



Feinpruef Spinning Pumps, Spin Finish Metering Pumps and Test Stands

Certified Quality
DIN EN ISO 9001



Mahr Metering Systems



Spinning Pumps – A Secret Life

Like Clockwork

Running with the precision and reliability of a Swiss clock, the spinning pump works in the background day in, day out. Feinpruef Spinning Pumps by Mahr Metering Systems deliver the material from which the finest filaments are made. Feinpruef Spinning Pumps meter the synthetic fibers used in today's textile world, to create everything from microfiber fabrics, sheer stockings, swim wear and diapers to non-flammable furnishings. They pump the polymers used in the manufacture of industrial-grade fibers for aircraft construction, tire casings, safety belts, fan belts, airbags, filters, filling materials, space suits,

all types of protective clothing, textile canopies, and furniture coverings.

These are just a few of the many applications in which Feinpruef Spinning Pumps by Mahr Metering Systems provide the core techno-

logy in synthetic fiber production. They deliver filaments of perfectly consistent thickness with precision down to the last thousandth of a millimeter over hundreds of miles of thread. That is the kind of process accuracy needed in the manufacturing of modern synthetic filaments with highly specific properties. Feinpruef Spinning Pumps by Mahr Metering Systems meter polymers precisely and continuously with no pulsation – for the ultimate in filament quality.



*Where quality counts –
Feinpruef Spinning Pumps
by Mahr Metering Systems,
the technology is on the inside*

From High Fashion Filaments to Rugged Industrial Fibers

Your Filaments are Our Business

Your production depends on exact metering of the materials you process, and your Spinning Pumps must be precisely tuned to the specific requirements of your manufacturing process. Mahr Metering Systems has a wide product range that covers

virtually all applications – including yours.

- Filaments for highly elastic stretch fabrics
- hollow fiber for medical and filter purposes
- fibers for high strength applications such as safety belts
- fine denier fiber for the finest of haute couture

Hot Processing

Feinpruef Spinning Pumps by Mahr Metering Systems consistently meter all polymers precisely and force them at high pressure through filament-forming elements such as fine-capillary spinnerets. Take-up machines wind the finished filaments onto spools at high speed, delivering unbroken threads over several hundreds of miles in length.

System downtime, brief interruptions in the production process or even the slightest fluctuation in metered flow are a major cost factor no manufacturer can afford. Even under the most extreme pressure and temperature conditions, Feinpruef Spinning Pumps by Mahr Metering Systems offer you the process reliability you need to maintain the highest metering accuracy, at process temperatures of 300°C [600°F] and pressures

*High Fashion Flowing Apparel:
Viscose and Polyester Silk made
with Feinpruef Spinning Pumps
by Mahr Metering Systems*



*Single-outlet port
Spinning Pump,
rectangular design*



*Multiple-outlet port
Spinning Pump,
rectangular design*



*Multiple-outlet port
Spinning Pump,
planetary design*

of up to 700 bar [10,000 psi]. The first-class material quality of Mahr Metering Systems products, engineering design according to process conditions, and the micro-precision of all manufacturing processes guarantee a level of pump quality that is recognized throughout the world.

Technical and Engineering Support

Our technical specialists are always available to provide the support you require during the planning and engineering phase of your system design. This will ensure the optimum spinning pump selection to meet your process parameters. All Pumps are selected based on the type of polymer, flow rate requirement, melt viscosity, process temperature, pressure and process technology

of your product. This ensures that you receive precisely the Spinning Pump required and guarantees constant product quality and maximum reliability.



*Safety hangs on strong threads:
Feinpruef Spinning Pumps by Mahr Metering Systems produce thread for airbags.*

stance. They meet all the requirements of today's hot melt, wet and dry spinning techniques.

Our Planetary Metering Pump design has been developed from our tried and tested Spinning Pumps. Their special construction makes it possible to integrate up to eight metered streams on one pump level.

Pressure Increase Pumps are usually mounted behind the extruder. Under high counter-pressure, they ensure uniform and regulated metering. They deliver polymer melts in the manufacturing of foils, films, profiles, granulates, and similar materials.

Vacuum Discharge Pumps with double heated jackets guarantee the optimal discharge of highly viscous polymers from reactors, with only slight product shearing.

Correct Pump Selection

Feinpruef Spinning Pumps by Mahr Metering Systems excel with the ultimate in precision, wear, corrosion and temperature resi-



*Pressure Increase Pump
with electric
heating elements*

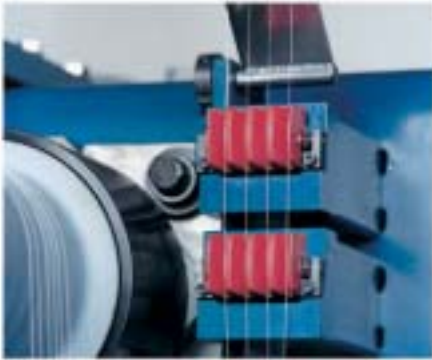


*Pressure Increase Pump
double jacketed for
liquid heating/cooling*



*Vacuum Discharge Pump
double jacketed for
liquid heating/cooling*

Tailored Pump Configurations



Applying spin finish

High Speed Spinning and Spin Finish Application

In the production of high quality synthetic fibers, Feinpruef Spin Finish Metering Pumps by Mahr Metering Systems are the most cost-effective method of applying finish to the yarn. Their highly accurate metering capabilities allow precise application of spin finishes, such as antistatics, bonding agents, slip agents and a wide range of additives. This prevents filament breakage and electrostatic charging, and also gives the filaments greater elasticity and improved processing properties for later production processing. The spin finish is fed from the Pump to the thread guide, where it is taken up by the

filament as it passes.

The advantages of this system over finish rolls are

- perfectly uniform application without loss of spin finish
- exact metering of the finish
- closed system from the tank to the thread guide
- no bacterial or atmospheric contamination
- excellent processing of treated fibers and filaments
- corrosion-resistant and hard-wearing special steel



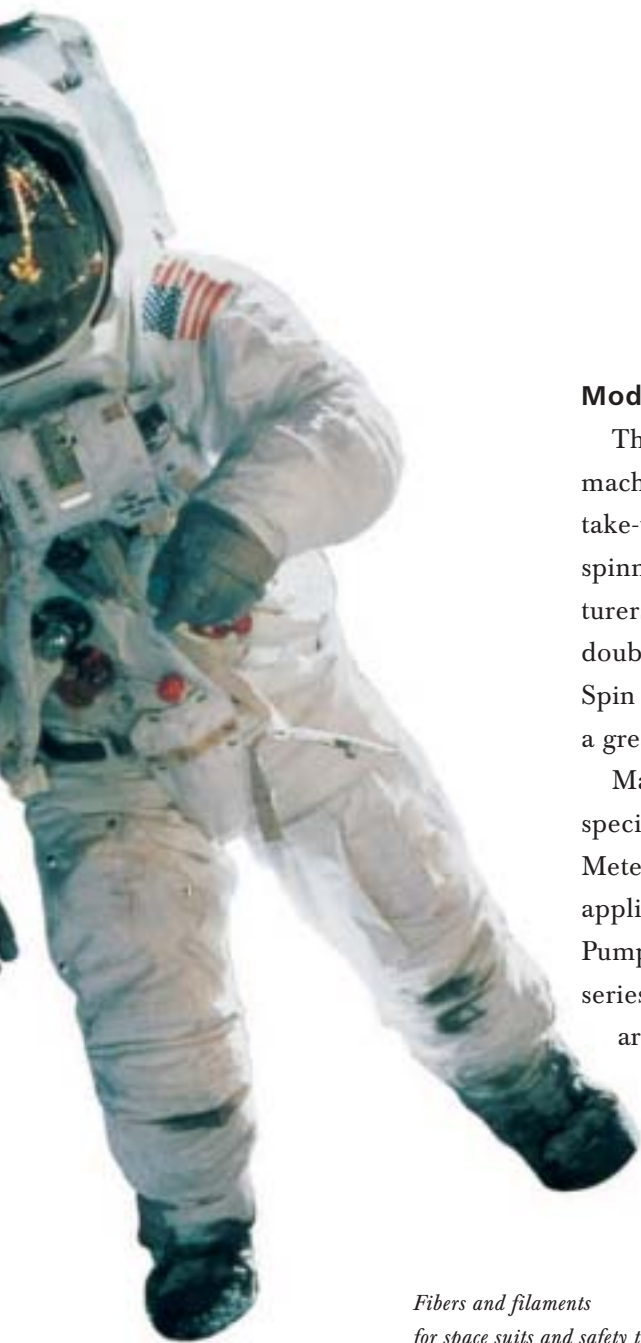
Double-outlet port Spin Finish Pump



Four-outlet port Spin Finish Pump



Eight-outlet port Spin Finish Pump



Modular Construction

The trend in today's spinning machines is to go for as many take-up points as possible at each spinning section. With manufacturers now frequently opting for double spin finishes, this calls for Spin Finish Metering Pumps with a greater number of discharge ports.

Mahr Metering Systems has specifically designed its Spin Finish Metering Pumps to meet these application requirements. Several Pump elements are arranged in series, creating a high-tech stacked arrangement of up to 24 outlets.

Synchronous Drive

For more demanding applications, Mahr Metering Systems can supply Feinpruef Spin Finish Metering Pumps in a single drive unit operated by a frequency controlled motor. This technology guarantees absolute synchronous operation of all Spin Finish Metering Pumps linked to the same frequency inverter.

*Fibers and filaments
for space suits and safety tethers*



Twelve-outlet port Spin Finish Pump



Twentyfour-outlet port Spin Finish Pump



Drive Unit with Spin Finish Pump

Testing is Believing



*Discharge test of Spinning Pumps
by Mahr Metering Systems*



Discharge and pressure test on Test Stand

World Standard

You must be able to rely on your Spinning Pumps 100%. That's why we at Mahr Metering Systems check our Pumps before they leave the factory – 100%. Your production process may require you to run regular checks yourself. This is why we offer Hydraulic Test Stands for Spinning Pumps. Mahr Metering Systems Test Stands have the highest measuring accuracy available in today's market. They offer complete reproducibility of all results with up to four measuring stations. They play a key role in the quality assurance of synthetic fiber production at customers' locations all over the world.

Performance Under Pressure

Our Test Stands put your Pumps under performance pressure. They have to deliver a testing oil against

a preset counter-pressure. The delivered flow rate of the discharge ports is then measured under various differential pressures and precisely documented. For increased testing accuracy, the test is carried out under defined conditions with a low-viscosity silicone oil (e.g. 0.5 Pascal). All other testing conditions remain constant while the discharge pressure is adjusted to the correct differential pressure. The fluid metered through the Pump is collected and weighed. Evaluation of these measurements gives the two vital Pump values needed to assure the discharge quality: the "metering accuracy" and the "delivery deviation" of the Pump discharge ports at various differential pressures. These results give you the certainty that everything is running the way your production process requires.

*Test Stand for twelve-outlet
port Spinning Pumps*



Total System Solutions

Total Coverage

Feinpruef Spinning Pumps by Mahr Metering Systems have proven themselves worldwide because of their high metering accuracy, and excellent wear and corrosion resistance. They are used for an immense number of very different polymers, in a wide variety of operational conditions, and for an extremely wide range of volumes from 0.05 kg/h to 20,000 kg/h. Mahr Metering Systems offers you a tailor-made solution for practically every task, whatever your needs, right up to complete ready-to-install systems.

Gear Pumps for extrusion. These are used in the production of semi-finished products such as plates, profile sections, tubes, plastic sheets and tubing.

Vacuum Discharge Pumps specifically developed for polymer

discharge from vacuum reactors.

These double heated jacket polymer Pumps have excellent material saving qualities and long life.

Package Solutions

If you are looking for complete, ready-to-install systems rather than single components for your production, Mahr Metering Systems has the answer for you. Our experts will give you comprehensive advice and will compile preconfigured Pump packages to suit your needs. For example, we can deliver Metering or Vacuum Discharge Pumps, electrically or liquid heated, including mounting, safety coupling, coupling guard, gear motor with mechanical or inverter speed control and, if required by your production process, with pressure control and control box.



Mahr measuring technology checking the quality of gearwheels in Spinning Pumps

Measured by Mahr

Our comprehensive Pump range also includes an entire program of state-of-the-art measuring technology developed by Mahr. If you are looking for reliable, cost-effective Metering Equipment for the kind of consistent quality you need to keep your customers satisfied, look to Feinpruef Technology by Mahr Metering Systems. Call us for further information – we'll be glad to help.



Ready-to-install system for Discharge Pump



Drive System

Facts & Figures

Spinning Pumps



Single-outlet port Spinning Pump



Double-outlet port Spinning Pump

Number of discharge ports	Capacity per discharge port cc/rev.
1 (2-gear-design)	0,1 – 250
2 (2-gear-design)	0,1 – 30
2 (3-gear-design)	0,1 – 150
3 (2-gear-design)	0,1 – 10
3 (3-gear-design)	0,1 – 30
4 (2-gear-design)	0,1 – 10
4 (3-gear-design)	0,1 – 30
Polymer:	polyamide, polyester, polypropylene, polyacryl, polyethylene, polyurethane and other elastomers
Operating temperature:	up to 350°C [700°F]
Discharge pressure:	500/700 bar [7,100/10,000 psi]
PUMP Material:	<i>Standard:</i> F 16 – highly tungsten-, vanadium- and chrome-alloyed, heavy duty, Super High Speed Steel [SHSS] <i>Alternative:</i> E 20 – highly chrome alloyed special steel, with added vanadium, tungsten and molybdenum <i>Special material:</i> on request
Drive type:	drive plug, or extended drive shaft

Planetary Metering Pumps



Eight-outlet port Planetary Spinning Pump

Number of discharge ports	Capacity per discharge port cc/rev.
2	0,1 – 30
3	0,1 – 30
4	0,1 – 20
6	0,1 – 6
8	0,1 – 6
10	0,1 – 3
12	0,1 – 3
16	0,1 – 3
24	0,1 – 3
Polymer:	polyamide, polyester, polypropylene, polyacryl, polyethylene, polyurethane and other elastomers
Operating temperature:	up to 350°C [700°F]
Discharge pressure:	500/700 bar [7,100/10,000 psi]
Surface area:	Ø 100, 120, 146, 160 mm, 1, 2 or 3 gear levels dia. 4, 4.7, 5, 6.3 inch, 1, 2 or 3 gear levels
Pump Material:	<i>Standard:</i> F 16 – highly tungsten, vanadium and chrome alloyed, heavy duty, Super High Speed Steel [SHSS] <i>Special material:</i> on request
Drive type:	drive plug, or extended drive shaft

Discharge Pumps/Pressure Increase Pumps

Pump type	Capacity per discharge port cc/rev.
Discharge Pumps with double jacket heating	30 – 6000
Pressure Increase Pumps with double jacket heating	30 – 6000
Pressure Increase Pumps with electric heating	0,3 – 6000
Polymer:	polyamide, polyester, polypropylene, polyacryl, polyethylene, polyurethane and other elastomers
Operating temperature:	up to 350°C [700°F]
Discharge pressure:	up to 300 bar [4500 psi]
Design:	in-line pump or face mounted
Material:	<i>Standard:</i> N23 – highly chrome alloyed cast steel with added nickel and molybdenum F24 molybdenum, tungsten, vanadium and chrome alloyed High-Speed Steel <i>Special material:</i> on request
Drive type:	extended drive shaft
Drive:	according to customer specification



Vacuum Discharge Pump with double jacket



Pressure Increase Pump with double jacket

Spin Finish Metering Pumps

Number of discharge ports	Capacity per discharge port cc/rev.
1, 2, 4, 6, 8, 10, 12, 16, 24	0,01 – 0,16
1, 2, 4, 6, 8, 10, 12, 16	0,01 – 0,3
1, 2, 4, 6, 8, 10, 12	0,01 – 1,2
1, 2, 4, 6, 8	0,6 – 30
1, 2, 4	1,2 – 50
Fluid:	spin finish, avivagen
Operating temperature:	up to 150°C [300°F]
Outlet pressure:	up to 10 bar [140 psi]
Material:	<i>Standard:</i> N19 – highly chrome alloyed, corrosion resistant, and wear resistant special steel <i>Special material:</i> on request
Drive:	according to customer specification



Spin Finish Metering Pump with six-outlet ports



Spin Finish Metering Pump with drive

* This is just a selection from our complete range of Pumps. Please call us and let us know your operating conditions. Our project engineers will give you detailed advice and suggest a solution that best meets your needs. Detailed leaflets are available on request. These printed specifications are for informational purposes only. Mahr Metering Systems reserves the right to make technical changes. Copyright reserved.

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