Permanent-Media Coolant Filter
Patented self-cleaning, permanent-media vacuum design delivers ultraclean coolant, dry swarf, and low operating costs

No other filtration system in the world offers these combined capabilities. Here's an inside look at how this patented process works.

**Vacuum operation.** Dirty coolant from the machine operation flows into the collection tank (1). Spanning the bottom of the tank is a drag-out chain (2) that rests on top of a permanent-media belt (3).

Both rest on a stainless steel, wedge-wire panel (4) that forms the inlet of a vacuum chamber (5).

The filter pump creates a pressure differential between the collection tank and the vacuum chamber which pulls coolant through the...
permanent-media belt and wedge-wire panel into the vacuum chamber, where it is pumped to the clean coolant tank (6) for recirculation. Small particles are trapped by the permanent-media belt before they can enter the vacuum chamber—only ultra-clean coolant is returned to the machining operation.

As swarf builds up on the permanent-media belt, the pressure differential increases between the collection tank and the vacuum chamber. A vacuum switch detects this and, at a predetermined level, starts the index cycle (a timer can also be used to initiate the cycle). The drag-out chain advances a set distance, pulling the permanent-media belt with it. The filtering cycle then begins again, using a clean section of the permanent-media belt. The entire process is automatic.

**Dry swarf.** During the index cycle, swarf is discharged automatically up the discharge ramp (7). A drying chamber (8) is used to remove liquid from the swarf. The swarf is then discharged in a dry or near-dry state.

**Continuously self-cleaning.** The permanent-media belt undergoes a 3-stage process of cleaning before it is returned to the collection tank for use in the filtering cycle. First, counter-current air, blowing from the underside of the belt, helps dislodge particles. Then a patented roller device called a ROTO-VAC (9) rotates at very high speeds to create a vacuum effect across the width of the permanent-media belt, removing the remaining particles. As a final step, the belt is washed with clean coolant by a series of nozzles (10) before re-entering the collection tank.
### Kleenall SIERRA™ Specifications

#### Plan View

#### Side View

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow Rate**</th>
<th>Total Tank Capacity</th>
<th>Dimensions (inches)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(GPM)</td>
<td>(Gallons)</td>
<td>A</td>
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<tr>
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<td>33</td>
<td>280</td>
<td>27.21</td>
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* Overall floor space includes drip pan
** Water soluble coolant
Honing, grinding and other precision machining operations today are under siege from all sides: coolant and swarf disposal costs are rapidly escalating; tough EPA requirements are squeezing the bottom line; and workpiece quality demands have never been higher.

Costs for coolant and coolant management have skyrocketed, but companies like Fiat, Audi, Timken, Cummins, Mercedes-Benz and others are doing something about it. They're employing a remarkable, patented filtration technology—a revolutionary new system called the Kleenall SIERRA™ Filter, now available to you through filtration leader Barnes International.

**Breakthrough technology.**

Barnes’ Kleenall SIERRA™ does what no other filtration system in the world has succeeded in doing: simultaneously delivering ultra-clean coolant and very dry swarf—but without the need for costly disposable media. Consider the cost and quality impact on your machine operations with Kleenall SIERRA™ filtration systems in place.

- Swarf is discharged dry, so it can be directly recycled or disposed of in compliance with EPA requirements. The added cost of processing and disposal of coolant-laden swarf is largely eliminated.
- The high cost for removal, replacement and disposal of replaceable fabric filtration media is eliminated too, because Kleenall SIERRA™ uses a permanent media vacuum design that’s self cleaning and doesn’t require regular replacement.
- Recirculated coolant is ultra-clean, so it lasts much longer and greatly reduces both disposal and replenishment costs.
- Grinding wheels require fewer dressings, and cutting tool life increases because abrasive particles are removed from the recirculating coolant before they can do damage.
- The quality of surface finish improves with less potential for reject and scrap.

**Versatility.** Kleenall SIERRA™ comes in a variety of sizes with flow rates from 20 to 225 gpm. Many machine configurations can be accommodated including stand-alone, cells and central systems. Filtration of all types of water-based and oil coolants is possible. In short, no other filtration system in the world offers users the ability to make such an immediate and powerful impact in reducing the cost of machining operations.