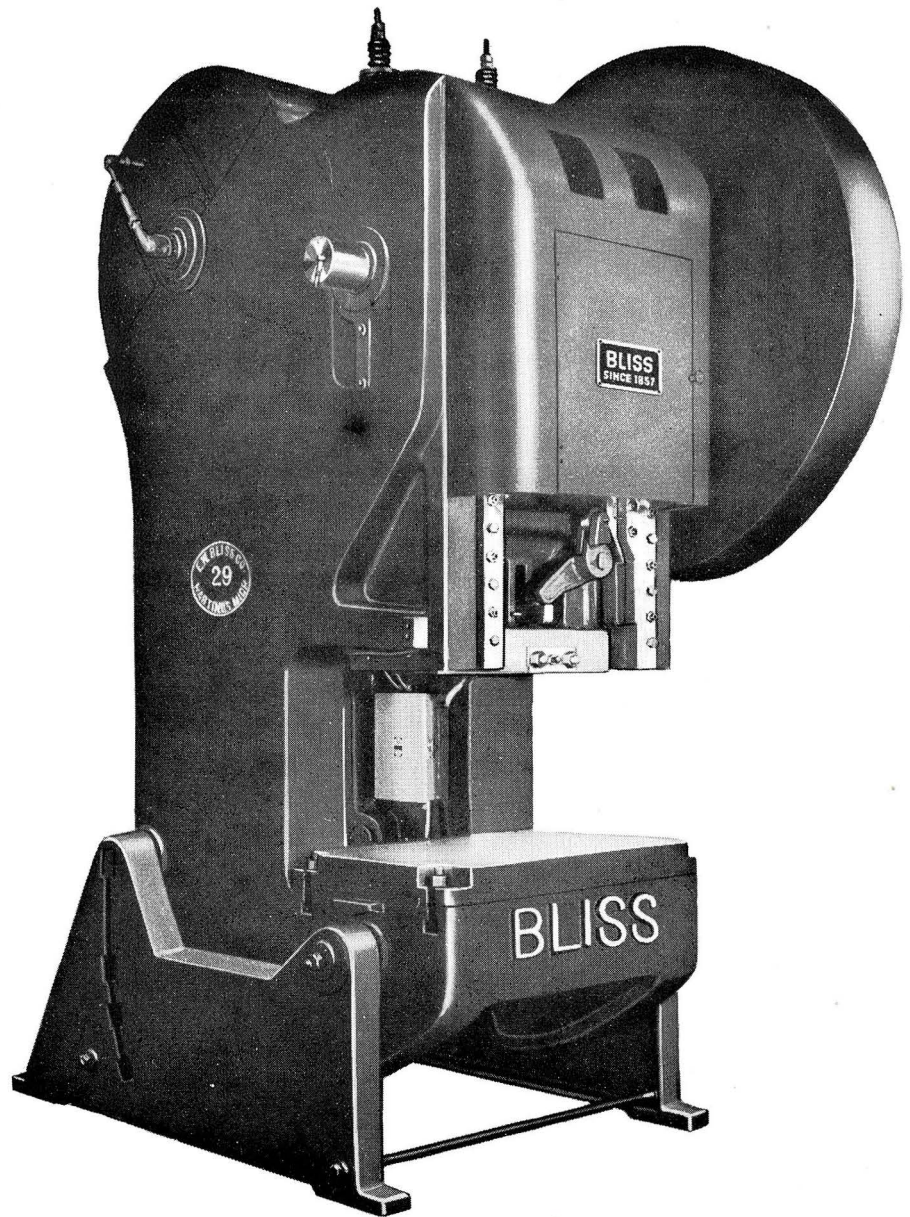


INCLINABLE PRESSES

No.'s 29 & 30



..... SERVICE MANUAL.....
A-110-3

BLISS E.W. Bliss Company
"Since 1857"

1004 E. STATE ST., HASTINGS, MICHIGAN 49058 • (616) 948-3300

BLISS INCLINABLE PRESSES

PRESS NUMBER 29 & 30

SPECIFICATIONS

1. Number presses.
2. Serial No..... 19.....
3. Order No. Customer Order No.....
4. Capacity tons, rating distance above bottom
5. Stroke
6. Slide area, L to R.....x..... F to B
7. Slide adjustment
8. Bed area, L to RxF to B
9. Bed opening, L to RxF to B
10. Die height, SDAU on the bed
11. Strokes per minute
12. Type: geared
13. Marquette cushion Serial No.....
14. Motor, HP-RPM
15. Lubrication
16. Counterbalance springair
17. Feed.....
18. Electric power volts phasecycle
19. Clutch control: 110 volts; single phase; 60 cycle

BLISS INCLINABLE PRESSES

PREFACE

This manual contains parts lists as well as instructions for installing, operating and servicing Bliss Inclinable presses (sizes 29 and 30).

The successful operation of this press depends largely on proper service and adjustment. Therefore, we urge that this manual be read carefully and in its entirety. The design of the press is such that service requirements are kept to a minimum, and the few adjustments that are required are easily and quickly made.

At the time the press was built, a complete set of engineering drawings and specifications were placed in our Service Department files. When replacements are required, please supply the following data:

- (1) Serial number of the press. This is stamped on the left side of the frame just above the opening. It is also listed in the specifications on Page 2.
- (2) Part name and number as given in this book, along with the date and number of the page.

Send this information to the following address:

Service Department
E.W. Bliss Company
1004 East State Street
Hastings, Michigan

BLISS INCLINABLE PRESSES

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PARTS LIST	
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Because Bliss builds several different arrangements of flywheels and clutches, service manuals for each are available. These contain detailed information on assembly, operation, and maintenance, and are identified as

A-139 Type "K" Clutch
A-136 Type "CK" Clutch

The manual describing the clutch on your press is attached to this complete service manual.

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SHIPPING

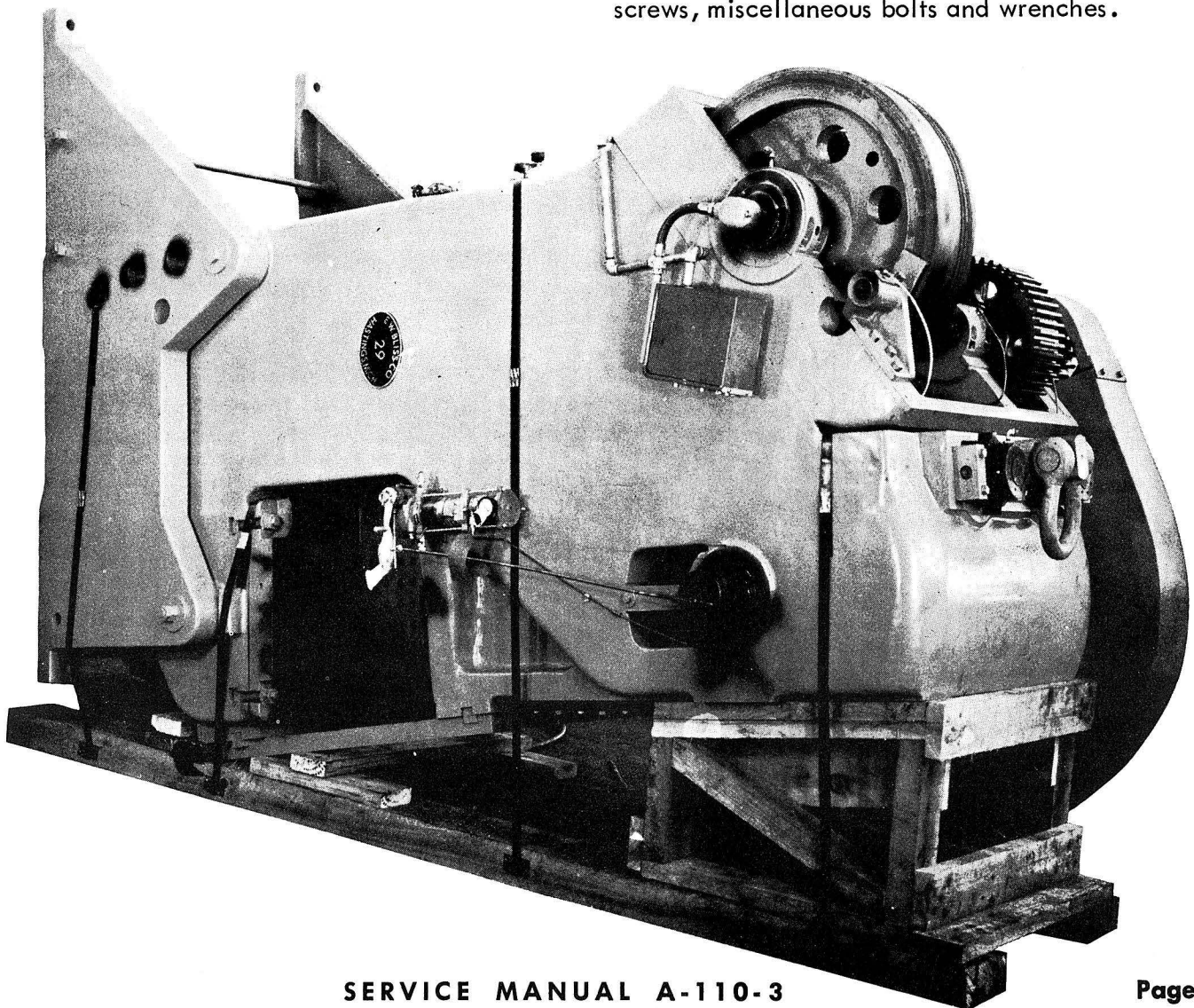
SHIPPING. Bliss inclinable gap type presses are shipped as completely assembled as possible. The method of shipment and distance to travel determines the number of items removed. The packing slip lists the complete press and parts shipped.

The larger sizes of Bliss Inclinable Presses are usually shipped by rail. The press frames with "V" belts attached are mounted face down on a rigid timber skid, blocked in place and fastened to the skid with metal straps. The straps can be cut with a cold chisel or other suitable tool.

The motor and lubrication system are left mounted to the frame for shipment because of their location inside the frame.

When shipped by rail, the gears and legs are removed and skidded separately. Leg tie rods, front cover guard and the three pieces of gear guard are blocked to the bed of the flat car. When shipped by truck, the gears and legs are not removed as shown below.

A wooden box attached to one of the skids contains press parts that may become damaged or lost in handling or transit. These parts include four leg bolts, guard cap screws, miscellaneous bolts and wrenches.



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ERECTION OF PRESS

ERECTION OF PRESS. Clean press thoroughly. All machined surfaces are coated with an anti-rust slushing compound which must be removed before the press is put into operation. Kerosene or any other suitable solvent can be used for cleaning.

Oilite bearings used on presses equipped with the Bliss Rolling Key Clutch are covered with a waterproof paper for shipment and are not coated with the slushing compound because solvents used on this type bearing will remove the oil, making it necessary to recharge them before they are put into use.

CAUTION: DO NOT USE KEROSENE OR OTHER SOLVENTS ON OILITE BEARINGS UNLESS THEY ARE RELUBRICATED AFTER THEY ARE CLEANED. REFER TO PAGE 10 OF THE BLISS ROLLING KEY CLUTCH SERVICE MANUAL A-111.

When the legs of the Bliss Numbers 29 and 30 Inclinable Presses are shipped separately from the frame, the first step is to reassemble these parts. After this is done the press is ready to be set in an upright position. A strong solid footing should be provided to take the press weight. Level the press on the floor.

ASSEMBLY OF MAIN GEAR AND DRIVING MEMBERS. After the press is in an

upright position, the crankshaft flywheel or gear can then be mounted. It is important that the fit of these units on the crankshaft be carefully made. **LUBRICATE ALL PARTS BEFORE ASSEMBLING THEM.** Refer to the attached clutch manual for assembly instructions.

ELECTRICAL SERVICE

Electrical service must be provided for the press motor. A flexible connection should be used to connect the motor because the motor is mounted on an adjustable plate. When wiring the motor, make sure that it rotates in the correct direction, otherwise it may damage parts of the press. The flywheel is marked with an arrow indicating the proper direction. The crankshaft of the press must rotate so that it moves toward the front of the press on the down stroke of the slide.

AIR SERVICE

AIR SERVICE. If the press is equipped with an air clutch, air counterbalance, pneumatic die cushion, or any other air operated device, air must be provided from the shop air supply. The air must be clean and of sufficient pressure to actuate the various devices. Maximum pressure for air clutches 70 lbs., air counterbalance cylinders 80 lbs., and pneumatic die cushions 100 lbs. A line supply of 100 lbs. should be sufficient to operate all devices.

Refer to clutch manuals listed on Page 4 for

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air service on clutches.

Refer to Service Sheet #201 which covers air counterbalances.

Refer to Service Sheet A-133 which covers pneumatic die cushions.

LUBRICATION

LUBRICATION. There is no detail in press operation more important than proper lubrication. The bearing surfaces of power presses are necessarily subjected to very high intermittent loads and failure to keep plenty of oil or grease on the press at all times may eventually cause a breakdown and necessitate extensive delays and repairs. While your press is new, keep it flooded with lubricant until the bearings are well seated.

AUTOMATIC CENTRALIZED LUBRICATION is a standard feature on inclinable presses from the number 23 up. It is of the automatic pump type operated through a linkage attached to the connection of the press. With this system use only straight mineral lubricating oil S.A.E. 50 grade with viscosity 950 Saybolt 100° F. The reservoir should be inspected every two days and should be refilled before completely empty. Do not use any special compound, black graphite, dripless oil, etc. in this lubricator.

Refer to the attached sheets covering automatic lubrication systems for further information.

WARNING! Individual attention is required for the lubrication of the clutch and, in the case of geared presses, the backshaft

bearings, as they are not usually cared for by the automatic systems.

The backshaft bearings are grease packed at assembly and should be checked every three months.

Refer to the clutch manual for lubrication instructions covering the clutch.

GEARS: On open gears one thin application of Amovis Lub. No. 8X (American Oil Company) or equivalent brushed on the face of the gears should be adequate for several months. If gears are enclosed be sure oil is provided in the enclosure, up to the height indicated in the sight gauge. Use Amolex Oil No. 95 or equivalent.

OPERATION

TURNING OVER. Read carefully the lubrication instructions and be certain before turning the press over that all lubricating points are flooded with lubricant to prevent any possible scoring of dry surfaces.

SETTING UP THE MOTOR. On the larger Bliss Inclinable Presses the motor remains mounted to the press frame for shipment, simplifying this phase of press assembly. The motor bracket must be adjusted so that the belts will slip over sheave and flywheel. **DO NOT PRY BELTS INTO GROOVES.** Adjust motor bracket until belts are at the proper tension. Belts should be taut as described in paragraph 1, page 9 under **PERIODIC INSPECTION.**

All presses are completely assembled and tested in our plant and run for a considerable length of time under power before being shipped. However, it is good practice to run press a short time after it is assembled

BLISS INCLINABLE PRESSES

to be certain that all adjustments are in order.

Check gib clearance with a feeler gauge to insure proper adjustment before putting the press to work. The distance between gibs and slide should be approximately .002. The slide and gibs were in perfect adjustment when they were shipped, however, they may have lost their adjustment due to handling and travel. If gibs must be readjusted, follow procedure as given in paragraph 5 under PERIODIC INSPECTION.

SPRING COUNTERBALANCES. The tension on the counterbalance springs is set to carry the weight of the slide at midstroke without a punch. When a heavier punch is used, it may be necessary to increase the tension of the springs slightly.

If it is necessary to make a large adjustment of the slide, either up or down, to suit a certain die, the nuts on the spring counterbalance rods should be adjusted a corresponding amount. This will maintain the same counterbalance pressure.

SPRING COUNTERBALANCE ADJUSTMENT. If the counterbalance springs have lost their setting due to removal or other reasons, they can be re-adjusted in the following manner. Turn on motor and engage clutch and run press several revolutions. Disengage brake and turn off motor, but leave clutch engaged so press will coast to a stop. If slide tends to drop past midstroke after last turn, more spring tension

is needed. If the slide tends to raise past midstroke, there is too much spring tension. When slide tends to stop at or near midstroke, the spring counterbalances are set at approximately the proper tension.

MAINTENANCE. Thorough and regular inspection is essential to economical and safe operation of the press. The clutch is the vital part of the machine and must be kept functioning properly. A damaged or worn part should be replaced without undue delay. The press should be inspected frequently for loose parts that may eventually cause damage to the press. Keep brake properly adjusted. Flywheel speeds should not exceed the recommended number of revolutions per minute, as this is the speed upon which proper operation of the press is based. Exceeding the recommended speed of the press puts too great a strain on the press at full load, especially the clutch parts.

High tool upkeep and clutch troubles are usually traceable to overloading of the press. Bliss presses are built to stand an unusual amount of mistreatment due to hard usage and excessive loads, however, it is good economy not to overload your press because of the additional wear on the press and damage done to expensive dies.

PERIODIC INSPECTION

PERIODIC INSPECTION.

BLISS INCLINABLE PRESSES

1. Check brake linings for wear.
2. Check clutch for wear, lubrication and performance.
3. Check to see that all lubrication points are receiving proper lubrication.
4. Check tension of V-belts.
A slack V-belt feels dead when you thump it with your hand. A properly taut V-belt has an alive springiness. Don't tighten belts too tight as this will cause undue stretch to the belts and also increase the load on bearings.
5. Check clearance between gibs and slide.
6. Check all keys, nuts and cotter pins.

ADJUSTING GIBS

TO ADJUST GIBS. Where it is necessary the gib adjustment should be made after the press has been run long enough to reach its normal operating temperature (approximately one hour). A .002 feeler gauge should be tried between gib and slide. If it can be inserted the gibs need to be tightened. This is accomplished by adjusting the set screws on the front of the gibs.

First, the two clamp screws located on the inside of the gibs should be backed off. Start the press and slightly back off the lock nuts on the adjustment screws and then tighten the cap screws on the front face of

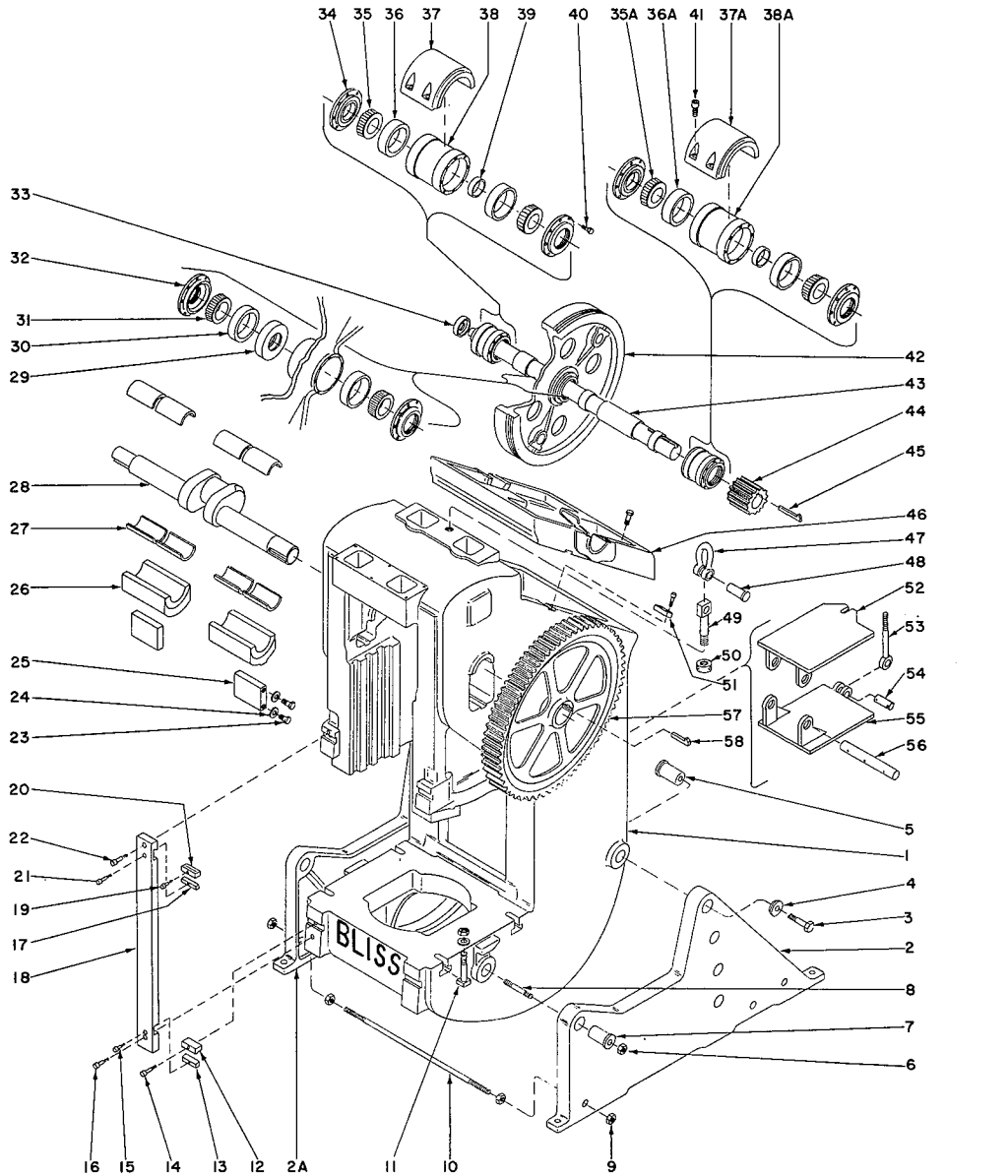
the gibs. Tighten the adjustment screws at the point where the gib was loose. Check the adjustment by placing the fingers of one hand on the front of the slide. You will detect a slight jerk just after the slide passes top or bottom stroke. Back off the adjusting screws until the jerk can be detected only when the slide is slightly past bottom stroke. (NOTE: The slide should be free enough to fall of its own weight).

Tighten down lock nuts and then adjust the brake to drag on the brake collar and run the press under this condition for a short time.

Stop the press and try again to insert the .002 feeler gauge between the gib and slide. If the gauge will go between them they are still out of adjustment and the procedure outlined above must be repeated. However, if the feeler gauge can not be inserted between gib and slide they are in adjustment. **THE RUNNING CLEARANCE SHOULD NEVER BE LESS THAN .0015.** However, this clearance can be increased when guide pins are used in the dies or when the press is being used for hot work.

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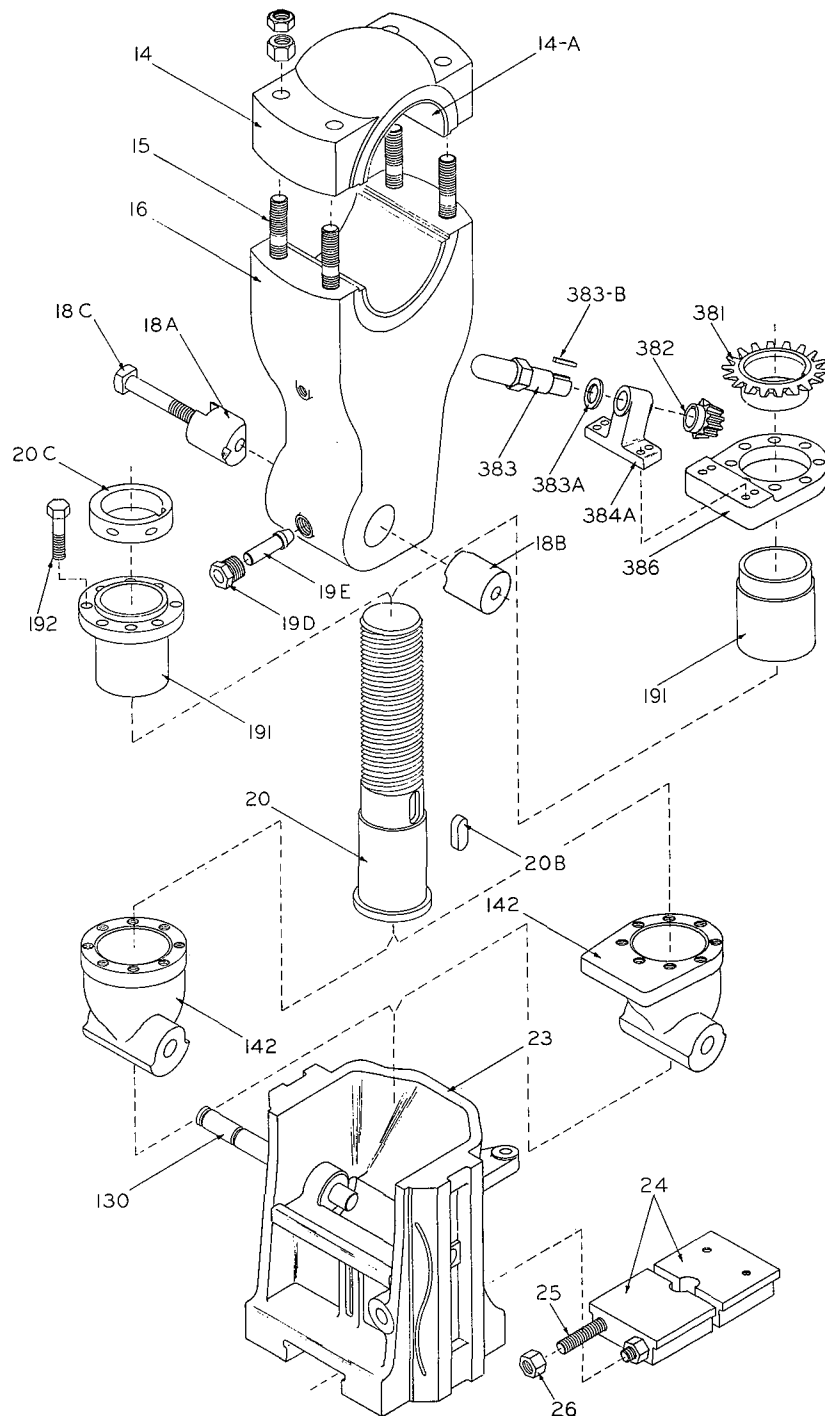
BODY ASSEMBLY



- | | | | |
|-------------------------|------------------------------------|-------------------------------------------|----------------------------------|
| 1. Frame | 20. Upper frame key | 35. Bearing cone (drive shaft, left end) | 41. Socket hd. cap screw |
| 2. Leg (right hand) | 21. Allen hd. cap screw | 36. Bearing cup (drive shaft, left end) | 42. Flywheel |
| 2A. Leg (left hand) | 22. Allen hd. cap screw | 36A. Bearing cup (drive shaft, right end) | 43. Drive shaft |
| 3. Bolt | 23. Hex hd. cap screws (for wedge) | 37. Driveshaft bearing cap (left end) | 44. Main pinion |
| 4. Washer | 24. Wedge washer | 37A. Driveshaft bearing cap (right end) | 45. Gib hd. key |
| 5. Leg bolt | 25. Wedge | 38. Roller bearing sleeve (left end) | 46. Back bracket |
| 6. Hex nut | 26. Body box | 38A. Roller bearing sleeve (right end) | 47. Anchor shackle |
| 7. Fulcrum pin | 27. Main bearing bushing | 39. Driveshaft bearing spacer | 48. Shackle pin |
| 8. Stud | 28. Crankshaft | 40. Hex hd. cap screw | 49. Shackle bolt |
| 9. Hex nut | 29. Flywheel cone spacer | | 50. Shackle bolt nut |
| 10. Leg tie rod | 30. Bearing cup (flywheel) | | 51. Back bracket key |
| 11. Bolster bolt | 31. Bearing cone (flywheel) | | 52. Motor table |
| 12. Lower frame key | 32. Bearing collar (flywheel) | | 53. Motor table adj. screw |
| 13. Tie rod key (lower) | 33. Cover plate (drive shaft) | | 54. Adj. screw pin (motor table) |
| 14. Allen hd. cap screw | 34. Sleeve collar (drive shaft) | | 55. Motor table hinge bracket |
| 15. Allen hd. cap screw | | | 56. Hinge shaft |
| 16. Allen hd. cap screw | | | 57. Main gear |
| 17. Tie rod key (upper) | | | 58. Gib hd. key |
| 18. Body tie rod | | | |
| 19. Allen hd. cap screw | | | |

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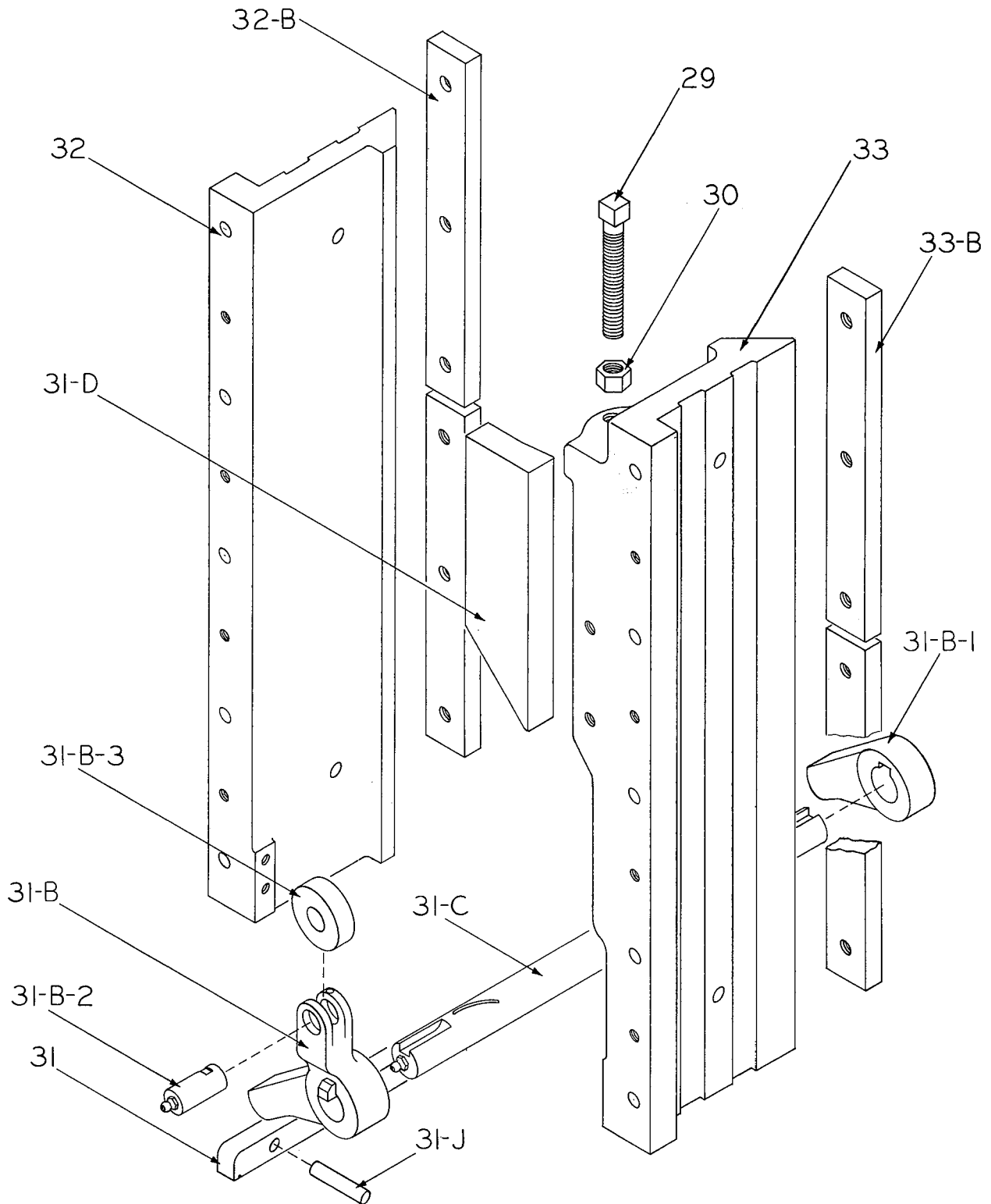
MANUAL SLIDE ADJUSTMENT



- | | | | | | | | |
|------|-------------------------------------------|------|--------------------------------------------|------|----------------------------------------------|-------|-------------------------------------------|
| 14. | Connection cap | 19D. | Connection screw clamping plug dummy screw | 24. | Punch holder | 382. | Connection screw gear, pinion bevel |
| 14A. | Connection cap bushing | 19E. | Connection screw clamping plug spreader | 25. | Punch holder stud | 383. | Connection screw hand ratchet |
| 15. | Connection cap stud | 20. | Connection screw | 26. | Punch holder stud nut | 383A. | Connection screw hand ratchet washer |
| 16. | Connection | 20B. | Connection screw gear | 130. | Connection wrist pin | 383B. | Key |
| 18A. | Connection screw clamping plug (head end) | 20C. | Connection screw adjusting collar | 142. | Connection wrist | 384A. | Connection screw pinion and shaft bracket |
| 18B. | Connection screw clamping plug (nut end) | 23. | Slide | 191. | Connection screw and wrist retaining bushing | 386. | Connection wrist plate |
| 18C. | Connection screw clamping plug screw | | | 192. | Cap screw | | |
| | | | | 381. | Connection screw gear, pinion bevel | | |
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GIBS & KNOCKOUT ASSEMBLY



- 29. Cam adjusting screw
- 30. Cam adjusting screw nut
- 31. Knockout bar
- 31-B. Front knockout lever

- 31-B-1. Rear knockout lever
- 31-B-2. Knockout lever roller pin
- 31-B-3. Knockout roller
- 31-C. Knockout lever shaft

- 31-D. Knockout cam
- 31-J. Knockout bar retaining pin
- 32. L.H. main gib
- 32-B. L.H. wear strip

- 33. R.H. main gib
- 33-B. R.H. wear strip