Pump Cooling & Cooling with Seal Flushing using an External Source

Flygt C-Pumps, having a cooling jacket, provide heat dissipation from an integrated cooling system. Heat is removed from the motor by means of flow through internal passages. (See next page for models with cooling jackets). These passages allow a portion of the pumped media, after filtering out any large particles, to circulate around the stator housing and finally exit through the impeller area.

In the event the pumped media is unsuitable for motor cooling, such as when the media is high in temperature, abrasives, or fiber content, the pump can be modified at the factory to accommodate such conditions. Such conditions require that cooling water then be supplied to the pumps internal passages from an external source.

There are two types of systems; Pumped Cooling, and Pump Cooling with Seal Flushing. Pumped cooling is usually employed in applications where it is not feasible to mix the cooling water with the pumped media. Pump Cooling with Seal Flushing is used when the pumped media is abrasive, the seals are flushed continuously with clear water, preventing the entrance of abrasive material to the seal faces.

It is of paramount importance that the type of system desired be specified when ordering the pump so that the correct internal modifications to the pump can be made at the factory, thus avoiding pump tear down for modifications later.

Types available are:

**MOTOR COOLING ONLY**

Cooling water, from a separate external source, enters the motor cooling jacket through a threaded connection, circulates through the motor cooling jacket, and exits at another threaded connection to which the return hose is attached.

**MOTOR COOLING with SEAL FLUSHING**

Config. 1 External cooling & integrated seal flushing

Water, from an external source, enters a threaded connection on the cooling jacket, circulates around the motor and exits through a passage way through the liquid end where it passes across the seal housing, thus keeping it clear of any abrasive material.
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### NOTES:

1. For all external cooling applications, consult Flygt Applications Engineering.

2. Two hoses will be needed if it is not acceptable for spent coolant to mix with pumped media (supply and return) only one required if spent coolant empties into pumped media.

3. Pump modifications by Factory.

### General Protective Cooling Circuit w/Flow Switch

Typical electric circuit to insure coolant flow. Normally open contact CR-2 to be wired in series with other motor protective circuitry so that contactor drops out and pump stops when coolant flow is lost.

### IMPORTANT:
It is most important that the inlet pressure of the coolant liquid be greater than the volute pressure of the pumped liquid to permit internal circulation. The volute pressure of the pumped liquid would be the total head plus submergence at duty point converted to pounds per square inch.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>3060</th>
<th>3080</th>
<th>3153</th>
<th>3171</th>
<th>3202</th>
<th>3301</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Flow Rate (GPM) WITHOUT SEAL FLUSH</td>
<td>*5.0</td>
<td>*5.0</td>
<td>*5.0</td>
<td>*5.0</td>
<td>*5.0</td>
<td>*5.0</td>
</tr>
<tr>
<td>Minimum Flow Rate (GPM) WITH SEAL FLUSH</td>
<td>*These models use the same rate “with” or “without” seal flushing. The minimum flow rates for cooling purposes are actually less than the 5 GPM shown, however, a minimum of 5 GPM is necessary to activate the monitoring system. **The cooling flow rate must be doubled if used with seal flushing.</td>
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</tbody>
</table>

### Minimum Flow Rates (GPM) for pumps with 600, 700, 800, 900 series drive units

<table>
<thead>
<tr>
<th>Drive</th>
<th>605</th>
<th>665</th>
<th>705</th>
<th>735</th>
<th>765</th>
<th>805, 835</th>
<th>905</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>11.0</td>
<td>15.0</td>
<td>20.0</td>
<td>15.0</td>
<td>15.0</td>
<td>20.0</td>
<td></td>
</tr>
</tbody>
</table>

The above flow rates apply for pump applications “with” or “without” seal flushing.

‡ For separate seal flushing, a minimum flow rate of 4 GPM must be maintained across the seal for sufficient flushing. (see Illustration below).

### Large Pumps

<table>
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### Typical electric circuit to insure coolant flow.

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<tbody>
<tr>
<td>Drive</td>
<td>*5.0</td>
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<td>*5.0</td>
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<td></td>
</tr>
</tbody>
</table>

### Cooling Only

Air inlet during drainage (2 x 180°)

Coolant in

Coolant out

**Seal Flushing Coolant In**

### Cooling with separate Seal Flushing

Air inlet during drainage (2 x 180°)

Coolant in

Coolant out

**Seal Flushing**
Flygt D-8000 series pumps, having a cooling jacket, provide heat dissipation from an integrated cooling system. Heat is removed from the motor by means of flow through internal passages. (See next page for models with cooling jackets). These passages allow a portion of the pumped media, after filtering out any large particles, to circulate around the stator housing and finally exit through the impeller area.

In the event the pumped media is unsuitable for motor cooling, such as when the media is high in temperature, abrasives, or fiber content, the pump can be modified at the factory to accommodate such conditions. Such conditions require that cooling water then be supplied to the pumps internal passages from an external source.

There are two types of systems; Pumped Cooling, and Pump Cooling with Seal Flushing. Pumped cooling is usually employed in applications where it is not feasible to mix the cooling water with the pumped media. Pump Cooling with Seal Flushing is used when the pumped media is abrasive, the seals are flushed continuously with clear water, preventing the entrance of abrasive material to the seal faces.

When Cooling, or Cooling with Seal Flushing is set up in the pump, it is extremely important that the cooling water be kept at the desired minimum flow rate while the pump is running. To protect the pump from damage, Flygt has a system which insures that the pump and the water source are operating simultaneously. This system consists of a paddle wheel flow switch. By connecting the flow switch to the pump electrical control panel, the flow switch will monitor the coolant flow and will shut down the pump if that flow is insufficient.

**IMPORTANT:**
When the pump is modified for Cooling, or Cooling with Seal Flushing from an external source, the pump must be supplied with water from that source at all times, even if the pumped media becomes acceptable to cool the motor. The external source can only be removed if the pump is converted back to its original arrangement at the factory.

It is of paramount importance that the type of system desired be specified when ordering the pump so that the correct internal modifications to the pump can be made at the factory, thus avoiding pump tear down for modifications later.

Types available are:

**MOTOR COOLING ONLY**
Cooling water, from a separate external source, enters the motor cooling jacket through a threaded connection, circulates through the motor cooling jacket, and exits at another threaded connection to which the return hose is attached.

**MOTOR COOLING with SEAL FLUSHING**
Water, from an external source, enters a threaded connection on the cooling jacket, circulates around the motor and exits through a passage way through the liquid end where it passes across the seal housing, thus keeping it clear of any abrasive material.
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### Small / Midrange Pumps

<table>
<thead>
<tr>
<th>MODEL</th>
<th>8056, 8058</th>
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</tr>
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<td>Minimum Flow Rate (GPM) WITH SEAL FLUSH</td>
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The purpose of the flow monitoring kit is to provide automatic shut down of the pump should the flow of external coolant be lost during pump operation.

![General Protective Cooling Circuit w/Flow Switch](image)

**IMPORTANT:** It is most important that the inlet pressure of the coolant liquid be greater than the volute pressure of the pumped liquid to permit internal circulation. The volute pressure of the pumped liquid would be the total head plus submergence at duty point converted to pounds per square inch.

![Diagram](image)

**NOTES:**

1. For all external cooling applications, consult Flygt Applications Engineering.

2. Two hoses will be needed if it is not acceptable for spent coolant to mix with pumped media (supply and return) only one required if spent coolant empties into pumped media.

3. Pump modifications by Factory.