The 1177D Butterfly Valves are primarily used on the TwinBed Reclamation Systems. The design of the system requires two burners to operate as a pair, one burner firing while its twin is exhausting. Two valves per burner are required. One valve is installed in the air piping to the burner and the other is installed in the exhaust piping to the burner. As one burner fires with air valve open and exhaust valve closed, its twin exhausts with air valve closed and exhaust valve open. Every 20 seconds the valves cycle to the opposite position thus switching which burner fires and which exhausts.

The 1177D Valve is a wafer butterfly valve which is pneumatically operated by a rack and pinion actuator. Actuator air pressure forces the pistons apart and compresses the springs. The linear travel of the piston is converted to a rotation of the drive shaft by the rack to pinion connection, thus opening the valve when pressure is applied to port 'A' (IN). A spring return closes the valve when air pressure is removed. An inlet snubber in port 'A' slows the valve response, preventing the disc from slamming against the internal stops. A small filter is in the actuator exhaust, port 'B'.

A proximity switch to indicate that the valve is in the closed position is required on all valves for TwinBed applications. The switch is required on the exhaust valves to assure that the burner is not exhausting at the same time it is firing which would result in a rich condition. The switch is required on the air valves to assure that the exhausting burner’s air valve is closed to prevent a rich condition on the firing burner. A second switch is available for open indication, as an option.

The closed indicator switch is specified by a suffix after 1177D code number for pipe size, e.g. 1177D-8-LC. To order both the open and closed indicator switches, use suffix LL in place of LC. Other options include LO for open indication and LW for those special applications where no switches are required. The LW option will be supplied with the switch mounting bracket for the capability of adding switches at a later date.
Compressed air operating pressure:  60 to 70 psi clean and dry
Maximum operating pressure:  120 psi
Actuator volume for 2 1/2 - 8" valves:  24.2 in.³
Actuator volume for 10" and 12" valves:  55.8 in.³
Combustion air or exhaust gas maximum operating pressure:  2 psi
Combustion air or exhaust gas maximum differential:  1 psi
Exhaust gas max temp.:  800 F
Maximum ambient temp.:  actuator +176 F
Maximum ambient temp.:  position indicator switch +212 F
Actuator cycles:  1,000,000 minimum (closed to open to closed)
Electrical: switch:  120/1/60
  100 mA continuous lead current
  < 2.5 mA max. residual current leakage

**VALVE MATERIAL**

*BODY - Heat Resistant C.I.*
*SHAFT - 316 SST*
*DISC - 316 SST*
*DISC CLAMP - 316 SST*
*DISC NUTS AND BOLTS - 304 SST*

---

**CAPACITIES**

<table>
<thead>
<tr>
<th>Valve designation</th>
<th>Size inches</th>
<th>Capacity, scfh at 1&quot;wc drop</th>
<th>Leak rate in closed position w/16 osi drop at 70 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1177D-5</td>
<td>2 1/2</td>
<td>9,600</td>
<td>425</td>
</tr>
<tr>
<td>1177D-6</td>
<td>3</td>
<td>16,700</td>
<td>330</td>
</tr>
<tr>
<td>1177D-7</td>
<td>4</td>
<td>30,000</td>
<td>450</td>
</tr>
<tr>
<td>1177D-8</td>
<td>6</td>
<td>65,000</td>
<td>1000</td>
</tr>
<tr>
<td>1177D-9</td>
<td>8</td>
<td>135,000</td>
<td>1770</td>
</tr>
<tr>
<td>1177D-10</td>
<td>10</td>
<td>223,000</td>
<td>2360</td>
</tr>
<tr>
<td>1177D-12</td>
<td>12</td>
<td>320,000</td>
<td>5500</td>
</tr>
</tbody>
</table>

---

**WARNING:** Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and Insurance Underwriters recommendations, and care in operation.