Standard Construction and Materials

**FRAME:** 20 GA. galvanized steel flat by 18" long integral sleeve.
**BLADES:** 16 GA. galvanized steel single thickness, parallel action.
**AXLES:** Plated solid steel stub.
**BEARINGS:** Oil impregnated bronze.
**LINKAGE:** Galvanized steel angle interconnect, with plated steel brackets and pivots located on blade.
**STOPS:** 18 GA. galvanized steel at head and sill.
**BLADE SEALS:** Silicone.
**JAMB SEALS:** Stainless steel.
**SLEEVE:** Integral 20 GA. galvanized steel by 18" long.
**RETAINING ANGLES:** ¼" x 1½" x 16 GA. adjustable perimeter mounting angle.
**CAULKING:** Hardcast Irongrip 601 or UL-listed equivalent.
**FINISH:** Mill on galvanized steel.
**ACTUATOR:** Electric with heat response device (EHRD) or pneumatic with heat response device (PHRD). Factory-installed for power-open/spring-close (fail close) operation. External left-hand mounted as viewed from jackshaft side of damper.

Options

Integral Dual Position Indication (IDPI) switches
Sensotherm re-openable heat response device (ESOT) for electric actuator
Sensotherm re-openable heat response device (PSOT) for pneumatic actuator
Model SM-501 Flow-rated smoke detector shipped loose
Model SM-501 Flow-rated smoke detector mounted and wired (6" minimum damper height with a 20" sleeve - extra 2" on jackshaft side)
Tab-Lock retaining angles
Stainless steel bearings
Copper tubing (for pneumatic actuators)
Optional 19" or 20" sleeve depth - Additional sleeve length is added to the non-jackshaft side unless ordered with mounted smoke detector and/or less than 6"H with B-Pan Transition
Round or oval transitions
Short-width (less than 16") and/or short-height (less than 6") transitions

Notes

1. "A" width and "B" height are opening dimensions. Damper frames are provided approximately ¼" undersized.
2. Dampers are available in 1" increments only.
3. Dampers for horizontal installation can only be mounted in a fire barrier constructed of masonry/concrete materials.
4. The blades must stay in the fire wall. The adjustable retaining angle may only be adjusted the distance shown on the label or installation instructions.

Damper Sizes

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Horizontal &amp; Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panels</td>
<td>Minimum Panel</td>
</tr>
<tr>
<td>Rectangular</td>
<td>4&quot;W x 4&quot;H</td>
</tr>
<tr>
<td></td>
<td>(16&quot;W x 6&quot;H frame)</td>
</tr>
<tr>
<td>Round</td>
<td>4&quot; dia.</td>
</tr>
<tr>
<td></td>
<td>(16&quot;W x 6&quot;H frame)</td>
</tr>
<tr>
<td>Oval</td>
<td>4&quot;W x 4&quot;H</td>
</tr>
<tr>
<td></td>
<td>(16&quot;W x 6&quot;H frame)</td>
</tr>
</tbody>
</table>

*Dampers smaller than minimum frame size require a transition. Reference SD-TRFS. Dampers less than 6"H will have a 20" sleeve with the additional sleeve length on the jackshaft side when a B-Pan type transition is ordered.*

In the interest of product development, Cesco Products reserves the right to make changes without notice.
**Operational Rating**
Maximum Differential Pressure: 4 in. w.g.
Maximum Velocity: 2000 fpm

**Leakage Rating**
UL Class I
8 cfm per sq. ft. maximum @ 4 in. w.g.

**Sound Rating**
The Noise Criterion data below was tested in accordance with ASTM E477.99 in the center octave band.

<table>
<thead>
<tr>
<th>Damper Size</th>
<th>Velocity fpm (m/s)</th>
<th>Noise Criterion (NC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;W x 12&quot;H (305mm x 305mm)</td>
<td>1000 (5.08)</td>
<td>22dB</td>
</tr>
<tr>
<td></td>
<td>2000 (10.16)</td>
<td>44dB</td>
</tr>
<tr>
<td></td>
<td>3000 (15.24)</td>
<td>55dB</td>
</tr>
<tr>
<td></td>
<td>4000 (20.32)</td>
<td>62dB</td>
</tr>
</tbody>
</table>

**Pressure Drop Rating**
The pressure drop data shown below is based on laboratory conditions. The test setup does not take into account elbows or other duct fittings that are part of every actual duct system. The configuration of the actual duct system immediately upstream and downstream of the damper often contributes more pressure loss than the damper itself.

<table>
<thead>
<tr>
<th>Static Pressure Drop in. w.g. (Pa)</th>
<th>Face Velocity FPM (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.100 (24.9)</td>
<td>200 (1.0)</td>
</tr>
<tr>
<td>0.010 (2.49)</td>
<td>1000 (5.1)</td>
</tr>
<tr>
<td>0.001 (0.249)</td>
<td>5000 (25.4)</td>
</tr>
</tbody>
</table>

This damper tested in accordance with AMCA 500-D, Figure 5.3

**Item #** | **Qty** | **Damper Size** | **Horizontal Orientation** | **Vertical Orientation** | **250°F Temp. Rating** | **350°F Temp. Rating** | **Velocity** | **Pressure** |
|------------|---------|-----------------|-----------------------------|-------------------------|------------------------|------------------------|--------------|--------------|

Arch. / Eng.: EDR: ECN: Job: 
Contractor: 
Project: Date: DWN: DWG: 

Cesco Products certifies that the model CR1 damper shown here is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Performance Ratings only.