APPLICATION

NR Series ARKTITE® heavy duty receptacles are designed to provide connection and distribution of secondary electrical power (600 volts or less) between a power source and portable or stationary electrical equipment. NR Series receptacles are supplied in 3 and 4 pole designs. They are capable of carrying a maximum continuous current of 30, 60, or 100 amperes at a rated voltage of 600 volts AC from 50 through 400 Hertz, or 250 volts DC.

NR Series receptacles are designed for use in non-hazardous areas — indoors or outdoors. When properly maintained and installed, NR receptacles are designed to provide safe and reliable operation in wet, damp, dirty and corrosive industrial environments.

NR Series receptacles are Style 2, in which the extra (grounding) pole connection is made before line and load poles engage and is broken after line and load poles disengage.

* ARKTITE and KRYDON are registered trademarks of the Crouse-Hinds Company.

Typical Installation (Non-hazardous location)

NR Series receptacle should be installed, inspected, maintained, and operated only by qualified and competent personnel.

RECEPTACLE DISASSEMBLY

NR Series receptacles are used with Crouse-Hinds NPJ Series Plugs and ARE, AJ and AJC back box assemblies. They may also be used with metal shelled APJ and CPH Series ARKTITE plugs with similar electrical ratings and configurations. Refer to Crouse-Hinds Product Catalog for a complete listing of compatible ARKTITE heavy duty receptacle housings and plugs.
1. Loosen the flange adapter set screw approximately 1/4 inch, then unscrew flange adapter from receptacle housing. See Figure 2.

2. Do not remove pressure termination type contacts from receptacle housing.

**IMPORTANT**

NR Series receptacles, identified by the addition of suffix T to the catalog number, are supplied with crimp or solder termination type contacts. Refer to Crimp/Solder Termination section of Instructions for installation information before proceeding further.

**WIRE CONNECTION**

Acceptable Wire Sizes For Use With Pressure Contacts

<table>
<thead>
<tr>
<th>Ampere Rating</th>
<th>Diameter of Recess</th>
<th>Wire Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Building</td>
</tr>
<tr>
<td>30</td>
<td>0.281</td>
<td>#10 - #6</td>
</tr>
<tr>
<td>60</td>
<td>0.312</td>
<td>#6 - #4</td>
</tr>
<tr>
<td>100</td>
<td>0.390</td>
<td>#4 - #1</td>
</tr>
</tbody>
</table>

**WARNING**

Electrical power must be turned OFF before and during installation and maintenance.

1. Establish a wiring pattern.

**WARNING**

Before assembling an NR Series receptacle, a wiring pattern must be established for your system. Locations having different voltages, frequencies or types of current (AC or DC) MUST NOT have interchangeable attachment plugs per section 210-7F of National Electrical Code and/or per Rule 26-700 (4) of Canadian Electrical Code. For each system the same colored wire must be put into the same numbered contact on all plugs and receptacles in that system. This will assure correct system polarity and eliminate the possibility of equipment damage and/or personal injury due to mis-phasing or shorts.

ARKitite plugs and receptacles are polarized so plug enters receptacle only one way. Contact recesses in insulating bodies are identified by number. This provides for proper polarity of conductors through plug and receptacle or cord connector.

**NOTE:** NR Series receptacles identified by the addition of suffix S4 to the catalog number are supplied with the receptacle contact pattern rotated 22-1/2 degrees for special polarity applications.

NR Series receptacles with a rotated contact pattern (Suffix S4) are compatible only with plugs built with the same special feature. Always compare catalog numbers located on unit nameplates if in doubt.

To ensure uniformity of the system, follow these instructions or use your own established standards. Electrical continuity testing is required to verify proper polarization.

**CAUTION**

Use only copper wire with this receptacle.

2. Select mounting location and style; panel or back box, that will provide suitable strength and rigidity. Be sure enough height is provided to allow ample insertion and withdrawal clearances for plugs. Securely fasten back box assembly into conduit system or prepare panel mounting surface. See Dimensional Information on page 5. Pull all phase and ground wires into back box (or through panel hole), providing sufficient length to connect to the receptacle.

3. Slide flange gasket, then flange adapter over phase and ground conductors.

**NOTE:** The gasket and flange adapter may be temporarily connected to the back box (on panel) to facilitate installation.

4. Strip conductor insulation to the dimensions shown in Figure 5. A conductor strip gage is also located on the receptacle housing. These dimensions will allow the conductors to bottom in the contact wire wells and the conductor insulation to extend into the insulating housing recesses.

**CAUTION Insulation**

Do not damage the conductor when removing its insulation.

5. Connect wires, identified by color in center column of Table 1, to contacts identified by number noted in column to the right. White wire is connected to contact identified by #2. Connect other contacts in accordance with color of wires.

Conductors are identified by the color of insulation on each individual conductor. These and/or Rule 4-038 of Canadian Electrical Code colors agree with those given in Section 210-5 of N.E. Code for multi-wire branch circuits; an additional wire, uninsulated or identified green, is for grounding and complies with Sections 250-42 and 250-45 of N.E. Code and/or Rules 10-400 and 10-408 of Canadian Electrical Code. If conductors are not identified with exactly these colors, these colors may be assumed in making proper connections.

**NOTE:** All installations must be electrically tested to assure proper polarity of conductors between plugs, receptacles and connectors.

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*Canadian Electrical Code — A voluntary code for Adoption and Enforcement by Regulatory Authorities.*
TABLE 1

<table>
<thead>
<tr>
<th>Cord Connector Style</th>
<th>Color of Wire in Cord</th>
<th>Numbers On Connector Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Pole</td>
<td>White*</td>
<td>Contact #8</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Contact #7</td>
</tr>
<tr>
<td></td>
<td>Green*</td>
<td>Contact #6</td>
</tr>
<tr>
<td></td>
<td>GR (Grounding Contact)</td>
<td></td>
</tr>
<tr>
<td>4 Pole</td>
<td>White*</td>
<td>Contact #2</td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>Contact #3</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>Contact #1</td>
</tr>
<tr>
<td></td>
<td>Green**</td>
<td>GR (Grounding Contact)</td>
</tr>
</tbody>
</table>

* White wire or terminal must not be used for grounding. If core conductor is uninsulated, or identified green; this wire is for grounding the portable device. If no green or bare wire is available, another wire may be connected through plug and receptacle connections to conduit or some other non-current-carrying conductor permanently grounded in accordance with Article 250 of the 1981 National Electrical Code, and or Section 8 of the Canadian Electrical Code.

** Use pressure type termination.

NOTE: NR receptacle housings supplied with snap-on cap option requires installation of cap mounting ring over receptacle housing before wires are fastened into contacts.

6. Loosen (but do not remove) pressure connector screws on contacts then insert conductors into wire wells according to your established wiring pattern.

Conductors must bottom in contact wire well and insulation must extend below surface of insulated housing. Tighten contact pressure connector screws securely to the torque values listed in Table 2.

<table>
<thead>
<tr>
<th>Assembly Amperage</th>
<th>Minimum Required Contact Screw Torque (In.-Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

CRIMP/SOLDER TERMINATION
(See Table 3 for proper wire sizes)

NR Series receptacles with crimp/ solder termination contacts are identified through the addition of a suffix T to the catalog number.

1. Remove all contacts (except the grounding contact) from the receptacle housing that require crimp or solder contact terminations. To remove the contacts, insert a flat blade screwdriver into the contact recess, depressing the retaining clip, push on the contact from the opposite end removing the contact. See Figure 9. Remove retaining clips from contacts and retain for reassembly.

2. Follow steps 1 through 5 of Wire Connection Instructions on page 2.

3. Connect the conductors into each contact wire well by either crimp or solder connection methods, following the established system wiring pattern. Grounding conductors are not crimped or soldered but held securely with a pressure connector screw.

Crimp Connection:
Proper crimp termination may require the use of a wire well reducer to ensure a complete metal fill in the crimped joint. Table 3 lists the various wire well reducers and crimping dies to be used with each wire well contact and the conductor size.

Figure 6. Conductor Installation

RECEPTACLE ASSEMBLY
1. Rethread flange adapter onto receptacle housing by rotating flange adapter until housing seats firmly against O-ring seal and alignment notches on receptacle housing and flange adapter are aligned. Tighten flange adapter set screw securely to 10 in.-lbs. torque.

Figure 7.

Figure 8. Contact Removal

2. Follow steps 1 through 5 of Wire Connection Instructions on page 2.

3. Connect the conductors into each contact wire well by either crimp or solder connection methods, following the established system wiring pattern. Grounding conductors are not crimped or soldered but held securely with a pressure connector screw.

Crimp Connection:
Proper crimp termination may require the use of a wire well reducer to ensure a complete metal fill in the crimped joint. Table 3 lists the various wire well reducers and crimping dies to be used with each wire well contact and the conductor size.

Figure 10. Wire Well Reducer
- Select the proper wire well reducer (supplied with NR Series receptacles ordered with a "T" suffix on the catalog number) and insert into the contact wire well.
- Insert the conductor and crimp the connection. The recommended Thomas and Betts hex crimp dies are listed in Table 3.

![Figure 11. Crimp Connection](image)

Inspect the crimp connection. The contact should securely grip the conductor without any cracks or tears in the wire well.

![Figure 12. Crimp Connection](image)

**TABLE 3**

<table>
<thead>
<tr>
<th></th>
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<td>.116</td>
<td>.180 .137</td>
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<td>.126</td>
<td>.180 .137</td>
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<td>#9</td>
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<tr>
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<td>42</td>
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<td>.375 .343</td>
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<td></td>
<td>#1</td>
<td>B</td>
<td>.372</td>
<td>None</td>
<td>42</td>
<td>11737</td>
<td></td>
</tr>
</tbody>
</table>

* Use in Thomas & Betts Crimp Tools, Catalog #13642 (Head) #13604 (Pump)

Solder Connection:

**CAUTION**

Do Not solder pressure connection type contacts. Use only crimp type contacts for soldering.

Reliable solder connections require the use of proper soldering techniques.
- Remove O-ring gasket from the contact and wipe off silicon lubricant.
- Remove insulation from conductor as shown in Figure 5 and wire brush contact wire well.
- Hold contact securely with wire well in upright position. Heat and pre-tin the wire well using a 60-40 resin core solder. Do not fill well with solder.

**NOTE:** A high heat source is required for good soldering. Use a high current resistance type. A torch may be used only if the surrounding conductor insulation is adequately protected.
- Insert conductor into wire well as far as possible while applying heat to the well. Add solder by melting on conductor until well fills and a smooth concave surface of solder forms between the wire and well lip.
- Remove heat but continue to hold the conductor and contact rigid until solder solidifies. A good solder connection is indicated by a bright shiny solder surface.

![Figure 13. Solder Connection](image)

4. Following the system wiring pattern, reinstall the contact retaining clip onto each contact, then push each contact through the rear of the receptacle housing until retaining clip snaps into position in the contact recess. Insert the green or grounding conductor into the grounding contact wire well at the same time and securely tighten the pressure connector screw to 30 in. lbs. torque.

![Figure 14.](image)

5. Complete assembly of receptacle following Receptacle Assembly instructions on page 3.

**SPRING DOOR**

Some NR Series receptacles are provided with a protective spring loaded door. The door position can be adjusted by loosening the spring door set screw then rotating the door until the hinge is in desired position. Relighten the set screw to 10 in. lbs. torque making sure that the door gasket is flat against the receptacle housing when closed.
ELECTRICAL TESTING
Do not connect to power until the following electrical tests have been performed.
- Make continuity checks of wiring to verify correct phasing and grounding connections.
- Check insulation resistance to be sure system does not have any short circuits or unwanted grounds.

MAINTENANCE
Electrical and mechanical inspection of all components must be performed on a regular schedule determined by the environment and frequency of use. It is recommended that inspection be performed a minimum of once a year.

WARNING
If any parts of the plug, receptacle or connector appear to be missing, broken, or show signs of damage, DISCONTINUE USE IMMEDIATELY. Replace with the proper replacement part(s) before continuing service.

1. Inspect all contact wire terminals for tightness. Discoloration due to excessive heat is an indicator of a possible problem and should be thoroughly investigated and repaired as necessary.
2. Check grounding and bonding for correct installation and secure connection.
3. Check gaskets for deterioration and replace if necessary.
4. Clean exterior surfaces making sure nameplates remain legible.

5. Check tightness of all screws before using.
6. Inspect housings and replace those which are broken.
7. Check contacts for signs of excessive arcing or burning and replace if necessary.

In addition to these required maintenance procedures, we recommend an Electrical Preventative Maintenance program as described in the National Fire Protection Association Bulletin NFPA No. 70B.

ELECTRICAL RATING
Maximum Voltagess: 500 VAC @ 50-400 Hz, 250 VDC
Maximum Continuous Current: 30, 60, or 100 Amperes