



WHEN ORDERING REPLACEMENTS STATE SERIAL NUMBER AND SIZE STAMPED ON NAME PLATE OF MACHINE AND DESIGNATE PART BY BOTH NAME AND NUMBER.

- 401 DIE SLIDE KNUCKLE
- 402 BED PLATE KNUCKLE
- 403 CAM SLIDE CONNECTING LINK
- 404 RELIEF KNUCKLE
- 405 RELIEF LINK
- 406 RELIEF LEVER
- 407 RELIEF ARM & PIN WITH CAP
- 408 BUSHINGS FOR 407
- 409 DIE SLIDE & KNUCKLE PIN
- 410 BUSHING FOR 409
- 411 BEDPLATE & KNUCKLE PIN
- 412 BUSHING FOR 411
- 413 DIE SLIDE KNUCKLE INTERMEDIATE PIN
- 414 BUSHINGS FOR 413
- 415 DIE SLIDE KNUCKLE THRUST SHOES
- 416 CAM SLIDE CONNECTING LINK PIN
- 417 BUSHING FOR 416
- 418 RELIEF KNUCKLE FULCRUM PIN
- 419 BUSHING FOR 418
- 420 RELIEF KNUCKLE & LINK PIN
- 421 BUSHING FOR 420
- 422 RELIEF LEVER & LINK PIN
- 423 BUSHING FOR 422
- 424 RELIEF SPRING TRUNNION
- 425 RELIEF SPRING ROD
- 426 OUTER RELIEF SPRING
- 462 DIE SLIDE & BED KNUCKLE CONN LINK

- 427 MIDDLE RELIEF SPRING
- 428 INNER RELIEF SPRING
- 429 RELIEF SPRING ROD NUT
- 430 RETURN CAM ROLLER LEVER
- 431 RETURN CAM ROLLER SPRING
- 432 RETURN CAM ROLLER SPRING ROD
- 433 RETURN CAM ROLLER SPRING ROD NUT
- 434 RETURN CAM ROLLER LEVER PIN
- 435 BUSHING FOR 434
- 436 RETURN CAM ROLLER
- 437 RETURN CAM ROLLER PIN
- 438 BUSHING FOR 437
- 439 FORWARD CAM ROLLER
- 440 FORWARD CAM ROLLER PIN
- 441 ROLLER BRG. FOR (440) (SEE BUSHING)
- 442 CAM SLIDE
- 443 CAM SLIDE SIDE LINER - RIGHT REAR
- 444 CAM SLIDE SIDE LINER - LEFT REAR
- 445 CAM SLIDE SIDE LINER - RIGHT FRONT
- 446 CAM SLIDE SIDE LINER - LEFT FRONT
- 447 CAM SLIDE BOTTOM LINER - REAR
- 448 CAM SLIDE BOTTOM LINER - RIGHT FRONT
- 449 CAM SLIDE BOTTOM LINER - LEFT FRONT
- 450 CAM SLIDE CONN LINK BOTTOM LINER
- 451 CAM SLIDE COVER PLATE - RIGHT REAR
- 452 CAM SLIDE COVER PLATE - LEFT REAR
- 453 CAM SLIDE COVER PLATE - LEFT FRONT
- 454 CAM SLIDE TOP LINER - RIGHT FRONT
- 322 CAM SLIDE & HEADER SLIDE COVER PLATE
- 208 DIE CLOSING CAM
- 209 DIE CLOSING CAM RETAINING NUT
- 463 BUSHINGS FOR 462
- 464 FRONT KNUCKLE PIN

THE CAM OPERATED DIE GRIPPING MECHANISM SHOULD FUNCTION SMOOTHLY AND QUIETLY AT ALL TIMES, AND IF KNOCK OR POUND IS EVIDENT, IMMEDIATELY INVESTIGATE; TOO TIGHTLY PACKED DIES, UNDERSIZED GRIPS, OR OVERSIZED STOCK DEVELOP EXCESSIVE PRESSURES, NOT SUFFICIENT TO THROW OUT THE SAFETY TOGGLES, BUT ENOUGH TO COMPRESS THE RETURN CAM ROLLER SPRING (431) DURING DIE OPENING, AND CAUSE THE FORWARD ROLLER (439) TO LEAVE ITS CAM SURFACE. INVESTIGATE, AND CORRECT ANY ONE OF THESE CAUSES AND IF NECESSARY, TIGHTEN THE SPRING (431) BY UN-CLAMPING THE NUT (433) AND TURNING THE SPRING ROD (432).\*

WEAR, DEVELOPED THROUGH LONG SERVICE IN THE FORWARD ROLLER (439), PIN (440) AND BUSHING (441), MAY ALSO CAUSE SUCH A POUND EITHER ON THE CAM (208) OR FROM THE DIE SLIDE (501) OVER-TRAVELLING AGAINST THE STOP (9). WEAR MAY ALSO CAUSE A DECREASE IN GRIPPING POWER THROUGH FAILURE TO BRING THE DIE SLIDE KNUCKLE INTERMEDIATE PIN (413) UP TO THE PRESCRIBED DISALIGNMENT (A) AS LISTED BELOW. TO CORRECT THIS CONDITION MAY CALL FOR REPLACEMENT OF THE FORWARD CAM ROLLER PIN (440), ITS BUSHING (441), OR POSSIBLY THE FORWARD CAM ROLLER (439). THE CORRECT DIAMETER OF THE FORWARD CAM ROLLER CAN BEST BE DETERMINED BY RELEASING THE RETURN CAM ROLLER SPRING (431) THEN JACKING THE CAM SLIDE FORWARD UNTIL STUDS SCREWED INTO PINS (409), (411), AND PIN (413), THROUGH THE PLUGGED HOLE IN THE DIE SLIDE COVER PLATE (521), ARE IN THE PROPER DISALIGNMENT, THEN CALIPER THE DISTANCE BETWEEN THE FORWARD ROLLER PIN (440) AND THE HIGH DWELL OF THE FORWARD CAM (208).

AFTER THE NEW ROLLER IS INSTALLED, CHECK THE DISTANCE BETWEEN THE RETURN CAM ROLLER LEVER (430) AND ITS STOP (H), AND IF NOT BETWEEN  $\frac{1}{16}$ " AND  $\frac{1}{8}$ "\*, TURN OFF THE OUTER DIAMETER OF THE RETURN CAM ROLLER, OR REPLACE IT WITH ONE OF CORRECT DIAMETER AFTER CHECKING THE WEAR OF PIN (437) AND BUSHING (438). BOTH ROLLERS MUST TURN FREE AT ALL TIMES. AN ALEMITE FITTING IS PROVIDED FOR GREASE LUBRICATION OF FRONT ROLLER (440), AND A PLUG IS PROVIDED IN LEVER (430) FOR INJECTING LIGHT OIL IN CASE REAR ROLLER (436) SHOULD STICK.

THE TREADS OF THE CAM (208) CAN BE PROTECTED AND THEIR LIFE CONSIDERABLY PROLONGED THROUGH FREQUENT APPLICATIONS OF A HEAVY LUBRICANT OF THE "GEAR SHIELD" TYPE. THE CAM HAS A TAPERED FIT ON THE CRANKSHAFT, WHERE IT IS SECURED BY A RETAINER NUT (209) WITH LEFT HAND THREAD.

ADJUSTMENT FOR GRIPPING PRESSURE

THE RELIEF SPRINGS (426), (427), AND (428) HAVE LIMITED ADJUSTMENT FOR INCREASING THE POWER OF GRIP BY UN-CLAMPING THE SPRING ROD NUT (429), SCREWING UP ON THE RELIEF SPRING ROD (425), AND RE-CLAMPING. IF RELIEF CONTINUES TO THROW OUT, CHECK THE DIES FOR OVER-PACKING, THE STOCK FOR SIZE, AND THE DISALIGNMENT OF PIN (413). NEVER INSTALL WASHERS ON THE ROD (425) AS THE SPRINGS WILL THEN GO SOLID AND SERIOUS DAMAGE WILL RESULT.

THE STOP PLATE (I) FOR RELIEF KNUCKLE (404) SHOULD BE OF JUST THE RIGHT THICKNESS TO CONTACT AT THE SAME TIME AS THE STOP ON THE RELIEF LEVER (406) TOUCHES THE CAM SLIDE (442)

INTERMEDIATE PIN (413) DISALIGNMENT A

MACHINE SIZE	2"	2 1/2"	3"	4"	5"	6"	7"	5 PL.
DISALIGNMENT	MIN	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"
	MAX	5/16"	3/8"	7/16"	1/2"	9/16"	3/8"	11/16"

\* CLEARANCE (H) CAN BE MADE BETWEEN  $\frac{1}{16}$ " AND  $\frac{1}{8}$ " TO ELIMINATE KNOCK BY ATTACHING A SHIM TO BACK OF LEVER (430).