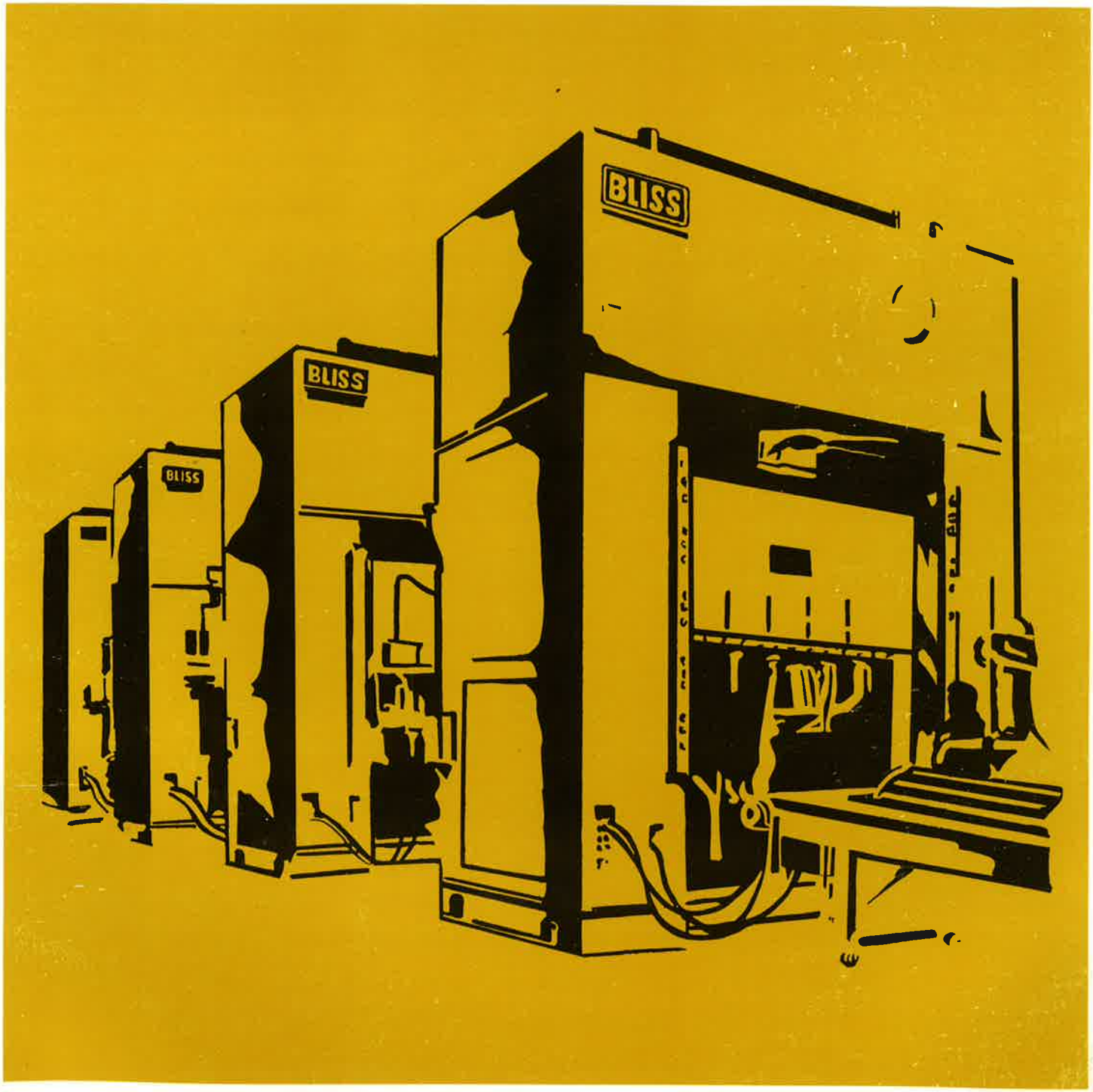
BLISS

Straight Side Presses

SE Series
Catalog 10A

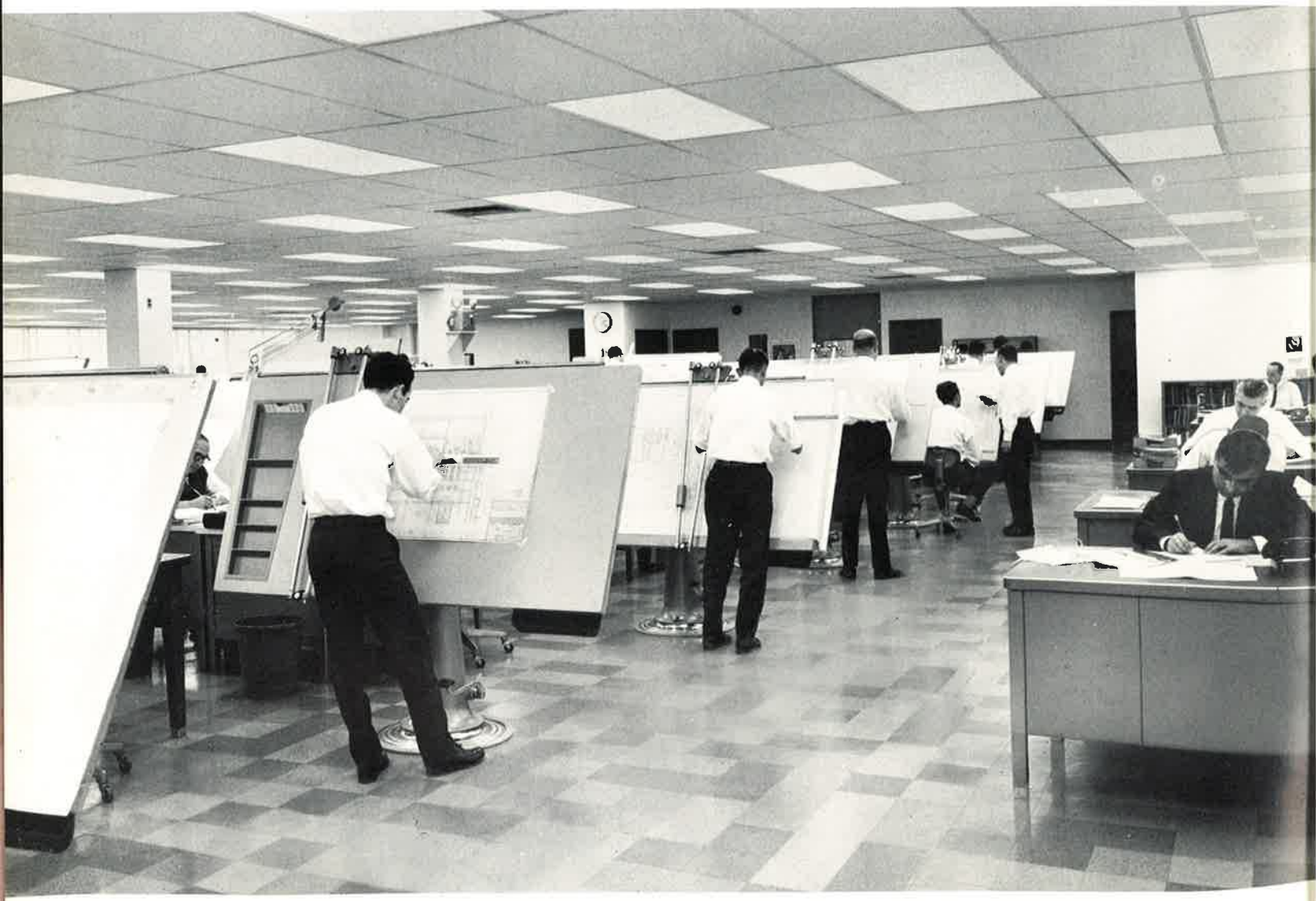


BLISS SETS THE STANDARD OF VALUE

It starts with an engineering concept

In point of time, Bliss' press building experience outdates all others. Even more important, this experience has gone hand in hand with *sustained* leadership.

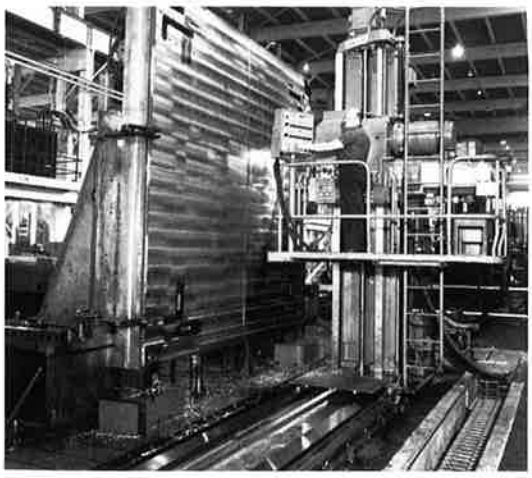
Since 1857, Bliss has pointed the way in improved press design, better materials of construction, and refinement of manufacturing techniques. To a significant degree, Bliss' present engineering capability is an extension of its historical position of leadership in the industry.



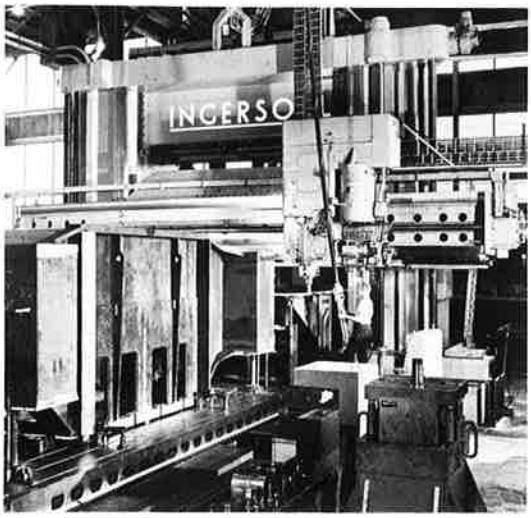
...it is shaped in the world's largest press building facilities

Facilities are the muscle of leadership. It has long been a Bliss policy to invest heavily in the physical plant necessary to sustain a "can do" rather than a "make do" philosophy. Result is the largest and most versatile press building capability in the world.

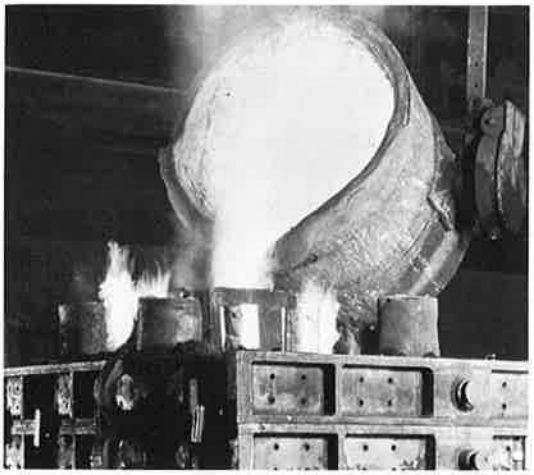
Tape-controlled drilling machine typifies the constant upgrading of production facilities at Bliss plants.



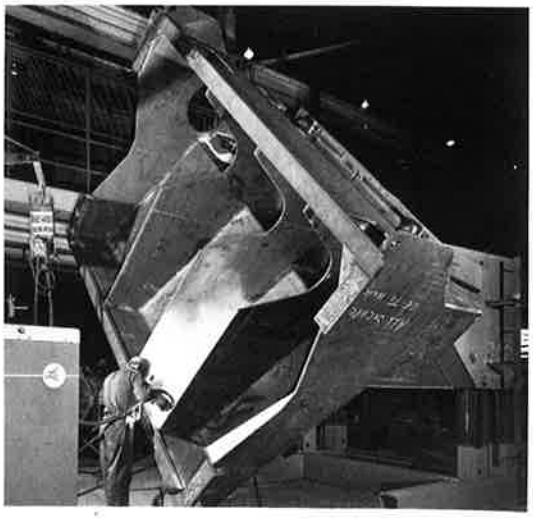
This 14 foot planer mill is part of a program designed to maintain peak efficiency while increasing production.



Castings continue to occupy an important place in smaller press construction. Meehanite in Bliss presses is the highest quality of cast iron.

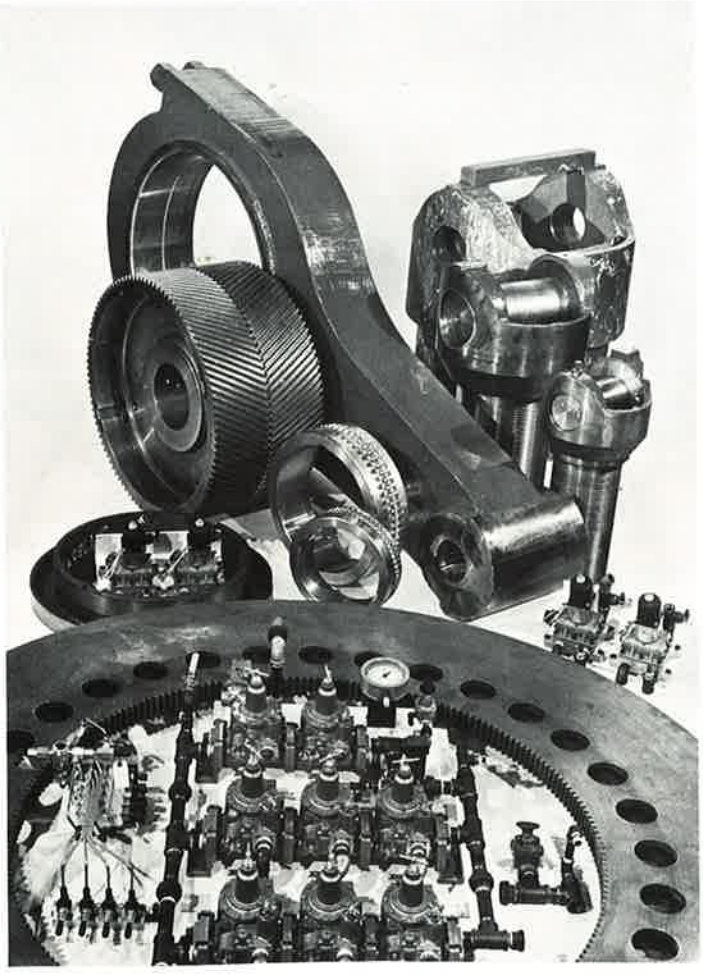


The Heavy Equipment Division has welding positioners with capacities up to 120,000 pounds and crane capacities to 150 tons.



BLISS SETS THE STANDARD OF VALUE

. . . maintained by an unequalled service organization



Inventive design and reliable construction are the prerequisites of value in presses. Service – concerned with the continuing performance of Bliss equipment in customers plants – gives depth to the total picture of value.

A substantial part of our large manufacturing capacity is devoted to maintaining a stock of replacement parts. However, because nearly all the presses manufactured in Salem, Ohio are custom-designed, it is impossible to stock ready-made replacement parts. Nevertheless, computerized order processing and production control, together with the plant's major machining and welding facilities make possible the speedy handling of replacement parts orders.

The field service that is available to Bliss press owners is an important factor contributing to customer satisfaction. Specialists, who we call our "Action Crew", provide installation or repair advice, training in operation and maintenance, or assistance in the diagnosis and correction of difficulties. They are eager to expedite equipment repairs when they are needed.

This well-staffed and mobile field service department assures Bliss customers of expert assistance throughout the free world. Above all, a determination to make every Bliss press a testimonial to Bliss value guarantees the customer continued satisfaction during the long service life of his Bliss equipment.

Bliss' Quality Control Program is a three-part operation: pre-production laboratory analysis of materials and processing techniques; in-process precision testing; and final inspection, including factory assembly and run-in prior to shipment.

Pre-production QC involves metallurgical tests which determine proper materials, processing procedures, and surface treatments.

In-process QC combines physical checks with non-destructive examination, such as x-ray, Zyglo, and Magnaflux.

Quality Engineering examines rejects to assure that proper manufacturing techniques are employed to preclude recurrences. Process capability studies are regularly performed to assure continued high quality of manufacturing operations.

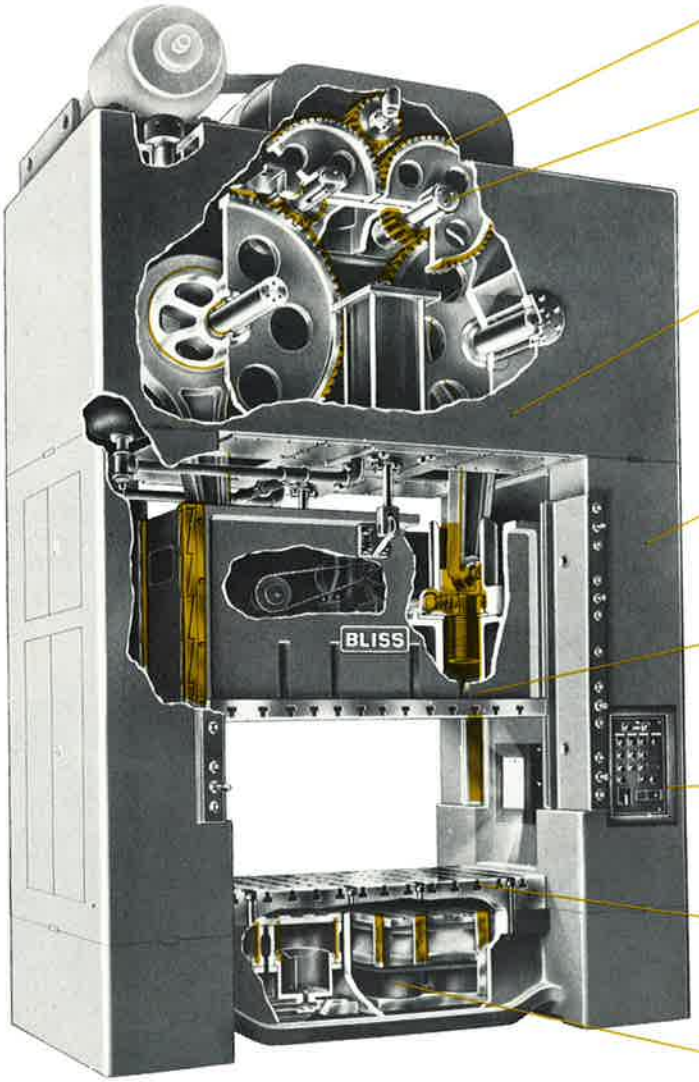
Final inspection gives specific meaning to Bliss' motto: "The Standard of Value." In this ultimate test, each press is factory assembled and Quality Control certifies that the unit conforms both to customer's specifications and to Bliss' own exacting standards of manufacture and performance.

Material deflection test—one of the many metallurgical analyses used.

Ultrasonic inspection—one of several non-destructive test techniques.

BLISS

TYPE SE ECCENTRIC GEARED PRESSES



DRIVE

CLUTCH AND BRAKE

LUBRICATION SYSTEM

UPRIGHTS AND TIE RODS

SLIDE, CONNECTION AND GIBS

CONTROLS

BED AND BOLSTER

DIE CUSHION

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INTRODUCTION

The Straight Side, Single Action, Eccentric Gear Presses described herein are the latest generation of Bliss designs, brought to a high degree of standardization to cover a broad range of industry requirements. They are the most rugged of the straight-side, top-drive presses. Frames are of welded steel throughout, designed for maximum rigidity and accessibility. Even broader application than is afforded by the standard designs can be met by optional departure from standard dimensions, controls, and accessories. A variety of these options is covered in appropriate sections of the catalog. Sizes and dimensions include all JIC recommendations.

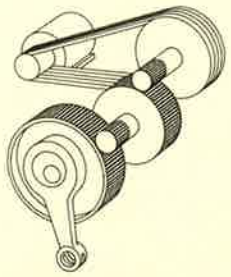
Pages 8-26 of this Catalog give detailed information about the design, construction, and performance of the presses—standard and special.

Pages 27-38 show dimensions and specifications for all standard models. Finally, to help the user to a more complete understanding of the equipment's capabilities in terms of his own requirements, pages 39-43 briefly discuss selection of the proper Straight Side, Eccentric Drive Press for a specific range of applications.

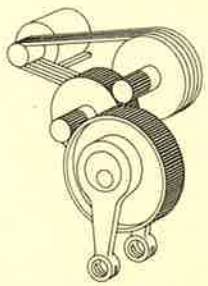
BLISS ECCENTRIC GEAR DRIVES

Design of the Bliss eccentric gear element reduces the bending moment to a minimum, eliminating the possibility of torsional deflection which can occur under heavy loads with crank-type drives. Gear and eccentric are an integral piece, machined from ductile iron and running in large, bronze-bushed bearings. Main pins are fixed type. The standard press employs heat-treated alloy steel pinions engaging ductile iron or welded gears. This combination affords the quietest, longest wearing drives while allowing the greatest flexibility of design for optimum strength/size ratio.

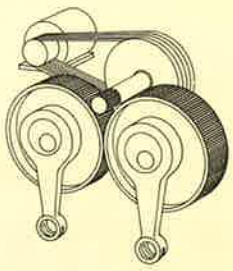
Herringbone gears are used where good design practice dictates to minimize noise and vibration. All bearings are anti-friction except those on the main pins. The standard connection is ductile iron. While a wide latitude exists in the design of drives to meet energy and stroke requirements, Bliss engineering tends to favor the larger flywheel and slower flywheel speeds with consequent advantages in reduction gearing ratios and lower wear rates on gearing, clutch, and bearings. The energy characteristics of Bliss flywheels are designed for a maximum 15% slowdown.



Double Geared



Double Geared—One Main Gear —Two Connections

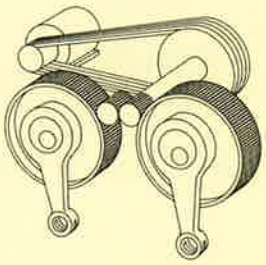


Single Geared — Main Gears In Mesh

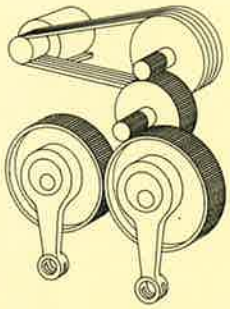
GEARING AND GEAR CONFIGURATIONS TO SUIT THE APPLICATION

Except for a narrow range of overlap, selection of press speed automatically determines the gearing to be employed—that is, presses operating at 24 SPM and less are usually double-geared; all faster Eccentric Gear Presses are single geared, except for those with speeds of 24-34 SPM, which can be either single or double-geared depending upon the type of work to be performed.

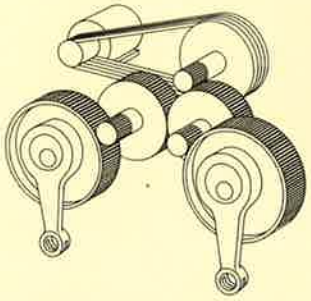
Live main pin construction can be employed to provide power take off at the main pin bearing either front or rear of F-to-B shaft presses or at either side of L-to-R shaft presses. Power takeoff at other locations can be furnished by means of gear trains from the drive mechanism.



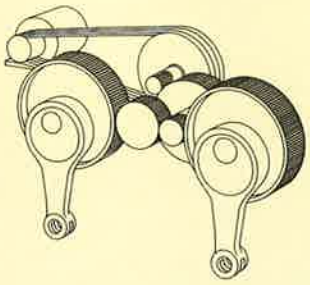
Single Geared — Main Gear Train In Mesh



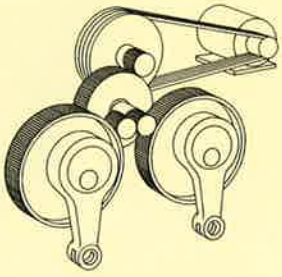
Double Geared — Main Gears In Mesh



Double Geared — Intermediate Gears In Mesh



Double Geared — Main Gear Train In Mesh

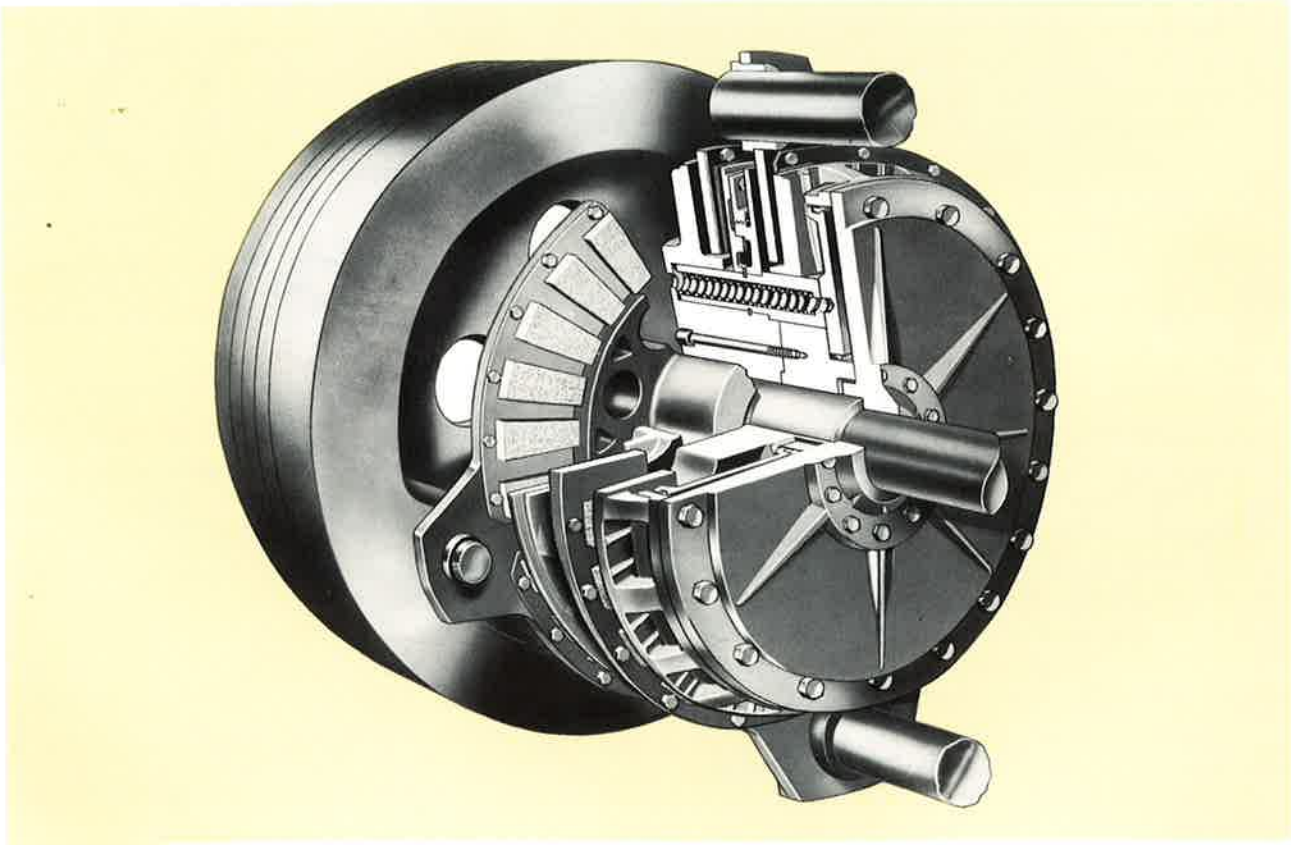


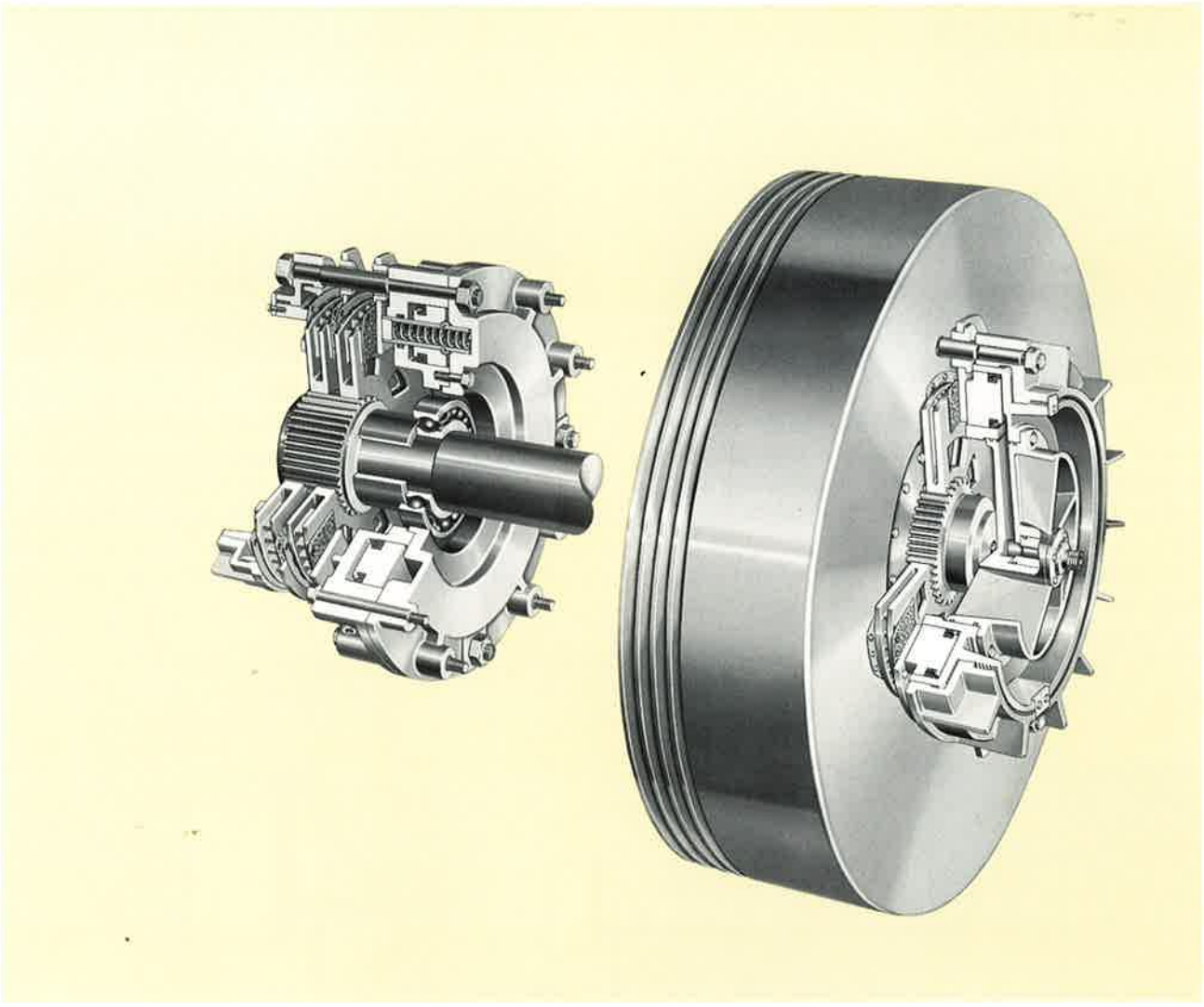
Double Geared — Main Gear Train In Mesh

BLISS CLUTCHES AND BRAKES

TYPE "AK" ADJUSTABLE DISC COMBINATION AIR FRICTION CLUTCH AND BRAKE

This popular unit is a combination clutch and brake in which the friction clutch is air-operated and the disc brake is spring-set. When air pressure is released (or fails), springs automatically set the brake. An adjustment is provided which insures instant engagements and full energy transfer even after much wear on the linings. The driving disc moves only a fraction of an inch between full engagement and full brake. Heat is dissipated rapidly by the exclusive Bliss design which forces blasts of cooling air over surfaces where heat is generated. This unit's self-aligning feature eliminates much of the periodic adjustment required by some designs. Linings are replaceable without dismantling the clutch or drive.

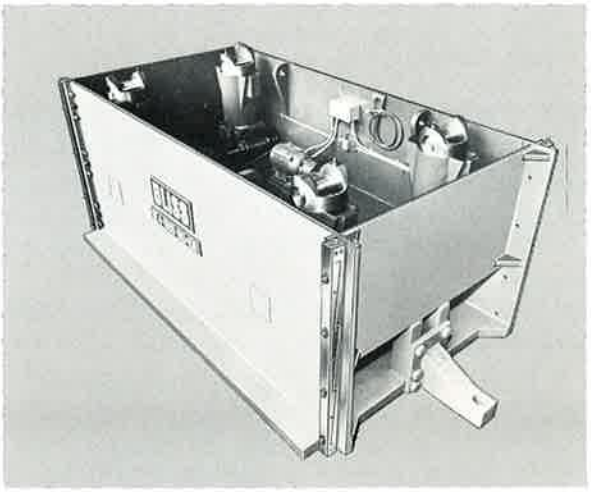




TYPE "DK-FK" LOW INERTIA CLUTCH AND BRAKE

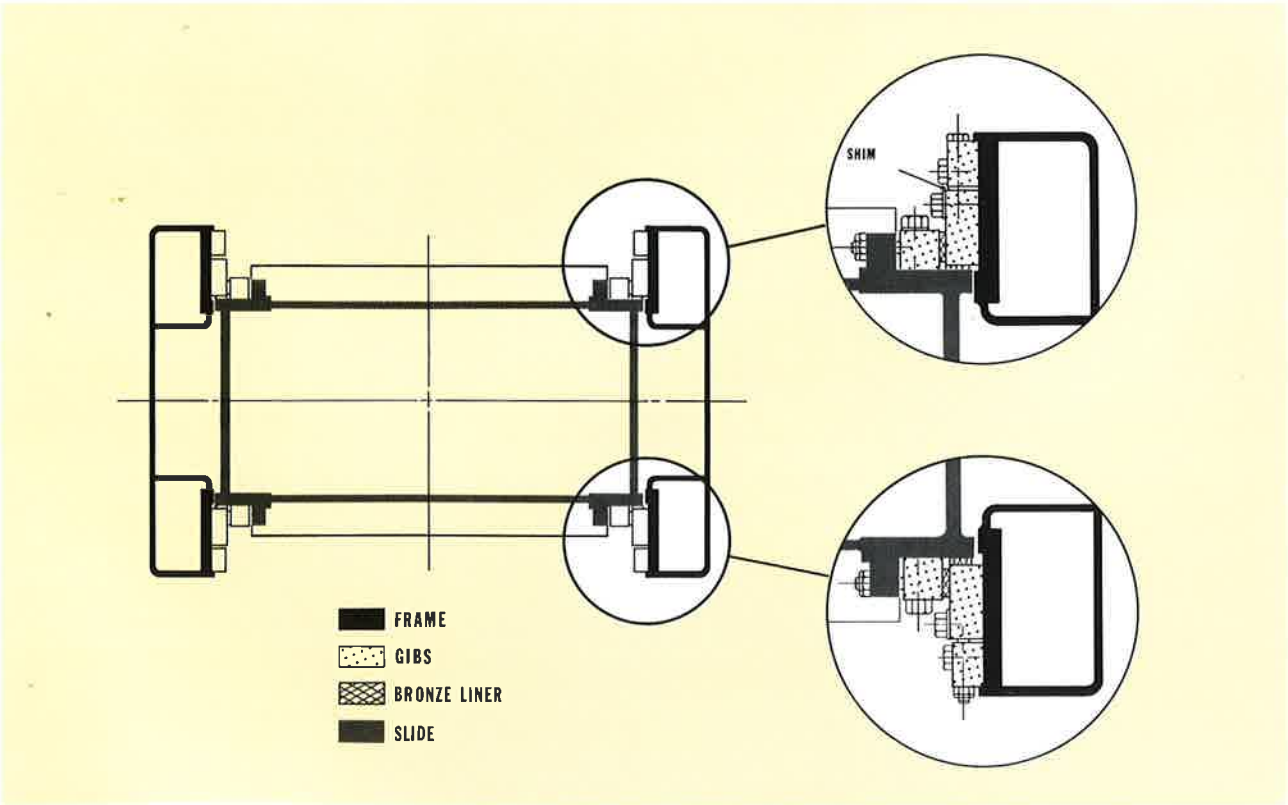
Where heat dissipation rates cannot be achieved conveniently with combination clutch and brake units, the independent clutch and brake design is recommended. Pin and bushing arrangement enables rapid change of brake linings which are interchangeable with those of the combination clutch and brake design. Where needed, the low inertia brake design lends itself to the use of multiple discs for more rapid heat dissipation, which also permits controlling torque on the brake independently of heat dissipation requirements. Both clutch and brake can be adjusted for lining wear.

BLISS SLIDE CONNECTION AND GIBS



SLIDE CONSTRUCTION

The slide is a rigid, stress relieved weldment Deflection in the standard press is guaranteed not to exceed .002" per foot between pitman centers with rated load evenly distributed between such centers. The above specification takes into account measured deflection. Other deflection characteristics are available on request.

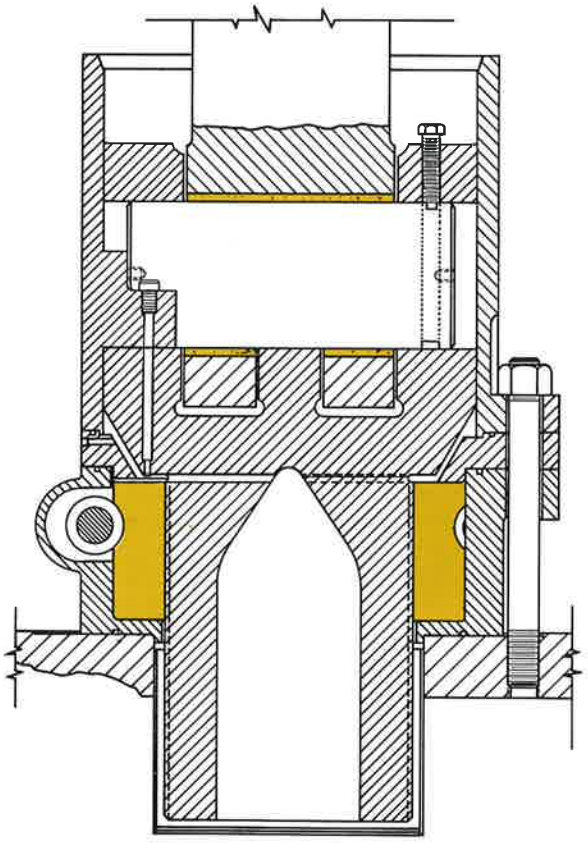


GIBBING

Eight-point gibbing is standard on all Bliss Eccentric Gear Presses. Only this type of gibbing can provide the desirable full guidance of the slide at all four corners in both directions of thrust. Gibs are steel with bronze wear liners on all eight faces. Push-pull screws in the gibs enable eight-point adjustment. Where particularly severe environments indicate, fitted sheet metal gib covers are available to eliminate foreign matter from the gibways. Metal shims are inserted to maintain running clearances.

SLIDE ADJUSTMENT

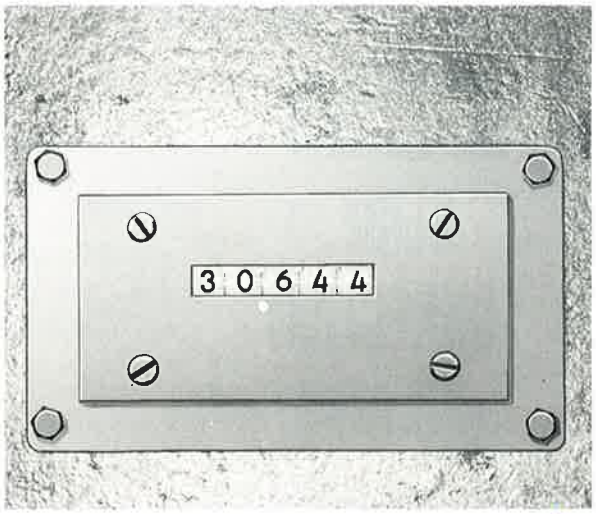
All standard presses in this line have power slide adjustment. Adjustment of the barrel-type connection is made by motor-driven steel worm engaging a bronze wormwheel and nut. This bi-metallic engaging surface provides maximum resistance to galling during extended periods of use. The connection is designed to minimize undesirable play during tension and compression portions of the press cycle.



■ *Denotes bronze*

FULLY AUTOMATIC SLIDE ADJUSTMENT

Besides the close control of slide adjustment available via manual push buttons on the standard press, a completely automatic slide adjustment control "package" is available as a special feature. It permits programming the required shutheight and provides an accurate shutheight readout.



SHUTHEIGHT INDICATORS

Two types of shutheight indicators, both mechanically actuated, are available as optional equipment. These devices can be located either on the slide or the control panel. They speed die setting to previously established shutheights by direct readout of shutheight in thousandths of an inch. Other available aids to die setting and ram adjustment are discussed under "Controls," pages 22 and 23.

STROKE INDICATOR

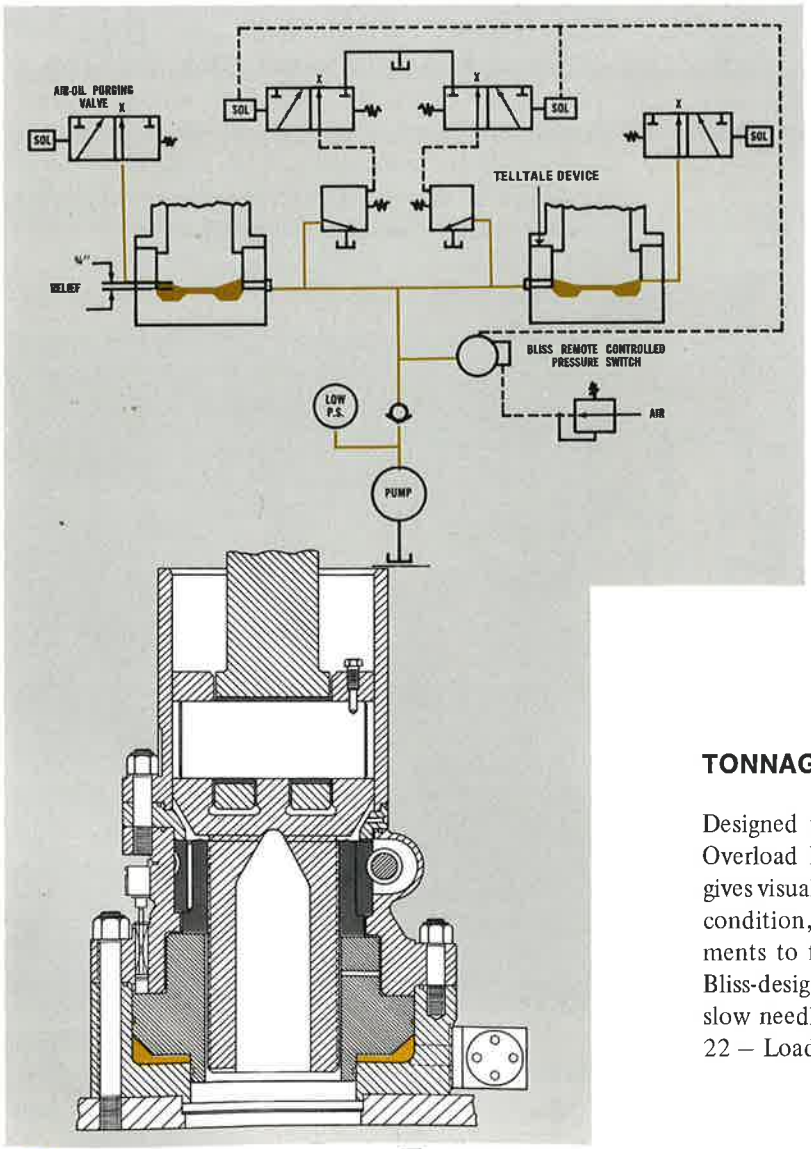
This mechanically driven device shows the four quadrant positions of the crank throughout the stroke of the press. It can be positioned either on crown or upright and is an optional feature.

BLISS SLIDE CONNECTION AND GIBS

HYDRAULIC OVERLOAD DEVICE

Available as an option on all Eccentric Gear Presses, this device is highly recommended for protection against possible damage to press due to errors in die setting or accidental overloading. The device is set to operate at 115% of press capacity unless otherwise specified. Callouts in the illustration indicate the sequence and principle of operation.

The overload system incorporates an hydraulic cylinder at each point of tonnage application, designed to open an overload relief valve upon exceeding a pre-set pressure. A standard remote control setting of the pressure limit can be furnished.



Denotes oil *Denotes bronze*

Hydraulic Overload Slide Adjustment

1. A pressure-sensitive element triggers the clutch control mechanism to disengage the press and apply the brake at the instant of overload.

2. Relief valve opens, preventing further buildup of pressure on the dies by absorbing the inertial energy of the press parts in motion.

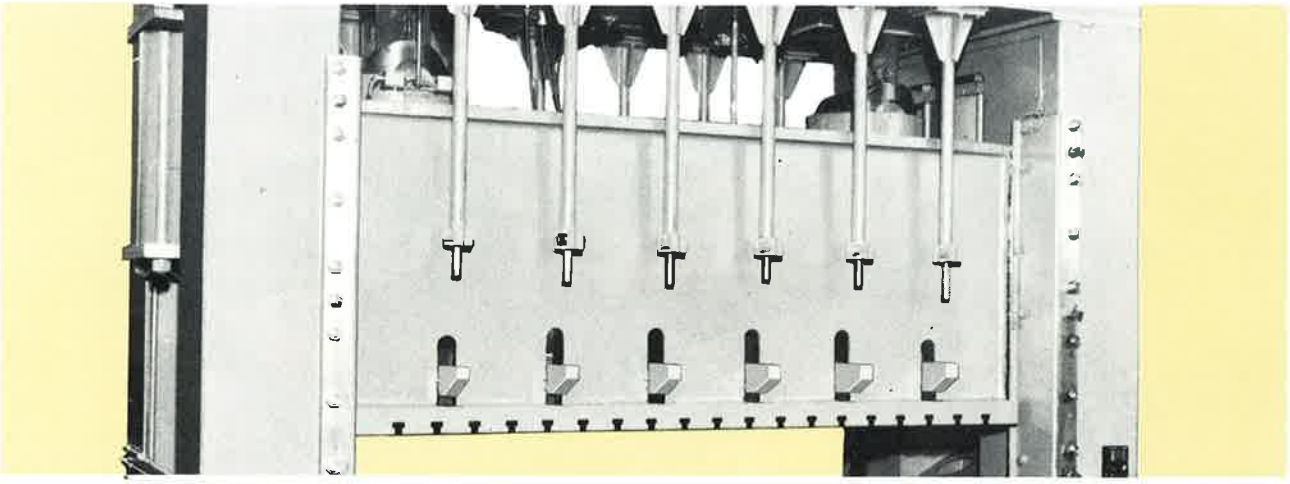
3. An electrical control responds to function of the relief valve in any one cylinder to open the valves in the other cylinders, maintaining parallelism in the slide.

TONNAGE READOUT DEVICE

Designed to work in conjunction with the Hydraulic Overload Device, a pneumatic tonnage readout unit gives visual indication of working tonnage and overload condition, and can be equipped with recording instruments to furnish a permanent record of operation. A Bliss-designed hydraulic snubbing device provides slow needle return for ease of reading. Refer to page 22 – Load Indicators.

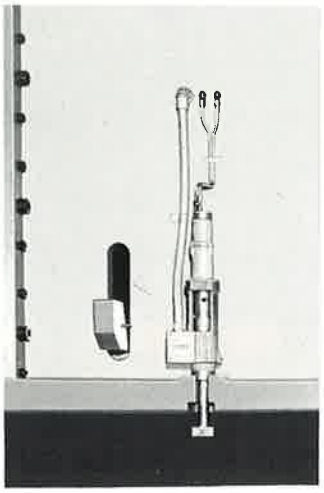
KNOCKOUTS

Standard knockouts on the Eccentric Gear line are bar-type, as illustrated. An optional variation of this positive type of knockout is the cam-operated arrangement. Another special type is the air-actuated knockout which is held in the "Up" position until the slide triggers an adjustable limit switch. A variety of mechanical and pneumatic die-clearing devices is also available.



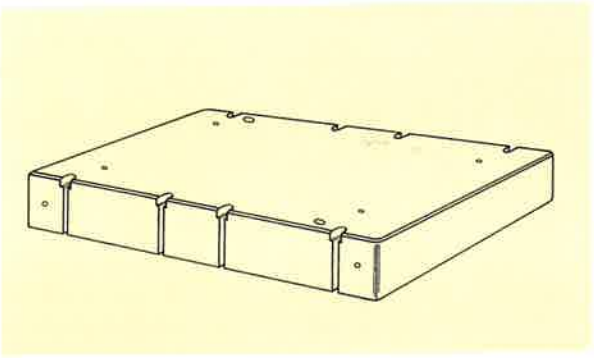
AUTOMATIC DIE CLAMPS

Automatic die clamps greatly facilitate die changes. They are optional on the entire line of Eccentric Gear Presses and are available in 7 and 10 ton capacities. Each clamp is composed of an air-driven torque motor attached to a T-bolt and nut. To operate, the press ram is brought to bottom so that the dies nest together. Pushing the "die set" and "unclamp" buttons initiates an automatic sequence of operations for unclamping the punch from the ram. The T-bolt is loosened and turned 90° by the torque motor. The cycle is self-terminating. Clamping of the new die set proceeds in the reverse order. Once locked, the clamps maintain their own locking force. Should power fail, the clamps can be operated manually. Interlocks prevent press operation unless T-bolts are properly aligned and in locked position.



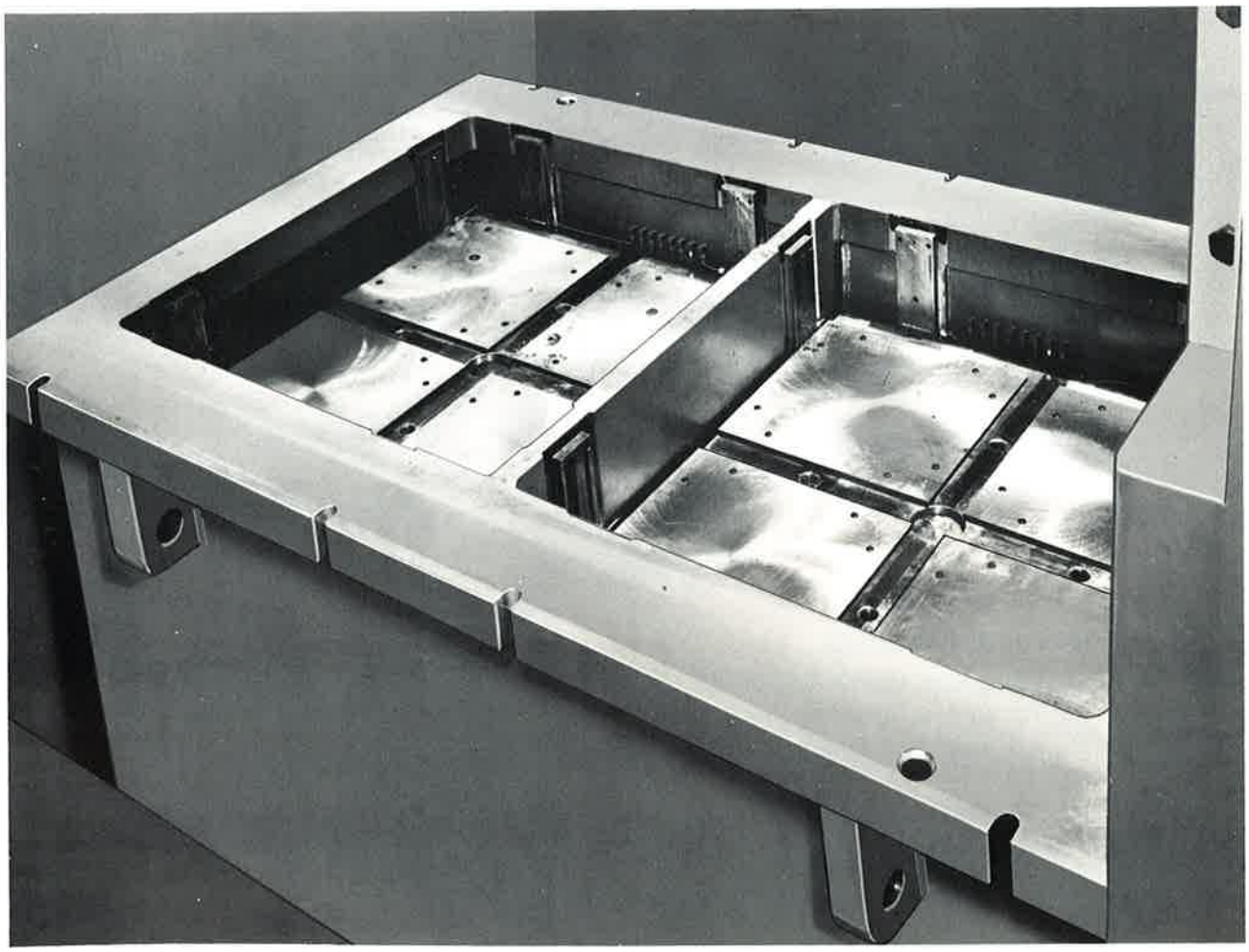
Automatic Die Clamping

BLISS BEDS AND BOLSTERS



BOLSTERS

Standard bolsters are steel, provided with holes for conventional hold-downs. Additional machining for T-slots, etc. is optional.



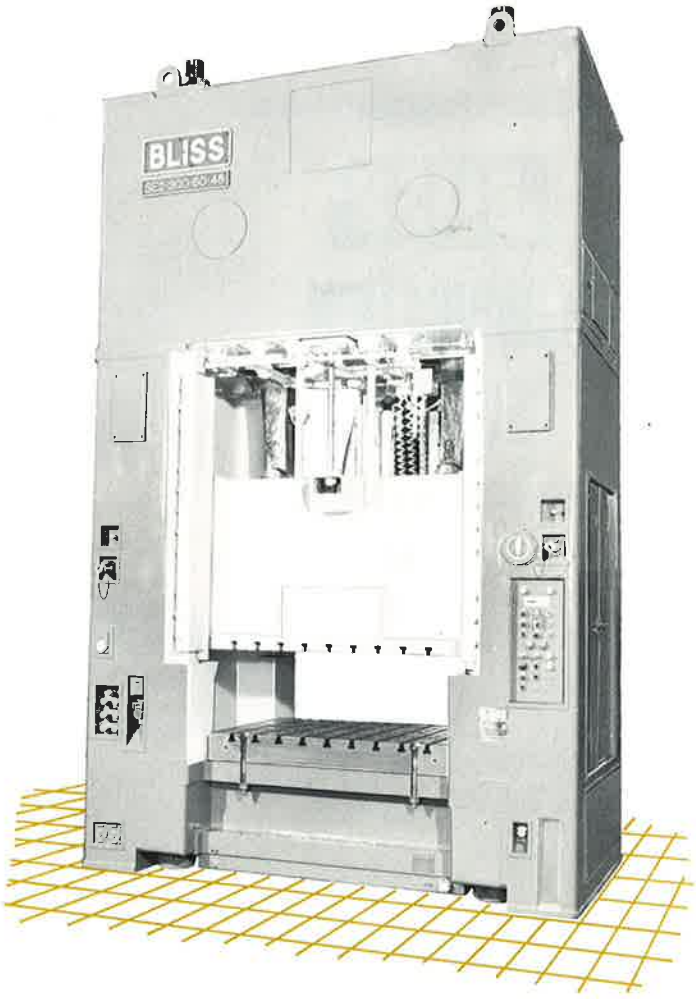
BEDS

Press beds are constructed of welded steel, stress relieved and rigidly reinforced to assure that deflection does not exceed .002″ per foot of die space with the load evenly distributed over center 60% of the distance between tierod centers. Calculations take into account both bending and shear deflection. Other deflection characteristics are available on request. All standard beds are machined for field installation of standard die cushions. Optional variations from standard machining include special machining for scrap discharge and provision of pads for specific feeding mechanisms to customer specifications.

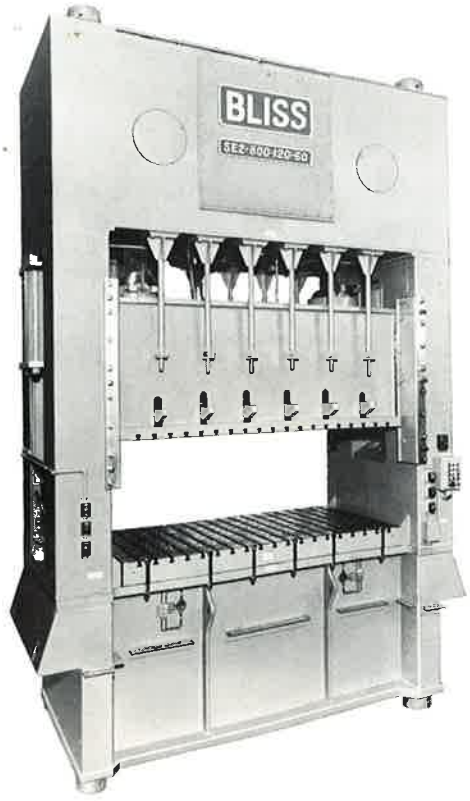
BLISS BEDS AND BOLSTERS

BED MOUNTING

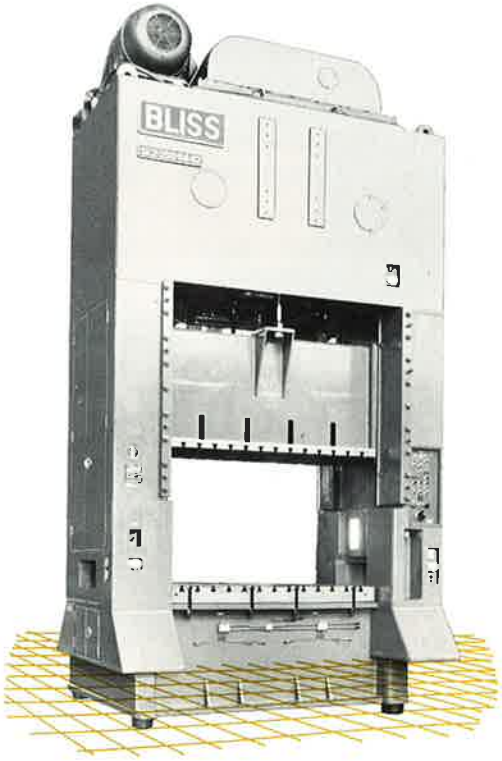
Eccentric Gear Presses up to 400 tons and 96" right-to-left bed size are usually floor-mounted, with pits sometimes required for cushions. Larger presses are pit mounted with the top of bed either flush with the floor or raised above it. Plant headroom, anticipated materials handling practice, and die change procedure are among the factors to be considered in deciding upon the type of bed mounting.



Floor Mounting—Bed Above Floor



Pit Mounting—Top Of Bed Flush With Floor



Pit Mounting—Top Of Bed Above Floor

BLISS LUBRICATION SYSTEM

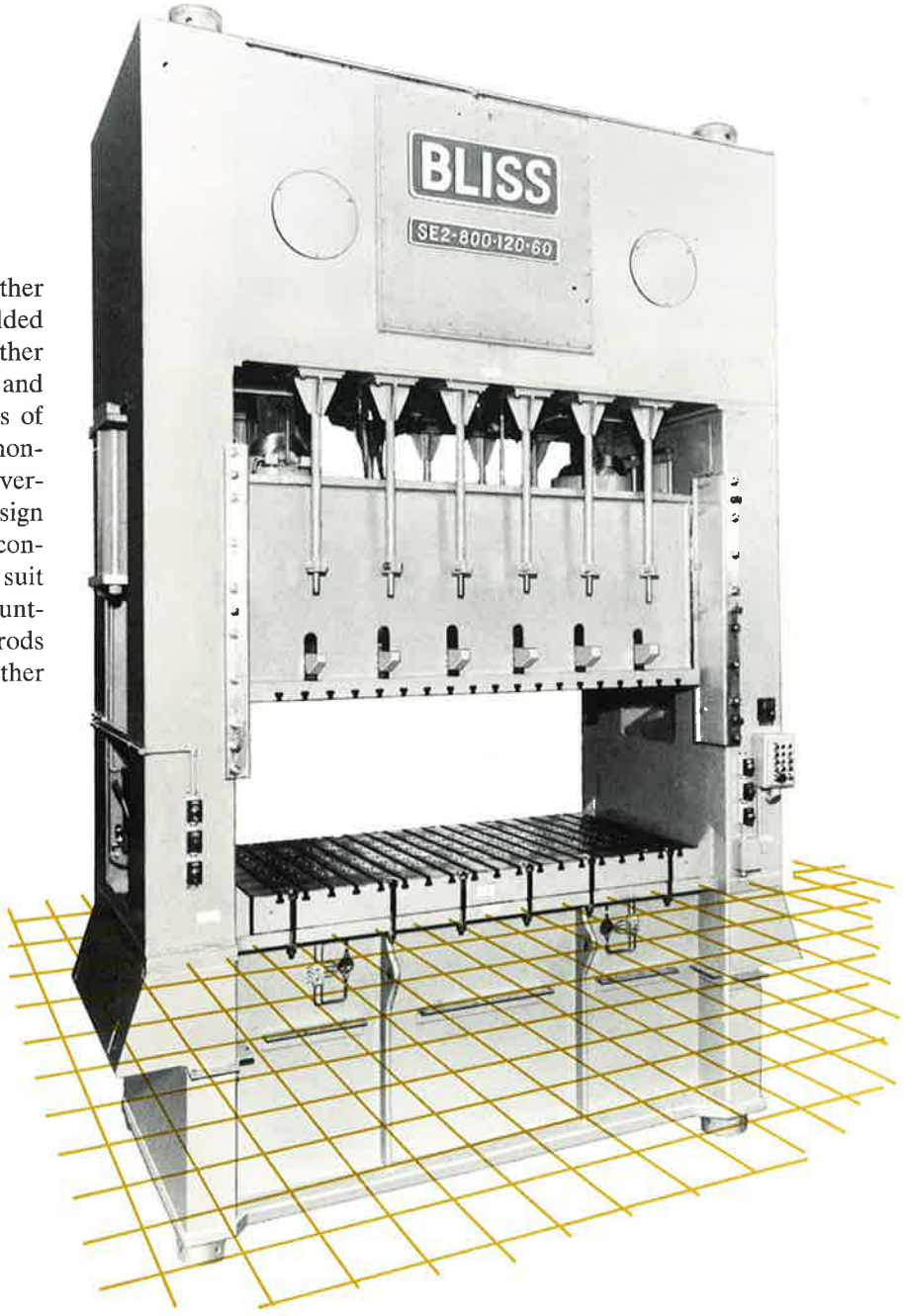
Standard presses in this line are furnished with a high pressure, positive displacement, recirculating oil lubricating system which serves all points on the press. Internal lubrication of counterbalances and cushion cylinders is by means of manual oil fittings, serviced from the floor; or an optional, automatic timed oil system may be substituted for this manual arrangement. When externally-guided cushions are used, Bliss also recommends an automatic grease system to lubricate the cushion guides. Lube systems are normally interlocked into the press controls to provide warning of system failure and/or stoppage of the press.

The following lubricant characteristics and maintenance check intervals are recommended:

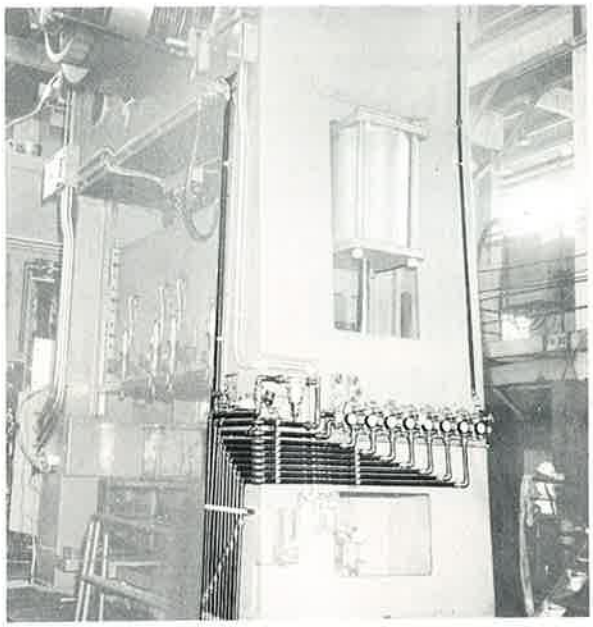
Oil Lube System (recirculating)—900-1000 SUS @ 100°F, 79-84 SUS @ 210°F, 85 Viscosity Index, 450°F Min. Flash Point Type R & O.
Manual Lubrication—150 SUS @ 100°F R & O, for air line oilers.
Grease for Roller Bearings—MLG1 #1 Lithian Base, R & O check every three months.
Cushion and Counterbalance Internals—1000 SUS @ 100°F oil, R & O check every two weeks.
Manual or Automatic Grease System—NLG1 #1 R & O.
With Grease System—1000 SUS @ 100°F R & O oil in adjustment barrel in slide.

BLISS UPRIGHTS AND TIE ROD ASSEMBLY

Uprights of Bliss Eccentric Gear Presses, like other major frame components, are constructed of welded steel and stress relieved and, cross keyed together for positive alignment. Rigidity, ease of access, and precision guidance are the paramount principles of design. Standard presses in this line are the non-inbuilt type shown here. Completely in-built versions of these presses are available as a design option where full enclosure of piping, wiring, controls, etc. is required. Others are optional to suit individual requirements including suitable mounting pads for various feeding devices. The tie rods which hold the crown, uprights, and bed together are prestressed.



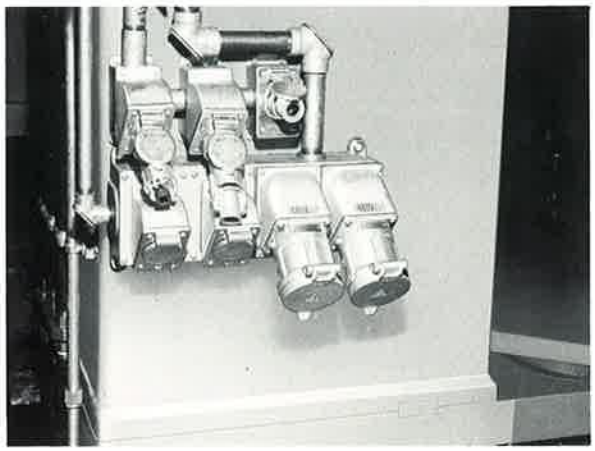
BLISS UPRIGHTS AND TIE ROD ASSEMBLY



Typical Air Manifolding

AIR MANIFOLDS AND CONVENIENCE OUTLETS

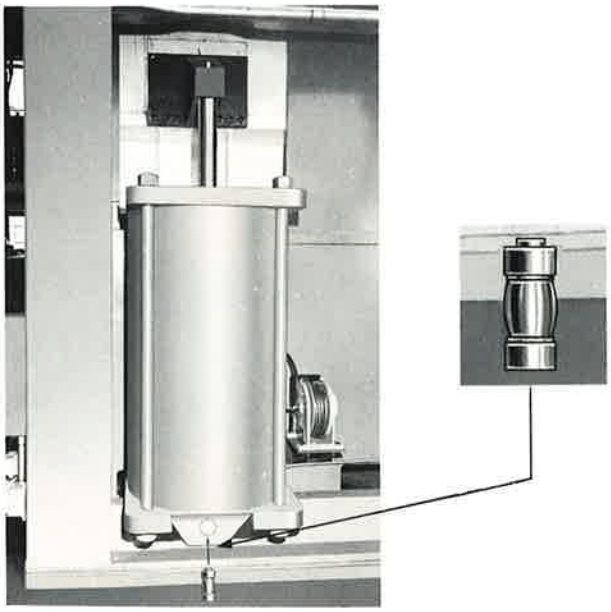
A variety of convenience outlets can be furnished to the customer's requirements. Outlets on the standard press include 440 and 120V electrical connections and an outlet for unregulated shop air supply for portable pneumatic tools. Standard air manifolds are provided for clutch, brake, and counterbalances. These are regularly provided at a single location having pressure gauges and adjusting valves, from which air is rigidly piped to the various accessories. Additional air manifolds are available for cushions and other air-operated accessories. Die lights at convenient inbuilt locations are optional.



Convenience Outlets

COUNTERBALANCES

Counterbalance cylinders are provided on all standard Eccentric Gear Presses. These units offset the weight of the slide and other reciprocating press parts. Varying air pressure is possible to counteract the weight of dies, reducing wear of drive gears. These cylinders are usually mounted within the uprights, where possible, are self-contained incorporating their own surge volume. They are self-adjusting to mis-alignment by means of wobble pin mountings (visible in illustration).



BLISS UPRIGHTS AND TIE ROD ASSEMBLY

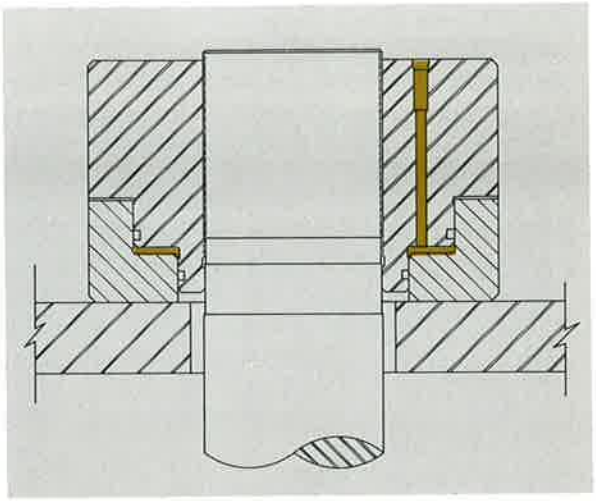
TIE ROD TENSIONING DEVICES

TIE ROD NUT

Standard tie rods are drilled for bolt heaters (cal-rods). The following are optional features for precise tensioning of the tie rods. One of the quickest and most convenient ways of prestressing tie rods in these straight side presses is by means of the two-piece, hydraulically expanded tie rod nut shown here. Used in place of standard tie rod nuts, these devices are mounted permanently on the crown or bed. Threaded on the rod until snug against the crown, the nut is then expanded until a shim of correct thickness to provide the proper tensioning in the rod can be inserted between the nut and cylinder housing. By reactivating the nut and removing the shim, stress on the rod is quickly removed to relieve an "on-bottom" condition. Operation of the nut is by means of a pneumatic or manually operated hydraulic pump.

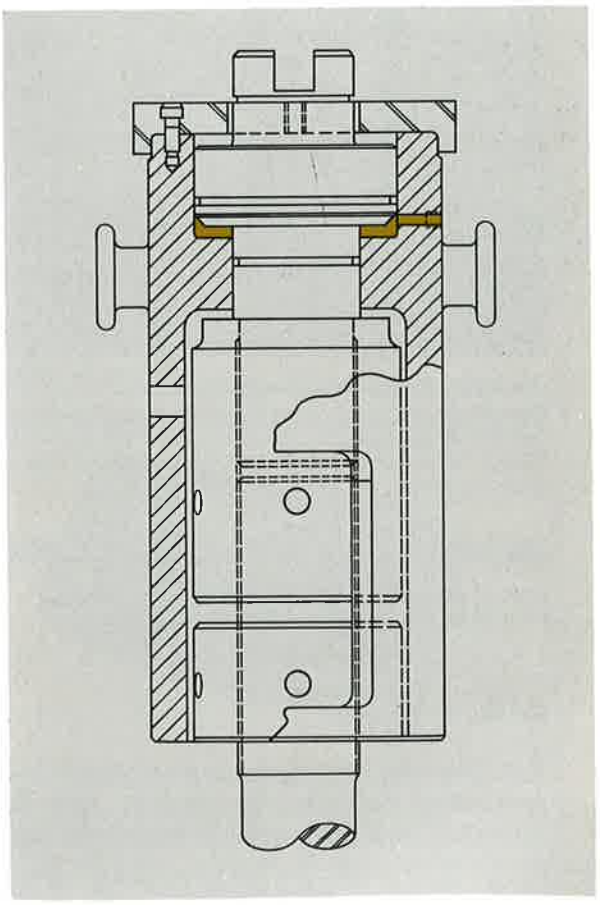
HYDRAULIC STRETCHER

Another way of prestressing the tie rods is provided by this hydraulic stretcher, which can also be furnished for power or manual pumping. It is a portable device, hoisted into position each time it is used and can therefore serve an entire line of presses where time permits. Tie rods have an extended thread length beyond the nut to allow the adaptor to be screwed on to the tie rod.



Hydraulic Tie Rod Nut

Denotes oil

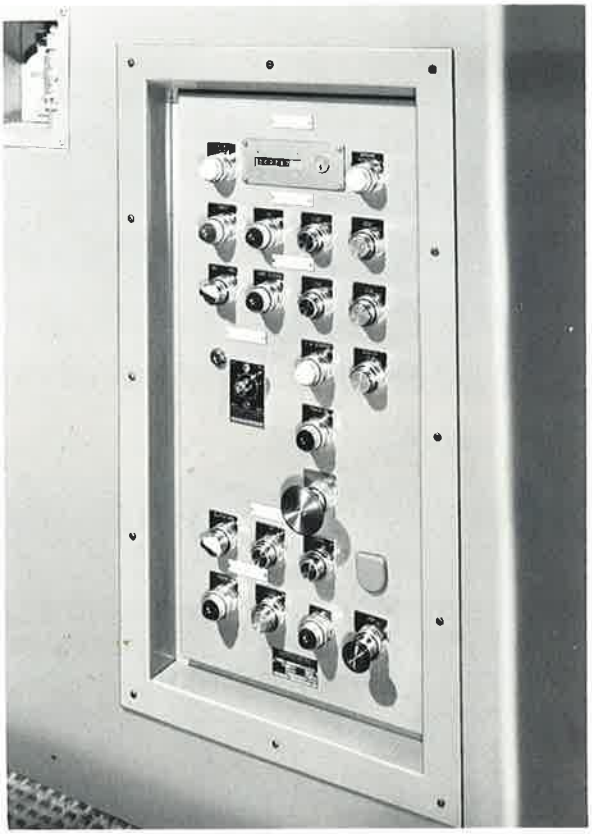


Hydraulic Tie Rod Stretcher

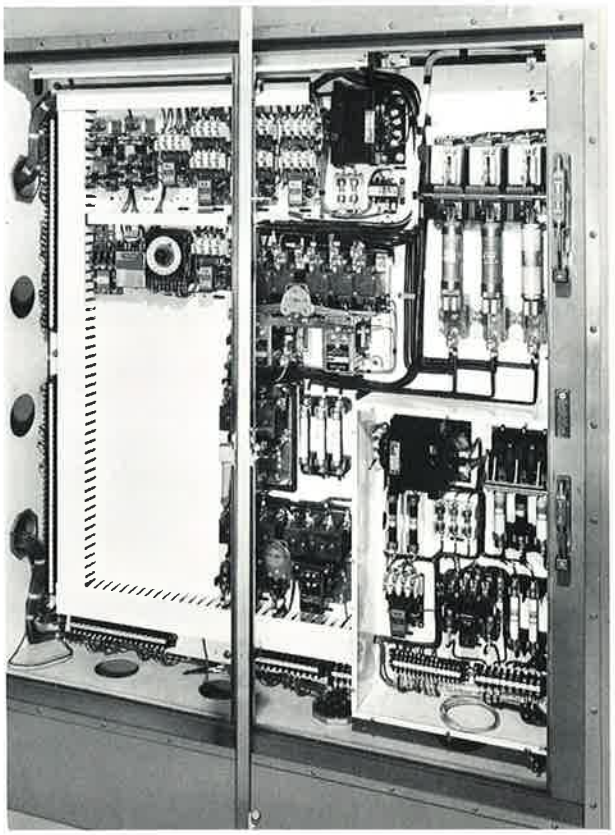
Denotes oil

BLISS CONTROLS

Design and engineering of standard Bliss Controls affords a wide range of choices to suit individual user requirements. Standard presses include all necessary controls for standard features, terminating in a single master control panel. Many other arrangements of terminal control hardware are available as options, including pedestal mounts, foot controls, remote consoles, and run-button arms. Solid state controls are also available as an option feature.



Operator's Control Panel—normally located on an upright, this standard panel provides one-location push-button control of all operator-actuated press functions except "Run", "Emergency Stop", and "Jog" buttons. The panel is recessed into the upright for safety.



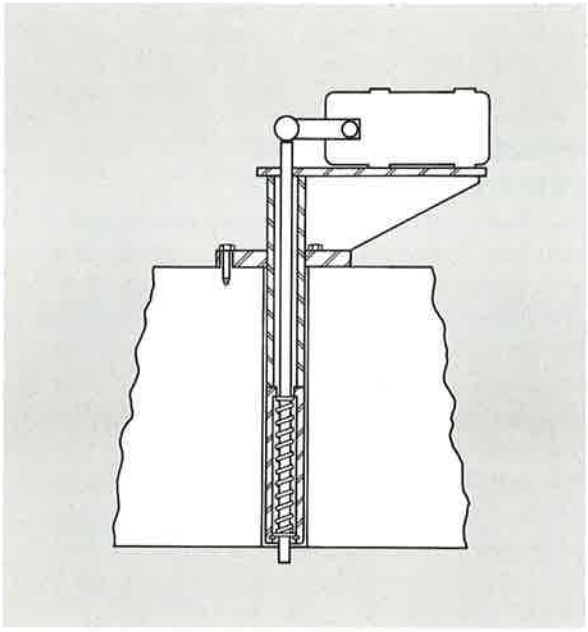
Main Control Cabinet—contains color-coded wiring for all press circuits. All components are numbered in accordance with the wiring diagram. Note available space for addition of components as needed.

LOAD INDICATORS

BLISS-PAK

The Bliss-Pak System consists of a solid-state instrument for direct reading of press loading and load distribution in per cent of rated capacity, with either two or four sensor units. Sensors are bolted permanently to the press frame, and the mounted amplifier unit contains the controls and meter.

The load sensors are full-bridge force transducers, steel-encapsulated and factory-sealed against dust, vibration, moisture and stray electric fields. They can be mounted to the press in minutes using a simple jig and portable drill. Sensors are factory-calibrated, tested and balanced for complete interchangeability with only minor re-calibration. Initial calibration can be made with either static or dynamic loading.



VISULOAD *"What it can do for you"*

1. Reads directly the total press load, or individual sensor loading, in per cent of rated press capacity.
2. "Tracks" load exerted throughout each stroke of the press.
3. Reads "Peak" dynamic load, and retains this indication up to three minutes.
4. Reads directly the static load in a press stuck on bottom.
5. Indicates by extent of overload, or sudden change in load reading, the likelihood of damage to press members, such as a stretched tierod.
6. Enables early detection of changes in stock thickness, die lubrication or metal characteristics.
7. Indicates tool wear – helps to schedule outages for die maintenance on an optimum basis.
8. Enables operation of press within rated capacity – prolongs press and die life.
9. Speeds set-up to previously established optimum conditions of loading and load distribution.
10. Allows a permanent record of operating conditions to be made for each job.
11. Reads the change in pressure resulting from each adjustment of the connection screws.

SPECIAL FAST DIE-SETTING AND CYCLE CONTROLLERS

SLOW INCHING CONTROL

This control arrangement permits the set-up man to produce a complete workpiece under inching conditions. The unit is driven through the brake element of the Type "AK" combination clutch and brake or the "DK-FK" independent brake and can turn the press over at a rate of one to two strokes per minute while developing full rated tonnage near bottom. The control operates in both forward and reverse direction.

BLISSIMIT BOTTOM ADJUSTMENT

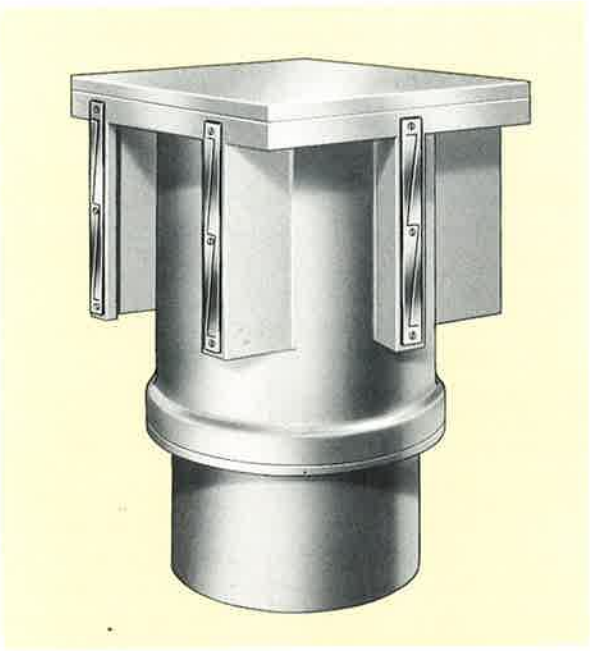
This ram control unit is operated either manually or automatically. Under manual control, the ram adjusting mechanism operates in the normal manner. On automatic, the ram goes to the top limit of adjustment upon actuation of the control. Upon pressing the "lower" button, the ram is adjusted down until a plunger, set in the ram face, contacts the die. This contact triggers a limit switch which stops the ram adjustment motor. Repeatability of pre-set shut-heights by means of this control is accurate to plus .125″, minus .000″.

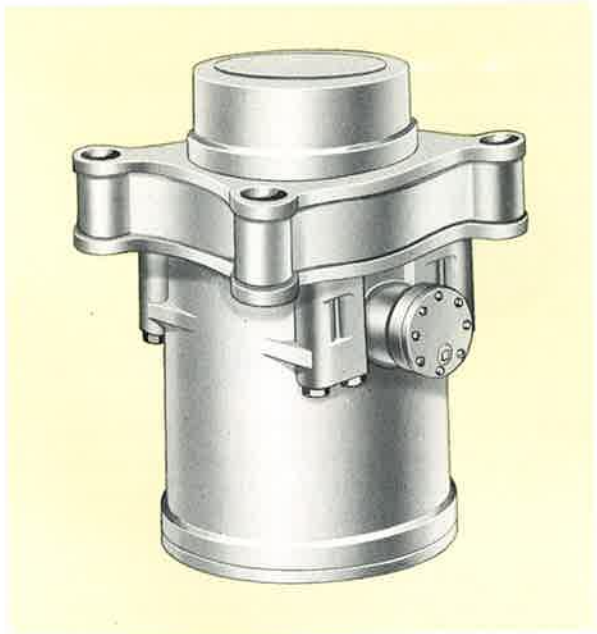
BLISS ROTARY CAM LIMIT SWITCH

This rotary switch controls the top-stop position, resets the anti-repeat circuit, and determines the amount of time the operator must maintain pressure on the "Run" buttons. Auxiliary functions include actuation of a production counter, a Bliss timed oil system, and other press functions. These are available in 2, 4 or 6 cam models. A monitor detector can also be provided.

The new Visuload instrument is a little portable box packed with solid-state microcircuitry, a few knobs and a meter that answers many questions about press operation instantly, precisely, repeatably. All you do is plug it into permanently-mounted sensors on the press. You can then carry it from press to press. It can also be connected to a graph-type recorder giving a permanent record of each job.

BLISS DIE CUSHIONS





EXPANDING THE CAPABILITY OF SINGLE ACTION PRESSES

The two basic types of Bliss cushions shown here—pneumatic and hydro-pneumatic—are available in a wide range of sizes, capacities, and operating features. With them, the quality as well as the versatility of work performed in single action presses can be substantially extended. Every Bliss press is furnished with the bed pre-machined to accept a variety of standard cushions. Standard cushions can be installed in side-by-side multiples for large bed areas or stacked to increase cushion tonnage in relatively small die space. Cushions may also be installed in the slide and can provide knockout function as well as draw ring pressure.

SPECIAL DIE CUSHIONS

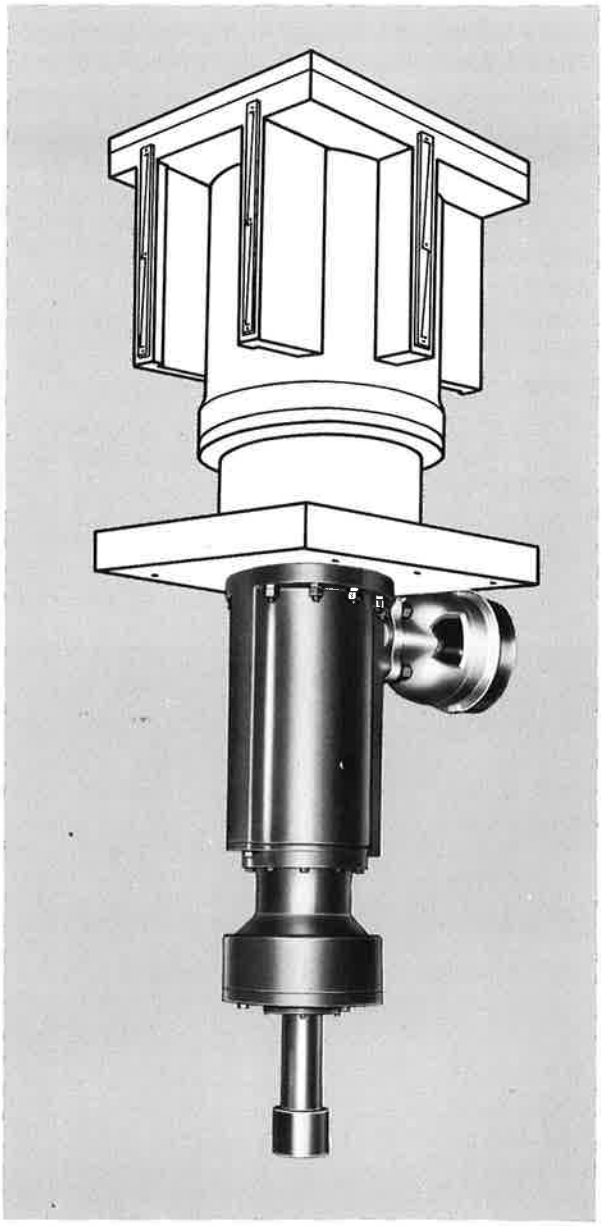
When the dimensions of a press bed opening and the cushion tonnage will not permit installation of a standard cushion, special designs can be furnished. Often standard models can be modified to suit special conditions. In departing from standard, cataloged cushions, the press builder's engineering department should be consulted.

SELECTING THE PROPER CUSHION FOR THE JOB

Bliss engineers with greater experience and more types of cushions to select from than any other press builder, work closely with customers in this aspect of press application. Following are some of the factors to be considered when evaluating cushions for your Eccentric Gear Presses.

CUSHION TYPE

The type UC pneumatic cushion is often used on Eccentric Gear Presses with relatively wide bed areas. In this design, the cushion is inverted—cylinder on top and piston below. This arrangement is especially clean in operation, the position of the cylinder keeping it virtually clear of scrap and contamination. The piston is wiped clean on the cushion down stroke. These cushions are most often provided with external guides but may be internally guided if conditions favor. If the cushion depth is greater than five times the stroke of the cushion, a surge tank may not be required. On presses with sufficient shut height, a pit may not be needed, unless the cushion is furnished with a locking device. This design is also available in in two-stage and three-stage arrangements in which cushions are stacked to multiply unit capacity.



Locking Device incorporating cushion adjustment.

Types FH and EH hydro-pneumatic cushions are often used for relatively large tonnage requirements on single point Eccentric Gear Presses or on multiple point presses having two or more small bed openings. They are usually internally guided in such applications. Externally guided FH cushions are more often used on multiple point presses. Both arrangements require a pit. Separate surge tanks may also be required. Cushions are also available to conserve air and to facilitate rapid cushion deflation. The air loss for die change is equivalent to approximately the working stroke of the cushion. Air will remain at operating pressure in the surge system of the cushion.

TONNAGE AND STROKE

A rule of thumb for cushion capacity is 1/6 that of the press tonnage and for stroke, ½ to ⅓ that of the press. There is considerable flexibility in this rule to meet special conditions. Capacities ranging from ½ ton to almost 100 tons are available in single pneumatic cushions operating at 100 psi air pressure. For higher tonnages in limited space, hydro-pneumatic cushions are used. Where possible, necessary surge tank capacity is designed into the cushion. Internally guided cushions are simplest and most economical where off center loading is not excessive. For more severe off center loading, externally guided cushions are recommended.

SPECIAL FEATURES AVAILABLE

For draw work, it is usually necessary to delay the cushion return until the die is cleared for ejection of the part. This is accomplished by a Locking Device, applicable to most types of cushions. A switch is provided on the press control panel which renders the Locking Device inoperative when not required. A single Locking Device can serve multiple-stage cushions. Synchronizing the locking device with the press cycle is readily accomplished by the press rotary limit switch. Other optional features include cushion snubbers and motorized adjustment of cushion.

HYDRAULIC OVERLOAD RELIEF BEDS, akin to cushions in their function, furnish protection against overloads from double blanks, careless adjustments, etc. They function in the range of 2,000 to 3,000 psi and can be adjusted to sustain slightly more pressure than required for a given job, beyond which they will yield to overload pressure.

CUSHION DESIGNATIONS

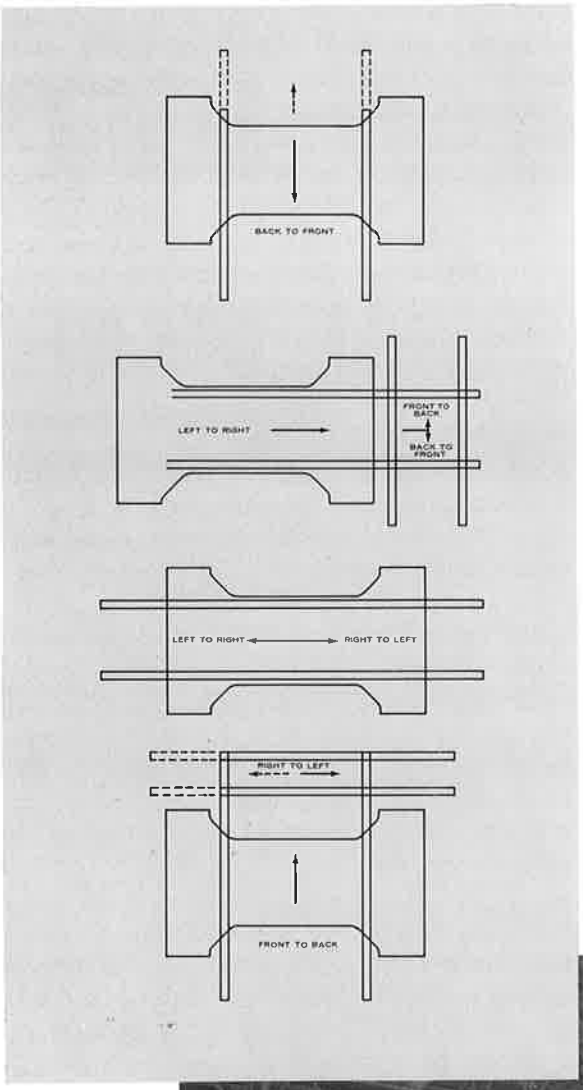
UC—Inverted cylinder pneumatic, single unit
UCC—Inverted cylinder pneumatic, two stacked units
UCCC—Inverted cylinder pneumatic, three stacked units
FH—Self-contained hydro pneumatic
EH—Non-self-contained hydro pneumatic
L—Suffix denoting locking device on any of the above

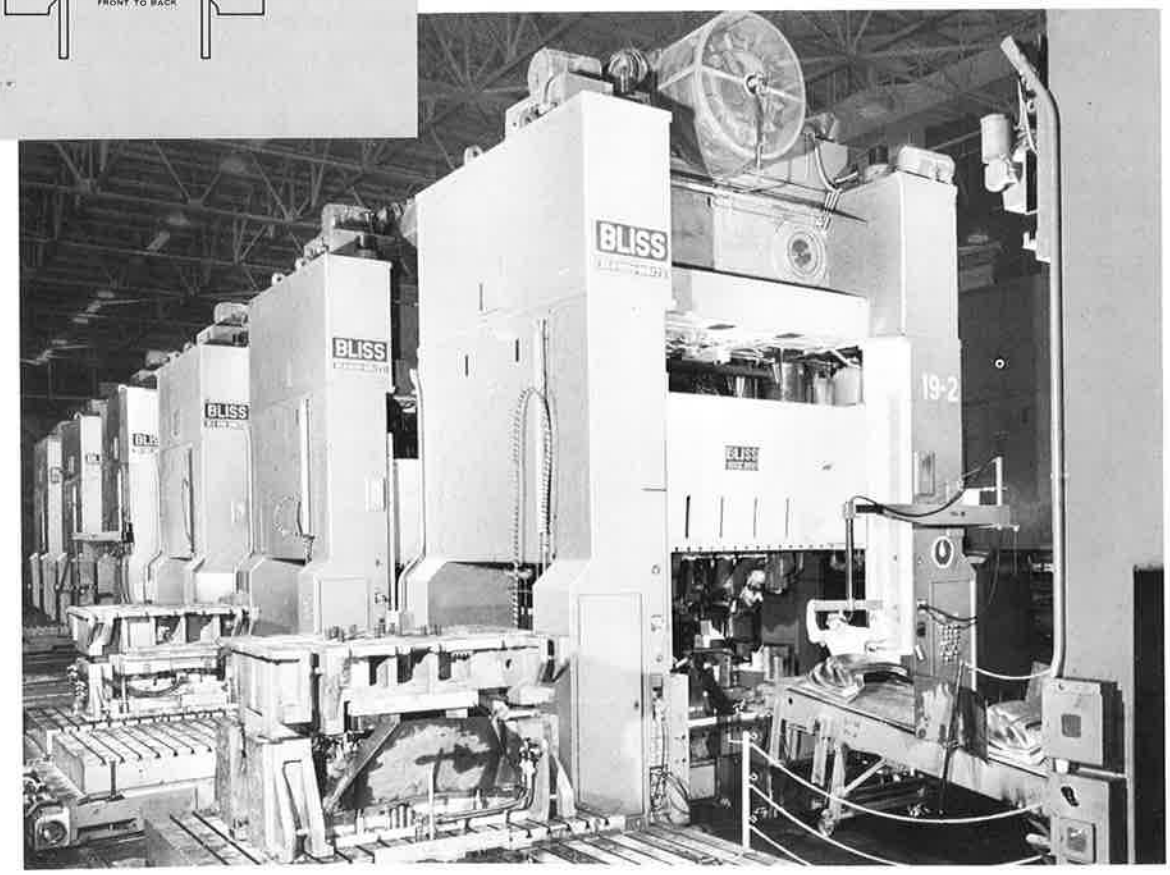
ROLLING BOLSTER PRESSES

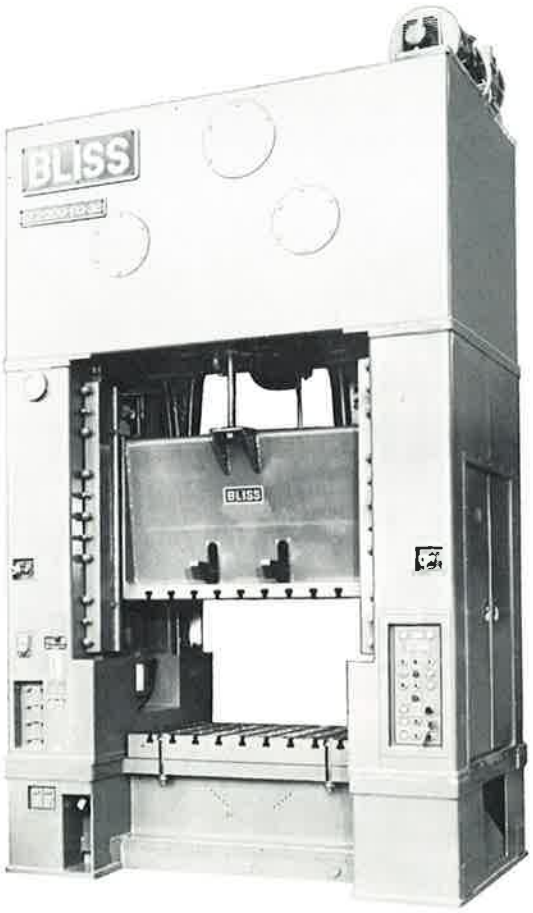
The obvious advantage of rolling bolsters on a production line . . . faster and more accurate die-change . . . is by no means the only benefit derived from this major advance in press technology. Reduced inventories, parts storage, and parts handling are direct results of rapid die-change. While rolling bolsters can be designed for almost any type of press, they are most often used in conjunction with large straight-side top-driven or underdriven presses, either single or double-action types.

The bolsters are self-powered, interlocked and controlled at the master panel. While one die stamps out parts, another die can be secured to a bolster outside the press. Changing large dies merely involves moving the rolling bolster with die attached into the press and automatically positioning and clamping it in place. Die changeover time is often reduced from hours to minutes.

More than two bolsters are sometimes used, and various bolster arrangements are available to suit individual plant requirements. More typical Bliss rolling bolster configurations are shown at left. Other features of these presses include: automatic die clamps, bolster clamps, automatic slide-positioning devices, hydraulic overload protection, and tonnage indicators.







BLISS
200 TON PRESS

Stroke		
Std.	ins.	4
Max.	ins.	16
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	10
Shutheight, bed to slide, SDAU	ins.	34
**Main Motor	HP	20
	RPM	1200

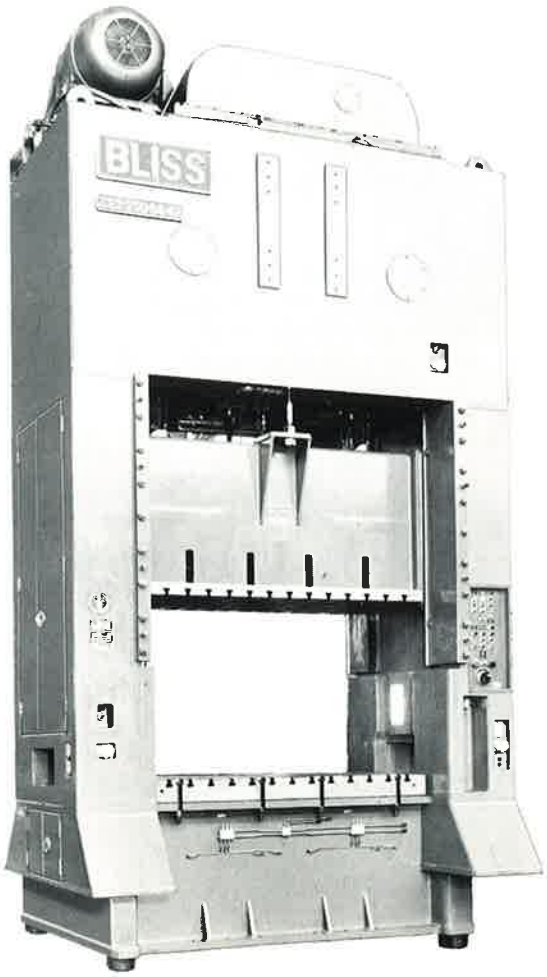
*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		5	6	6	6	6	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		21	21	27	33	39		
BOLSTER AND SLIDE F to B		36	36	42	48	54		
UPRIGHT OPENING* F to B x HT		26x20	26x20	26x20	26x20	26x20		
BOLSTER AND SLIDE L to R	30	1 pt.					21	18
	48		2 pt.				33	7
	60		2 pt.				45	12
	72		2 pt.				57	14
	84		2 pt.				69	16
	96			2 pt.			81	20

*Upright openings can be furnished when desired.

BLISS 250 TON PRESS



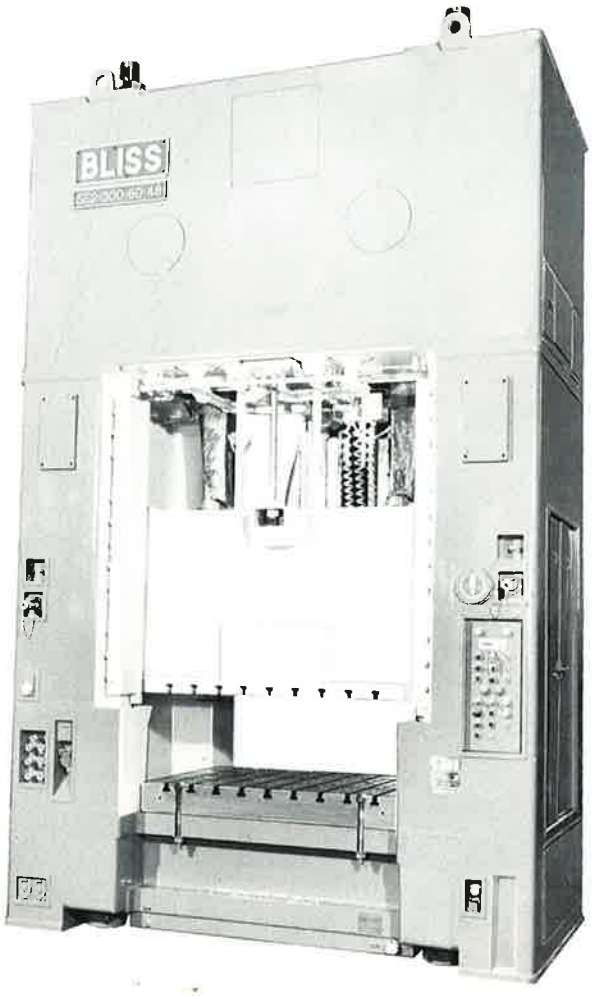
Stroke		
Std.	ins.	8
Max.	ins.	16
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	10
Shutheight, bed to slide, SDAU	ins.	37
**Main Motor	HP	25
	RPM	1200

*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		5½	6½	6½	6½	7	7	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		21	27	33	39	45	51		
BOLSTER AND SLIDE F to B		36	42	48	54	60	66		
UPRIGHT OPENING* F to B x HT		26x20	26x20	26x20	26x20	30x20	30x20		
BOLSTER AND SLIDE L to R	30	1 pt.						21	18
	48		2 pt.					33	7
	60		2 pt.		2-4 pt.			45	12
	72		2 pt.		2-4 pt.			57	14
	84		2 pt.		2-4 pt.		4 pt.	69	16
	96			2 pt.		2-4 pt.	4 pt.	81	20
	108			2 pt.		2-4 pt.	4 pt.	93	22
	120				2 pt.		4 pt.	105	24

*Upright openings can be furnished when desired.



BLISS 300 TON PRESS

Stroke		
Std.	ins.	8
Max.	ins.	16
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	10
Shutheight, bed to slide, SDAU	ins.	40
**Main Motor	HP	30
	RPM	1200

*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		6	6	7	7	7	7	7½	7½	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		21	24	27	33	39	45	51	57		
BOLSTER AND SLIDE F to B		36	42	42	48	54	60	66	72		
UPRIGHT OPENING* F to B x HT		26x20	26x20	26x20	26x20	26x20	30x20	30x20	30x20		
BOLSTER AND SLIDE L to R	36	1 pt.								24	20
	60			2 pt.						45	12
	72			2 pt.			2-4 pt.			57	14
	84			2 pt.			2-4 pt.	4 pt.		69	16
	96				2 pt.		2-4 pt.	4 pt.		81	20
	108				2 pt.		2-4 pt.	4 pt.		93	22
	120						2-4 pt.	4 pt.		105	24

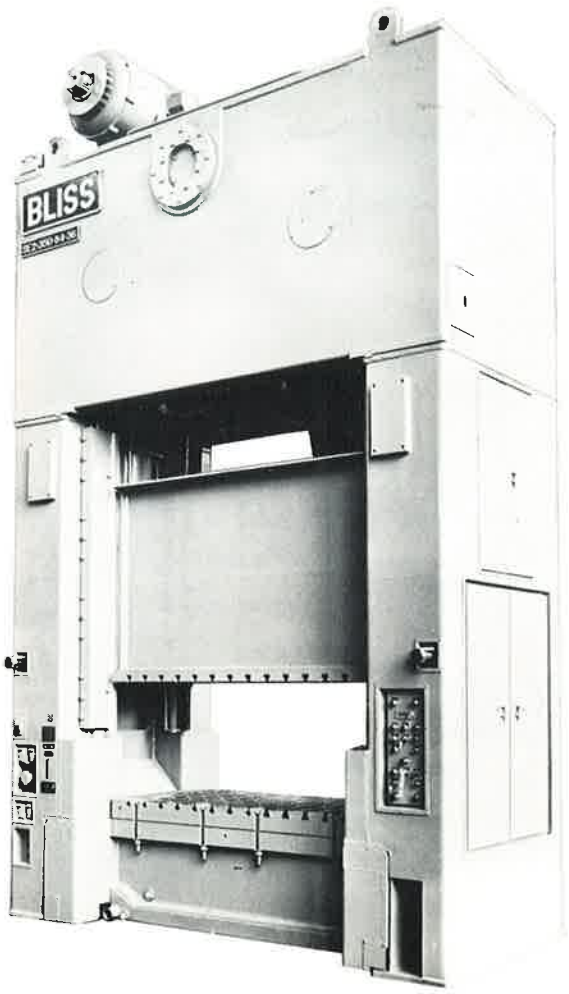
*Upright openings can be furnished when desired.

BLISS 350 TON PRESS

Stroke		
Std.	ins.	8
Max.	ins.	18
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	10
Shutheight, bed to slide, SDAU	ins.	44
**Main Motor	HP	30
	RPM	1200

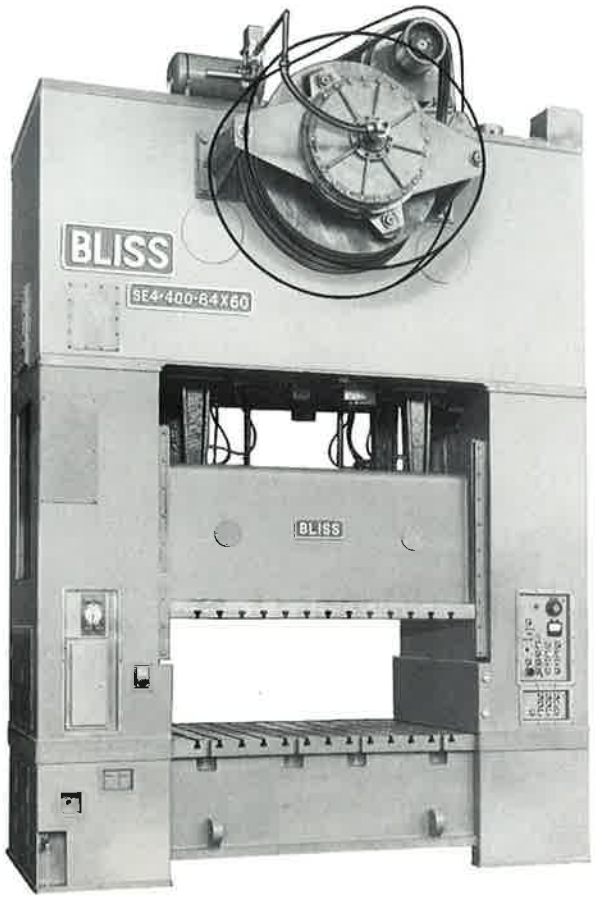
*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.



BOLSTER THICKNESS		6½	6½	7	7½	7½	7½	8	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		21	24	27	33	39	45	51		
BOLSTER AND SLIDE F to B		36	42	48	54	60	66	72		
UPRIGHT OPENING * F to B x HT		26x20	26x20	26x20	26x20	30x20	30x20	30x20		
BOLSTER AND SLIDE L to R	36	1 pt.							24	20
	60		2 pt.						45	12
	72		2 pt.			4 pt.			57	14
	84		2 pt.			2-4 pt.	4 pt.		69	18
	96			2 pt.		2-4 pt.	4 pt.		81	22
	108				2 pt.	2-4 pt.		4 pt.	93	24
	120				2 pt.		2-4 pt.	4 pt.	105	26

*Upright openings can be furnished when desired.



BLISS 400 TON PRESS

Stroke		
Std.	ins.	8
Max.	ins.	20
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	10
Shutheight, bed to slide, SDAU	ins.	44
**Main Motor	HP	40
	RPM	1200

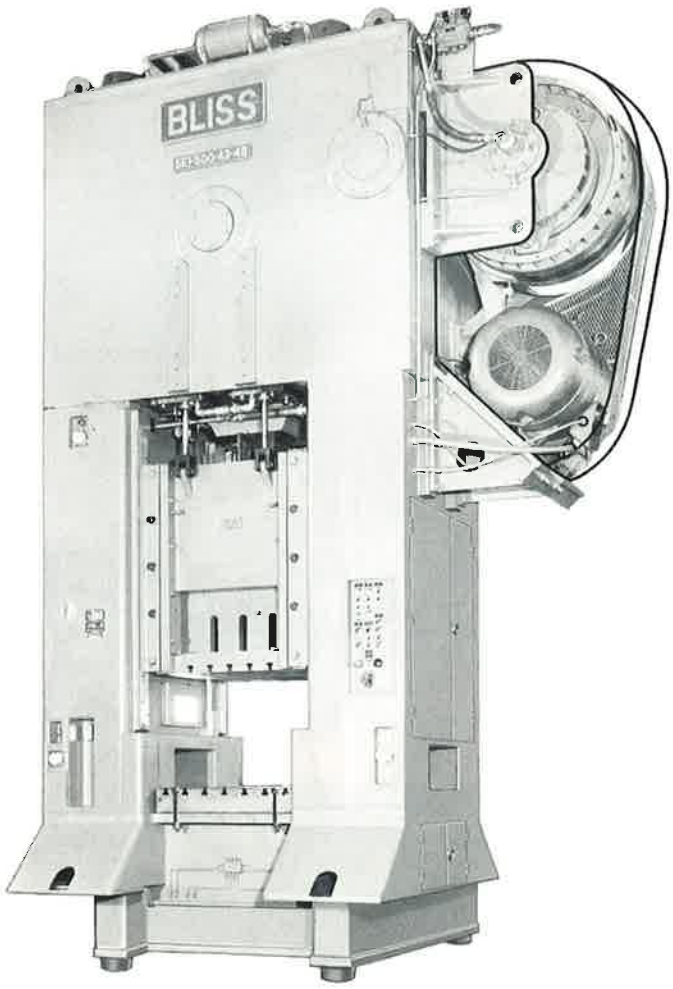
*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		6½	6½	7	7½	7½	7½	8	8	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		24	24	27	33	39	45	51	57		
BOLSTER AND SLIDE F to B		36	42	48	54	60	66	72	78		
UPRIGHT OPENING* F to B x HT		26x20	26x20	30x20	30x20	30x20	30x20	30x20	30x20		
BOLSTER AND SLIDE L to R	36	1 pt.								24	20
	60		2 pt.							45	12
	72		2 pt.							57	14
	84		2 pt.							69	18
	96			2-4 pt.			4 pt.			81	22
	108				2 pt.		2-4 pt.	4 pt.		93	24
	120					2 pt.		2-4 pt.	4 pt.	105	26
	132					2 pt.		2-4 pt.	4 pt.	117	28
	144						2 pt.	4 pt.		129	30
	156							4 pt.		141	34

*Upright openings can be furnished when desired.

BLISS 500 TON PRESS



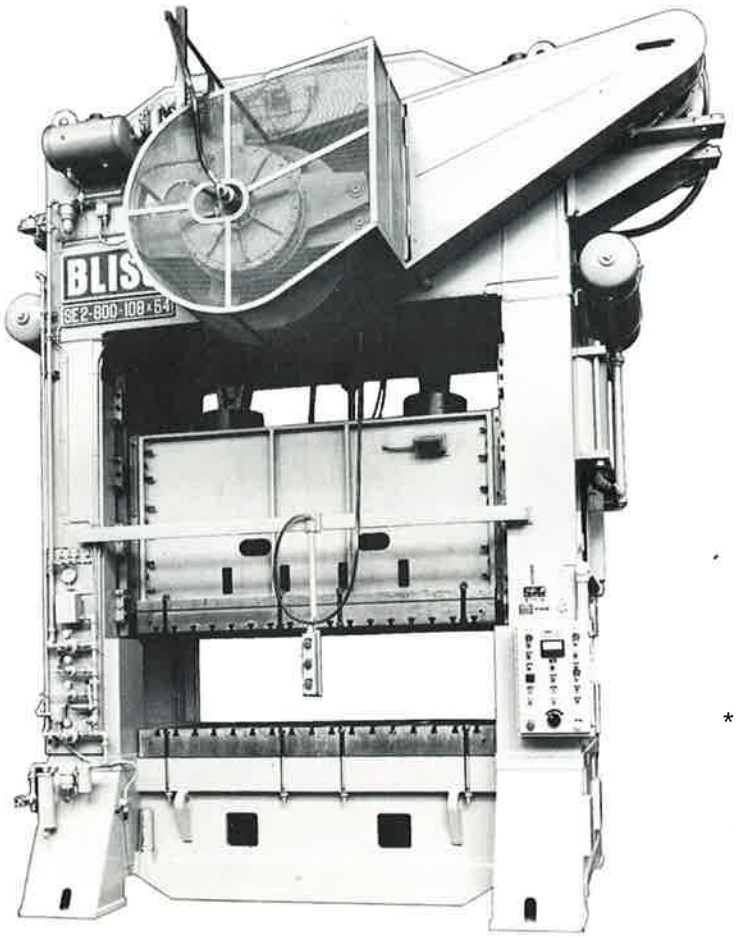
Stroke		
Std.	ins.	8
Max.	ins.	20
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	12
Shutheight, bed to slide, SDAU	ins.	48
**Main Motor	HP	50
	RPM	1200

*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		7	7	8	8	8	9½	9½	9½	9½	11½	11½	11½	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		24	27	33	39	45	51	57	63	69	75	81	87		
BOLSTER AND SLIDE F to B		42	48	54	60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		26x24	26x24	26x24	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	42	1 pt.												27	24
	72		2 pt.											57	14
	84		2 pt.		2-4 pt.	4 pt.								69	18
	96			2 pt.	2-4 pt.		4 pt.							81	22
	108			2 pt.	2-4 pt.			4 pt.						93	24
	120				2 pt.	2-4 pt.		4 pt.						105	26
	132				2 pt.	2-4 pt.			4 pt.					117	28
	144									4 pt.				129	30
	156										4 pt.			141	34

*Upright openings can be furnished when desired.



BLISS 600 TON PRESS

Stroke		
Std.	ins.	12
Max.	ins.	24
Strokes per minute		
Single geared	spm	25-40*
Double Geared	spm	10-24
Adjustment of slide	ins.	12
Shutheight, bed to slide, SDAU	ins.	52
**Main Motor	HP	60
	RPM	1200

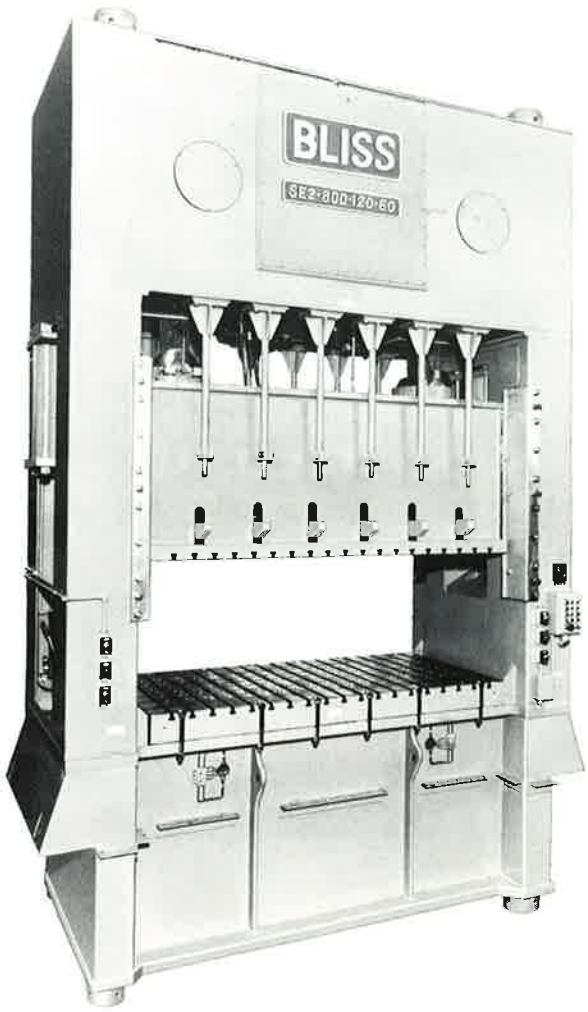
*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		7½	7½	8½	8½	8½	10	10	10	10	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		24	27	33	39	45	51	57	63	69	75	81	87		
BOLSTER AND SLIDE F to B		42	48	54	60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		26x24	26x24	26x24	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	42	1 pt.												27	24
	72		2 pt.											57	14
	84		2 pt.											69	18
	96		2 pt.			2-4 pt.	4 pt.							81	22
	108				2-4 pt.			4 pt.						93	24
	120				2 pt.	2-4 pt.		4 pt.						105	26
	132				2 pt.		2-4 pt.	4 pt.						117	28
	144						2-4 pt.	4 pt.						129	30
	156						2 pt.	4 pt.						141	34
	180								4 pt.					165	38
	204										4 pt.			189	40

*Upright openings can be furnished when desired.

BLISS 800 TON PRESS



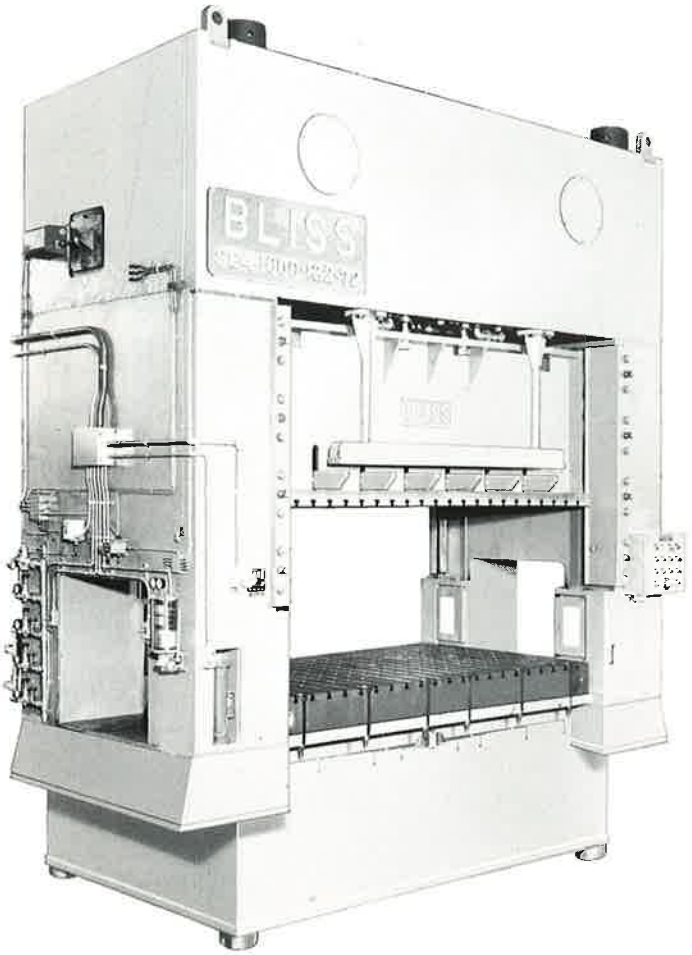
Stroke		
Std.	ins.	12
Max.	ins.	24
Strokes per minute		
Double Geared	spm	10-24*
Adjustment of slide	ins.	12
Shutheight, bed to slide, SDAU	ins.	56
**Main Motor	HP	75
	RPM	1200

*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		8½	8½	9	9	10½	10½	10½	10½	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		27	33	39	45	51	57	63	69	75	81	87		
BOLSTER AND SLIDE F to B		48	54	60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		26x24	26x24	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	48	1 pt.											33	28
	72		2 pt.										57	14
	84		2 pt.										69	18
	96		2 pt.			2-4 pt.							81	22
	108		2 pt.		2-4 pt.		4 pt.						93	24
	120			2 pt.		2-4 pt.		4 pt.					105	26
	132			2 pt.		2-4 pt.			4 pt.				117	28
	144					2-4 pt.			4 pt.				129	30
	156					2-4 pt.				4 pt.			141	34
	180									4 pt.			165	38
	204											4 pt.	189	40

*Upright openings can be furnished when desired.



BLISS 1000 TON PRESS

Stroke		
Std.	ins.	16
Max.	ins.	28
Strokes per minute		
Double Geared	spm	10-24*
Adjustment of slide	ins.	14
Shutheight, bed to slide, SDAU	ins.	60
**Main Motor	HP	100
	RPM	1200

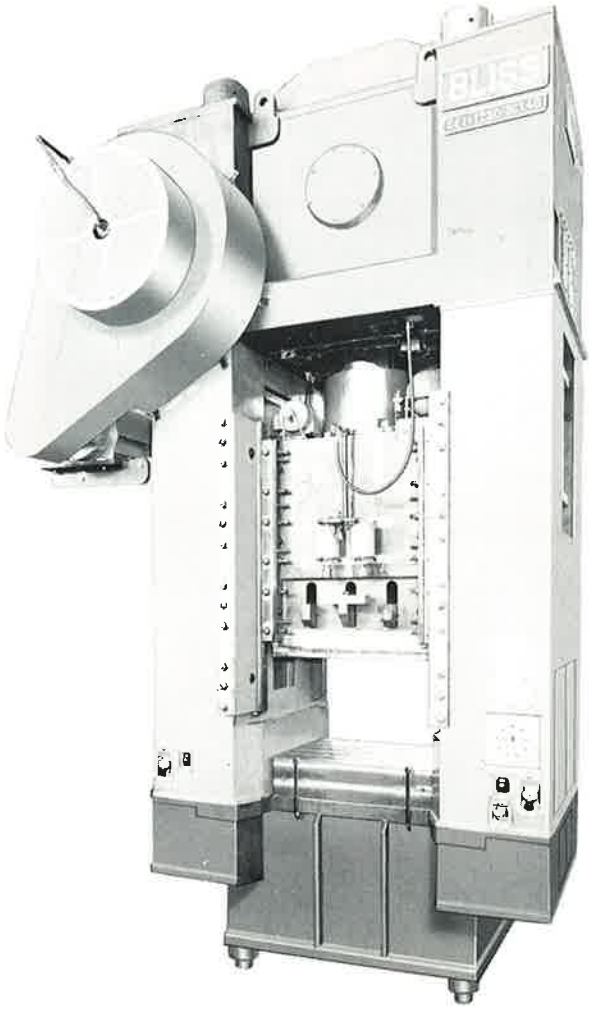
*More spm can be designed into press when requested.

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		9	9	10	11	11	11	11	11	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		27	33	39	45	51	57	63	69	75	81	87		
BOLSTER AND SLIDE F to B		48	54	60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		26x24	26x24	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	48	1 pt.											33	28
	84		2 pt.										69	18
	96		2 pt.			2-4 pt.							81	22
	108			2 pt.		2-4 pt.	4 pt.						93	24
	120				2 pt.	2-4 pt.	4 pt.						105	26
	132				2 pt.	2-4 pt.		4 pt.					117	28
	144					2-4 pt.		4 pt.					129	30
	156					2-4 pt.			4 pt				141	34
	180								4 pt				165	38
	204									4 pt.			189	40
	228									4 pt			213	44

*Upright openings can be furnished when desired.

1250 TON PRESS

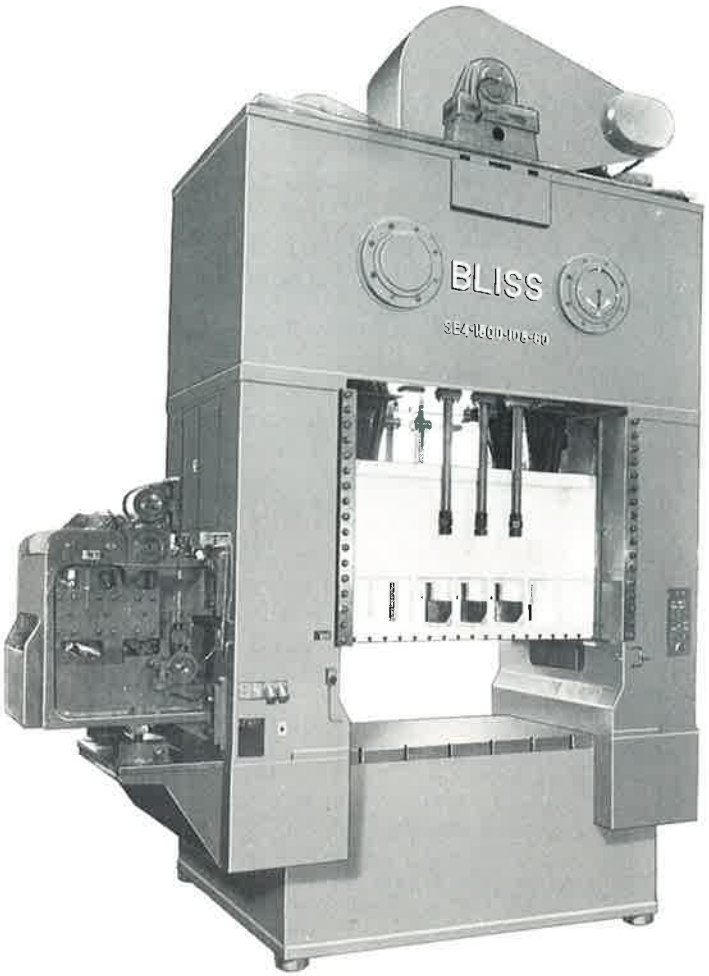


Stroke		
Std.	ins.	16
Max.	ins.	28
Strokes per minute		
Double Geared	spm	10-24
Adjustment of slide	ins.	14
Shutheight, bed to slide, SDAU	ins.	62
**Main Motor	HP	125
	RPM	1200

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		9	9½	10	11	11	11	12	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		27	39	45	51	57	63	69	75	81	87		
BOLSTER AND SLIDE F to B		48	60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		26x24	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	54	1 pt.										39	36
	84		2 pt.									69	16
	96		2 pt.									81	18
	108		2 pt.		2-4 pt.	4 pt.						93	26
	120			2 pt.	2-4 pt.	4 pt.						105	28
	132				2-4 pt.	4 pt.						117	30
	144				2-4 pt.	4 pt.						129	34
	156				2-4 pt.	4 pt.						141	36
	180					4 pt.						165	38
	204							4 pt.				189	40
	228							4 pt.				213	44

*Upright openings can be furnished when desired.



1600 TON PRESS

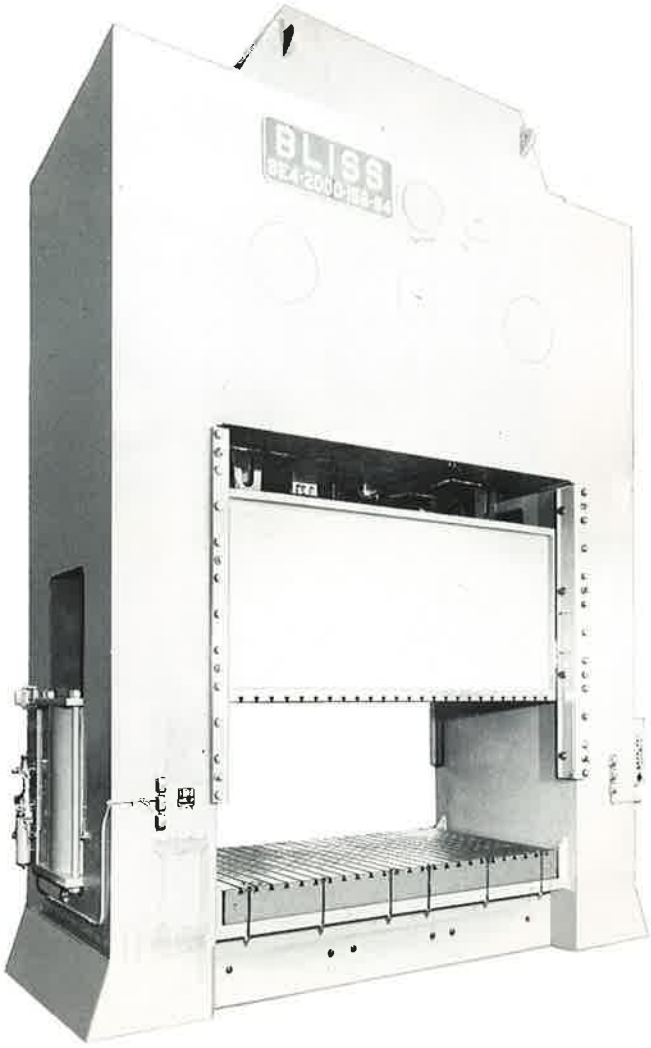
Stroke		
Std.	ins.	16
Max.	ins.	32
Strokes per minute		
Double Geared	spm	10-24
Adjustment of slide	ins.	16
Shutheight, bed to slide, SDAU	ins.	64
**Main Motor	HP	150
	RPM	1200

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		10	10	11	12	12	12	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		39	43	45	51	57	63	69	75	81		
BOLSTER AND SLIDE F to B		60	66	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	60	1 pt.									43	38
	96		2 pt.	4 pt.							81	18
	108		2 pt.	4 pt.							93	26
	120		2 pt.		2-4 pt.	4 pt.					105	28
	132		2 pt.		2-4 pt.	4 pt.					117	30
	144				4 pt.						129	34
	156				4 pt.						141	36
	180					4 pt.					165	38
	204							4 pt.			189	40
	228							4 pt.			213	44

*Upright openings can be furnished when desired.

BLISS 2000 TON PRESS



Stroke		
Std.	ins.	16
Max.	ins.	32
Strokes per minute		
Double Geared	spm	10-24
Adjustment of slide	ins.	16
Shutheight, bed to slide, SDAU	ins.	66
**Main Motor	HP	200
	RPM	1200

**Based on standard of 1 hp for each 10 ton of capacity. Maximum and minimum requirements will depend on press speed, stroke and auxiliary equipment.

BOLSTER THICKNESS		11	11	12	12	12	12	12	12	BED OPENING L to R	MAX. STROKE WITH F to B PIN
BED OPENING F to B		39	47	51	57	63	69	75	81		
BOLSTER AND SLIDE F to B		60	72	78	84	90	96	102	108		
UPRIGHT OPENING* F to B x HT		32x28	32x28	32x28	32x28	32x28	32x28	32x28	32x28		
BOLSTER AND SLIDE L to R	66	1 pt.								47	40
	96		2 pt.	4 pt.						81	18
	108		2 pt.	2-4 pt.		4 pt.				93	26
	120		2 pt.	2-4 pt.		4 pt.				105	28
	132		2 pt.	2-4 pt.		4 pt.				117	30
	144		2 pt.	2-4 pt.			4 pt.			129	34
	156			2-4 pt.			4 pt.			141	36
	180						4 pt.			165	38
	204							4 pt.		189	40
	228							4 pt.		213	44

*Upright openings can be furnished when desired.

BLISS

SELECTING THE PROPER ECCENTRIC GEAR PRESS FOR YOUR APPLICATIONS

Before discussing the factors affecting selection of a particular Eccentric Gear Press, it is well that the following general concepts of press applications engineering be clearly understood.

Tonnage capacity is generally understood to mean the tons force which the press structure is designed to withstand without overloading the various parts or causing excessive deflection of bed or slide.

Rated tonnage of a press is the tons force which can be delivered by the drive at a specified distance above the bottom of the stroke. *Bliss standard Eccentric Gear Presses are rated at full tonnage ½" above bottom.* Tonnage ratings at other points of the stroke are available for specific applications.

Energy capacity of a press drive refers to the work in inch-tons which the drive delivers in one complete stroke of the press, without regard to press speed or consequent flywheel slowdown.

Motor horsepower is calculated on the basis of its ability to restore up to 15% of the flywheel energy during the non-working portion of the stroke.

It is generally understood, when a customer specifies "tonnage", that he is referring to the structural capacity of the press and that the builder will design a drive with the energy capacity and horsepower needed to deliver the desired force under specified conditions of operation. Drives and motors of standard presses are intended to satisfy energy and horsepower requirements of normal operation. Any anticipated departure from such norms should be worked out through cooperation between user's and builder's engineering departments. Drives can be designed to deliver, in the same press frame, the required rated tonnage at various points above bottom.

FLYWHEELS AND MOTORS

Drive motors for general purpose single action presses, operating at normal catalog speeds and being used in a normal manner, usually have a horsepower rating equal to one horsepower for each 10 tons of rated press capacity.

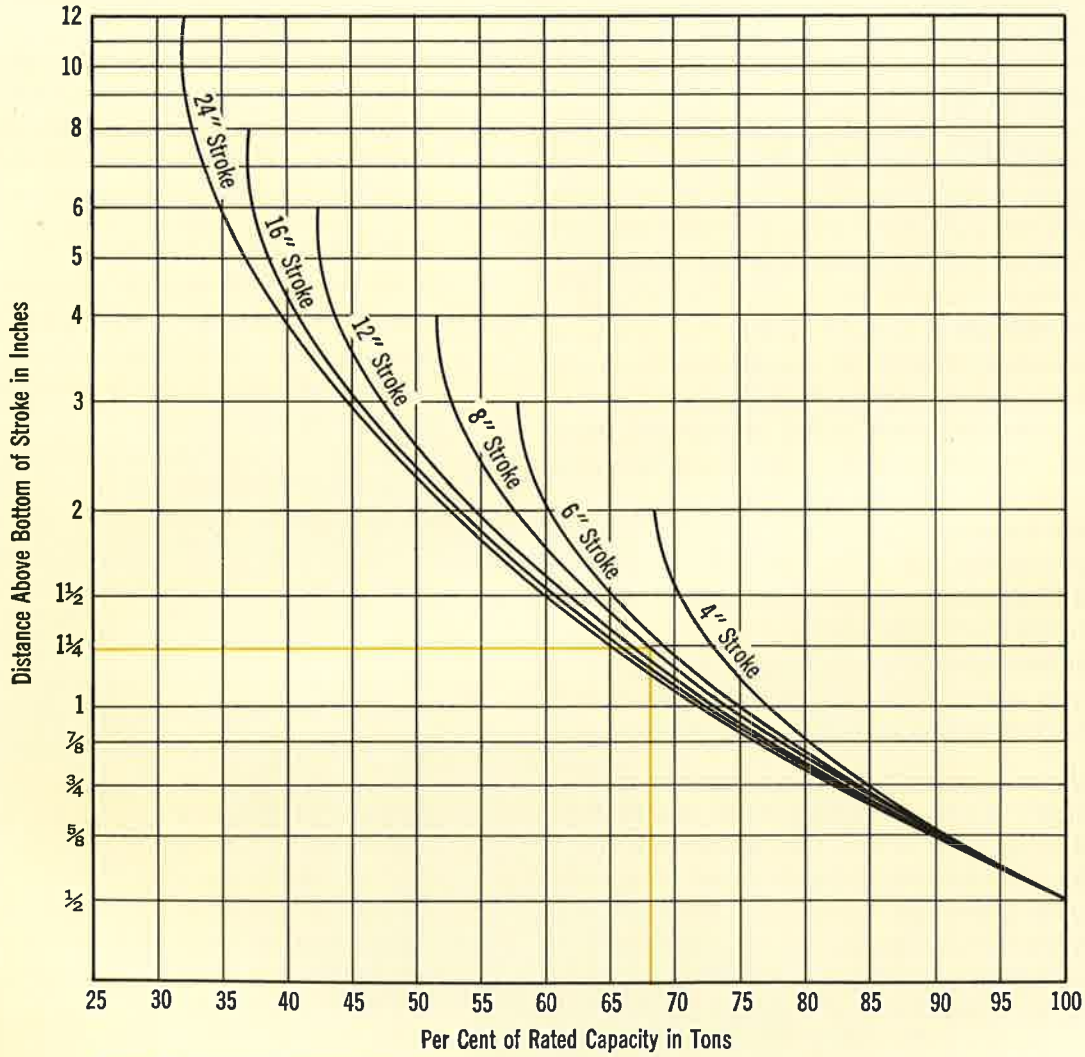
General purpose presses operating in excess of normal catalog speeds and which are to be single stroked, must be evaluated as to the kinetic energy of their drive trains, which must be repeatedly accelerated from rest. Motor horsepower increases of as much as 50% over normal are common.

General purpose presses which are equipped with roll feeds and/or stock straighteners and which are to be operated "continuously" may require larger motors than presses not so equipped. As a general rule, the next larger size than normal will usually be satisfactory if the work stroke is short and the press is intended for blanking or shallow forming operations without the use of air cushions. If the press is equipped with cushions and the press stroke is long, it may be assumed that drawing operations are contemplated, under which circumstances the motor size may have to be further increased.

BLISS

SELECTING THE PROPER ECCENTRIC GEAR PRESS FOR YOUR APPLICATIONS

Specification sheets, pages 27-38, show the rated capacity at ½" above bottom. For capacities at various other points above bottom, Table I is helpful in determining which model will provide the necessary characteristics within the limits of normal speed and lengths of stroke. Use of cushions and press driven accessories must also be taken into account in determining the required tonnage and energy capacity of a press.



Note: All Bliss SE presses are rated ½" above bottom.

TABLE I

Example:

Problem — With an 8" stroke press what tonnage is needed to produce a part requiring 82 tons rated 1¼" above bottom?

Solution — Read across the 1¼" line until it meets the 8" curve line. Read down to per cent scale along bottom to 68%. Divide the tonnage required (82) by the % (68) which equals 120.5 tons. The press required is the next highest standard tonnage which would be 125.

SELECTING BED AREA

Standard dimensions shown on specifications pages 27-38, cover all standard bed sizes including those recommended by JIC. Economy dictates the selection of a standard size bed wherever possible. Even departures from such standards can retain some economies of standardization if kept to certain intermediate dimensions. Departures from standard bed requirements should be carefully considered with the press manufacturer. Often selection of the next larger tonnage to provide needed bed area is the most economical solution to the problem and can afford additional flexibility of application, as well.

SELECTING PRESS SPEED

The optimum speeds at which various materials can be worked is an important consideration in selecting the speed of operation (SPM). Table II is helpful in selecting press speed for various lengths of stroke. Speeds of standard presses are intended to satisfy the largest possible range of general purpose applications in the area of large dies and relatively heavy tonnages. Another series of Bliss Presses—the High Production Line—is designed for speeds and production rates significantly higher than the Eccentric Gear Press range.

GEARING AND GEAR CONFIGURATIONS TO SUIT THE APPLICATION

Except for a narrow range of overlap, selection of press speed automatically determines the gearing to be employed—that is, presses operating at 24 SPM and less are usually double-geared; all faster Eccentric Gear Presses are single geared, except for those with speeds of 24-34 SPM, which can be either single or double-geared depending upon the type of work to be performed.

Live main pin construction can be employed to provide power take off at the main pin bearing either front or rear of F-to-B shaft presses or at either side of L-to-R shaft presses. Power takeoff at other locations can be furnished by means of gear trains from the drive mechanism.

SELECTING LENGTH OF STROKE

Length of stroke must be *at least* twice the working stroke to prevent the punch contacting the work above mid stroke and to permit removal of the piece from the die. Workpiece handling requirements may increase the stroke length desired to 2½", 3, or even 4 times the working stroke for deep draw work and for certain types of automatic feeding. The shortest possible stroke consistent with the work to be done is most desirable. Some additional stroke may be desired out of considerations of press versatility. Special stroke lengths, other than the standards shown on pages 27-38, are available as an option.

ADJUSTMENT OF SLIDE

Slide adjustment is usually based upon accommodation of existing dies or die design practice. Standard lengths of adjustment are desirable, although special departures from standard are available.

NUMBER OF SLIDE CONNECTIONS

Whether one, two, or four points of slide connection are used is determined largely by the bed dimensions and the expected distribution of the working load. For well balanced, small area work, a single connection may suffice. Two point connection more evenly distributes the load left-to-right in wide, shallow front-to-back dies. Four points of connection affords even load distribution in both directions and may be preferable to two point design even on relatively small areas where extreme off center loading may be encountered. This characteristic of press design should be carefully considered with the press builder before specifying.

*Joint Industry Conference.

BLISS

SELECTING THE PROPER ECCENTRIC GEAR PRESS FOR YOUR APPLICATIONS

SHUTHEIGHT

Like slide adjustment, shutheight—distance from top of bed to bottom of slide face, stroke down, adjustment up—should accommodate dies and die design of the user. Considerable variations of standard shutheight are available.

OTHER CONSIDERATIONS

Shaft arrangement in Eccentric Press Drives is determined largely by the length of stroke and the right-to-left bed dimension (see page 9). Departures from standard in length of stroke, shutheight, etc. may affect this design decision. Since all SE-Series Eccentric Gear Presses are top driven, a sub floor is not required. A pit may be required for many types of cushion installations and for cushion locking devices and other accessories.

A WORD OF CAUTION

The many factors affecting selection and application of power presses place a high value on the experience of the engineering team charged with this responsibility. The foregoing data on press design and selection are not intended to substitute for definitive discussions between customer and builder. Rather, they are designed to aid in preliminary evaluation of approximate press needs, plant layout requirements, and the like, which often precede initial contact with suppliers. Even in these early stages, Bliss welcomes the opportunity to consult with press users and aid in preliminary evaluations.

EXAMPLE 1: To find SPM—A press with an 18″ stroke contacts the work 7″ above bottom. If the material permits a maximum punch speed of 60 FPM, what is the required SPM of the press?

Find the intersection of the curve for "Press Stroke (18″) with the coordinate "Working Stroke" (7″). Project up to the horizontal line for "Contact Velocity" (60 FPM) and draw a line parallel to the nearest diagonal through the "Velocity—SPM" scale. The optimum press speed is seen to be 12-14 SPM.

EXAMPLE 2: To find FPM—A press with an 8″ stroke runs at 25 SPM. Maximum contact velocity at 3″ above bottom is 50 FPM. Is the press suitable for the job?

From the intersection of "Working Stroke" (3″) and "Press Stroke" (8″), project upward to intersect the diagonal for "Velocity" (25 SPM). From this point, read horizontally to the left on the "Contact Velocity" scale. A reading of 50 FPM shows the press to be ideally suited to the job.

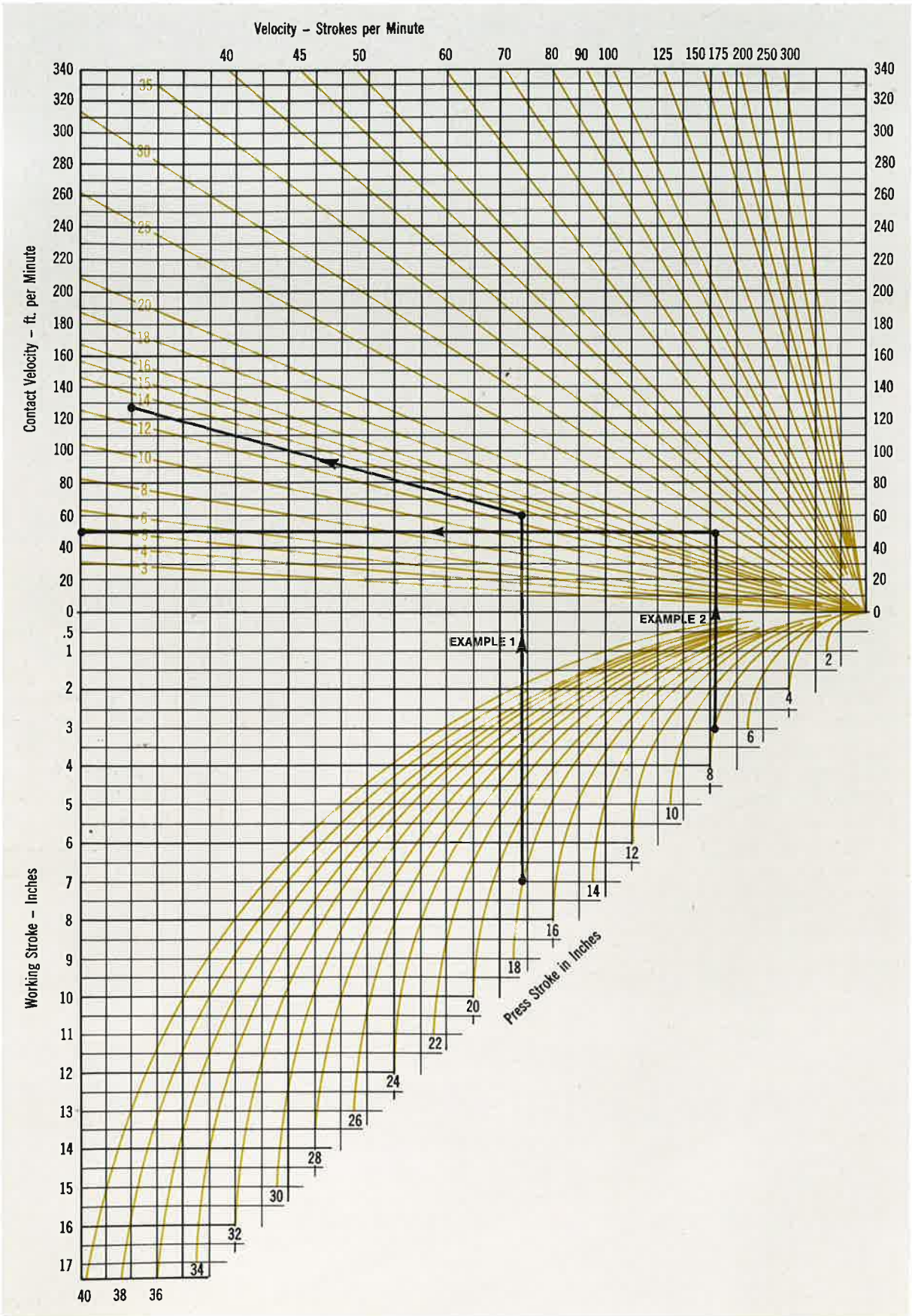
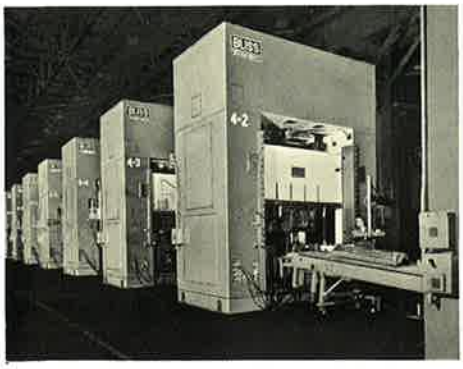
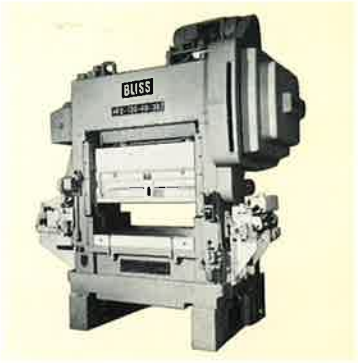

Velocity – Strokes per Minute
40 45 50 60 70 80 90 100 125 150 175 200 250 300
Contact Velocity – ft. per Minute
340 320 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0
35 30 25 20 18 16 15 14 12 10 8 6 5 4 3
EXAMPLE 1
EXAMPLE 2
Working Stroke – Inches
.5 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
40 38 36
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
Press Stroke in Inches

TABLE II

OTHER BLISS PRESSES

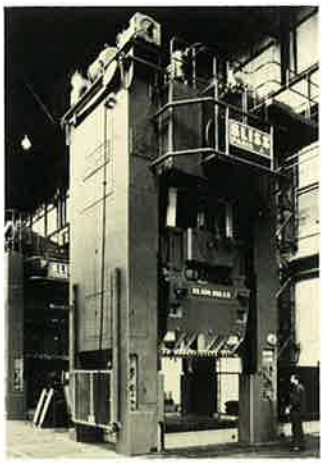


STRAIGHT SIDE ECCENTRIC PRESSES

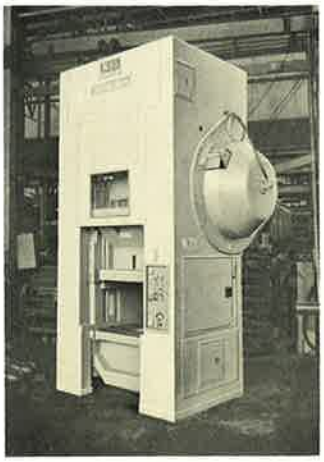


HIGH PRODUCTION PRESSES

SINGLE AND MULTIPLE ACTION UNDER-DRIVEN PRESSES

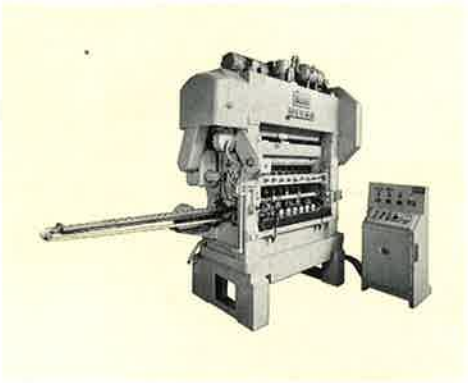


POWERBAR PRESSES

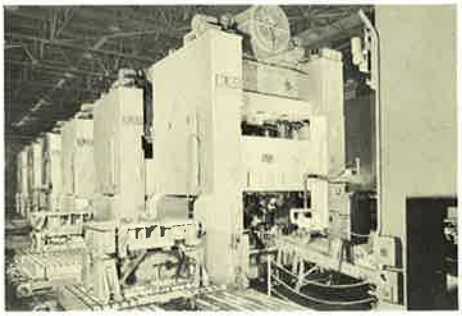


KNUCKLE JOINT PRESSES

STRAIGHT SIDE CRANK-TYPE PRESSES



TRANSFER FEED PRESSES



ROLLING BOLSTER PRESSES

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