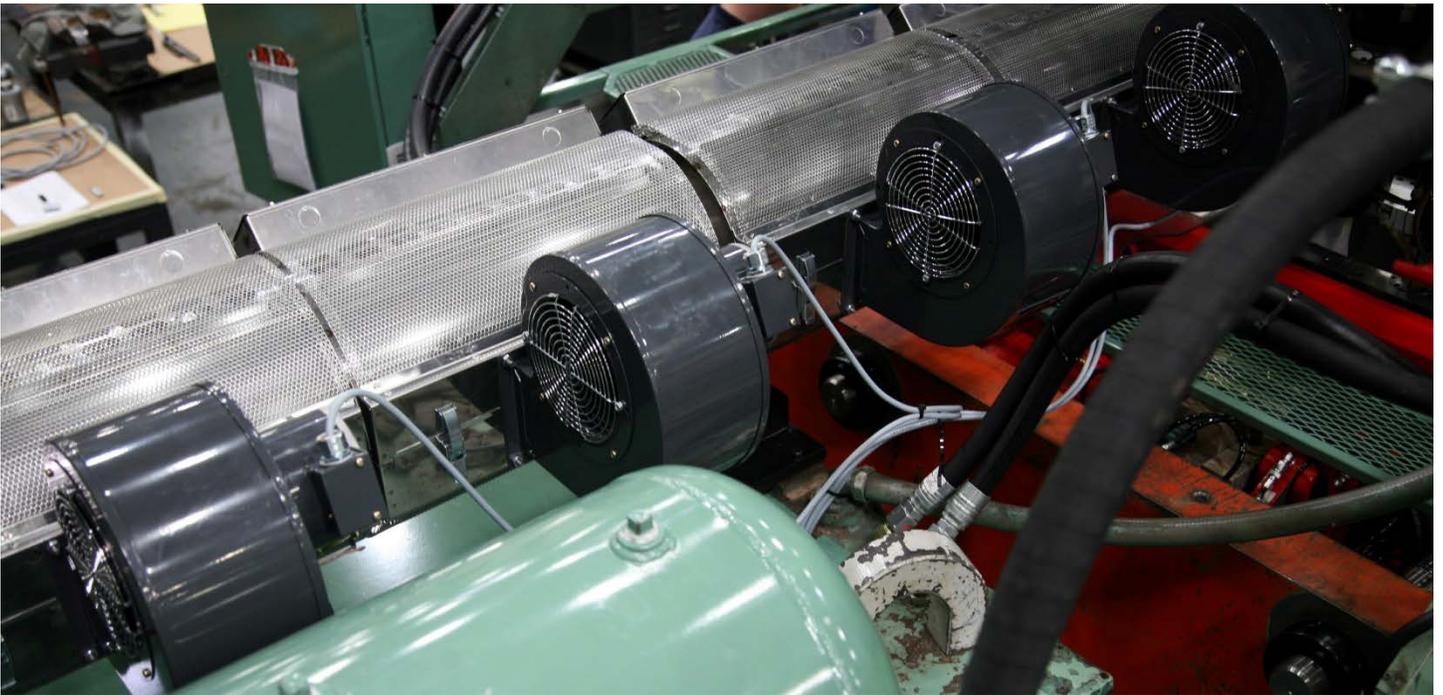


Uniloy Series R2000 Air Barrel Cooling Retrofit

Barrel heating and cooling system for your
Uniloy Reciprocating Screw Machine



Integrate the latest technology improvements from our
state of the art Recip 2000 Machine into your existing
equipment.

Uniloy Series R2000 Air Barrel Cooling Retrofit

Uniloy Milacron is proud to introduce an integral feature of our state of the art, Recip 2000 which has been engineered to adapt to many of our current reciprocating screw machines.

The **Series R2000 Air Barrel Cooling Retrofit** replaces currently used liquid barrel cooling. This engineered system is specifically designed to provide the ultimate in safety and performance. The heart of this system is finned, cast aluminum heater bands, which provide extremely even heating and cooling. Cast heaters are renowned for extremely long, trouble-free life. The stainless steel cover and air directional shroud feature a series of thermal barriers which ensure that the outer layer of the cover will remain cool and not cause harm to operators. An anti-rotation device, which prevents the air shroud from any radial movement during the process, and specially designed locking pins to secure the shroud to the heaters which are firmly clamped to the barrel have also been incorporated. We have found that this retrofit is at least as powerful in removing excess heat as any system we have used in the past.

This product offering describes a complete package which provides all of the components you will need to equip your Uniloy machine. As always, rely on Uniloy Milacron to supply the highest quality parts and packages for all your blow molding needs.

Typical Retrofit Package Description

Uniloy Milacron provides complete packages for our 250R1, 5700 Series, 5800 Series, 350R1, 350R2, 350R3, 350R4, 350R5, 400R11, 400R20, 400R25, Bantam, RS3500, and RS4500 machines which include:

Air Barrel Cooling Assembly

- Finned, Aluminum Heater Bands
- Heat Guards (meet all safety requirements for shrouding)
- Individual Cooling Zone Blowers and Finger Guards
- **Optional** Front Barrel Shrouds and Covers
- Thermocouple Adapters
- Safety Signs
- Miscellaneous Mounting Hardware
- Layout, Schematic, and Installation Instructions
- Electrical Components to Wire into Your Existing Electrical Cabinet:
 - Solid State Relays
 - Fuses
 - Fuse Blocks
 - Terminal Blocks
 - Cord Grips
 - Wire

**Depending on the model of machine, there may be additional covers, extensions, front barrel support or bracket included in this retrofit.

Water Cooled Feed Throat Assembly - Optional

- Feed Throat
- Solenoid Valve
- Flow Control Valve
- Thermometer
- Hose and Fittings

Benefits of The Series R2000 Air Barrel Cooling Retrofit

1.) Eliminates liquid cooled barrel components including the tank, motor, pump, heat exchanger, valves, gages, coolant lines, and fittings.

2.) Eliminates the maintenance and associated down time which the liquid cooled barrel components required. Based upon customer feedback, we have seen savings in the following areas:

- Annual Preventative Maintenance Labor
- Annual Preventative Maintenance Materials, such as:
 - Heat Transfer Fluid
 - Valve Kits
 - Pump Kit
 - Fittings/Tubing
- Maintenance Labor to correct problems
- Maintenance Parts to correct problems
- Cost of Machine Downtime
- Decreases chiller usage by an average of 4-5 tons.

Financial Justification

Based upon customer feedback, the following costs associated with liquid barrel cooling will be eliminated:

1.) Annual Preventative Maintenance

* Labor:	16 Hours x \$25/hr	= \$400
* Materials:	Heat Transfer Fluid	= \$455
	Valve Kits	= \$ 44
	Pump Kit	= \$ 34
	Fittings/Tubing	<u>= \$ 50</u>
		\$973

2.) During The Year, Ongoing Maintenance

* Labor:	13 Hours x \$25/hr	= \$325
* Materials:	Heat Transfer Fluid, Valves, Seal Kits, Thermometers, Gages, Pumps, Pump Kits, Heat Exchangers	= \$925
* Downtime:	13 Hours x \$100/hr	<u>= \$1300</u>
		\$2,550

3.) Decreased Chiller Usage

* 4-5 Ton Reduction:	(4.5 tons x 3.5kw/ton x \$.08/kw x 6840 hrs/yr)/(4.375 COP)	\$ 1,970
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Total Annual Savings \$ 5,493

*Note :The costs used in this financial justification are close estimates based on industry norms
Please feel free to use your own figures to tailor these calculations to meet your operation.*

Delivery and Installation

We are stocking these packages for immediate shipment. In the event that we are temporarily out of stock it may take up to 12 weeks to fill your order. Uniloy Milacron Service Technicians are available to install these packages. We estimate that package installation will require 2-3 days of machine downtime.

Answers To Commonly Asked Questions Regarding This Retrofit Package

1.) Should I order this package with or without front barrel shrouds?

It is really a matter of appearance preference. Due to the construction of the heater bands we have used, the temperature of the outside skin of these bands does not warrant being guarded.

2.) Why do I need a water cooled feed throat?

A water cooled feed throat gives you the opportunity to regulate the temperature of the incoming resin. This in turn allows for maximizing the consistency of the feed and thus maximizing the extruder screw performance. We recommend an operating range of 70-80°F.

3.) Do I need to use the R2000 High Efficiency Extruder Screw in order to use the Air Barrel Cooling Retrofit?

No. However, if you are not changing your screw and/or barrel, we highly recommend that you check these components to ensure that only an acceptable amount of wear exists. Furthermore, we highly recommend that you upgrade your temperature controllers to digital units in order to increase your temperature control accuracy and minimize overshoot. Finally, when using the Series R2000 High Efficiency Extruder Screw, we have found no increase in ambient room temperature. We cannot say if this will be the case with your current extruder screw.

4.) How do I know if my existing barrel needs to be replaced?

3.5" Extruder

The outside diameter of the extruder screw is 3.492" to 3.494" while the inside diameter of the barrel is 3.500" to 3.502" . This means that when both components are new, there is an .008" nominal diameter difference. If an additional .008" wear occurs so that the diameter difference grows to .016", then the barrel should be replaced. Said another way, the maximum allowable barrel inside diameter is 3.508" to 3.510".

2.5" Extruder

The outside diameter of the extruder screw is 2.494" to 2.496" while the inside diameter of the barrel is 2.500" to 2.501" . This means that when both components are new, there is an .006" nominal diameter difference. If an additional .006" wear occurs so that the diameter difference grows to .012", then the barrel should be replaced. Said another way, the maximum allowable barrel inside diameter is 2.506" to 2.507".

Obviously, the more the barrel is worn, the less productive your new extruder screw will be.

5.) How do I check the inside diameter of my existing barrel?

Use Bakelite Natural 7 Purging Compound in the extruder before disassembling. Remove the head assembly and then the extruder screw from the barrel. Clean, polish, and inspect the I.D. bore of the barrel to ensure that it is completely clean of any remaining plastic or purging compound. Measure the bore of the barrel with a bore gage (with extensions). Pay special attention to the front third of the barrels' bore, this is normally where the barrel wears during normal use. Since the amount of barrel wear cannot be accurately checked until the head is off and the screw is pulled, we will sell you a new barrel with this package and if you determine it is not required, and you do not use it, we will take it back for full credit less freight.