

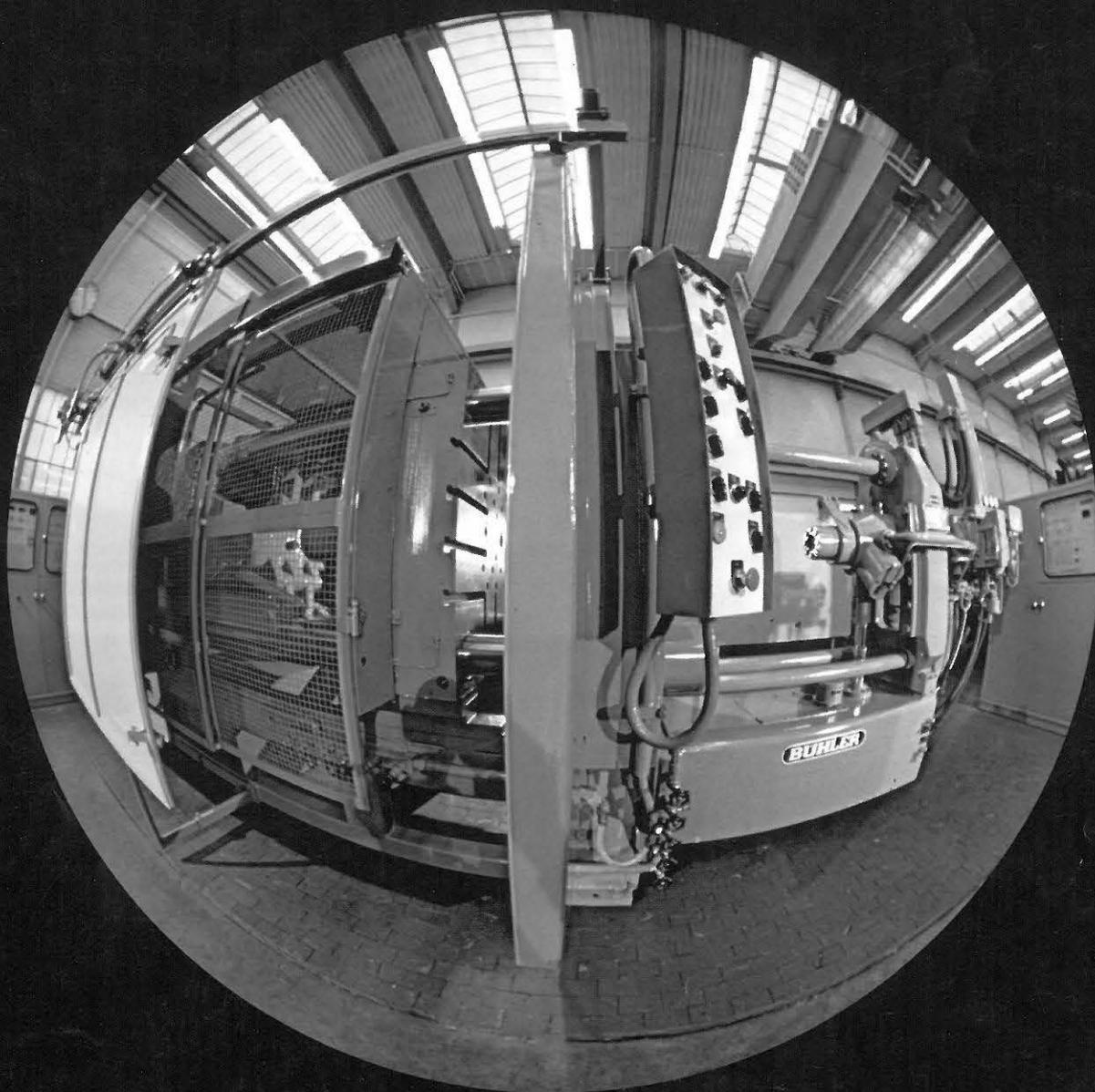
BUHLER

BUHLER-MIAG

H-250/400/630 B

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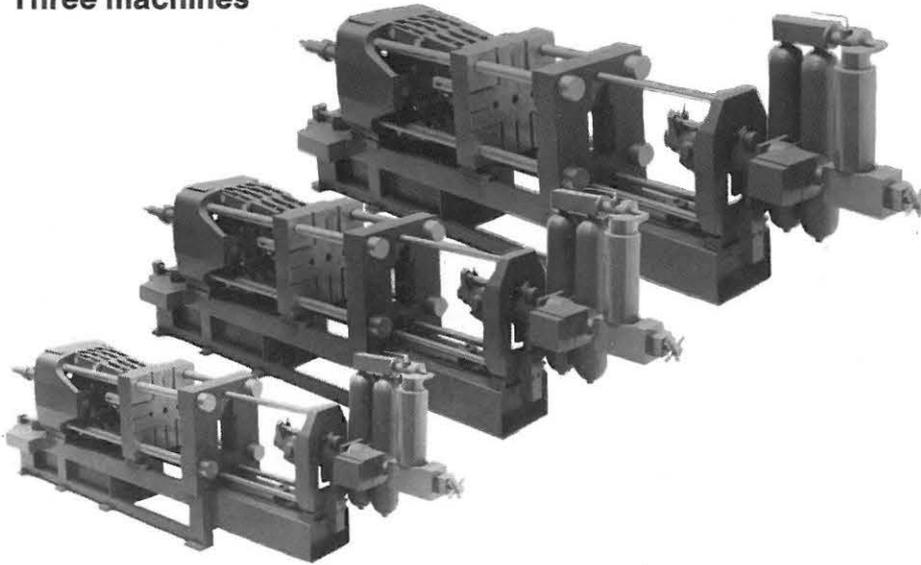
BUHLER-MIAG, Inc., 1100 Xenium Lane, Minneapolis, MN 55441, (612) 545-1401



The Integral Concept

What does that mean for you?

One concept – Three machines



In the Buhler B-series of die casting machines, the similarity principle has been systematically applied, with standardized graduation of machine sizes. The individual machines all fit into a self-contained modular system organized around a central idea, thus offering users the advantage of an integral concept.

The main advantage for the **die caster** lies in the similarity of technological behaviour of an entire series.

Simple programming, instruction and training

Empiric values gained from one machine can be utilized for a different machine type within the whole series. Once the operating personnel knows one machine, it automatically knows all the others of the Buhler B-series. This largely prevents setting errors.

Reduced setting time

The **setter** finds all the elements required for set-up at the same location, be it in the case of a H-250 B or H-630 B.

Low maintenance

Servicing and maintenance are facilitated, thanks to the identical functional design of the mechanical, hydraulic and electrical systems.

Easy automation

Designed for the automatic operation of integrated mechanized production facilities, for functional foundry design.

Balanced design of details

with a great number of elaborately designed components.

- Adequately stepped machine sizes
- High injection speeds owing to optimized flow characteristics
- Extremely easy to maintain, safe to operate, and reliable
- High degree of machine utilization
- The die mounting platens allow mounting of the dies of one machine onto the machine next in size
- Amply sized locking system, with large platens, long strokes and large tie bar clearances
- Long service life, due to use of most up-to-date technologies
- Wear-resistant even of HFC fluids are used

Economical

Decisive seconds faster per cycle, with powerful hydraulic drive.

Energy-saving

With cartridge-valve control and end-position switches.

Built at our own electronics plant

Buhler INTERCIRC control system and CENTROL casting-parameters control system, with compact integrated plug-in units.

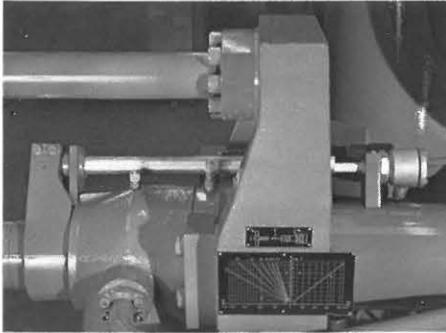
Die casting with Buhler machinery allows economical production, because you may select, from a geometrically stepped series, the machine that optimally meets your needs.

Large areas for parts removal, and hydraulic reservoir that can be removed at the rear, make for easy maintenance

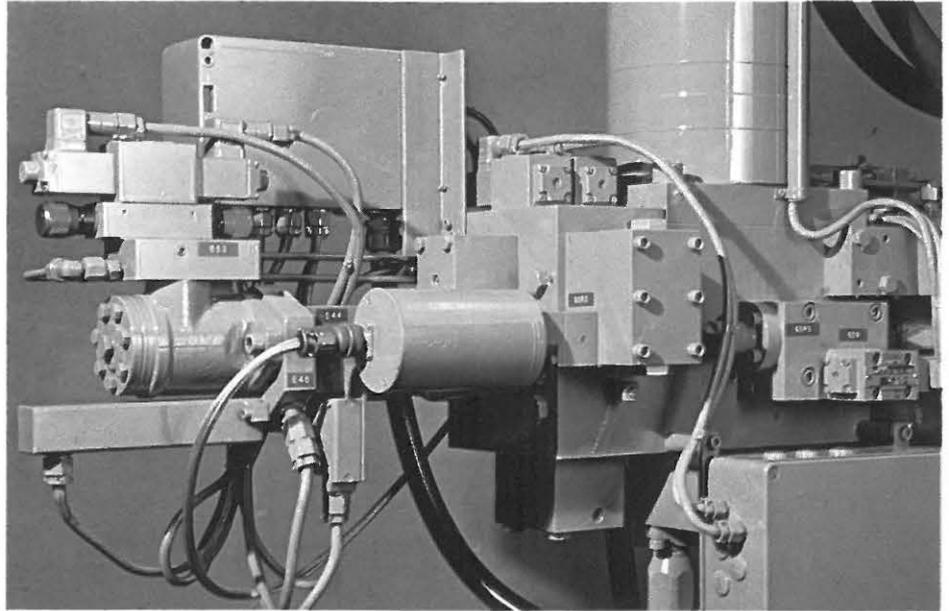


Injection End

PARASHOT injection end, with CENTROL injection speed control ▼



INJECTROL probe, mounted within minutes ▲



High-pressure peaks eliminated even with high casting speeds. Standard equipment includes Buhler low-mass direct-injection system and the PARASHOT® injection system, for highest casting quality with minimum amount of rejects. Patents throughout the world.

Long service lives of sleeve and shot plunger

The injection unit is statically balanced in a guide frame support, with optimal force transmission.

High casting capacity

The injection characteristic has been optimized by computer, to meet the demanding requirements of day-to-day operation. Mounting of an Injectrol probe for casting-speed readings is accomplished within minutes.

Minimum pressure build-up time

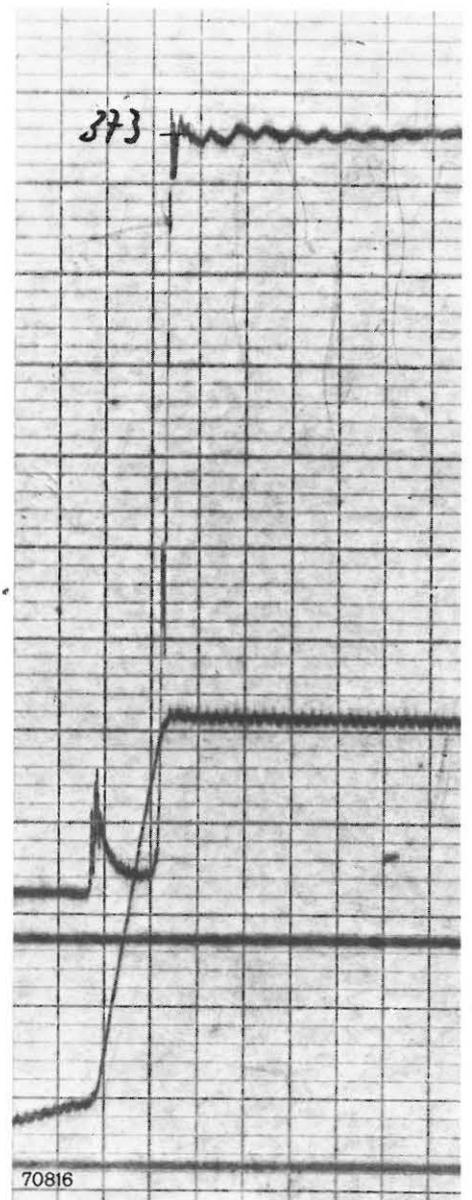
The intensifier control system has been improved, and stands up to die casters extremest demands. Pressure build-up time is now in the range of $\frac{1}{100}$ second.

Minimum high-pressure peaks

Thanks to the so-called capacitive behaviour of a control component, especially developed for the purpose, the high-pressure peaks have been eliminated, despite the high speed range, to help counteract the splashing-out of metal.

Energy-saving pressure accumulation

The accumulator group stands vertical, and is equipped with a distance-dependent end-position switch. This allows accurate monitoring of the filling process, and optimal utilization of the high filling ratio.



INJECTROL readout curve
Maximum casting capacity, with high injection speeds, short response lags. High-pressure peaks eliminated, due to capacitive control components ▶

Toggle System

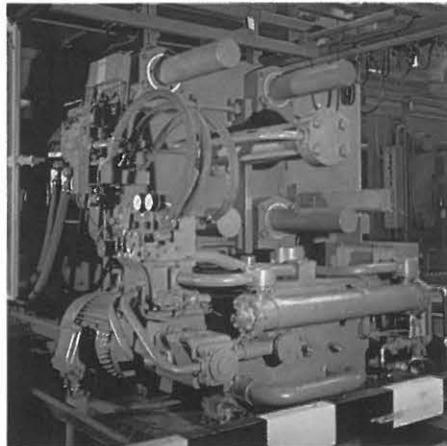
Large-stroke toggle system with optimized kinematics. Joltless die movements. No leaps in the acceleration processes. Short cycles with large die opening strokes. Die height adjustment with rugged worm gears and accurately reproducible fine adjustment. Integral functional groups based on the modular design principle. Large parts-removal areas on all four sides, for unobstructed automatic die casting (see technical specifications).

In order to obtain permanent high quality, it is necessary to continuously check the machine components during production. Particular attention is paid to the highly stressed sections of the machine. For instance, every critical part of the die mounting platens is checked for defects by means of ultrasonic methods. This allows invisible fatigued sections to be detected before they do any harm.

The dominant features in the technical data are the amply sized die mounting platens, the large tie bar clearances and the square cross-section formed by the tie bars.

Minimum die change time

Special attention has been paid to short die change times when large, bulky dies are to be mounted, with tie bars that are easily withdrawn, and safety gates that do not obstruct. The central die height-adjustment is rugged, and allows quick adjustment to the modified die heights. The LOCKMAT die locking-force regulator guarantees



optimal locking force, regardless of temperature variations and other extraneous influences.

Maximum service life, high wear-resistance

Hardened toggle pins and toggle bushings are assembled according to latest concept (floating type). For monitoring of the central lubrication system, an electrical pressure and level

switch is used. The quantity of lubricant is metered out in a preselected cycle by means of proportioning valves. The tie bar nut connection, especially designed for optimal load distribution, is the warranty for long service life, even with high tie bar loads. The tie bar bushings in the moving die mounting platen are equipped with dirt scrapers, to prevent the penetration of dirt and dust between the sliding surfaces and the tie bar bushings.

Two readily re-adjustable sliding shoes move on a stainless steel track; they support the moving die mounting platen and ensure, even in the case of heavy dies, parallel movement and safe die locking.

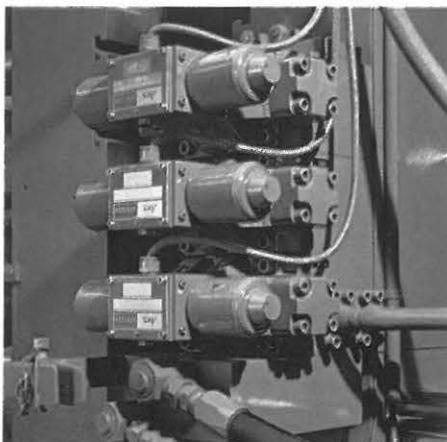
Trouble-free eccentric ejection

The sturdy ejection unit also allows eccentric ejection of the castings. The design of the moving die mounting platen offers easy accessibility, permitting trouble-free adjustment of the limit switches.

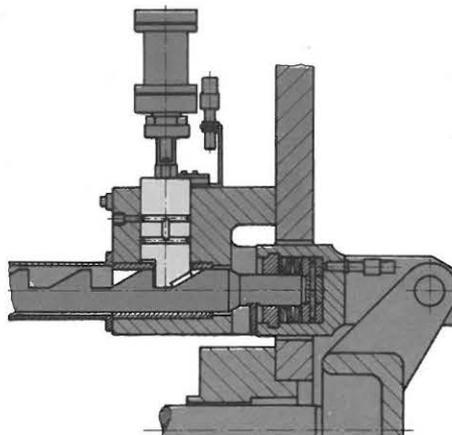
Core pull groups in subassemblies

The core pull groups are designed according to the modular system, and may be used for both the moving and the fixed die mounting platens, for easy operation and reduced maintenance, as part of integral quality.

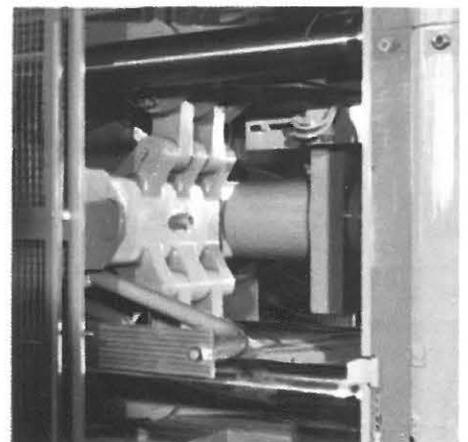
Core pull equipment is exchangeable, divided into subassemblies



The mechanical die safety system for operational safety

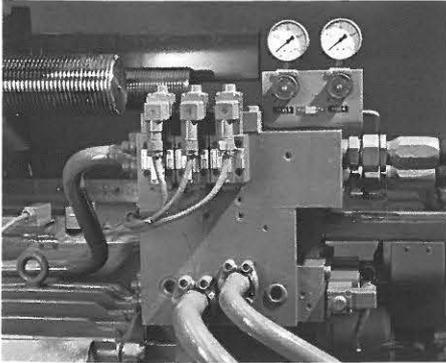


Large-stroke toggle system, with easily accessible ejection unit



Hydraulic System

Optimized hydraulic components based on the modular principle ▼



Optimized hydraulic drive based on the modular principle. Ease of setting, for reproducible die casting. Smooth, joltless change-overs with cartridge valves, at top-speed flow dynamics.

Maximum power with minimum energy requirements

The powerful hydraulic drive works with small energy losses and optimized hydraulic efficiency.

To achieve rapid production runs with extremely short cycles, time and energy-saving slow-fast-slow speeds are used for the die movement. Despite the top speeds reached at times, smooth starting and stopping is guaranteed.

Operating-hours warranty

There is a Buhler 6000-operating-hours warranty on the internal-gear hydraulic pump.

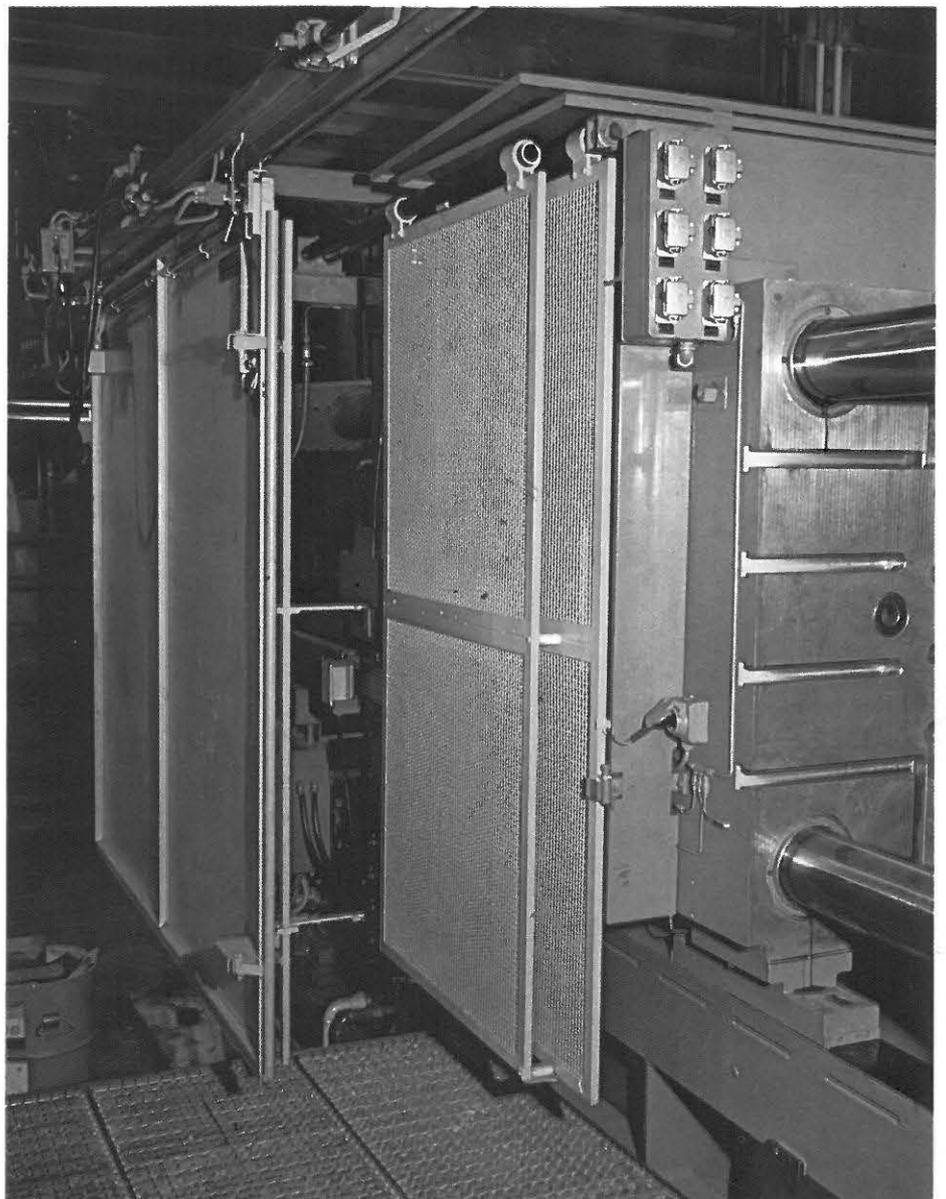
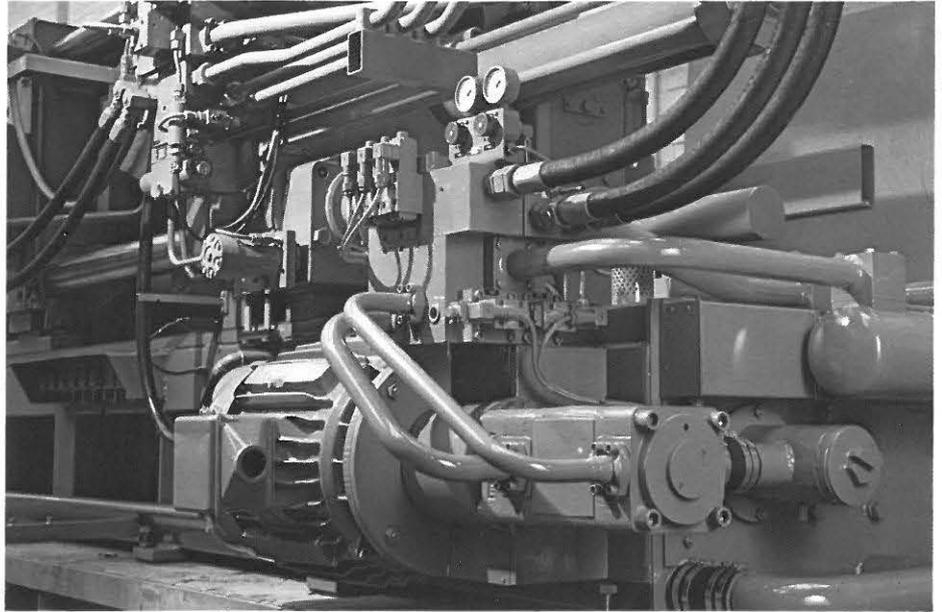
Low noise level, quiet hydraulic unit

A low noise level of 70 dBA is easily achieved with the hardly combustible, water glycol-based hydraulic fluids.

Safety

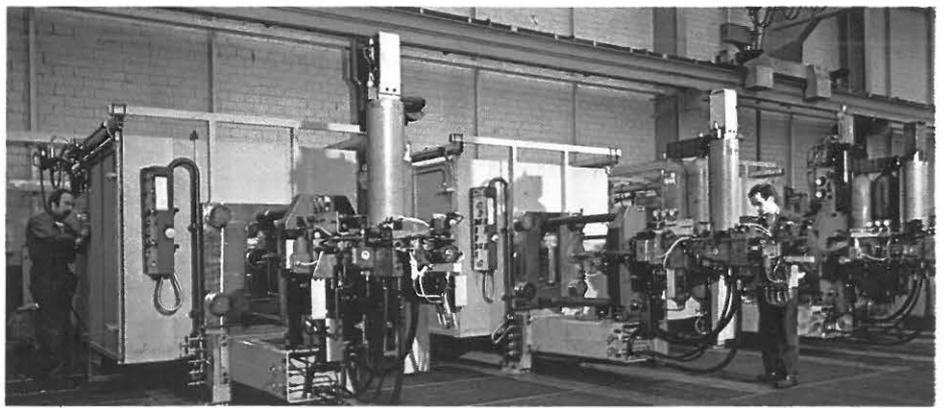
All-around protection with sliding safety guards and over-man-high safety gates, for protection of the die casting personnel. Lateral telescopic safety gates, for unobstructed mounting of large dies having projecting cores.

Pump package with the internal-gear double-pump, covered by the Buhler 6000-operating-hours warranty ▼



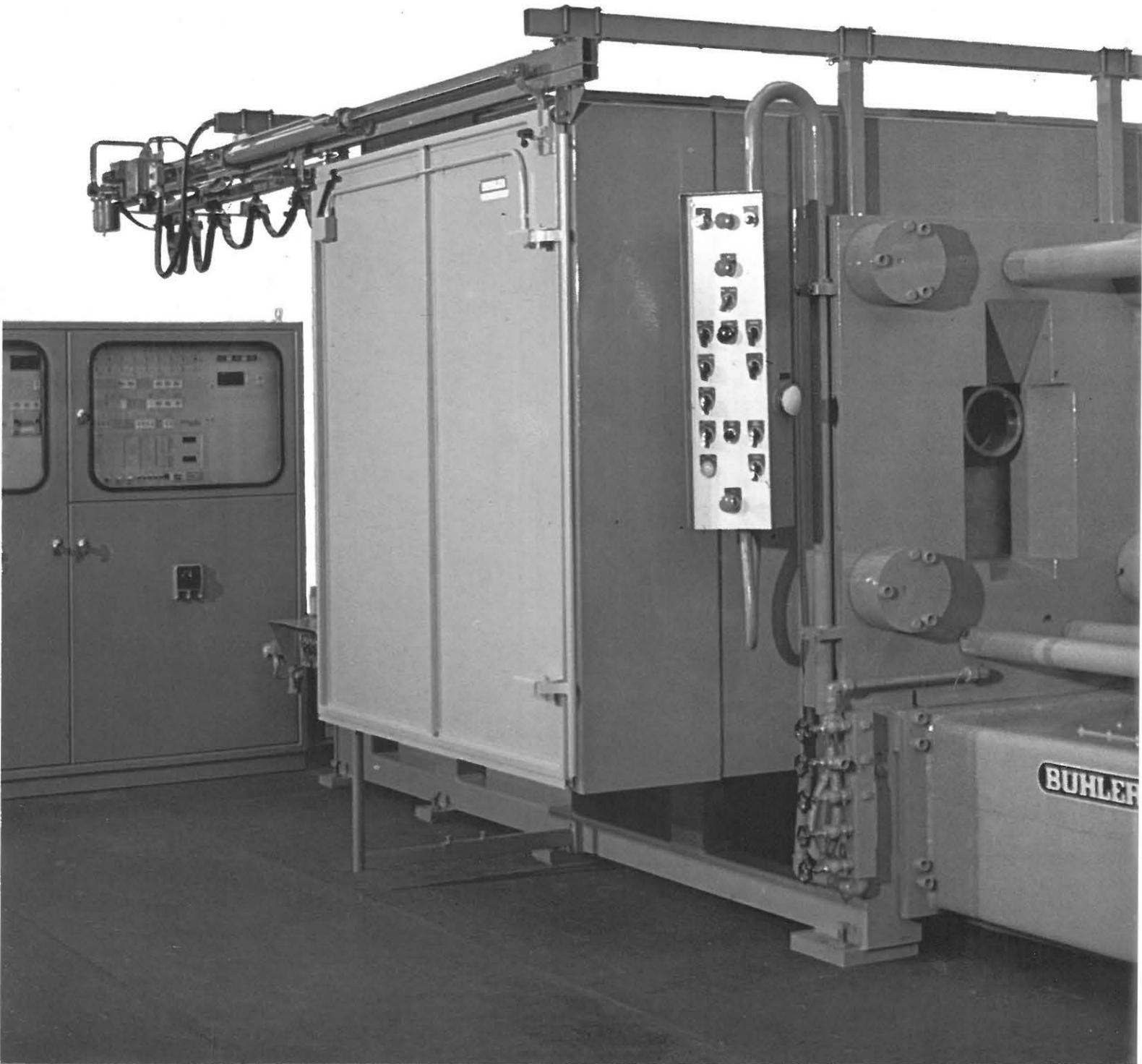


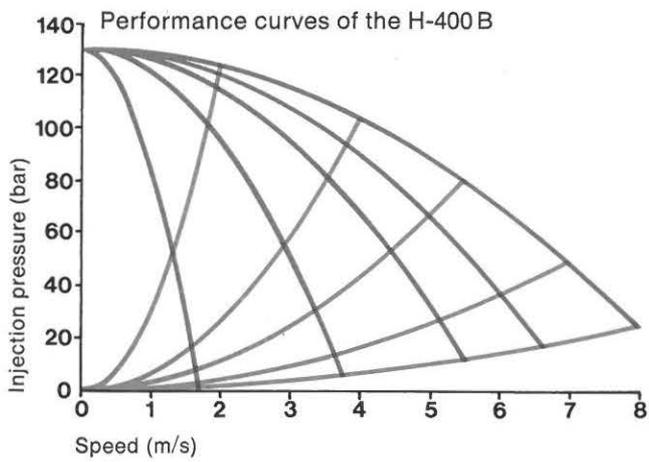
Quality test:
Photoelastic study of stresses in order to optimize the toggle shield, as part of the integral concept



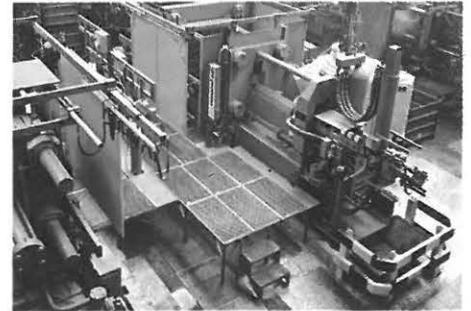
Operating test:
The B-series in a 100-hour test. Safe, dependable, low-maintenance machines. The electronic controls are in addition tested with the aid of a simulator (burn-in test)

Performance test:
The locking force is tested within a narrow tolerance range, by means of a wire strain gauge. A cycle-time test proves the reliability of the hydraulic and mechanical systems.

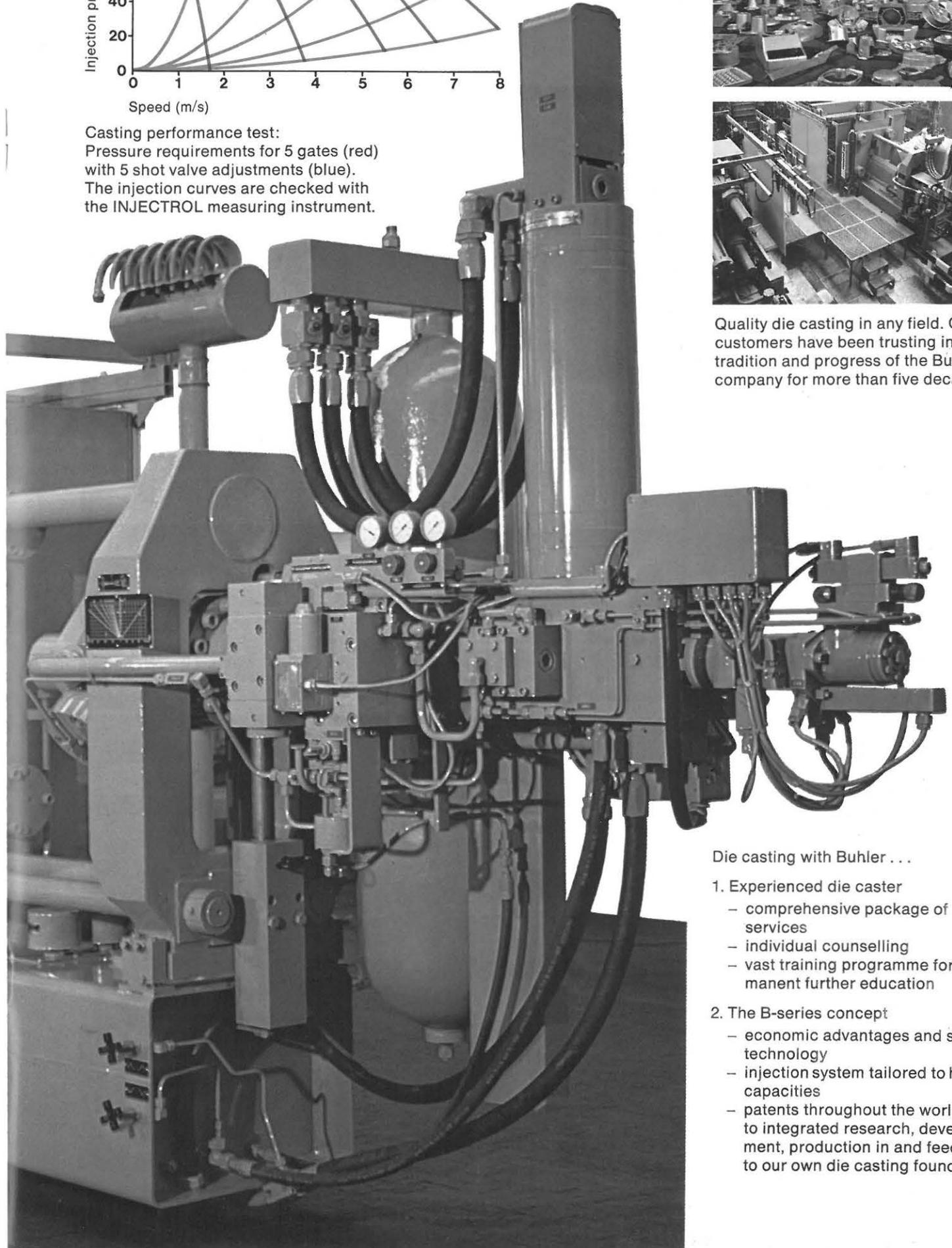




Casting performance test:
 Pressure requirements for 5 gates (red)
 with 5 shot valve adjustments (blue).
 The INJECTROL curves are checked with
 the INJECTROL measuring instrument.



Quality die casting in any field. Our
 customers have been trusting in the
 tradition and progress of the Bühler
 company for more than five decades.



Die casting with Bühler . . .

1. Experienced die caster
 - comprehensive package of services
 - individual counselling
 - vast training programme for permanent further education
2. The B-series concept
 - economic advantages and safe technology
 - injection system tailored to highest capacities
 - patents throughout the world, due to integrated research, development, production in and feedback to our own die casting foundry

INTERCIRC Control System

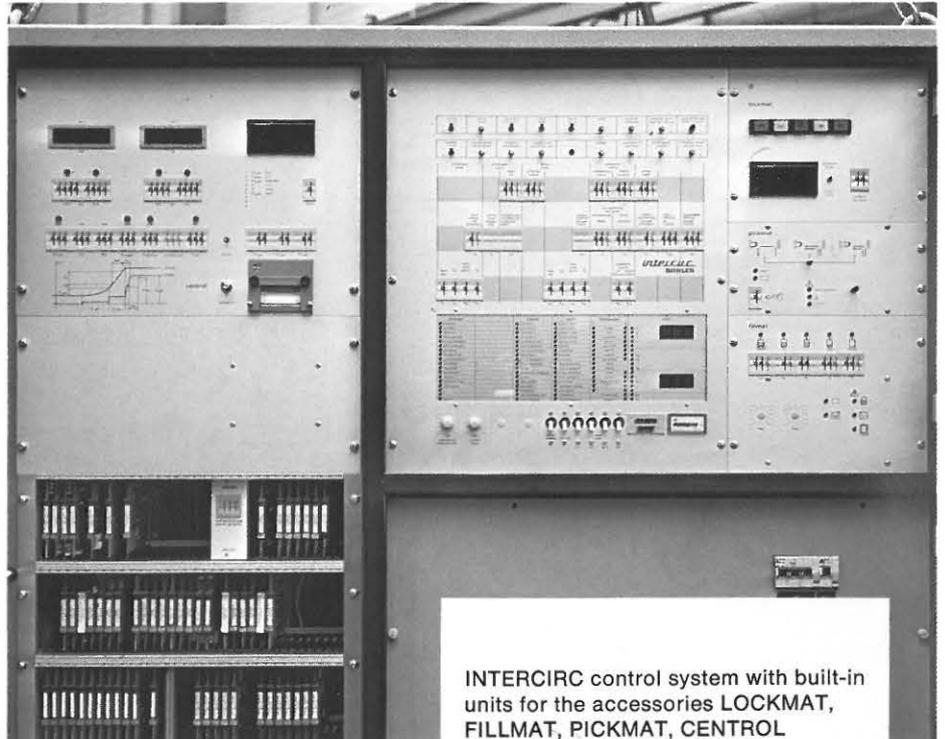
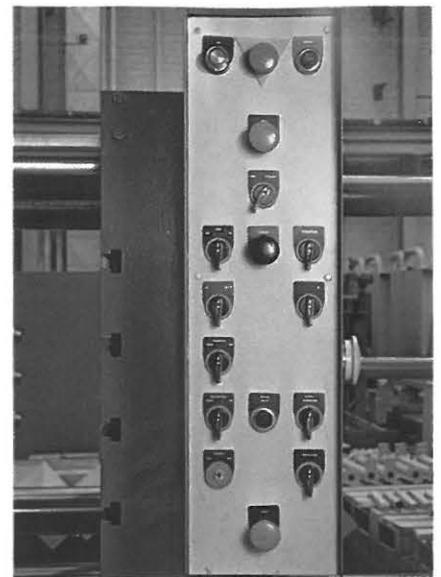
Today a hallmark the world over

Clear, reliable and reproducible control with compact system having plug-in units for the accessories CENTROL, LOCKMAT locking-force regulator, FILLMAT ladling device, PICKMAT extraction device.

- Greatest ease of operation, due to accurate digital programming of the sequence of operations
- Increased reliability with more convenient setting
- Indication of functions for checking machine movements, limit switches, solenoids and manual switches
- Insensitive to vibration and shocks
- High temperature resistance (even in tropical countries), fan not required
- Simple and clear control cabinet design. Ample spare room for taking account of customers wishes regarding accessories when operating a chain of die casting systems
- Electronic plug-in components (prints) allow easy checking of functions, and elimination of possible defects by simple replacement, without detailed knowledge being required of the operating personnel
- Rapid detection of defects. The function and malfunction indicator makes work a great deal easier for the operators, and increases the rate of utilization of the machines.

Swivelling control column with selection switches ▶

Neatly laid cables, with electric raceways integrated in the base plate ▼

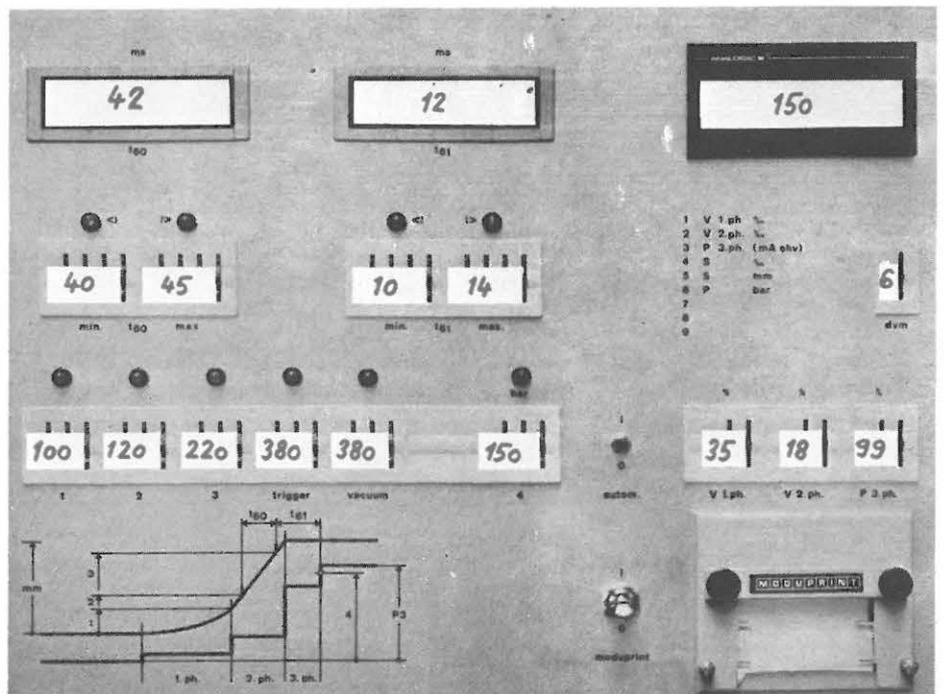


CENTROL

Accessory control system for the automatic regulation of the casting speed. The following items can be set as a percentage at the control cabinet: slow approach speed, casting speed, i. e. die filling time, final squeeze, plunger stroke. The casting parameters can be accurately set, and registered on job cards. Simple permanent production supervision and quick detection of deviations in the casting process.

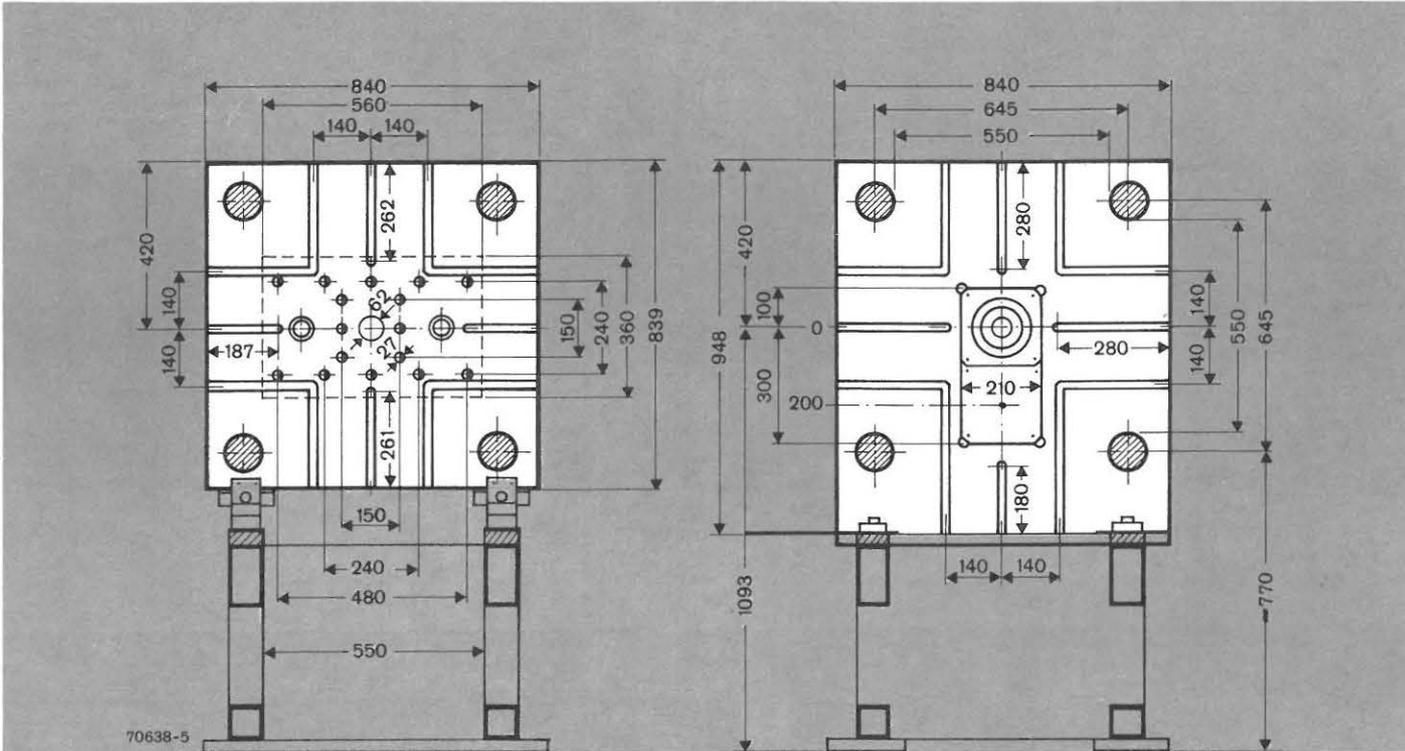
Quick restarting of production due to concentrated and short start.

CENTROL job and adjustment card ▶
Increased rate of utilization of the machine, shorter setting times



Die mounting platens, production data and dimensions

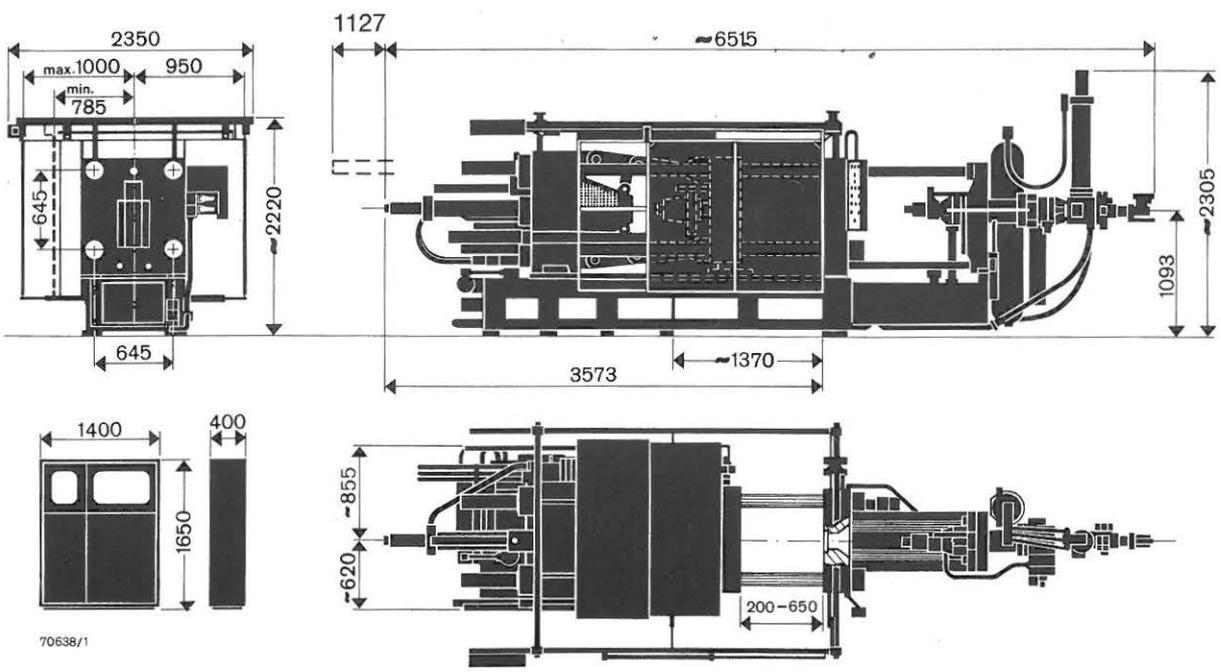
H-250 B



Production data

Plunger diameter	mm	40	50	60	70	80	90
Theor. shot volume (DIN 24480)	cm ³	318	497	716	975	1273	1611
Max. shot weight for Al**	kg	0,9	1,4	2,0	2,75	3,6	4,5
Max. specific injection pressure	bar	2388	1528	1060	780	596	471
Maximal projected area***	cm ²	119	187	269	365	478	605

** / *** Basis for calculation on last page under technical data



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H-250/400/630 B

Technical data		H-250 B	H-400 B	H-630 B
Locking force (strain-gauge tested)	kN	2850	4600	7250
Injection-force - final squeeze (adjustable)	* kN	300-138	420-180	650-265
Plunger stroke	mm	380	480	580
Ejection force	kN	170	240	340
Ejector stroke (adjustable)	mm	120	145	175
Fixed platens (H×V)	mm	840×947	990×1130	1210×1370
Moving platens (H×V)	mm	840×840	990×990	1210×1210
Space between tie bars	mm	550×550	640×640	780×780
Diameter of tie bars	mm	95	120	150
Min. die height	mm	200	250	300
Max. die height	mm	650	780	950
Stroke of moving die platen	mm	560	640	780
Idle operating cycles per hour	n/h	553	450	360
Rated motor capacity	kW	22	30	45
Machine area L×W (incl. safety gate)	m	6.5×2.3	7.5×2.5	9×2.9
Machine height (incl. safety gate)	m	2.2	2.3	3.2
Machine weight (ready f. product.)	kg	10500	16000	27200
Control cabinet L×W×H	m	1.4×0.4×1.65		

* Actual force, which is approx. 10% below the static force defined by DIN 24480

** Max. shot weight for H machines, calculated from:
 Plunger area x plunger stroke x 0.75 x specific density
 Density of aluminium = 2.6 g/cm³
 Density of magnesium = 1.63 g/cm³
 Density of zinc alloy = 6.25 g/cm³
 Density of copper alloy = 8.0 g/cm³

*** Max. theoretical projected area on max. specific injection pressure, without consideration of core locking and dynamic part of injection process

Subject to alterations



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