

# Hot Runners and Temperature Controllers

Better parts, faster cycles



## Benefits

- Complete tooling solutions
- Application specific solutions
- Pristine gate quality
- Fastest cycles
- Fast color change
- Accurate, reliable temperature control
- Resin testing
- Mold-filling analysis
- Mold process optimization
- Proactive maintenance and refurbishment
- Leakproof guarantee

## It all starts with the part

Husky works to gain a detailed understanding of a customer's business and project requirements at the tooling level. This parts first approach reflects our goal of offering melt delivery solutions optimized for each application—helping customers bring products to market faster while achieving the highest levels of quality at the lowest part cost. Our value-added services include in-depth application review and recommendation, resin testing, flow simulation, finite element analysis, 24-hour service parts support and local service.

Offering a complete tooling solution, Husky hot runners are available in both hot tip and valve gate configurations depending on application requirements and are available as complete hot halves consisting of a manifold, Ultra nozzles and plates, supported by an integrated Altanium® temperature controller. Our technologies help customers to minimize waste and increase production efficiencies. By optimizing the entire melt delivery system we can ensure best gate quality, cavity-to-cavity balance and fast color changes.

**HUSKY®**

*Keeping our customers in the lead*

## Products



### Complete hot halves with plates

Every hot runner we build is optimized for its specific application. Our complete systems are fully tested prior to shipment, are delivered ready to bolt on and run and are backed by a three-year leakproof guarantee. With a regular three-year refurbishment process, we can offer our customers an extended life-time leakproof guarantee. Our systems experience includes:

- Low cavitation
- PRONTO® systems for fast delivery and reduced cost
- High cavitation
- Tight pitch
- Stack systems up to 2 x 96-drops
- Multi color and multi-material
- Variety of stem actuation methods including electrical, hydraulic and pneumatic



### Manifold systems

Manifold systems offer the flexibility of integrating key components into the mold design. Manifold systems include:

- Optimized designs for specific applications
- Fully assembled and finished manifold
- Nozzle stacks
- Electrical components
- Design guidelines and drawings that allow for easy installation



### Altanium temperature controllers

Altanium temperature controllers deliver precise control for both low and high cavitation hot runners:

- Consistent part quality using Active Reasoning Technology (ART)
- 2-254 zones of accurate control
- Modular design allows flexibility in configuring controller
- Intuitive user friendly interface provides simple navigation
- Onboard system diagnostics and optional processing and optimization software
- Simple and easy to configure Altanium Neo2™ controllers

## Products

### Ultra nozzles

Husky's market-proven Ultra nozzle family is engineered for reliability and performance. Ultra nozzles use advanced tip technology and optimized materials to deliver exceptional performance. Ultra nozzles offer the flexibility of hot tip and valve gate solutions with standard gating options available over a wide range of applications.

- Five nozzle sizes
- Melt channel diameters from 4 mm to 18 mm (0.16" – 0.7")
- Over 50 gating styles
- More than 30 standard nozzle lengths

### Custom and configurable hot runners

All Husky hot runners are optimized for customer specific applications. Configurable hot runners like PRONTO offer narrower design flexibility to

decrease delivery times, but make no compromise in quality and performance. Custom hot runners allow total design freedom for customers. Both solutions deliver part-to-part consistency, reduced mold maintenance and increased uptime for even the most complex applications.

### UltraSync technology

UltraSync™ technology offers shot-to-shot and part-to-part consistency through precise stem closing. Precision is achieved by using either an electric servo motor, hydraulic or pneumatic cylinder that moves the valve stems with 100% synchronization. Electric, pneumatic and hydraulic options are configured to provide high gate force and good gate quality.

- Technology is available with Ultra 350, Ultra 500 and Ultra 750 valve gate hot runners

- Allows for minimum nozzle spacing of 18 mm (0.7")
- Ideal solution for high precision molding of small parts
- Unique plate actuation mechanism requires limited maintenance
- UltraSync-E uses an electric servo system that is ideal for molding medical components in a cleanroom environment
- UltraSync-H is designed to run with a hydraulic power pack to actuate the plate and stems
- UltraSync-P uses air to actuate the plate and stems

### Single drops

Single drop hot runners are ideal for prototyping and proving performance or for low volume requirements.



## Support



"Nothing is more important to ICU Medical than quality. As the manufacturer of the CLAVE®, a precision medical device used for connecting patients to life-saving IV systems, productivity is important—but quality is critical. ICU was able to significantly improve both by switching to Husky's injection molding systems including valve gated hot runners, UltraSync-E electric plate actuation technology and Altanium controllers."

Dr. George Lopez, President and CEO  
ICU Medical

### Flow simulation

Predicting filling behavior at the part design stage can reduce trial and error and development costs, as well as improve speed to market. Our flow simulation team offers a complete solutions approach to improving productivity. Flow simulation examines polymer flow behavior when injected into the cavity (fill, pack, cool analysis) and once ejected (warpage analysis).

Our dedicated team is able to review filling behavior providing the following benefits:

### Part design

- Determine the optimal number of gates, gate location and size, weld line location, fiber orientation and pressure levels
- Avoid short shots and hesitation effects

### Mold design

- Optimize cooling efficiency
- Determine air trap location

### Injection molding

- Define optimum injection time
- Determine the table of sequence for sequential gating

### Resin tests

We ensure that customer objectives are met by qualifying resins and applications up-front, using our latest technologies. Specific molding requirements and resins can be tested in one of our factories or local technical centers. We provide complete reports detailing how the resin processes with respect to:

- Operating window
- Gate quality
- Color change

## Support

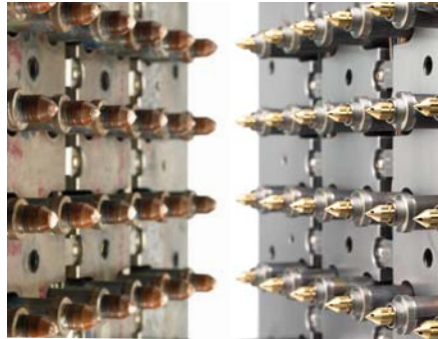


Local Husky facilities provide up-front testing capabilities to help ensure tooling programs are successful.

### Refurbishment

Proper maintenance can significantly extend tool life. Husky's refurbishment services provide a cost-effective solution to ensure improved productivity and uptime. With our experience, advanced equipment and factory support, we can restore your system to "like new" condition. This cost-effective service includes:

- Manifold, plate and component inspection
- Cleaning and part replacement
- Assembly and final certification
- Renewed three-year leakproof guarantee



Regular hot runner refurbishment ensures peak performance.

### Service parts

Husky guarantees the reliability and performance of our spare parts, which are all backed by a six-month warranty. Our global service parts centers ensure we meet our customers' purchasing and warranty requirements at any time, from anywhere.

- Dedicated sales and support teams
- Around-the-clock parts ordering
- 24-hour shipping of available parts
- Eight strategic global locations



Simplified system design means maintenance can be completed with 20% less time required on the workbench.

---

## System Design

Our hot runner systems are designed to deliver part-to-part consistency, reduce mold maintenance and increase uptime.

### Optimized and balanced melt channels

Every Husky hot runner undergoes melt channel analysis to confirm equal pressure distribution to each drop. Optimizing shear rate, residence time and system pressure drop ensures balanced part filling and reduces the risk of material damage. Manifolds with more than four drops feature level changes for improved balance. Tests have shown that introducing level changes can improve balance by more than 10%. This means better part-to-part consistency.

### Thermal layout

Our manifold heater layouts follow proven design guidelines based on thermal FEA analysis to ensure thermal balance. Thermal balance is achieved by counteracting heat sinks where necessary and avoiding overheating well-insulated areas.

### Minimized plate deflection

Husky design principles follow FEA models to minimize plate and mold deflection, reducing mold wear. Integrated pillars and contoured pockets reduce the potential for plate deflection. A contoured pocket design provides up to four times less deflection than open pocket designs.

### In-machine maintenance

The simplicity of our system design allows in-machine maintenance for key components—nozzle tips, heaters and thermocouples.

# The Ultra Advantage

## UltraGuide

For valve gate applications, UltraGuide® technology pre-aligns the valve stem prior to entering the gate area achieving excellent gate quality.

- Reduced gate and stem wear—up to five million cycles with no visible wear
- Cylindrical shut-off for superior gate quality across a range of operating temperatures
- Thermally conductive tip component for easy start-up and wide processing window

## Ease of maintenance

Ultra Nozzles for hot tips and valve gates allow for convenient maintenance and replacement of wear items.

- Tips, tip retainers, nozzle thermocouples and nozzle heaters are replaceable while the hot runner remains in the machine
- Valve gate systems utilize a single O-Ring operating in a cooled backing plate for longevity
- Valve gate O-Rings are serviceable without pulling the valve stems from the nozzles

## Wide operating window

The thermal design of Ultra nozzles and tips provide a wide operating window giving the molder maximum processing flexibility while molding quality parts.

- Wide temperature range without stringing or freeze-off
- Faster cycle times

## Gating solutions for abrasive materials

Ultra hot tip nozzles offer an optional wear resistant tip insert for improved longevity while processing abrasive materials.

## UltraSeal

UltraSeal® technology guarantees

leakproof operation for three years.

UltraSeal technology prevents leakage at start-up, even if the hot runner is not in its correct operating temperature range.

- Nozzles are pre-loaded to the manifold to provide leak protection at cold condition
- Leakproof operation over a wide processing window (up to  $\pm 100^{\circ}\text{C}$  /  $212^{\circ}\text{F}$ ) for increased processing flexibility
- UltraSeal spring provides component protection against overheating—wide operating window prevents damage to nozzles and plates
- Spring forces are optimized to minimize plate bowing

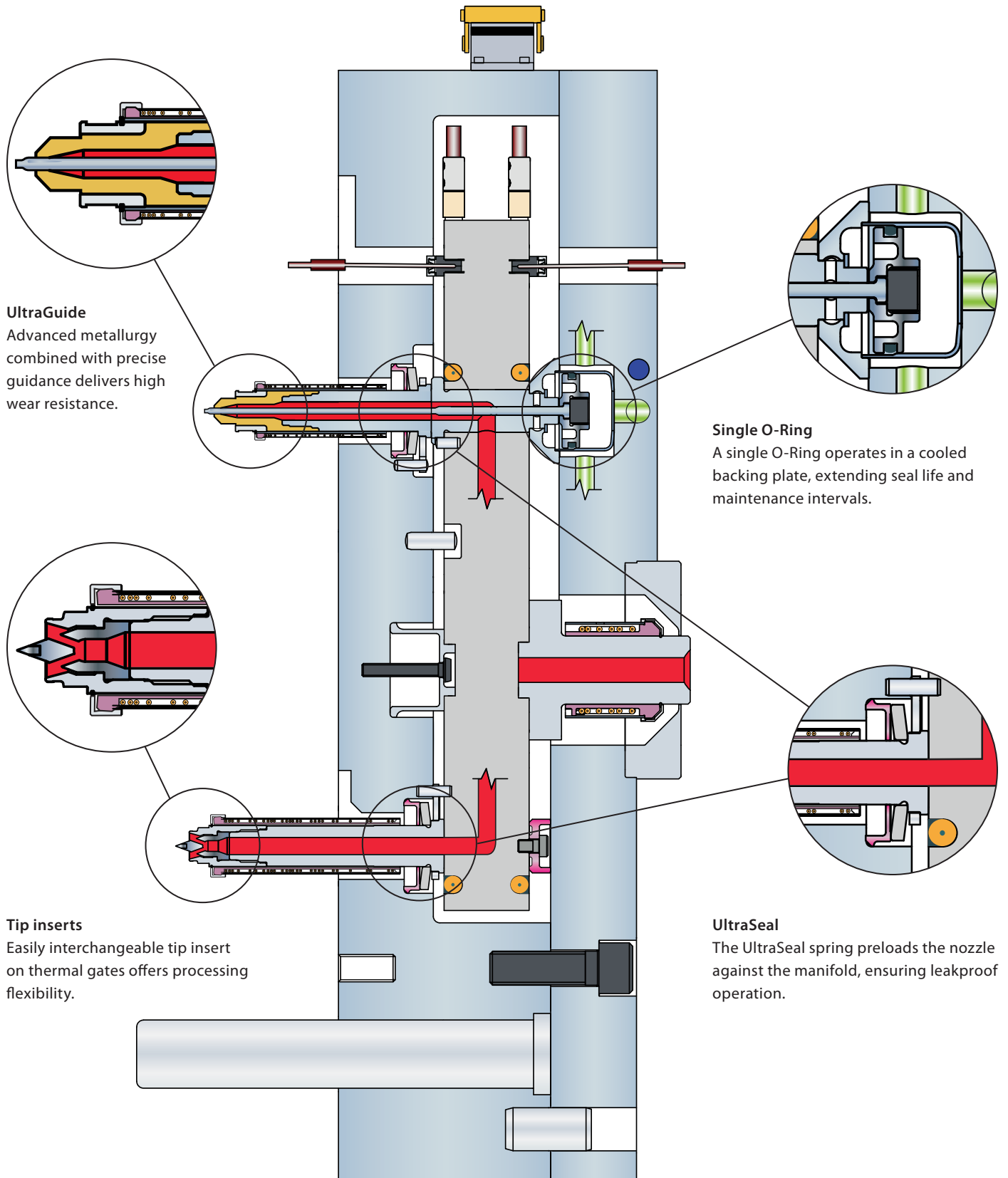
## UltraFlow nozzle tips

The UltraFlow® nozzle tip's patented technology provides melt mixing prior to the melt entering the cavity, leading to improved part tolerances and color changes compared to traditional nozzle tips.

- Improved melt homogeneity for less molded-in stress and mechanically improved part properties
- Elimination of flow-lines in valve gate and hot tips
- Improved color consistency and melt distribution, even for metallic and pearlescent resins
- Color changes up to 10 times faster than a traditional hot tip

We offer a three-year leakproof guarantee along with a three-year warranty on most components, including manifolds, plates, heaters and nozzle housings.

## The Ultra Advantage



### UltraGuide

Advanced metallurgy combined with precise guidance delivers high wear resistance.

### Single O-Ring

A single O-Ring operates in a cooled backing plate, extending seal life and maintenance intervals.

### Tip inserts

Easily interchangeable tip insert on thermal gates offers processing flexibility.

### UltraSeal

The UltraSeal spring preloads the nozzle against the manifold, ensuring leakproof operation.

# Altanium Temperature Controllers

Altanium controllers are designed to provide the most accurate temperature control possible using distributed control and Active Reasoning Technology (ART).

Distributed control offers the fastest reaction times by placing the heater signals and power switching directly on the control board. ART optimizes the control of each individual heater in the mold, automatically selecting the best possible algorithm for each heater.

Recognized as the easiest controller to operate, Altanium features simple to navigate user interfaces.

With accurate temperature control in a flexible modular design, ART optimizes thermal performance for each heater. Enclosure options, user interfaces and diagnostic tools are configurable to meet the needs of any molding environment.

## 2 to 48 zone applications

The Altanium Neo2 controller is a single, cost effective package for up to 48 zones of control.

## 2 to 254 zones

Altanium controllers with the Matrix interface offer accurate temperature control in a flexible modular design.

## Highly flexible configuration options

### Free standing

Both compact and versatile, freestanding controllers are available in table top portable versions or with an integrated mobile stand.

### Mold mount

Directly mounted to the mold, this patented design can save significant amounts of cost by eliminating cables and minimizing the need for floor space. Mold mount technology can be used on low and high cavitation hot runners, the configuration is controlled using a remotely mounted operator interface.

### External machine mount

Mounted directly to the outside of the injection molding machine, the external mount offers flexibility and floor space savings. The unit is compatible with all Altanium user interfaces.

Contact Husky today for more information on our hot runners and temperature controllers.



Altanium controllers feature simple to navigate user interfaces.

**Husky Injection Molding Systems**  
[www.husky.ca](http://www.husky.ca)

**Head Office** Canada • Tel. (905) 951 5000 • Fax (905) 951 5384  
**Asia** China • Tel. (86) 21 3850 8000 • Fax (86) 21 5048 4900  
**Europe** Luxembourg • Tel. (352) 52 11 51 • Fax (352) 52 60 10

\* HUSKY, HUSKY KEEPING OUR CUSTOMERS IN THE LEAD & DESIGN, ALTANIUM, ULTRAGUIDE, ULTRASEAL, ULTRAFLOW and PRONTO are registered trade-marks of Husky Injection Molding Systems Ltd. in the United States and other countries, and may be used by certain of its affiliated companies under License. ULTRASYN, Neo2 and other HUSKY products or service names or logos referenced in these materials are trade-marks of Husky Injection Molding Systems Ltd. and may be used by certain of its affiliated companies under License. CLAVE is a registered trade-mark of ICU Medical Inc.  
© 2012 Husky Injection Molding Systems Ltd. All rights are reserved.