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Valve Gate Hot Runner Systems



Hot runner technology has a crucial impact on the cost-effectiveness and part quality in injection molding. As a pioneer in hot runner technology, we focus on the development and manufacture of Cylindrical Valve Gate Systems – recognized as the best hot runner solution for achieving impeccable surface quality, part-to-part consistency, and process reliability. All valve gate systems are custom tailored and designed to meet the specific needs of our customers.

Tailored Valve Gate Systems



PERSONAL CARE

Impeccable surfaces
Superior gate quality



MEDICAL/PHARMA

High precision and
part-to-part consistency
Hygienic surface quality



CAPS AND CLOSURES

Tightly spaced configurations
High-speed molds



MICROPARTS

Ultrasmall shot weights
Short material dwell time



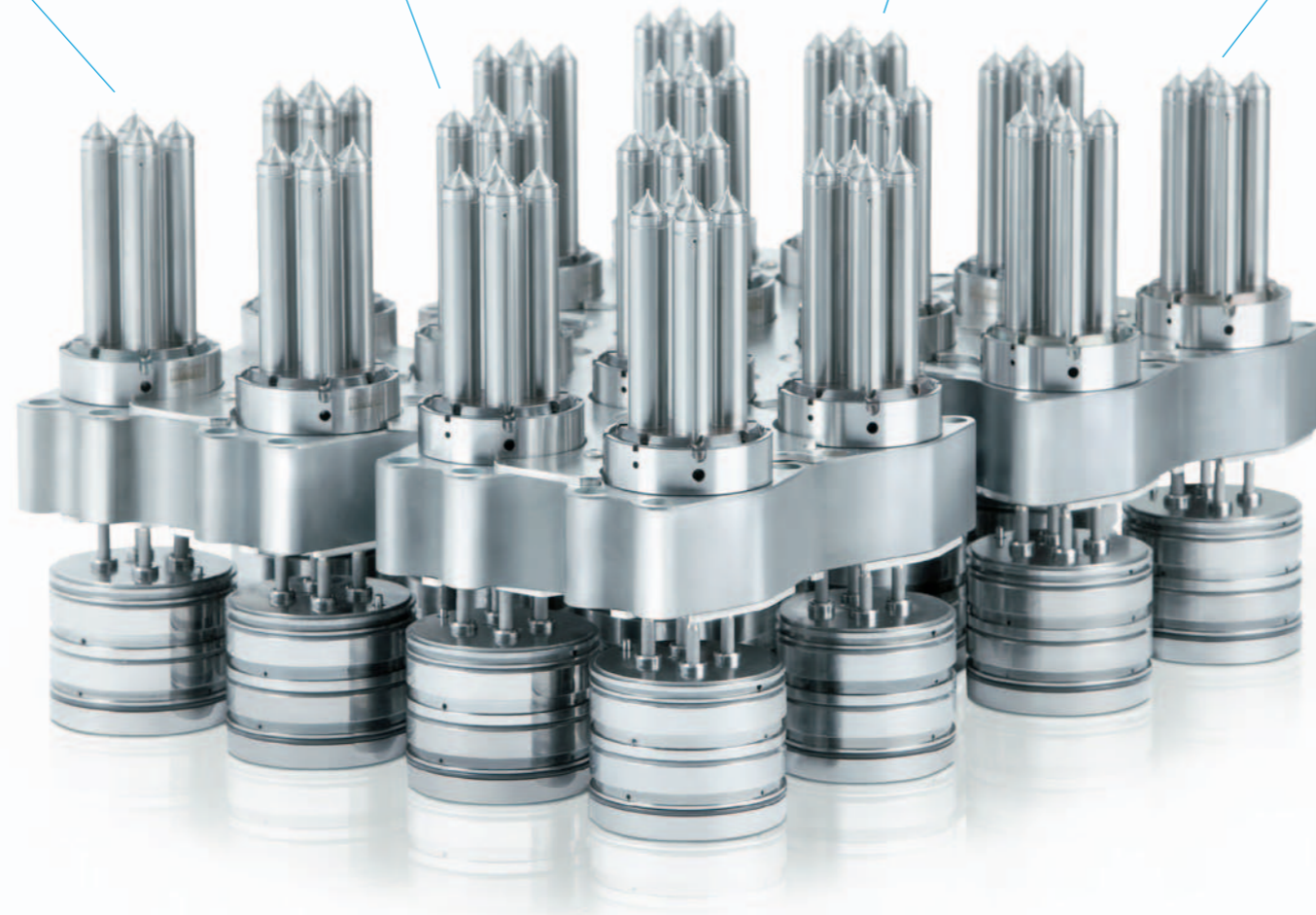
THIN-WALL PACKAGING

High flow rates
High injection speeds



TECHNICAL PARTS

Technical high-temperature resins
with narrow processing windows



männer Valve Gates.
**High Precision and
 Part-to-Part Consistency**
Hygienic Surface Quality



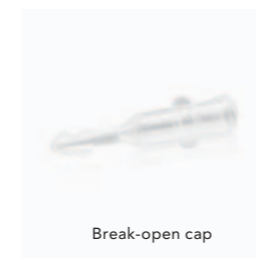
Side injection of molded parts made of amorphous cyclic polyolefins (COC/COP).

Due to their tubular geometry, with long, narrow cores and an opening on both sides, syringe barrels require side gating. At the same time, the processability of COC/COP can make designing the molds and hot runners a tricky task. The SIDEGATE nozzle has been specifically developed to handle the high viscosity and temperature sensitivity of the polymeric materials. The nozzle ensures reliable processing and impeccable surface quality in the production of demanding pharmaceutical packaging.



Medical/Pharmaceutical

When it comes to producing medical devices and disposables, high precision, part-to-part consistency, and cleanliness are vital. männer's original valve gate delivers virtually noncontact injection points for hygienic surface quality and stable processing – so that you can produce reliably.



Break-open cap



Infusion reservoir



Needle protector



Inhaler casing



Inhaler mouthpiece



SYSTEM*	NOZZLE DESIGN*
MSS (Singledrop)	STANDARD, SPECIAL, MCN-I
MMS (Multidrop)	STANDARD, SPECIAL
MES (STACK)	STANDARD, SPECIAL
SIDEGATE	

* Recommended systems and nozzle designs

männer Valve Gate.
Impeccable Surfaces
Superior Gate Quality

Personal Care

Consumers are picky. Cosmetic and personal care products must have an impeccable look and feel. Meanwhile, the use of resins containing Iriodin is increasing, and frequent color changes are in demand. The plastic parts of these products are generally used every day, which means their functional areas must be able to withstand a high degree of stress. The nozzle design of the Cylindrical Valve Gate facilitates stress-free injection of the melt and enables processing of cutting-edge high-performance resins.

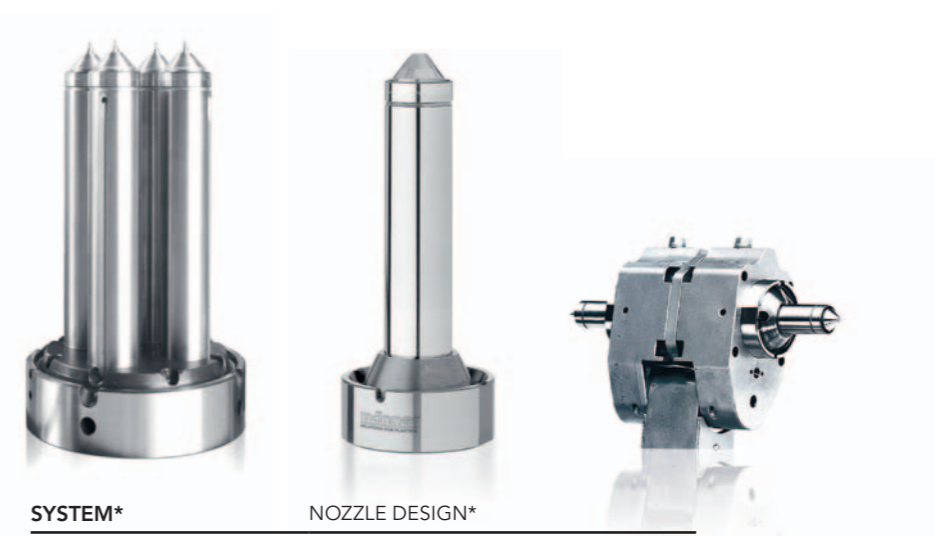


Pregnancy testing kit

Nozzle spray head

Spray head for deodorant

Contact lens packaging



SYSTEM*	NOZZLE DESIGN*
MSS (Singledrop)	SPECIAL
MMS (Multidrop)	SPECIAL
MES (Stack)	SPECIAL

* Recommended systems and nozzle designs

männer Valve Gate.
Maximum Flow Rates
High Injection Speeds

IML – In-Mold-Labeling.

The IML process involves inserting the label into the injection mold and injecting plastic from behind, making it possible to reduce wall thickness. Temperature control is the key to achieving impeccable results. männer valve gate hot runner systems enable virtually constant melt temperatures for the entire distance of flow. Nozzles are designed to maximize flow rates. The size of the gate orifice, meanwhile, depends on the application involved.

Thin-Wall Packaging

With the high flow rates and injection speeds required for rapid-process thin-wall packaging, friction within the nozzle tip and gate orifice is a critical factor. To ensure that the melt reaches the cavity under optimum conditions, we rely on valve gate systems capable of operating within extremely narrow tolerance ranges. At the same time, the geometry of the flow channel within the nozzle greatly impacts results.



Container (IML)



Thin-wall lid



Ice cream packaging



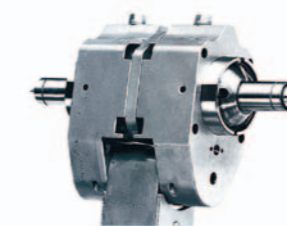
Yoghurt container (IML)



SYSTEM*

MSS (Singledrop)

MES (Stack)



NOZZLE DESIGN*

STANDARD, WEARPROOF

STANDARD, WEARPROOF

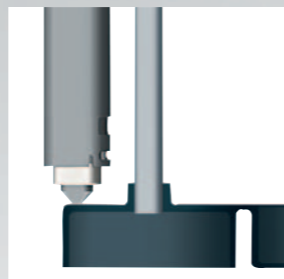
* Recommended systems and nozzle designs

männer Valve Gate.
Tightly Spaced Configurations
High-Speed Molds



Difficult spacing conditions.

Compact mold sizes, direct injection close to the core, or inner injection can mean less space for the hot runner system. männer's SLIMLINE is a slender nozzle with minimal space requirements that boasts an optimum temperature profile despite its intricate construction. The svelte nozzle is insulated by special high-tech ceramic, enabling delivery of a homogeneous temperature profile. The use of high-performance materials makes männer's SLIMLINE exceptionally resistant to pressure.



Caps and Closures

Plastic closures for the food and beverage industry as well as for cosmetics and personal care products are generally produced in high-cavitation, high-speed molds. In cases like these, valve gate systems are vital to achieving very short cycle times. Particularly in the production of flip caps, spacing within the mold can become quite tight. männer's SLIMLINE was designed specifically with these types of applications in mind.



Closures



Tamper-proof cap



Flip cap



Sports Cap



SYSTEM*

MSS (Singledrop)

MMS (Multidrop)

MES (Stack)

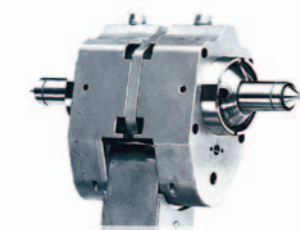


NOZZLE DESIGN*

SLIMLINE, STANDARD, WEARPROOF

WEARPROOF

STANDARD, WEARPROOF



* Recommended systems and nozzle designs

männer Valve Gate.
Ultrasmall Shot Weights
Short Material Dwell Time



Microparts

When units are produced in large numbers, designing molds for small injection-molded parts with often demanding geometries can be a real challenge. The construction of compact molds with numerous cavities, core-pulling mechanics, and hot runners is extremely complex – and every millimeter counts. männer's valve gate nozzles are thermally isolated from their working environment to ensure process reliability despite the tight spacing conditions. The design principle helps to shorten material dwell time within the system for gentle processing of the plastic.



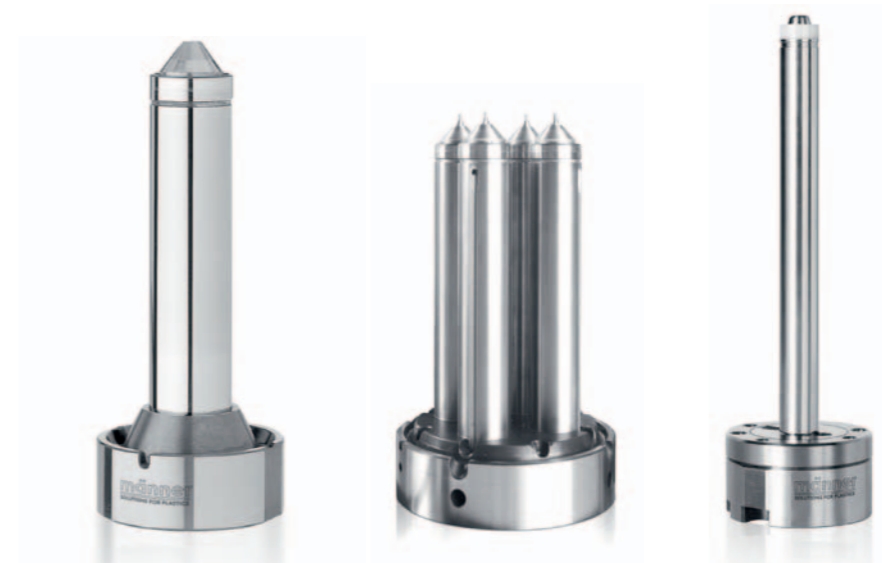
Pushbutton



2C gears



Valve cap



SYSTEM*

MSS (Singledrop)

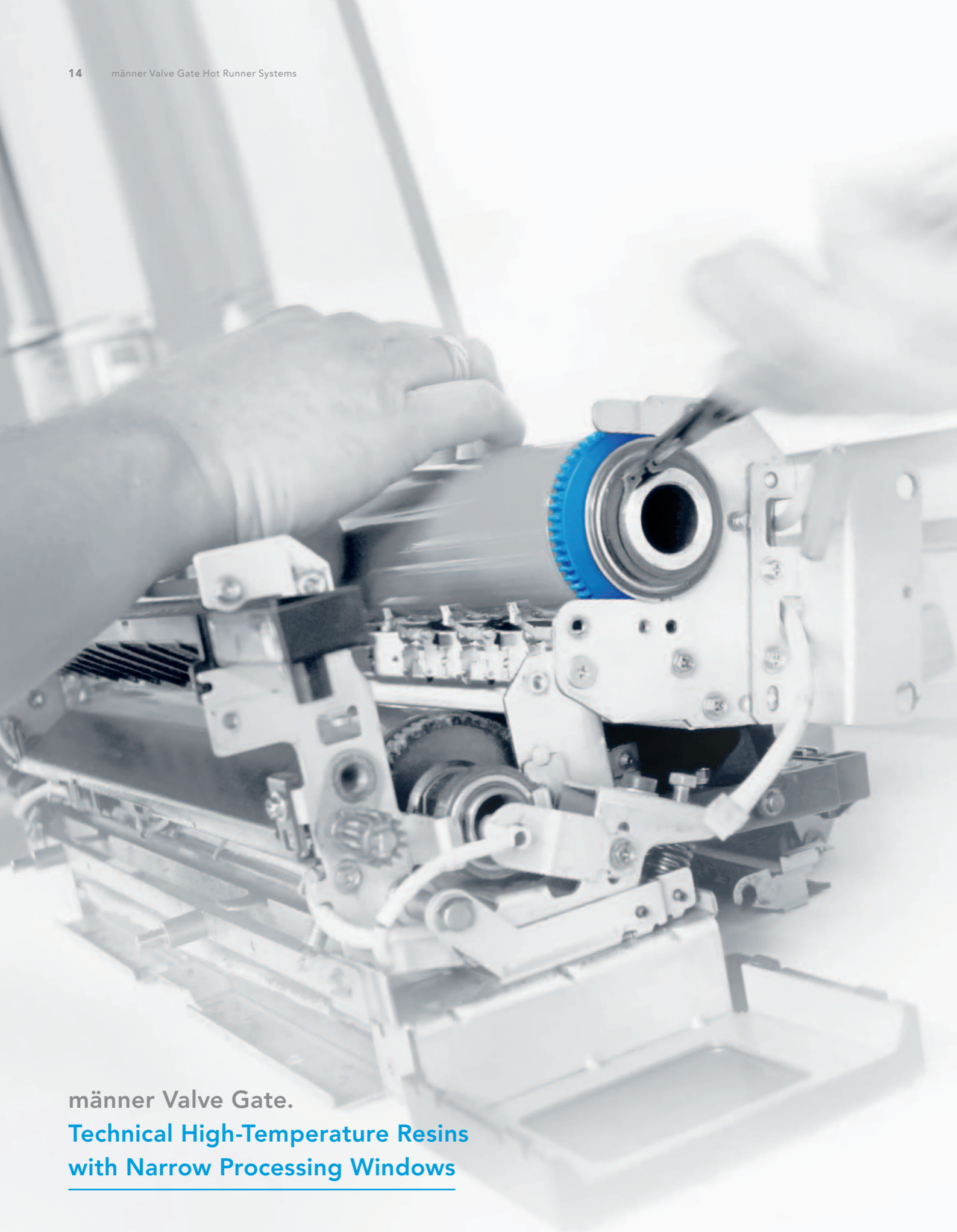
MMS (Multidrop)

NOZZLE DESIGN*

SLIMLINE, WEARPROOF, SPECIAL, MCN-I

SLIMLINE, WEARPROOF, SPECIAL

* Recommended systems and nozzle designs



männer Valve Gate.
**Technical High-Temperature Resins
 with Narrow Processing Windows**

Technical Parts

When it comes to processing demanding materials such as filled and abrasive resins or semicrystalline / engineered resins, the use of exceptionally wear-resistant special materials is essential. männer's tailored valve gate systems are designed for worry-free extended operation, even when working with difficult-to-use materials having extremely narrow processing windows.



Tube connector



Piston



Pulley



Cartridge component



Plug housing



SYSTEM*

MSS (Singledrop)

MMS (Multidrop)

MES (Stack)

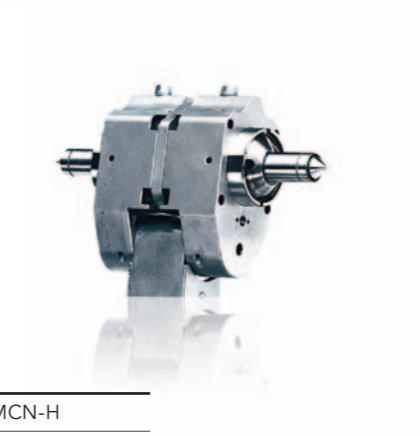


NOZZLE DESIGN*

WEARPROOF, SPECIAL, MCN-H

WEARPROOF, SPECIAL

WEARPROOF, SPECIAL



* Recommended systems and nozzle designs

Nozzle Overview

SYSTEMS



- MSS (Singledrop)**
- Large selection of nozzle designs for a wide range of applications
 - Custom manifold systems with 1 to 256 cavities
 - Nozzle designs SLIMLINE, STANDARD, SPECIAL, WEARPROOF, MCN-I, MCN-H



- MMS (Multidrop)**
- Ideal for applications with tightly spaced cavities
 - For production of parts with low shot weights
 - 2- to 4-point nozzles available with different axis spacing
 - Custom manifold systems with 1 to 128 cavities
 - Nozzle designs SLIMLINE, STANDARD, SPECIAL, WEARPROOF



- MES (Stack)**
- A cost-effective solution for large-volume production
 - Opposing injection points lie on a single axis
 - Double the output with the same closing force
 - Split snorkel enables easy access to parts by handling systems and permits parts to fall freely from the mold
 - Two or four parting lines possible
 - Nozzle designs STANDARD, SPECIAL, WEARPROOF



- MZS (Central)**
- Central injection combined with valve gate technology
 - For single-cavity molds used in producing parts with large areas
 - For pilot / pre-production molds
 - Nozzle designs STANDARD, SPECIAL, WEARPROOF, MCN-I, MCN-H



- SIDEGATE**
- Side injection with the benefits of a Cylindrical Valve Gate
 - Direct side gating (no cold runner gating)
 - Ideal for long tubular parts

All systems are also available as hot halves.

NOZZLE DESIGNS



- STANDARD**
- Available in many different lengths and diameters
 - Suitable for processing virtually all commercially available thermoplastics



- WEARPROOF**
- Specifically designed for processing filled and abrasive resins
 - Constructed of special, highly wear-resistant materials for long life and durability
 - Ensures reliable, extended operation when processing demanding resins



- SLIMLINE**
- For close cavity spacing
 - Ideal for applications involving tightly spaced configurations such as direct injection close to the core or inner injection
 - For high-cavitation molds
 - For applications with extremely low part weights
 - Minimal space requirements
 - Special ceramic insulation for optimum temperature profile



- MCN-I (Combination Nozzle, Insulated)**
- Basic body coupled with custom nozzle tip tailored to specific applications.
 - Specifically designed for transparent applications requiring superior surface quality and for polyester



- MCN-H (Combination Nozzle, High Temperature)**
- Basic body coupled with custom nozzle tip tailored to specific applications.
 - For processing technical and semi-crystalline resins at high temperatures.



- SPECIAL (Special execution)**
- For processing amorphous as well as semicrystalline resins
 - For processing resins with narrow processing windows
 - For processing light-weight parts

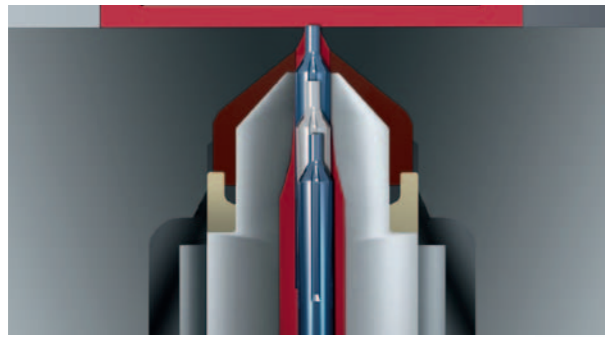
	Nozzle Ø (mm)	Type	Length (mm)	Medical/pharmaceutical	Personal care	Thin-wall packaging	Caps and closures	Microparts	Technical parts
MSS	8	SLIMLINE	79, 104, 129						
	16	STANDARD	79, 104, 129	•		•	•		
	19	STANDARD	79, 104, 129, 154	•		•	•		
	22	STANDARD	79, 104, 129, 154, 179, 204, 229, 254	•			•		
	16	WEARPROOF	79, 104, 129			•	•	•	•
	19	WEARPROOF	79, 104, 129, 154			•	•		•
	22	WEARPROOF	79, 104, 129, 154, 179, 204, 229, 254			•	•		•
	16	SPECIAL	79, 104, 129	•	•			•	•
	19	SPECIAL	79, 104, 129, 154	•	•				•
	22	SPECIAL	79, 104, 129, 154	•	•				•
MMS	16	MCN-I	79, 104, 129, 154, 179, 204	•*				•*	
	16	MCN-H	79, 104, 129, 154, 179, 204						•
	22	MCN-H	104, 129, 154, 179, 204						•
	8 M2, 8 M4	SLIMLINE	79, 104, 129						•
	16 M2, 16 M4	STANDARD	79, 104, 129	•					
MES	16 M2, 16 M4	WEARPROOF	79, 104, 129				•	•	•
	16 M2, 16 M4	SPECIAL	79, 104, 129	•	•			•	•
	19, 22	STANDARD	79, 104, 129	•		•			
MZS	19, 22	WEARPROOF	79, 104, 129			•			•
	19, 22	SPECIAL	79, 104, 129, 154	•	•				•
	16	STANDARD	79, 104, 129	•		•	•		
SIDEGATE	19	STANDARD	79, 104, 129, 154	•		•	•		
	22	STANDARD	79, 104, 129, 154, 179, 204	•		•	•		
	28	STANDARD	79, 104, 129, 154, 179, 204, 229, 254			•	•		
	34	STANDARD	79, 104, 129, 154, 179, 204, 229, 254			•	•		
	16	WEARPROOF	79, 104, 129			•	•	•	•
	19	WEARPROOF	79, 104, 129, 154			•	•		•
	22	WEARPROOF	79, 104, 129, 154, 179, 204			•	•		•
	16	SPECIAL	79, 104, 129	•	•			•	•
	19	SPECIAL	79, 104, 129, 154	•	•				•
	22	SPECIAL	79, 104, 129, 154	•	•				•
	16	MCN-I	79, 104, 129, 154, 179, 204	•*				•*	
	16	MCN-H	79, 104, 129, 154, 179, 204						•
22	MCN-H	104, 129, 154, 179, 204						•	

*Amorphous resins

Resin examples

Medical	PC, COC, COP, PS, ABS, PMMA, POM, PBT, TPE-S, TPE-O, TPE-U, TPE-V
Personal care	ABS, PC, PC/ABS, SAN, PS, PET, PET-G, PCT-G, TPE-S, TPE-O, TPE-U
Thin-wall	Polyolefins (MFI 40-100), PP, PE, PE-LD, PE-HD
Caps and closures	Polyolefins (MFI 5-80), PP, PE, PE-LD, PE-HD, PET, PET-G, PCT-G
Microparts	Polyolefins PP, PE (reinforced/unreinforced), POM, PBT, PA (PA6, PA66, etc.), ABS, PS, PC, COC, COP, PMMA, PET, PET-G, PCT-G, TPE-S, TPE-O, TPE-U
Technical parts	Polyolefins PP, PE (reinforced), PMMA, PC, PC/ABS, ABS, PBT, PA (PA6, PA66, PA46, etc.), PPE, PPS, PET, PET-G, PCT-G

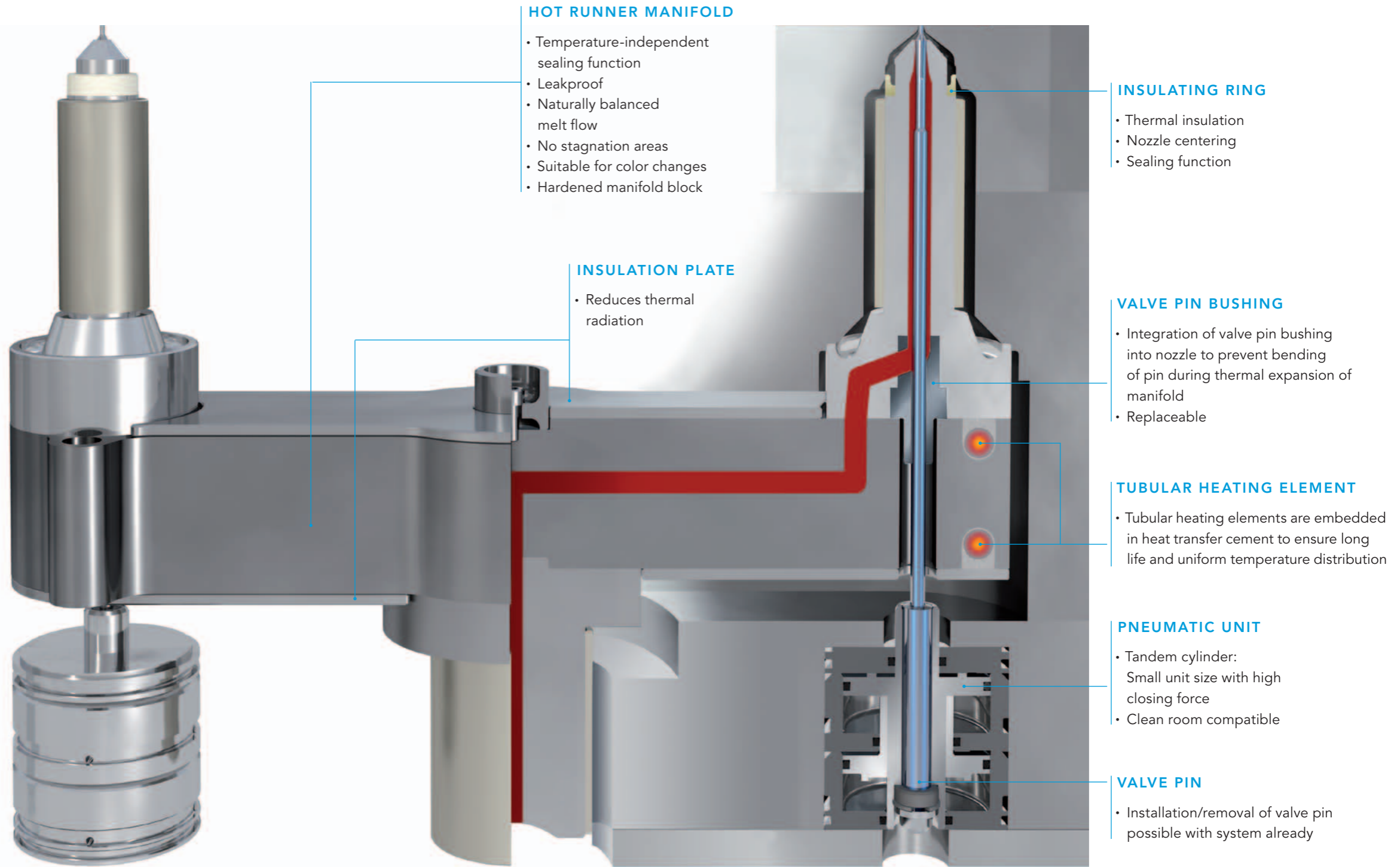
Cylindrical Valve Gate – the Original by männer



Precentered Cylindrical Valve Gate

During the closing movement, the valve pin is first precentered by an angled guide area and then positioned perfectly in the gate orifice by means of a cylindrical guide. Nozzle and valve pin are designed to provide maximum performance and long life.

- Superior gate quality
- Large gate cross section
- Minimal pressure drop
- Low shear rates
- Long life with minimal wear and low maintenance
- Defined opening and closing of the gate orifice
- Processing of demanding materials with narrow processing windows
- Short cycle times
- Individual heating control
- Cascade injection molding possible
- Clean room compatible (pneumatic barrel)





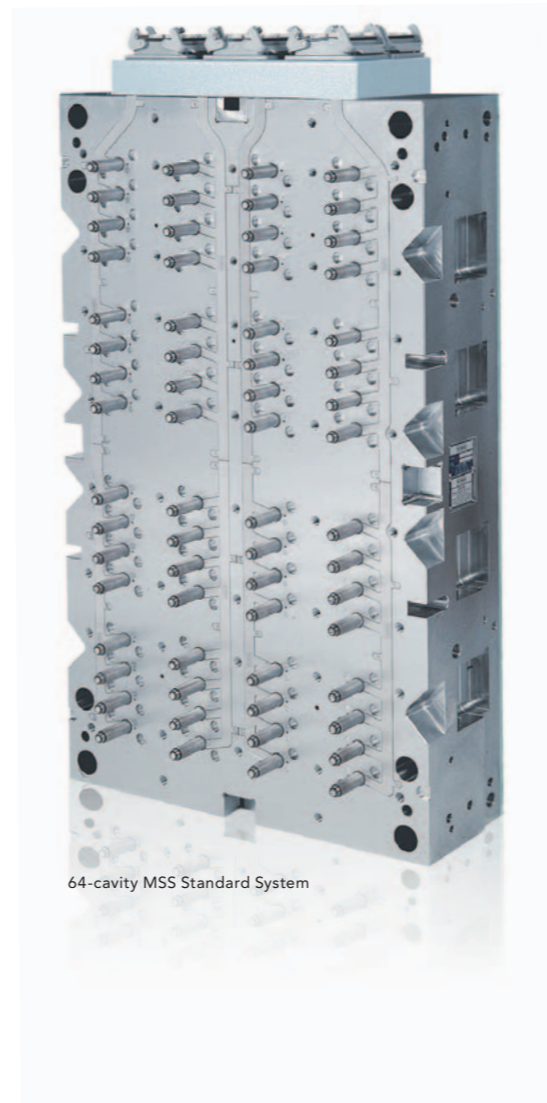
128-cavity MMS SLIMLINE



32-cavity MMS SLIMLINE

Hot Halves

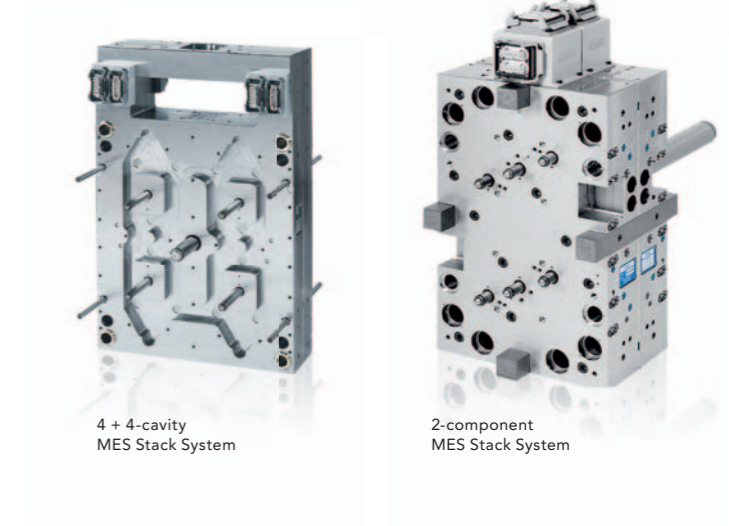
We offer our customers fully assembled, wired, and tested hot halves, helping to reduce the time required for mold installation and lower costs. Our hot halves can be custom-designed according to customer specifications.



64-cavity MSS Standard System



32-cavity MMS multiple drop system



4 + 4-cavity MES Stack System

2-component MES Stack System

Valve pin drive: individual or plate-actuated

We deliver your hot half with individually controlled pneumatic units or with a pin actuation plate furnished with a pneumatic or electrical drive depending on the application involved.

Pneumatic individual drive

- Proven and easy to maintain
- High-speed opening of the pins positively impacts the cycle time

Pneumatic plate actuation

- Ideal for synchronized filling of high-cavitation molds

Electrical plate actuation

- Ideal for synchronized filling of high-cavitation molds
- Customizable path profile
- Variable positioning of pins

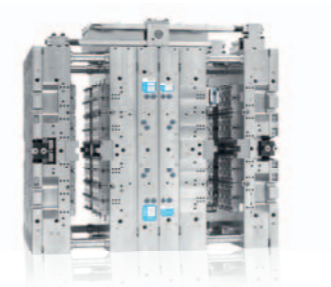
	Pneumatic individual	Pneumatic plate actuation	Electrical plate actuation
Mold assembly height	+	o	-
Acquisition costs	+	o	-
Maintenance	+	o	o
Procurement of replacement parts	+	o	-
Replacement part costs	+	+	-
Operating costs/electricity	o	o	+
Complexity	+	+	-
Shut-off capabilities	+	-	-
Balance	+	+	+
Opening- and closing profile	-	-	+
Variable pin positioning	o	o	+
Tight nozzle pitch	o	+	+
Cycle time	+	o	o

+ positive o neutral - not optimum

High-precision molds

For large-volume production of reproducible injection-molded parts with maximum part-to-part consistency

Extremely durable and easy-to-maintain high-performance molds with optimum temperature control for short cycle times.



Valve gate hot runner systems

Tailored and reliable

Recognized as the superlative hot runner solution for impeccable surface quality, part-to-part consistency, and process reliability.



moldMIND



The black box of the injection mold

Tamper-proof recording of all process-relevant data, providing factual evidence in the event of disputes and for other uses.

Your One-Stop Source

Reliability and cost-effectiveness in production:

- Perfectly coordinated components
- Extensive engineering know-how
- Dedicated contact person for your project



duo-män

Injection molding units for multicomponent applications

Turn one component into two – high-precision dosing of even the smallest injection volumes.

HCS 2 series



Temperature controllers

Easy-to-use control technology with the latest functions such as early recognition of leaks.

micro-män



Production cells for micro injection molding

For both large-volume and small-scale production of precision miniparts and microparts. Can be custom configured for a wide range of production needs.

männer

SOLUTIONS FOR PLASTICS

A business of BARNES GROUP INC



Plant I: High Precision Molds in Bahlingen

Plant II: Hot Runner Systems in Bahlingen

Plant III: in Bahlingen

Plant IV: High Precision Molds in Au, Switzerland

Plant V: Manner USA, Inc.

männer develops high-tech solutions for injection molding applications. We offer high-performance molds, tailored valve gate hot runner technology, and innovative micropart manufacturing systems for the production of plastic parts capable of meeting the most demanding requirements for precision and surface quality.

Founded in 1965, männer is among the industry's leading suppliers, with over 400 employees and production, sales, and service locations in Europe, the USA, and Asia.

Headquarters in Bahlingen

