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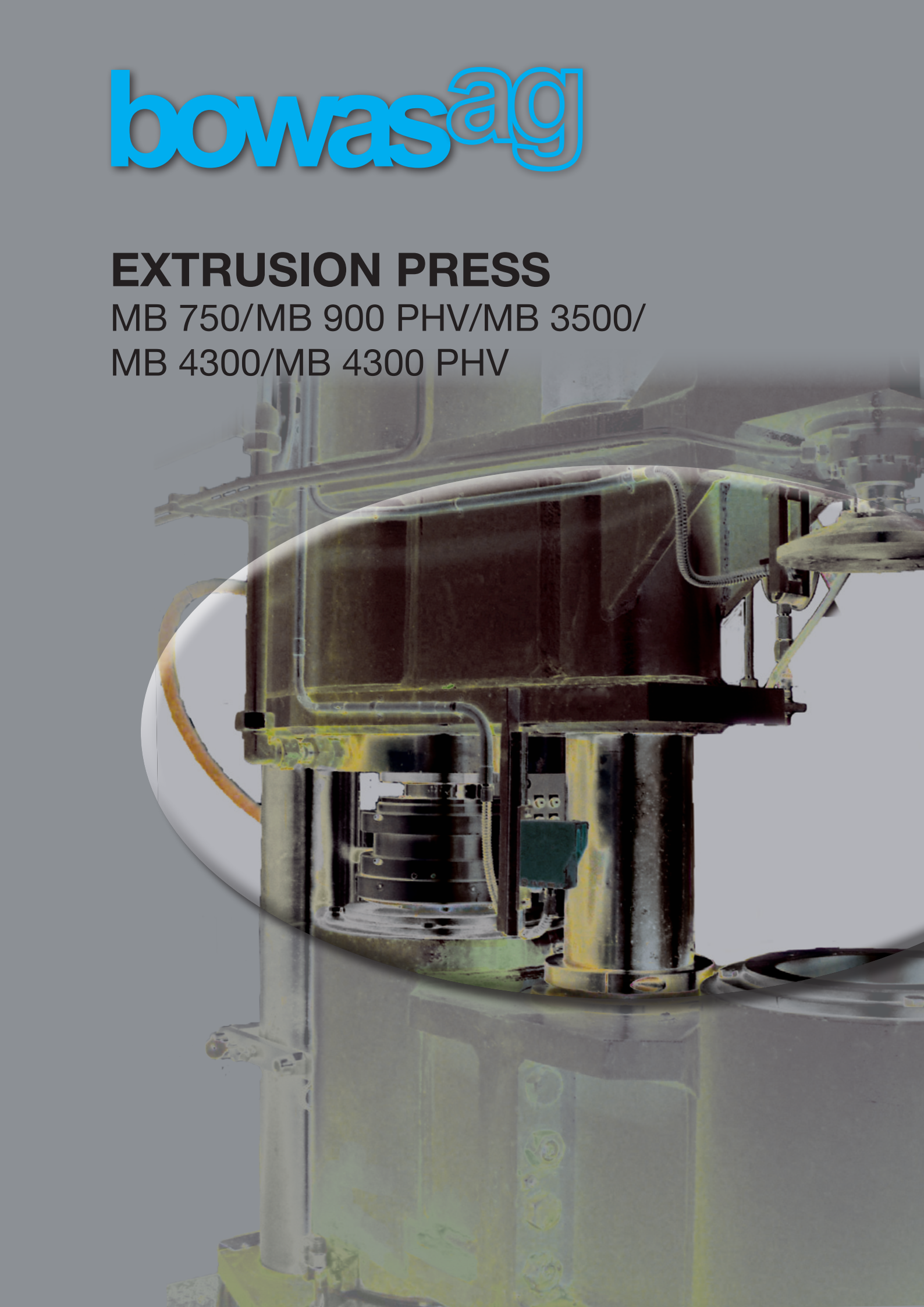
EXTRUSION PRESS

MB 750/MB 900 PHV/MB 3500/ MB 4300/MB 4300 PHV



EXTRUSION PRESS

MB Series

Main Operation

■ The production of strands of various diameters and perforations for different types of *double base-* and *multi base propellants.*

Available Capacities

■ The maximum capacity is 250 kg/h but depends on the consistency of the dough, the configurations and diameters of the propellant strands and on the number and models of inserted dies. For *double base-* and *multi base propellants* Extrusion presses with 750 up to 4300 kN main cylinder force are available.

BOWAS Extrusion Process

BOWAS is in a position to offer a modern, state of the art plant concept which fits into the concept of existing *client's* plant sections actually under modernization and as stand alone solutions. The plant concept aims at offering the most economic solution which follows the *client's* requirements.

Solvent Process

The kneading dough is manually fed into the mass container by the operator. The mass container will be filled step by step and the operator starts the pre-pressing from outside the pressing room in a protected area – important for safety reasons. For the lifting and positioning of the dough-barrels special devices are available.

Once the pre-pressing is finished after 4 - 5 cycles, the mass container is automatically revolved after manual release for 180° around one pillar. Now after manual release, the main pressing takes place automatically, with the selected speed. The pressure is increasing during start up of pressing cycle. So strands will be produced passing dies with different formats, then the single strands will be directed and collected by special devices, available as accessory kits. Also simultaneous cutting during pressing is possible with cutting machines in BOWAS design.

After finishing the main pressing, the mass containers are automatically revolved to their start position.

By means of an extractor cylinder the die support is removed apart from the mass container, the die unit is replaced for cleaning and ready for reusing. Afterwards, the cycle can be started again.

Solventless Process

Heating and vacuum units are to be connected to the press and the temperature level of the mass container and the die holder with die inserts has to be reached before the press is started.

The carpet roll is manually fed into the mass container by the operator. The pre-pressing from outside the pressing room in a protected area is not necessary. The pre-presser is out of function in this kind of process.

After filling the mass container is automatically revolved for 180° around one pillar. Before starting the pressure build-up the mass container will be evacuated. Now, the pressing takes place automatically, with the selected speed. The pressure increases during start of pressing.
So strands will be produced passing dies with different formats, then the single strands will be directed, and collected by special devices, available as accessory kits. Also simultaneous cutting during pressing is possible with cutting machines in BOWAS design.

After finishing the main pressing, the mass containers are automatically revolved to their start position. By means of an extractor cylinder the die support is removed apart from the mass container, the die unit is replaced for cleaning and ready for reusing. Afterwards, the cycle can be started again.

Better economic results

The design and concept of the BOWAS pressing process together with a predefined degree of automation offer an optimum balance between investment costs and necessary personnel requirements. The equipment is designed for a high availability at low maintenance costs.

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Advantages of the Process

Compared to other existing extrusion processes BOWAS' process offers the following advantages:

Safety – Special care has been dedicated to increase the safety of the extrusion process. All equipment has been designed and built in accordance with the latest and most advanced technology and is based on our extensive experience in the field of explosives and propellant production. An important increase in safety is achieved by the remote control of movements including the automatic turning of the mass cylinders.

■ The process is designed with the necessary *automation* level in order to minimize the number of operating personnel in areas of potential risk. This also reduces the frequency and duration of the operators' activities in these areas.

■ The Extrusion press is equipped with a *pressure control system,* which is activated as soon as the propellant dough has started to be compressed by the main press ram.

During start of extrusion, the pressure increases from zero to the pre-set max. level in an adjustable period of time. The required pressing speed is then maintained during the main pressing operation. This pressure control system guarantees safe operation. The underlying operating figures as *empirical data* sets of years of operating experience and research save operating and maintenance costs and are responsible for the good surface quality of the extruded strands.

■ Ergonomics for the operating personnel in the different operation steps are improved by mechanized handling providing safety and cost effective production with known and tested technology.

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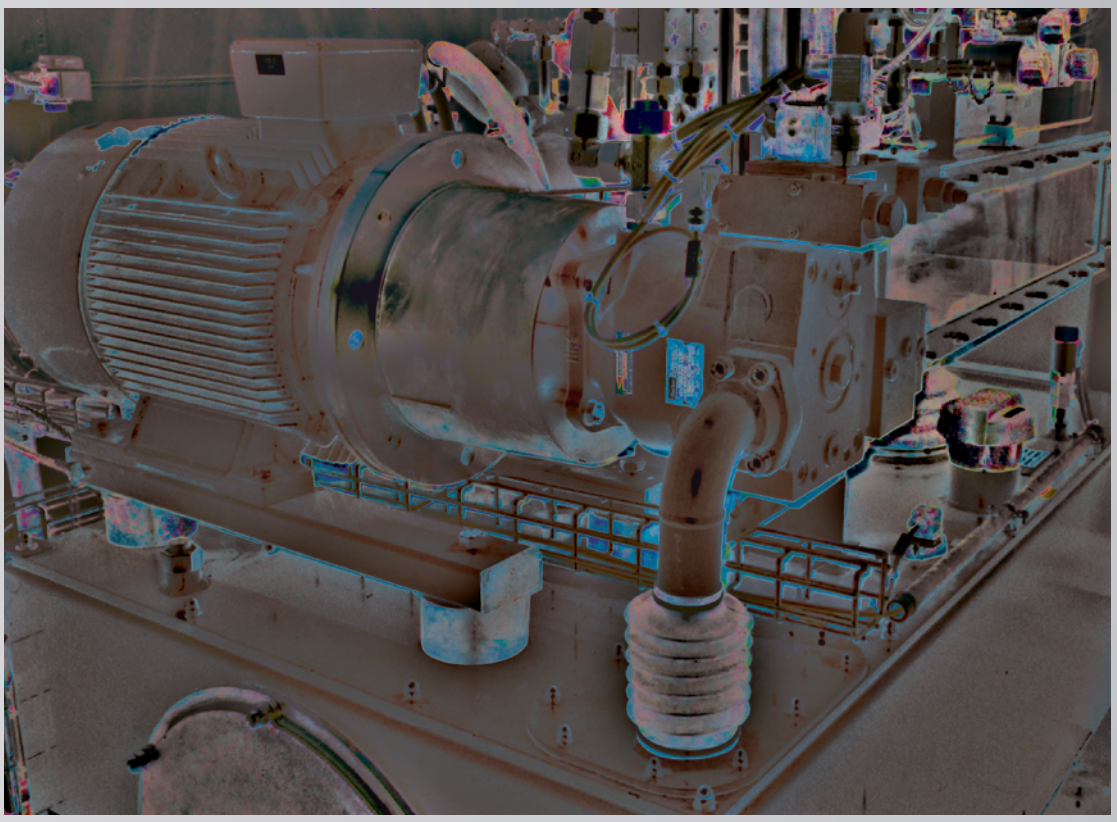

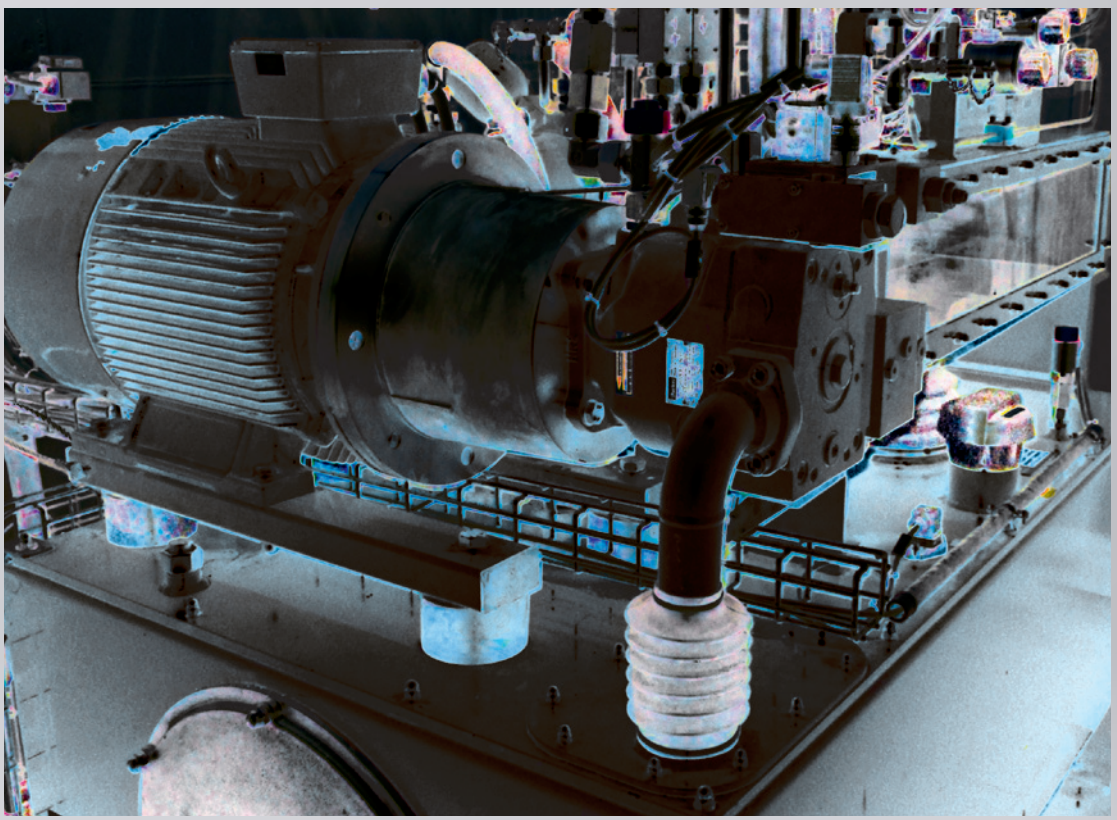

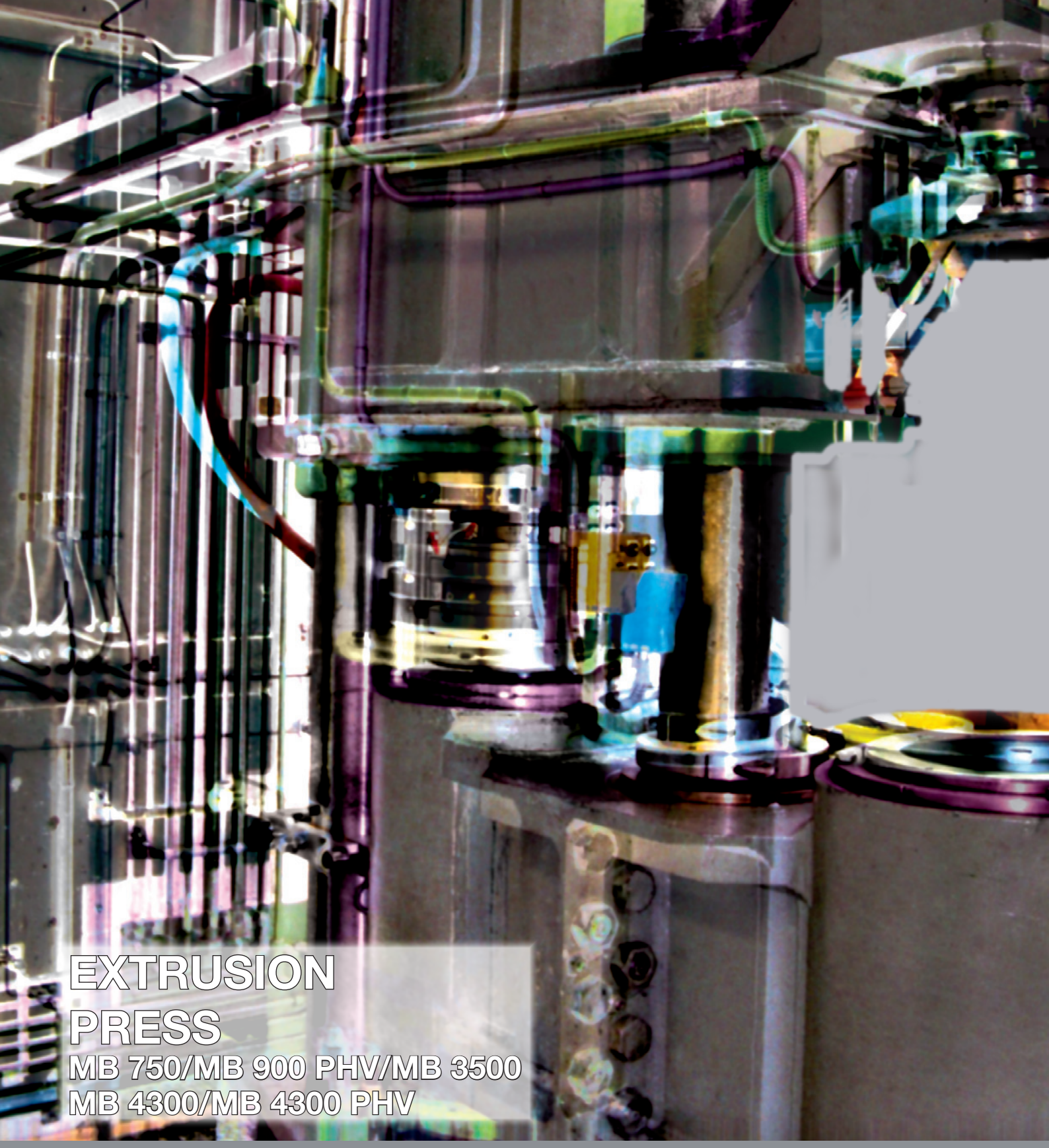

EXTRUSION PRESS

MB 750/MB 900 PHV/MB 3500
MB 4300/MB 4300 PHV

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Technical characteristics

Extrusion Press Type Multi Base	MB 750 solvent process	MB 900 PHV solventless process	MB 3500 solvent process	MB 4300 solvent process	MB 4300 PHV solventless process
main pressing force	750 kN	880 kN	3500 kN	4300 kN	4300 kN
return force	150 kN	150 kN	150 kN	290 kN	290 kN
max. hydraulic working pressure	238 bar	315 bar	315 bar	300 bar	300 bar
spec. Extrusion pressure (adjustable)	485 daN/cm²	410 daN/cm² 875 daN/cm²	495 daN/cm²	608 daN/cm²	608 daN/cm² 1894 daN/cm²
effective working stroke	420 mm	600 mm	682 mm	682 mm	682 mm
mass cylinder height	480 mm	650 mm	750 mm	750 mm	750 mm
pressing speed (adjustable)	0-14 mm/sec	0-14 mm/sec	0-6,5 mm/sec	0-5 mm/sec	0-5 mm/sec
bull back speed	65 mm/sec	65 mm/sec	25 mm/sec	25 mm/sec	25 mm/sec
pre-pressing/ejector force	50 kN	50 kN	180 kN	180 kN	180 kN
return force	20 kN	20 kN	20 kN	20 kN	20 kN
max. hydraulic working pressure	100 bar	100 bar	160 bar	160 bar	160 bar
spec. pre-pressing pressure	20 daN/cm²	20 daN/cm²	20 daN/cm²	25 daN/cm²	25 daN/cm²
stroke pre-presser	850 mm	1.100 mm	1.100 mm	1.185 mm	1.185 mm
stroke ejector	220 mm	220 mm	250 mm	250 mm	250 mm
masscontainer diameter	1 x 140 mm 1 x 140 mm	1 x 165 mm 1 x 120 mm	1 x 300 mm 1 x 300 mm	1 x 300 mm 1 x 300 mm	1 x 300 mm 1 x 170 mm
effective filling height	400 mm	600 mm	682 mm	682 mm	682 mm
volumina masscontainer	1 x 6,5 ltr. 1 x 6,5 ltr	1 x 12,5 ltr. 1 x 5,0 ltr.	1 x 48 ltr. 1 x 48 ltr.	1 x 48 ltr. 1 x 48 ltr.	1 x 48 ltr. 1 x 15 ltr.
capacity	25 ltr./h 25 ltr./h	60 ltr./h 10 ltr./h	200 ltr./h 200 ltr./h	200 ltr./h 200 ltr./h	200 ltr./h 30 ltr./h
turning of mass containers	manual	manual	auto	auto	auto
tempering unit	-- --	yes 36 kW	-- --	-- --	yes 48 kW
evacuation device	-- --	yes 25 m³/h	-- --	-- --	yes 25 m³/h
supply voltage	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz
power capacity	22 kW	22 kW	40 kW	55 kW	55 kW
body material	carbon steel				
press cylinder	inside honed, with screwed lids				
pre presser	optional for MB 900 PHV and MB 4300PHV in case of use for solvent process additionally				
colouring	Ral 7035 light grey				

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