

ADDITIVE MANUFACTURED TOOLING INSERTS for plastic injection molding (PIM)

RECOMMENDATIONS FOR OPERATION & MAINTENANCE

- » Pressure drops can result from variations in cooling-channel dimensions and cross-sections. To optimize cooling channel flow rate and cooling medium temperature in each line, use separate or additional individual pump units.
- » Feed multiple cores individually instead of serial connections to avoid flushing problems, dirt accumulation at the end of serial connections, and high pressure drops. For parallel channels, ensure each line allows flow monitoring.
- » Conformal cooling channels may be as small as 2–3 mm in diameter, so the cooling medium must be sufficiently filtered. A 100-micron mesh is recommended for mechanical filters. The [voestalpine Cooling Liquid Filter](#) is perfect for this.
- » Continuously monitor and document flow rate. A rise in pressure drop may indicate a circuit blockage. In such cases, clean the circuit with a device that descales, derusts, and degreases the cooling ducts. After cleaning, apply rust protection to the channels.
- » Thermally insulated hoses are recommended for tempering lines between the tempering unit and the mold.
- » Inspect fittings to ensure there are no blockages or restrictions limiting cooling medium flow between the tempering unit and the mold.
- » Inspect mold channels for debris, lubricant, or other foreign objects before operation.
- » Use a reprocessed cooling medium that is regularly monitored for lime content and pH.
- » Prevent scale build-up in cooling channels to maintain heat transfer. Use treated (softened) water whenever possible.
- » To prevent corrosion in cooling channels, use sufficient water additives or corrosion-resistant tool steel.
- » Where possible, ensure cooling circuits are adequately deaerated, as oxygen in water increases aggressiveness and can cause corrosion.
- » Ensure the cooling medium is properly maintained to optimize heat transfer. Follow additive dosing regimens and flush or replace the medium as recommended by the supplier.
- » Maintain heat exchangers regularly to maximize heat transfer efficiency. This includes periodic cleaning to remove algae, scale, and dirt.
- » After each production run, clean the channels using a suitable descaling chemical for 1–2 hours, or use an ultrasonic cleaner. In addition to conformal cooling, clean areas such as vents, thin fins, or similar features.
- » When storing molds, flush cooling channels with a preservative fluid and dry them to prevent corrosion during non-use.

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