Application
45° return filter grilles are used as return units that match the appearance of the supply outlets. They are well suited for locations where the occupant can see into the duct, and can be mounted on the wall or in the ceiling.

Standard Features
- Steel construction.
- Teardrop blades are 3/4” deep, on 2/3” centers.
- Deflection is fixed at 45°.
- Minimum grille size is 4” x 4”.
- Choice of 1” or 2” deep filter.
- Grille is attached to frame via full-length piano hinge.
- Grille is closed with knurled nut. (1/4 turn fastener available upon request.)
- Standard finish is electrocoat acrylic baked enamel.
- Standard color is #11 Bright White.
- Choice of hinging along long or short side.
- Gasket around the edge of the mounting frame.

Optional Features

Sizing and Performance Notes
- Performance data in this catalog does not include the presence of a filter.
- All grilles take the same filter size as grille nominal size, except as follows:

<table>
<thead>
<tr>
<th>Nom. Size</th>
<th>To Fit</th>
<th>Takes this filter size</th>
</tr>
</thead>
<tbody>
<tr>
<td>21” x 21”</td>
<td>24” x 24” T-bar</td>
<td>20” x 20”</td>
</tr>
<tr>
<td>21” x 45”</td>
<td>24” x 48” T-bar</td>
<td>20” x 20” (2 qty)</td>
</tr>
</tbody>
</table>

Quick Select Chart
This shows grilles with:
- A maximum NC of 35.
- A minimum duct velocity of 200 FPM.

<table>
<thead>
<tr>
<th>CFM</th>
<th>Size</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 x 6</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>12 x 6</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>12 x 10</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>12 x 12</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>16 x 12</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>16 x 16</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>24 x 16</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>24 x 24</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>30 x 24</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>36 x 24</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Table Data:
- (75-275)
- (85-295)
- (100-340)
- (130-440)
- (150-475)
- (210-620)
- (250-695)
- (300-800)
- (410-1050)
- (470-1165)

Model Numbering System

www.carnes.com
**Multi-Panel Construction for the following Registers & Grilles**

<table>
<thead>
<tr>
<th>Steel</th>
<th>Stainless Steel</th>
<th>Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Deflection</td>
<td>RSSB, RTSB</td>
<td>RLSB, RMSB, RKS</td>
</tr>
<tr>
<td>Double Deflection</td>
<td>RSDB, RTDB</td>
<td>RLDB, RMDB, RKDB</td>
</tr>
<tr>
<td>0° Fixed Return</td>
<td>RSRB, RTRB</td>
<td>RLRB, RMFB, RKB</td>
</tr>
<tr>
<td>45° Fixed Return</td>
<td>RSAB, RTAB</td>
<td>RLAB, RMAB, RKB</td>
</tr>
</tbody>
</table>

**In-line Construction**

- **W**: Over 72”
- **H**: Up to 36”
- **Notes**: Height: Up to 36”
- **Notes**: Width: Over 72”
- **Notes**: Three or more sections.
- **Notes**: Any blade alignment.

**Ganged Construction**

- **Notes**: Height: Over 72”
- **Notes**: Width: Up to 36”
- **Notes**: Three or More Sections
- **Notes**: Any blade alignment

**Notes:**
1. Maximum single panel width and height is 36” listed size regardless of blade alignment.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is as pictured.
4. Grille height & width dimensions shown are listed size dimensions.
5. Panel flanges are sheared and aligned with joining strips.

**Center Support Attachment to Wall Opening**

- **Notes**: Center Support installs flush with wall.
- **Notes**: Wall Angle.
- **Notes**: Wall.

**Cross-Sectional View of Center Support with Grilles Attached**

- **Notes**: Wall Angle.
- **Notes**: Wall.
# Multi-Panel Construction

## Multi-Panel Construction for the following Registers & Grilles

<table>
<thead>
<tr>
<th></th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louvered Return</td>
<td>RSLA, RTLA</td>
</tr>
<tr>
<td>Perforated Return</td>
<td>RSFA, RTFA</td>
</tr>
</tbody>
</table>

### In-Line Construction

- **Height**: Up to 36"
- **Width**: Over 96"
- **Horizontal Blade Alignment**
- **Three or More Sections**

- **Height**: Up to 48"
- **Width**: Over 72"
- **Vertical Blade Alignment**
- **Three or More Sections**

- **Height**: 38-72"
- **Width**: Up to 48"
- **Horizontal Blade Alignment**
- **Two Sections**

- **Height**: Over 72"
- **Width**: Up to 48"
- **Horizontal Blade Alignment**
- **Three or More Sections**

### Ganged Construction

**Notes:**
1. Either the vertical or horizontal joint can be sheared down, but not both.
2. Maximum single panel width is 48" listed size.
3. Maximum blade length on louvered face models is listed size 48".
4. Maximum single panel height is 36" listed size.
5. Panels are made in even inch increments unless specified otherwise.
6. Blade alignment is always parallel to center support.
7. The center support can be aligned vertically or horizontally, depending on the blade alignment desired. It is shown here mounted horizontally.
8. Grille dimensions shown are listed size dimensions.

### Center Support Attachment to Wall Opening

1. Panels will be made in even inch increments unless specified otherwise.
2. Dimensions shown are listed size dimensions.
3. Max. blade length on louvered face models is nominal 48".
4. Panels are sheared and aligned with joining strips.

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*Images and diagrams are not transcribed as natural text.*
**Multi-Panel In-Line Construction**

**Notes:**
1. Maximum single panel width and height is 48” nominal size, regardless of blade alignment.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is as pictured.
4. Grille dimensions shown are nominal dimensions.
5. Panel flanges are sheared and aligned with joining strips.

**Cross-Sectional View of Center Support**

- Height: 50-96”
- Width: Up to 48”
- Two Sections
- Any Blade Alignment

**Multi-Panel Ganged Construction**

**Notes:**
1. Maximum single panel width and height are 48” nominal size.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is always parallel to center support.
4. Either the vertical or horizontal joint can be sheared down, but not both.
5. The center support can be aligned vertically or horizontally, depending on blade alignment desired.
6. Grille dimensions shown are nominal dimensions.
All Sections of Butted Grilles or Registers will be made in Listed Sizes as Standard.

STANDARD REGISTERS AND GRILLES
Applies to all models except louvered return air registers and grilles and door partition grilles.
Registers and grilles over 36” x 36” butting two or more grilles together.

NOTES:
Extruded aluminum supporting members with mounting angles, are furnished where required.
Center support may run vertically or horizontally, depending upon combination of grilles used.
Combination of panels will be furnished to fit duct opening with satisfactory clearance.
Screw Hole Location for the following Registers & Grilles

<table>
<thead>
<tr>
<th>Steel</th>
<th>Aluminum</th>
<th>Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Deflection</td>
<td>RSSB, RTSB</td>
<td>RASM, RNSM</td>
</tr>
<tr>
<td>Double Deflection</td>
<td>RSDB, RTDB</td>
<td>RADM, RNDM</td>
</tr>
<tr>
<td>0° Fixed Return</td>
<td>RSRB, RTRB</td>
<td>RARM, RNRM</td>
</tr>
<tr>
<td>45° Fixed Return</td>
<td>RSAB, RTAB</td>
<td>RAAM, RNAM</td>
</tr>
<tr>
<td>Louvered Return</td>
<td>RSLA, RTLAL</td>
<td>— — — — — — — —</td>
</tr>
<tr>
<td>Perforated Return</td>
<td>RSFA, RTFA</td>
<td>RAFM, RNFM</td>
</tr>
</tbody>
</table>

Notes:
- Screw holes on the face are standard on Registers and Grilles.
- Steel R&G can be ordered without screw holes, for use with concealed hangers (Opt. N).
- The screw holes is 5/32" in diameter.
- Each Register or Grille is provided with the appropriate number of screws as standard.
- The standard screw is #8 x 1-1/4" pan head screw, with a flat blade head.
- Tamper-proof screws are available as an option (Opt. B).

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**Nominal Size Plus 2”**

- **One Screw hole per Side**
  - Nominal Size Range 4” through 18”.

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**Nominal Size +2”**

- **Two Screw holes per Side**
  - Nominal Size Range 19” through 31”.

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**Nominal Size +2”**

- **Three Screw holes per Side**
  - Nominal Size Range 32” through 48”.