MIDLAND TECHNOLOGIES

2020 PRODUCT CATALOG

ABOUT
MIDLAND TECHNOLOGIES

Midland began over 25 years ago as a tool and die maker for the die casting and injection molding industries. 20 years ago, the focus began to change to accessory products that could be offered to other die casters in North America – including Vent and Valve-less Vacuum Blocks. One thing led to another and there was enough business selling these Blocks, that tool and die making took a backseat.

Today, Midland manufactures a variety of components used in the high pressure die casting industry including our Vent and Valve-less Vacuum Blocks, Hydro Coolers, Vacuum Components, Bushings, Spreaders. In addition to standard products for those components, we also offer 'Midland Custom' solutions, along with Conformal Cooled inserts.

Have questions about your die runner design, sizing blocks for your project? Call us! We have years of experience and can help find a solution to solve your problems.

MIDLAND TECHNOLOGIES

763.428.4229
www.midlandtechnologies.com
14800 James Rd. Rogers, MN 55374

CONTENTS

STANDARD & VARIABLE TOOTH PATTERN

PRODUCT OVERVIEW

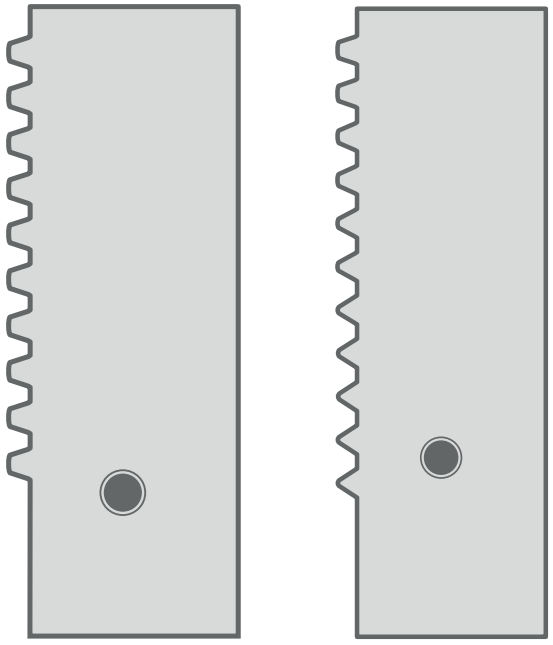
- ☆ Standard Tooth Pattern provides a flat profile for maximum metal flow resistance.
- ☆ Variable Pattern can be requested by adding '–Variable' to the end of any Block catalog number.

APPLICATION

The Variable Pattern is ideal for all die casting applications that can benefit from reduced porosity and where sticking of metal within the flow pattern is of concern.

OPERATION

Radii on the teeth near the input end of the variable pattern allow for thicker material build-up to prevent breaking during release. Flat geometry on the top of teeth near the output end of the pattern help to prevent blow-through of material. Increased draft of the side angles of the teeth assists with release of the solidified metal.



Standard Tooth Pattern

Variable Tooth Pattern (Patent #8424587)

FEATURES

- ☆ Flow pattern designed to facilitate release of solidified metal
- ☆ Interchangeable with all Standard Valve-Less Vacuum, Ultimate Vent and Super Chill Blocks

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ULTIMATE VENT AND VALVE-LESS VACUUM BLOCKS

Vent and Valve-Less Blocks made from premium H-13 steel are ideal for dies used in long production runs of aluminum castings. Heat-treated to 44-46 HRC, premium blocks have higher resistance to heat-check, cracking, and wear caused by thermal shock.

FEATURES

- ☆ Durable for long production runs
- ☆ Heat-treated to 44-46 HRC
- ☆ High resistance to thermal shock
- ☆ Premium H-13 Steel

E-SERIES VENT AND VALVE-LESS VACUUM BLOCKS

Vent and Valve-Less Blocks are ideal for dies to be used in production of zinc or magnesium castings, or may be used for short production runs of aluminum castings, typically up to 50,000 shots. To order E Blocks add '–E' to the end of a Standard Vacuum Block or Ultimate Vent Block part number. (i.e. UVS-2500-E).

FEATURES

- ☆ Ideal for casting with zinc or magnesium
- ☆ Can be utilized for casting aluminum in short production runs
- ☆ Pre-hard tool steel

CUSTOM DESIGNS AND ALTERNATIVE FORMATS

CUSTOM DESIGN OPTIONS

- Custom Dimensions
- Corner Radii
- Double Flow Areas
- Ejection Pins
- Custom Water Lines
- Steps

SEMI-CUSTOM BLOCKS

At times it may be desirable to have a larger shut off area than that of standard blocks. It is possible to order the flow area from a smaller standard block on the footprint of a larger block.

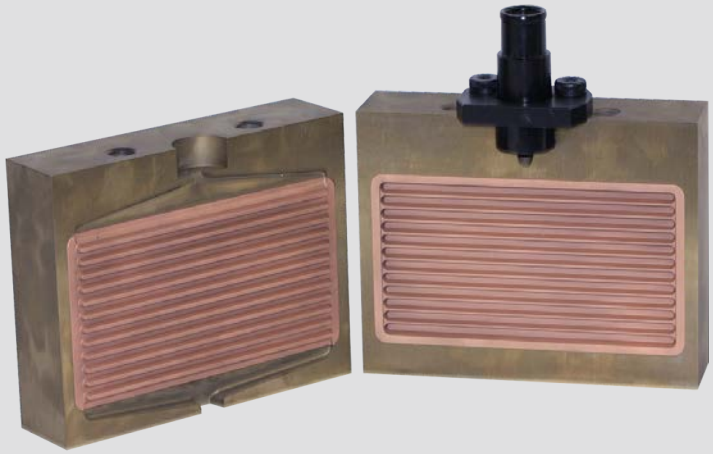
Specify the catalog number of the block from which flow area you require and which larger block footprint you would like to order.

CUSTOM BLOCKS FOR LARGE CASTINGS

Midland can design and manufacture your custom Valve-Less Vacuum or Vent Blocks for large casting applications.

With full design and programming capabilities, and decades of experience calculating correct evacuation areas for venting or vacuum of high pressure dies, Midland can help deliver effective blocks for your specific application.

Additionally, our technical experts can suggest an optimal Valve-Less Vacuum or Ultimate Vent Block runner layout for your application.



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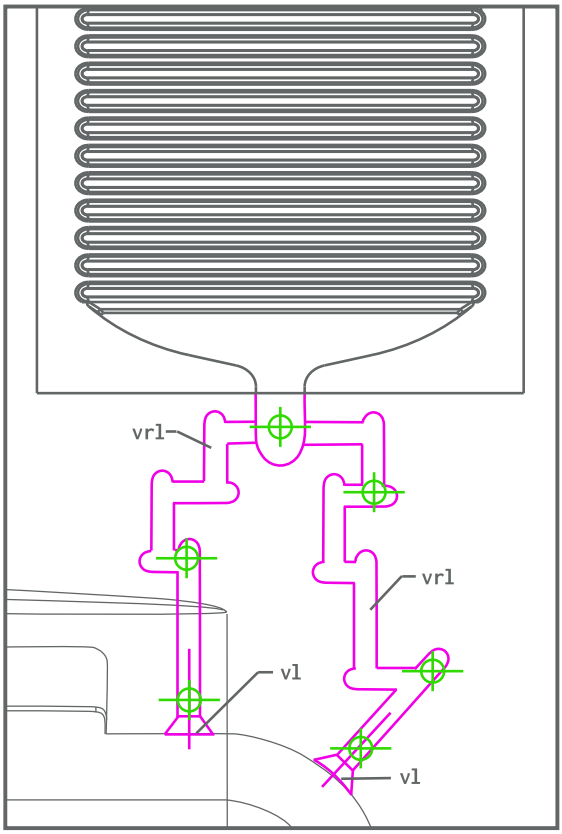
NEED ASSISTANCE
WITH VENT RUNNERS?

Midland Technologies will offer a suggested vent block runner layout when Midland Ultimate Vent Blocks are purchased and a 3D layout of the tool is provided.



CONSIDERATIONS FOR RUNNERS

Midland Blocks allow for more efficient venting than conventional vents. Not only is more air evacuated and risk of flash reduced, but the vent runners that tie the block to the die cavity insert also do not oxidize during remelt as severely as conventional vents. This allows the caster to reclaim more casting alloy contributing to overall job profitability while at the same time reducing porosity through improved venting.

Correctly designing vent runners from the cavity to the vent block is critical to proper venting. Vent runners should be designed to control velocity of the exiting metal while providing sufficient area for air and gas evacuation. This is achieved by designing a vent runner system which creates a pressure drop and provides sufficient resistance to slow the metal. Proper ejection of the runners must also be taken into consideration.

If your die is currently running vacuum valves you may be able to switch to Ultimate Valve-Less & Vent Blocks in order to reduce maintenance issues associated with valves. Midland will work with you to determine if passive venting can be used with the specific casting application. The first step is to fill out and submit a Block Sizing form found at **midlandtechnologies.com/valve-less-vacuum-and-vent-block-sizing-form** so that we can calculate the area needed for sufficient air and gas evacuation of the die cavity insert. Retrofitting existing tools to utilize Midland Blocks requires special consideration of alignment of each half of the die. A check of the clearance between leader pins and bushings should be performed, and if not to original dimensions, new pins and bushings are recommended to ensure proper clearance in Ultimate Valve-Less &Vent Blocks.

VENT & VALVE - LESS VENT BLOCKS

FLOW AREAS

MODEL	BLOCK WIDTH	FLOW AREA
Mini	2.250	.035 in^2
2500	2.500	.040 in^2
4000	3.938	.070 in^2
4500	4.566	.080 in^2
5500	5.512	.100 in^2
6500	6.500	.120 in^2
8000	8.000	.140 in^2

VENT BLOCK COMPARISON

CONVENTIONAL VENTS		ULTIMATE VENT AND VALVE-LESS BLOCKS
.005 – .008 in^2	VENT AREA	.035 – .140 in^2
Easily clogged	EVACUATION	Ensures proper evacuation
Excessive flash	VENT RUNNER FLASH	Minimizes vent runner flash
Too thin for effective remelt	MATERIAL RECLAIM	Thicker vent runners to reclaim

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VENT BLOCKS

APPLICATION

The Ultimate Vent Block is ideal for all die casting applications that can benefit from increased air evacuation for reduced part porosity.

PRODUCT OVERVIEW

The Ultimate Vent Block is a highly durable insert with no moving parts to fail or replace. The specialized serrated pattern provides more venting area than conventional vents while significantly reducing risk of flash, a critical feature when automating the die casting cell. Most existing dies can be modified to accept Ultimate Vent Blocks.

FEATURES

- ☆ Seven stock sizes available or custom design to your specifications
- ☆ Available in premium H-13 steel or pre-hard tool steel
- ☆ Can be water cooled
- ☆ Most existing dies can be retrofitted to accept Ultimate Vent Blocks
- ☆ Complementary assistance to calculate the needed venting area for your casting application
- ☆ Mag, Zinc and Aluminum

VALVE-LESS VACUUM BLOCKS

APPLICATION

The Valve-Less Vacuum Block is ideal for any die cast application that will utilize vacuum assist to achieve low porosity levels.

PRODUCT OVERVIEW

The Valve-Less Vacuum Block is a highly durable insert designed to connect a vacuum system to the high pressure die for active vacuum evacuation of air and gas from the cavity. Valve-Less Vacuum Blocks can be utilized in aluminum, zinc, and magnesium high pressure casting applications. Because there are no moving parts to fail, Valve-Less Vacuum Blocks support a low maintenance vacuum assist process within automated casting cells. Most existing dies can be modified to accept Valve-Less Vacuum Blocks.

FEATURES

- ☆ No moving parts to fail or replace
- ☆ Seven standard sizes available or we can customize to your specifications
- ☆ Available in premium H-13 steel or pre-hard tool steel
- ☆ Can be used when casting aluminum, zinc or magnesium
- ☆ Can be water cooled
- ☆ Most existing dies can be retrofitted to accept Valve-Less Vacuum Blocks

VALVE-LESS VACUUM BLOCKS

WHY VACUUM-ASSIST?

The two leading causes for rejection of high pressure castings are poor fill and excessive porosity. Vacuum-assist is an effective tool to combat both poor fill and air porosity when casting aluminum, zinc, or magnesium parts that are difficult to fill or have low porosity requirements.

DIFFICULT TO FILL

- ✔ Thin walls or ribs
- ✔ Sharp angles
- ✔ Standing posts

LOW POROSITY REQUIREMENTS

- ✔ Pressure sensitive components
- ✔ Structural castings
- ✔ Cosmetic parts

VACUUM-ASSIST AS A PRODUCTION PROCESS

Incorporating vacuum-assist when first quoting a part can help to **maximize job profitability** and **minimize potential loss** by ensuring proper air and gas evacuation from the start.

PROMOTE

- ✔ Higher casting yields
- ✔ Faster job completion with less press time
- ✔ More efficient casting processes

AVOID

- ✔ High fallout rates due to porosity or poor fill
- ✔ Downtime while troubleshooting
- ✔ Resources spent troubleshooting

VACUUM-ASSIST AS A CORRECTIVE PROCESS

Vacuum-assist can be a highly effective remediation tool when a casting presents unacceptable or undesirable fallout rates due to poor fill or excessive air and gas porosity. Midland Technologies provides the service of reviewing specific casting porosity and fill issues to evaluate applicability of vacuum-assist.

CHECKLIST WHEN UTILIZING VACUUM

- ☐ Vacuum pump is properly sized for the casting application
- ☐ Correct size and quantity of vacuum blocks to provide sufficient area for evacuation
- ☐ Proper vacuum block runner design from the cavity to manage velocity
- ☐ Vacuum blocks are correctly installed in the die
- ☐ Proper filtration between the press and the vacuum pump
- ☐ Proper maintenance is performed on vacuum blocks, pump, filters and hoses
- ☐ Floor operators understand how to turn the vacuum process on and off

VACUUM PUMPS AND ACCESSORIES

Portable and central vacuum systems are available in a variety of sizes and configurations. Midland can help you to select the pump size appropriate for your casting applications.

SIZING VACUUM PUMPS AND RECEIVER TANKS

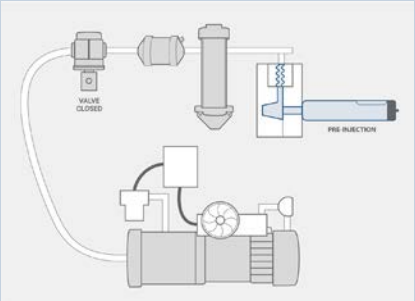
Correctly sizing vacuum pumps and receiver tanks for specific applications is critical to proper function. Vacuum pumps generate the vacuum level within a defined volume that is the receiver tank. Vacuum level is measured in relation to ambient atmospheric pressure and reported in units such as Torr, inches of mercury (“Hg), Pascals (Pa) or millibar (mb).

The critical feature of the pump is the speed at which it can evacuate a volume of air down to a particular vacuum level as measured by average cubic feet per minute. If the pump is too small, it will not be able to achieve sufficient vacuum within the shot cycle. If the tank is too small, it will not provide a sufficient reservoir to evacuate air from the cavity. Midland Technologies can calculate the required pump and tank size for your specific casting application.

CONFIGURATION OPTIONS

CONFIGURATION	DESCRIPTION
Horizontal Tank Mounted	One pump mounted horizontally on receiver tank.
Tank Mounted Duplex	Two pumps mounted on a horizontal receiver tank

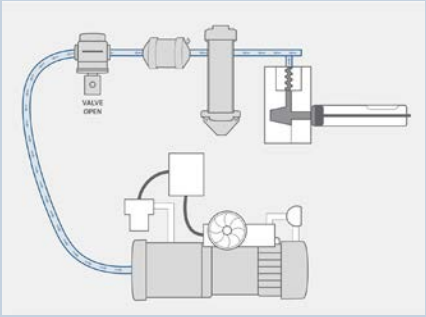
Horizontal tank mounted is the standard configuration for Midland vacuum systems.



STEP 1

PRE-INJECTION

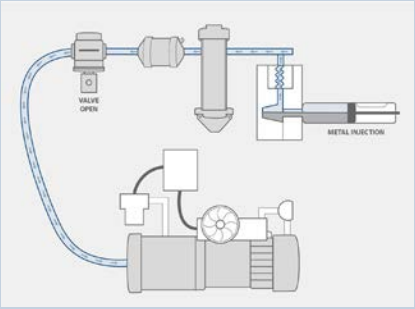
- Solenoid is closed
- Vacuum pump evacuates the receiver tank down to vacuum level
- Die is in the closed position



STEP 3

SOLIDIFICATION

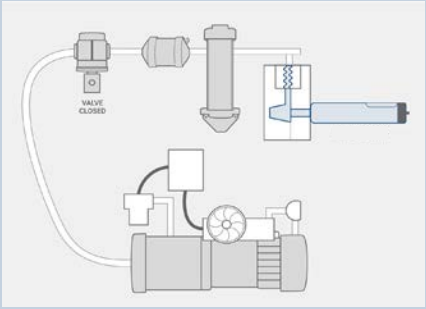
- Cavity fill and solidification
- Vacuum can remain on throughout solidification for process simplicity and to ensure maximum evacuation



STEP 2

EVACUATION OF CAVITY/INJECTION

- Injection begins
- Solenoid on vacuum system opens when plunger tip covers pour hole
- Air evacuates from the sleeve and cavity through the vacuum block
- Slowing down the slow shot can increase time for air evacuation



STEP 4

CASTING EJECTION/ RECOVERY

- Solidification complete
- Solenoid on vacuum system closes
- Die opens and casting is ejected
- Vacuum pump recovers vacuum level in receiver tank as necessary
- Cycle repeats

STANDARD VACUUM SYSTEMS – OIL-SEALED, ROTARY VANE PUMPS

PART #	PUMP HORSE POWER	EVACUATION CAPACITY (AVERAGE CUBIC FT/MIN)	TANK SIZE (GALLON)
MSVP-10	1	14	30
MSVP-15	1.5	18	60
MSVP-20	2	26	80
MSVP-30	3	36	80
MSVP-50	5	56	120

Vacuum systems can be supplied with either automatic or manual control panels with pump voltages of 208V, 230V, or 460V. Other options are available. Systems can be configured to your specific casting application.

FL0016

OPERATION

The FL0016 Media Filter utilizes wire mesh pads to catch metal particles, dust and liquids that pass through the vacuum blocks prior to reaching the vacuum tank and pump. It is recommended to place a FL0016 Media Filter behind the FL0803 Knockdown Filter in every vacuum system. Separate filters should be utilized for each press when multiple presses are connected to the same vacuum system.

Cleaning FL0016 Media Filters is specific to process and system configuration, and should be conducted on both a regular schedule and as needed. Cleaning can be achieved by replacing the three wire mesh pads and cleaning the wire screen inside the body of the filter. If filters are not appropriately cleaned, they may clog and prevent proper function of the vacuum blocks within the casting process.

FL0016 MAINTENANCE PARTS

- WM-0392 Mesh Media (sold in packs of 3)
- MD-3562 Screen Filter
- MID-154 O-Ring

FL0803

OPERATION

The FL0803 Knockdown Filter with 1” NPT ports utilizes baffles to prevent material from passing through the vacuum system to the pump and tank. It is recommended to place the FL0803 approximately ten feet from the vacuum blocks. The FL0803 may be drained by means of a valve located at the bottom of the filter. To ensure proper function, drain the FL0803 regularly. Occasionally, the body of the FL0803 should be disassembled and the baffles cleaned.

FL0803 MAINTENANCE PARTS

- MID-154 O-Ring
- FB-0803 Filter Bracket

VACUUM SYSTEM HOOKUP KITS AND ACCESSORIES

Midland Technologies provides spare parts or complete kits that contain all the necessary components to connect Valve-Less Vacuum Blocks to the vacuum system. Hookup kits come in two sizes that include either a small or large solenoid valve which is responsible for regulation of the "open" or "closed" state of the vacuum system.

HOOKUP KITS*

PART #	INCLUDES
DCMH1000-24V DCMH1000-110V	1000 Activating Solenoid Valve (choose from 24 VDC or 110 VAC) 30 ft. of 1" vacuum hose Brackets and hardware to connect one Midland Valve-Less Vacuum Block
DCMH1250-24V DCMH1250-110V	1250 Activating Solenoid Valve (choose from 24 VDC or 110 VAC) 20 ft. of 1-1/2" vacuum hose 10 ft. of 1" vacuum hose Brackets and hardware to connect one Midland Valve-Less Vacuum Block

**Midland can help you choose the correct hookup kit for your application. Please advise if multiple Valve-Less Vacuum Blocks are being utilized.*

VALVES

PART #	PART NAME	VOLTAGE
DCMH1000AV24V	1000 Activating Solenoid Valve	24V DC
DCMH1000AV110V	1000 Activating Solenoid Valve	110V
DCMH1250AV24V	1250 Activating Solenoid Valve	24V DC
DCMH1250AV110V	1250 Activating Solenoid Valve	110V

GAUGES

PART #	PART NAME
DCMH-SG	Small Vacuum Gauge
DCMH-LG	Large Vacuum Gauge

VACUUM HOSE

PART #	PART NAME
12104MB	3/4" Vacuum Hose
16104MB	1" Vacuum Hose
24104MB	1-1/2" Vacuum Hose

HOSE CLAMPS

PART #	PART NAME
TBC125	3/4" Hose Clamp
TBC150	1" Hose Clamp
TBC200	1-1/2" Hose Clamp

MAINTENANCE PARTS FOR VACUUM SYSTEMS

- Exhaust Filter Kits
- Exhaust Filter w/ O-Ring
- Exhaust Valve Assembly
- Gasket Kit
- Oil Filter
- Vanes
- Inlet Filter Cartridges
- Bearing Sleeves
- Shaft Seals
- Overhaul Kits
- Vacuum Pump Oil

HYDRO COOLERS

PRODUCT OVERVIEW

High Pressure Hydro Coolers from Midland Technologies are durable, high-quality, domestically manufactured cascades for use with High Velocity Jet Cooling Units. High Pressure Hydro Coolers consist of a rotating or stationary brass head which houses the ports for the water/air supply lines. Stainless steel tubing is used for both the outer and inner tubes at various sizes for your application. Connection to the core pin with the outer tube can be made with threads, o-rings, or a grommet. All major sub-components of the Hydro Coolers have been designed in-house to support long-life and easy installation.

APPLICATION

High Pressure Hydro Coolers utilize with High Velocity Jet Cooling in small diameter core pins to combat shrink porosity, core pin solder, and core pin washout. High Velocity Jet Cooling deploys high pressure water and air injection cycles to manage core pin temperature.

OPERATION

The inner tube of the Hydro Cooler is inserted into a cooling channel within the core pin to within 10 – 15 mm of the core pin tip. Hydro Coolers insert and seal with core pins via a threaded, o-ring, or grommet connection. The brass head of the Hydro Cooler can be fitted with two push-lock fittings for either 4mm, 6mm, 8mm, or 5/32” OD tubing that provide the inlet and outlet water/air supply lines to the cascade tube. As necessary, inner tubes can be removed from the Hydro Cooler and replaced through the bottom of the head.

FEATURES

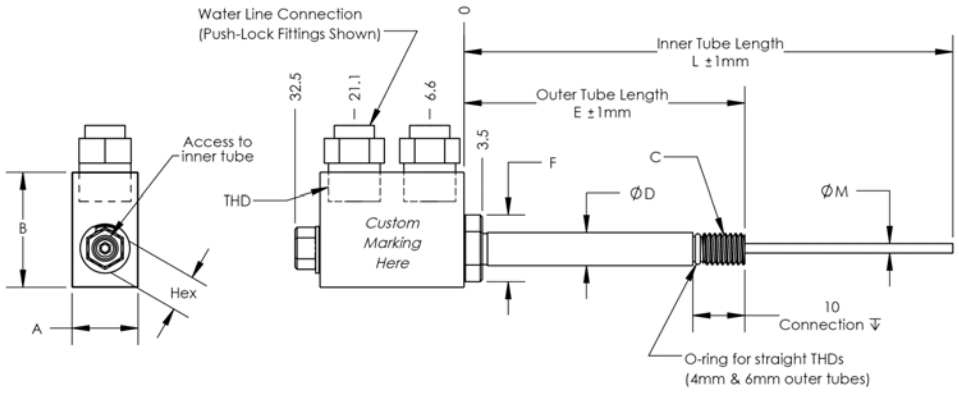
- ☆ Domestically designed and produced
- ☆ Rotating or stationary heads
- ☆ Threaded, o-ring, or grommet connections
- ☆ Two-week turnaround on most orders
- ☆ 4mm, 6mm, 8mm or 5/32” push-lock for inlet and outlet tubing
- ☆ Quick access port for removal and replacement of inner tube
- ☆ Inner & Outer tubes manufactured to your custom lengths

HIGH FLOW RATE BUBBLERS

High flow rate Bubblers are available in either a Stationary or Rotating head configuration. Send us your dimensions and we can create a solution that meets your needs, with custom inner and outer tube lengths, down to the millimeter. All Bubblers are available with either a threaded or O-ring connection.

Midland can fabricate your custom cooling tubes at our facility in Rogers, MN.

ROTATING HEAD HYDRO COOLER WITH THREADED CONNECTION



HC-	XXXT-	XXX-	RQXX-	EXXX-	Lxxx-	M xxxx
				Outer Tube Length (20mm Min)	*Inner Tube Length*	*-M Option for Custom Marking*

All dimensions in mm

OUTER TUBE Ø	Ø D	C	Inner Tube Ø	Ø M	Ø B	Ø HOLE	F	HEX	A	B
040	4	M4x0.7	012	1.2	4.2	1.7	12.8	7	12.7	22
			015	1.5		2.0				
060	6	M6x1.0	012	1.2	6.2	1.7				
			015	1.5		2.0				
			018	1.8		2.4				
			023	2.3		3.0				
080	8	1/16 BSTP*	015	1.5	NA	2.0				
			018	1.8		2.4				
			023	2.3		3.0	14.7	10	15.9	25.4
			028	2.8		3.6				
100	10	1/8 BSTP*	018	1.8	NA	2.4				
			023	2.3		3.0				
			028	2.8		3.6				
			032	3.2		4.2				

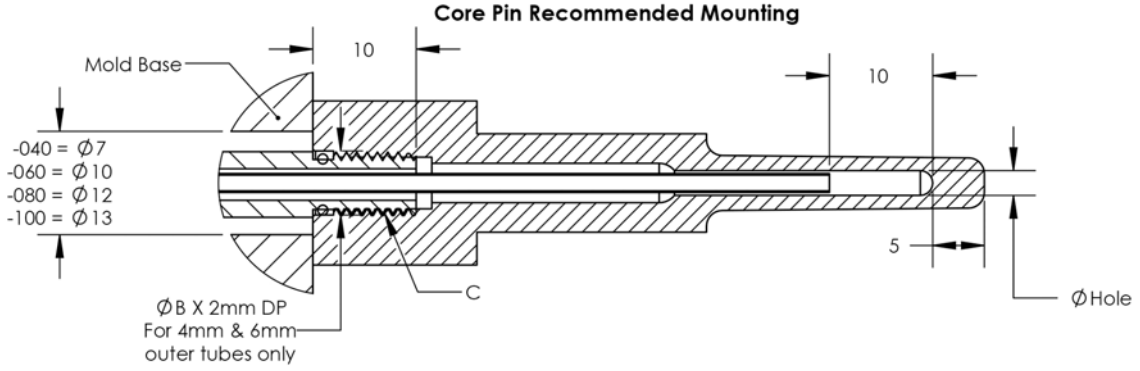
**For NPT connection, add NP after outer tube Ø. Ex: HC-100NPT-...*

WATER LINE CONNECTION	SIZE
BP	1/8 BSPT Push-Lock for Ø4mm Tube
B6	1/8 BSPT Push-Lock for Ø6mm Tube
B8	1/8 BSPT Push-Lock for Ø8mm Tube
BT	1/8 BSPT Thread Only
NP	1/8 NPT Push-Lock for Ø5/32 Tube
NT	1/8 NPT Thread Only

Ex: HC-060T-018-SQBP-E150-L200-M 123
(Ø6.0mm outer tube with a M6x1.0 thread, Ø1.8mm inner tube, 1/8 BSPT push-locks fittings for a 4mm tube water line connection, E length of 150mm, L length of 200mm, and a custom marking of 123)

Ex: HC-100R-023-SQNT-E175-L210
(Ø10.0mm outer tube with a 1/8 BSPT thread, Ø2.3mm inner tube, 1/8 NPT threads for the water line connection, E length of 170mm, L length of 210mm)

Core Pin Recommended Mounting



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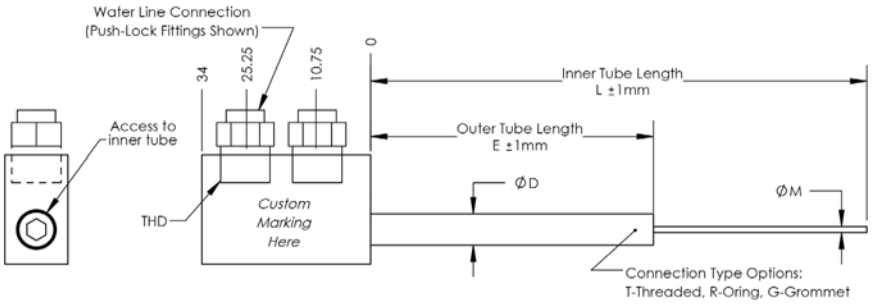
STATIONARY HEAD HYDRO COOLER WITH THREADED CONNECTION



HC-	XXX	X	XXX-	SQXX-	EXXX-	Lxxx-	M xxxx
					Outer Tube Length (20mm Min)	*Inner Tube Length*	*-M Option for Custom Marking*

All dimensions in mm

OUTER TUBE Ø	Ø D	CONNECTION TYPE T = threaded, O = Oring, G = Grommet	A (Threaded connection only)	Inner Tube Ø	Ø M	Ø HOLE
040	4	T	M4x0.7	012	1.2	1.7
				015	1.5	2.0
060	6	T,R,G	M6x1.0	012	1.2	1.7
				015	1.5	2.0
				018	1.8	2.4
				023	2.3	3.0
080	8	T,R,G	1/16 BSTP*	015	1.5	2.0
				018	1.8	2.4
				023	2.3	3.0
				028	2.8	3.6
100	10	T,R	1/8 BSTP*	018	1.8	2.4
				023	2.3	3.0
				028	2.8	3.6
				032	3.2	4.2

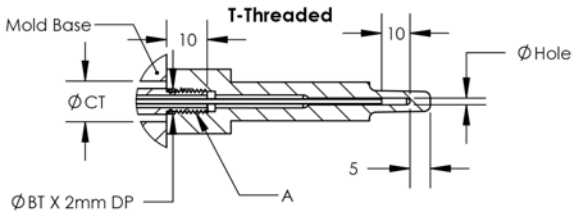
**For NPT connection, add NP after outer tube Ø. Ex: HC-100NPT-...*

WATER LINE CONNECTION	SIZE
BP	1/8 BSPT Push-Lock for Ø4mm Tube
B6	1/8 BSPT Push-Lock for Ø6mm Tube
B8	1/8 BSPT Push-Lock for Ø8mm Tube
BT	1/8 BSPT Thread Only
NP	1/8 NPT Push-Lock for Ø5/32 Tube
NT	1/8 NPT Thread Only

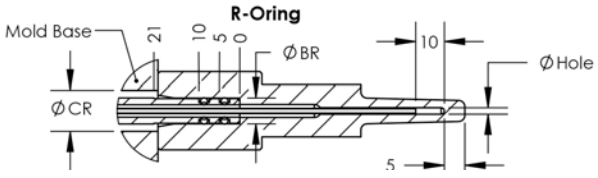
Ex: HC-060T-018-SQBP-E150-L200-M 123
(Ø6.0mm outer tube with a M6x1.0 thread, Ø1.8mm inner tube, 1/8 BSPT push-locks fittings for a 4mm tube water line connection, E length of 150mm, L length of 200mm, and a custom marking of 123)

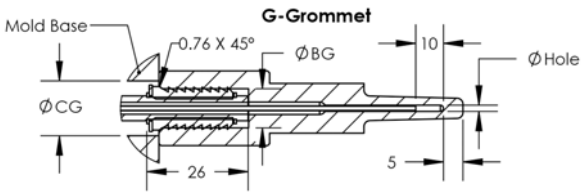
Ex: HC-100R-023-SQNT-E175-L210
(Ø10.0mm outer tube with an o-ring connection, Ø2.3mm inner tube, 1/8 NPT threads for the water line connection, E length of 175mm, L length of 210mm)

Core Pin Recommended Mounting for each Connection Type



OUTER TUBE Ø	T-THREAD		R-ORING		G-GROMMET	
	Ø BT	Ø CT	Ø BR	Ø CR	Ø BG	Ø CG
040	4.2	7				
060	6.2	10	6.3	10	10	14
080	NA	12	8.2	12	13	17
100	NA	13	10	13		





BUSHINGS AND SPREADERS

APPLICATION

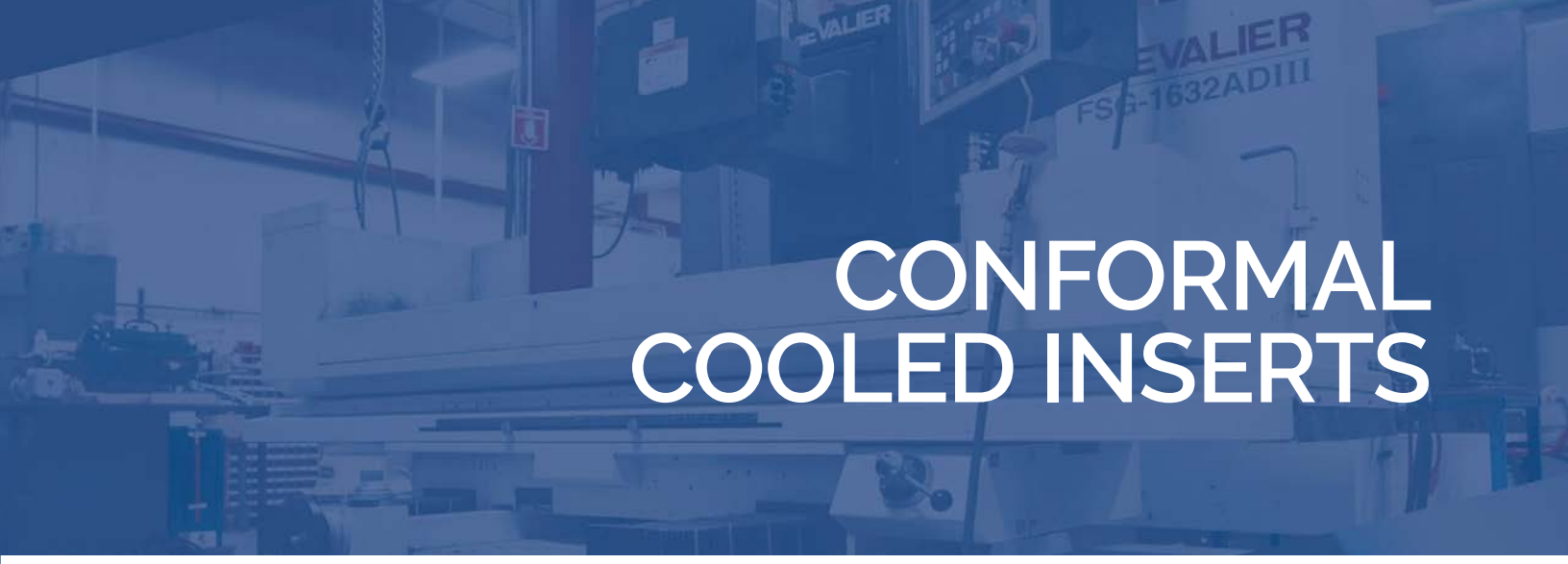
Midland runner spreaders and bushings are ideal for casting thin-wall parts with zinc.

PRODUCT OVERVIEW

Die casting zinc is faster and easier with runner spreaders and bushings from Midland. Made from premium H-13 steel and heat-treated to 44-46 HRC, these components are built to last. Choose from a range of pre-designed sizes or request your own custom design. Runner spreaders can accommodate either baffle or cascade cooling. Spreaders can be purchased as blanks, or Midland can cut your custom spreaders for an additional fee. Midland runner bushings are manufactured with unique internal ridges that provide a large surface area to achieve faster cooling than other bushings. Midland bushings are threaded together and hermetically sealed to prevent leakage.

FEATURES

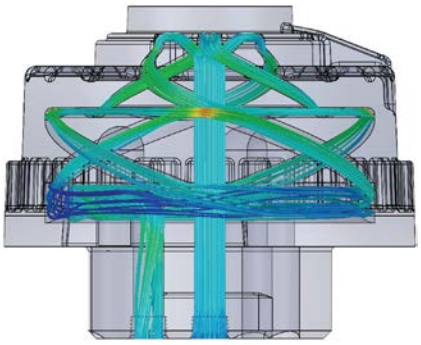
- ☆ Small, medium and large sizes
- ☆ Short and long styles
- ☆ Designs customized to your specifications
- ☆ Use with either baffle or cascade cooling
- ☆ Allows faster cavity fill and sprue cooling
- ☆ Premium H-13 steel, 44-46 HRC

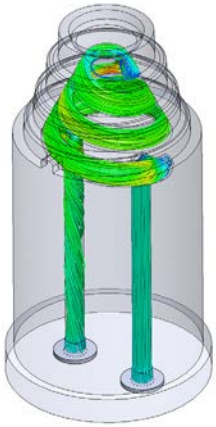


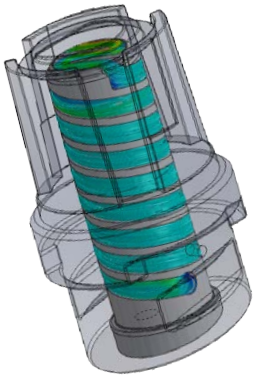
CONFORMAL COOLED INSERTS

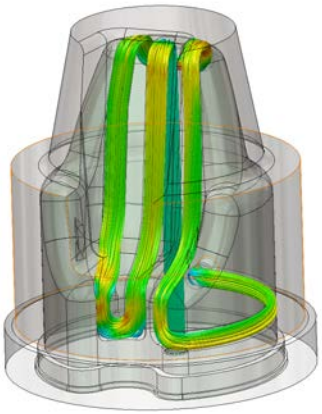
PRODUCT OVERVIEW

Conformal cooling solutions from Midland Technologies, offer faster and more uniform heat transfer within a tool, during the die casting process. Our conformal cooling inserts are made from premium H13 tool steel as two separate pieces, and vacuum brazed together for a high-quality component, while helping to cool critical areas more rapidly than with traditional cooling lines.





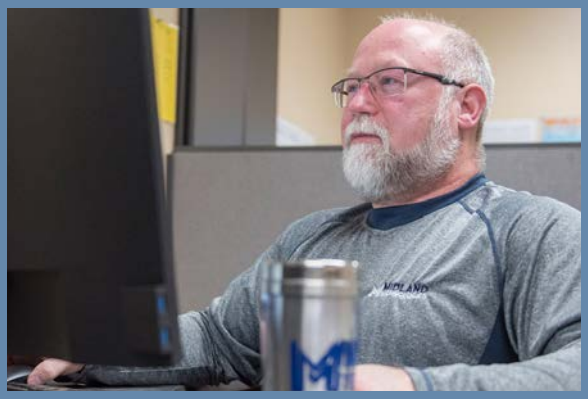


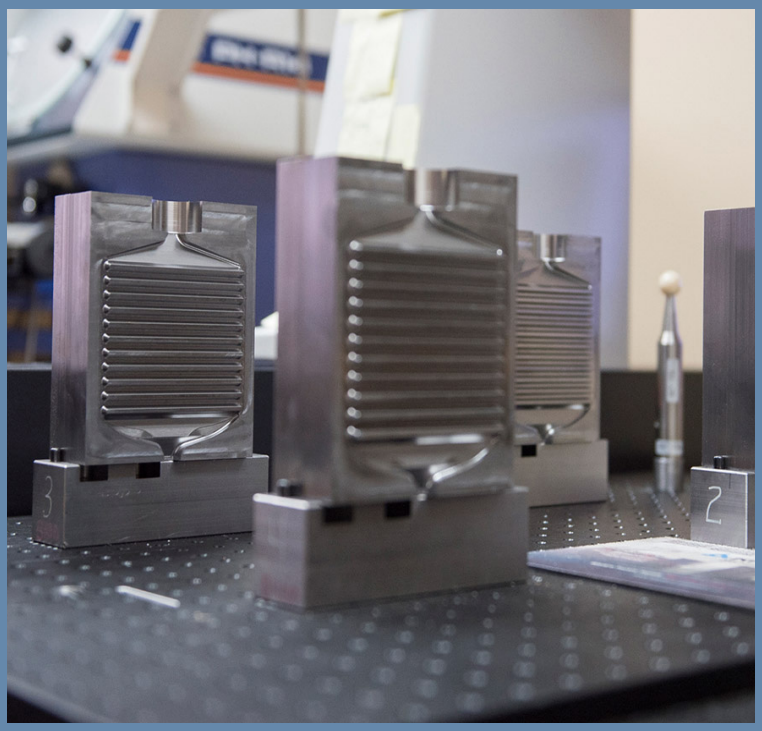


FEATURES

- ☆ Domestically designed and produced
- ☆ Premium H13 Tool Steel
- ☆ Vacuum brazed – not 3D printed


MIDLAND
TECHNOLOGIES





INNOVANCE™

Innovation Drives Performance

The Innovance name comes from our two defining characteristics; Innovation and Performance.

Innovance is the holding company for a family of five, 100% employee owned, Minnesota-based manufacturing companies. We collaborate across the organization to grow our Employee Share value, deliver outstanding customer experiences and become the most respected companies in our communities. Our unique and varied mix of industrial manufacturing capabilities assures our customers we are committed to developing solutions that help solve their most challenging business issues. Awarded a Best Place to Work for several years in a row, our 400+ employee-owners, strive to make every customer interaction a great one.

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CORE VALUES

- Conduct business with integrity and respect.
- Maintain a positive, challenging work-place and a healthy work-life balance.
- Sustain a safe and secure working environment through a collaborative culture.
- Broaden employee job skills with professional development, education and training.
- Embrace innovation and technology to deliver exceptional performance for our customers.
- Operate with social responsibility to our community and the environment.

EMPLOYEE 100% OWNED

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