






**Calculation header**

Identifier *BINAK*  
 Tag No. *RO-2144*

**Medium selection and state**

Medium  *Water*  
 State  *Liquid*  
☐ Liquid contains dissolved gas

**Inlet properties**

|   |   |                 |        |
|---|---|-----------------|--------|
| Operating temperature                                       | t1  | <i>58.89</i>    | °C     |
| Operating pressure  | p1  | <i>53.9</i>     | bar(g) |
| Vapor pressure (t1)   | pv1  | <i>-0.82381</i> | bar(g) |
| Operating density (t1, p1)                                  | ρ1   | <i>986.11</i>   | kg/m³  |
| <input checked="" type="radio"/> Dynamic viscosity (t1, p1) | η1  | <i>0.47525</i>  | cP     |




**Pipeline**

|   |   |                     |
|---|---|---------------------|
| <input checked="" type="radio"/> Pipe class |      | <i>ANSI</i>         |
| Size class                                  | NPS  | <i>2"</i>           |
| Schedule                                    | SCH  | <i>Schedule 40s</i> |





**Orifice plate**

|   |  |
|---|--|
| Throttle                                  | <i>Single stage</i>  |
| Type of orifice plate                     | <i>Single-hole orifice</i>   |
| Type of bore                              | <i>Cylindrical bore</i>  |
| <input type="checkbox"/> Flow coefficient | C  <i>0.78716</i> - |

**Operating data**

|  |   |
|--|---|
| <input checked="" type="checkbox"/> Safety-related application |   |
| Calculation  | <i>d</i>  |
| Permanent pressure loss  | Δω <i>53.7</i> bar  |
| Throttle orifice (20°C)  | d  <i>7.0817</i> mm          |
| <input checked="" type="radio"/> Mass flow rate                | qm <i>11,500.0</i> kg/h   |
| <input type="radio"/> Volume flow rate (operating conditions)  | qv  <i>51.346</i> GPM(US)    |
| Flow type  |  <i>Incipient cavitation</i> |



***Calculated auxiliary values***

|                                   |   |         |       |
|-----------------------------------|---|---------|-------|
| Sound pressure level (A-weighted) | LpAe     | 89.2    | dB(A) |
| Diameter ratio                    | $\beta$  | 0.13489 | -     |
| Flow velocity in pipeline         | u1       | 4.9093  | ft/s  |
| Flow velocity in pipeline         | u2       | 4.9237  | ft/s  |

***Outlet properties***

|                    |  |     |        |
|--------------------|--|-----|--------|
| Operating pressure | p2  | 0.2 | bar(g) |
|--------------------|--|-----|--------|





***Hint:***

-  Incipient cavitation
-  Approximate value: Min. orifice thickness for  $\Delta p$  - E,min

***Confirmation:***

-  The fluid data is calculated thermodynamically by means of FLUIDCAL

***Legend***

-  Calculated value
-  Lookup value
-  Hint
-  Confirmation