HYDRAULIC PRESSES

Precision in solid metal forming

Lasco

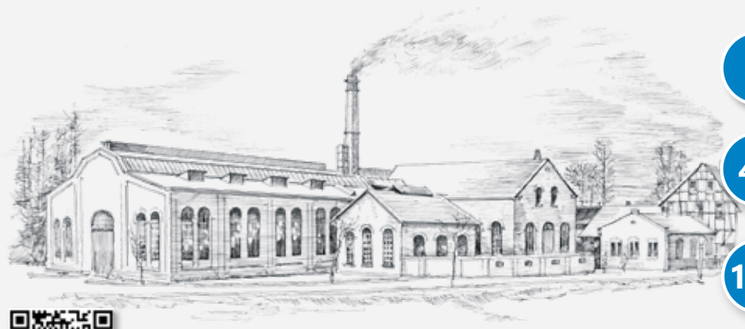
LASCO UMFORMTECHNIK

Produce more efficiently with automation

As a technology leader in the field of solid metal and sheet metal forming as well as sand-lime block production, we are specialists in modern machine tools and efficient production facilities.

We develop and create individual customer- and product-specific automation solutions that ensure our customers a competitive edge for years to come. Focusing on economic efficiency, we at LASCO design holistic solutions; this includes **automation**, **handling** and **interface technology** as well as the **modernization** of existing production facilities.

LASCO is your partner for the production of the future. **Industry 4.0** enables completely new organizational and control options. Intelligently networked, digitized processes become significantly more efficient, dynamic and flexible. Benefit from our know-how. We bring together man and machine and thus optimize the entire value chain.



4 SITES ON 3 CONTINENTS

48 SALES & SERVICE PARTNERS IN 60 COUNTRIES

100 COUNTRIES WORLDWIDE WHERE OUR PLANTS ARE USED

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PRECISION & POWER

Take your production to the next level

Since its foundation in 1863, LASCO has been engaged in harnessing fluid power for forming applications. At an early stage we became aware of the advantages of oil-hydraulic systems and applied them to the construction of efficient forming machines. With our experience, LASCO offers forming systems world-wide that are designed to withstand the demanding working environments which exist in the forming industry and are capable of performing their tasks with efficiency and reliability.

LASCO presses, with oil-hydraulic drive, combine „state of the art" hydraulic, mechanical, and electronic control technology in a functional entity, ensuring optimum productivity in a cost effective manner, for the long term. The requirements of our customers are the benchmark for our actions, resulting in the production of machines designed specifically for each application.

Whilst the basic concepts of LASCO hydraulic presses are outlined in this brochure, we would be delighted to discuss with you, the exact performance you would expect from „your" hydraulic press.

Hydraulic presses are the first choice for a diverse range of solid metal forming tasks, due to the wide range of energy at their disposal, which in combination with other inherent characteristics provides high versatility. Efficiency is maximised by the careful design of the drive unit and by the selection of modern control technologies.

Characteristics which LASCO incorporate in all their presses are rigidity, ergonomic design, operator safety, ease of operation and maintenance, and never sacrificing long term viability for reasons of cost.

Illustrated is a LASCO KFP cold extrusion press of 1000 tonnes capacity for extrusion of automotive parts.

Consideration of high rigidity of the press frame, optimum forming speeds, rapid pressure attainment, quick reversal of stroke, and exceptionally short contact times is afforded high priority at the design stage.

The **VP, KFP, KP** and **VPZ** ranges are available with a large number of options of automation, quick tool change systems and process technology for a wide range of hot, warm, and cold forming applications, which may include combinations of **descaling, upsetting, edge breaking, pre-forming, stretching, bending, extrusion, trimming, piercing,** and **calibrating.**

Demands of the actual process will influence selection of stroke length, ram speed, function and tool area dimensions, as well as frame construction, press drives, ram depth and guidance, and possibility of ejection systems.

VPE 160 and VPE 500

A billet is pre-formed for a ring, on a VPE 800.

Customer preferences will influence the design of the control system and tooling application.

LASCO is able to offer not just the construction, fabrication and assembly of a press, but an integrated production and quality system, incorporating all the features requested by the customer, with development done in house, ensuring a smooth installation and start up in the customer's plant.

BASIC QUALITY FEATURES

Comprehensively proven in demanding environments

Press frame design

The choice of press frame design, either single piece or multiple element construction is determined by table area, installation height, ram stroke and application.

- Single piece weld fabrication, stress-relieving heat treated.
- Multiple element press frames, consisting of press table, uprights and cross head, prestressed with four tie rods.

Multiple element press frame

The press frame offers certain advantages, compared with single piece frames. Different materials of special suitability may be considered for the individual parts. Potential notch stress concentrations at the connection between the table and the uprights and between the cross-head and the uprights on single piece frames are eliminated.
Transport of multi piece presses may be easier and at lower cost, as press is able to be disassembled into smaller units.
Above all, the press frame consisting of several parts is considerably more rigid as a result of the pre-stressing. For the same tensile stress, the elongation is only 20 % of the value induced in a single piece frame.
As well as ensuring longevity of the frame, and forming of more accurate parts, overall size and weight of press may be reduced.

Sections of frames of LASCO presses - single piece (right top side) and pre-stressed multi piece (left).

Polster plate on the table

LASCO presses are equipped with a protective bolster plate on the table to minimise wear. They are supplied as standard with T-slots for holding the tools, with option of custom designed hydraulic clamping systems.

Press cylinder

The press cylinder is forged steel with the bore honed. A pre-fill valve between the top of the cylinder and the oil tank ensures rapid filling and return of the oil. Split chevron packings with wiper rings provide a seal between cylinder and piston.

Press piston

The press piston is also forged. The contact surfaces are hardened, ground, and polished. A bronze bush ensures optimum sliding characteristics in the upper sealing and guiding area.

Layout of a press cylinder on a "LASCO" hydraulic press.

Ram

The ram may be either a steel casting or weld fabricated, fully stress-relieved. It is accurately mated with the bore in the piston and clamped securely.

Guiding system

The guiding system is designed according to the specific application. For hot forming processes, a system maintaining constant clearance in spite of heat expansion has become standard. For cold forming, a guiding system with eight slideways is preferred. The sliding surfaces are bronze running on nitrited steel.
Tight clearances may be maintained and are adjustable by shims. Combined with the long ram guiding system and the high press rigidity, production of high accuracy parts with excellent tool life is assured.

Ram support device

A pneumatically operated, electrically safe-guarded ram support device provides operational safety and prevents unintentional movements of the ram.
The ram may be locked in its top position, when work is being carried out in the tool area. This safety feature is integrated into the press control system.

HYDRAULIC DRIVE

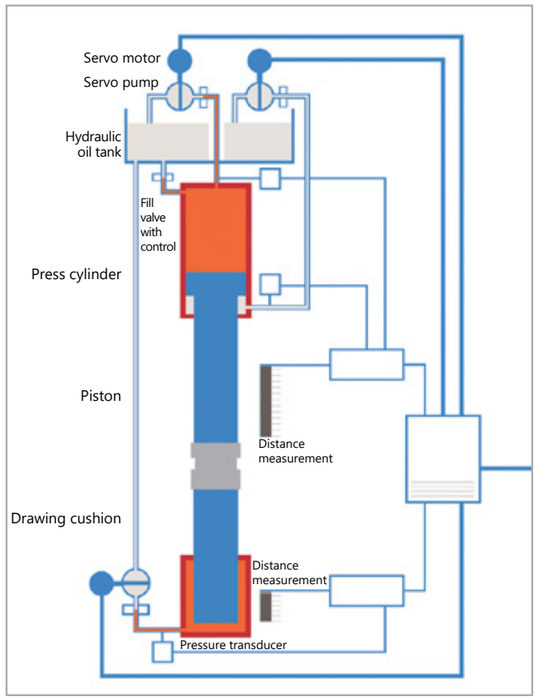
LASCO HYDRAULIC SERVO DIRECT DRIVE ®

In the hydraulic servo direct drive® developed by LASCO, the hydraulic pump and servo motor form a compact unit.

The excellent controllability enables exact specifications of torque, speed and position of the pump rotor. Highest output with optimum energy use is guaranteed.

ADVANTAGES OF THE DRIVE TECHNOLOGY

- Enables high cycle rates/high output
- Low power dissipation
- Highest energy efficiency
- Less susceptible to faults, low wear and easy to maintain
- Hydraulic presses driven by servo pumps have an efficiency of >90% (cos φ = 1)
- When the system is at a standstill, the drive motors and pumps are also at a standstill
- Hydraulics operate largely shock-free
- Multi-axis systems - especially with close functional links between the axes - can be controlled reliably
- All setting data can be stored and documented in digital form
- Simplified diagnosis even of complex systems due to clear drive structure



Schematic view of LASCO hydraulic servo direct drive®

Scan now and learn more about the LASCO hydraulic servo direct drive®!

PROCESS CONTROL

Controlled production without compromise

If the hydraulic system is the "heart", then the "brain" of a modern hydraulic press is the decentralised process control. As LASCO is totally customer focused, all configuration and programming are performed in house.

LASCO's competence in software programming and in the design and installation of electronic, electrical, and mechatronic components allows the consideration of all customer requests that are technically feasible, including the provision of interfaces for integration of existing processes and interlinked operations.

LASCO press and process controls offer all the performance characteristics of a modern product organisation, such as:

- Centralised, product-related setting and evaluation of all machine parameters
- Product data administration with connection to a database
- Operating data registration
- Product follow-up
- Integration in MRP
- Integrated maintenance programme
- Integrated data logger

The design, installation, and programming of electronic, electrical, and mechatronic components are core competences of LASCO

The requests of the customer are also considered, when designing man-to-machine interfaces, as well as specific screen menus and charts.

The operator is guided by a graphic colour display, which is in the same language as the messages displayed at the terminal. The registration, evaluation, and listing of data can be input during operation and the data can be transferred into the company network via interfaces.

Software modules specific to the customer can be linked. Options of integrated phone- or internet-aided on-line maintenance systems are offered.

MULTIPURPOSE PRESSES

Classic with a wide suitability profile

The VP range of LASCO presses covers a large spectrum for hot metal forming of solid parts. The press forces and characteristics are chosen for each application. This versatility makes the LASCO VPs ideal presses for pre-forming tasks, such as edge breaking, upsetting, bending or material distribution.

VP SERIES

In addition, the sturdy VP series are well-suited for tasks demanding one step finishing, or for intricate forming processes with several stages, as well as for extrusion. By doing the pre-forming of components which are finished subsequently in die forging hammers or presses - it increases productivity and efficiency of the forging process, while at the same time optimising material utilisation. Salient features of the LASCO-VP range are their high capacities and their rigidity which permits the application of eccentric loads, long ram guidance, infinitely adjustable pressing speeds and press stroke, and precise pressure control.

VPE series

The VP series provide customers with a versatile press, capable of a wide range of applications, at an economical cost. The precise control depending on force, speed and/or distance is the key to precision of the single forming operation and its repeatability.

It is often a requirement on some pressing applications that the nominal press force is available for the entire stroke at maximum speed. Thus, the VPA range has been designed especially for massive forming with a high press force, such as is encountered in the manufacture of extruded parts, for example, automobile axle tubes. A favourable ratio between the width and the height of the ram and accurately adjustable slideways permit the precise forming of long components with a high eccentric load.

The VP series from LASCO have proven their capabilities worldwide in combined forming operations.

Typical components pre-formed and finish-formed on LASCO VP series presses.

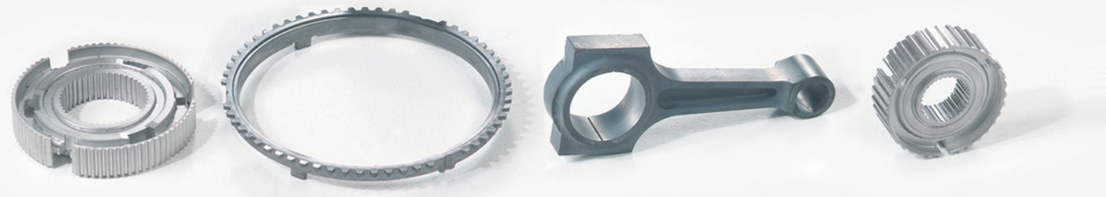
Technical data VP series

VPA series		250	400	630	800	1000	1250	1600	2000
Press force	[kN]	2500	4000	6300	8000	10000	12500	16000	20000
Ram stroke	[mm]	450	650	650	650	700	800	800	1000
Installation height max.	[mm]	900	1150	1250	1250	1400	1500	1500	1600
Daylight between guides	[mm]	800	1000	1000	1250	1250	1400	1500	1600
Table (ram) area width x depth	[mm] x [mm]	780 x 700	980 x 1000	980 x 1000	1230 x 1200	1230 x 1200	1380 x 1300	1480 x 1400	1580 x 1500
Ram speed Return	[mm/sec]	550	550	550	550	550	550	550	550
Pressing speed	[mm/sec]	100	85	110	85	100	110	85	85
Main motor	[kW]	160	2 x 132	3 x 160	3 x 160	3 x 200	4 x 200	4 x 200	5 x 200

VPE series		400	500	630	800	1000	1250	1600	2000
Press force	[kN]	4000	5000	6300	8000	10000	12500	16000	20000
Ram stroke	[mm]	450	450	650	650	800	800	800	800
Installation height max.	[mm]	1000	1000	1100	1100	1350	1350	1350	1350
Daylight between guides	[mm]	1000	1000	1000	1250	1300	1300	1500	1600
Table (ram) area width x depth	[mm] x [mm]	980 x 1000	980 x 1000	980 x 1000	1230 x 1000	1280 x 1200	1280 x 1300	1480 x 1400	1580 x 1500
Ram speed Return	[mm/sec]	550	550	550	550	550	550	550	550
Pressing speed	[mm/sec]	45	70	60	55	68	55	55	50
Main motor	[kW]	120	2 x 120	2 x 132	2 x 200	3 x 200	3 x 200	3 x 200	4 x 200

- Additional press series and sizes on request
- Hydraulic ejectors in the table and/or in the ram on customer's demand
- Ejector force, -stroke, -speed according to customer's specifications

Typical parts produced by LASCO hydraulic KFP cold extrusion presses.



Examples of powder-forged and standard sintered parts that are calibrated on LASCO calibrating presses.

KFP SERIES

Superior for producing large volumes

LASCO KFP hydraulic cold forming presses are capable of producing parts with a tolerance of one-hundredth of a millimetre. Cold extrusion is among the most important processes for the economic forming of near net-shape parts in large volumes. The KFP characteristics of stroke, force, and speed are particularly suited to the rigorous demands imposed by cold extrusion.

World-wide a multitude of different parts, including drive pinions, starter shafts, hollow shafts, and similar automotive parts, are cold forged on LASCO KFP presses. In a combined process of forward, backward, and cross extrusion, intricate parts, such as spiders, can be produced in an efficient way and with consistent quality.

A LASCO KFP is capable of incorporating several subsequent forming stages in the tool area. A guiding system with eight slideways ensures the utmost precision at each stage. Options, such as shifting slides, rotary punches and tables (top or bottom), as well as feeding and handling devices for billets or for pre-formed parts, allow the KFP to be considered for fully automatic production. Ejector systems integrated in the press table and the ram are standard features.

Technical data

KFP series		250	400	500	630	800	1000	1200	1500
Press force	[kN]	2500	4000	5000	6300	8000	10000	12000	15000
Ram stroke	[mm]	500	650	650	800	800	1000	1000	1200
Installation height max.	[mm]	1000	1450	1450	1800	1800	2000	2000	2200
Daylight between guides	[mm]	800	1000	1000	1150	1150	1250	1400	1600
Table (ram) area width x depth	[mm] x [mm]	600 x 600	800 x 900	800 x 900	950 x 1.000	950 x 1000	1050 x 1200	1200 x 1300	1450 x 1500
Ram speed Return	[mm/sec]	480	550	550	500	400	550	500	450
Pressing speed	[mm/sec]	65	60	67	50	40	65	55	45
Main motor	[kW]	100	150	220	220	220	2 x 220	2 x 220	2 x 220

- Additional press series and sizes on request
- Hydraulic ejectors in the table and/or in the ram on customer's demand
- Ejector force, -stroke, -speed according to customer's specifications

KP SERIES

Calibrating presses – economical to the final geometry

Calibrating of parts after the actual forming operation is often required to meet dimensional tolerances, improve surface finish and straightness.

LASCO KP calibrating presses are intended for the cold, warm, and hot calibration of parts, but may also be considered for trimming, piercing, and bending operations. The tool area has been designed for a wide range of applications and is able to accept eccentric loads.

The pressing speed and press force are infinitely adjustable, up to maximum values, and combined with accurate ram positioning by servo drive, ensuring a high calibrating accuracy.

Basic presses are able to be retro-fitted with upgrades to hydraulic and electronic control circuits, to meet unforeseen future production demands.

Technical data

KP series		400	500	630	800	1000	1250	1600	2000
Press force	[kN]	4000	5000	6300	8000	10000	12500	16000	20000
Ram stroke	[mm]	350	350	350	350	350	350	450	500
Installation height max.	[mm]	750	750	750	750	750	750	1100	1000
Daylight between guides	[mm]	800	800	850	1000	1100	1200	1350	1450
Table (ram) area width x depth	[mm] x [mm]	750 x 800	750 x 800	800 x 800	900 x 800	1000 x 800	1100 x 800	1250 x 1100	1350 x 1100
Ram speed Return	[mm/sec]	240	220	260	260	300	200	260	250
Pressing speed	[mm/sec]	14	12	10	13	12	10	12	13
Main motor	[kW]	30	30	30	55	55	75	90	2 x 75

- Additional press series and sizes on request
- Hydraulic ejectors in the table and/or in the ram on customer's demand
- Ejector force, -stroke, -speed according to customer's specifications

VPZ series

also for combined operations

The VP series from LASCO have proven their capabilities worldwide in combined forming operations.

Thus, the piercing and drawing press VPZ performs on a single setup the type of work that would normally have to be applied to two presses, a hot extrusion press and a subsequent ironing press.

Long, axially symmetrical hollow parts up to an outer diameter of approx. 350 mm and a length of approx. 2000 mm, such as axle tubes, tool joints and gas bottles, are produced on a VPZ - including ironing and indenting - with consistent precision and high output.

LASCO VPZ in production.

The hot ironing following the hot extrusion process can either be effected with a movable drawing punch, or with a drawing slide.

The part manipulation and the combined inner and outer cooling of the tools are automated.

Capacities:

- Press force 5000 – 40000 kN

Combined piercing and drawing press VPZ for the production of axially symmetrical parts.

AUTOMATION & ROBOTICS

More precise / faster / more economical

Intelligent production lines: People, machines, lines, products and logistics communicate and cooperate directly with each other - that's Industry 4.0, with the goal of largely self-organizing production. We create automation solutions and robotic systems that secure your competitive edge for years to come. You benefit from our experienced programmers who devote themselves in-house to the creation of source code. Always in direct contact with technicians and assemblers. This enables us to meet your needs precisely, even if your requirements change or the market makes adjustments necessary.

Separation

Ideal automation solutions are used for the separation of source materials, for example step conveyors or stacking devices with image recognition.

Transport & handling

With fast, safe and robust transport and handling systems, such as robots and linear transfer systems, production lines become efficient.

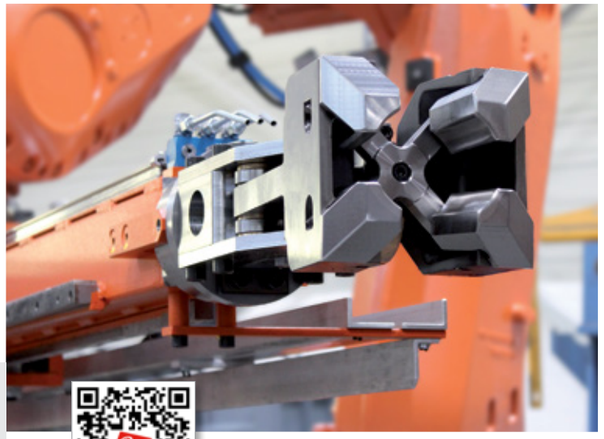


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Image processing systems

State-of-the-art sensor technology and optical image recognition identify potential misalignments, which are compensated by robotics automatically.

Gripping technology

Transfer operations must be handled quickly, accurately and safely, but also smoothly. LASCO knows the most advanced solution for every product and process - from vacuum systems to sensitive gripping system.

In addition, LASCO offers robotic systems for sorting, stacking, cleaning, testing and marking different work-pieces/components. LASCO master control systems reliably link and control complex production lines.

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