MAAG Group

a DOVER company

PUMP & FILTRATION SYSTEMS ›

MAAG

Extrusion Gear Pumps

www.maag.com

Customized Solutions

Thermoplastic manufacturers and processors need efficient and reliable components that can adapt to a wide range of applications. At MAAG Group our team of extrusion experts has the combined know-how of tens of thousands of applications behind them to provide the right solution for your needs. From standard to special configurations we analyze and help you to provide the optimum solution to succeed in a competitive environment.

We select the most suitable methods and processes for your application. You can test your innovative plastics and try out innovative ideas under practice-based conditions together with us in our test and development centers. Optimally designed on a rheological and materials engineering level, our machines and systems ensure your production is safe, reliable, and cost-effective.

About us

The MAAG Group is a broadly diversified global solutions provider with integrated and customizable systems in process technology for the polymer, chemical, petrochemical, pharmaceutical and food industries. Its Pump & Filtration Systems, Pelletizing & Pulverizing Systems, Recycling Systems and Digitalization divisions consolidate the many years of experience and in-depth know-how of the AMN, AUTOMATIK, ETTLINGER, GALA, MAAG, REDUCTION, SCHEER and XANTEC product brands. The MAAG Group currently employs over 1,250 people at production sites in Switzerland, Germany, France, Italy, the USA, and China. Additional sales and service centers in Malaysia, India, Thailand and Brazil ensure close attention to customers' needs.

Applications for highly specific materials

Thermoplastics

Extrusion processes are used to convert thermoplastics into pipes, hoses, blown films, cable sheaths, aerated plastics, and profiles. Our gear pumps optimize the extrusion process since they convey the product stream precisely and apply the die pressure efficiently, thus relieving the extruder of pressure build-up. This increases the production plant's output, improves the end product quality thanks to the reduced temperature input and prolongs the extruder's service life. The damping effect of the gear pumps also mitigates or eliminates pulsations and pressure peaks in the extruder. Material savings can be achieved by minimizing the tolerance range.

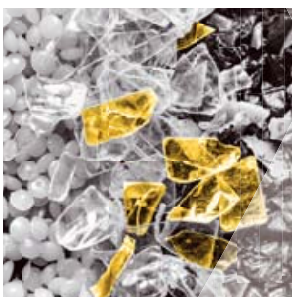
Compounding & Masterbatch

Our melt pumps provide the necessary pressure to manufacture a wide range of quality pellets from spherical to cylindrical to micro. Screen changers are used to protect the die plates, reliably filtering contaminants from the melt. Extrusion pumps build up the pressure for extruding high-content compounds and masterbatches such as polyolefins with talc, $CaCO_3$ or soot without forcing the temperature up unnecessarily high. Our screen changers guarantee that agglomerates are retained and do not pass through to the following process.

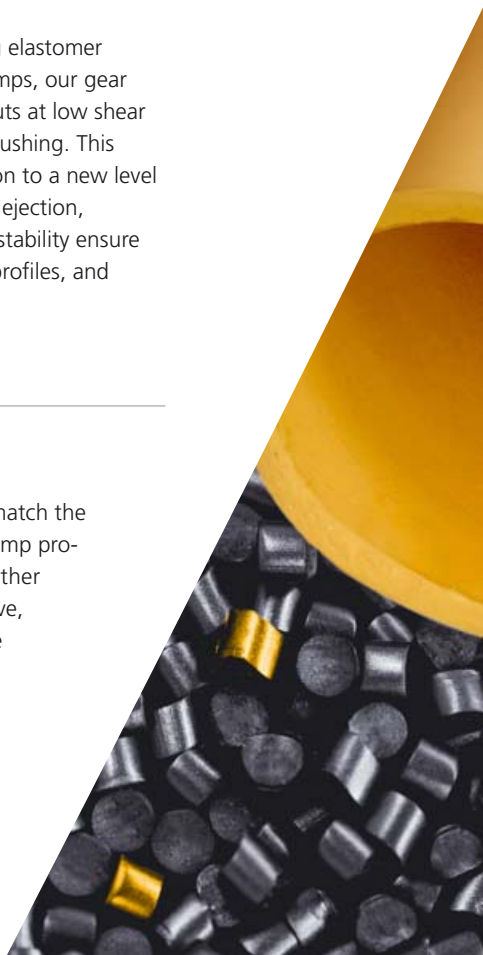
Elastomers

Gear pumps are used to convey highly viscous rubber during elastomer plastic production. Used as transfer, booster or metering pumps, our gear pumps can easily achieve high pressure levels and throughputs at low shear rates thanks to optimized gear tooth geometries with low crushing. This optimized performance allows us to bring elastomer extrusion to a new level in terms of cost efficiency and process engineering. Efficient ejection, minimum tolerance deviations and rapidly achieved process stability ensure optimum product quality in manufacturing tires, elastomer profiles, and other silicon parts.

Recycling



Our gear pumps and accessories offer different features to match the requirements of recycling applications. The **x**^{6} extrex gear pump provides a higher volume between the teeth as compared to other models in the market and our latest innovation, the Duo Drive, prevent the gears from touching each other. Both features are offering advanced acceptance of high filler content and impurities as they apply in recycling and are increase the lifetime of the melt pump.



Our promise to you

Technology

MAAG is known worldwide as a pioneer and technology leader in the development and manufacturing of gear pump systems and solutions. MAAG has always focused on keeping its technology up-to-date and tailor it to meet the needs of individual customers. We promise to go beyond your expectations in this regard.

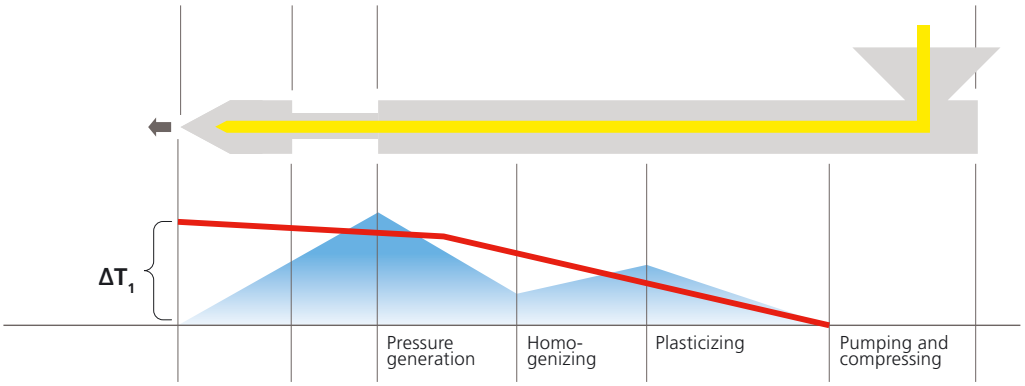
Innovation

The result of our values and aspiration for customer satisfaction made our extre**x**^{6} gear pumps come alive. We are confident that the new optimized design, materials used, opens new doors in the application ranges. We promise that this innovation takes the flexibility and maintenance to the next level and ease the efforts put in by the customer in a pump's lifetime.

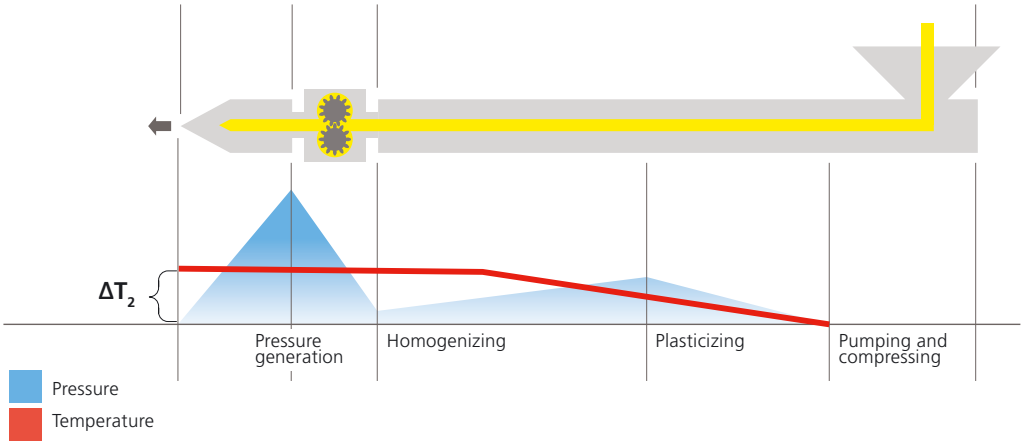
Quality

Customer satisfaction has always been our top priority. We dedicate a major part of our resources to maintaining and enhancing quality and performance of our systems.

Die and extruder without gear pump



Die and extruder with gear pump



Our pump benefits

- **Higher productivity**

The new **x**[6] class design gear pump can increase the productivity of your system by up to 25%.

- **Higher lifetime**

Up to 50% longer life of the **x**[6] class design gear pump versus a comparable gear pump. This is extremely suitable for highly filled processes and recycling applications.

- **Higher product quality**

The new **x**[6] class design gear pump helps increase the quality of the final product by:

- Maintaining low temperatures in the extruder and reduce the temperature increase in the gear pump
- Reducing the pulsations by up to 90%.

- **Less waste**

Significant reduction in pulsation ensures that product will remain within quality parameters allowing to save up to 10% in raw material rejections.

- **Less production costs**

Less power consumption of the extruder motor and lower power consumption of the gear pump are needed thanks to the optimized heating design.

- **Less maintenance costs**

By using the **x**[6] class gear pump, the extruder will need less torque, which will increase the life of the screws. The new **x**[6] class shafts are 25% more wear resistant versus the classic pumps.

Our portfolio at a glance

Gear pumps made by MAAG – a sturdy and reliable solution

Pump	extrex⁶ GU	extrex⁶ EP	extrex⁶ SP	extrex⁶ MP
Throughput (kg/h)	150 - 15000	140 - 12000	130 - 9000	40 - 6000
Pump size	25 - 160	25 - 160	25 - 160	25 - 160
Inlet Pressure (bar)	120	120	120	200
Differential Pressure (bar)	250	320	400	500
Outlet Pressure (bar)	370	440	520	700

Size comparison of pump models

extrex⁶	extrex GP	extrex HP	extrex HP	trudex
25	28	-	-	-
32	36	36	36	36
40	45	45	45	45
50	56	56	56	56
63	70	70	70	70
80	90	90	90	90
100	110	110	110	112
125	140	140	140	140
160	180	-	-	-

Drop in flange design former pump models

extrex⁶	extrex GP	extrex HP	extrex HP	trudex
ST (Flow optimized)	-	-	-	Yes
5R (Drop in classic pumps)	Yes	Yes	Yes	-

Materials
- Polyolefins
- Polyesters
- Polyamids
- Polycarbonates
- Styrene polymers
- Expandable polystyrene
- ABS/SAN
- Fluor polymers
- TPE
- Other polymers upon request

Options
- Defined tolerance classes
- Wired heating cartridge fully attached to connector
- Liquid heating with interconnection bores
- Pressure/temperature sensor bores in body
- Choice of materials for every application
- Cooling feature for shaft seals
- Special seal types

Accessories
- Adapter flange
- Sensors
- Support Carts / Base frames
- Drive units
- Control Systems
- Complete solutions

extre**x**^{6} GU

extre**x**^{6} EP

extre**x**^{6} SP

extre**x**^{6} MP

extrex^6 GU

General Use gear pump for thermoplastic applications

The extrex^6 GU gear pump is a general use design that elevates your process to the next level. With the new x^6 class design you have additional benefits compared to the classic gear pump designs.

Pump	extrex^6 GU
Throughput (kg/h)	150 - 15000
Pump size	25 - 160
Inlet Pressure (bar)	120
Differential Pressure (bar)	250
Outlet Pressure (bar)	370

Your Benefits

- + 10 % more spec. vol. than GP
- + 25 % more wear resistant
- + 25 % larger sealing surface

- - 12 % less energy consumption
- - 40 % less temperature increase
- - 90 % less pulsation

Outlet pressure: 370 bar

Application limits	
Viscosity:	30,000 Pas
Temperature:	350 °C

Technical specifications	
Housing, cover	Alloy steel
Gear shafts	Tool steel
Bearings	Tool steel
Shaft seals	Alloy steel
Pump heating	Electric/fluid

extrex^6 GU				classic GP
Pump size	**Spec. Vol. (ccm)**	**Throughput (kg/h)**	**rpm (min)**	**Ref. pump size**
25/32	12	174	325	28
32/40	25	298	276	36
40/50	48	503	239	45
50/63	96	873	207	56
63/80	194	1524	179	70
80/100	385	2569	152	90
100/125	764	4474	134	110
125/160	1545	7735	114	140
160/200	3082	13105	97	180

extrex⁶ EP

Extra Pressure gear pump for thermoplastic applications

The extrex⁶ EP gear pump is an intermediate pressure solution for applications requiring higher pressure, greater load bearing considerations for low lubricity products. With the new x⁶ class design you have additional benefits compared to the classic gear pump designs.

Pump	extrex⁶ EP
Throughput (kg/h)	140 - 12000
Pump size	25 - 160
Inlet Pressure (bar)	120
Differential Pressure (bar)	320
Outlet Pressure (bar)	440

Application limits	
Viscosity:	30,000 Pas
Temperature:	350 °C

Technical specifications	
Housing, cover	Alloy steel
Gear shafts	Tool steel
Bearings	Tool steel
Shaft seals	Alloy steel
Pump heating	Electric/fluid

Your Benefits

- + 28 % more pressure than GP
- + 40 % more spec. vol. than HP
- + 25 % more wear resistance
- + 25 % larger sealing surface

- - 12 % less energy consumption
- - 40 % less temperature increase
- - 90 % less pulsation

Outlet pressure: 440 bar

extrex⁶ EP				classic HP
Pump size	**Spec. Vol. (ccm)**	**Throughput (kg/h)**	**rpm (min)**	**Ref. pump size**
25/25	10	135	325	-
32/32	20	238	276	36
40/40	38	402	239	45
50/50	76	693	207	56
63/63	153	1202	179	70
80/80	308	2055	152	90
100/100	611	3578	134	110
125/125	1210	6058	114	140
160/160	2465	10481	97	-

extrex⁶ SP

Super Pressure gear pump for thermoplastic applications

The extrex⁶ SP gear pump is a high pressure gear pump for applications dictating high pressures and loads. With the new x⁶ class design you have additional benefits compared to the classic gear pump designs.

Pump	extrex⁶ SP
Throughput (kg/h)	130 - 9000
Pump size	25 - 160
Inlet Pressure (bar)	120
Differential Pressure (bar)	400
Outlet Pressure (bar)	520

Your Benefits

- + 32 % more pressure than GP
- + 26 % more spec. vol. than HP
- + 25 % more wear resistance
- + 25 % larger sealing surface

- - 12 % less energy consumption
- - 40 % less temperature increase
- - 90 % less pulsation

Outlet pressure: 520 bar

Application limits	
Viscosity:	30,000 Pas
Temperature:	350 °C

Technical specifications	
Housing, cover	Alloy steel
Gear shafts	Tool steel
Bearings	Tool steel
Shaft seals	Alloy steel
Pump heating	Electric/fluid

extrex⁶ SP				classic HP
Pump size	**Spec. Vol. (ccm)**	**Throughput (kg/h)**	**rpm (min)**	**Ref. pump size**
25/16	-	on request	-	-
32/25	15	131	276	36
40/32	31	279	239	45
50/40	61	436	207	56
63/50	122	757	179	70
80/63	242	1244	152	90
100/80	489	2230	134	110
125/100	966	3784	114	140
160/125	-	on request	-	-

extrex⁶ MP

Maximum Pressure gear pump for thermoplastic applications

The extrex⁶ MP is a high pressure gear pump for the most demanding thermoplastic applications. With the new x⁶ class design you have additional benefits compared to the classic gear pump designs.

Pump	extrex⁶ MP
Throughput (kg/h)	40 - 6000
Pump size	25 - 160
Inlet Pressure (bar)	200
Differential Pressure (bar)	500
Outlet Pressure (bar)	700

Application limits	
Viscosity:	30,000 Pas
Temperature:	350 °C

Technical specifications	
Housing, cover	Alloy steel
Gear shafts	Tool steel
Bearings	Tool steel
Shaft seals	Alloy steel
Pump heating	Electric/fluid

Your Benefits

- + 10 % more spec. vol. than trudex
- + 25 % more wear resistance
- + 25 % larger sealing surface

- - 12 % less energy consumption
- - 40 % less temperature increase
- - 90 % less pulsation

Outlet pressure: 700 bar

extrex⁶ MP				trudex
Pump size	**Spec. Vol. (ccm)**	**Throughput (kg/h)**	**rpm (min)**	**Ref. pump size**
-	-	on request	-	-
32/16	12	75	276	36
40/25	24	158	239	45
50/32	49	252	207	56
63/40	97	444	179	70
80/50	192	709	152	90
100/63	385	1306	134	112
125/80	773	2230	114	140
160/100	-	on request	-	-

Accessories

Perfect match

Optimal performance can only be expected from systems which are truly designed to work together. Our gear pumps and filtration systems are complemented by an extensive range of additional equipment for maximum productivity and top product quality in thermoplastic applications.

Customized

All accessories are specially developed to get the most out of your production. Accessories tailored to your application extend the service life of your extrusion pump, this way process and operational safety of the entire compounding and extrusion line is lastingly improved.

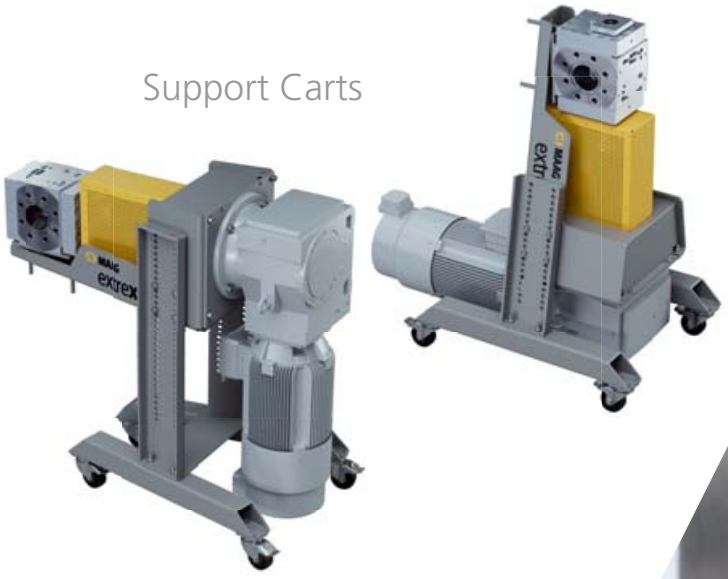
Simplifying operation

Control and automation systems for extrusion lines simplify operation, control, and monitoring of operating parameters. Different installation options and adjustable operation heights offer maximum flexibility.

extrex^{6} Y Adapter

Drive Units

Support Carts



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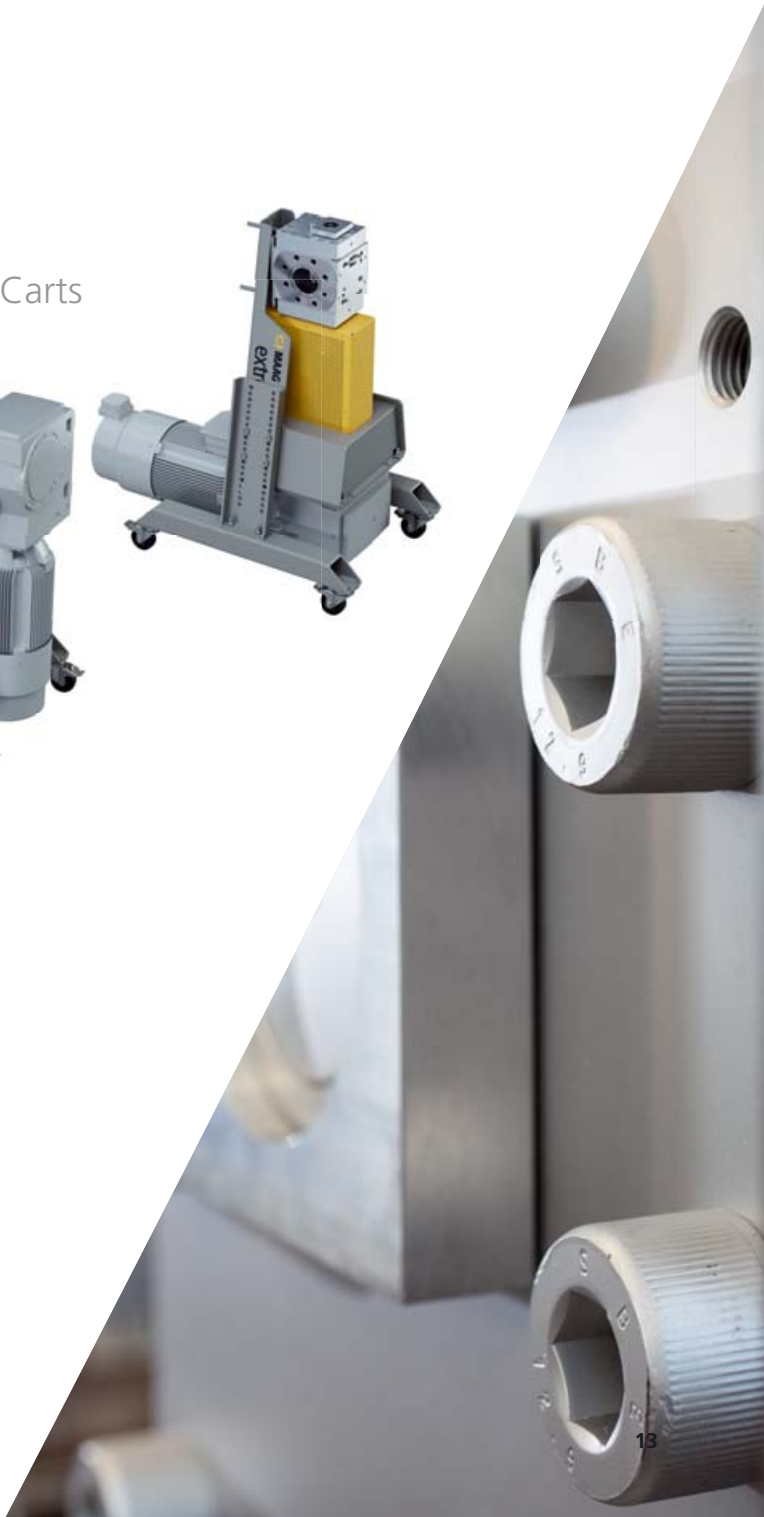


extrex^{6} Y Adapter

High flexibility for thermoplastic applications

The extrex^{6} Y-Adaptor distributes output from a single extruder to two extrex x^{6} class gear pumps. The extrex^{6} Y-Adaptor can be used with any extruder to feed two different dies with independent and consistent melt flow streams. This concept makes it possible to produce two individual profiles at separately controlled rates. Two separate precision speed controlled drives and the precise output of the extrex x^{6} pumps assure exact control of both profiles.

The extrex x^{6} class gear pump portfolio also allows customers to choose between different pressure ratings tailored to each die requirement.

Your benefits

- Flexible solution for multifunction application
- More flexible range of applications
- Standardized design
- Multiple arrangement of the drive unit

- + **50 %** higher flexiblity
- + **50 %** service friendly

extrex⁶ Y Adapter

High flexibility for thermoplastic applications

Description	Quantity
Throughput (kg/h)	140 - 12000
Pump size	25 - 160
Inlet Pressure (bar)	120

Application limits	
Viscosity:	30,000 Pas
Temperature:	350 °C

Technical specifiations	
Housing, cover	Alloy steel
Pump heating	Electric/fluid

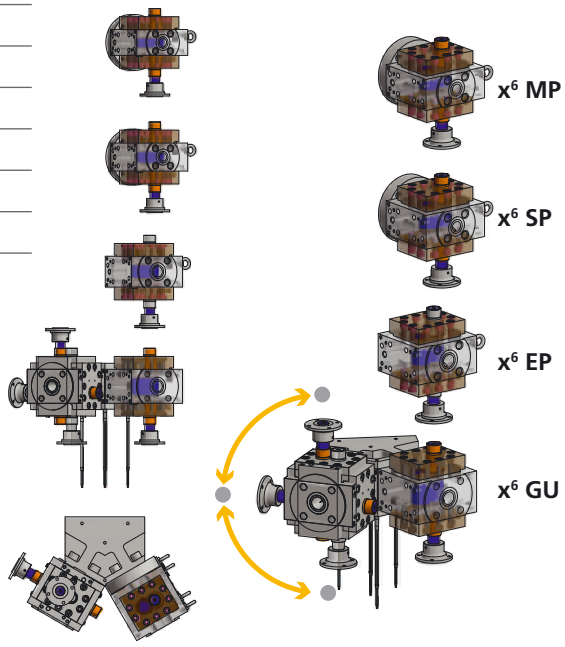
Pump size	Pump type
25	GU/EP
32	GU/EP/SP/MP
40	GU/EP/SP/MP
50	GU/EP/SP/MP
63	GU/EP/SP/MP
80	GU/EP/SP/MP
100	on request

Options

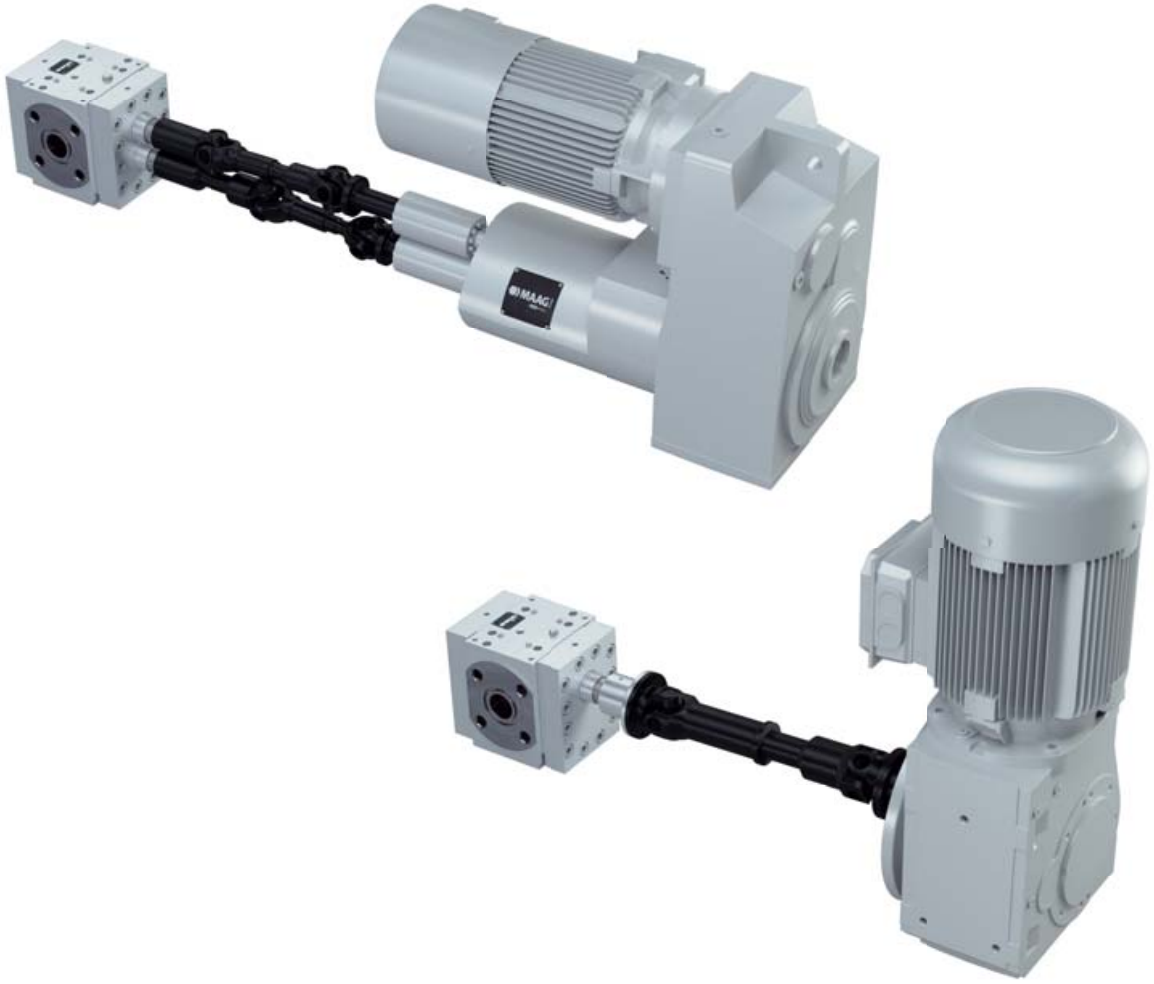
- Defined flange designs / on customers requests
- Wired heating cartridge fully attached to connector
- Liquid heating with interconnection bores
- Pressure/temperature sensor bores in body
- Choice of materials for every application

Accessories

- Adapter flange
- Sensors
- Support carts / base frames
- Drive units
- Control systems
- Complete solutions



Pump	extrex⁶ GU	extrex⁶ EP	extrex⁶ SP	extrex⁶ MP
Throughput (kg/h)	150 - 15000	140 - 12000	130 - 9000	40 - 6000
Pump size	25 -160	25 - 160	25 - 160	25 - 160
Inlet Pressure (bar)	120	120	120	200
Differential Pressure (bar)	250	320	400	500
Outlet Pressure (bar)	370	440	520	700



Drive units

Complete solutions for your applications

Together with the extre**x**[6] we can provide the drive unit as a package. For optimum performance the drive units have to be matched to the application requirements accurately. MAAG has both the experts and high level modeling programs to assure just the right combination of torque, speed and efficiency.

Newly introduced is our Twin Drive unit designed for high abrasive, recycling and Fluoro polymer applications. The twin drive unit is a MAAG own development to bring up an economical and effective solution for processes requiring minimum gear toothand loading.

Your benefits

- Calculated to your applications by expert with high level modeling capability
- Complete service solution
- Contact free operation of the gear pump
- Longer lifetime of the gear pump

Applications

- Highly filled polymers
- Fluoro polymer
- Recycling

Single Drive Unit

Drive unit	extrex⁶ GU	extrex⁶ EP	extrex⁶ SP	extrex⁶ MP
Pump size	25 -160	25 - 160	25 - 160	25 - 160

Bevel gear motor	
Torque range (Nm)	400 - 15000
Power (kW)	0.37 - 75
Voltage	on request
Energy class	IE 3
Different certification	yes
Painting (RAL)	9006

Dual Drive Unit

Bevel gear motor	
Torque range (Nm)	3000 - 9000
Power (kW)	11 - 45
Voltage	on request
Energy class	IE 3
Different certification	yes
Painting (RAL)	9006

Drive unit	extrex⁶ GU	extrex⁶ EP	Torque max. (Nm)	Torque (Nm)
BG 80	63- 80	63 - 80	3000	2 x 1500
BG 100	80 - 100	80 - 100	5000	2 x 2500
BG 125	100 - 125	100 - 125	9000	2 x 4500

Support Cart

Complete solutions for your applications

Together with the extre**x**[6] we can provide the support cart as a package. The new multi-functional support cart can be mounted in 2 different directions and is also adjustable in the height.

Your benefits

- Flexible solution for mulitfunctional application
- More flexible installation position applications
- Standardized design

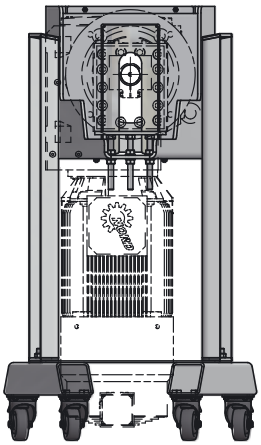
- + **50 %** higher flexiblity
- + **50 %** service friendly

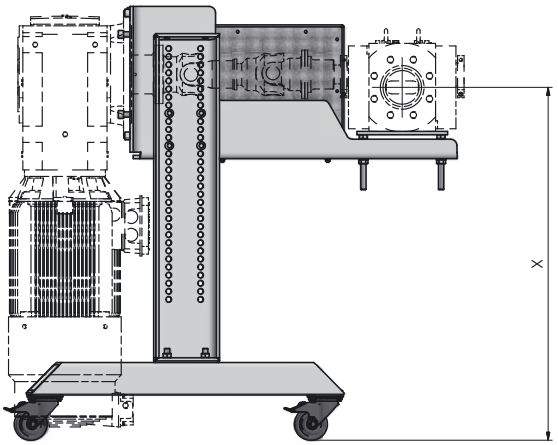
Support Cart

Complete solutions for your applications

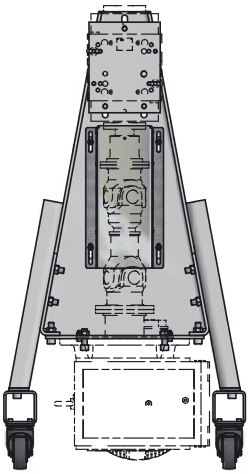
Support cart size	Extrusion height X horizontal (mm)	Extrusion height Y vertical (mm)	Gearbox size	Motor size
EX 25 - 40	1100 - 1400	1200 - 1400	9022 - 9032	Up to 11 kW
EX 50 - 80	1100 - 1400	1200 - 1400	9042 - 9052	Up to 22 kW
EX 100	1200 - 1400	1200 - 1400	9072 - 9082	Up to 37 kW

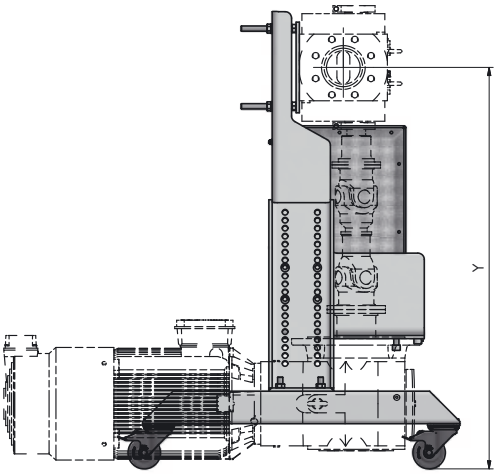
Extrusion height horizontal

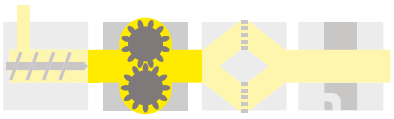




Extrusion height vertical







maax PC

Pump Control System
for extrusion line integration

XANTEC

The PC automation system is particularly suitable for stand alone or retrofitting of gear pumps in extrusion lines.

Operation, control, regulation and monitoring of the operating parameters are simplified. Production data are displayed transparently and operation is simple and intuitive. Process and production safety of the line are increased.

Your benefits

- Simple and clear operation of the start-up and shutdown routines
- Quick and precise control of the extruder or pump speeds
- Independent start-up and production control of the pump speed
- Integrated temperature control of the line components
- Fast troubleshooting thanks to plain text messages

maax PC

Pump Control System for extrusion line integration

Features

- Comfortable operation via touch panel
- Temperature zones max. 6
- Online language switching
- Start-up and production control of the pump speed
- Remote access possible at any time

Operation

- Automatic acceleration to start-up speed on starting
- Operation with pressure control right from the start
- Integrated filter monitoring
- Quick and exact control of the pump inlet pressure

maax PC	Standard	Options
Control Unit	Extrusion or Compound-ing mode included	——
Pump Inverter:	0.55 KW to 110.00 KW	——
Electrical heating of the Pump and Adapter	3 Heating Zones + 1 Melt temperature input	6 Heating Zones + 2 Melt temperature input
Monitor	Siemens KTP 400 (4 Inch Touch Panel)	Siemens TP 700 (7 Inch Touch Panel)
Cabinet size 1 (0.55 to 7.5 kW)	1200 x 800 x 300 mm	2100 x 1000 x 500 mm
Cabinet size 2 (11.0 to 110.0 kW)	2100 x 1000 x 500 mm	——
Interface:	——	Profinet/Ethernet
Swingarm:	——	Swingarm including Control Panel

With maax PC you get full service on demand

- Supply of the complete electrical equipment, including the automation system
- Design and supply of all required mechanical assemblies and parts, such as connections, flanges, subframes
- Supply and control engineering integration of melt filtration systems
- Installation of the electrical and mechanical assemblies
- Process engineering optimization and advice
- Commissioning, incl. training of the operating personnel
- 24/7 service with short response times

Maximum configuration overview (included in Standard)

Extruder			Filter			Pump			Additional Drive		
Drive	PID / Control	Monitoring	Drive	Control	Monitoring	Drive	PID / Control	Monitoring	Drive	Line / Control	Monitoring
–	1	1	–	–	1	1	1	1	–	1	1

Service around the clock. Worldwide.

For MAAG Group, "service" is far more than just supplying spare parts. Contacting and supporting a wide range of customers, from small and specialized one to large multinational manufacturers, has provided us with expert service knowledge found nowhere else in the industry.

Our experts within our fields of competence support our customers by presenting solutions that fit their unique requirements. We start with the important step of a comprehensive process analysis. Only if all individual components of a system are ideally matched and coordinated, minimized waste, reduced downtimes, improved product quality, optimized production and reduced energy costs can be achieved.

With a very large number of machines and systems installed at over 25,000 customers worldwide, MAAG Group has, over the past decades, built up a high level of expertise in pump technology, filtration, pelletizing, pulverizing, and recycling that is unique in the world. With a high level of expertise in control system technology and data processing, the digitalization experts of the MAAG Group partners with its customers for their capital expenditure projects – from the first rough idea through to the handover of the operational plant. Specialized consulting and process support is an essential part of MAAG Group's current range of products and services and its extensive global network of services.

MAAG Group maintains service centers in Germany, Switzerland, Italy, France, Malaysia, the USA, Brazil, China, Thailand, and India. With these worldwide locations and their associated proximity to customers, we have earned a reputation for providing prompt, reliable service to our customers – before, during, and after the purchase. In addition, an extensive inventory of wear and spare parts is always available for immediate shipment. Since all spare parts are manufactured to original specifications, our customers can always rely on their design, quality, and reliability to keep their systems running at peak performance.

my MAAG

» Original spare parts at your fingertips! «

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We are where our customers are

Find the nearest MAAG Location

maag.com/locations

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