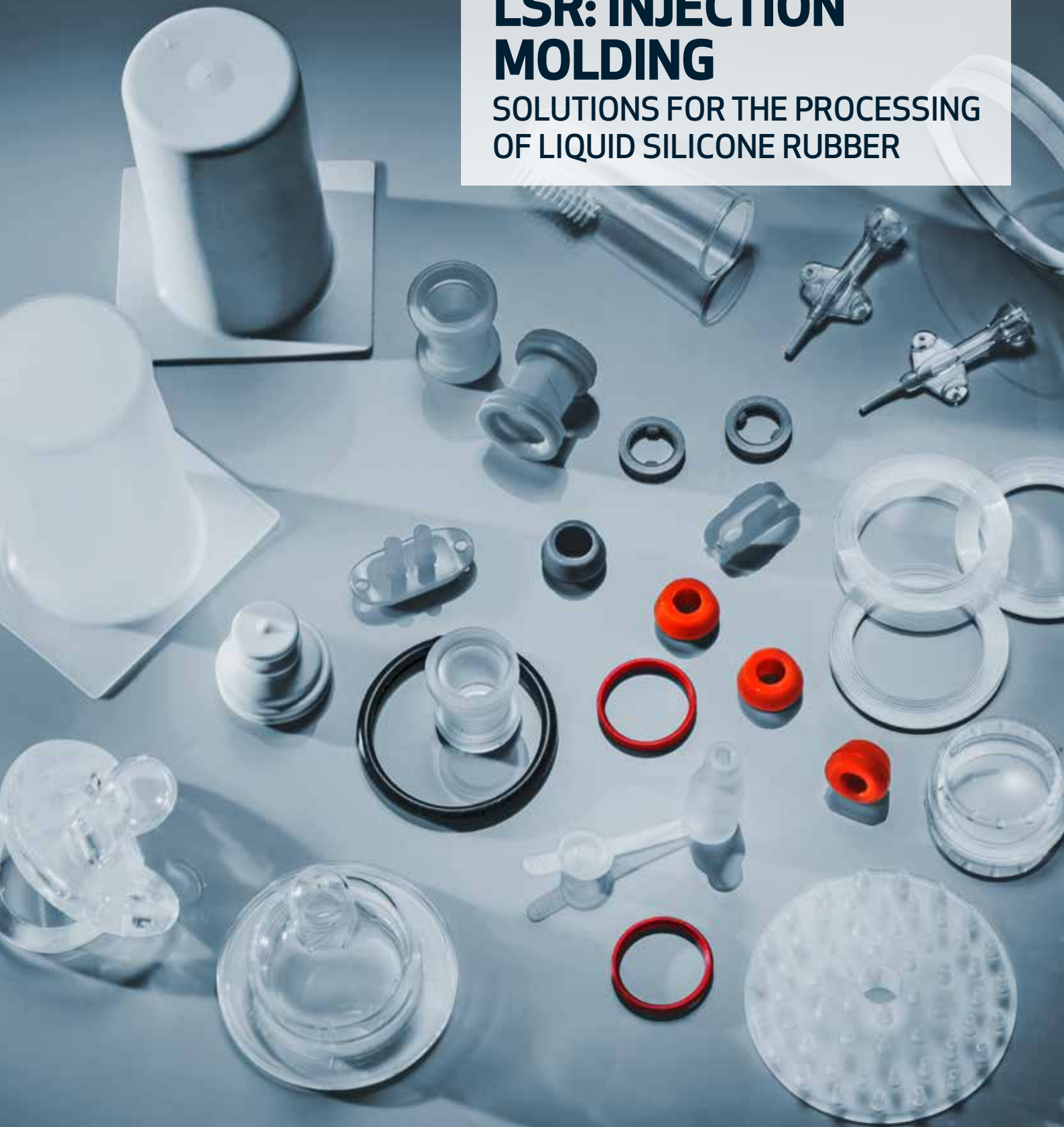




A MEMBER OF THE
HILGER&KERN GROUP

LSR: INJECTION MOLDING

SOLUTIONS FOR THE PROCESSING
OF LIQUID SILICONE RUBBER





We understand the challenge at hand

Stability and reliability in continuous use

Secure production processes in the case of high loads are a key requirement for your business success. Thanks to robust technology, we ensure that your production runs reliably – with even shorter set-up times.

The continuously growing demand for silicone products is due to the special properties of the material. For example, it can be reformed even after it has been processed. As high elasticity is needed for many products, this key distinguishing feature compared to other materials is becoming increasingly important. The high temperature stability of the finished products is another

significant factor. Consequently, its use is growing in various industries – from automotive production and domestic appliance technology to lifestyle products. As liquid silicone has a low reaction with other substances, it is now also increasingly being used in medical technology.

DOPAG systems in operation

In relation to LSR, DOPAG is one of the world's leading providers of high-quality systems technology thanks to our precise, flawless processing. Our success is based on our extensive experience in processing liquid silicone (LSR) for various types of challenges spanning many different industries.

Close collaboration with our customers and project partners ensures that our systems are tailored precisely to the particular requirements and that top-quality products are produced.



silcomix



The silcomix is a compactly designed, electrically driven piston pump, metering and mixing system. It is used for continuously processing medium to high-viscosity, silicone-based media with a mixing ratio of 100:100.

Metering is carried out directly from the original containers with a size of 20 or 200 l.

Technical data

Outflow rate	up to 1.2 or 3.6 l/min (at max. 20 or 12 double strokes per minute and at MR 100:100, depending on viscosity)		
Mixing ratio	100:100 (further ratios available on request)		
Color injection metering	up to 4 colors with a ratio of 0.2 - 5 % each		
Maximum working pressure	250 bar		
Material supply	20 or 200 l		
Viscosity	up to 1,000,000 mPa s (higher viscosity available on request)		
Operating voltage	400/230 VAC 3/N/PE / 50/60 Hz	480 VAC 3/PE / 50/60 Hz	200 VAC 3/ PE / 50/60 Hz
Dimensions (D x W x H), Lifter retracted	960 x 1,320 x 1,920 mm		

Equipment

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Standard

- Pneumatic driven rams
- Follower plate for 200 l containers
- Static base support
- Servo-electrically driven piston pumps with 'SWIPSYNC'
- Material pressure monitoring via pressure sensors
- DOPAG MR40 metering calculator
- System operation via 7" colour touch panel
- Analogue level monitoring
- High-pressure material supply package
- Injection pressure sensor
- Real-time remaining time display
- Interface for all well-known manufacturers of injection moulding systems

Optional

- Drum roll-in unit
- Drum roller conveyor
- Active, pneumatic base support
- Removable follower plates for 20 l containers
- Material screens for follower plates
- Automated drum and pump ventilation
- Mixing ratio monitoring (volume measuring cells)
- Pigment or additive metering – up to 4 pigments/additives available
- Empty signal for 10 l pigment supply
- Level detector and electrical agitator for pigment container
- Pigment/additive quantity measurement (volume flow, quantity)
- Additional mixing units
- Mixer cooling
- Metering pressure monitoring at mixer with digital display
- Special operating voltage

Benefits for you

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- **High energy efficiency** through servo-electrically driven piston pumps
- **Extremely low material waste** through simultaneous drum drainage and use of special supply pumps (material residual quantity in drum <1 %)
- **User-friendly system operation** thanks to 7" touch panel
- **Precise adherence to mixing ratio** through synchronous switching of piston pumps (SWIPSYNC)
- **Compact, space-saving system design**
- **Compatible with pallet trucks and forklifts**
- **Extremely good control behaviour**; even small shot sizes are possible in optimal quality
- **Flexible operation** thanks to processing from 20 or 200 l containers (on a chassis)
- **Process reliability** thanks to data monitoring and archiving
- **Processing of abrasive media for pigment metering** through special sealing technology



Revolutionised LSR mixing unit

Previously, setup work on LSR mixing units was a complicated process that took a long time. It was a job that required tools and sometimes even needed the involvement of several workers. Thanks to the new mixing unit for the silcomix LSR metering system, this has changed fundamentally. The new design is unique on

the market and simplifies operation while ensuring shorter setup times and greater system availability. Maintenance time and intervals can be reduced by up to 75 per cent. The low-viscosity silicones increasingly being used can also be processed without difficulty.

Faster, simpler, more efficient

The key benefit of the new mixing unit is that it is structured in such a way that the mixer or valve for the addition of pigments can be disassembled or replaced quickly and easy. It is also smaller and more compact than the previous model. This simplifies the setup work considerably. The static mixing system can be replaced easily thanks to the new design. Any one-way mixer on the market can be used, as well as stainless steel mixers. The modular design of the unit ensures even greater flexibility, as individual

components can be replaced in various sizes as desired. This functionality takes into account the fact that materials of increasingly low viscosity are being used in production and that cycles times and the overall processing time are getting ever shorter. For users, the new design simplifies operation and means that the system is ready to use again more quickly. Different products can be manufactured easily on just one system in future. The mixing unit can be used on practically any LSR injection moulding system.

Benefits for you

- Simple maintenance and cleaning
- Very short setup times (<5 mins)
- Very long service life
- Continuous temperature control for constant processing temperature; water cooling via injection moulding system
- Designed for low- and high-viscosity media
- Precise metering of minimal quantities
- Integrated snuff-back function closes the valve at the mixer outlet against the flow direction and does not generate any additional build-up of pressure for the injection moulding system – perfect in the case of small cavities
- Ball valve ensures bubble-free flooding of the material after the mixer is replaced, for example.
- Can be used on all LSR systems

Reliable components

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Reliable components for a stable production process



Base support



Ventilation
Follower plate 200 l



Ventilation pump



Ventilation
Follower plate 20 l



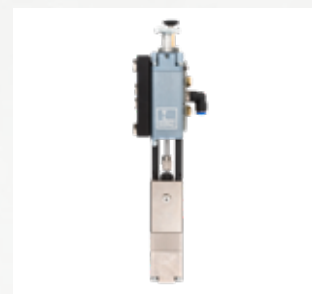
Material screen
beneath follower plate
(strainer/optimised for
residual quantities)



Pigment supply 1 l



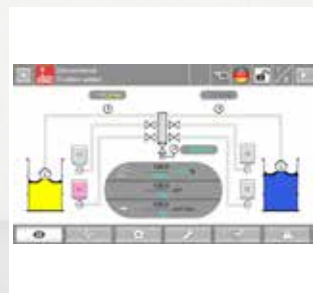
Pigment supply with
plastic container and
piston pump



Pigment valve



Volume counter
Pigment metering



Flow chart



Control panel



Process data
information

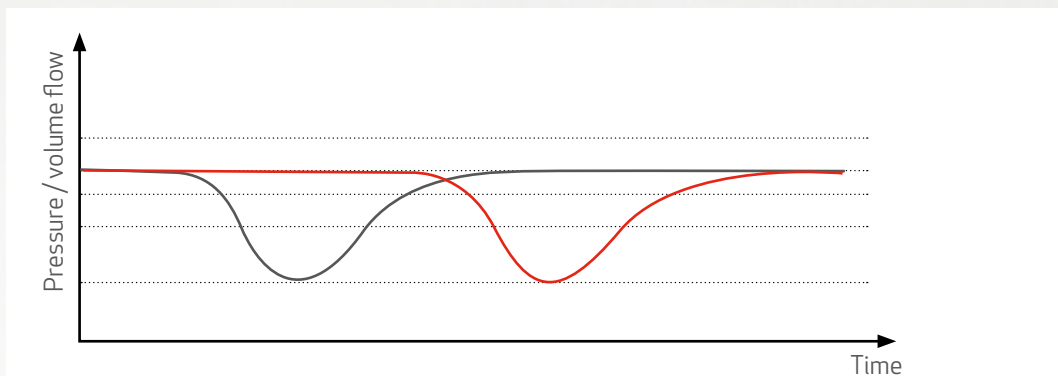
Precise SWIPSYNC

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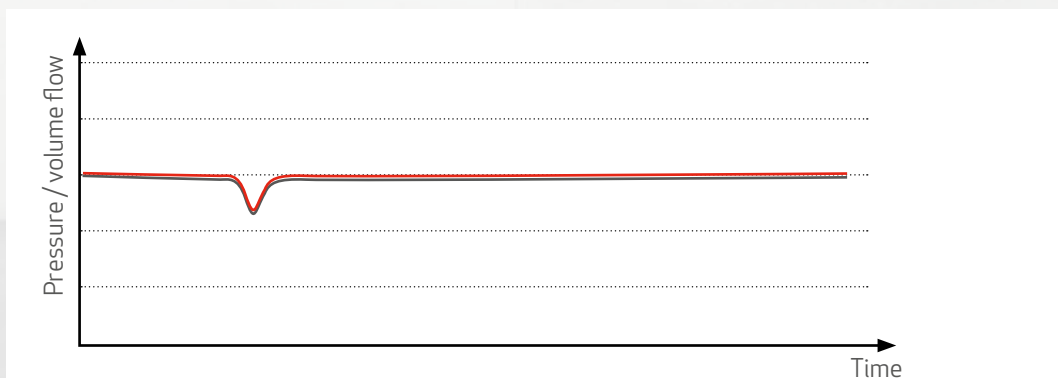
Synchronous switching of servo-electrically driven piston pumps for precise adherence to mixing ratio

The servo-electrical drive enables synchronous switching of the piston metering pumps, regardless of the current position of the respective pump piston (switching point synchronisation). This prevents deviations from the mixing ratio due to different switching points. The demand-based, automated adaptation of the volume flows of individual components by means of the lifting speed of the piston metering pumps

ensures uniform drum drainage of the A and B components. The collapse in pressure flow, and thus also volume flow, is considerably reduced through a special control of the servo drives, with the time also significantly shortened.



Without SWIPSYNC



With SWIPSYNC

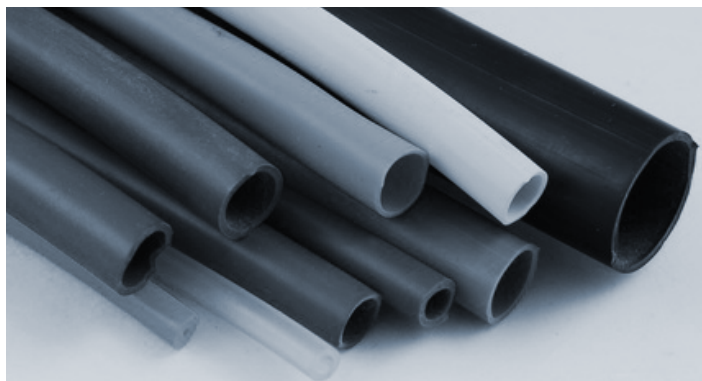
Versatile and productive

Our silcomix is used in many different industries and applications



Automotive industry

e.g. seals on car keys, general connector seals, valves, membranes, LED lens optics, cable harness seals



Electrical engineering

e.g. coatings, various seals for smartphones, watch straps, seals for 'brown goods'



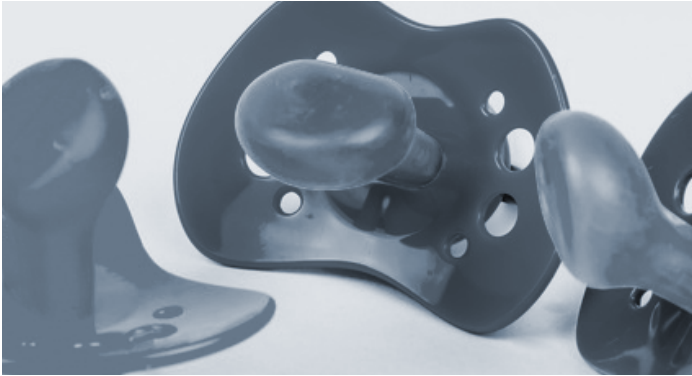
Household and kitchen

e.g. baking moulds, kitchen utensils, various seals for perfume bottles



Aviation and aerospace industries

e.g. valves, membranes, cable harness seals



Baby care

e.g. soothers and bottle teats, toys, teething rings, toothbrush handles



Medical technology

e.g. respirators and syringes, nose pads and temples for glasses, pumps for nose drops, surgical replacement parts (e.g. kidney repair)



Sanitary technology

e.g. shower heads, shower frame seals (by the yard/metre), valves (fittings)



A MEMBER OF THE
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We are one of the world's most experienced manufacturers of high-quality metering technology. Wherever adhesives, resins, silicones or lubricants are metered and applied in industrial production, we offer reliable, precise solutions. We provide systems and components for highly automated production processes, including for the automotive, wind, household appliances and electrical industries, as well as for aviation.

DOPAG is part of the HILGER & KERN GROUP, a reliable supplier and a development and service partner to industrial companies in a variety of market segments for almost 100 years. The group employs around 350 people and has subsidiaries and distributors in more than 40 countries.



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