEARING

* All detectors with the piezo horn option include smoke detector reverse polarity horn activation. Relay contacts are not activated with the application of reverse polarity power.

NOTICE: The 8240P/8100P models produce a non-temporal audible alarm and are therefore not intended for locations where the desired action of the occupant(s) is evacuation.

NOTICE: The 8243P/8103P models produce a temporal 3 audible alarm. Per NFPA 72, the American National Standard Audible Emergency Evacuation Signal as defined in ANSI S3.41, is required whenever the intended response is to evacuate the building.

** The H Series 135°F normally open isolated thermal is not wired into the detection circuit. It is for remote connection to the auxiliary annunciation circuit. The "H" thermal is supervised with two wires in and two wires out.

HOW YOUR SMOKE DETECTOR WORKS

The 8000 Series smoke detector operates on the photoelectric light scatter principle. The unit's sensing chamber houses a light source and a light sensor.

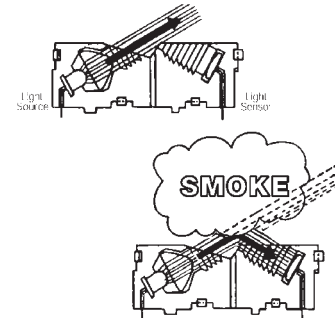
The darkened sensing chamber is exposed to the atmosphere and designed to permit optimum smoke entry from any direction while rejecting light from outside the detector.

The light source is an infrared (invisible) LED which pulses every 4 to 8 seconds. The light sensor is a photodiode matched to the light frequency of the LED light source.

Under normal conditions, the light generated by the pulsing infrared LED is not seen by the light beam. When smoke enters the sensing chamber, light from the pulsing LED light source is reflected by the smoke particles onto the photodiode light sensor. At the first sighting of smoke, the smoke detector is put into a pre-alarm mode. This is indicated by a rapidly flashing LED on the face of the smoke detector.

Once the light sensor confirms smoke for 2 consecutive pulses inside the chamber, the light sensor produces the signal necessary to trigger the alarm.

This technique of verifying the smoke condition, combined with a 5-to-1 signal-to-noise ratio, substantially reduces the possibility of nuisance alarms.



LOCATION

This smoke detection alarm can be mounted on a ceiling or wall with equal efficiency in either location.

- ◆ Ceiling location - smoke detector should be mounted as close as possible to the center of a hallway or room. If this is not possible, the edge of the detector should be at least 12 inches from any wall.
- ◆ Wall location - mount the top of the smoke detector at least 4 inches and not more than 12 inches from the ceiling. Observe smoke detector for proper top/bottom orientation (test knob is near the bottom of unit).

Each smoke detector and spacing shall be determined by an evaluation based on engineering judgment supplemented, if possible, by field tests and NFPA 72. For additional information on Smoke Detector Location and Spacing, contact: National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, and request a copy of NFPA 72, Standard on Automatic Fire Detectors.

INSTALLATION - GENERAL

CAUTION - New Construction: DO NOT attach smoke detector head until AFTER sanding, insulation, painting, and other dust creating situations are finished.

COMMERCIAL OR INDUSTRIAL USE
Recommendation according to NFPA Standard 72

LOCATION	SPACING RECOMMENDATION
Smooth ceiling	Spacing of 30 feet between smoke detectors may be used.
Joisted ceiling	Joists 8" or less may be considered as a smooth ceiling.
Sloped ceiling	Within 3 feet of peak, measured horizontally. Additional smoke detectors based on horizontal projection of ceiling.
High ceiling	If air temperature near ceiling is high enough to cause loss of thermal lift (smoke stops rising and stratifies), install smoke detectors at alternate levels: half at ceiling level, half 3 feet below ceiling. Typical structure where stratification may occur is a warehouse with metal roof.
Beam ceiling	Beams less than 8" may be considered as a smooth ceiling. Beams more than 8" and less than 18" thick require reduced spacing for smoke detectors. Beams 18" or larger spaced on 8-foot centers - each bay shall be treated as a separate area requiring at least one smoke detector.

MOUNT ROUGH-IN BOX & RUN WIRING

IMPORTANT: INSURE THAT ALL FLUORESCENT LIGHTING FIXTURES ARE PROPERLY GROUNDED.

1. Use a 2" x 3" switch box or a 4" square or octagon junction box. Mount a box for each smoke detector and run the system fire detection circuit plus the power circuit to all smoke detector locations. See Wiring Diagrams, Figures A and B, for Latching Models, and Figures C and D for Self Clearing Models.

NOTE: The wiring to be used shall be in accordance with the provisions of Article 300.3(b) of the National Electrical Code, ANSI/NFPA 70, as well as Article 210.

CAUTION: Break wire runs to provide supervision for connections made to each wire pair.

NOTICE:

120 AC Voltage (8100 & 8103 Series):

Hot (Black) Wire: Pin 3 and Pin 6

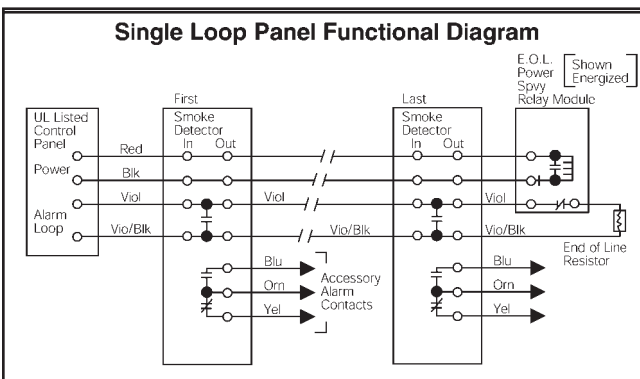
Neutral (White) Wire: Pin 12 and Pin 15

24 DC Voltage (8240 & 8243 Series):

Positive (Red) Wire: Pin 3 and Pin 6

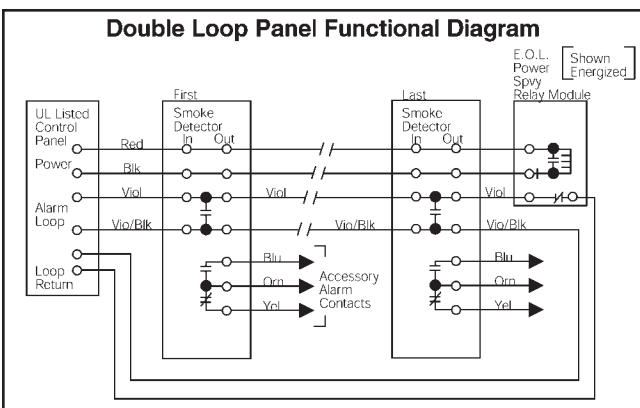
Negative (Black) Wire: Pin 12 and Pin 15

FIGURE A



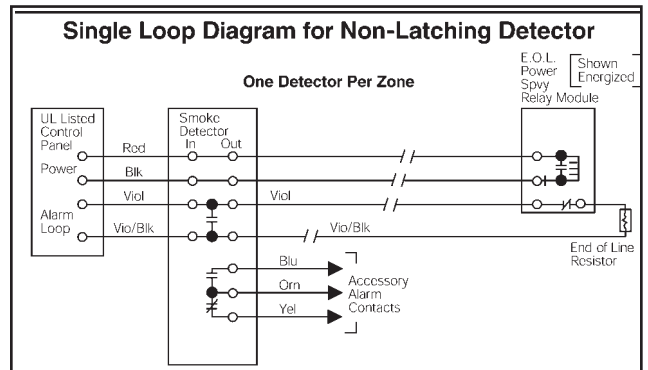
Class B Panel Wiring Diagram

FIGURE B



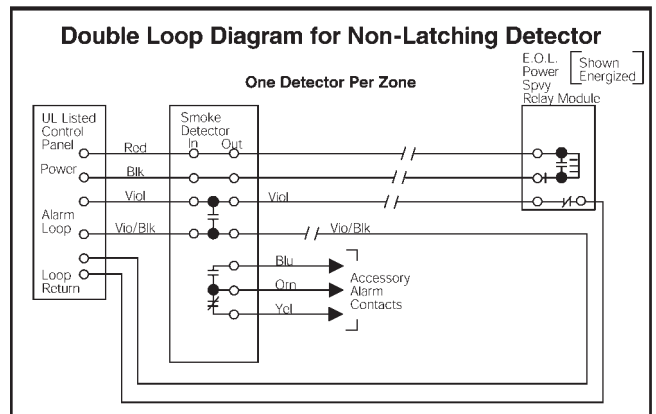
Class A Panel Wiring Diagram

FIGURE C



Class B Panel Wiring Diagram - One Smoke Detector Per Zone

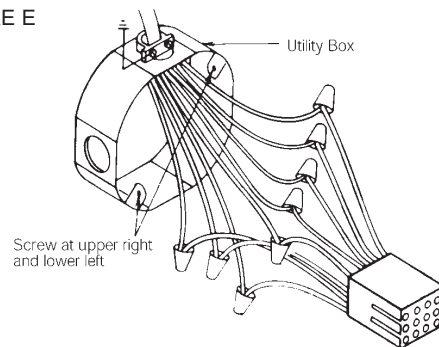
FIGURE D



Class A Panel Wiring Diagram - One Smoke Detector Per Zone

2. If wall mounting is desired, be sure the box screws are oriented to upper right and lower left corners, Figure E. The volume of the box is determined by the number of conductors entering and exiting the box. Use 1-3/4 cubic inches per conductor (#16 AWG).

FIGURE E

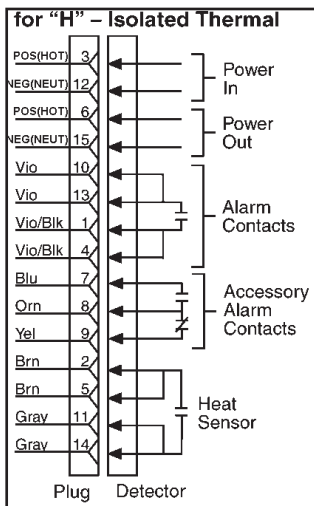
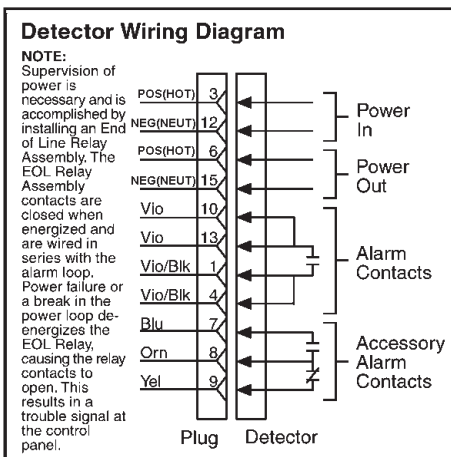


INSTALL MOUNTING PLATE & CONNECT WIRES

1. Remove the plug and wire assembly from the shipping container and wire it in junction box as follows:
2. Major Circuits (power in, power out, and alarm contacts) have two wires, one for the incoming circuit and one for the outgoing circuit. Auxiliary relay contacts are single wire circuits. Make connections as detailed on wiring diagrams, Figure F.
3. Lace the connector through the provided mounting plate and secure the plate to the junction box.

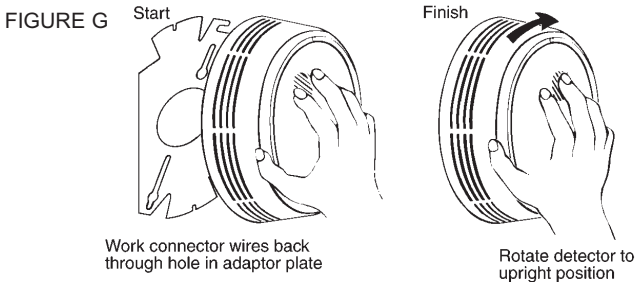
NOTE: For trouble areas where there can be a large volume of air blowing out through the electrical junction box. You must first insert the cardboard shield packaged with your smoke detector to the backside of the smoke detector before securing it to mounting plate.

FIGURE F



SECURE SMOKE DETECTOR TO MOUNTING PLATE

1. Plug the wire connector into the detector base.
2. Place the smoke detector up to the mounting plate, rotating it clockwise until smoke detector firmly snap locks into place. Keep the smoke detector parallel to the mounting plate so upper and lower tabs on plate seat correctly into detector, Figure G.

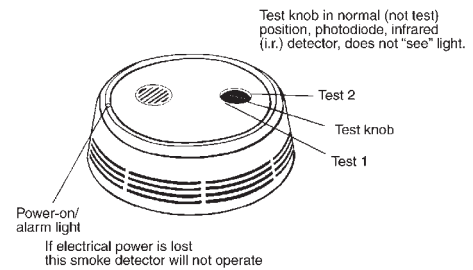


CHECKOUT & TROUBLESHOOTING

1. Turn test knob on each unit to the NORMAL position and supply power to the system Control Unit.
 - a. If the fire alarm sounds, one or more smoke detector connections to the fire detection circuit may be reversed. Check wire color codes and trace.
 - b. If the trouble buzzer sounds, the fire detection circuit may be reversed or disconnected at the Control Unit.
2. Testing with the Test Knob.
 - a. Rotate the test knob on the front of the unit to TEST 1 position (counter-clockwise). See Figure H. The alarm should sound in less than 20 seconds.
 - b. To reset the system, return the knob to its NORMAL position and use the reset switch on the system Control Panel. Hold in reset for 5 or more seconds.

- c. To test smoke detector for high sensitivity, rotate test knob clockwise to the TEST 2 position. Alarm should remain silent. Return test knob to normal position. If your smoke detector alarmed during TEST 2, the smoke detector's sensitivity has become too high and may cause false alarms. This may mean your smoke detector is dirty and should be cleaned as described in the below maintenance procedure.
- d. If your detector still alarms in TEST 2 position following washing and recommended drying time, return it to Gentex Corporation for service. The test knob actually tests the sensitivity of the unit by using the same principle involved as when smoke enters the smoke detector. When you turn the test knob to the TEST 1 position, you are scattering the detector's LED light to the equivalent of 3.4% actual smoke. TEST 2 position is equivalent to 0.85%.

FIGURE H



- e. The test knob is not an electrical switch, nor is it connected in any way to the alarm horn. Therefore, when you test with the test knob, you are simulating the smoke condition in the detector and testing all elements of the smoke detector that are necessary for the detection of actual smoke. To check for proper smoke entry into your smoke detector's sensing chamber, Gentex recommends using the Home Safeguard Smoke Detector spray or CHEKKIT® SMOKE Detector Tester from SDI. This test should be performed once a year and should be sprayed from a distance no closer than 12 inches from smoke detector (refer to NFPA 72 for details).
3. A trouble buzzer will sound if any detector is removed from its socket in supervised circuits. **CAUTION:** When a smoke detector is removed it may cause other smoke detectors to have a loss of power and become inoperative. If this happens, reconnect the smoke detector until a replacement can be installed, or use a jumper plug which can be ordered separately from the factory.
 4. Power-On - Alarm Light. The LED on the face of the smoke detector blinks every 15-30 seconds, indicating electrical power is being supplied. See Figure H. If the smoke (or test knob) persists for about 20 seconds, the LED will be on continuously for latching models or flash rapidly for non-latching models to indicate the alarm condition of the smoke detector. It will stay on until the system is reset.

MAINTENANCE

After your smoke detector has been in operation for a period of time or if it was installed prior to the completion of all building construction, your smoke detector may have become more sensitive due to dirt build-up in the smoke detector's optic sensing chamber. This could cause nuisance alarms or cause the smoke detector to activate from small amounts of smoke build-up. If this should occur, following this simple washing procedure will restore your smoke detector back to its original condition.

For further information regarding frequency of maintenance and testing, refer to NFPA 72, NFPA, Batterymarch Park, Quincy, MA 02269.

NOTICE: Failure to follow full cleaning instructions could result in damage to this smoke detector.

1. Turn off electrical power to the detector.
2. Twist the smoke detector counter-clockwise to remove it from its mounting plate. **WARNING!** The fire alarm system shall remain active during all maintenance. Therefore, while servicing one smoke detector, either use a replacement smoke detector or jumper plug to keep the fire alarm system operative. Contact your local Gentex distributor for the proper jumper plugs to use with your fire system.
3. Unplug the connector from the back of the smoke detector. Do not remove the wire connection; leave the connector for your replacement smoke detector or jumper plug.

4. Select three (3) standard size wash buckets and fill them each with one gallon of normal tap water (**distilled or de-ionized treated water is recommended as a final rinse if water is extremely hard in your area**).
5. Add 1/8 cup of Ivory dishwashing liquid to the first bucket of water and allow it to mix thoroughly, then place dirty smoke detector in the soap water mixture until it becomes completely covered or submerged. NOTE: If the smoke detectors are exceptionally dirty, you may wish to first wipe off any excess dirt before washing smoke detector so as not to dirty the wash water too quickly.

DO NOT open smoke alarm for cleaning. IF SMOKE ALARM IS OPENED DURING CLEANING, PRODUCT WARRANTY BECOMES VOID.

NOTICE: ONLY IVORY DISHWASHING LIQUID IS TO BE USED. OTHER BRANDS ARE NOT RECOMMENDED AND MAY CAUSE YOUR DETECTOR TO MALFUNCTION.

6. Allow smoke detector to soak for approximately 10 minutes (longer if extremely dirty). Then agitate for 5 or 10 seconds to flush out any remaining dirt left inside detector's housing.
7. Remove detector from wash water and transfer directly to one of the first rinse buckets containing clear water. Again, allowing smoke detector to become completely submerged, agitate once more for 5 or 10 seconds to remove soap residue.
8. Finally, transfer detector to your second and final rinse bucket, repeating method found in Step 7, then remove smoke detector to a clean dry area for a period of 48 hours to allow it to thoroughly dry.

NOTICE: SMOKE DETECTORS ARE TO AIR DRY ONLY. DO NOT PLACE SMOKE DETECTOR IN OVEN OR USE A HOT AIR BLOWER TO ACCELERATE DRYING TIME. THIS COULD RESULT IN DAMAGE TO YOUR SMOKE DETECTOR.

IMPORTANT: IT IS RECOMMENDED TO CHANGE WASH AND RINSE WATER AFTER FIVE (5) DETECTORS. IF YOUR DETECTORS ARE EXTREMELY DIRTY, WATER SHOULD BE CHANGED MORE FREQUENTLY.

In the event you experience difficulty in the cleaning of your smoke detectors or if you have any questions, please contact Gentex Corporation or your local Gentex distributor

⚠ WARNING If the smoke detector does not work properly, do not try and fix it yourself. This will void your warranty. See "To Return a Smoke Detector" for instructions to return smoke detectors that do not operate properly. **DO NOT TRY TO FIX IT YOURSELF.**

IMPORTANT: Gentex recommends smoke detectors be tested a minimum of once a week.

WARNING! Never use an open flame of any kind to test your smoke detector. You may ignite and damage the smoke detector as well as your home. The test feature of your smoke detector accurately simulates smoke conditions and tests the smoke detector's functions as required by Underwriters Laboratories.

WARNING! Do not cover, tape, or otherwise block the openings of your smoke alarm. These openings are designed to allow air to pass through your smoke detector, thus sampling the air around the smoke detector.

WARNING! Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

FAILURE TO REGULARLY CLEAN THIS SMOKE DETECTOR WILL RESULT IN FALSE ALARMS. A BUILD UP OF DUST CREATES AN OBSCURATION THAT SIMULATES SMOKE. THIS MEANS THE UNIT WILL GO INTO ALARM WITHOUT A FIRE CONDITION.

TO RETURN A SMOKE DETECTOR

Should you experience problems with your smoke detector, proceed as follows:

1. Turn off electrical power to the detector.
2. Rotate the detector counter-clockwise to remove it from its mounting plate.
3. Unplug the connector from the back of the detector. Do not remove the wire connection; leave the connector for your replacement detector. If the system is to remain active while the detector is removed, a jumper plug must be installed. Contact factory for part.
4. Carefully pack (the manufacturer cannot be responsible for consequential damage) and return to the manufacturer. Include complete details as to exact nature of difficulties being experienced and date of installation.
5. Return to: Gentex Corporation, 10985 Chicago Drive, Zeeland, Michigan 49464. Prior to returning, call 1-800-436-8391 or e-mail FP_RMA@gentex.com to obtain a RMA number from our return department.

ELECTRICAL SPECIFICATIONS

MODEL NUMBERS	8240	8100
Operating Voltage Nominal:	24VDC	120VAC
Range Min:	18VDC	110VAC
Max:	30VDC	120VAC
Frequency	-----	60Hz.

Current consumption at Normal Operating Voltage

Standby	6mA	70mA
Alarm	60mA	70mA

NOTE: For "P" Option (horn), alarm current consumption is unchanged. Reverse polarity current is 15mA.

Alarm Relay Contacts-1 Form A.....	Rated Load (Resistive)
	1 Amp at 24 Volt DC
	0.5 Amp at 120 Volt AC
Auxiliary Relay Contact-1 Form C.....	Rated Load (Resistive)
	1 Amp at 24 Volt DC
	0.5 Amp at 120 Volt AC
Temperature.....	40°F-100°F(4.4°C-37.8°C)
Humidity.....	10%-93% Relative Humidity
Size.....	5.7"W x 5.7"H x 2.8"D

LIMITED WARRANTY

For a period of 24 months from the date of purchase, or a maximum of 20 months from the date of manufacture, Gentex warrants to you, the original consumer purchaser, that your Smoke Detector will be free from defects in workmanship, materials, and construction under normal use and service. If a defect in workmanship, materials, or construction should cause your Smoke Detector to become inoperable within the warranty period, Gentex will repair your Smoke Detector or furnish you with a new or rebuilt replacement Smoke Detector without charge to you except for postage required to return the Smoke Detector to us. Your repaired or replacement Smoke Detector will be returned to you free of charge and it will be covered under this warranty for the balance of the warranty period.

This warranty is void if our inspection of your Smoke Detector shows that the damage or failure was caused by abuse, misuse, abnormal usage, faulty installation, improper maintenance, or repairs other than those performed by us. ANY WARRANTIES IMPLIED UNDER ANY STATE LAW, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLY ONLY FOR THE WARRANTY PERIOD SPECIFIED ABOVE. PLEASE NOTE THAT SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE EXCLUSION MAY NOT

APPLY TO YOU.

GENTEX WILL NOT BE LIABLE FOR ANY LOSS, DAMAGE, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING IN CONNECTION WITH THE SALES, USE OR REPAIR OF THIS SMOKE DETECTOR. PLEASE NOTE THAT SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

If a defect in workmanship, materials, or construction should cause your Smoke Detector to become inoperable within the warranty period, you must return the Smoke Detector to Gentex postage prepaid. You must also pack the Smoke Detector to minimize the risk of it being damaged in transit. You must also enclose a return address. Smoke Detectors returned for warranty service should be sent to: Gentex Corporation, 10985 Chicago Drive, Zeeland, MI 49464.

If we receive a Smoke Detector in a damaged condition as the result of shipping, we will notify you and you must file a claim with the Shipper.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

Important Notice:

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