PERKINS POWER PRESSES
OPERATORS MANUAL

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Printed in U.S.A.

Perkins Machine Company
WARREN, MASSACHUSETTS 01083 TEL: (413) 436-7771
Builders of Perkins Power Presses

TERMS AND CONDITIONS OF SALE

ACCEPTANCE

This order is subject to acceptance by Perkins Machine Company only at its place of business in Warren, Massachusetts and shall become a binding contract only when a copy has been accepted in writing and returned to Buyer.

DELIVERY TERMS

1. All shipments are to be made F.O.B. PERKINS MACHINE COMPANY plant, Warren, Massachusetts.
2. Quoted delivery dates are approximate only.
3. All scheduled delivery dates are subject to delays caused by civil insurrection, war, fire, strike, Acts of God, shortage of materials or failure of suppliers or sub-contractors satisfactorily to meet scheduled deliveries or any other factors or events beyond Seller's control, none of which factors or events shall give rise to any liability on the part of PERKINS MACHINE COMPANY.

INSTALLATION

On being expressly requested to do so by Buyer, PERKINS MACHINE COMPANY will provide technical personnel to aid in the installation, testing and demonstration of the machine. These services shall be wholly chargeable to the Buyer at the rate of $120.00 per day plus travel and living expenses, cost increases and taxes. The price quoted for any component or assembly, and any increase in such price will be passed on to the Buyer.

SALES AND USE TAXES

Sales, use, excise, property or similar taxes arising out of or relating to this order, or the goods delivered, are not included in the price except as otherwise specifically stated in the invoice. All such taxes are the responsibility of the Buyer. PERKINS MACHINE COMPANY shall have the right at any time separately to bill the Buyer for any such taxes which PERKINS MACHINE COMPANY may be called upon to pay.

PAYMENT TERMS

1. Net payment in full on all invoices is due thirty (30) days after shipment.
2. Any account unpaid thirty (30) days after shipment is subject to a service charge of 1½% per month on the unpaid balance.
3. In the event of failure to make full payment when due, the Buyer agrees to pay all costs of collection including reasonable attorney's fees.

WARRANTY

1. PERKINS MACHINE COMPANY warrants to the original purchasers of all products manufactured by it that such products will be free from defects in material or workmanship for a period of twelve (12) months from the date such products are shipped from its plants, provided that Buyer gives prompt written notice of such defects. Said warranty is to remain in effect if and only if such products are used in accordance with all instructions as to maintenance and operation set forth in manuals and instruction sheets furnished by PERKINS MACHINE COMPANY. In no event shall this warranty be deemed to cover or obligate PERKINS MACHINE COMPANY in any way regarding items or components not actually manufactured by it, or regarding items or components manufactured by PERKINS MACHINE COMPANY which have been modified, repaired, substituted or in any way adjusted by any individuals not authorized to do so by PERKINS MACHINE COMPANY.

2. THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE. No promise or affirmation of fact (including but not limited to statements regarding capacity or performance of a machine) shall constitute a warranty by PERKINS MACHINE COMPANY, or give rise to any liability or obligation of PERKINS MACHINE COMPANY.

3. PERKINS MACHINE COMPANY'S liability under this warranty is limited to delivering to the Buyer F.O.B. PERKINS MACHINE COMPANY'S plant in Warren, Massachusetts, replacements of any equipment or parts determined by PERKINS MACHINE COMPANY to be defective, or repairing such equipment or parts determined by PERKINS MACHINE COMPANY to be defective. PERKINS MACHINE COMPANY'S guarantee with respect to equipment manufactured by others will be the same as that of the manufacturer. In no event will PERKINS MACHINE COMPANY be liable for damages (direct, consequential or otherwise) or injuries sustained as the result of defective workmanship or material in the equipment or injuries sustained subsequent to any modifications, repairs, substitutions or adjustments of any kind of its equipment by individuals other than those individuals authorized to make such modifications, repairs, substitutions or adjustments by PERKINS MACHINE COMPANY.

4. Buyer shall use, and shall require its employees to use, all safety devices, guards, and proper safe operation procedures as set forth in manuals or instruction sheets furnished by PERKINS MACHINE COMPANY. Buyer shall not remove or modify any such device or guard or warning sign. Buyer shall not permit any person other than required operating personnel to remain within ten feet of any machine or accessory manufactured by PERKINS MACHINE COMPANY during operation thereof. If Buyer fails strictly to observe each and every one of the obligations set forth in this paragraph with regard to any of PERKINS MACHINE COMPANY'S products, Buyer agrees to indemnify and save PERKINS MACHINE COMPANY harmless from any liability or obligation incurred by PERKINS MACHINE COMPANY to persons injured directly or indirectly in connection with the operation of such products.

5. Buyer shall notify PERKINS MACHINE COMPANY promptly, and in any event within thirty (30) days of an accident or malfunction involving PERKINS MACHINE COMPANY'S products which result in personal injury or damage to property and shall cooperate fully with PERKINS MACHINE COMPANY in investigating and determining the cause of such accident or malfunction. In the event that Buyer fails to give such notice to PERKINS MACHINE COMPANY and so cooperate, Buyer agrees to indemnify and save PERKINS MACHINE COMPANY harmless from any claims arising from such accident or malfunction.

CANCELLATION

In the event of cancellation by Buyer

A. Any items completed at time of receipt of written cancellation notice will be shipped and invoiced at the contract price.

B. Work on the balance of the order will be stopped as promptly as is reasonably possible, and PERKINS MACHINE COMPANY shall be reimbursed by the Buyer for all actual expenditures, commitments, liabilities and costs determined in accordance with good accounting practice made or incurred with respect to such incompleted items plus a profit of 10% on such costs, less any net recovery realized by PERKINS MACHINE COMPANY on disposition of such items to others within a period of ninety (90) days after the cancellation. Any items which PERKINS MACHINE COMPANY can use economically to fill other active orders will be restocked at a 20% handling charge.

DRAWINGS

Any proposals, prints, brochures, drawings, or other information furnished to the Buyer by PERKINS MACHINE COMPANY is intended for confidential use by the Buyer, shall remain the property of PERKINS MACHINE COMPANY and shall not be used to the detriment of PERKINS MACHINE COMPANY'S competitive position.

ENTIRE CONTRACT—AMENDMENTS

The terms and conditions herein contained and any other terms and conditions stated in PERKINS MACHINE COMPANY'S proposal or specifications attached hereto shall constitute the complete agreement between PERKINS MACHINE COMPANY and the Buyer and shall supersede all prior oral or written statements of any kind whatsoever made by the parties or their representatives. No statement subsequent to the acceptance of this order purporting to modify the said terms and conditions shall be binding unless consented to in writing by a duly authorized agent of PERKINS MACHINE COMPANY in a document making specific reference to this order.

PREFACE

This owners manual has been prepared to assist you in the proper installation, operation and maintenance of your mechanical power press.

Please read this manual carefully as it can assist you in preventing accidents and maintaining production.

The owner-operator of this mechanical power press should become familiar with Section 1910–217 of the Occupational Safety and Health Act, to be sure of compliance with the law. Many states have additional laws governing the operation of mechanical power presses and these should be checked for compliance also.

A list of publications to assist in the proper operation of your press is listed below.

"ANSI B11.1–1971 Safety Requirements for the Care and Use of Mechanical Power Presses".
American National Standards Institute
1430 Broadway
New York, N.Y. 10018

"Power Press Safety Manual"
National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

"Power Press Safety"
The Minster Machine Co.
Minster, Ohio 45865

REPLACEMENT PARTS

When replacement parts for your Perkins Power Press are ordered, please supply the following information:

1. Serial number of press.
2. Model number of press.
3. Part number and name as shown on the parts list drawing.
4. Quantity required.
5. Purchase order numbers.
6. Complete shipping and invoicing instructions.

Send this information to:

PERKINS MACHINE COMPANY
P.O. BOX PP
WARREN, MASSACHUSETTS 01083
(Tel.) (413) 436-7771

Supplementary instructions are furnished with this manual for servicing equipment not manufactured by Perkins Machine Co.

SHIPPING

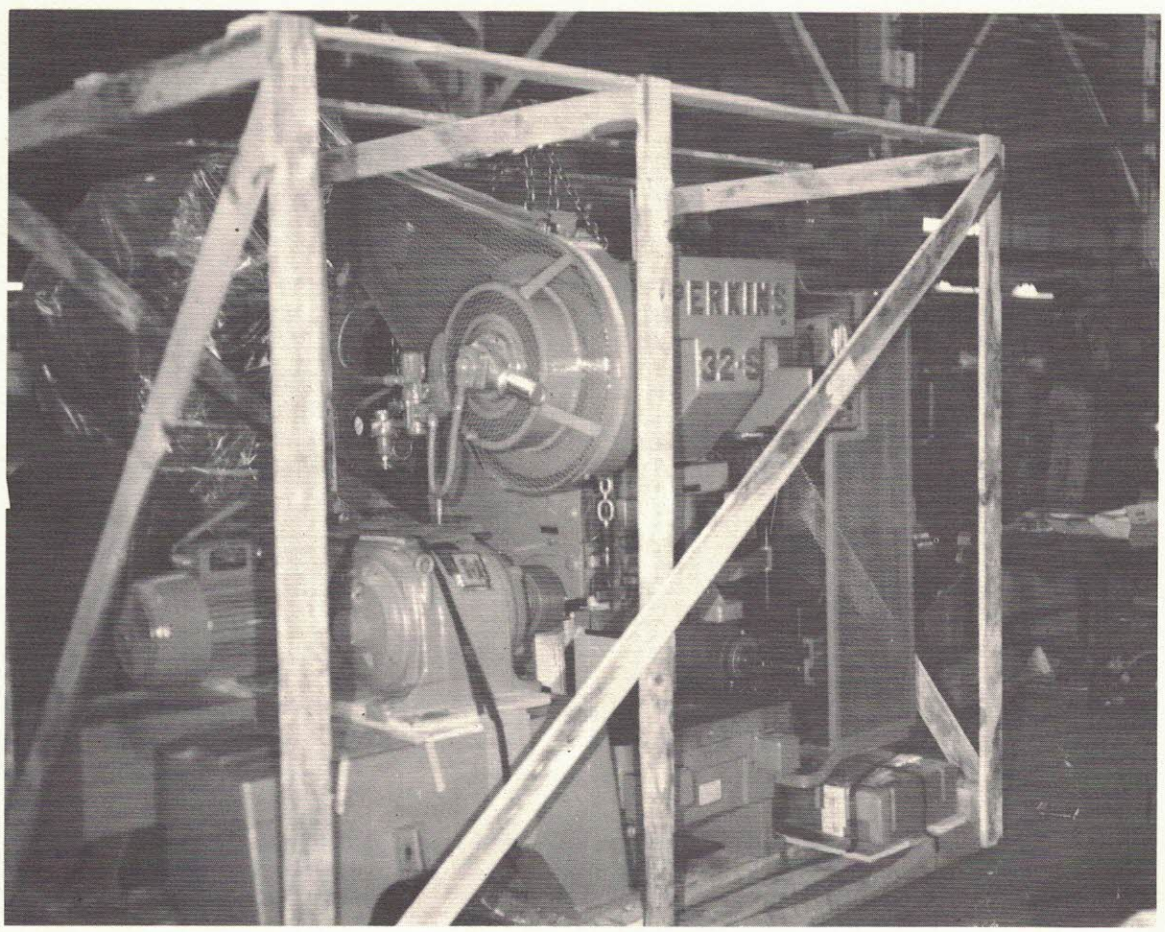
Perkins Power Presses are shipped as completely assembled as possible consistant with safe shipping procedures.

All Perkins Presses are shipped FOB Warren, Massachusetts. It is the responsibility of the Owner to inspect his press for damage when received. Any damage or missing parts must be reported to the delivering carrier immediately.

All exposed surfaces have been coated with a rust preventive.

All loose parts are packed in a separate container which is attached to the skid, i.e. belts, sheaves, lubricating tubing, hoses and fittings and other parts which might be damaged if left attached to the press.

Perkins Power Presses are securely skidded and crated for shipment.



SAFETY

The responsibility for SAFE operation of this mechanical power press lies with the OWNER-USER. Throughout this manual various cautions, warnings and safety suggestions will be presented to help in the safe operation of your press.

The user of this press should familiarize himself with the various safety devices available on the market to select the best possible combination of safety equipment to insure that the operator is properly protected.

Because of the many different types of power press applications being used today, no one system of protection can be recommended.

This manual will emphasize the proper installation, operation and maintenance of your power press. *The guarding of the point of operation is the responsibility of the OWNER-USER and this press should not be put into operation until adequate provisions are made for the protection of the operator.*

When installing dies or servicing this press, be sure the motor is shut off, the disconnect switch is locked in the OFF position, the flywheel has come to a complete stop and the slide is blocked, or placed at the bottom of the stroke.

WARNING: NEVER PLACE HANDS OR ANY PART OF THE BODY UNDER THE SLIDE OR WITHIN THE DIE AREA.

WARNING: Two Hand Trip control systems are intended to be used as a tripping method only and not as a point of operation protection device.

WARNING: DO NOT overload your press. The press capacity is shown on the name plate on the press and is also listed under specifications in this manual.

THRU OUT THIS MANUAL THE SYMBOL

IS USED TO WARN OF HAZARDS.

WE URGE THAT THE OWNER-OPERATOR OBSERVE ALL THE RULES OF SAFETY AND READ AND UNDERSTAND THE CAUTIONS AND WARNINGS IN THIS MANUAL BEFORE OPERATING OR MAKING ADJUSTMENTS TO YOUR POWER PRESS.

WARNING

NEVER	PLACE HANDS OR ANY PART OF THE BODY UNDER THE SLIDE OR WITHIN THE DIE AREA.
NEVER	OPERATE, SERVICE OR ADJUST THIS MACHINE, OR INSTALL DIES WITHOUT PROPER INSTRUCTION AND WITHOUT FIRST READING AND UNDERSTANDING THE INSTRUCTIONS IN THE OPERATORS MANUAL.
NEVER	INSTALL DIES OR SERVICE THIS MACHINE WITH THE FLYWHEEL IN MOTION, MOTOR ON OR THE SLIDE IN AN UNBLOCKED POSITION.
NEVER	REMOVE THIS SIGN FROM THE MACHINE.
NOTE	IT IS THE EMPLOYERS RESPONSIBILITY TO PROVIDE ALL GUARDS, SAFETY DEVICES, OR TOOLS THAT MAY BE NECESSARY OR REQUIRED TO PROTECT THE PRESS OPERATOR FROM INJURY.

CAUTIONS

1. Mechanical Variable Speed Motors (U.S. Varidrive, Reeves Motodrive, G.E. Polydyne.)

   To prolong the life of Belts in these units, the best procedure is to slow the press down before stopping the motor. This reduces the load on the belt when restarting.

   Do not attempt to change speed while motor is stopped. Damage to the unit may result.

2. DO NOT overload your press. The rated capacity is shown on the nameplate on the press.

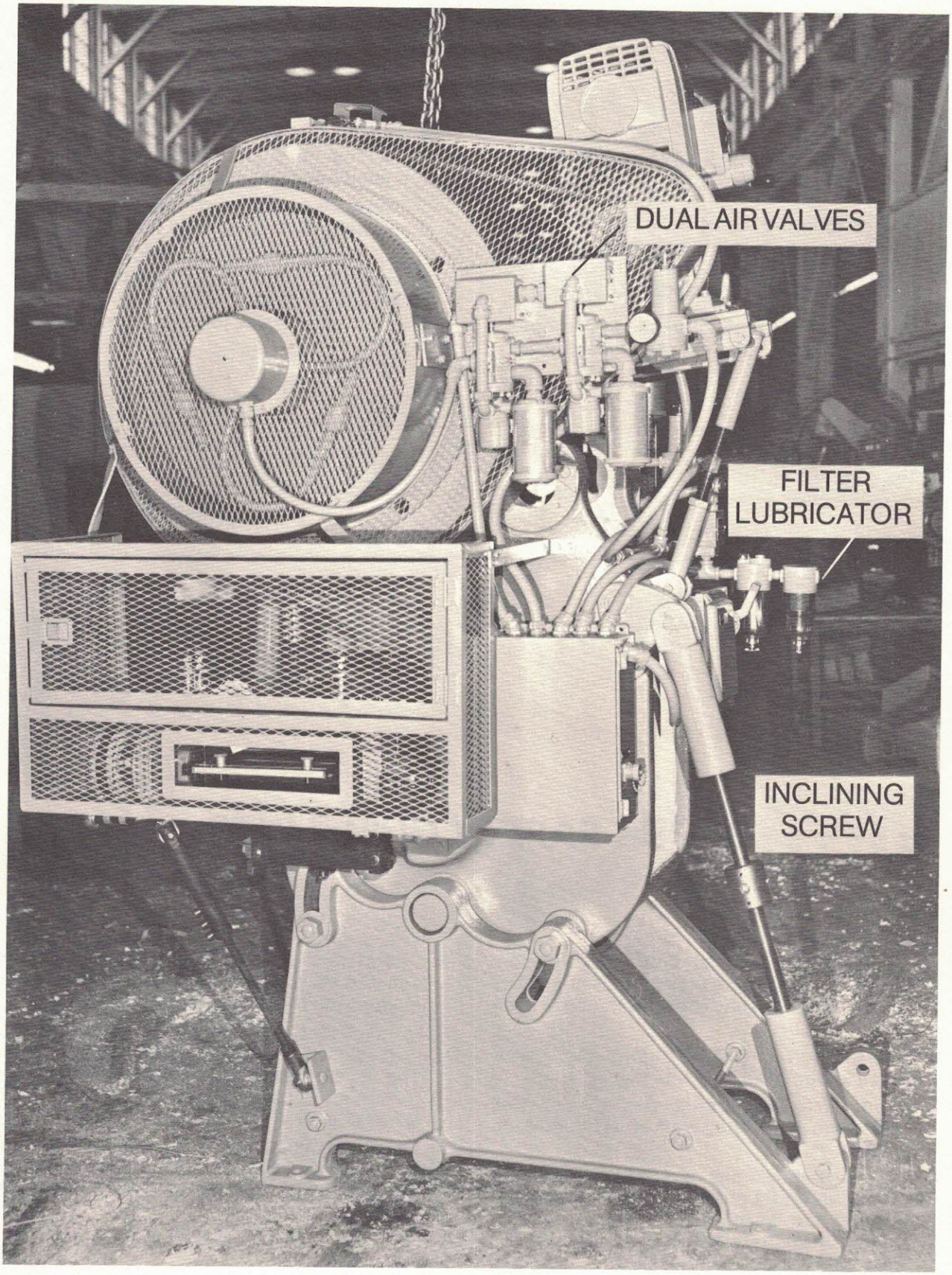
   Overloads can cause damage to your press and will void the warranty.

The distance above the bottom of the stroke for which the press is rated is listed below. As the distance above the bottom of stroke is increased the available tonnage decreases.

TONS UP TO AND INCLUDING	FLYWHEEL PRESS	SINGLE GEARED	TWIN GEARED
32	1/32	1/16	---
45 TONS AND UP	1/16	1/4	1/2

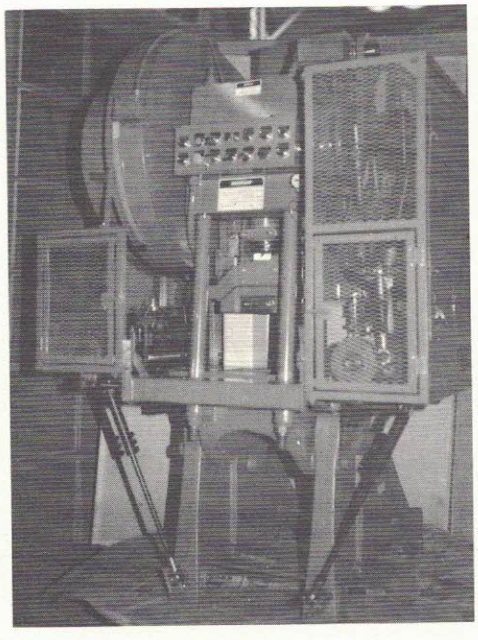
WORK SAFETY GUIDELINES

1. OWNER-USER management bears the responsibility to provide press operators with instructions for the safe and proper operation of each and every job.
2. No unauthorized person should ever be allowed to operate a power press.
3. Good safety practice dictates a clean, well lighted and uncluttered work area around each press.
4. At no time should any person ever reach into the die area of a press until the flywheel has stopped, the disconnect switch is locked in the OFF position and the slide has been blocked or is at the bottom of the stroke.
5. Operators should be instructed, if a malfunction occurs, to stop the press and report the malfunction to their supervisor.
6. Management must provide press operators with protective safety equipment for each job. The decision as to what constitutes safe protection for operators lies with OWNER-USER MANAGEMENT.
7. The use of mechanical feeding should be used wherever possible. Use of this type of equipment allows for more effective guarding of the die area.


DUAL AIR VALVES
FILTER LUBRICATOR
INCLINING SCREW

SAFETY GUARDS AND DEVICES

We have included a partial list of manufacturers of safety devices to help you select protective equipment for press operators. This list is offered as a guide only. Perkins Machine Company neither approves nor disapproves of these products but feels the press user should determine the best method of guarding the point of operation. Several excellent publications are available pertaining to power press safety and are listed in the front of this manual.



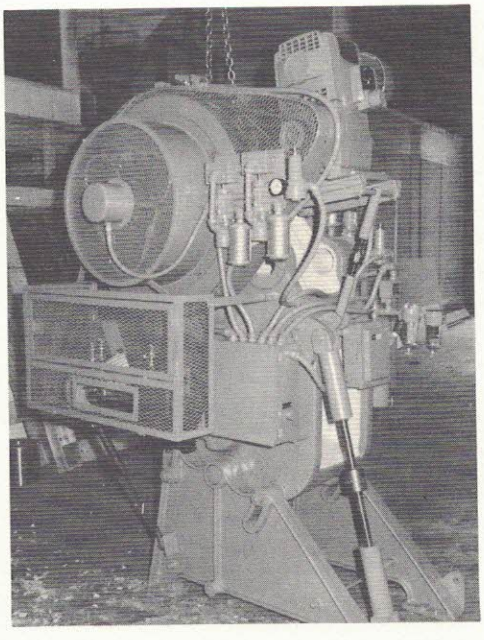


Illustration Shows Roll Feed Guards

FOOT TREADLE COVER

All presses built by Perkins Machine Company are shipped as standard with Press Controls set up for use by ONE operator only. If controls are added by the Owner-User for use by two operators it will be the responsibility of the Owner-User to take proper safeguards to protect the operators.

TREADLE COVER PROTECTS TREADLE FROM TOP REAR AND BOTH SIDES.

WARNING:
DO NOT OPERATE PRESS IF THIS COVER IS REMOVED.

Point of Operation **SAFETY** Guards and Devices

(MANUFACTURERS listed in "BEST'S SAFETY DIRECTORY") **Alfred M. Best, Inc.** **Post Office Box 600** **Morristown, New Jersey 07960**	PRESS FEEDS				SLIDE	SUCTION CUP FEEDING TOOL	MAGNETIC FEEDING TOOL	TONG & PLIER TYPE FEEDING TOOL	MISCELLANEOUS DEVICES	DIE SPACE DEVICES	CONTROLS
	DIAL	ROLL	HOPPER	SHUTTLE							
American Actuator Corp. Press Automation Systems Inc. Benchmaster Mfg. Co. Perkins Machine Co. Air-Lock Eng. Co.	• •	• • • •	•	• •	• •	•	• •	•			• • •
Cooper Weymouth Inc. H. E. Dickerman Mfg. Co. Durant Tool Co. Frank W. Egan & Co. Magni-Power Co. Inc.		• • • • •		• • • •	• •		• •		• •		•
L. M. Lind Engineering F. J. Littell Machine Co. W. I. Martin & Co. Osborn Mfg. Co. Searjeant Metal Products Inc. Jess Corp.		•				• • • •	• • • •	• • •	•	• •	• •
Permag Corp. Ullman Devices Corp. Atlantic India Rubber Works Inc. Industrial Products Co. Pendergast Safety Equipment Co.						• • •	• •	•	•		
Magline Inc. Wolverine Tool Co. American Allsafe Co. Inc. John Humm Safety Equipment Corp Clark Controller Co.								• •	• •	•	• • •
Micro-Switch Div. of Honeywell Tapeswitch Corp. of America Schrader Div., Scovill Westinghouse Air Brake Junkin Safety Appliance Co. Inc. Safeguard Mfg. Co.									• •	• •	• • • •
Positive Safety Mfg. Co. A-I Safety Supply Co. Inc. D & M Guard Co. Globe Products Corp. Shur-Safety Mfg. Co.									• • • • •		
Wiesman Mfg. Co. Inc. Luther Mfg. Co. Inc. Falstrom Co. Security Controls, Inc. Wintriss Controls Homestead Valve Mfg. Co.									• • • •		• •
Parker-Hannifin Corp. Dilley Mfg. Co. Mine Safety Appliances Co. Mannis Winch & Steel Co. Inc. Acme Wire & Iron Works Kirk & Blum Mfg. Co									• • • • •		•

ERECTING and INSTALLING

Check the leg nuts to be sure they are tight. Stand the press up.

Clean the press thoroughly using kerosene or other suitable solvent.

Move the press to its permanent foundation and level. In the case of inclinable presses, BOLT TO THE FOUNDATION.

Install any parts or equipment that may have been shipped in a disassembled condition.

Lubricate all parts such as flywheel and gears before assembly.

Mount the motor and align the sheave with the flywheel. Install the belts. Do NOT pry belts into sheave or flywheel grooves. Loosen motor mount so belts can be installed easily. Tighten belts in accordance with instructions on page 12 of the operators manual.

ELECTRIC SERVICE

Provide electric service to the main press disconnect switch. Check motor for proper rotation. The crankshaft must rotate top coming, i.e., the top of the crankshaft or pitman must come forward—toward the front, or normal operator's position.

Be sure the line voltage is the same as the voltage shown inside the disconnect switch.

CAUTION

We do not recommend the use of resilient mounting pads under the feet of inclinable presses.

While these pads may be correct for a press in the upright position, the changing center of gravity as the press is inclined on these pads could cause the press to become unstable and tip over.

We strongly recommend that the feet of all inclinable presses be bolted to the floor.

AIR SUPPLY

On presses that use air for one or more functions, a supply of clean dry air with minimum pressure of 80 PSI must be supplied.

Spring set air released brakes must have 80 PSI to prevent the brake from dragging and creating excess wear and heat.

Pneumatic Die Cushions may use up to 100 PSI for certain applications.

Counter balance air pressure is set depending upon the weight of the upper die shoe. A separate plate is provided on the press for correct air pressure if the machine is equipped with an air counterbalance.

V BELTS

In obtaining the proper tension on V belts it is not necessary to pull them exceedingly taut. New drives should be checked after eight hours of operation. In a multiple belt drive, proper tension will have been obtained when the top of any one belt can be depressed so that it is in line with the bottom of other belts in the drive, using only a moderate thumb pressure.

Proper tension on a single belt V drive can be tested by "striking" the belt with the fist it should vibrate and feel "alive."

In operation the tight side of belts should be in a straight line from sheave to sheave and have a slight bow on the slack side. Shafts should be parallel and sheaves properly aligned.

Belts should never be forced over sheaves, loosen motor mounts to install belts.

When replacing belts only matched sets should be used.

Belts should be kept clean and free of oil and grease.

CAUTION

MAKE ALL ADJUSTMENTS WITH MOTOR SHUT OFF AND DISCONNECT SWITCH LOCKED IN OFF POSITION.

INCLINING

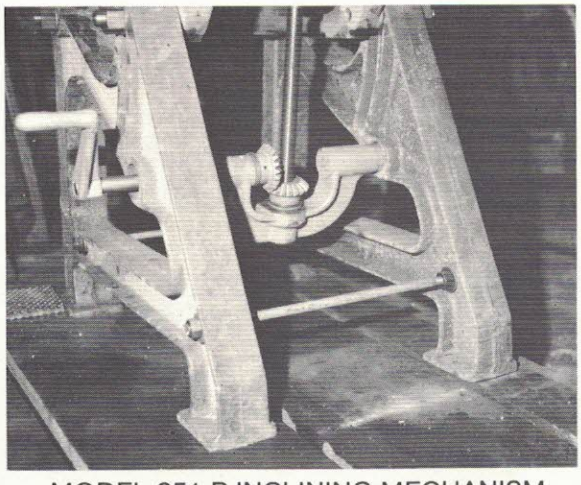
WARNING:
Before inclining any press not equipped with inclining screws it is imperative that a lifting device capable of supporting the press be used.

DO NOT stand directly behind any press while it is being inclined.

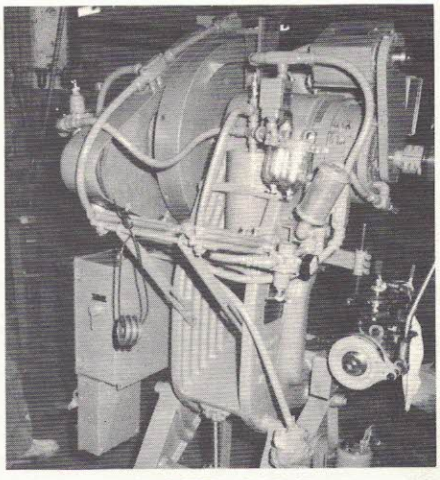
Presses thru 9 tons can be inclined by first loosening the trip rod clamp (Mechanical Clutch only) and the four leg stud nuts. Gradually back off the rear leg stud nuts allowing the press to incline along the tapered leg slots. After inclining tighten all nuts and re-adjust the trip rod to give proper pedal travel.

Presses from 15 thru 100 tons are equipped with inclining screws. Loosen the trip rod clamps (Mechanical Clutch only) and the four leg stud nuts, the press can now be raised or lowered to any desired position by turning the inclining screw nut. After inclining tighten all nuts and readjust trip rod (if equipped).

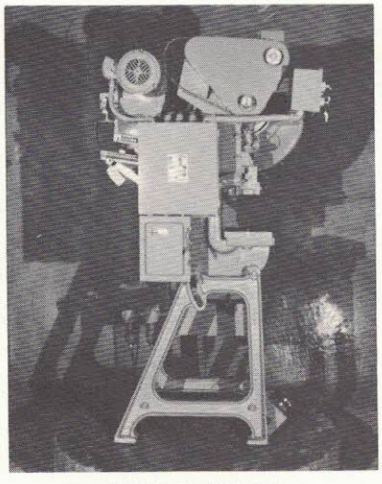
The Model 300-B is inclined with a ratchet.



MODEL 351-B INCLINING MECHANISM



MODEL 300-B



MODEL 200-B

INCLINING MECHANISM O.B.I. PRESSES

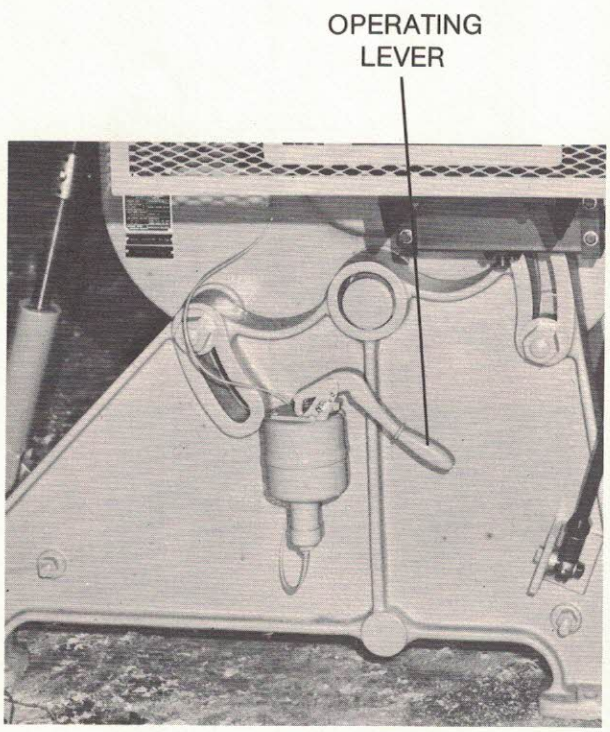
PRESS LUBRICATION

One of the most important functions of press maintenance is proper lubrication. Your press has been designed with one of several systems each of which will provide excellent lubrication which is so important to press life and efficiency. Before starting your press for the first time be sure all moving parts are lubricated.

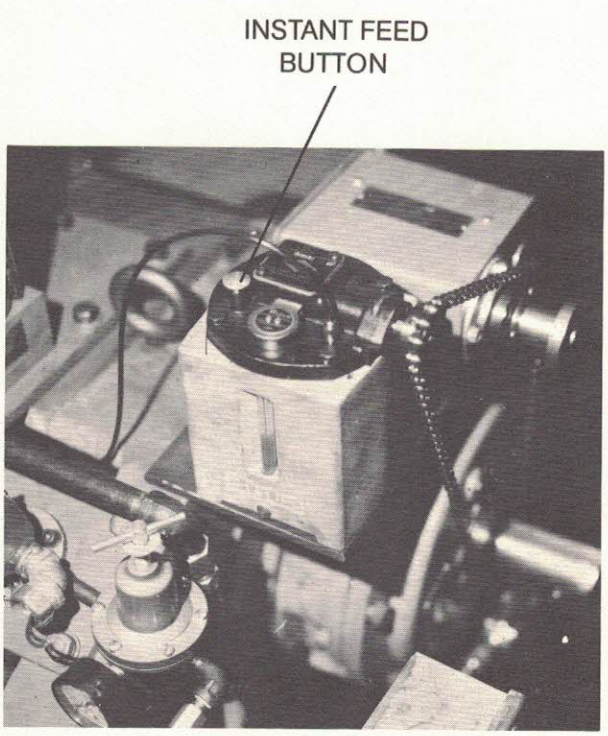
STANDARD LUBRICATION is manual by means of oil cups, grease fittings and drilled oil holes. With this system the main bearings, pitman and gibs are lubricated thru oil cups and should be filled each time the press is started and three to four times daily thereafter depending on press operation. The mechanical clutch is oiled thru drilled oil holes, the location of these holes is shown on the drawing on page 32. Wrist pins, flywheel bearings and gears are lubricated manually see table of lubricants for further instructions.

Some types of straight side presses have totally enclosed gears running in oil and need no service other than checking the oil level occasionally.

SEMI-AUTOMATIC, Hand Pump: Push handle down three to four times before starting press to lubricate all bearings. Allow handle to return to the original position each time before pumping again. Bearings should be lubricated several times daily. See table of lubricants for frequency. Check reservoir level daily.



SEMI-AUTOMATIC LUBRICATOR



AUTOMATIC LUBRICATOR
CHAIN GUARD REMOVED FOR ILLUSTRATION

AUTOMATIC LUBRICATOR: This lubricator is driven by a chain and sprocket from the crankshaft and lubricates the press on a predetermined time cycle. Pull and release the instant feed button (located on top of reservoir) several times before starting press to lubricate all bearings. Check daily to be sure the reservoir is full.

RECIRCULATING LUBRICATION: This system is fully automatic and the press cannot be started until operating pressure has been reached, indicated by a white light on the control panel. This system consists of an electric pump, reservoir, intake filter, discharge filter, distribution network of tubing and meter units, pressure gauges, low pressure switch and indicator lights. A system of piping returns the oil to the settling chamber where the lubricant is filtered and pumped again thru the system. The suction and discharge filters should be checked weekly during the first month of operation. If found to be dirty they should be cleaned or replaced. Porous bronze filter elements should be replaced when clogged rather than cleaned. If replacement elements are not available the element can be cleaned in a suitable solvent and blown dry until the replacement element can be installed.

OIL PRESSURE: The pressure switch is set to shut off your press if the pressure drops below 30 PSIG. The press will shut off and the red indicator light on the panel will come on. The working range is 30 to 60 PSIG.

Low oil pressure can be caused by one or more of the following:

1. Dirty or clogged filter.	Clean or replace filter.
2. Air trapped in line.	Remove oil line at pressure guage, start pump and run until the oil coming from the line is air free. Reconnect.
3. Low oil level.	Fill reservoirs.
4. Broken oil line.	Replace as required.
5. By-pass valve open to far.	Adjust.
6. Increase in oil temperature, this can be caused by high ambient temperature as well as a gradual increase due to the press warming up with use. A higher temperature will cause a decrease in oil viscosity and consequently a decrease in pressure.	Close by-pass valve gradually to increase pressure to the high side of the working range. (30 to 60 PSIG).

NOTE: Wrist pins, flywheel bearings, the mechanical clutch assembly and gears are not lubricated by these systems. See standard lubrication for instructions.

OPEN GEARS: Grease weekly with PMCo grease No. 3.

FLYWHEEL BEARINGS: Ball bearings are prelubricated and sealed and do not need lubrication. Tapered roller bearings are provided with a grease fitting in the flywheel hub. Every six months these bearings should be re-greased.

TO RE-GREASE

1. Remove plug opposite the grease fitting.
2. Grease flywheel bearing with a hand gun. (Pressure guns could damage the seals in flywheel requiring dismantling and replacement).
3. When grease starts coming out of the purging hole–stop greasing.
4. Remove grease fitting from hub.
5. Rotate flywheel until no more grease comes from the fitting hole or the purging hole.
6. Replace grease fitting and plug.
7. Clean all excess grease from flywheel.

CAUTION: DO NOT use so called fluid or tacky type oils. This may result in clogging oil grooves and filter elements with subsequent failure of bearings.

COUNTERBALANCE LUBRICATION: The counterbalance air cylinder is equipped with an oil cup on the cap end a grease fitting on the rod end. Once a week the rod end should be greased and ½ ounce of PMCo. No. 1 oil added to the cap end.

CHAIN LUBRICATION: The chain driving the lubrication pump and the rotary limit switch should be lubricated with PMCo. No. 1 oil every week. Sufficient oil should be applied so that the lubricant may penetrate the chain bearings. See table of lubricants for lubrication points and further instructions.

When lubricating a power press by manual means, shut off all power and lock the disconnect switch in the OFF position.

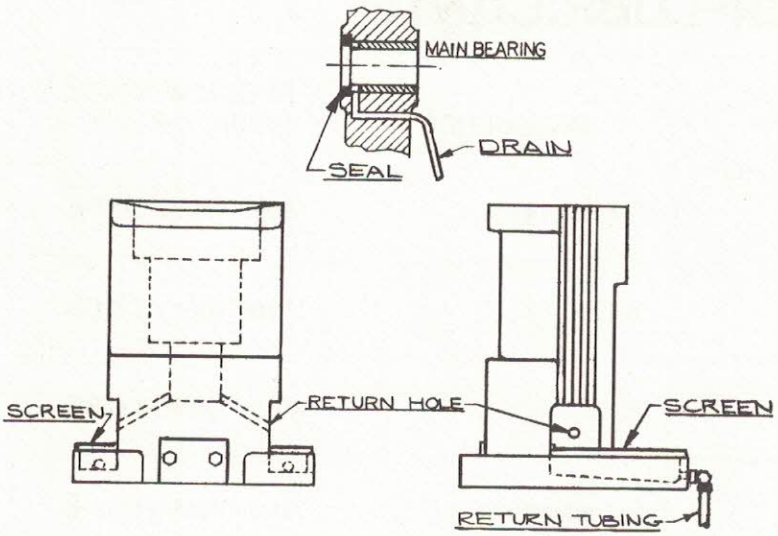
LUBRICANT SPECIFICATIONS

PMCo. No.	VISCOSITY SSU@	TYPE	MIN. FLASH
1.	900–1000 @ 100°F 79–84 @ 210°F	Highly refined Industrial mineral oil rust and oxidation inhibited	440°F
2.	145–155 @ 100°F 42–45 @ 210°F	Highly refined Industrial mineral oil rust and oxidation inhibited	395°F
3. GREASE–a high grade anti-friction bearing and guideway grease with worked penetration @ 77°F of 300/330 to be free of fillers and corrosive matter.			

CAUTION: DO NOT use so called fluid or tacky type oils. This may result in clogging oil grooves and filter elements with subsequent failure of bearings.

TABLE OF LUBRICANTS

PART LUBRICATED	TYPE OF LUBRICANT	FREQUENCY	RECOMMENDATION MOBIL OR EQUAL
Main Bearing	Oil No. 1	2-4 Hours	Mobil Vactra Oil BB
Pitman Bearing	Oil No. 1	2-4 Hours	Mobil Vactra Oil BB
Gibs	Oil No. 1	2-4 Hours	Mobil Vactra Oil BB
Ball Joint	Oil No. 1	2-4 Hours	Mobil Vactra Oil BB
Flywheel Sleeve Bearing	Oil No. 1	2-4 Hours	Mobil Vactra Oil BB
Wrist Pin	Grease No. 3	Daily	Mobilplex EP No. 1
Flywheel Anti-Friction Bearing	Grease No. 3	6 Months	Mobilplex EP No. 1
Clutch	Oil No. 1 (see separate sheet for location of oil holes) Page 32.	Twice Weekly	Mobil Vactra Oil BB
Motor Sleeve Bearing	See Individual Manufacturers Recommendation		
Motor Ball Bearings	See Individual Manufacturers Recommendation		
Air Line Lubricator	Oil No. 2	As Required	Mobil D.T.E. Oil Light
Air Counterbalance Rod End Cap End	 Grease No. 3 Oil No. 1	 Weekly Weekly	 Mobilplex EP No. 1 Mobil Vactra Oil BB
Main Gears (Open)	Grease No. 3	Weekly	Mobilplex EP No. 1
Main Gears (Enclosed)	SAE 90 Anti-Foam Gear Oil	As Required Check Sight Gage	
All Reservoirs Auto-Lube Systems	Oil No. 1	Check Daily	Mobil Vactra Oil BB
Over Running Clutches	Oil No. 2	Check Weekly	Mobil D.T.E. Oil Light



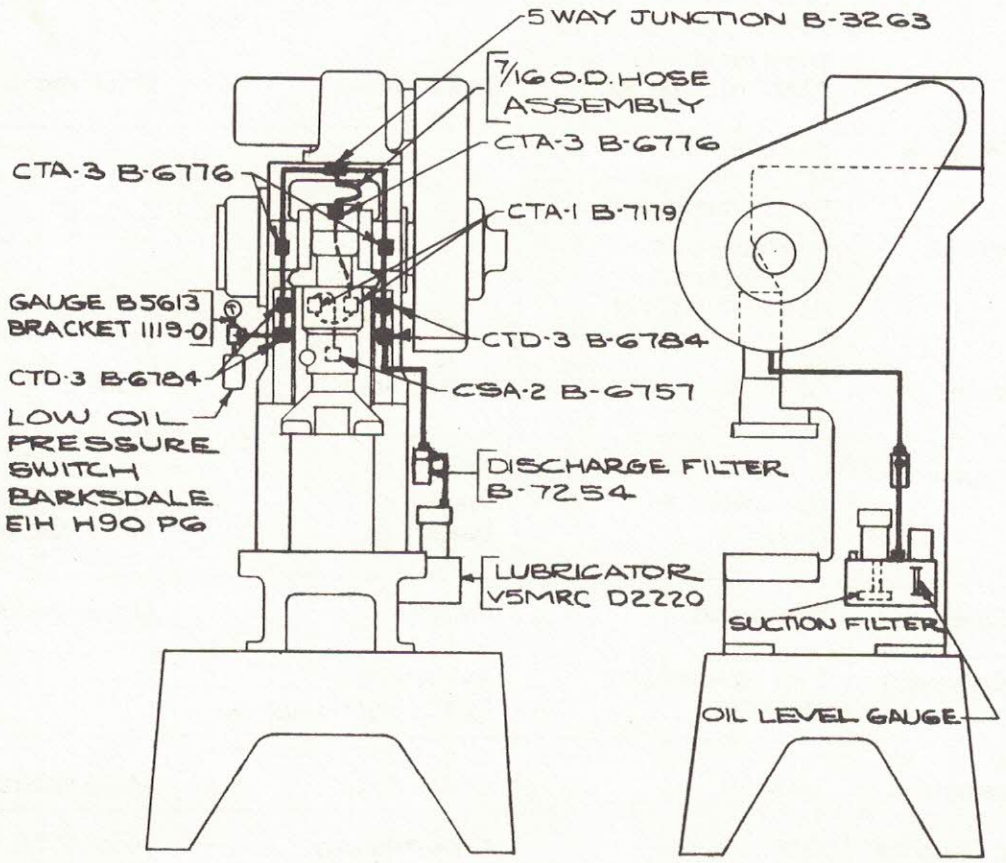
RETURN SYSTEM

The return system is designed to capture and return the oil from the bearings and gibs to the reservoir to be re-used. It is essential that the return piping and passages be clean and free from dirt.

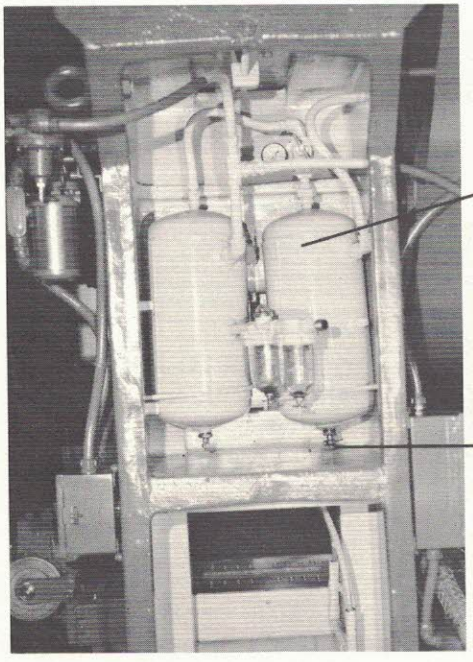
The screens in the slide flange should be cleaned regularly (monthly) and the return holes from the inside of the slide to the pocket in the flange should be checked for free flow. The return tubing at the rear of the slide flange must pitch downward for proper oil return.

LUBRICATION SYSTEM
SERIES "S" PRESSES

Check oil level daily and refill reservoir when required. Check the system periodically for loose or broken tubing, worn hoses, loose fittings and connections.



AIR SYSTEM

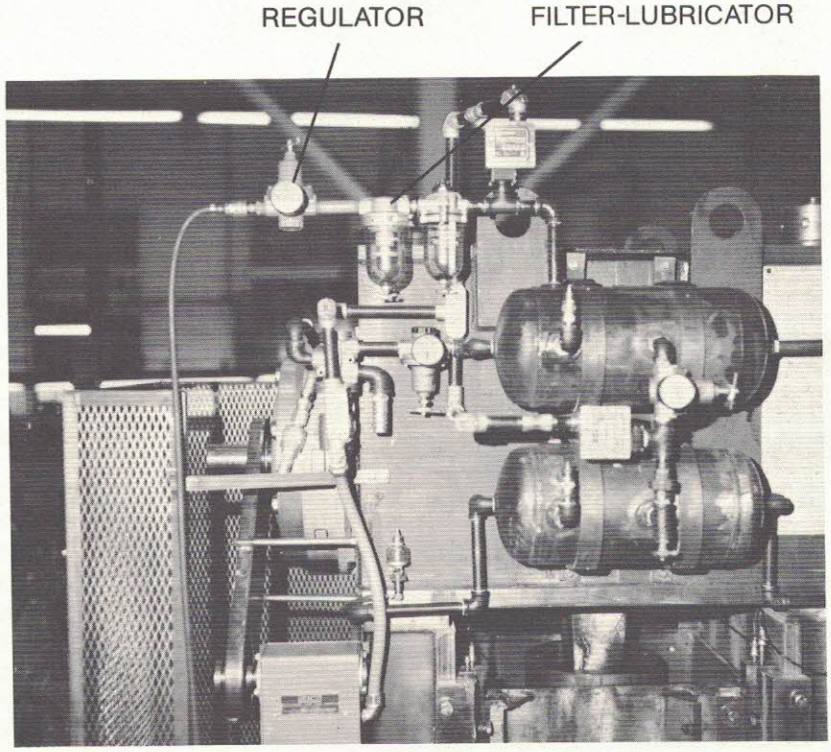


IMPORTANT: DRAIN MOISTURE FROM ALL AIR TANKS WEEKLY

Periodic inspections of the air system will insure continued efficient operation of your press. It is important that all joints and fittings be kept air tight.

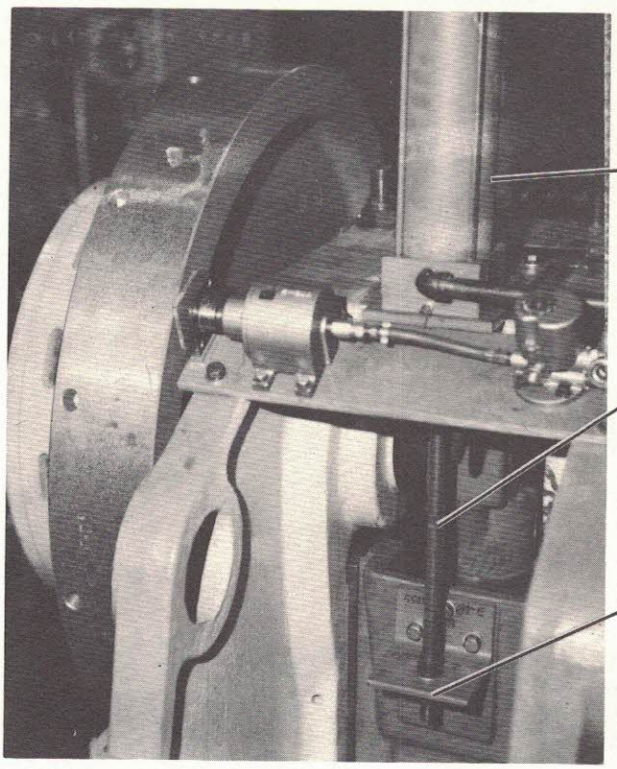
Air losses result in excessive use of compressors and needless expense. The air line filter is an important part of your air system and is designed to filter out moisture and dirt from the incoming air. Drain the bowl weekly or whenever the bowl is filled.

The air line regulator can be used to test the gauge for proper functioning. Turning the handle in either direction should give a corresponding reading on the gauge.



AIR COUNTERBALANCE

Air Counterbalance cylinders compensate for the weight of the slide and upper dies to provide smoother press operation and reduce shock to the bearings. The air pressure in the cylinder is controlled by a regulator valve and must be adjusted to compensate for different die weights. If your press is equipped with an air counterbalance, a data plate is attached to the press indicating the amount of air pressure required for various die weights.



WARNING

COUNTERBALANCE CYLINDER UNDER PRESSURE. BEFORE SERVICING OR SETTING PRESSURE REFER TO OPERATORS MANUAL FOR INSTRUCTIONS.

o SEE PLATE ATTACHED TO PRESS o

DANGER

IF NECESSARY TO DISASSEMBLE AIR CYLINDERS FOR REPAIRS TURN OFF AIR SUPPLY TO THE PRESS. OPEN PETCOCKS IN SURGE TANKS TO BLEED OFF AIR AND OPEN PIPE JOINTS AT CYLINDERS BEFORE ATTEMPTING TO DISASSEMBLE.

DIE CUSHION

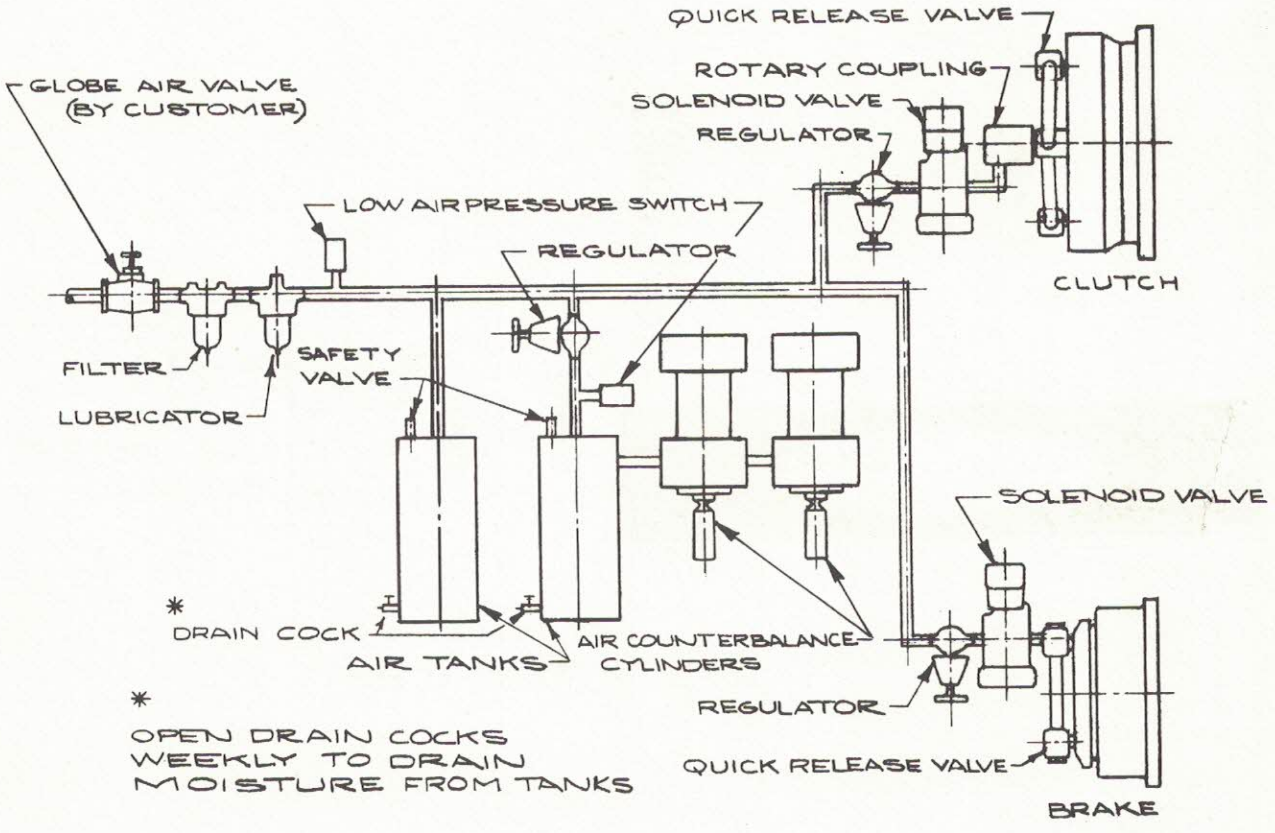
If your press is equipped with a die cushion it must be remembered that they are under pressure and are capable of exerting very high forces.

If a work piece becomes jammed in the dies *ALWAYS TURN OFF CUSHION PRESSURE* before attempting to remove the part. If the cushion requires service involving dis-mantling of parts discharge all pressure from cushion surge tanks and disconnect supply lines to each cushion.

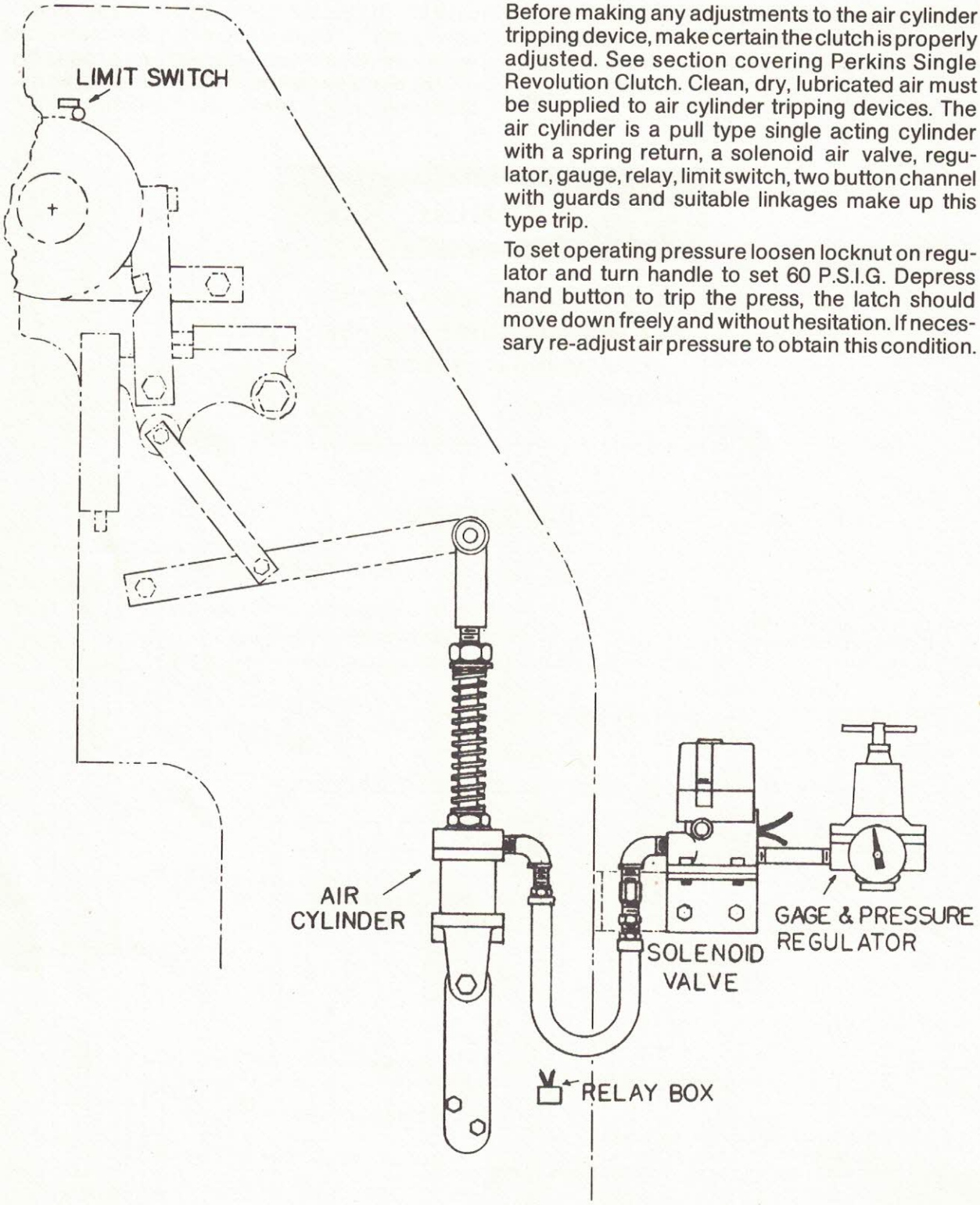
WARNING

DIE CUSHION UNDER PRESSURE SEE INSTRUCTIONS IN OPERATORS MANUAL BEFORE SERVICING.

AIR SYSTEM



AIR CYLINDER TRIPPING DEVICE



Before making any adjustments to the air cylinder tripping device, make certain the clutch is properly adjusted. See section covering Perkins Single Revolution Clutch. Clean, dry, lubricated air must be supplied to air cylinder tripping devices. The air cylinder is a pull type single acting cylinder with a spring return, a solenoid air valve, regulator, gauge, relay, limit switch, two button channel with guards and suitable linkages make up this type trip.

To set operating pressure loosen locknut on regulator and turn handle to set 60 P.S.I.G. Depress hand button to trip the press, the latch should move down freely and without hesitation. If necessary re-adjust air pressure to obtain this condition.

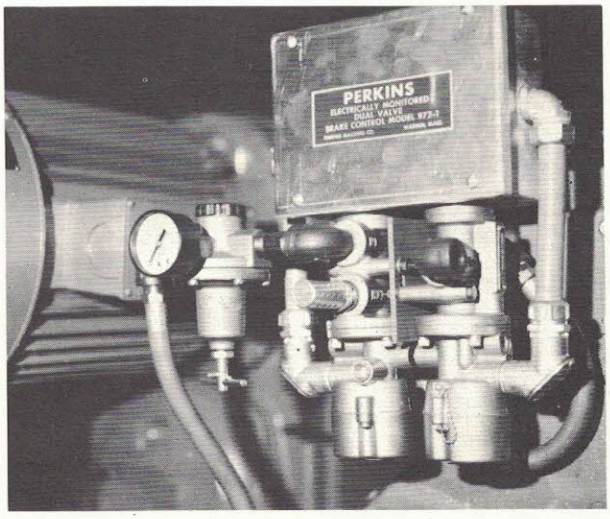
DUAL MONITORED AIR VALVES

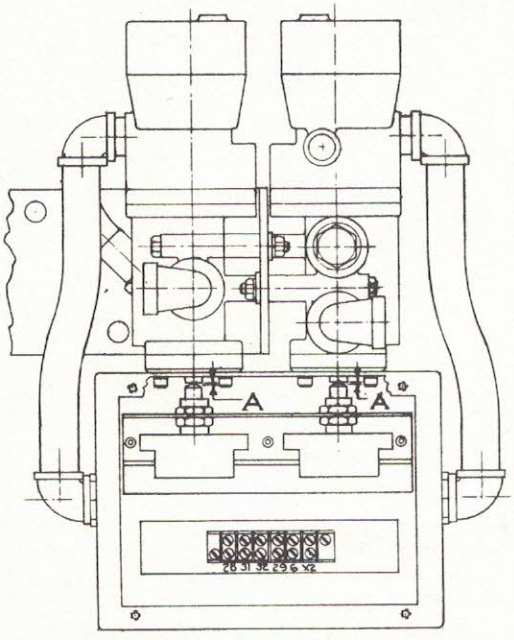
REFERENCE: PMCo. Dwgs. D-972-0 (Clutch) D-972-1(Brake)
Wiring Diagram A-EL-293-0

TO ADJUST THE DUAL MONITORED AIR VALVES PROCEED AS FOLLOWS:

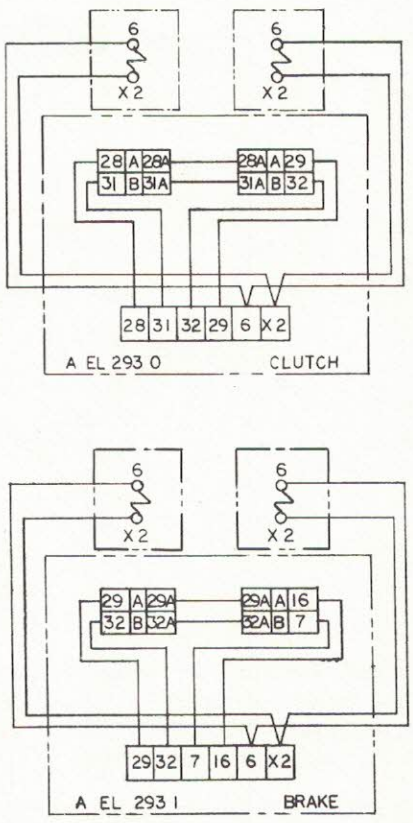
1. Stop press and shut off power.
2. Adjust clearance (Dimension "A") Page 23 between solenoid air valve indicator pin and limit switch plunger to .000 to .010 inches. Re-tighten check nuts on limit switch.
3. To check for proper electrical functioning use a continuity checker. Checking between 28 and 29 should be a closed circuit. Checking between 31 and 32 should be an open circuit. Turn power on. Place selector switch to BAR. With PUSH to BAR button depressed, checking between 28 and 29 should be an open circuit, checking between 31 and 32 should be a closed circuit. If continuity does not check re-adjust limit switch.

See Wiring Diagram page 23.





ADJUST TO PROVIDE .000" TO .010" CLEARANCE BETWEEN VALVE PLUNGER AND SWITCH PLUNGER.



WIRING DIAGRAM DUAL AIR VALVES

OPERATION

Every press manufactured by Perkins Machine Company is completely assembled, run in and tested before it leaves the factory. Because some parts have to be disassembled for shipment, CAUTION must be exercised the first time the press is operated.

Check to be sure all parts are assembled and properly lubricated.

Turn press over by hand for at least one complete revolution before running under power.

On air clutch equipped presses, follow the instructions for manually barring the press.

On pin clutch presses–*with the power shut off to the press*–trip the clutch mechanism by hand, insert the bar into the flywheel and turn the press through one complete revolution.

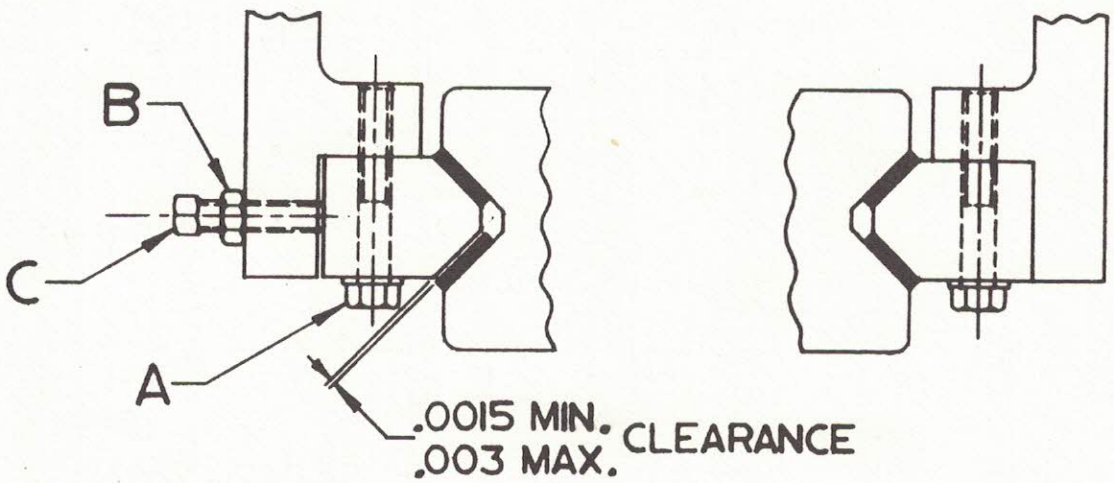
After checking the press by turning through at least one revolution by hand, remove bar from flywheel, close flywheel barring cover (if equipped) and start the press under power.

Run at slow speed (if variable speed) and check for proper lubrication to all points.

After approximately one hour of operation, stop the press and check the gibs and bearings for heat. Some heat is normal, however, there should be no hot spots or temperature in excess of approximately 180°F. (Hand held at the bearing or gib surface easily).

Check the gib clearance–It should be approximately .0015 to .002 inches per surface. If not within the above tolerances, adjust the gibs in accordance with instructions under gib adjustment.

GIB ADJUSTMENT



The gibs are adjusted for proper clearance at the factory before shipment. If the clearance in the gibs becomes more than .003 or less than .0015 per surface, adjust as follows:

The fixed side (right hand side illustrated) should not be adjusted.

Check to be sure the fixed side is tight to the frame on both mounting surfaces.

1. Stop the press
2. Remove the die from the press and set slide at bottom of stroke
3. Loosen check nuts (B)

4. Back off gib adj. bolts (C) ¼ turn
5. Loosen gib attaching bolts "A"
6. Retighten gib attaching bolts "A" until they are finger tight.
7. Using a .0015" thick feeler gauge tighten gib adj. bolts until a .0015" feeler will enter all surfaces but a .002 feeler is snug or will not enter.
8. Tighten gib attaching bolts "A"
9. Hold gib adjustment bolts in place firmly and tighten check nuts "B"
10. Recheck clearance. If not within tolerance –re-adjust.

CAUTION: Do not allow the clearance to be less than .0015 per surface. Too small a clearance could cause excessive heat, scoring of the gib ways and damage to the ram and gibs.

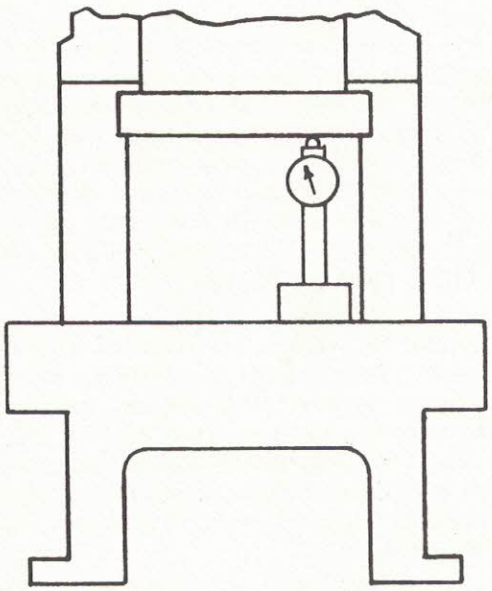
With the clearance adjusted, run the press for one hour at moderate speed and check clearance again–adjust if necessary.

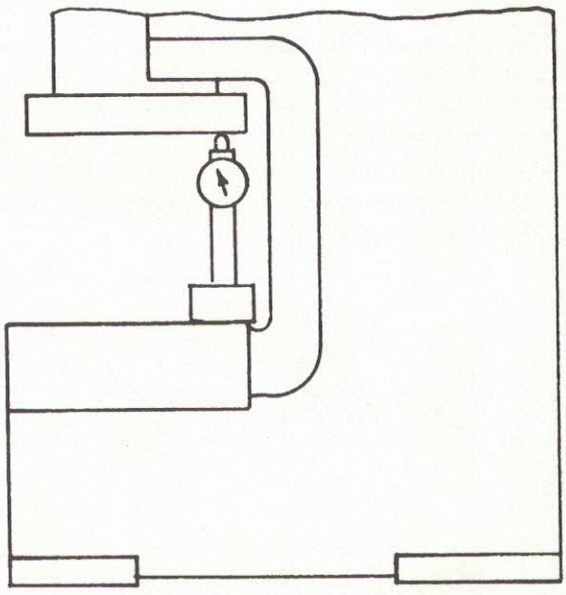
The accuracy of your press is built into the gib and frame surfaces.

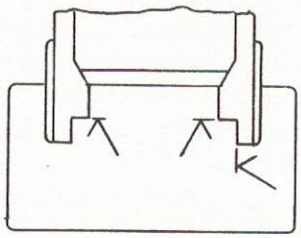
PRESS ACCURACY: Bed to ram parallelism should be within .001"/foot of length.

If your press is not within the above tolerance and the gib clearance has been adjusted properly, proceed as follows:

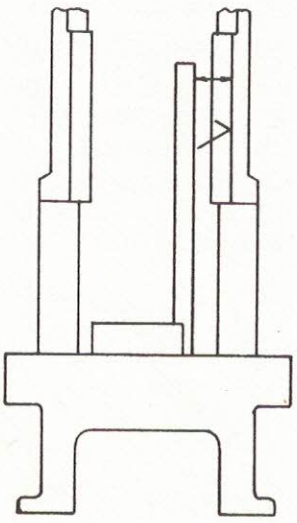
1. Remove the ram and gib assembly.
2. Check the frame for squareness from the bed to the gib backups and bed to the fixed side of the frame gib way.
3. If the frame is not square within .001"/foot of length, the frame should be remachined or refit (scraped) to bring it within tolerance.

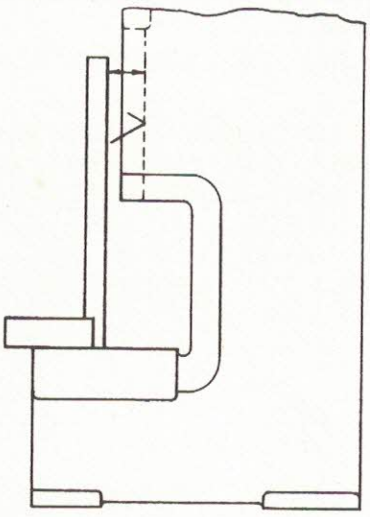






Surfaces marked $\surd$ must be square with the bed within .001"/foot of length.

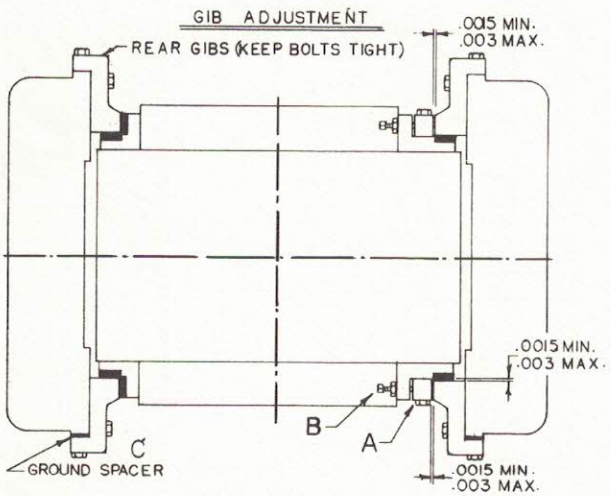




The gibs have been set at the factory to provide correct clearances and slide to bed parallelism and should only be adjusted to compensate for wear on the wear plates.

A total clearance of from .0015 to .003 inches should be maintained between the sliding surfaces.

Adjust as follows:



Remove the dies and set the slide at the bottom of the stroke. The slide should be adjusted down approximately one third of its adjustment range. Shut off all power. Rear gibs are fixed, check to be sure all bolts are tight. Loosen bolts on adjustable gibs "A" both front and rear, see drawing. Loosen gib adjusting bolts "B" and adjust gib for clearance of .0015 to .003 inches. Retighten all bolts and check clearance again.

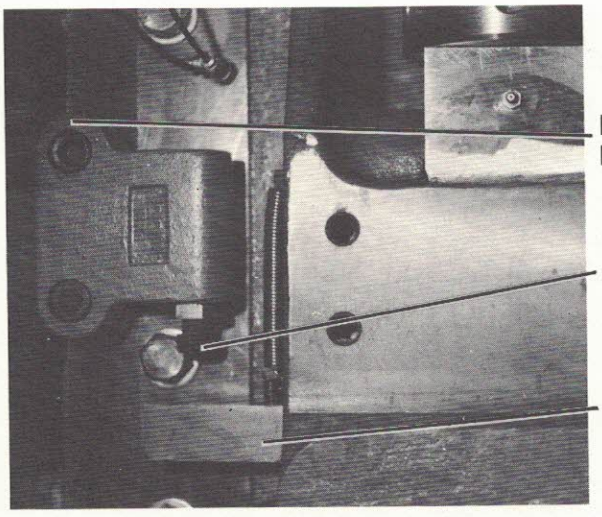
Adjustment of the slide for front to back clearance is provided for with ground spacers. If clearance exceeds .003 inches remove both front gibs and grind the spacers "C" removing only enough material to maintain the required .0015 to .003 inches of clearance. Make certain all surfaces are free of dirt and burrs before reassembling. Replace spacers and gibs, tighten all bolts and recheck clearances.

We recommend that the press be run at a slow speed to insure that oil is flowing to all surfaces and after stopping to recheck the clearances again.

CAUTION:

The gibs are provided with a tapped hole on the top for an eye bolt. Be sure adequate handling equipment is at hand to support their weight before removing.

KNOCKOUT BAR

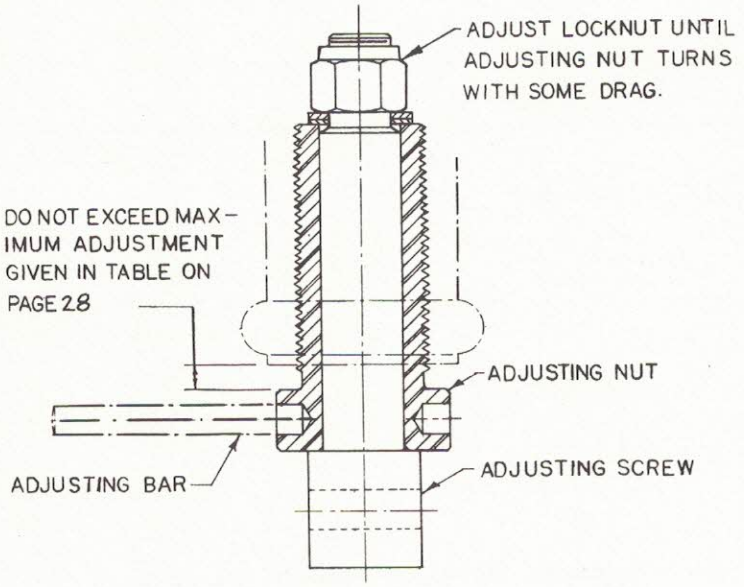


CROSS BAR KNOCKOUT

Knockout bars are standard equipment on O.B.I. and high speed "C" frame presses. Most all other presses have provisions for knockouts.

Knockout brackets are bolted to the frame. These brackets are tapped for knockout screws, and by adjusting these screws the knockout bar can be positioned to contact the knockout pins (by customer) as the slide returns to the top of the stroke.

SLIDE ADJUSTING SCREW
MODEL "B" PRESSES



If the adjusting screw tends to bind or is difficult to turn check the following for probable cause:

1. DAMAGED THREADS
2. FOREIGN MATTER ON THREADS
3. CLAMPING BOLTS NOT LOOSENED
4. GIBS TOO TIGHT OR SLIDE BINDING
5. THREADS DRY (INADEQUATE LUBRICATION)

SLIDE ADJUSTMENT

The table shown below lists the maximum slide adjustment for Perkins Presses.

DO NOT EXCEED THE MAXIMUM ADJUSTMENT FOR YOUR PRESS.

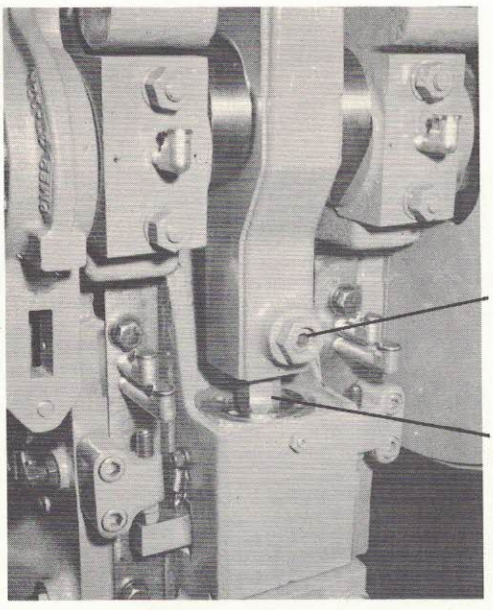
PRESS MODEL	ADJUSTMENT	PRESS MODEL	ADJUSTMENT
JR.	1″	32-S	2½″
1-A	¾″	45-S	2½″
2-A*	¾″	60-S	2¾″
5-C	1½″	22-T	2½″
100-B	1½″	32-T	3″
200-B	1½″	45-T	3″
300-B	2″	60-T	4″
375-B	2½″	75-T	4″
450-B	2½″	100-T	4″
550-B	2½″	125-T	4″
650-B	3″	150-T	4″
700-B	3″	2-H	3″
800-B	4″	3-H	4″
15-S	2¼″	6-H	4″
22-S	2½″	9-H	4″
*2-A-24″ WIDE	1½″		

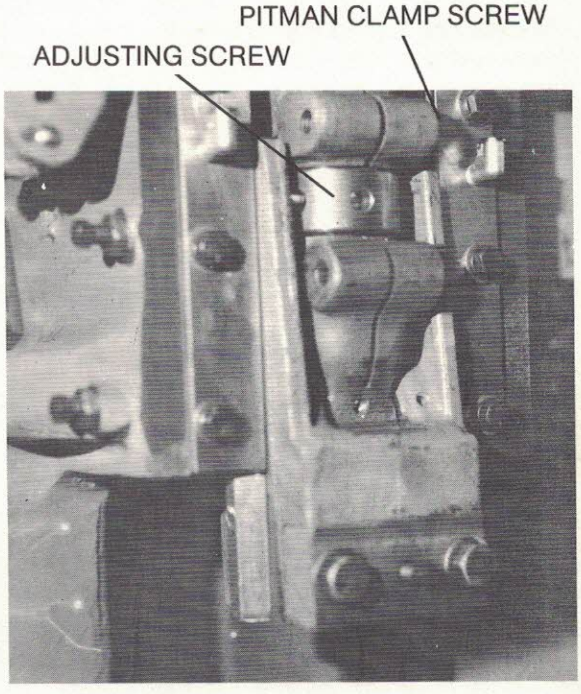
No adjustments should be made to the slide without first shutting off the motor and allowing the flywheel to come to a complete stop.

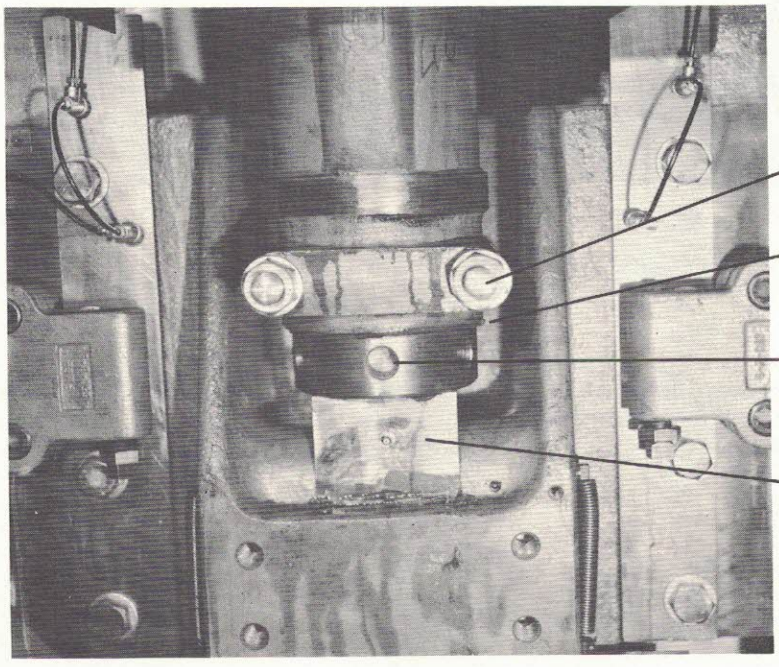
With slide stopped and motor shut off loosen clamping screws on pitman. Insert the adjusting bar in the holes in the adjusting nut and turn to adjust slide to desired height.

BE SURE TO TIGHTEN CLAMPING SCREWS AFTER ADJUSTING.

CAUTION: DO NOT adjust slide too low for die set being used.

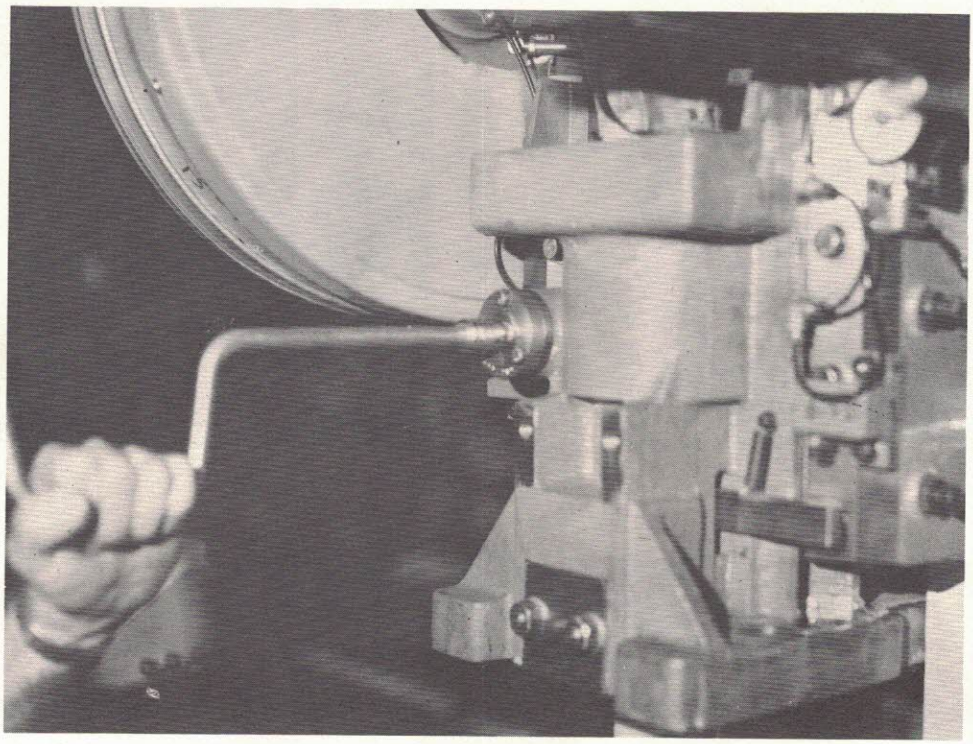






SLIDE ADJUSTMENT
MODEL "S" PRESSES

To adjust the slide on Model "S" presses place the socket wrench (furnished) over the hex end of the worm shaft, push inward slightly to disengage the lock and turn to adjust slide to desired setting maintaining a slight pressure to keep the lock disengaged while turning the wrench. When releasing the lock make certain that the pin on the lock enters one of the slots in the lock housing, this will lock the slide adjusting assembly to prevent "creeping" and possible damage to equipment.



MODEL "S" SLIDE ADJUSTMENT
PRESS WRENCH IN TO UNLOCK

SINGLE CRANK PRESSES: Turn wrench in a counterclockwise direction to lower the slide and in a clockwise direction to raise the slide.

DOUBLE CRANK PRESSES: Turn the wrench in a clockwise direction to lower the slide and in a counterclockwise direction to raise the slide.

SINGLE REVOLUTION CLUTCH

The Perkins Single Revolution Clutch is designed for single stroking. When the roll (1) is in contact with the clutch collar (2) the latch (3) is automatically released, making it necessary to release the tripping mechanism for the next stroke. To run the press continuously, remove the roll and lever assembly (4) by un-bolting it from the latch trip lever (5). The press will now run continuously when tripped, and will not stop until the tripping mechanism is released. When stopping a press it is necessary to release the tripping mechanism all the way, and at once to avoid possible damage to the latch.

The friction should be adjusted as described on page 35 to keep the dog from striking the safety stop on the latch. When the shaft is on Top Center there is a clearance between the dog and the latch, and only when the shaft coasts by center do these surfaces come together to prevent a repeat stroke.

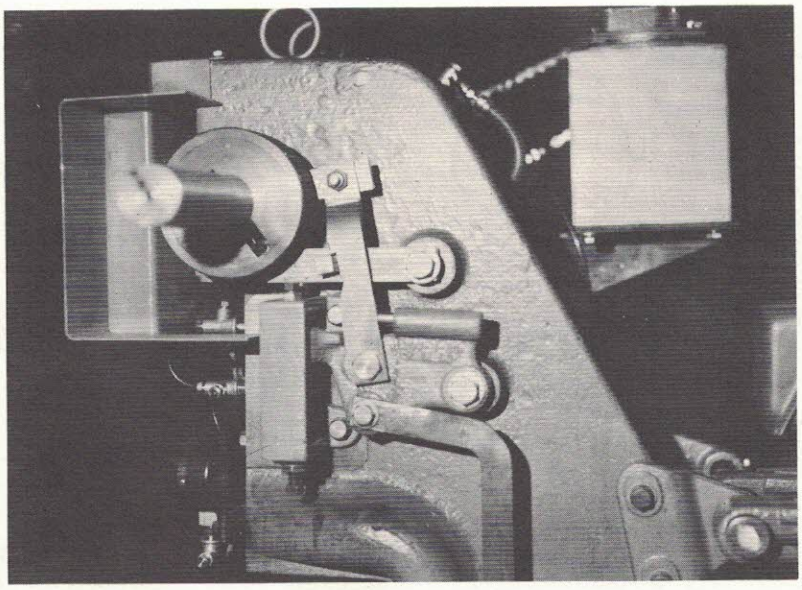
The latch is provided with a spring which pushes ahead slightly after the dog has been drawn out of the wheel to prevent clicking. Clicking is caused when the dog does not completely withdraw into the collar. The dog just slightly touches the drive slugs as the wheel rotates.

Do not operate the press with the clutch clicking as an inadvertant stroke could occur.

The latch square has four hardened faces and can be rotated four times for longer life.

CAUTION:

Place slide at bottom of stroke when making any adjustments to clutch.



SINGLE REVOLUTION CLUTCH

WARNING: A good maintenance program and regular inspection will contribute to maximum production and safety.

The springs in the mechanical clutch should be made a part of regular inspection. Springs which are broken, bent or weak in action should be replaced.

DO NOT OPERATE THE PRESS UNTIL CORRECTIVE ACTION HAS BEEN TAKEN.

TO ADJUST FOR CLEARANCE BETWEEN LATCH TRIP LEVER AND LATCH SQUARE:

There should be a normal clearance of 1/32 inch between the latch trip lever and the latch square when the latch is in the UP position (see drawing).

ADJUST AS FOLLOWS:

Stop the press and turn off motor. Loosen locknut "A" on spring box and adjust pull down up or down by turning screw "B" to obtain correct clearance. Tighten lock nut "A" and recheck.

TO ADJUST FOR CLEARANCE BETWEEN LATCH AND DOG:

There should be a minimum clearance of 1/16 inch between the clutch dog and the latch when the latch is in the DOWN position (see drawing) if adjustment is necessary proceed as follows:

Stop the press and turn off motor. Trip the press to bring the latch to the DOWN position. Loosen locknut "C" located at bottom of the spring box and by turning screw "D" adjust for a minimum clearance of 1/16 inch between the latch and dog. Tighten locknut "C" and recheck. If further adjustment is required repeat the above procedures.

CLUTCH SPRINGS:

Check springs for proper tension. Action of all clutch components should be crisp.

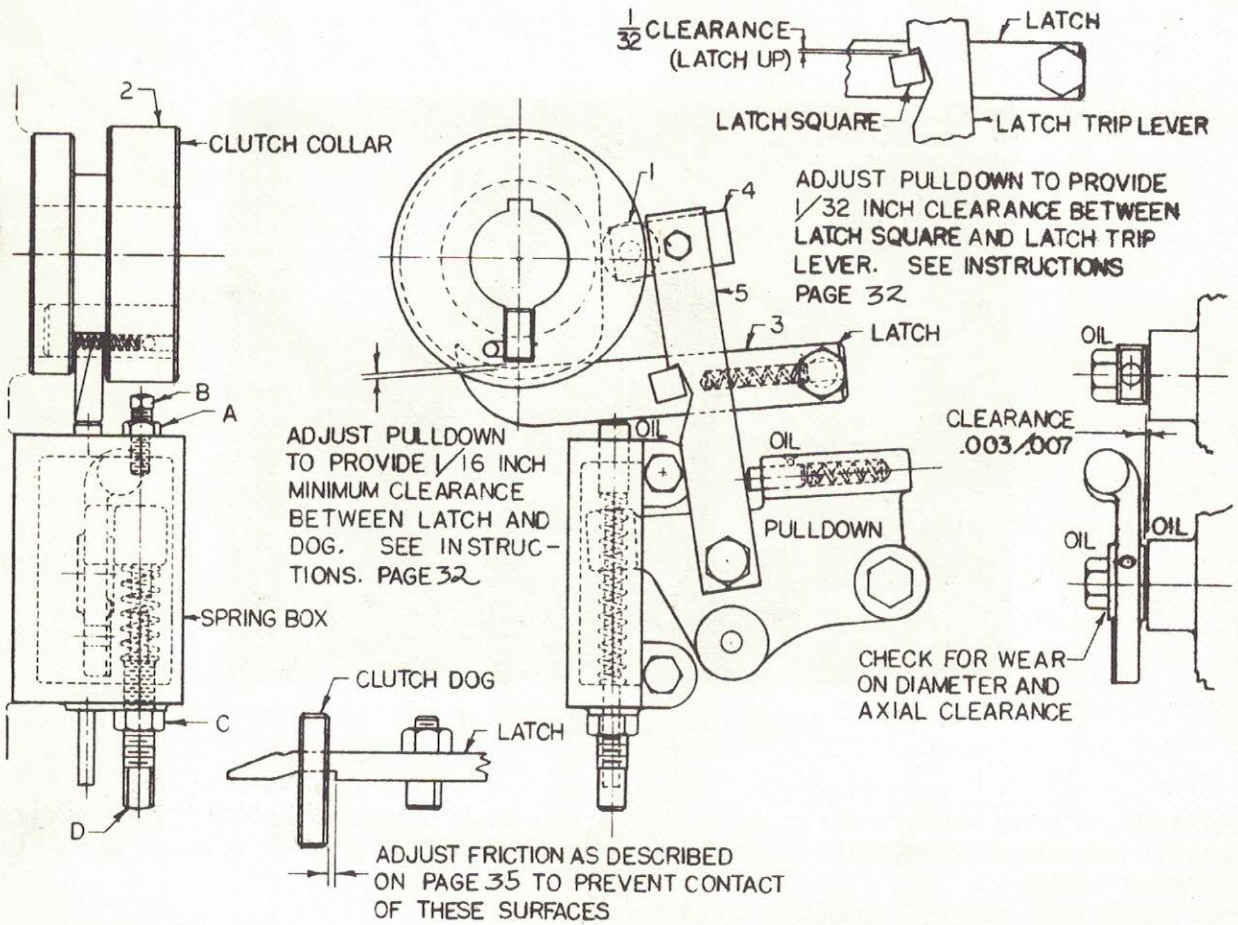
DANGER

If clutch appears to be sluggish replace springs.

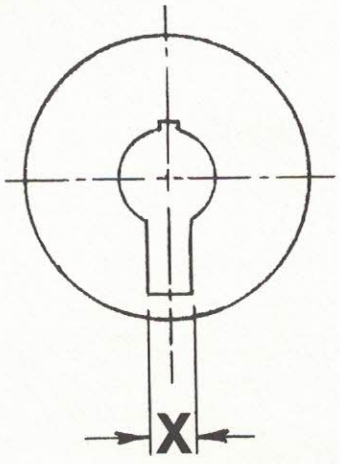
If the clutch has been tripped with the motor off, the press will make one cycle when the motor is started.

DO NOT OVER GREASE THE CLUTCH.

Replace clutch dog and or wheel slugs if press does not stop at the first available dog slot. Always replace dog springs if dog is replaced.



CLUTCH COLLAR DOG SLOT WEAR

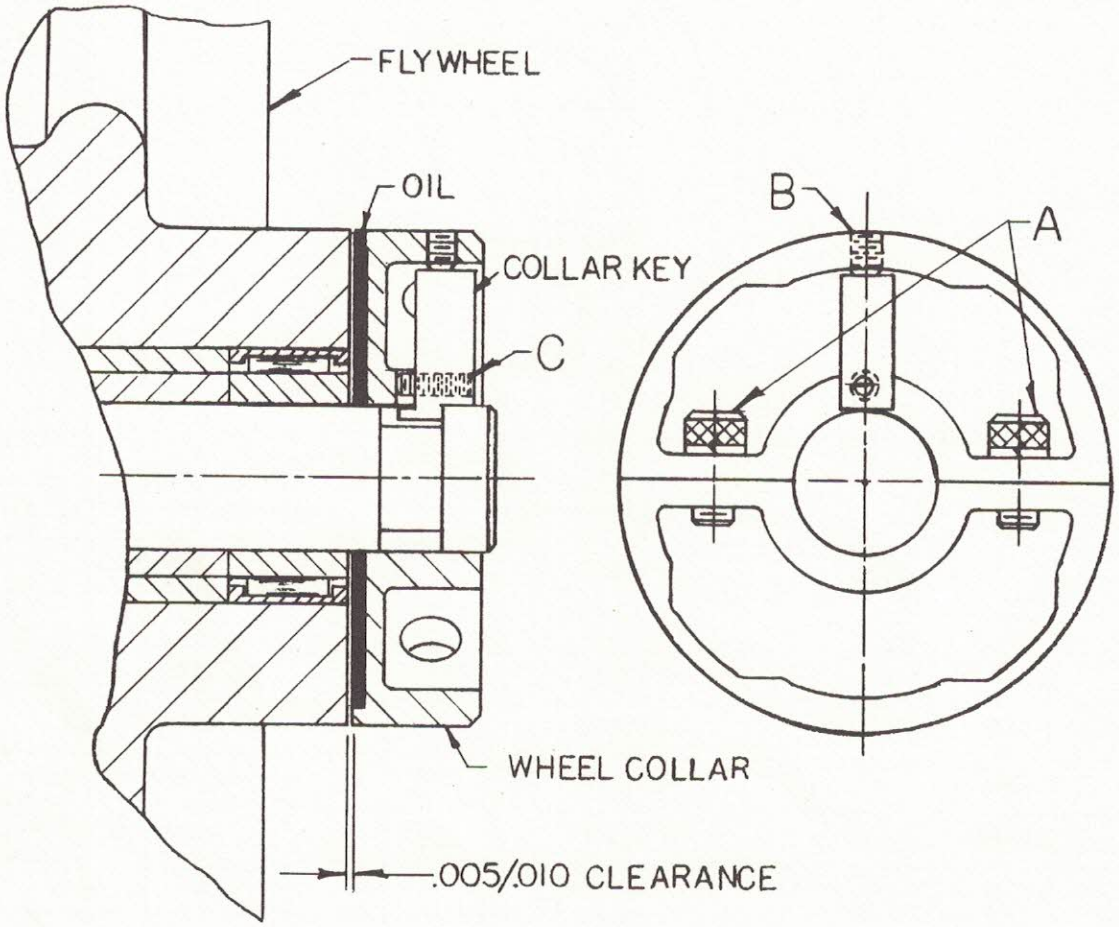


PRESS MODEL	DIMENSIONS IN INCHES	
	(NEW) DOG SLOT WIDTH	X-MAX. DOG SLOT WIDTH
JR.	.440/.442	.452/.454
1A	.440/.442	.452/.454
2A	.502/.505	.514/.517
100-B	.440/.442	.452/.454
200-B	.502/.505	.514/.517
300-B	.871/.877	.883/.889
351-B	1.005/1.007	1.021/1.023
375-B	1.130/1.132	1.146/1.148
450-B	1.130/1.132	1.146/1.148
550-B	1.378/1.380	1.394/1.396
650-B	1.503/1.507	1.523/1.527
700-B	1.878/1.883	1.902/1.907
800-B	2.254/2.258	2.280/2.284
5-C	.440/.442	.452/.454

SOME PROBABLE CAUSES OF CLUTCH DOG WEAR

1. Excessive wear of dog slot in collar — See table above
2. Overloading press
3. Press running too fast
4. Press brake improperly adjusted — See page 35
5. Excessive end play in flywheel or gear — See page 34

WHEEL COLLAR



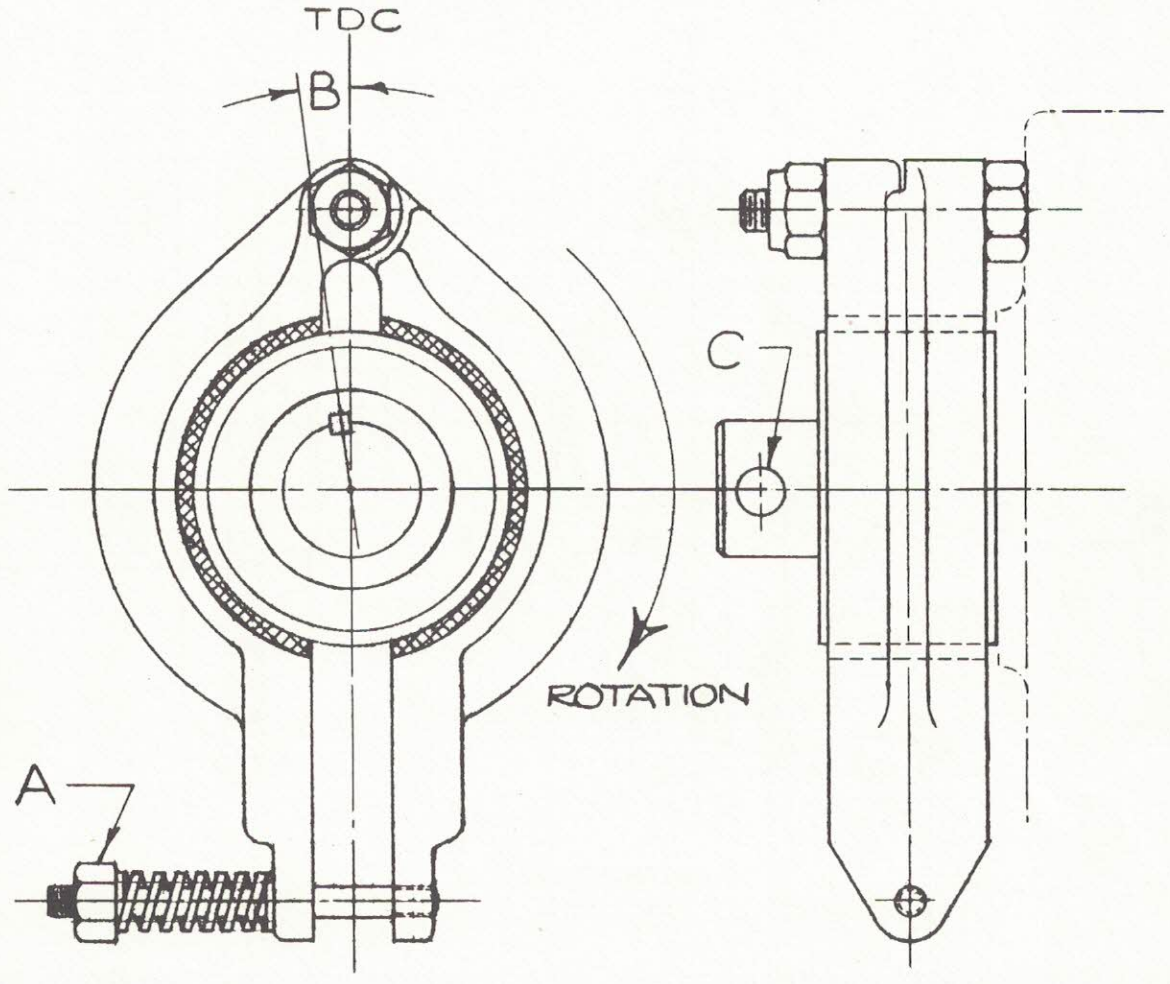
WHEEL COLLAR–FULL REVOLUTION CLUTCH

There should be a .005 to .010 inch clearance between the flywheel and the wheel collar. This clearance will provide a smooth running flywheel with a minimum of lateral movement. Adjustments to maintain this clearance are as follows:

Check clearance with feeler stock and if greater than .010 inch loosen the two clamping screws "A" and the set screw "B" to loosen the collar key. Adjust wheel collar for correct clearance by turning set screw "C". After adjusting tighten all screws. Apply oil occasionally to the oil hole provided in the collar to keep the felt wiper saturated.

MECHANICAL BRAKE

BRAKE ADJUSTMENT–PIN CLUTCH PRESSES



DRAG BRAKE:

1. With press stopped–back off nut "A" until spring has no tension. Tighten nut "A" approximately 3 to 5 turns, and trip press.
2. Determine the stopping position of the press. This can be done by observing the keyway and centers on the shaft extension. The proper stopping position is between 7° before T.D.C. to T.D.C. (top dead center). Angle "B" in illustration.
3. If press has gone beyond T.D.C., tighten nut "A" 1/2 turn and trip press. If press trips hard, do not force or pry latch down. Stop press–shut off power. When flywheel stops, back up crankshaft using barring hole "C" in end of crankshaft, to before T.D.C.

REMOVE BAR
START PRESS

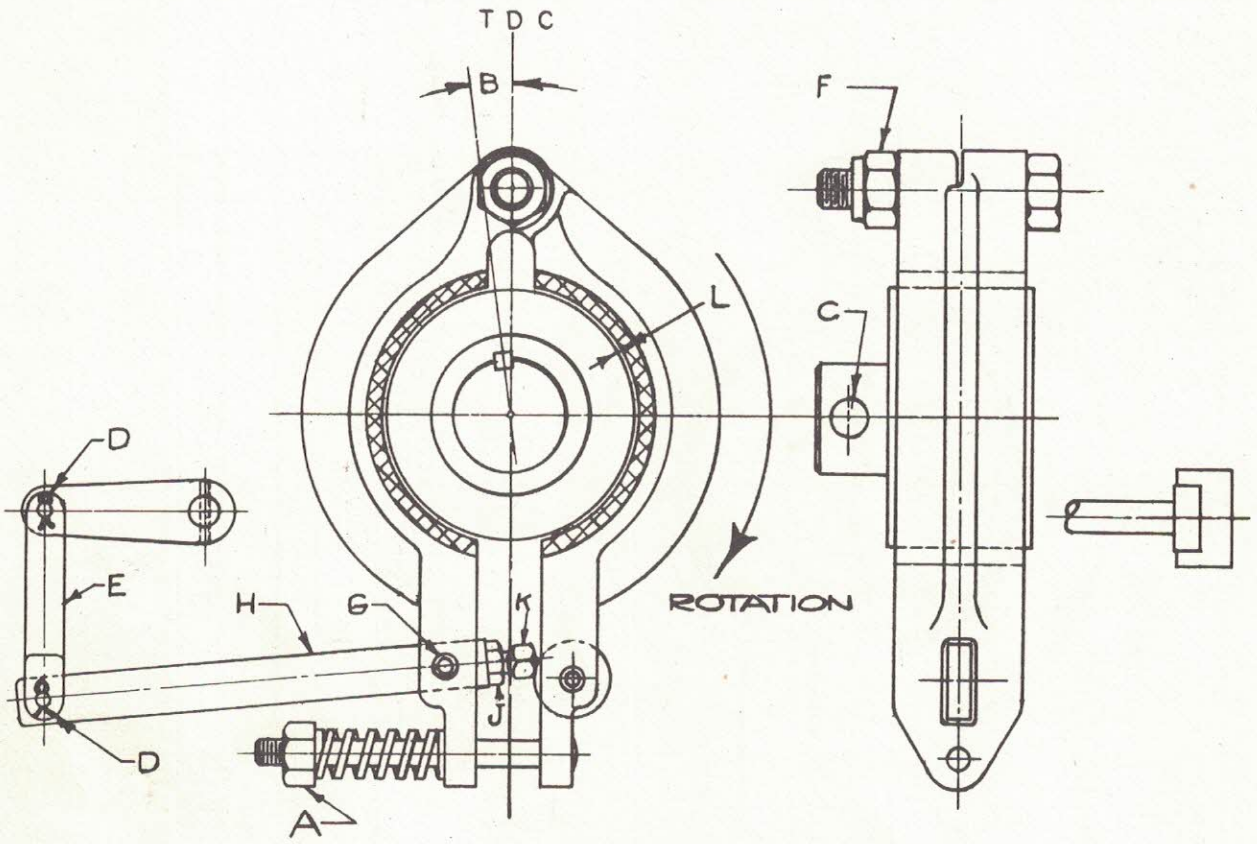
Trip press and check stopping position of crankshaft. Repeat Step 3 until press stops correctly.

4. If press stops before 7° ahead of T.D.C. loosen nut "A" 1/2 turn and trip press. Repeat until press stops correctly.

NOTE:

Proper operation of the brake is dependent on clean brake linings. If the linings are oil soaked they should be cleaned with a suitable solvent. If the cleaning gives only temporary improvement the linings should be replaced.

AUTOMATIC RELEASE BRAKE



AUTOMATIC BRAKE

The automatic release brake is designed to release while the clutch latch is in the down position. This will prevent excessive heat build up in the friction assembly while the press is running continuously.

NOTE:
If the press is to be run on single stroke, it is recommended that the automatic part of the brake be disconnected. This can be done as follows:

1. Stop press and shut off power at disconnect switch. Allow flywheel to stop.
2. Remove cotter pins "D".
3. Remove clevis pin assembly "E".
4. Remove friction anchor stud nut "F".
5. Remove friction assembly from press.
6. Using a drift of the proper size, remove sel-lok pin "G".
7. Remove brake lever "H".
8. Store parts D, E, G, and H in a safe place for future use.
9. Reassemble the friction assembly on press. Reinstall friction anchor stud nut "F".
10. Adjust the brake in accordance with instruction under DRAG BRAKE.

TO ADJUST AUTOMATIC RELEASE BRAKE:

1. Stop press and shut off power at disconnect switch. Wait for flywheel to stop.
2. Trip press and hold latch in the down position.
3. There should be a total of 1/32–1/16 inch clearance between the brake drum and the friction lining (dimension L).
4. If the clearance is not correct, loosen nut "J" and adjust bolt "K" to provide the proper clearance.

NOTE: Release the latch–make a trial adjustment and check for clearance. Repeat until clearance is correct.

5. With clearance correct, adjust the spring tension for proper stopping and following instructions under DRAG BRAKE.