

DOWNLIGHTS

RECESSED DOWNLIGHT HOUSINGS

INSTALLATION

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A. CAUTION

Before beginning any downlight installation, disconnect electrical power at a main switch or circuit breaker. Lucifer recessed downlights are low voltage fixtures which operate on a 12-volt power supply, except the line voltage DHH housing. Downlight installations where housings are not specified is not advised or approved. Installing Lucifer downlights without Lucifer supplied housings and transformers voids the UL/C-UL Listing and Lucifer warranty.

B. IMPORTANT SAFETY INSTRUCTIONS

When installing or using these recessed downlights, basic safety precautions must be followed, including the following:

1. Read all instructions before attempting any part of the installation. If you do not understand the instructions, do not attempt to install these light fixtures. Save these instructions.
2. Recessed housings may be installed in dry and damp locations only. The trims are not Listed for use in wet locations. (except for DL21X and DL21XCP)
3. Install and mount recessed housings on a structurally sound surface.
4. Do not install any fixture assembly closer than 6" from any curtains, exotic veneers or similar combustible materials.
5. To reduce the risk of fire, electric shock and potential damage to the fixtures, do not attempt to connect motors, power tools, extension cords, appliances, and the like on the branch circuit serving the recessed downlights.
6. Disconnect electrical power circuit before adding to or changing the configuration of the recessed downlights

C. GENERAL INSTALLATION AND WIRING INSTRUCTIONS

- Lucifer 12-volt recessed downlights should be installed by a competent registered electrician in accordance with these instructions.
- The installation shall comply with the national electric code (NEC) and local codes and ordinances having jurisdiction.
- The installer is responsible for furnishing proper electrical equipment and materials for the installation of these fixtures as intended by these installation instructions.
- Install housings in a manner to permit access to components and splice connections which may require future service.
- Set recessed housing plumb square and level with the ceilings and walls, in alignment with adjacent structural members. Secure in accordance with these installation instructions for the specified housing.
- Recessed housings installed in accessible and non-accessible ceilings shall be supported from the structural members of the building. Do not support housings by lay-in ceiling support T-bars only.
- Metal conduit shall be used if required by applicable codes. Conductor insulation must be rated for the appropriate temperature rating as specified for each Lucifer housing.
- The ground wire at the service junction box shall be secured to a ground screw. No part of the secondary 12-volt circuit shall be grounded.
- Switching or dimming should be controlled on the primary 120-volt side of the transformer. The switch must be rated to resist the effect of the switch-on surge (usually 1.25 to 1.50 times the running current). Use only dimmers specially designed and manufactured for dimming the primary side of transformers. Verify with the dimmer manufacturer that the dimmer is suitable for dimming the primary side of low voltage magnetic or electronic

transformers, whichever is applicable, and can accommodate transformer load.

- The recessed downlights are thermally protected as required by underwriters laboratories (UL). Blinking lamp may indicate that the installation of the housing is improper and the surrounding space above the ceiling is causing over-heating or a higher wattage lamp is being used other than the wattage in which the housing is approved. Check if insulation is too close to the housing or if the lamp's wattage is too high contrary to housing label and specific installation instructions.
- Lucifer downlights operate on a 12-volt secondary system, except the line voltage DHH housing. When circuiting Lucifer 12-volt recessed downlights either singly or in series with a remote transformer, it must be remembered that a lower voltage signifies a higher current in amperes. Therefore, secondary fusing based on a multiplier of 1.25% (NEC) must be used. The conductor on the secondary side of the transformer at 12-volts must be sized for the full load amperage.

EXAMPLE:

*50 watts / 12 volts = 4.16 amps
 4.16 amps x 1.25 = 5.20 amps
 This dictates a 5-amp fuse*

- The proper size of supply wire is also critical to reduce the possibility of voltage drop. Undersizing of supply wire reduces efficiency, affects color temperatures and will affect lamp life. Refer to the following chart for recommended wire sizes for specified distances of housing from a 12-volt remote transformer.

WARNING: Conductor size and lengths shall not exceed figures set forth in table below:

MAX LENGTH FROM TRANSFORMER (Distance in feet given secondary wire size)															
Watts/12v	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
Amps/12v	1.7	3.3	5.0	6.7	8.3	10.0	11.7	13.3	15.0	16.7	18.3	20.0	21.7	23.3	25.0
12AWG	65	33	22	16	13	11	9	8	7	7	6	5	-	-	-
10AWG	104	52	35	26	21	17	15	13	12	10	9	8	7	7	7
8AWG	165	83	55	41	33	28	24	21	18	17	15	14	13	12	11
6AWG	263	132	88	66	53	44	38	33	29	26	24	22	20	19	18

D. POWER SOURCE

The secondary power supply is either a remote 12-volt transformer (model DHT, DHX-R, DHI-R, DH-NIC-JVC1-HAL-50-REM, and DH-NIC-RM-XF-HAL-50-REM housing) installed between the 120-volt electrical supply and the recessed downlight; or an integral transformer (model DHX, DHI, DH-NIC-RM-XF-HAL-50-120E/120M/277M, DHC, DH-NIC-JVC1-HAL-50-120E/120M/277M, and DH-NIC-JVC2-HAL-50-120E housing); or a line voltage housing intended for use on a 120 volt AC branch circuit (model DHH housing). In remote transformer installations, each low-voltage circuit from the power supply must be protected by an in-line circuit breaker or a fuse that is properly sized for the connected load, i.e. a 1.25% multiplier as required by the national electrical code.

E. UL/C-UL LISTINGS AND CLEARANCE REQUIREMENTS

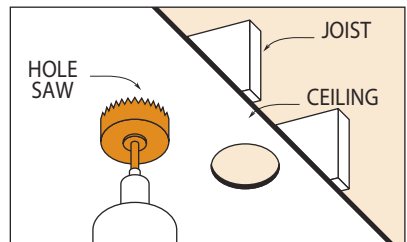
1. Accessible, non-insulated ceilings:
DHT/P, DHT/R, DHT/Q, DHT/S,
DHT/C, DHX-3, DHX-5
Clearance: 3" minimum on all sides
2. Accessible and non-accessible, non-insulated ceilings: DHX-1, DHX-2, DHX-4, DHX-6, DH-NIC-RM, DHC, DH-NIC-JVC1, DH-NIC-JVC2, DHH
Clearance: 3" minimum on all sides
3. Accessible and non-accessible, insulated ceilings: DHI

F. HOUSING/TRIM AND CEILING CUTOUT REFERENCE

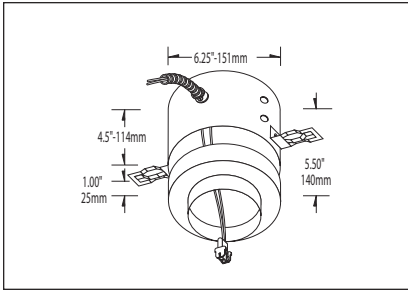
1. Housings: DHT/P, DHX-1, DH-NIC-RM**, DHI, DHC
Ceiling cutout: 4 3/8" diameter **
For use with trims: DL1X/XM/XMM, DL1XP/XMP/XMMP, DL2RX/XM/XMM, DL2RXP/XMP/XMMP, DL4X/XM, DL5XP/XMP/XMMP, DL11X/XM, DL12X, DL13X/XM, DL15X/XM, DL18XM, DL21X, DL21XCP

**DH-NIC-RM housing requires chamfered/beveled ceiling cutout.
See page 5.

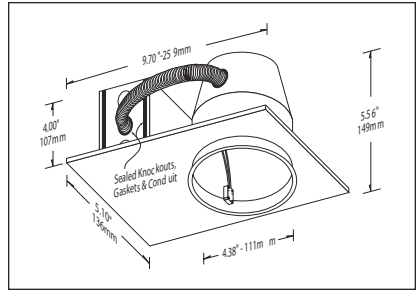
2. Housings: DHT/C, DHX-2
Ceiling cutout: 5 1/2" diameter
For use with trim: DL19X
 3. Housings: DHT/R, DHX-3
Ceiling cutout: 3 1/8" diameter
For use with trims: DL1, DL2, DL2R, DL3, DL10, DL11, DL14, DL15, DL23 (DHX-3 only)
 4. Housing: DHX-4
Ceiling cutout: 5 3/4" diameter
For use with trim: SDL13
 5. Housings: DHT/Q, DHX-5
Ceiling cutout: 3 5/16" square
For use with trims: DL12, DL16
 6. Housing: DHT/S
Ceiling cutout: 3 3/4" diameter
For use with trim: DL19
 7. Housing: DHX-6
Ceiling cutout: 4 3/8" diameter
For use with trims: DL2RXM-20P, DL2RXM-50P
 8. Housing: DH-NIC-JVC1
Ceiling cutout: 5 1/2" x 5 1/2" square
For use with trim: DLJ1
 9. Housing: DH-NIC-JVC2
Ceiling cutout: 9 1/8" x 5 1/2" rectangle
For use with trim: DLJ2
 10. Housing: DHH
Ceiling cutout: 4 3/8" diameter
For use with trims: DL22R, DL22RF
- NOTE: Lucifer Lighting recommends using a Hole Saw for a more accurate ceiling cut due to many trims have minimal goof allowance.



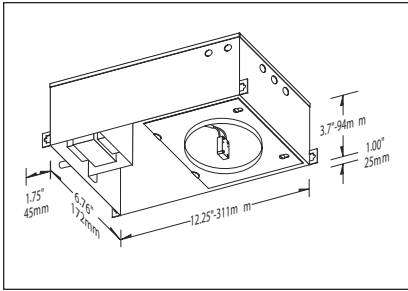
G. HOUSING ILLUSTRATIONS



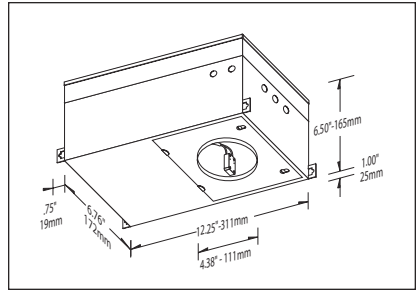
DHT/P/Q/R/S/C



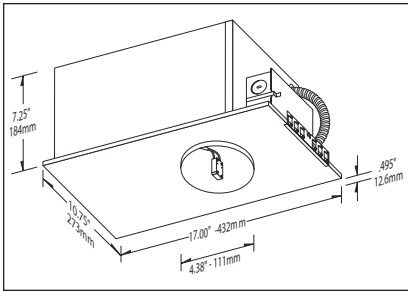
DHC



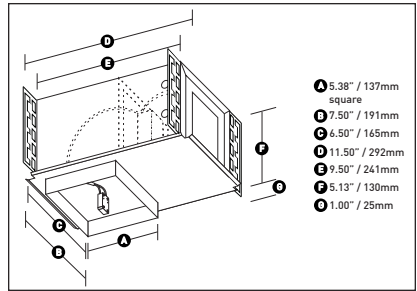
DHX-1/2/3/4/5/6



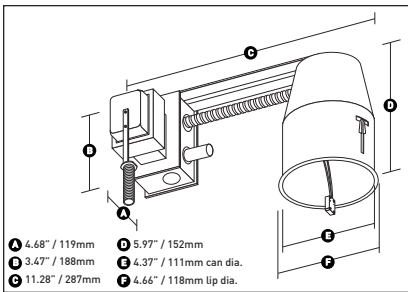
DHH



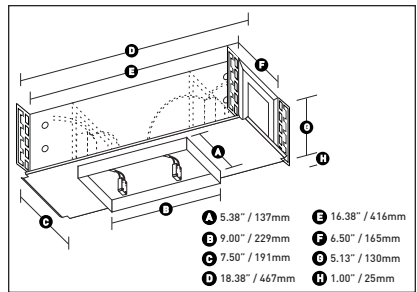
DHI



DH-NIC-JVC1



DH-NIC-RM



DH-NIC-JVC2

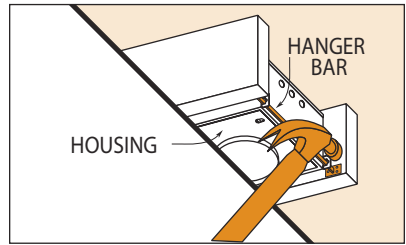
H. HOUSING INSTALLATION

I. MOUNTING

- a. Models DHT, DHX, DHI, DHC, DHH, DH-NIC-JVC1 and DH-NIC-JVC2 housings

Install the housing where the trim model is specified to be located and rough-in framing of housing with the use of hanger bars or butterfly brackets provided. In ceiling grid systems, clip the hanger bar end clips onto the ceiling grid to secure the housing. In other ceilings, nail the hanger bar end brackets into the crossbeam supports. In drywall ceilings it is required that the cutout is sized properly for the housing. The neck of the housing should fit snugly into

the circular cutout and be level with the finished ceiling plane. In ceilings where insulation is present, all insulation must be at least 3" away from each side of the downlight housing, except for the DHI Insulated housing.

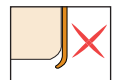
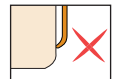
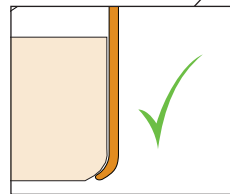
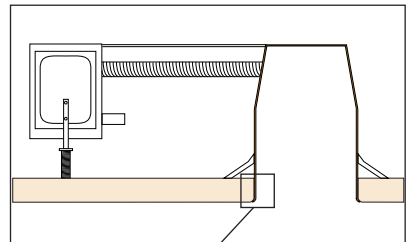
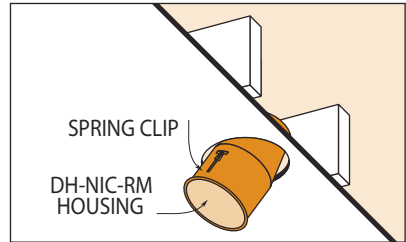


- b. Model DH-NIC-RM housing

Once the ceiling cutout and electric connections have been made (Refer to section H-2a) adjust support leg of DH-NIC-RM by twisting spoke as required to accommodate thickness of ceiling and counterweight housing flange to be level with ceiling surface on room side once installed.

Note to installer: For XM or XMM trim applications, ceiling cutout **MUST** be chamfered/beveled to allow housing can lip to be flush with ceiling surface on room side (see graphic to right). Chamfer/bevel must be made so that ceiling panel positively engages lip of housing can to prevent can from pulling up through cutout when secured.

Insert transformer end of housing at an angle into ceiling opening. Rotate, straighten and push top of housing through ceiling cutout. Insert hand into can and push spring clip on transformer side out and adjust for security by squeezing and pushing clip downward. Repeat with clip on opposite side.



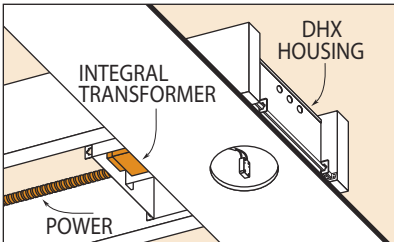
H. HOUSING INSTALLATION *continued*

2. WIRE CONNECTIONS

NOTE: Verify that all wiring meets the temperature requirements labeled on the housing.

- a. **Integral Transformer:** Models DHX, DH-NIC-RM, DHI, DHC, DH-NIC-JVC1, DH-NIC-JVC2 housings

Where the transformer is integral to housing, remove a knockout on the housing suitable for conductors. Use an approved fitting or strain relief to protect the wire. Consult the NEC and your local code authority as to the appropriate wire type, wire gauge, and wire connectors for your application. The housing is provided with three wires in the transformer compartment. The green wire is to be connected to an earth ground. The white wire is to be connected to the neutral leg of the circuit. The black wire is to be connected to the line leg of the circuit. Locate all wiring connections within the transformer compartment. Replace cover plate, where provided (DH-NIC-RM).

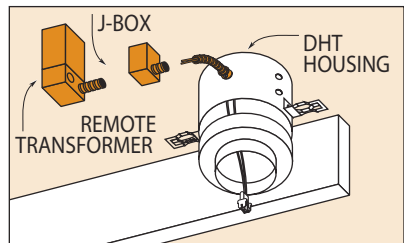


- b. **Remote Transformer:** Models DHT/P/Q/R/S/C, DHX-R, DHI-R, DH-NIC-JVC1-HAL-50-REM, and DH-NIC-RM-XF-HAL-50-REM housings

Where the transformer is remote, install a Lucifer supplied transformer with 12 volt output and adequate volt amp rating in a well-ventilated and accessible location. Place the transformer to allow the shortest possible run of the voltage conductors. Magnetic transformers are heavy. Assume that the transformer is securely attached to sound support. Be sure to properly size wiring in accordance with the distance to the transformer, lamp wattage and transformer size. Refer to wire chart under section C-12 proceeding. Specific instructions for transformer wiring may be found with the remote transformer.

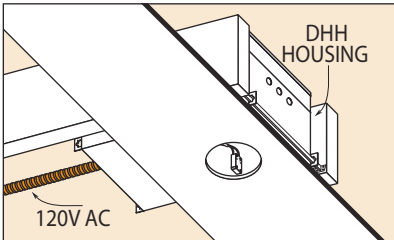
- c. **Wiring DHT remote specifics**

Connect the 3/8" flexible conduit from the DHT series downlight housing to an accessible electrical junction box. Connect conductors to the branch circuitry junction box using wire nuts. In installations where three or fewer downlights are powered by a single transformer, the flexible conduit and conductors may be connected directly to the transformer's compartment and secondary leads using appropriate connectors. Then connect the primary power leads to the 120-volt power supply.



H. HOUSING INSTALLATION continued

- d. Wiring DHH line voltage specifics
- The model DHH housing is a line voltage housing intended for use on a 120 volt AC branch circuit. Route the branch circuit wiring through one of the knockouts provided in the splice compartment or the top of the housing. Use an approved fitting or strain relief to protect the wire. Consult the NEC and your local code authority as to the appropriate wire type, wire gauge, and wire connectors for your application. The housing is provided with three wires in the splice compartment. The green wire is to be connected to an earth ground. The white wire is to be connected to the neutral leg of the circuit. The black wire is to be connected to the line leg of the circuit. Locate all wiring connections within the splice compartment.



I. LAMP WATTAGE

Lucifer recessed downlights are low voltage lighting fixtures, (except the DHH,) designed to operate with a 12-volt power supply only. When using 120-volt primary models DHT/P/Q/R/S/C, DHI, DH-NIC-RM, DHC, DH-NIC-JVC1, DH-NIC-JVC2, DHX-3, DHX-5 can utilize up to a 50 watt MR-16 lamp; models DHX-1, DHX-2, DHX-4, DHX-6 and can utilize up to a 75 watt MR-16 lamp. When using 277-volt primary, ALL downlight housings are limited to 50 watt maximum.

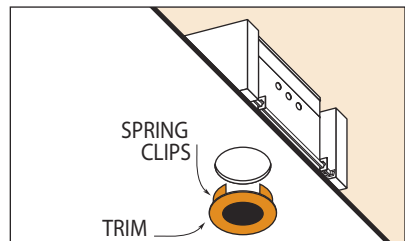
J. LENS AND LAMP INSTALLATION

When the housing has been properly and securely installed, and all electrical connections have been made, install the specified MR-16 lamp into the socket hanging from the housing's opening. When a glass barrier (lens) is not used, install a sealed (lensed) MR-16 lamp only.

When using lenses, the proper installation order is to place the spread lens closest to the lamp, prism side away, then diffusion lens, color lens, and louver, respectively.

K. TRIM INSTALLATION

After lamping, insert the downlight trim into the downlight housing by carefully depressing the outer ends of the spring clips toward the center of the trim with the thumb and forefinger of each hand. Slip the trim up into the neck of the downlight housing, applying even pressure.



LIMITED WARRANTY

LUCIFER LIGHTING COMPANY (Seller) warrants that for a period of one (1) year from date of sale to the first non-retail purchaser, Seller will repair or replace, at the Seller's sole option, free of charge, any defective products purchased from Seller provided that prior authorization is obtained from the Seller and the products are sent prepaid to the Seller's manufacturing facility. Lamps are not warranted or guaranteed in any manner for any length of time. In no event shall Seller's obligations under this warranty extend beyond the initial cost of the products and accordingly, consequential damages arising out of any claimed product defect are expressly excluded. This Warranty does not cover the costs, if any, in re-installation of products serviced under this Warranty. This Warranty does not cover damage or failure caused by acts of God, abuse, misuse, abnormal usage, faulty installation, or any repairs or modifications other than

those made by Seller. This Warranty does not cover damage or failure caused by light fixtures used with transformers or other products not supplied by Seller, nor shall it apply to defects for which written notice thereof is not received by Seller within one (1) year from date of purchase. Except as to Seller's Warranty of repair or replacement set forth above, there are no understandings, agreements, representations, or warranties, express or implied (including any regarding the merchantability or fitness for a particular purpose), respecting Lucifer products. This Warranty is the purchaser's sole and exclusive remedy against the Seller for the repair or replacement at Seller's option of defective Lucifer products. Under no circumstances shall Seller be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, the products sold hereunder.

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