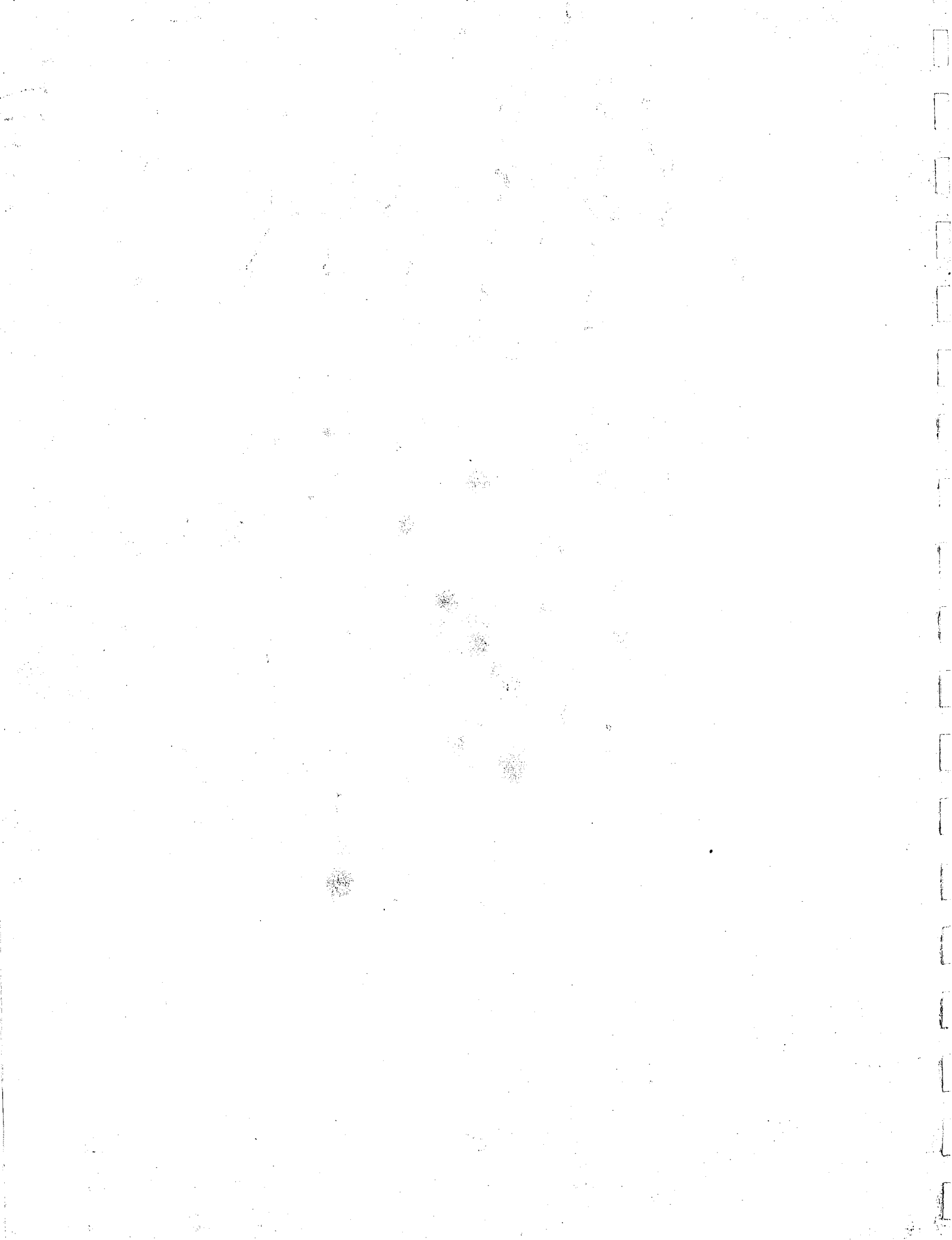


Chicago Model

1012L

Instructions and Parts



CHICAGO STEEL PRESS BRAKES

INSTRUCTIONS AND PARTS CATALOG

CONTENTS

GENERAL INSTRUCTIONS
REPLACEMENT PARTS LIST
MAJOR ASSEMBLY (MA) DRAWING
SUB-ASSEMBLY (SA) DRAWINGS
SUPPLIERS' INSTRUCTIONS & PARTS

WHEN ORDERING REPLACEMENT PARTS BE SURE TO GIVE THE FOLLOWING

MODEL NO.

10124

SERIAL NO.

2-15713

- MODEL AND SERIAL NUMBERS
- QUANTITY OF PART REQUIRED
- PART NUMBER AS IDENTIFIED ON THE ASSEMBLY DRAWING
- PART NAME AS IS SHOWN ON REPLACEMENT PARTS LIST
- NUMBER OF DRAWING FROM WHICH PART WAS IDENTIFIED



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FORM PRTF

CHICAGO STEEL PRESS BRAKES

GENERAL INSTRUCTIONS

LEVELLING PRESS

1. Adjust or shim Press Housings (1) at base until top surface of Bed (2) is level right to left.
2. Adjust or shim Press Housings at base until Levelling Surfaces lie in a vertical plane. These Levelling Surfaces are indicated on Assembly Drawings and their location is described below for:

131 Series:

Rear of Ram (3) next to Ram Gib Pin Holder (235).

200-300 Series:

Front of Press Housings below Bed. (Remove masking tape)

"SS" Types:

Front of Housing Gibs (184). (Remove masking tape)

Other Series and Types:

Portions (see Photo) of Housing Gibs (313) exposed by lowering Ram (3) as follows:

1. Stop Ram at bottom of stroke.
2. Adjust Ram down to one inch below limit of Adj. Scale (263). (NOTE: Never Adjust Ram Below Limit of Scale Except In This Levelling Procedure !)
3. At points indicated on Assembly Drawings use Thickness Gauge to check clearance between Ram and Housing. This should be a front and back accumulated clearance of .005" to .006" at top and bottom of Gibs. Procedure for adjusting Gibs is outlined below.

Check periodically to be sure that Press is still level.

LUBRICATING (USE THESE SHELL LUBRICANTS OR THEIR EQUIVALENTS)

All Series:

1. Lubricate Treadle and Toggle Linkages daily with Vitrea Oil No. 41 (SAE 30); and, any gears not running in oil, as indicated in (F) below.
2. At points indicated on Assembly Drawings by alphabetical symbols listed below, lubricate as follows: (Note: These symbols do not appear on every drawing nor are they applicable to every press)

SYM	METHOD	LUBRICANT	FREQUENCY
(A)	Grease Gun	Alvania Grease No. 2	Daily
(B)	Grease Gun	Alvania Grease No. 2	1,000 Hours
(C)	Grease Gun	Alvania Grease No. 2	250 Hours
(D)	Grease Gun	Alvania Grease No. 2	As Necessary
(E)	Hand Applied	Vitrea Oil No. 41 (SAE 30)	As Necessary
(F)	Hand Applied	Cardium Compound D	As Necessary

When Centralized Lubricating Systems are provided follow the specific System instructions using Vitrea Oil No. 69 (SAE 40). Instructions for lubrication of other purchased parts are provided by the manufacturer of the parts, eg: Dodge Clutches.

131 Series:

1. Lubricate Main Pins (251) while Press is running to assure delivery of lubricant to Bushings (252) and (277).
2. When Ram (3) is stopped at bottom of stroke, partially fill wells in which Strap Pins (275) and Bushings (276) ride with Vitrea Oil No. 41 (SAE-30); or, as directed in Sym. (A) above.

"L-LSS" and "D-DSS" Series: (Note - Item (2) below applies to "L-LSS" Series only)

1. Before attempting to operate, fill Gear Boxes (68) with Vitrea Oil No. 72 (SAE 50) until Sight Gages (708) show half full.
2. Open Sight Feed Lubricators (205) at beginning of operation to allow oil from Gear Boxes to run freely onto Gibs. After a few minutes of operation adjust Feeds to about 5 drops per minute. Close Feeds when Press is not in operation.

OPERATING

1. Before engaging Clutch determine that Flywheel (34) is turning in the direction indicated by arrow on Flywheel or on Flywheel Guard (280).
2. If Press has Fully Automatic Air Clutch Control, set Selector Switch (147) on "INCH" when first starting Press or when setting Dies.



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FORM PRGI-10

SETTING DIES (EITHER RAM OR BED ADJUSTMENT)

1. Inch Ram (3) downward and stop at bottom center of stroke as indicated on Main Gear (19) or on Stroke Scale (263). (NOTE: Set Selector Switch (147), if furnished, on "INCH" position)
2. With Die Holder (16) free on Bed, insert Lower Die on Holder and lock in position with Die Set Screws (60).
3. Slide Upper Die into position on Lower Die.
4. Release Adj Shaft Lock (199) and adjust Ram slowly downward (or Bed (2) upward) until Upper Die is firmly seated in Ram. Lock in position with Clamping Bar Bolts (62).
 - A. If Dies should become jammed together so that attempting to free them with the Adjustment Mechanism may strip the gears or stall the Adj Motor (51), simply engage Clutch to raise Ram and separate Dies.
5. Allow for metal thickness clearance between Dies at both ends and center by adjusting Die Holder with Set Screws (61) and Ram (or Bed) by means of the Adjustment Mechanism. To adjust one side of Ram (or Bed) alone, release Adj Shaft Lock and disengage Adj Shaft Clutch (196) or Clutch Coupling (221). Lock Die Holder in position with Bolts (63) when they are furnished.

JAMMING OF PRESS IN OPERATION

If Dies are not set at bottom of Ram (3) stroke, are set too close, or are set for a lighter gauge than that used in the operation, the Press will jam so that the Ram can not carry through the stroke. In such cases:

1. Stop Drive Motor (24) and allow Flywheel (34) to come to rest.
2. Start Drive Motor in reverse direction and allow Flywheel to attain top speed. Set Vari-Speed Drive for top speed if Press is so equipped.
3. Engage Clutch by means of Electrical Controls where used, or by stepping quickly and hard on Foot Pedal (14) or Treadle Foot Bar (210). With a properly adjusted Clutch the Flywheel will stop immediately if Ram is not released. Disengage Clutch in this case, and allow Flywheel to regain top speed before again engaging Clutch. Repeat until Ram is released.
4. Stop Drive Motor when Ram has been released and allow Flywheel to come to rest.
5. Start Drive Motor in forward direction again and continue normal operations.

(NOTE: NEVER ATTEMPT TO RELEASE RAM BY MEANS OF ADJ MECHANISM!)

ADJUSTING DRIVE

- SINGLE SPEED:** Adjust Drive Motor (24) on its Base (286) or adjust Bracket (56) to remove slack from Drive Belt (23).
- TWO SPEED:** Adjust as above for slack in Belt. Change speeds by means of Shifter (120) only when Flywheel (34) is revolving very slowly as it comes to rest.
- VARI-SPEED:** Turn Drive Motor Base Adj Handle (302) or Vari-Speed Adj Handle (290) to obtain required strokes per minute.

ADJUSTING CLUTCH AND BRAKE See the instructions on the various Assembly Drawings.

ADJUSTING GIBS

200-300 Series:

1. Loosen Ram Gib Bolts (11).
2. Tighten Ram Gib Adj Screws (12) until there is .005" to .006" clearance between Ram and Hsg as shown on Assembly Drawings.
3. Tighten Ram Gib Bolts.

300 RA, "A", "B", "L", and "D" Series:

1. Loosen Ram Gib Adj Screws (12), remove Ram Gib Bolts (11) and Ram Gib (10).
2. Remove Shims (296) until there is .005" to .006" clearance between Ram and Hsg as shown on Assembly Drawings when Ram Gib is bolted back in position.
3. Tighten Ram Gib Adj Screws until there is .010" to .012" clearance between edge of Ram Gib and side of Hsg Gib.

"SS" Type:

1. Loosen Back Hsg Gib Bolts (185).
2. Place .005" to .006" Thickness Gauge blades or leaves between top and bottom of Front Ram Liner (190) and Front Hsg Gib (184).
3. Tighten Back Hsg Gib Adj Screws (187) until Back Hsg Gib (183) is snug against Back Ram Liner (189).
4. Tighten Gib Bolts and remove Thickness Gauge.

CHICAGO STEEL PRESS BRAKES

PARTS LIST

- | | |
|---------------------------------------|------------------------------------------------------|
| 1 - Press Housing | 101 - Clutch Disc Hub |
| 2 - Bed | 102 - Clutch Disc Spring |
| 3 - Ram | 103 - Clutch Disc Brg |
| 4 - Top Leaf | 104 - Clutch Disc Brg Seal |
| 5 - Main Shaft | 105 - Drive Shaft Flange - Inner |
| 6 - Inter Shaft | 106 - Drive Shaft Brg Sleeve - Inner |
| 7 - Drive Shaft* | 107 - Drive Shaft Flge - Outer |
| 8 - Strap - R H | 108 - Drive Shaft Brg Sleeve - Outer |
| 9 - Strap Cap | 109 - Drive Shaft Brg Seal - Outer |
| 10 - Ram Gib | 110 - Drive Shaft Brg - Inboard |
| 11 - Ram Gib Bolt | 111 - Drive Shaft Flge - Inboard |
| 12 - Ram Gib Adj Screw | 112 - Drive Shaft Brg Sleeve - Inboard |
| 13 - Ram Liner | 113 - Drive Shaft Brg Seal - Inboard |
| 14 - Foot Pedal | 114 - Drive Shaft Brg Brkt - Inboard |
| 15 - Bolster | 115 - Brg Brkt Adj Screw |
| 16 - Die Holder | 116 - Clutch Fulcrum Lever Crossbar |
| 17 - Clamping Bar | 117 - Clutch Shifting Turnbuckle |
| 18 - Adj Motor Switch | 118 - Shifting Lever Support Bar |
| 19 - Main Gear | 119 - Bed Bolt |
| 20 - Main Pinion | 120 - Two Speed Clutch Shifter |
| 21 - Inter Gear | 121 - Two Speed Clutch Shifter Finger |
| 22 - Drive Pinion | 122 - Air Regulator and Gauge |
| 23 - Drive Belt | 123 - Air Lubricator |
| 24 - Drive Motor | 124 - Air Filter |
| 25 - Down Rod Spring | 125 - Piston |
| 26 - Down Rod | 126 - Gasket |
| 27 - Down Rod Clevis | 127 - Piston Follower |
| 28 - Fulcrum Lever | 128 - Cylinder Cover |
| 29 - Treadle Cross Rod | 129 - Cup Packing |
| 30 - Treadle Shaft | 130 - Hi Speed Pinion Spacer |
| 31 - Treadle Shaft Lever | 131 - Lo Speed Pinion Spacer |
| 32 - Drive Shaft Brg Brkt - Outboard | 132 - Counterbalance Cyl |
| 33 - Drive Shaft Brg - Outboard | 133 - Breather |
| 34 - Flywheel | 134 - Oil Cup |
| 35 - Main Shaft Brg - Outer | 135 - Safety Valve |
| 36 - Drive Shaft Brg - Outer | 136 - Check Valve |
| 37 - Adj Shaft Clutch Receiver | 137 - Petcock |
| 38 - Main Shaft Brg - Inner | 138 - Die Cushion |
| 39 - Adj Shaft Clutch Shifter | 139 - Surge Tank |
| 40 - Automatic Lubricator | 140 - Drive Motor Starter |
| 41 - Adj Shaft | 141 - Push Button Station |
| 42 - Foot Pedal Socket | 142 - Clutch Control Panel (Includes 143, 5, 6, & 7) |
| 43 - Adj Screw - R H | 143 - Clutch Control Relay |
| 44 - Adj Worm Gear - R H | 144 - Transformer |
| 45 - Adj Gear Box | 145 - Fuse Block |
| 46 - Adj Gear Box Cover | 146 - Fuse |
| 47 - Ball Cap | 147 - Selector Switch |
| 48 - Ball Seat | 148 - Start Button |
| 49 - Support Beam | 149 - Stop Button |
| 50 - Adj Gear Pin | 150 - Reset Button |
| 51 - Ram Adj Motor | 151 - Solenoid Air Valve |
| 52 - Main Adj Gear | 152 - Solenoid |
| 53 - Inter Adj Gear | 153 - Foot Operated Switch |
| 54 - Main Adj Pinion | 154 - Foot Switch Cable |
| 55 - Adj Motor Pinion | 155 - Drive Shaft Brg. Brkt Support - Inboard |
| 56 - Drive Motor Brkt | 156 - Brake Drum |
| 57 - Clutch Shifting Lever | 157 - Brake Lining |
| 58 - Inter Shaft Brg - R H Outlet | 158 - Brake Band |
| 59 - Inter Shaft Brg Seal - R H Outer | 159 - Brake Rod |
| 60 - Die Set Screw | 160 - Brake Cam Lever |
| 61 - Die Holder Set Screw | 161 - Brake Cam Lever Shaft |
| 62 - Clamping Bar Bolt | 162 - Brake Cam Bolt |
| 63 - Die Holder Bolt | 163 - Brake Band Eyebolt |
| 64 - Inter Shaft Brg - R H Inner | 164 - Brake Band Eyebolt Brkt |
| 65 - Drive Shaft Brg - Inner | 165 - Brake Spring |
| 66 - Inter Shaft Brg Seal - R H Inner | 166 - Air Cyl |
| 67 - Drive Shaft Brg Seal - Inner | 167 - Air Cyl Brkt |
| 68 - Gear Box | 168 - Air Cyl Clevis |
| 69 - Hi Speed Pinion | 169 - Brake Spring Adj Bolt |
| 70 - Hi Speed Gear | 170 - Brake Spring Adj Bolt Brkt |
| 71 - Inter Pinion | 171 - Clutch Hose |
| 72 - Two Speed Inter Pin | 172 - Air Cyl Hose |
| 73 - Low Speed Gear | 173 - Ctrbalance Cyl Brkt |
| 74 - Two Speed Clutch | 174 - Ctrbalance Cyl Clevis |
| 75 - Clutch Toggle Link - Outer | 175 - Ctrbalance Cyl Clevis Pin |
| 76 - Flywheel Sleeve | 176 - Twin Disc Clutch Hub |
| 77 - Flywheel Sleeve Nut | 177 - Twin Disc Spacer Ring |
| 78 - Flywheel Brg | 178 - Twin Disc Clutch Brg |
| 79 - Flywheel Brg Seal | 179 - Twin Disc Shaft End Plate |
| 80 - Clutch Shifter | 180 - Twin Disc Clutch Flge |
| 81 - Liner Screw | 181 - Twin Disc Clutch Flge Seal |
| 82 - Clutch Lining | 182 - Twin Disc Rotoseal Carrier |
| 83 - Clutch Adj Nut | 183 - Housing Gib - Back |
| 84 - Clutch Shifting Pin | 184 - Housing Gib - Front |
| 85 - Shifting Pin Screw | 185 - Housing Gib Bolt - Back |
| 86 - Toggle Adj Nut - Outer | 186 - Housing Gib Bolt - Front |
| 87 - Toggle Adj Bolt | 187 - Housing Gib Adj Screw - Back |
| 88 - Clutch Shifter Crossbar | 188 - Housing Gib Adj Screw - Front |
| 89 - Shifting Pin Seal | 189 - Ram Liner - Back |
| 90 - Ram Truss Rod | 190 - Ram Liner - Front |
| 91 - Ram Truss Rod Eyebolt | 191 - Ram Liner - Side |
| 92 - Drive Motor Switch | 192 - Treadle Lever Brg - R H |
| 93 - Adj Worm - R H | 193 - Treadle Brg - L H |
| 94 - Clutch Disc Key | 194 - Adj Shaft Spring |
| 95 - Drive Motor Pulley | 195 - Adj Shaft Collar |
| 96 - Bed Pin | 196 - Adj Shaft Clutch |
| 97 - Drive Shaft Nut | 197 - Adj Shifter Rod |
| 98 - Ball Seat Housing | 198 - Adj Shifter Handle |
| 99 - Down Rod Spring Brkt | 199 - Adj Shaft Lock |
| 100 - Clutch Disc | 200 - Adj Gear Box Cap - L H Outer |



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PGI(PL) 1A



201	- Adj Gear Box Cap - L H Inner	301	- Inter Shaft Brg Cover - Outer
202	- Adj Gear Box Cap - R H Inner	302	- Drive Motor Base Adj Handle
203	- Adj Gear Box Cap - R H Outer	303	- Inter Shaft Brg Seal - L H Inner
204	- Ball Cap Key	304	- Drive Shaft Flge Seal - Outer Barrel
205	- Sight Feed Lubricator	305	- Clutch Dog
206	- Grease Fitting	306	- Clutch Dog Housing Pin
207	- Flywheel Sleeve Nut (Pin Type)	307	- Down Rod Clevis Pin - Top
208	- Adj Worm Brg - Outer	308	- Down Rod Clevis Pin - Bottom
209	- Adj Worm Brg - Inner	309	- Clutch Shifting Lever Pin
210	- Treadle Foot Bar	310	- Clutch Shifting Lever Support
211	- Treadle Spring	311	- Treadle Shaft End Pin
212	- Treadle Spring Eyebolt	312	- Adj Motor Bracket
213	- Treadle Spring Brkt	313	- Housing Gib
214	- Adj Shaft Coupling	314	- Clutch Fulcrum Lever Bracket
215	- Adj Shaft - L H	315	- Knuckle Pin Block
216	- Adj Shaft - Center	316	- Hand Lubricator
217	- Adj Shaft - R H	317	- Drive Shaft Brg Spacer - Outer
218	- Adj Shaft Lock Handle	318	- Ctrbalance Cyl Brkt Pin
219	- Inter Shaft Brg - L H Outer	319	- Strap - L H
220	- Inter Shaft Brg - L H Inner	320	- Adj Screw - L H
221	- Adj Shaft Clutch Coupling	321	- Adj Worm - L H
222	- Clutch Shifting Lever Adj Screw	322	- Adj Worm Gear - L H
223	- Clutch Fulcrum Lever	323	- Toggle Adj Nut - Inner
224	- Spring Cap	324	- Spider Arm
225	- Inter Shaft Brg - Inboard	325	- Spider Arm - Back
226	- Inter Shaft Brg Brkt - Inboard	326	- Spider Arm - Front
227	- Die Holder Key	327	- Spider Arm Cap
228	- Bed Gib	328	- Spider Arm Top
229	- Bed Gib Bolt	329	- Die Holder Adj Plug
230	- Bed Gib Pin	330	- Knuckle
231	- Bed Gib Pin Holder	331	- Knuckle Cap
232	- Clamping Bar Spring	332	- Knuckle Seat
233	- Removable Insert	333	- Knuckle Stem
234	- Ram Gib Pin	334	- Knuckle Stem Nut
235	- Ram Gib Pin Holder	335	- Knuckle Stem Brg
236	- Drive Shaft Thrust Plate	336	- Knuckle Box Tapered Pin
237	- Drive Shaft Flge - Outer Blind	337	- Flywheel Grease Retainer
238	- Drive Shaft Brg - Outer Blind	338	- Flywheel Guard Shims
239	- Drive Shaft Collar	339	- Clutch Disc Brg Seal Adapter
240	- Inter Shaft - L H	340	- Down Rod Clevis Nut
241	- Inter Shaft - R H	341	- Ram Gib Key
242	- Inter Shaft Coupling	342	- Hsg Gib Key
243	- Inter Shaft Tubing	343	- Main Shaft Brg Brkt - Inner
244	- Inter Shaft Collar	344	- Main Shaft Brg Cap - Inner
245	- Inter Pin	345	- Adj Screw Flge
246	- Inter Pin Cover	346	- Two Speed Hsg Collar
247	- Inter Gear Bushing	347	- Air Cyl Adapter Nut
248	- Inter Gear & Main Pinion	348	- Clutch Toggle Link - Inner
249	- Inter Gear Guard	349	- Toggle Anchor Pin
250	- Main Shaft Collar	350	- Toggle Anchor Pin Collar
251	- Main Pin	351	- Toggle Anchor Brkt
252	- Main Gear Bushing	352	- Toggle Floating Pin
253	- Main Pin Cover	353	- Shifter Crossbar Support
254	- Main Gear Guard	354	- Treadle Brg - Center
255	- Main Shaft Eccentric	355	- Treadle Brg Brkt - Center
256	- Fulcrum Lever Collar	356	- Treadle Shaft End Plug
257	- Fulcrum Lever Pin	357	- Shifting Lever Pin Collar
258	- Clutch Shifting Lever Clevis	358	- Clutch Throwout Gear Mounting Plate
259	- Adj Shaft Crank	359	- Clutch Throwout Limit Switch
260	- Bed Adj Block	360	- Clutch Throwout Limit Switch Brkt
261	- Ram Adj Pointer	361	- Clutch Throwout Main Gear
262	- Ram Stroke Pointer	362	- Clutch Throwout Gear Screw
263	- Ram Stroke and Adj Scale	363	- Clutch Throwout Pinion
264	- Bed Adj Screw Brkt - R H	364	- Clutch Throwout Pinion Pin
265	- Bed Adj Locking Bolt	365	- Clutch Throwout Cam
266	- Knuckle Box - R H	366	- Inter Shaft Brg Seal - L H Outer
267	- Knuckle Box Cover	367	- Bed Angle - Front
268	- Knuckle Box Cover Bolt	368	- Bed Angle - Back
269	- Knuckle Box Cover Bushing	369	- Ram Angle - Front
270	- Knuckle Pin	370	- Ram Angle - Back
271	- Knuckle Pin Bolt	371	- Ball Cap Screw
272	- Plunger - R H	372	- B/G Pointer
273	- Plunger Seal	373	- B/G Pointer Screw
274	- Plunger Bushing	374	- B/G Dial
275	- Strap Pin	375	- B/G Dial Flge
276	- Strap Pin Bushing	376	- B/G Graduated Wheel
277	- Strap Bushing	377	- B/G Horizontal Screw Handle
278	- Bed Adj Shaft Bevel Gear	378	- B/G Handle Crossbar
279	- Bed Adj Screw Bevel Gear	379	- B/G Handle Crossbar Pin
280	- Flywheel Guard	380	- B/G Handle Retaining Ring
281	- Flywheel Guard Bolt	381	- B/G Horizontal Screw Handle Lock
282	- Clutch Adj Shims	382	- B/G Horizontal Screw Flge
283	- Clutch Adj End Bolt	383	- B/G Horizontal Screw Bushing
284	- Brake Ring	384	- B/G Horizontal Screw Brg - Front
285	- Brake Ring Mounting Bar	385	- B/G Horizontal Screw Brg Retainer - Front
286	- Drive Motor Base	386	- B/G Horizontal Screw Brg Retaining Ring - Front
287	- Drive Motor Balance Spring	387	- B/G Horizontal Screw Lock Collar
288	- Drive Motor Base Shaft	388	- B/G Horizontal Screw Lock Nut
289	- Drive Motor Base Shaft Collar	389	- B/G Horizontal Screw
290	- Vari-Speed Adj Handle	390	- B/G Horizontal Screw - Short
291	- Vari-Speed Adj Handle Screw	391	- B/G Horizontal Screw Brg - Back
292	- Pulley & Belt Guard	392	- B/G Horizontal Screw Brg Retainer - Back
293	- Gear Box Cover	393	- B/G Horizontal Screw Sprocket
294	- Knuckle Box Cover Adj Shims	394	- B/G Roller Chain
295	- Ball Seat Cap Adj Shims	395	- B/G Mounting Plate - Front
296	- Gib Adj Shims	396	- B/G Mounting Plate Screw - Front
297	- Drive Shaft Flge Seal - Inner Barrel	397	- B/G Mounting Plate - Back
298	- Drive Shaft Tubing	398	- B/G Horizontal Bar
299	- Drive Shaft Flge - Inner Blind	399	- B/G Horizontal Bar Brkt
300	- Drive Shaft Brg - Inner Blind	400	- B/G Horizontal Bar Clamping Screw

CHICAGO STEEL PRESS BRAKES

PARTS LIST

401 - B/G Horizontal Box	501 - Two Speed Shaft Brg - R H Outer
402 - B/G Horizontal Box Brkt - Inner	502 - Plunger - L H
403 - B/G Horizontal Box Brkt - Outer	503 - Clutch Throwout Inter Pinion
404 - B/G Horizontal Key	504 - Clutch Throwout Trip Bar
405 - B/G Horizontal Adj Nut	505 - Clutch Throwout Trip Shaft
406 - B/G Horizontal Block	506 - Clutch Throwout Trip Shaft Brg
407 - B/G Horizontal Block Guide Bars	507 - Clutch Throwout Trip Shaft Lever
408 - B/G Micro Adj Nut	508 - Clutch Throwout Down Rod
409 - B/G Micro Adj Screw	509 - Clutch Throwout Down Rod Spring
410 - B/G Micro Adj Screw Lock Nut	510 - Clutch Throwout Down Rod Spring Adj Nut
411 - B/G Micro Adj Block	511 - Clutch Throwout Down Rod Clevis
412 - B/G Micro Adj Block Clamping Screw	512 - Clutch Throwout Crossbar Lever
413 - B/G Vertical Bar	513 - Clutch Throwout Crossbar Lever Bolt
414 - B/G Vertical Bar Brkt	514 - Clutch Throwout Crossbar Lever Clamp
415 - B/G Vertical Bar Block	515 - Clutch Throwout Crossbar Lever Pin
416 - B/G Vertical Bar Set Screw	516 - Clutch Throwout Treadle Crossbar
417 - B/G Vertical Bar Clamping Screw	517 - Clutch Throwout Treadle Lever
418 - B/G Vertical Bar Dovetail Bolt	518 - Clutch Throwout Down Rod Spring Brkt
419 - B/G Vertical Screw Arm	519 - Bed Adj Motor
420 - B/G Vertical Screw Washer - Bottom	520 - Bed Adj Motor Brkt
421 - B/G Vertical Screw	521 - Bed Adj Motor Pinion
422 - B/G Vertical Screw Brkt	522 - Bed Adj Inter Gear
423 - B/G Vertical Screw Lock Collar	523 - Bed Adj Inter Gear Pin
424 - B/G Vertical Screw Washer - Top	524 - Bed Adj Main Pinion
425 - B/G Vertical Screw Handle	525 - Bed Adj Main Gear
426 - B/G Vertical Screw Handle Lock	526 - Bed Adj Shaft
427 - B/G Crossbar Support	527 - Bed Adj Worm Brkt
428 - B/G Crossbar Support Guide Bar	528 - Bed Adj Worm Brg - Inner
429 - B/G Crossbar	529 - Bed Adj Worm Brg - Outer
430 - B/G Crossbar Chamfer Bolt	530 - Bed Adj Worm - L H
431 - B/G Crossbar Carriage Bolt	531 - Bed Adj Worm - R H
432 - B/G Crossbar Carriage Bolt Spring	532 - Bed Adj Worm Gear Brkt - R H
433 - B/G Crossbar Clamping Screw	533 - Bed Adj Worm Gear - L H
434 - B/G Finger	534 - Bed Adj Worm Gear - R H
435 - B/G Finger Block	535 - Bed Adj Worm Gear Lock Nut
436 - B/G Finger Block Clamping Screw	536 - Bed Adj Screw - L H
437 - B/G Finger Lock	537 - Bed Adj Screw - R H
438 - B/G Finger Lock Clamping Screw	538 - Bed Adj Screw Brg - Back
439 - B/G Finger Eyebolt	539 - Bed Adj Screw Brg - Front
440 - B/G Finger Eyebolt Washer	540 - Bed Adj Screw Collar
441 - B/G Finger "T" Bolt	541 - Bed Adj Screw Nut - L H
442 - B/G Limit Switch	542 - Bed Adj Screw Nut - R H
443 - B/G Limit Switch Brkt - Front	543 - Adjustable Bed Liner
444 - B/G Limit Switch Brkt - Back	544 - Drive Shaft Pinion Brg
445 - B/G Adj Shaft Coupling	545 - Main Shaft Brg Cap - Outer
446 - B/G Adj Shaft - Long	546 - Bed Adj Screw Hand Wheel
447 - B/G Adj Shaft - Short	547 - Knuckle Box Bolt
448 - B/G Adj Shaft Clutch	548 - Bed Adj Screw Brkt - L H
449 - B/G Adj Shaft Clutch Receiver	549 - Bed Adj Worm Gear Brkt - L H
450 - B/G Adj Shaft Bevel Gear	550 - Two Speed Shaft Brg - L H Inner
451 - B/G Horizontal Screw Bevel Gear	551 - Two Speed Shaft Brg - R H Inner
452 - B/G Adj Shaft Brkt - R H	552 - Top Leaf Locating Key
453 - B/G Adj Shaft Brkt - L H	553 - Bed Locating Key
454 - B/G Adj Shaft Clutch Shifter	554 - Horn Collar
455 - B/G Adj Shaft Clutch Shifter Rod	555 - Drive Pinion Pin
456 - B/G Adj Shaft Clutch Shifter Handle	556 - Main Shaft Lock Washer
457 - B/G Adj Shaft Collar	557 - Main Shaft Lock Nut
458 - B/G Adj Shaft Spring	558 - Brake Band Tension Spring & Nut
459 - B/G Ad Motor	559 - Stroke Counter Cam
460 - B/G Ad Shaft Brg	560 - Clutch Throwout Drive Pinion Adapter
461 - B/G Ad Shaft Clutch Receiver Brkt	561 - Ram Spring Ring Holder
462 - B/G Ad Shaft Bevel Gear Brg	562 - Horn Gate
463 - B/G Ad Indicator	563 - Horn Gate Extension
464 - B/G Ad Indicator Chain	564 - Horn Gate Limit Switch
465 - B/G Ad Indicator Sprocket	565 - Horn Gate Guide Pin
466 - B/G Ad Shaft Sprocket	566 - Horn Gate Guide Pin Clamp
467 - Ram Ad Indicator	567 - Horn
468 - Ram Ad Indicator Sprocket	568 - Stroke Counter
469 - Ram Ad Shaft Sprocket	569 - Solenoid Brkt
470 - Ram Ad Indicator Chain	570 - Stroke Counter Limit Switch
471 - Rotary Cam Limit Switch	571 - Pin Clutch Collar
472 - Flywheel Brake Air Cyl	572 - Pin Clutch Ring
473 - Flywheel Brake	573 - Pin Clutch Pin
474 - Flywheel Brake Release Spring	574 - Pin Clutch Pin Spring
475 - Speed Control Valve	575 - Pin Clutch Latch Link
476 - Ram Adj Worm Brkt - R H	576 - Pin Clutch Latch Spring
477 - Ram Hand Adj Collar	577 - Pin Clutch Latch Spring Adj Screw
478 - Ram Hand Adj Pawl	578 - Pin Clutch Latch
479 - Knuckle Stem Collar	579 - Pin Clutch Latch Adj Screw
480 - Brake Cam Lever Support	580 - Pin Clutch Latch Cushion
481 - Ram Adj Clutch Shifter Rod Support	581 - Pin Clutch Latch Plate
482 - Adj Shaft Handwheel	582 - Pin Clutch Latch Brkt
483 - Ram Cushion	583 - Pin Clutch Latch Pivot Pin
484 - Ram Cushion Support	584 - Flywheel Brg Seal - Back
485 - Ram Adj Ratchet	585 - Flywheel Brg Seal - Front
486 - Ram Adj Ratchet Nut	586 - Oil Reservoir
487 - Ram Adj Ratchet Bolt	587 - Horn Collar Screw
488 - Adj Gear Box Stop	588 - Horn Bolt
489 - Clutch Shifting Pin Housing Bushing	589 - Strap Clamping Screw
490 - Ram Bolster	590 - Knockout Bar - Back
491 - Clutch Throwout Inter Gear	591 - Knockout Bar - Front
492 - Guide Post	592 - Knockout Crossbar Adj Screw
493 - Guide Post Bushing	593 - Knockout Crossbar
494 - Strap Lubricating Hose	594 - Knockout Crossbar Adj Screw Brkt
495 - Housing Gib Bolt	595 - Motor Base Turnbuckle
496 - Housing Gib Adj Screw	596 - Motor Base Turnbuckle Pin
497 - Main Shaft Brg - Outboard	597 - Brake Shoe
498 - Ram Gib Pin Bushing	598 - Brake Shoe Limit Bolt
499 - Two Speed Shaft	599 - Brake Shoe Clevis
500 - Two Speed Shaft Brg - L H Outer	600 - Brake Shoe Clevis Pin



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PQ/PI 2A



- 601 - Air Cyl Clevis Pin
602 - Treadle Hand Lever
603 - Bed Adj Shaft - L H
604 - Bed Adj Shaft - R H
605 - Overload Throwout Deflection Bar
606 - Overload Throwout Deflection Bar Adj Screw
607 - Overload Throwout Limit Switch
608 - Overload Throwout Limit Switch Brkt
609 - Overload Throwout Limit Switch Cover
610 - Overload Throwout Solenoid
611 - Overload Throwout Solenoid Brkt
612 - Overload Throwout Release Link
613 - Overload Throwout Release Link Pin
614 - Overload Throwout Connecting Link
615 - Overload Throwout Connecting Link Pin
616 - Overload Throwout Brg - Back
617 - Overload Throwout Brg - Center
618 - Overload Throwout Brg - Front
619 - Overload Throwout Return Spring
620 - Tonnage Indicator Gauge Lever - Long
621 - Tonnage Indicator Gauge Lever - Short
622 - Tonnage Indicator Gauge Lever Brkt
623 - Tonnage Indicator Tension Lever
624 - Tonnage Indicator Gauge Lever Box
625 - Tonnage Indicator Gauge Brkt
626 - Tonnage Indicator Gauge Mount
627 - Tonnage Indicator Gauge
628 - Plunger Seal Retainer
629 - Double Arm Lever
630 - Double Arm Lever Shaft
631 - Double Arm Lever Shaft Collar
632 - Double Arm Lever Down Rod
633 - Stripper Crossplate Guide Bar
634 - Stripper Crossplate Brkt
635 - Stripper Crossplate
636 - Stripper Finger Wedge
637 - Stripper Finger
638 - Jaw Clutch Plate Spacer
639 - Jaw Clutch Plate
640 - Jaw Clutch Plate Bushing
641 - Jaw Clutch Insert (specify square or bevelled).
642 - Jaw Clutch Plate Collar
643 - Jaw Clutch Disc
644 - Jaw Clutch Disc Shaft Insert
645 - Jaw Clutch Disc Cam Key
646 - Jaw Clutch Disc Cam
647 - Jaw Clutch Disc Spring
648 - Jaw Clutch Disc Spring Collar Plug
649 - Jaw Clutch Disc Spring Collar
650 - Jaw Clutch Disc Spring Collar Key
651 - Jaw Clutch Roller Screw
652 - Jaw Clutch Roller
653 - Jaw Clutch Roller Brg Case
654 - Jaw Clutch Roller Brg Race
655 - Jaw Clutch Roller Shaft
656 - Jaw Clutch Roller Shaft Brkt
657 - Jaw Clutch Roller Shaft Weight
658 - Swinging Bed Gauge Screw
659 - Swinging Bed Floating Die Stop
660 - Swinging Bed Floating Die Stop Adj Screw & Nut
661 - Swinging Bed Slide
662 - Swinging Bed Adj Bar
663 - Swinging Bed Pivot Pin - Top
664 - Swinging Bed Pivot Pin - Bottom
665 - Swinging Bed Pivot Pin Brg
666 - Swinging Bed Pivot Pin Seat
667 - Swinging Bed Pivot Lever
668 - Swinging Bed Pivot Lever Link
669 - Swinging Bed Latch
670 - Swinging Bed Latch Handle
671 - Swinging Bed Latch Handle Pin
672 - Swinging Bed Latch Limit Switch
673 - Swinging Bed Material Cradle
674 - Swinging Bed Air Cyl
675 - Swinging Bed Air Cyl Brkt
676 - Swinging Gate
677 - Swinging Gate Pivot Pin
678 - Swinging Gate Pivot Pin Brg - Bottom
679 - Swinging Gate Pivot Pin Brg - Center
680 - Swinging Gate Pivot Pin Brg - Top
681 - Swinging Gate Slide
682 - Swinging Gate Gauge Screw
683 - Swinging Gate Lock
684 - Swinging Gate Lock Handle
685 - Swinging Gate Limit Switch
686 - Swinging Gate Auxiliary Bed
687 - Overload Throwout Solenoid Clevis Plate
688 - Overload Throwout Trip Lever
689 - Treadle Safety Stop
690 - Foot Pedal Safety Cover
691 - Ram Adj Indicator Gear
692 - Ram Adj Shaft Indicator Gear
693 - Ram Adj Motor Switch Arm Clamp
694 - Ram Adj Limit Arm
695 - Ram Adj Limit Shaft
696 - Ram Adj Limit Nut
697 - Ram Adj Limit Slide
698 - Ram Adj Limit Switch
699 - Ram Adj Limit Switch Brkt
700 - Clutch Shifting Auxiliary Lever
701 - Adj Shaft Lock Pin
702 - Adj Shaft Lock Spring
703 - Adj Shaft Lock Spring Retainer
704 - Ram Adj Shaft Solenoid Brake
705 - Ram Adj Shaft Brake Drum
706 - Knuckle Box - L H
707 - Drive Shaft Brg Retainer - Inboard
708 - Sight Gauge
709 - Sliding Plate
710 - Sliding Plate Guide
711 - Pawl Lever
712 - Main Shaft Brg Brkt - Outboard
713 - Treadle Air Valve
714 - Flywheel Brg Sleeve Nut Lock
715 - Drive Shaft Flge - Outboard Adapter
716 - Drive Shaft Brg - Outboard Adapter
717 - Spreader Beam
718 - Filler Bar
719 - Knuckle Seat Tapered Pin
720 - Clutch Backing Plate
721 - Lubricator Pump Rod
722 - Lubricator Pump Rod Connector
723 - Lubricator Pump Rod Connector Pin
724 - Combination Press Control Panel
725 - Bed Cushion Support
726 - Adj. Shaft Support
727 - Adj. Shaft Support Liner
728 - Adj. Shifter Handle Brkt
729 - Drive Shaft End Plate
730 - Bed Adj Shaft Lock
731 - Tonnage Indicator Tension Lever Pin
732 - Tonnage Indicator Gauge Lever Brkt Pin
733 - Tonnage Indicator Gauge Lever Pin
734 - Two Speed Lever
735 - Two Speed Down Rod
736 - Two Speed Handle
737 - Two Speed Handle Pin
738 - Two Speed Handle Pin Spring
739 - Overload Throwout Deflection Bar Adj Lock
740 - Overload Throwout Deflection Bar Spacer
741 - B/G Horizontal Screw - L H
742 - B/G Horizontal Screw - R H
743 - B/G Graduated Wheel - L H
744 - B/G Graduated Wheel - R H
745 - B/G Horizontal Adj Nut - L H
746 - B/G Horizontal Adj Nut - R H
747 - Drive Shaft Cplg
748 - Drive Shaft - L H
749 - Drive Shaft - R H
750 - Ram Cushion Cylinder
751 - Ram Cushion Piston - Upper
752 - Ram Cushion Piston Follower - Upper
753 - Ram Cushion Piston Seal - Upper
754 - Ram Cushion Piston - Lower
755 - Ram Cushion Piston Follower - Lower
756 - Ram Cushion Piston Seal - Lower
757 - Ram Cushion Piston Rod
758 - Ram Cushion Piston Rod Follower
759 - Ram Cushion Piston Rod Seal
760 - Ram Cushion Piston Guide Pin
761 - Ram Bolster Pressure Pins
762 - Ram Seal
763 - Ram Bushing
764 - Bed Cushion - L H
765 - Bed Cushion - R H
766 - Bed Cushion Ring - L H
767 - Bed Cushion Ring - R H
768 - Horn Cushion Replaceable Insert
769 - Horn Cushion Piston
770 - Bed Bolster Insert - L H
771 - Bed Bolster Insert - R H
772 - Ram Adj Worm Brkt - L H
773 - Pin Clutch Drive Plug
774 - Pin Clutch Back Lash Plug
775 - Treadle Lever Brg - L H
776 - Treadle Brg - R H
777 - B/G Adj Shaft Clutch Shifter Rod Bushing
778 - Drive Pinion Spacer
779 - Strap Brg
780 - Strap Brg Seal
781 - Knuckle Pin Brg
782 - Rotary Seal
783 - Brake Brkt
784 - Air Brake
785 - Cam Lever Brake Shoe
786 - Brake Spring Adj Bolt Pin
787 - Brake Shoe Cam Lever
788 - Brake Shoe Cam Lever Link
789 - Brake Shoe Cam Lever Shaft
790 - Brake Shoe Cam Lever Shaft Link
791 - Swinging Bed Latch Air Cyl
792 - Swinging Bed Latch Air Cyl Brkt
793 - Swinging Bed Latch Mounting Brkt
794 - Swinging Bed Latch Receiver
795 - Swinging Bed Latch Adj Screw
796 - Foot Operated Valve
797 - Hand Operated Valve
798 - Swinging Gate Air Cyl
799 - Swinging Gate Alignment Key
800 - Swinging Gate Alignment Block

CHICAGO STEEL PRESS BRAKES

PARTS LIST

- | | |
|----------------------------------------------------|-----------------------------------------------------------------|
| 801 - Swinging Gate Guard | 901 - Lower Frame Strut |
| 802 - Clutch Spacer Ring | 902 - Upper Frame Strut |
| 803 - Clutch Release Valve | 903 - Platform Ladder |
| 804 - Clutch Release Valve Hose | 904 - Hydraulic Pressure Gauge |
| 805 - Brake Release Valve | 905 - Tonnage Control Pressure Switch |
| 806 - Brake Release Valve Hose | 906 - Up Stroke Control Limit Switch |
| 807 - Clutch Throwout Chain | 907 - Down Stroke Control Limit Switch |
| 808 - Clutch Throwout Switch Sprocket | 908 - Slow Down Control Limit Switch |
| 809 - Clutch Throwout Shaft Sprocket | 909 - Safety Limit Switch Control |
| 810 - Counterbalance Spring | 910 - Down Stroke Control Adjustment Stop |
| 811 - Counterbalance Spring Bracket | 911 - Up Stroke Control Adjustment Stop |
| 812 - Counterbalance Spring Clevis | 912 - Slow Down Control Adjustment Cam |
| 813 - Counterbalance Spring Clevis Rod | 913 - Length of Stroke Scale Indicator |
| 814 - Counterbalance Spring Clevis Pin | 914 - Cylinder |
| 815 - Swinging Gate Air Cylinder | 915 - Cylinder Head Ring |
| 816 - Swinging Gate Air Cylinder Clevis | 916 - Piston |
| 817 - Swinging Gate Air Cylinder Clevis Pin | 917 - Piston Pressure Packing |
| 818 - Swinging Gate Air Cylinder Trunion Mounting | 918 - Clamping Ring for Piston Pressure Packing |
| 819 - Swinging Gate Air Cylinder Trunion Bracket | 919 - Piston Ball |
| 820 - Swinging Gate Air Cylinder Trunion Bearing | 920 - Piston Packing |
| 821 - Adjustment Worm Bearing Retainer-Inner | 921 - Piston Bushing |
| 822 - Adjustment Worm Bearing Retainer Seal-Inner | 922 - Gland |
| 823 - Adjustment Worm Bearing Retainer - Outer | 923 - "O" Ring Seal |
| 824 - Adjustment Bearing Retainer Seal - Outer | 924 - Gland Spacer |
| 825 - Plunger Bearing - Left Hand | 925 - Oil Filter Element |
| 826 - Plunger Bearing - Right Hand | 926 - Oil Reservoir Drain Valve |
| 827 - Treadle Bearing Flange - Left Hand | 927 - Micrometer Depth Stop |
| 828 - Treadle Bearing Flange - Right Hand | 928 - Cylinder Mounting Bolt |
| 829 - Strap Pin Knockout Hole Cover | 929 - Tape |
| 830 - Down Rod Cylinder Clevis Bracket | 930 - Tape Control Spring |
| 831 - Ram Adjustment Motor Sprocket | 931 - Tape Control Pulley |
| 832 - Ram Adjustment Motor Sprocket Chain | 932 - Tape Control Pulley Shaft |
| 833 - Ram Adjustment Shaft Drive Sprocket | 933 - Tape Adjustment Screw |
| 834 - Housing Gib - Right Front | 934 - Tape Adjustment Nut |
| 835 - Housing Gib - Left Front | 935 - Tape Adjustment Screw Bracket |
| 836 - Housing Gib - Right Rear | 936 - Stroke Control Turret Stop |
| 837 - Housing Gib - Left Rear | 937 - Adjustment Screws for Turret Stop |
| 838 - Horn Cushion "O" Ring | 938 - Decompression Valve |
| 839 - Adjustment - Outer | 939 - Decompression Control Pressure Switch |
| 840 - Adjustment Bearing | 940 - Check Valve for Compression Valve |
| 841 - Adjustment Shaft Bearing Support | 941 - Low Pressure Pump Pressure Switch |
| 842 - Adjustment Shaft Drive Sprocket | 942 - Cylinder Key |
| 843 - Adjustment Shaft Drive Sprocket Chain | 943 - Low Pressure Pump Safety Valve |
| 844 - Adjustment Shaft Main Sprocket | 944 - LVDT - Linear Variable Differential Transformer Enclosure |
| 845 - Knuckle Pin - Left Hand | 945 - Excess Tilt Micro Switch |
| 846 - Knuckle Pin - Right Hand | 946 - Gear Pump Safety By-Pass Valve |
| 847 - Rotary Cam Limit Switch Bracket | 947 - Reservoir Filler Pipe |
| 848 - Bed Adjustment Indicators | 948 - Control Panel |
| 849 - Bed Adjustment Indicator Gear | 949 - Excess Tilt Micro Switch |
| 850 - Bed Adjustment Shaft Indicator Gear | 950 - Terminal Block |
| 851 - Adjustment Indicator Guard | 951 - LVDT - Linear Variable Differential Transformer |
| 852 - Adjustment Shaft Sprocket Guard - Front | 952 - LVDT - Mounting Block |
| 853 - Cam Lever Brake Shoe Pin | 953 - Micro Switch Mounting Block |
| 854 - Vee Block Packing | 954 - Cam Rod |
| 855 - Piston Rod Nut | 955 - Cam Rod Bearing Block |
| 856 - "O" Rings | 956 - Cam Rod Stem |
| 857 - Opening Rod | 957 - Cam Rod Spring |
| 858 - Adjustment Bolt Washer | 958 - Cam Rod Bearing Cap |
| 859 - Adjustment Bolt Nut | 959 - Piston Return Packing |
| 860 - Jam Nut | 960 - Valve Mounting Panel |
| 861 - Adjustment Worm Gear Retainer | 961 - Rapid Advance Motor |
| 862 - Adjustment Shaft Sprocket Guard - Rear | 962 - Cylinder Mounting Spacer Block |
| 863 - B/G Adjustment Indicator Gear | 963 - Check Valve Low Pressure Pump |
| 864 - B/G Adjustment Shaft Gear | 964 - Check Valve Low Pressure Pump By-Pass |
| 865 - Air Cylinder Connector | 965 - Transfer Motor Pump |
| 866 - Air Cylinder Connector Cap | 966 - Foot Switch |
| 867 - Ram Hand Rail | 967 - Oil Level Gauge |
| 868 - Adjustment Indicator Guard - Left Hand | 968 - Pressure Dwell Valve |
| 869 - Adjustment Indicator Guard - Right Hand | 969 - Ram Gib Liner - Rear |
| 870 - Saddle Block - Left Hand | 970 - Ram Gib Liner - Side |
| 871 - Saddle Block - Right Hand | 971 - Ram Adjustment Handle |
| 872 - Adjustment Shifter Lock Pin - Left Hand | 972 - Gib Spacer Block |
| 873 - Adjustment Shifter Lock Pin - Right Hand | 973 - Ram Pivot Sleeve |
| 874 - Adjustment Shifter Lock Spring | 974 - Ram Pivot Bolts |
| 875 - Adjustment Shifter Shaft Bearings | 975 - Safety Limit Stop |
| 876 - Brake Cam Lever Roller | 976 - Micro Switch Adjustment Knob |
| 877 - Ram Adjustment Indicator - Left Hand | 977 - Micro Switch Adjustment Knob Locknut |
| 878 - Ram Adjustment Indicator - Right Hand | 978 - Tape Adjustment Worm Gear |
| 879 - Worm Gear Retainer Shims | 979 - Tape Adjustment Worm Gear |
| 880 - Ball Pins | 980 - Tape Adjustment Shaft |
| 881 - Idler Gear | 981 - Tape Adjustment Drive Shaft |
| 882 - Idler Gear Bushing | 982 - Tape Adjustment Handle |
| 883 - Idler Gear Pin | 983 - Tape Adjustment Drive Shaft Universal Joints |
| 884 - Treadle Lock | 984 - Tape Adjustment Drive Gears |
| 885 - Ram Pin Bushing | 985 - Venting Valve for High Pressure Pump |
| 886 - Ram Adjustment Motor Starter | 986 - Pressure Relief Valve for High Pressure Pump |
| 887 - Low Pressure Pump | 987 - Servo Level Control Valve |
| 888 - Fixed Volume Pump | 988 - Pressure Drop Valve |
| 889 - Variable Volume Pump | 989 - Blocking Valve |
| 890 - Coupling | 990 - Directional Control Valve |
| 891 - Actuating Spool for Excess Tilt Micro Switch | 991 - Flow Control & Relief Valve Low Pressure Pump |
| 892 - Oil Filter | 992 - Venting Valve for Low Pressure Pump |
| 893 - Filter Gauge | 993 - Ram Counterbalance Valve |
| 894 - Foot Valve | 994 - Piping Shield |
| 895 - Low Pressure By-Pass Valve | 995 - Drive Motor Control Box |
| 896 - Pressure Pump By-Pass Valve | 996 - Rapid Advance Motor Control Box |
| 897 - Gear Pump Check Valve | 997 - Directional Control Pilot Valve |
| 898 - Gauge Line Check Valve | 998 - Tonnage Control Shut-off Valve |
| 899 - Solenoid Bleed Valve for Gauge | 999 - Oil Filter Pump Motor |
| 900 - Power Unit Platform | 1000 - Adjustment Worm Bearing Retainer - Left Hand - Inner |



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- 1001 - Adjustment Worm Bearing Retainer Seal - Left Hand - Inner
- 1002 - Adjustment Worm Bearing Retainer - Right Hand - Inner
- 1003 - Adjustment Worm Bearing Retainer Seal - Right Hand - Inner
- 1004 - Adjustment Indicator Guard Bracket
- 1005 - Adjustment Indicator Light
- 1006 - Oil Filter Pump
- 1007 - Fast Press Pump Valve
- 1008 - Vent Valve for Fast Press Dump Valve
- 1009 - Check Valve Level Control
- 1010 - Filter for Servo Valve
- 1011 - Relief Valve for Pilot Pressure
- 1012 - Check Valve LP Pump Vent Line
- 1013 - Relief and Dump Valve Rapid Advance Pumps
- 1014 - Check Valve for Gear Pump Bypass Valve
- 1015 - Remote Control for LP Relief Valve
- 1016 - Auxiliary Tank Discharge Valve for Top Cylinder Line
- 1017 - Ram Adjustment Flexible Drive Shaft
- 1018 - Ram Adjustment Indicator Dial
- 1019 - Flow Control Valve for Rapid Advance
- 1020 - Rapid Advance Shut Off Valves
- 1021 - Shut Off Valve Oil Filter Pump
- 1022 - Heat Exchanger
- 1023 - Check Valve Heat Exchanger
- 1024 - Flow Regulator for Oil Filter
- 1025 - Relief Valve for Oil Filter
- 1026 - Housing Spreader Bar
- 1027 - Ram Reinforcing Bar
- 1028 - Brake Spacer Ring
- 1029 - Adjustment Shaft Lock Pawl
- 1030 - Adjustment Clutch Shifter Collar
- 1031 - Ram Adjustment Dial
- 1032 - Ram Adjustment Pointer
- 1033 - Ram Adjustment Lock Bushing
- 1034 - Ram Adjustment Roller
- 1035 - Ram Adjustment Bracket
- 1036 - Ram Adjustment Eccentric Shaft
- 1037 - Ram Adjustment Gear - 29 Teeth
- 1038 - Ram Adjustment Gear - 27 Teeth
- 1039 - Ram Adjustment Gear - 28 Teeth
- 1040 - Ram Adjustment Gear - 27 Teeth
- 1041 - Ram Adjustment Stop Pins
- 1042 - Ram Adjustment Spring
- 1043 - Ram Adjustment Shaft Support
- 1044 - Ram Adjustment Lock Nut
- 1045 - Ram Adjustment Gear Bushing
- 1046 - Ram Adjustment Shoulder Screw
- 1047 - Ram Adjustment Stop Washer
- 1048 - Ram Adjustment Spacer Washer
- 1049 - Ram Adjustment Spring Washer
- 1050 - Ram Adjustment Dial Plate
- 1051 - Ram Adjustment Dial Plate Bushing
- 1052 - Pressure Control Check Valves
- 1053 - HP Pump Pressure Control Valve
- 1054 - HP Pump Pressure Control Vent Valve
- 1055 - Booster Pump
- 1056 - Booster Pump Drive Motor
- 1057 - Check Valve Booster Relief Line
- 1058 - Booster Pump Relief Valve
- 1059 - Booster Pump Check Valve
- 1060 - Ram Counterbalance Checks
- 1061 - Blocking Valve Tilt Adj.
- 1062 - Packing Washer
- 1063 - Bottom Cylinder Flange
- 1064 - Top Cylinder Flange
- 1065 - Back Gauge Adj. Indicator - L.H.
- 1066 - Back Gauge Adj. Indicator - R.H.
- 1067 - Back Gauge Adj. Motor Sprocket
- 1068 - Back Gauge Adj. Shaft Drive Sprocket
- 1069 - Back Gauge Adj. Motor Sprocket Chain
- 1070 - Back Gauge Adj. Indicator Bracket
- 1071 - Oil Cooler
- 1072 - Booster Pump Dump Valve
- 1073 - Main Gear Seal
- 1074 - Main Gear Seal Spacer
- 1075 - Main Gear Bearing
- 1076 - Bearing Spacer
- 1077 - Main Gear Hub
- 1078 - Main Gear Hub Bearing
- 1079 - Main Gear Hub Seal
- 1080 - Drive Shaft Bearing - L.H.
- 1081 - Drive Shaft Bearing - R.H.
- 1082 - Drive Shaft Bearing Bracket - L.H.
- 1083 - Drive Shaft Bearing Bracket - R.H.
- 1084 - Bleed Valves
- 1085 - Bed Wedges
- 1086 - Terminal Box
- 1087 - Booster Pump Starter
- 1088 - Treadle Shaft Collar
- 1089 - Counterbalance Cyl. Hose
- 1090 - Pressure Switch
- 1091 - Tilt Correction Valve
- 1092 - Tilt Correction Valve
- 1093 - Tilt Bleed Valves
- 1094 - Tilt Bleed Valve Orifice
- 1095 - Drive Motor Push Button Station
- 1096 - Decompression Valve Orifice
- 1097 - Pilot Valve Checks
- 1098 - Slow Speed Blocking Valve
- 1099 - L. H. Slow Speed Flow Control Valve
- 1100 - R. H. Slow Speed Flow Control Valve
- 1101 - R. H. Aux. Slow Speed Flow Control Valve
- 1102 - Slow Speed Correction Valve
- 1103 - Ram Hand Rail Center Bracket
- 1104 - Check Valve Filter Line
- 1105 - Gear Pump Pilot Pressure
- 1106 - Supercharge Back Pressure Check Valve
- 1107 - Relief Valve Back Pressure Check Valve
- 1108 - Top Cylinder Line Supercharge Check Valves
- 1109 - Light Indicator For Bottom Limit
- 1110 - Crank For Bottom Limit Adj.
- 1111 - Spring For Overstrike Trip
- 1112 - Pendant Control Switch
- 1113 - Venting Valve For Rapid Advance Dump Valve
- 1114 - Coupling for Rapid Adv. Pump
- 1115 - Fast Press Vent Line Check Valve
- 1116 - Check Valve Rapid Adv. Pump To HP Line
- 1117 - Check Valve Rapid Adv. Pump Dump Valve
- 1118 - Check Valve Fast Press Pump Dump Valve
- 1119 - Solenoid Valve For Supercharging HP Pump Relief Valve
- 1120 - Check Valve For Supercharging HP Pump Relief Valves
- 1121 - Filter For Full Flow Oilgear Pump
- 1122 - Filter For Proportion Of Flow Oilgear Pilot Pump
- 1123 - Limit Switch Trip
- 1124 - Piston Seat
- 1125 - Tape Adjustment Lock Nut
- 1126 - Tape Clamp
- 1127 - Cylinder Gland Bushing
- 1128 - Clamping Ring Bushing
- 1129 - "O" Ring For Cylinder Cap
- 1130 - "O" Ring For Top Cylinder Pipe Flange
- 1131 - "O" Ring For Bottom Cylinder Pipe Flange
- 1132 - Separator Ring For Cylinder Packing
- 1133 - Mounting Block For Top Stroke Limit Switch
- 1134 - Upper Bearing Block Adj. Switch Shaft
- 1135 - Lower Bearing Block Stroke Control
- 1136 - Tripper Bar For Bottom Stop Limit Switch
- 1137 - Ram Mounting Bar For Tripper Bars
- 1138 - Bearing Bar & Nut For Screw Adj. Stroke Control
- 1139 - Adj. Screw For Stroke Control
- 1140 - Bearing Block For Adj. Screw Stroke Control
- 1141 - Large Spur Gear For Productometer
- 1142 - Small Spur Gear For Productometer
- 1143 - Large Helical Gear On Vertical Shaft Stroke Control
- 1144 - Small Helical Gear On Productometer Shaft
- 1145 - Shaft For Productometer Gears On Stroke Control
- 1146 - Collar For Productometer Shaft On Stroke Control
- 1147 - Mounting Bracket For Productometer On Stroke Control
- 1148 - Mounting Bracket For Level Gear On Stroke Control
- 1149 - Large Bevel Gear On Stroke Control
- 1150 - Small Bevel Gear On Stroke Control
- 1151 - Shaft For Crank Handle On Stroke Control
- 1152 - Collar For Shaft On Crank Handle For Stroke Control
- 1153 - Cover For Gear Case On Stroke Control
- 1154 - Slotted Angle For Switch Mounting On Stroke Control
- 1155 - Adj. Orifice For Tilt Correction Valve
- 1156 - Check Valves For Lower Cyl. Line
- 1157 - Rapid Advance Bleed Valve
- 1158 - Check Valve For HP Pump Venting Valve
- 1159 - Muffler - Air
- 1160 - Tilt Correction Orifice
- 1161 - Adj. Worm Bearing - Outer - RH Side
- 1162 - Adj. Worm Bearing - Outer - LH Side
- 1163 - Adj. Worm Bearing - Inner - RH Side
- 1164 - Adj. Worm Bearing - Inner - LH Side
- 1165 - Valve for Differential Advance
- 1166 - Check Valve for Differential Advance Valve
- 1167 - Cam Plate Locking Knob
- 1168 - Cam Plate Slide
- 1169 - Cam Plate
- 1170 - Pre-Set Stop Tripper
- 1171 - Pre-Set Stop Tripper Switch
- 1172 - LVDT Excess Limit Switch Cam
- 1173 - Cam Rod Bearing
- 1174 - Cam Rod Guide
- 1175 - Slow Pressing Stroke Control Limit Switch
- 1176 - Slow Pressing Stroke Control Adjustment Stop
- 1177 - Rapid Advance Pressure Switch
- 1178 - High Pressure Holding Pressure Switch
- 1179 - Brake Shoe Stop Bracket
- 1180 - Brake Shoe Stop Bracket Bolt
- 1181 - Brake Shoe Stop Bracket Bolt Jam Nut
- 1182 - Gear Pump Adapter
- 1183 - Washer
- 1184 - Shim Piston Retainer
- 1185 - Plunger Seal Retainer
- 1186 - Oil Reservoir Valve Housing Cover
- 1187 - Tape Failure Limit Switch
- 1188 - Plunger Seal Retainer
- 1189 - Vari-Speed Control Plate
- 1190 - Idler Plinon
- 1191 - End Plate, Outer
- 1192 - Main Pin Taper Bushing
- 1193 - Clutch Fulcrum Lever Spring
- 1194 - Clutch Fulcrum Lever Bracket Pin
- 1195 - Prefill Valve
- 1196 - Prefill Operating Valve
- 1197 - Rapid Advance Valve
- 1198 - Electric Shut Off Valve
- 1199 - Off-On Selector Switch
- 1200 - Variable Release Speed Control Switch

CHICAGO STEEL PRESS BRAKES

PARTS LIST

- | | |
|---------------------------------------------|--------------------------------------------------------------------|
| 1201 - Oil Temperature Lamp | 1214 - Control Panel for Vari-Speed Back Gauge and Vari-Speed FODS |
| 1202 - Inch-Auto Selector Switch | 1215 - Transmitter for Back Gauge Indicator |
| 1203 - Pressing Speed Control Switch | 1216 - FODS Adjustment Motor |
| 1204 - Hand-Foot Selector Switch | 1217 - Control Panel for FODS Adjustment Motor |
| 1205 - Extra Sensory Selector Switch | 1218 - Tonnage Control Safety Relief Valve |
| 1206 - Dwell Timer Switch | 1219 - Venting Valve for Tonnage Control Pressure Switch |
| 1207 - Clamp Timer Switch | 1220 - Chain Tension |
| 1208 - Dwell Selector Switch | 1221 - Needle Bearing Sprocket Idler |
| 1209 - Clamp Selector Switch | 1222 - Piston Ring |
| 1210 - Brake Pivot Pin Base | 1223 - Flywheel Brake Lever |
| 1211 - Treadle Shaft Trunnion - RH | 1224 - Flywheel Brake Air Cylinder Clevis |
| 1212 - Treadle Shaft Trunnion - LH | 1225 - Flywheel Brake Bracket and Pin |
| 1213 - Transmitter for Back Gauge Indicator | 1226 - Flywheel Brake Air Cylinder Bracket and Pin |
| | 1227 - Knuckle Pin Seat |

IDENTIFICATION OF UNNUMBERED COMPONENT PARTS

Depending upon the frequency with which they are replaced, certain component parts such as Bushings, Oil Seals, Gaskets, Screws, Bolts, Cotter Pins, Retaining Rings, Grease Fittings, Collars, etc., may or may not be identified by a specific part number.

When desiring to order any of these unnumbered parts please identify them by referring to the numbered part of which they are a component, or with which they are used.

EG - Bushing for Pt 64 - Inter Shaft Brg, RH Inner
Screws for Pt 64 - Inter Shaft Brg, RH Inner

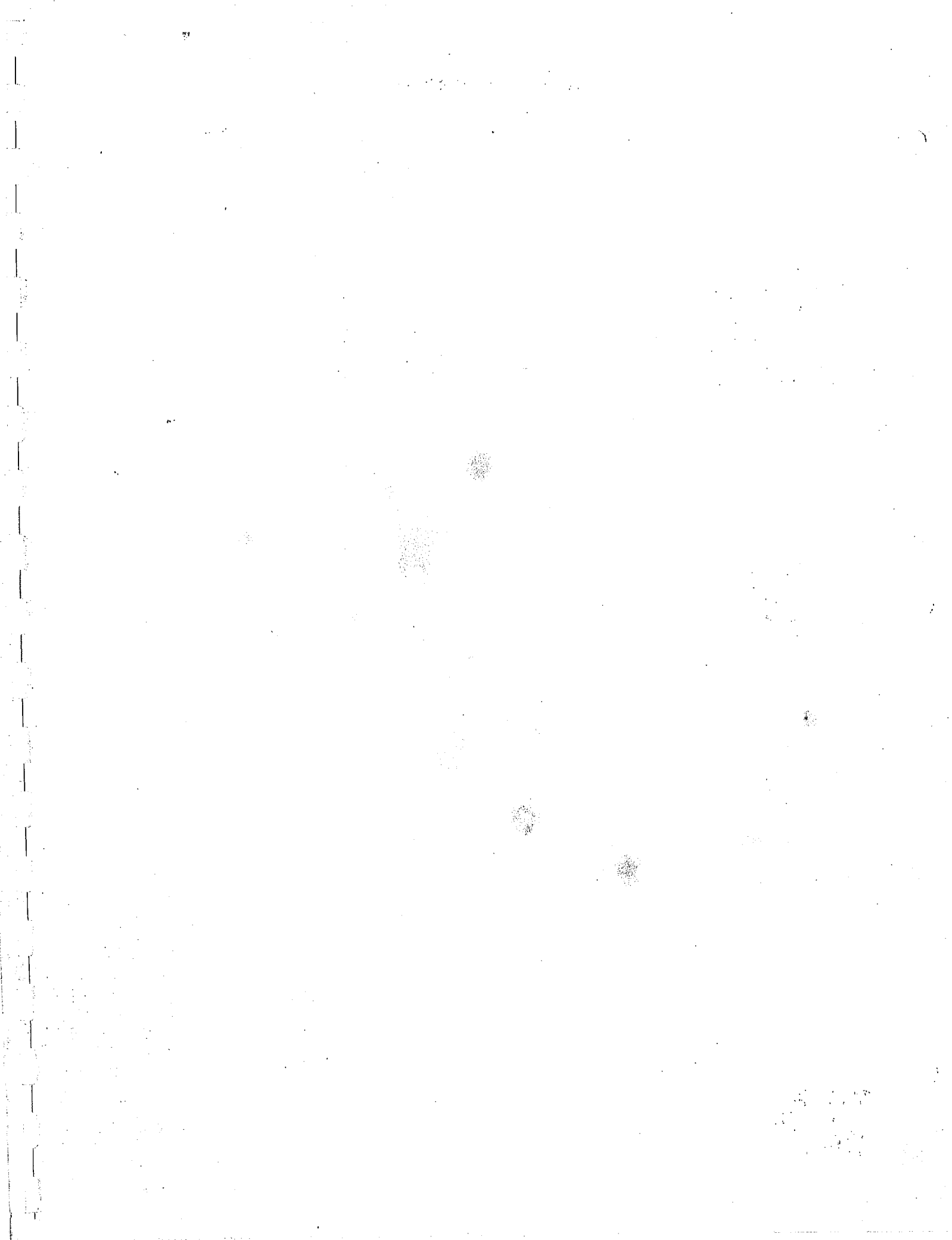
Gasket for Pt 36 - Drive Shaft Brg, Outer
Oil Seal for Pt 36 - Drive Shaft Brg, Outer



DREIS AND KRUMP MANUFACTURING COMPANY



PGI(PL)-4A

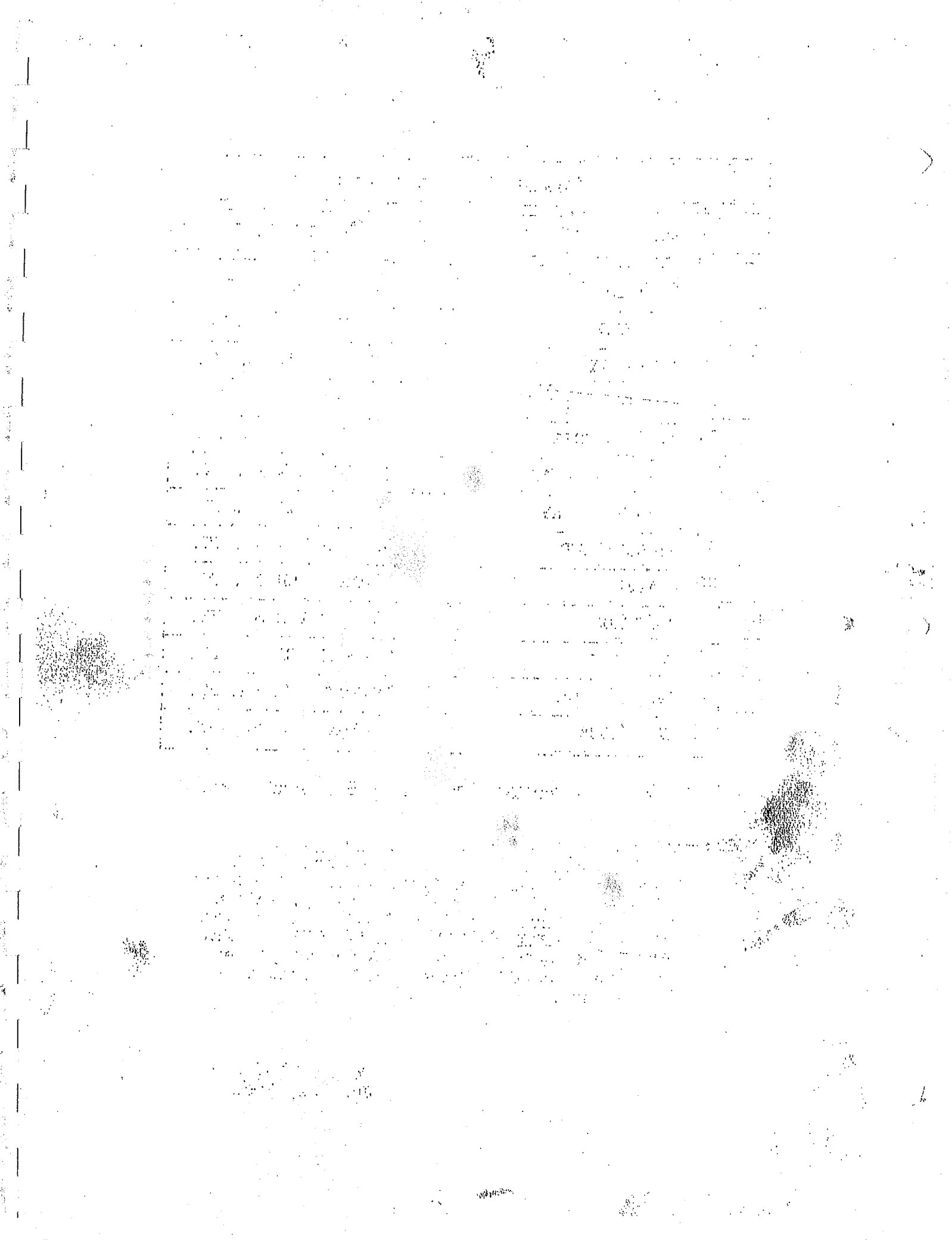


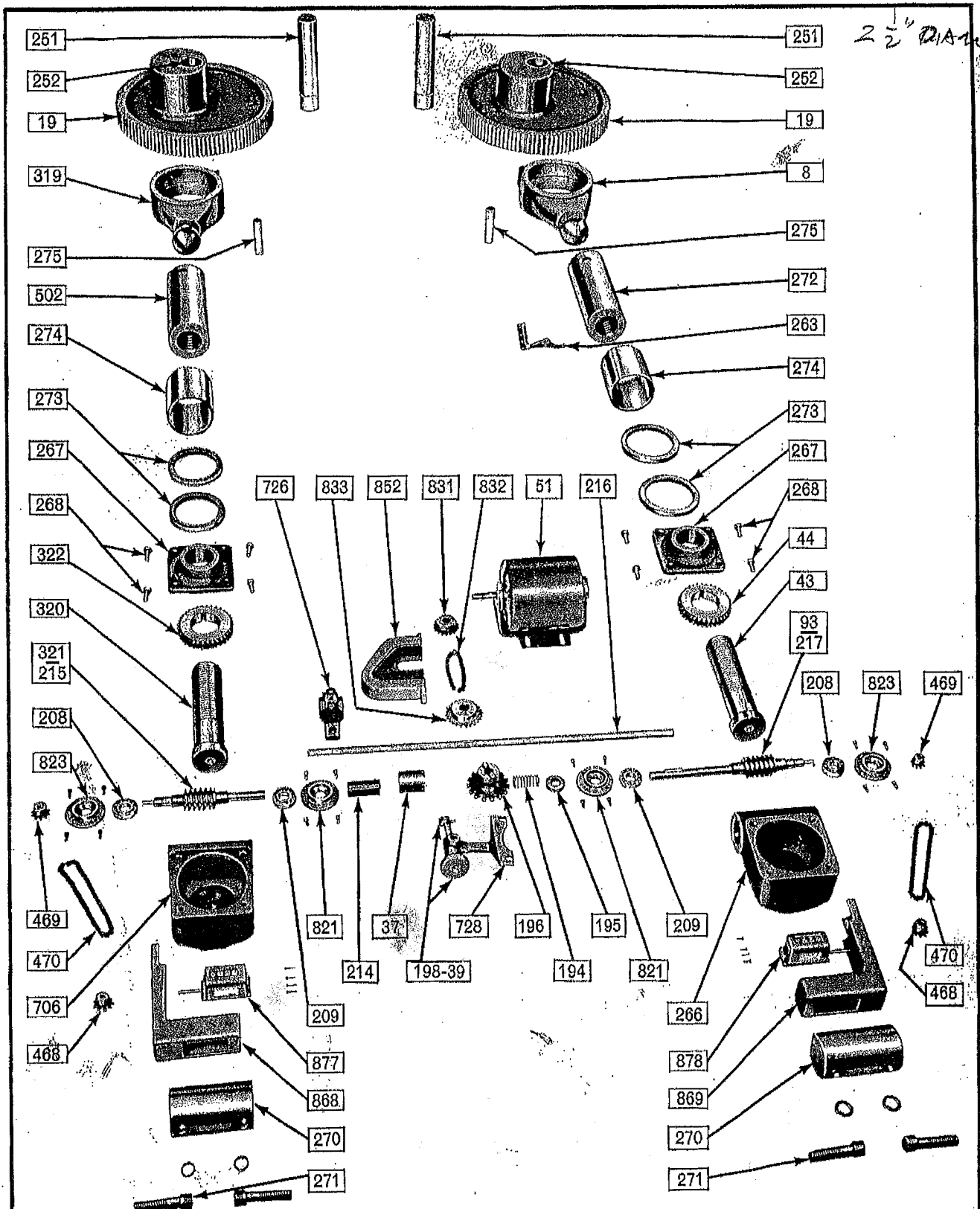
LOADS ON FOUNDATIONS *	
SOIL CONDITIONS	ALLOWABLE LOAD
WET CLAY	1 TON PER SQ. FT.
WET SAND	2 TONS PER SQ. FT.
FIRM CLAY	2 TONS PER SQ. FT.
SAND & CLAY MIXED	2 TONS PER SQ. FT.
OR IN LAYERS	2 TONS PER SQ. FT.
FINE & DRY SAND	3 TONS PER SQ. FT.
HARD DRY CLAY	4 TONS PER SQ. FT.
COARSE SAND	4 TONS PER SQ. FT.
GRAVEL	6 TONS PER SQ. FT.
SOFT ROCK	8 TONS PER SQ. FT.
HARD PAN	10 TONS PER SQ. FT.
MEDIUM ROCK	15 TONS PER SQ. FT.
HARD ROCK	40 TONS PER SQ. FT.

* Based on New York Building Code Regulations

NOTE: Above chart can be used as a guide for allowable loads for various soil conditions. Consult your local contractor for permissible loads for soil in your locality. Being unacquainted with soil conditions at your plant, DREIS & KRUMP MANUFACTURING COMPANY cannot be held responsible for improper operation of machine, due to foundation failure.

Form PM/HS(Fdtn)A-1
July 21, 1960





NOTE:

When ordering parts, specify part name and number, quantity required, serial number of machine, and this Photo No. DK-980R.

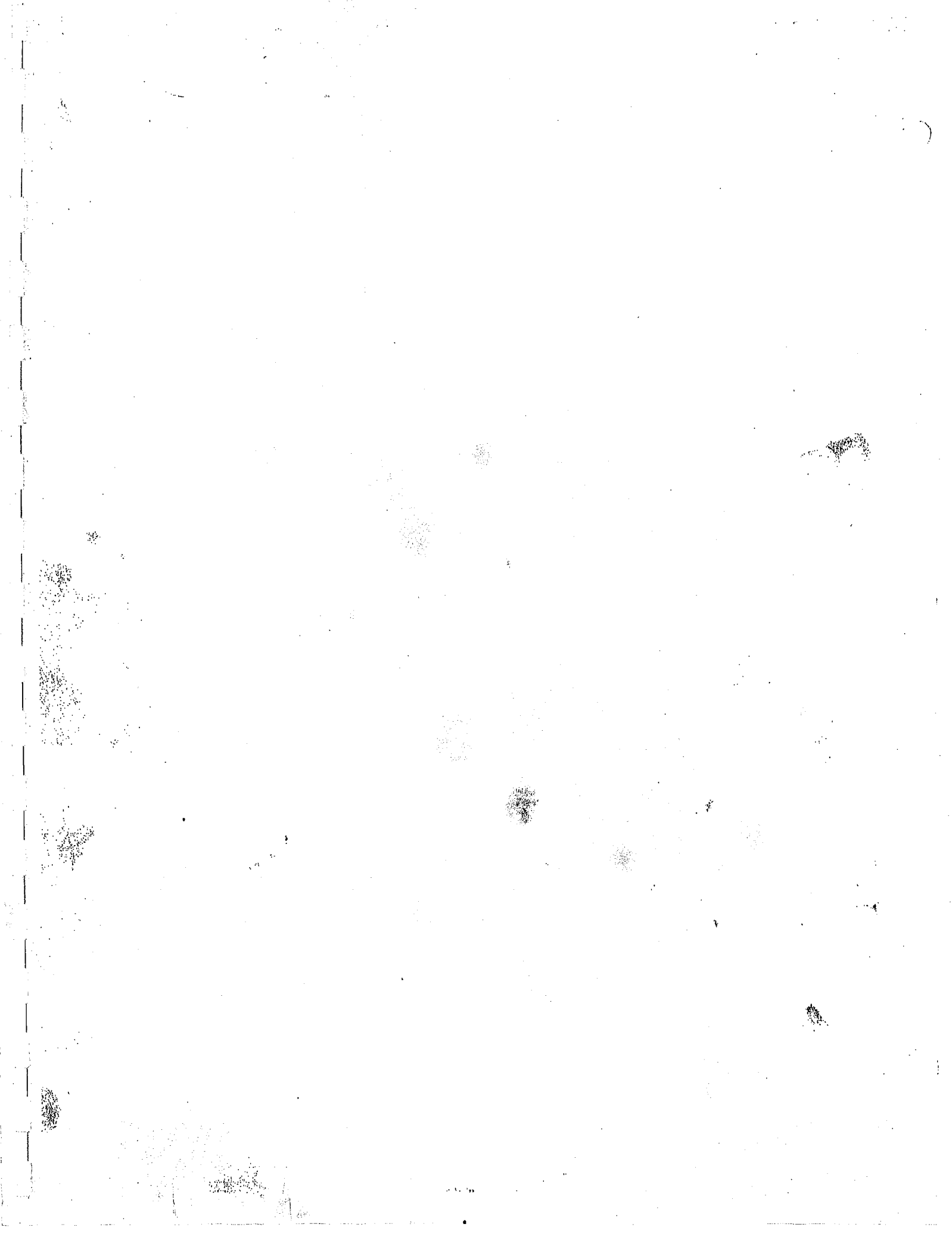
Depending upon the frequency with which they are replaced, certain component parts such as bushings, oil seals, gaskets, screws, bolts, cotter pins, retaining rings, grease fittings, collars, etc., may or may not be identified by a specific part number. When desiring to order any of these unnumbered parts, identify them by referring to the numbered part of which they are a component, or with which they are used.

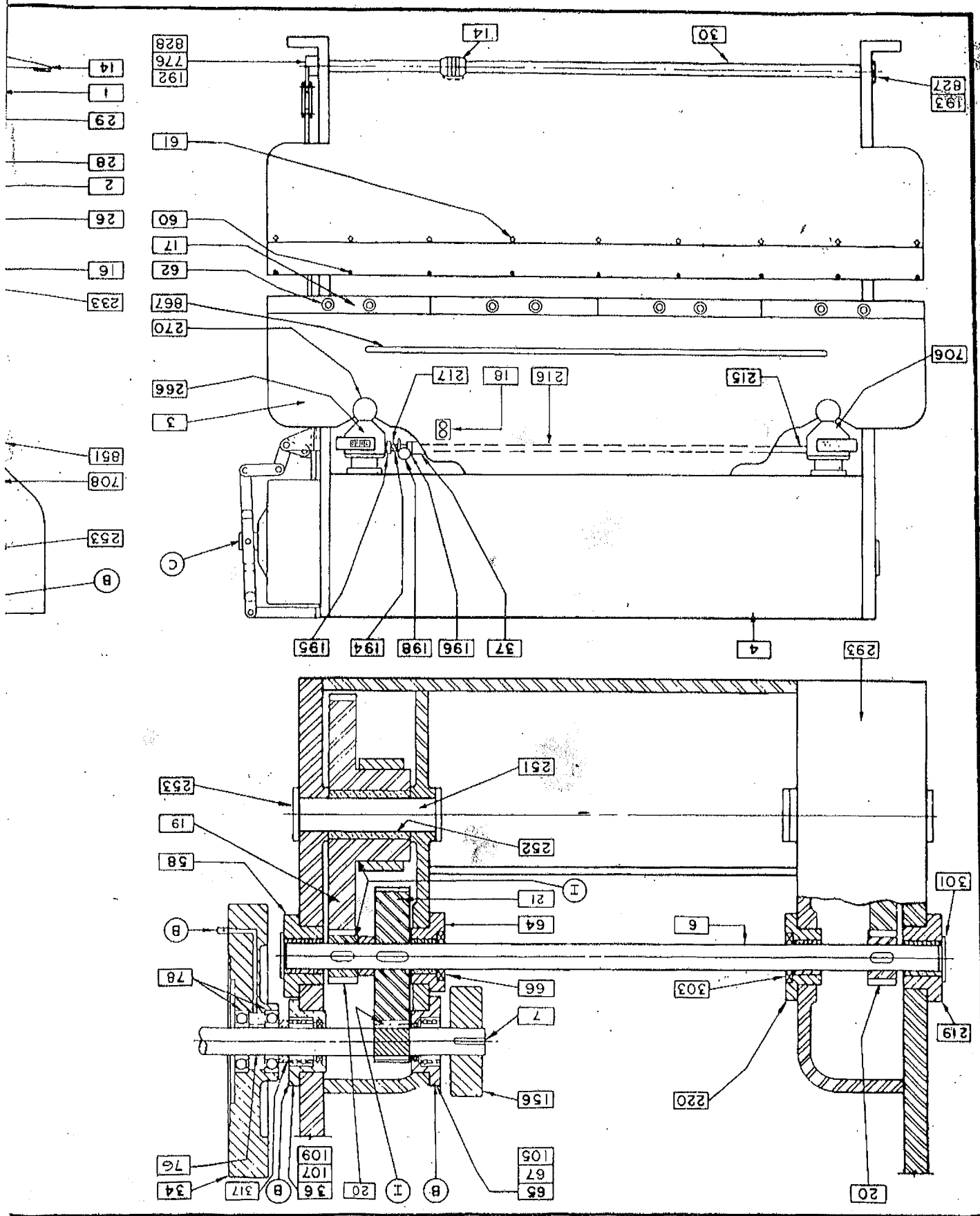
"C" and "L" SERIES PRESS BRAKE PARTS

DREIS & KRUMP MFG. CO.

PHOTO NO. DK-980R

REVISED 11-15-62





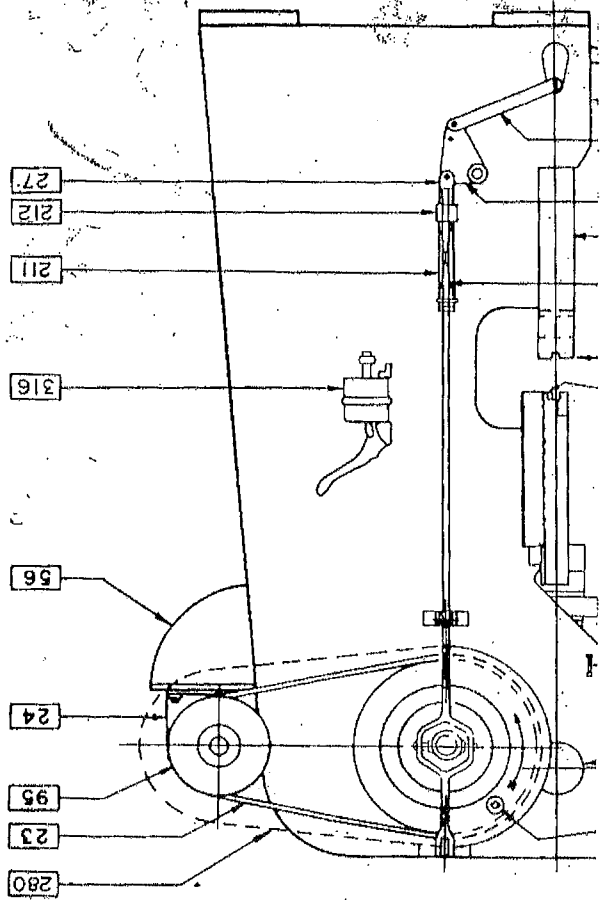
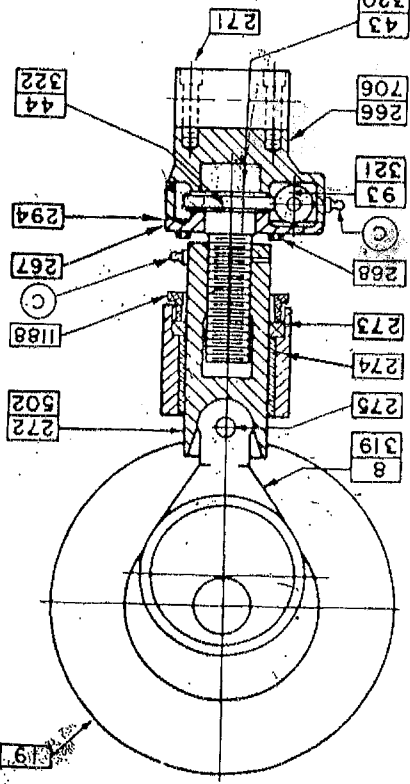
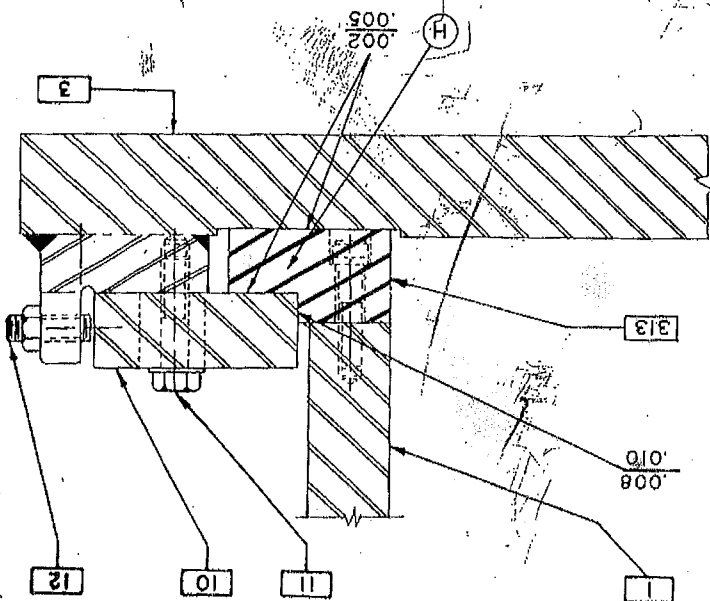
NOTE: When Ordering Parts, Please Specify Name, No. Quantity Req'd, Serial No. of Press & This Draw- ing No. MA-5009C

DREIS & KRUMP MFG. CO. CHICAGO, ILLINOIS

REVISED 4-13-64

DR'NG NO. MA5009-C

LUBRICATION: SEE LUBE CHART



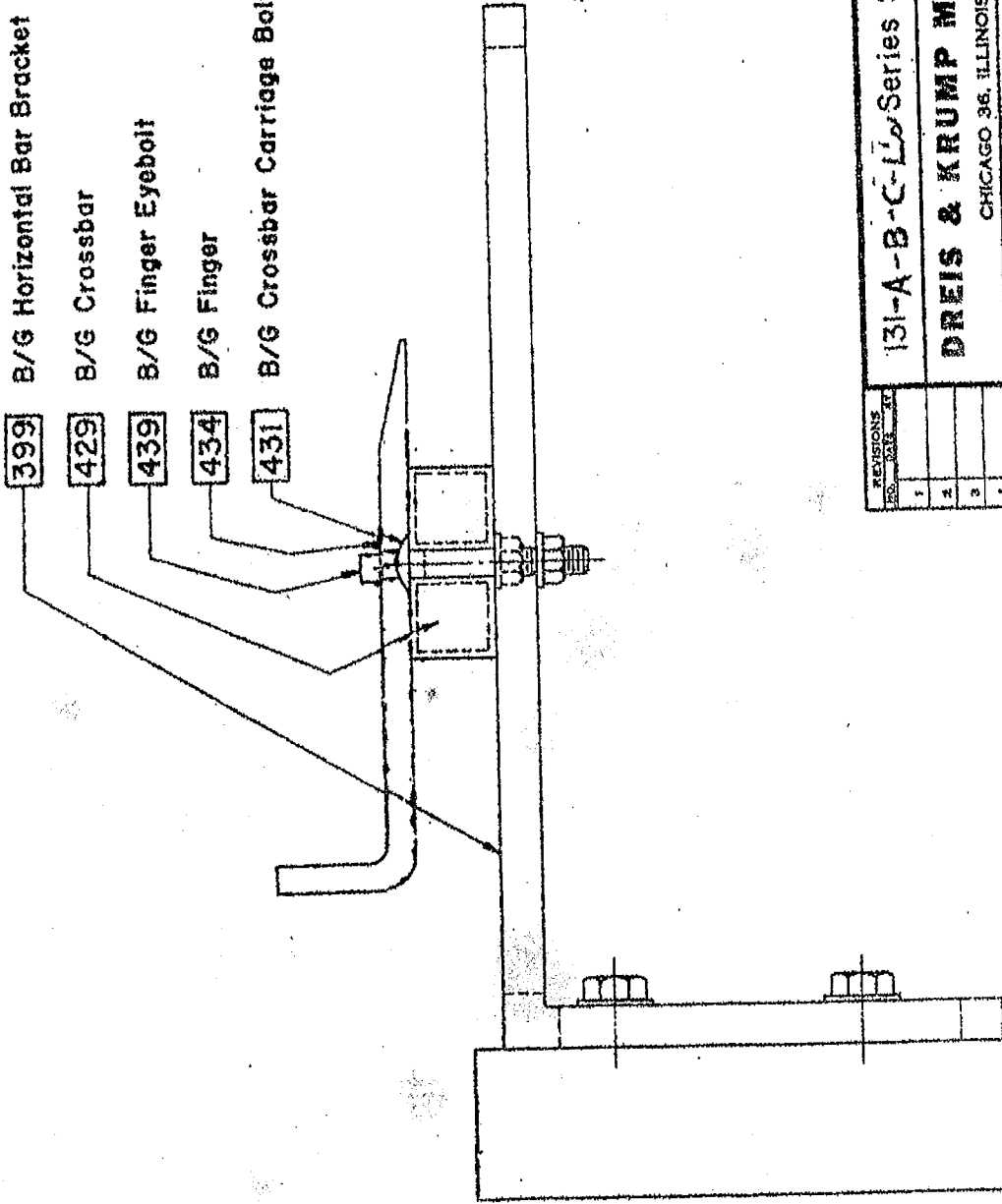
399 B/G Horizontal Bar Bracket

429 B/G Crossbar

439 B/G Finger Eyebolt

434 B/G Finger

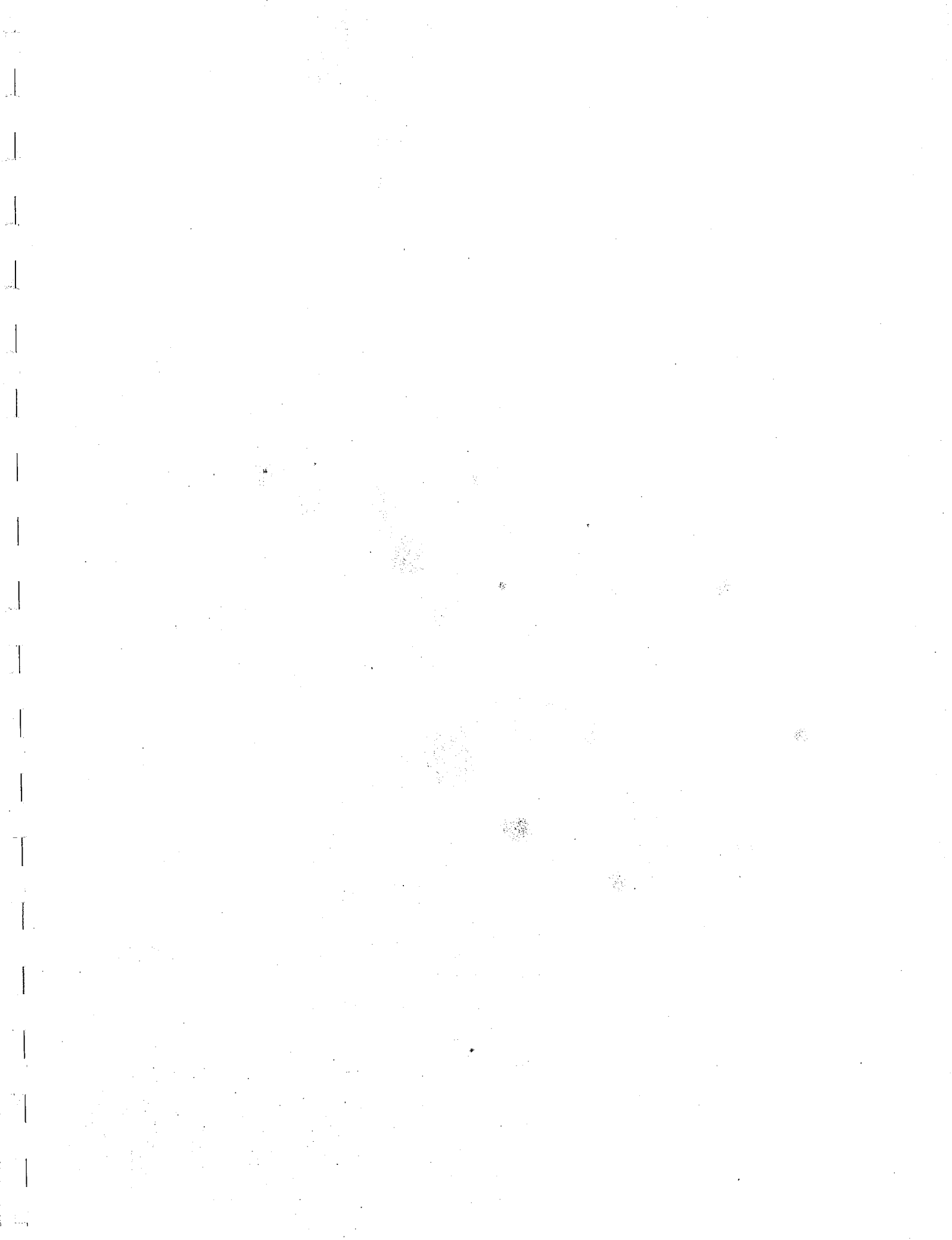
431 B/G Crossbar Carriage Bolt



REVISIONS	DATE	BY
1		
2		
3		
4		
5		
6		
7		
8		

131-A-B-C-L Series Std. B/G.
DREIS & KRUMP MFG. CO.
 CHICAGO 36, ILLINOIS

SCALE _____ DATE _____
 DRAWN BY **A.S.**
 CHECKED BY **DRNG**
SA-127



CHICAGO STEEL PRESS BRAKES

Operating Instructions

CLUTCHES DISC TYPE MECHANICALLY ACTUATED

TWIN DISC MODELS CL FOR SERIES A-B-C-L

TWIN DISC MODELS E & EH FOR SERIES M-R-D




DREIS AND KRUMP MANUFACTURING COMPANY
7400 SOUTH LOOMIS BOULEVARD
CHICAGO 36, ILLINOIS
TRiangle 4-1200



PARTS: For instruction reference, Complete Parts Lists on pages 4 and 5.

<u>Number</u> <u>CL</u>	<u>Description</u>	<u>Number</u> <u>E & EH</u>
12	Adj. Yoke or Ring	17
18a	Cone (Ring)	24C
13	Cover	20
12G	Lock Pin	15
12B	Rollers	9E

PREVENTATIVE MAINTENANCE

1. Once a week remove Clutch Cover and blow out interior with an air hose to remove any foreign particles that may adhere to the Friction Plates lest they interfere with the free movement of the Plates.
2. Lubrication: see Lubrication Chart and  symbols on Parts Lists (pages 4 & 5).

NOTE: New Friction Plates will require several frequent adjustments to tighten Clutch during the initial wear-in of the Plates.

NOTE: When Clutch is disengaged and idling, there is a distinct but normal clattering noise indicating that Plates are rotating "free" within the Clutch.

ADJUSTMENT

CAUTION: Whenever Clutch is adjusted always recheck adjustment of Brake also.

If Clutch heafs, grabs too fast, jumps out of engagement, or does not pull, it is in need of adjustment.

CAUTION: Before adjusting Clutch, set machine at bottom of stroke, disengage Clutch, turn off power, and let Flywheel stop.

1. Remove Clutch Cover so that position of Rollers may be observed to determine proper adjustment.
2. Turn Clutch by hand until Lock Pin can be reached. Place washer over Pin, pull Pin out and insert nail or wire thru hole in Pin to hold in "out" position while adjustment is being made.
3. Turn Adjusting Yoke one or two holes (clockwise to tighten, counter clockwise to loosen) or until Clutch requires a distinct pressure to engage. This adjustment moves the Friction Plates together or apart.

NOTE: When Yoke can be turned no further for tighter adjustment the Friction Plates must be replaced.

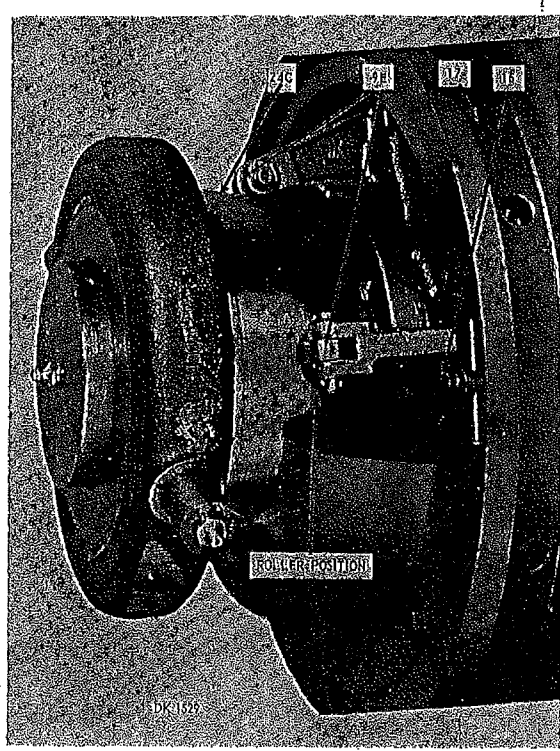
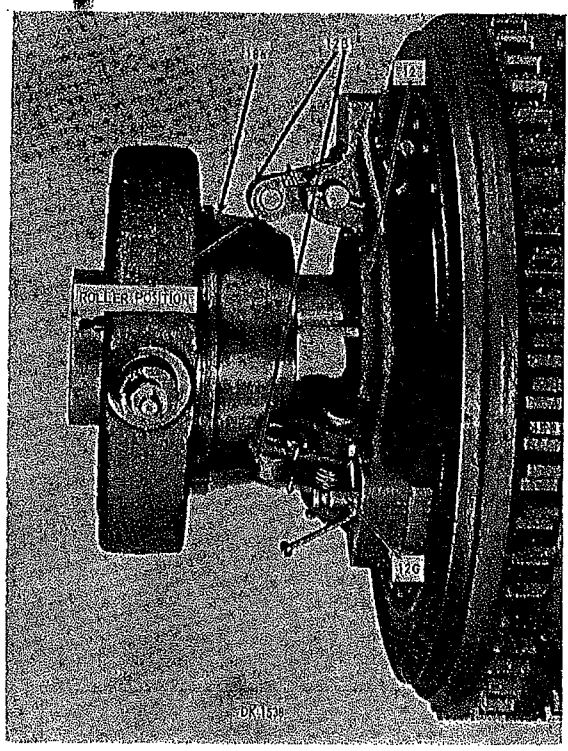
4. Engage Clutch slowly with a steady pressure to determine amount of engagement.

a. Correct Adjustment

Clutch begins to take hold when Rollers are approximately one-quarter up on Cone.

Models CL

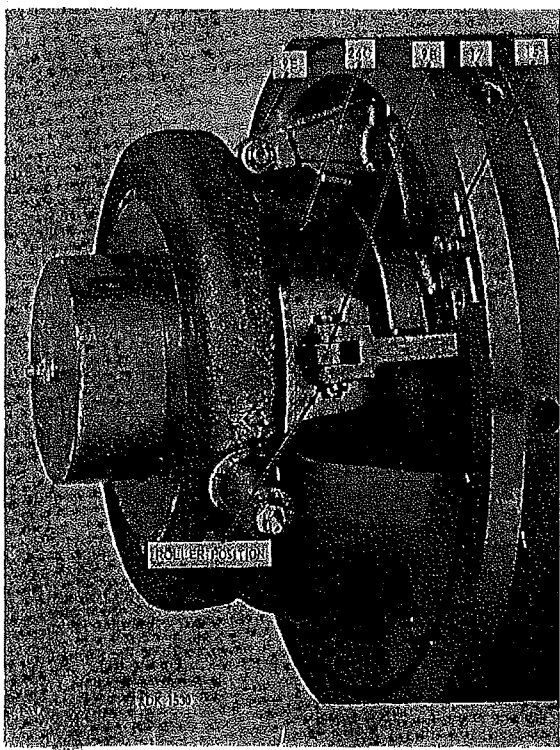
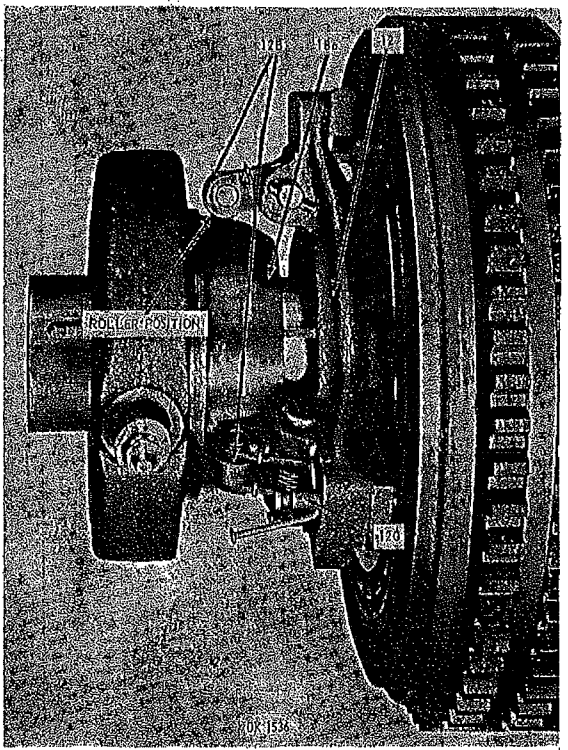
Models E & EH



Clutch is fully engaged when Rollers are three-quarters up on Cone.

Models CL

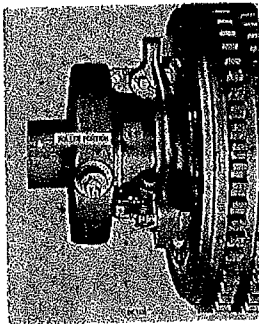
Models E & EH



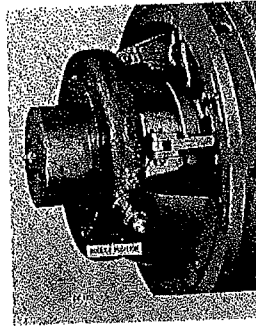
b. Loose Adjustment

Cone Completely enters Clutch before It is fully engaged. Tighten as in point 3 above.

Models CL



Models E & EH



WARNING: A loose adjustment of Clutch can cause excessive heat (above 140°) on Friction Plates. In time plates may buckle and may stick, possibly causing machine to repeat unintentionally.

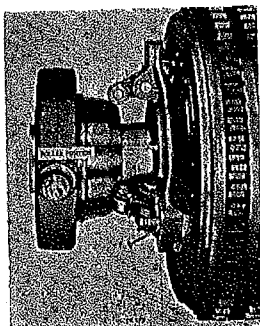
CAUTION: The same condition could arise should an operator intentionally do an extremely inordinate amount of continuous Clutch slipping. The proper purpose for slipping a Clutch however, is to prevent whip-up of a material being formed, so heat should not be a problem when the clutch is used properly.

WARNING: The Cones are made with tapered surfaces against which the Rollers ride up and down. With too loose an adjustment the Rollers could move up beyond the tapered surface. While the Clutch is designed so that the spring pressure will push the Rollers down off the Cone to separate the Friction Plates when the Clutch is disengaged, there is a very remote possibility that under a combination of adverse conditions the Rollers might possibly "hang-up" on the flat of the Cone causing the machine to repeat unintentionally.

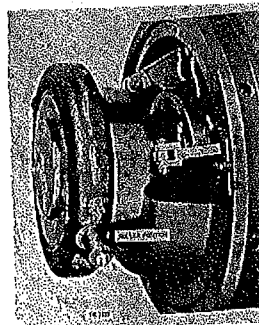
c. Tight Adjustment

Clutch grabs as soon as Rollers contact Cone. Loosen as in point 3 above.

Models CL



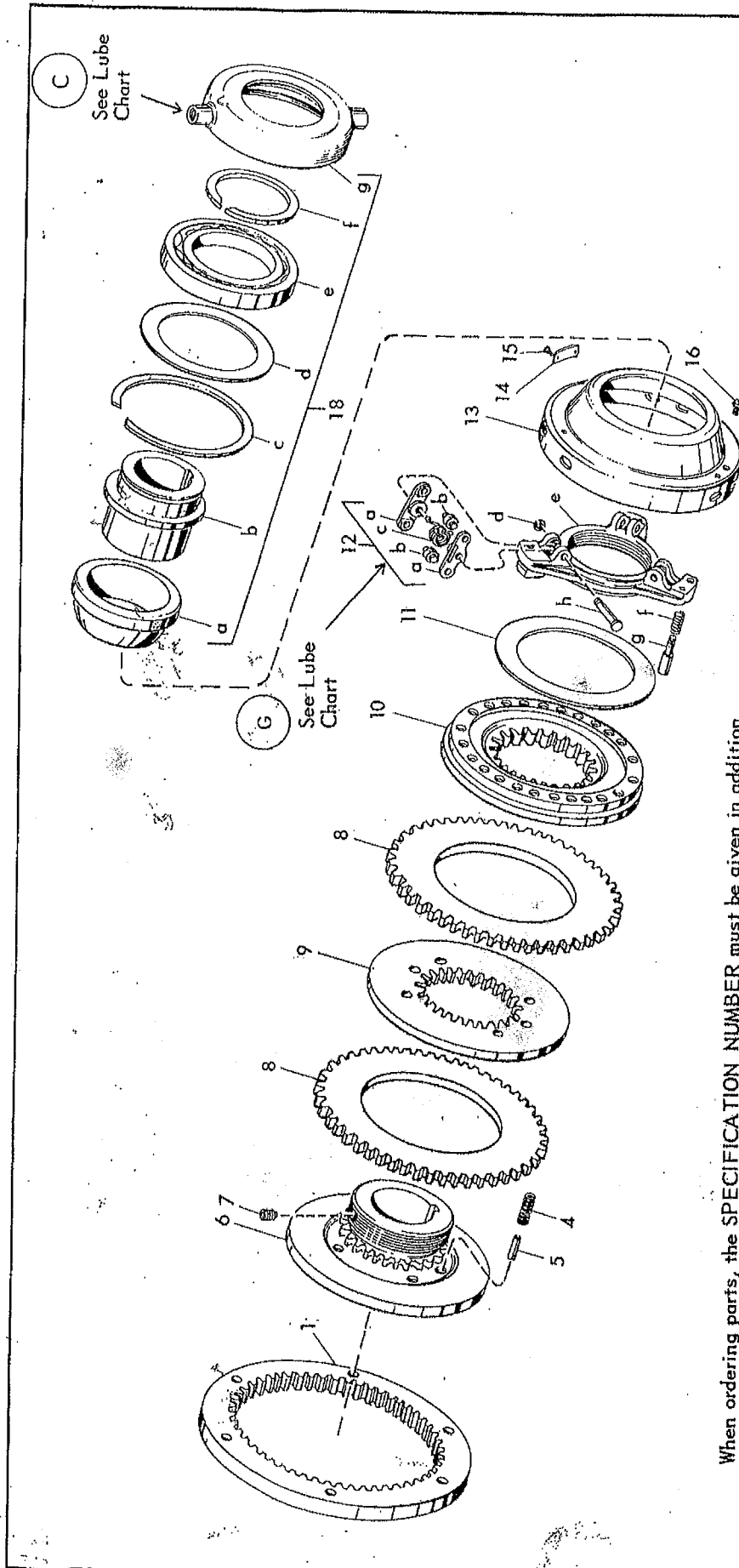
Models E & EH



CAUTION: Too tight an adjustment not only prevents the slipping action desirable in forming operations, but also effects the Linkage travel so that Brake drags rather than releasing as Clutch takes hold thus causing excessive wear of Brake Linings. (See instructions for adjusting Brake also.)

5. Remove nail or wire and washer from Lock Pin and insure pin is seated in nearest locking hole. Replace cover and Clutch is ready for operation under power.

CAUTION: Insure Lock Pin is seated in hole before operating.



When ordering parts, the SPECIFICATION NUMBER must be given in addition to the part number and name. The specification number of the clutch is stamped on the clutch specification plate (item 14).

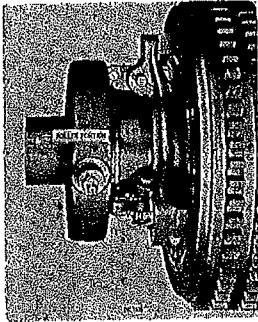
Item	Description	Qty.	Item	Description	Qty.	Item	Description	Qty.
1	RING, driving	1	a	LEVER	6	15	PIN, drive	2
4	SPRING, release	6	b	ROLLER	6	16	SCREW, machine, round-head	3
5	PIN, spring, release	6	c	SPRING, lever	3	18	CONE, assembly	1
6	PLATE, hub-and-back	1	d	RING, retainer, pin, lever	3	a	RING, cone	1
7	SETScrew	1	e	YOKE, adjusting	1	b	SLEEVE, cone	1
8	PLATE, driving	*	f	SPRING, pin lock, adjusting	1	c	RING, snap, collar, cone	1
9	PLATE, center	*	g	PIN, lock, adjusting	1	d	WASHER, collar, cone	1
10	PLATE, floating	1	h	PIN, lever	3	e	BALL BEARING, collar, cone	1
11	DISC, roller	1	13	COVER, clutch	1	f	RING, snap, sleeve, cone	1
12	YOKE, adjusting, assembly	1	14	PLATE, specification	1	g	COLLAR, cone, ball bearing	1

* As Required

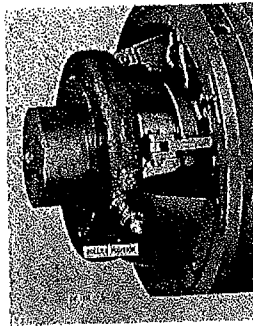
b. Loose Adjustment

Cone Completely enters Clutch before it is fully engaged. Tighten as in point 3 above.

Models CL



Models E & EH



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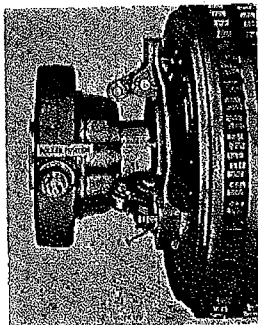
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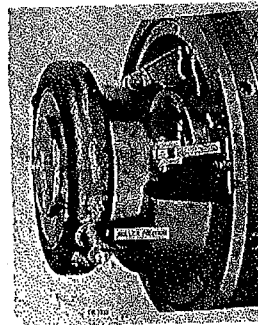
c. Tight Adjustment

Clutch grabs as soon as Rollers contact Cone. Loosen as in point 3 above.

Models CL



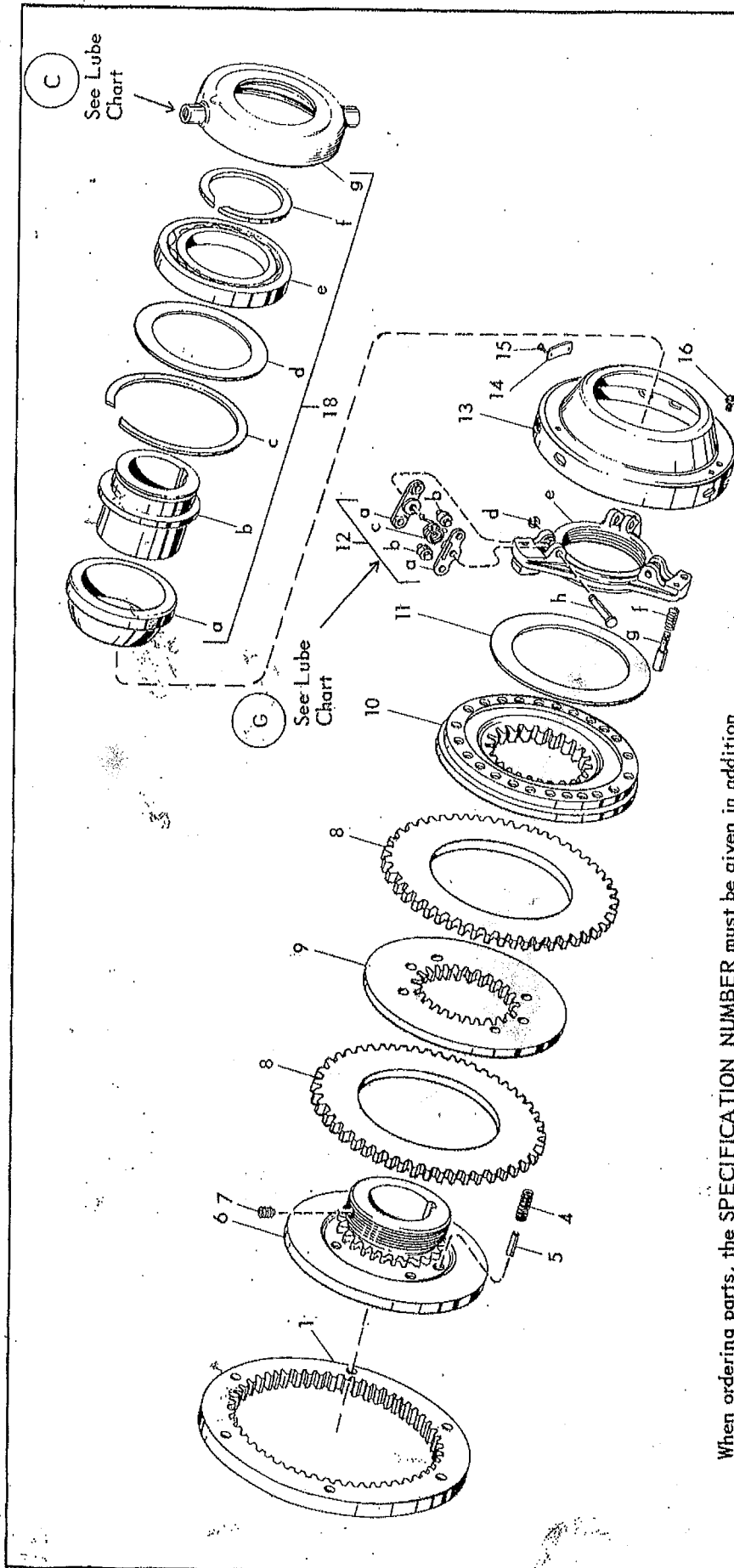
Models E & EH



CAUTION: Too tight an adjustment not only prevents the slipping action desirable in forming operations, but also effects the Linkage travel so that Brake drags rather than releasing as Clutch takes hold thus causing excessive wear of Brake Linings. (See instructions for adjusting Brake also.)

5. Remove nail or wire and washer from Lock Pin and insure pin is seated in nearest locking hole. Replace cover and Clutch is ready for operation under power.

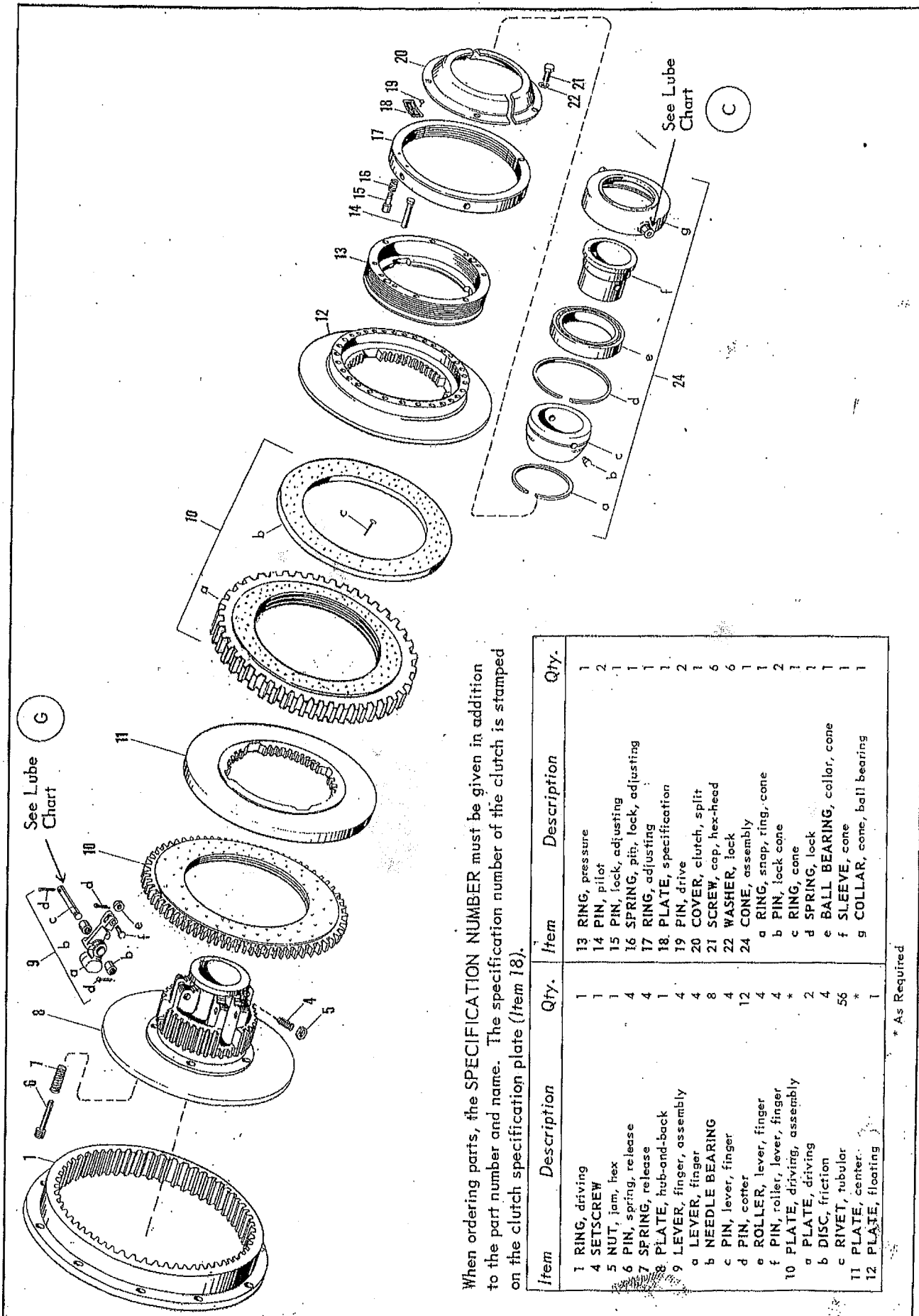
CAUTION: Insure Lock Pin is seated in hole before operating.



When ordering parts, the SPECIFICATION NUMBER must be given in addition to the part number and name. The specification number of the clutch is stamped on the clutch specification plate (Item 14).

Item	Description	Qty.	Item	Description	Qty.	Item	Description	Qty.
1	RING, driving	1	a	LEVER	6	15	PIN, drive	2
4	SPRING, release	6	b	ROLLER	6	16	SCREW, machine, round-head	3
5	PIN, spring, release	6	c	SPRING, lever	3	18	CONE, assembly	1
6	PLATE, hub-and-back	1	d	RING, retainer, pin, lever	3	a	RING, cone	1
7	SETScrew	1	e	YOKE, adjusting	1	b	SLEEVE, cone	1
8	PLATE, driving	*	f	SPRING, pin lock, adjusting	1	c	RING, snap, collar, cone	1
9	PLATE, center	*	g	PIN, lock, adjusting	1	d	WASHER, collar, cone	1
10	PLATE, floating	1	h	PIN, lever	3	e	BALL BEARING, collar, cone	1
11	DISC, roller	1	13	COVER, clutch	1	f	RING, snap, sleeve, cone	1
12	YOKE, adjusting, assembly	1	14	PLATE, specification	1	g	COLLAR, cone, ball bearing	1

* As Required



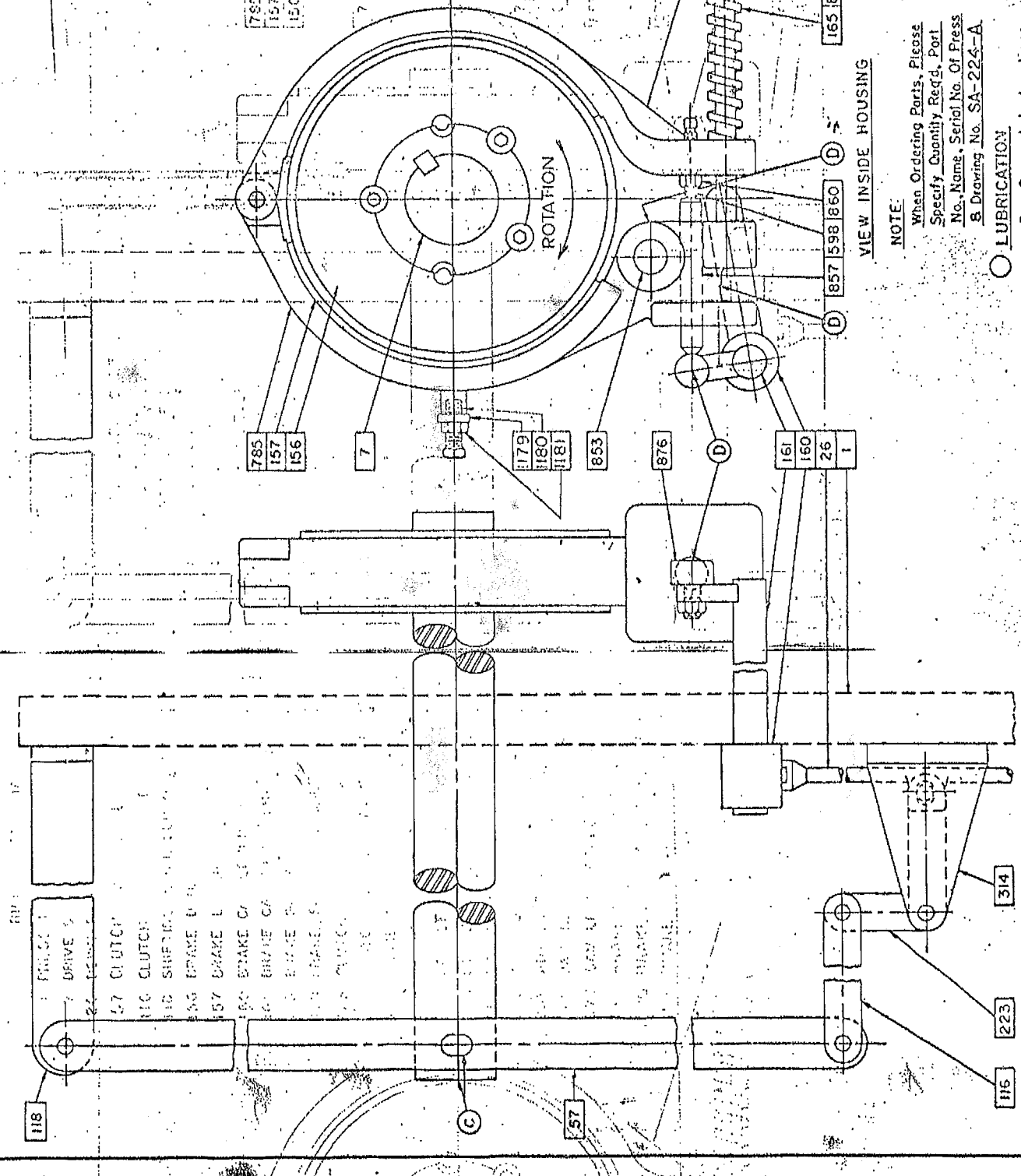
When ordering parts, the SPECIFICATION NUMBER must be given in addition to the part number and name. The specification number of the clutch is stamped on the clutch specification plate (Item 18).

Item	Description	Qty.	Item	Description	Qty.
1	RING, driving	1	13	RING, pressure	1
4	SETScrew	1	14	PIN, pilot	2
5	NUT, jam, hex	1	15	PIN, lock, adjusting	1
6	PIN, spring, release	4	16	SPRING, pin, lock, adjusting	1
7	SPRING, release	4	17	RING, adjusting	1
8	PLATE, hub-and-back	1	18	PLATE, specification	1
9	LEVER, finger, assembly	4	19	PIN, drive	2
a	LEVER, finger	4	20	COVER, clutch, split	1
b	NEEDLE BEARING	8	21	SCREW, cap, hex-head	6
c	PIN, lever, finger	4	22	WASHER, lock	6
d	PIN, cotter	12	24	CONE, assembly	1
e	ROLLER, lever, finger	4	a	RING, snap, ring, cone	1
f	PIN, roller, lever, finger	4	b	PIN, lock cone	2
10	PLATE, driving, assembly	*	c	RING, cone	1
a	PLATE, driving	2	d	SPRING, lock	1
b	DISC, friction	4	e	BALL BEARING, collar, cone	1
c	RIVET, tubular	56	f	SLEEVE, cone	1
11	PLATE, center	*	g	COLLAR, cone, ball bearing	1
12	PLATE, floating	1			

* As Required

BILL OF MATERIAL

- 1 PRESS HOUSING
- 7 DRIVE SHAFT
- 26 DOWN ROD
- 57 CLUTCH SHIFTING LEVER
- 116 CLUTCH FULCRUM LEVER CROSSBAR
- 118 SHIFTING LEVER SUPPORT BAR
- 156 BRAKE DRUM
- 157 BRAKE LINING
- 160 BRAKE CAM LEVER
- 161 BRAKE CAM LEVER SHAFT
- 157 BRAKE SPRING
- 169 BRAKE SPRING ADJ. BOLT
- 223 CLUTCH FULCRUM LEVER
- 314 CLUTCH FULCRUM LEVER BRACKET
- 597 BRAKE SHOE
- 598 BRAKE SHOE LIMIT BOLT
- 785 CAM LEVER BRAKE SHOE
- 853 CAM LEVER BRAKE SHOE PIN
- 857 PISTON ROD
- 858 ADJ. BOLT WASHER
- 859 ADJ. BOLT NUT
- 860 JAM NUT
- 876 CAM LEVER ROLLER
- 1179 BRAKE SHOE STOP BRKT.
- 1180 BRAKE SHOE STOP BRKT. BOLT
- 1181 BRAKE SHOE STOP BRKT. BOLT
- JAM NUT



NOTE:
 When Ordering Parts, Please
 Specify Quantity Req'd, Part
 No., Name, Serial No. Of Press
 & Drawing No. SA-224-A

LUBRICATION
 See General Instructions

DREIS & KRUMP MFG. CO.
 CHICAGO, ILL.
 DESIGNED FOR
MECHANICAL SHOE BRAKE
 G. J. SA-224-A

CHICAGO STEEL PRESS BRAKES

Operating Instructions

Ram Brake - Shoe Type Air or Mechanical Release-Spring Set

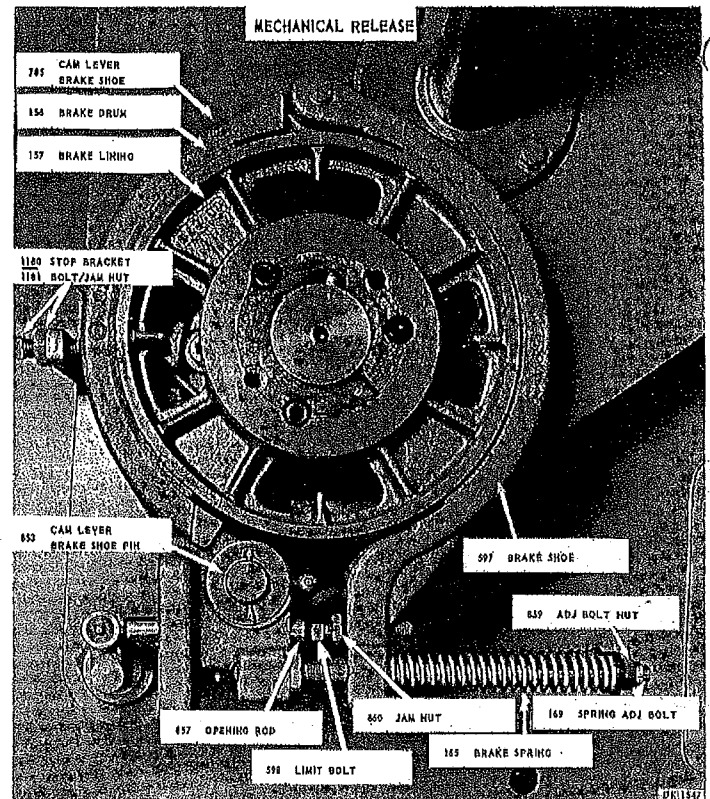
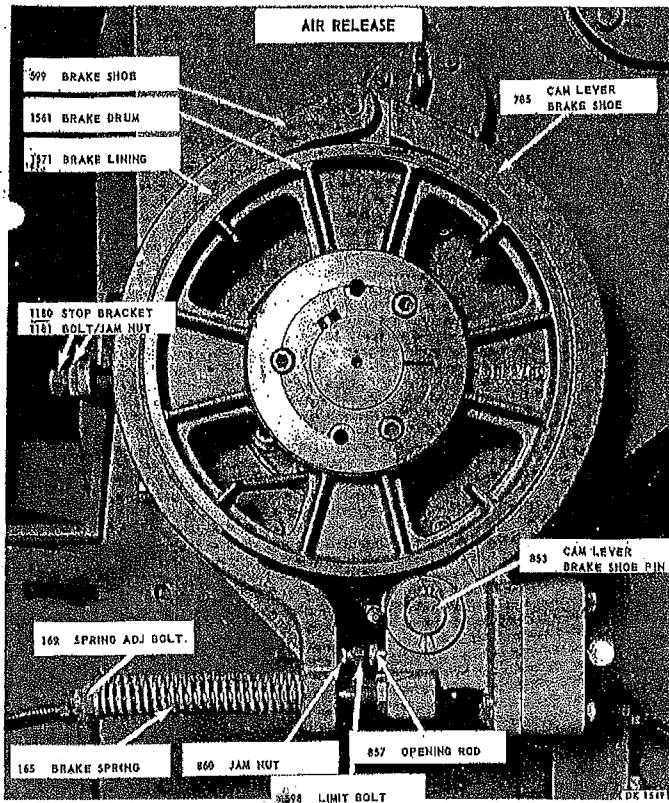
ADJUSTMENT:

When Brake is set, the Ram should come to a smooth sliding stop after 1/2" to 1" of travel. If Ram drifts beyond that, adjustment is needed. The frequency of adjustment obviously depends upon many things, such as the amount of usage, the amount of slipping required and other conditions as cautioned against below.

WARNING: Always leave Ram at bottom of stroke, disengage Clutch, turn Drive Motor off and let Flywheel come to rest before making any adjustments.

NOTE : New Linings will require an early adjustment after the initial wear-in. Any squealing of Linings is usually due to not having radiused all edges of Linings to remove any rough spots.

CAUTION: While small amounts of oil are sometimes applied between Linings and Drum until the rough spots wear-in, this is not recommended since lubrication deteriorates the Linings and hampers the braking efficiency of the Linings.



(see Drawings SA-223 & SA 224 also)

ADJUSTMENT:

1. Loosen Jam Nut (860) and back off Limit Bolt (598).
2. Tighten Adj Bolts (859) equally to compress both Springs (165) until both Shoes (597 & 785) grip Drum (156) firmly.

NOTE : The desired adjustment will permit Ram to come to a smooth sliding stop within 1/2 to 1 inch of travel.

CAUTION: Too tight an adjustment brings the Ram to an immediate, shuddering, dead stop which of course is hard on the machine.

WARNING: Never compress Springs (165) WITHOUT first backing off the Limit Bolt (598) which holds Shoes (597 & 785) apart since this will cock Shoes off center toward Springs' side causing excessive wear to the Linings (157) on the lower portion of Shoe (785). If this happens and is not detected the Lining (157) may wear through to the rivets which in turn will score the Drum (156) necessitating its replacement.

3. Re-adjust Limit Bolt (598) back in toward Opening Rod (857) until there is about 1/32" clearance between them when Brake is engaged. **INSURE THIS CLEARANCE IS MAINTAINED.**

CAUTION: The Rod (857) contacts the Limit Bolt (598) and thus opens or separates the Shoes as the Clutch is engaged. If the Limit Bolt (598) is too far away from the Rod (857) the Shoes will not open soon enough and fight the Clutch because the Lining is dragging on the Drum. This, of course, causes excessive Lining wear.

If Rod (857) is too close to the Limit Bolt (598) the Brake will grab too long after the Clutch completely disengages. This causes Ram to drift beyond desired stopping point.

4. Adjust Stop Bracket Bolt (1180) so that Shoes **do not cock off center** when Brake is released. Thus, when Shoes are opened there should be 1/16" to 1/8" clearance between the Lining and the Drum - **all around the Drum.**

CAUTION: Unequal clearance will cause excessive wear on Lining through dragging on release or grabbing too soon on braking. **INSURE THIS CLEARANCE IS MAINTAINED.**

5. Lock the adjustments by tightening the Jam Nut (860) on the Limit Bolt (598); and, the Jam Nut (1181) on the Stop Bracket Bolt (1180).

LINING REPLACEMENT:

The Brake Shoe Assembly is mounted on Cam Lever Brake Shoe Pin (853).

WARNING: Before removing Assembly insure that machine is inoperative with Ram at bottom of stroke, Clutch disengaged, Drive Motor off and Flywheel at rest; and, if Air Actuated, with Air off.

WARNING: Do not remove wire from or loosen screws which secure Shoe Pin to the Mounting Adaptor.

1. Back off Jam Nuts (859) on both Springs (165).
2. Remove fastening on Shoe Pin (853) and remove Brake Shoe Assembly.

CAUTION: If Air Actuated, disconnect Air Hose first.

3. Unscrew Spring Adj Bolts (169) and remove with Springs (165) to open Shoes completely so Linings can be easily replaced.
4. Insert chisel between Shoe and Lining, chisel off the Rivets, remove Linings and Rivets.
5. Clean all lubricant from Drum and Shoes. The new Linings must also be free from any lubricant.
6. Before installing Linings, radius all four edges which will contact surface of Drum to eliminate any "squealing" caused by rough edges.

7. Check surface of Drum to insure it is not scored as these score marks will cause excessive Lining wear.

CAUTION: Replace Drum if any score marks cannot be polished out. Do not turn down Drum to remove any bad scoring as this changes the Arcs of the Drum and Lining matching surfaces causing uneven Lining wear and inadequate braking; and, weakens Drum.

8. Fasten new Linings (free of any lubricant) to Shoes with Rivets supplied.

NOTE : When ordering replacement Linings please specify if the same kind of "Cherry Rivets" as originally used at factory are desired. To install these Rivets a special gun or adaptation of a "C" clamp is required. If these tools are not available the stem of the Cherry Rivet will have to be snipped off and removed so that the outer tube can be flared-over like the conventional type Rivet. If Cherry Rivets are not requested on replacements, the factory will furnish the conventional type with the Linings.

9. Re-insert Spring Adj Bolts (169) with Springs (165).
10. Remount Shoe Assembly on Shoe Pin (853) and refasten securely to Pin.

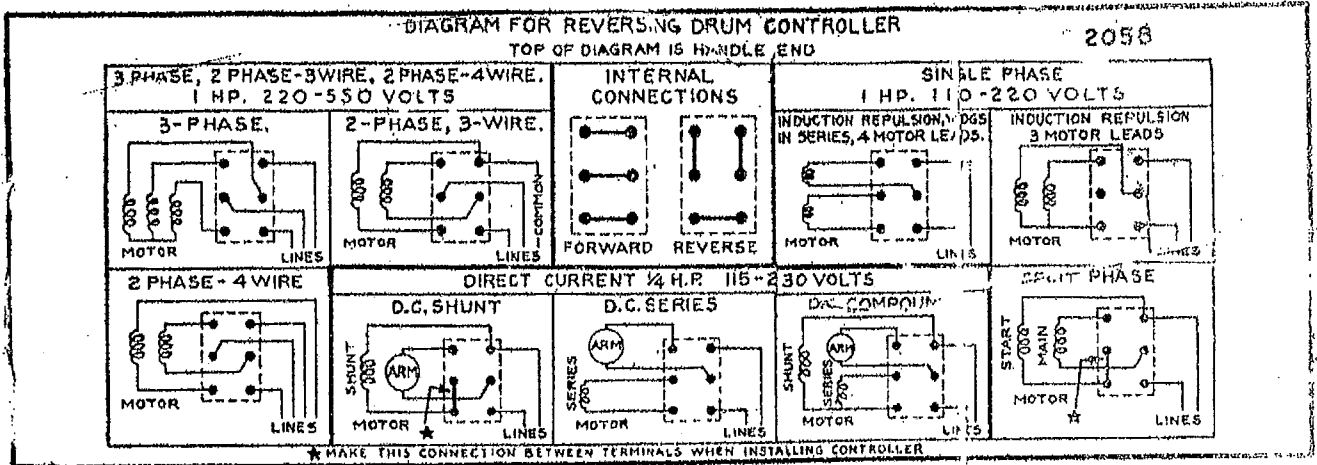
WARNING: Insure Shoe Pin set screws remain tightened and wired together, securing Pin to Mounting Adaptor.

CAUTION: If Air-Actuated, reconnect Air Hose.

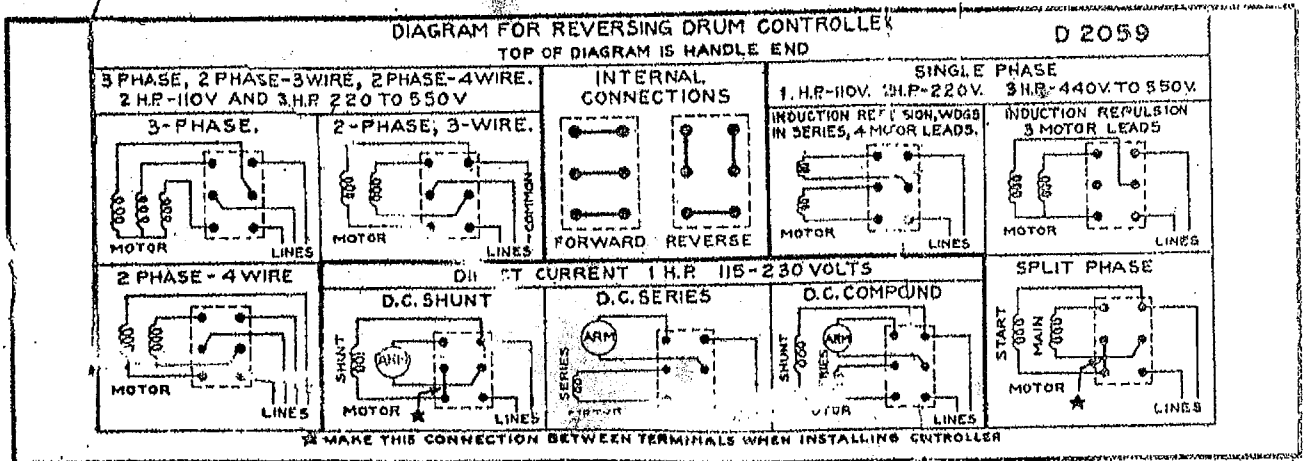
11. Adjust for proper breaking action as directed in "ADJUSTMENTS".

FURNAS ELECTRIC COMPANY

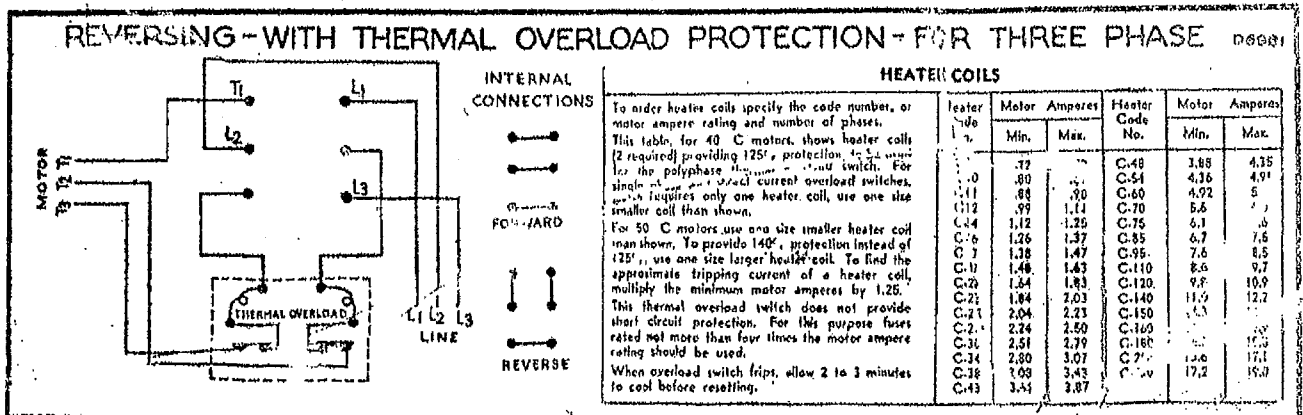
DRUM SWITCH MODEL NO R-1090-A

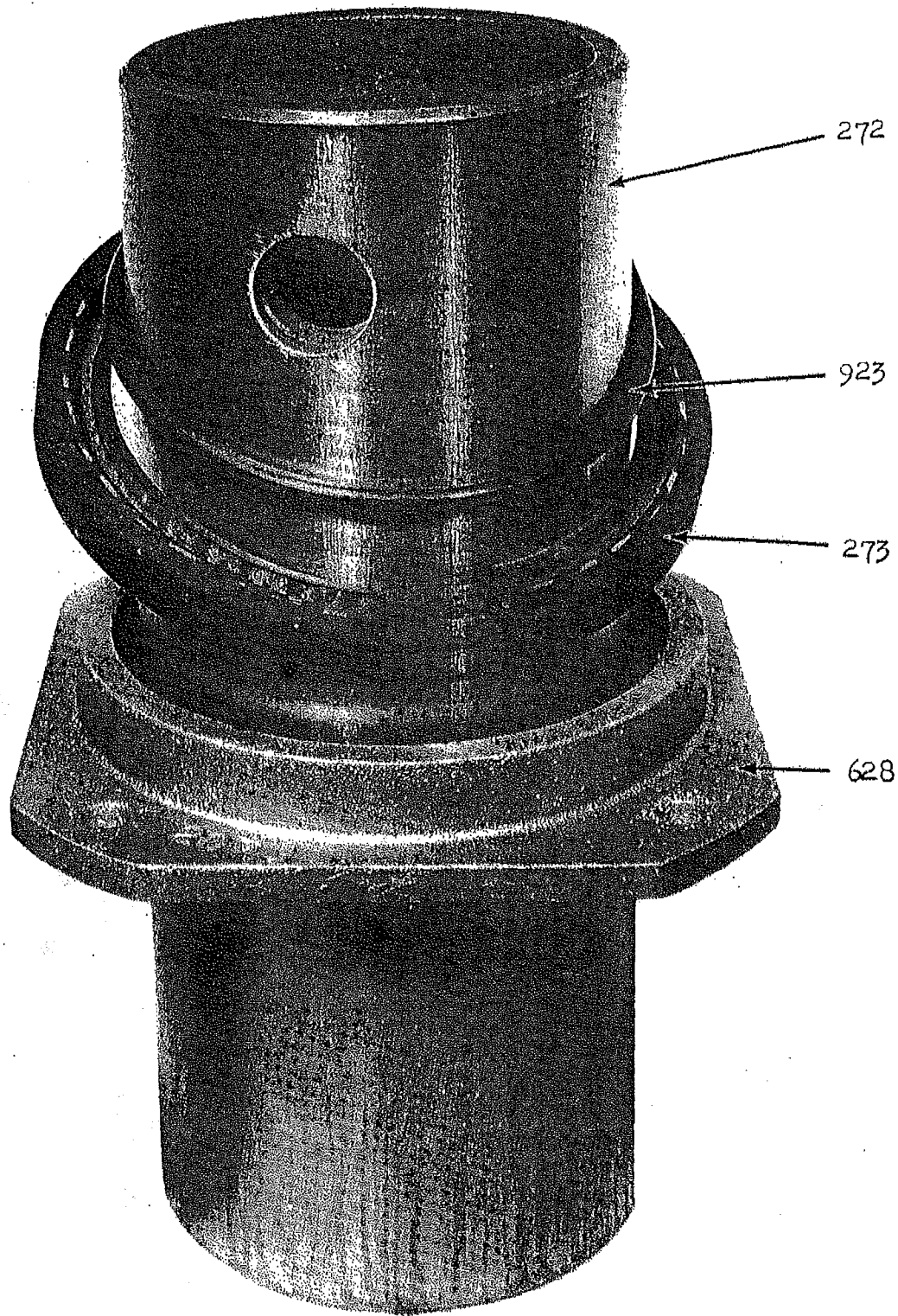


DRUM SWITCH MODEL NO J-2



DRUM SWITCH MODEL NO'S JT-2, JT-2105, JT-2513



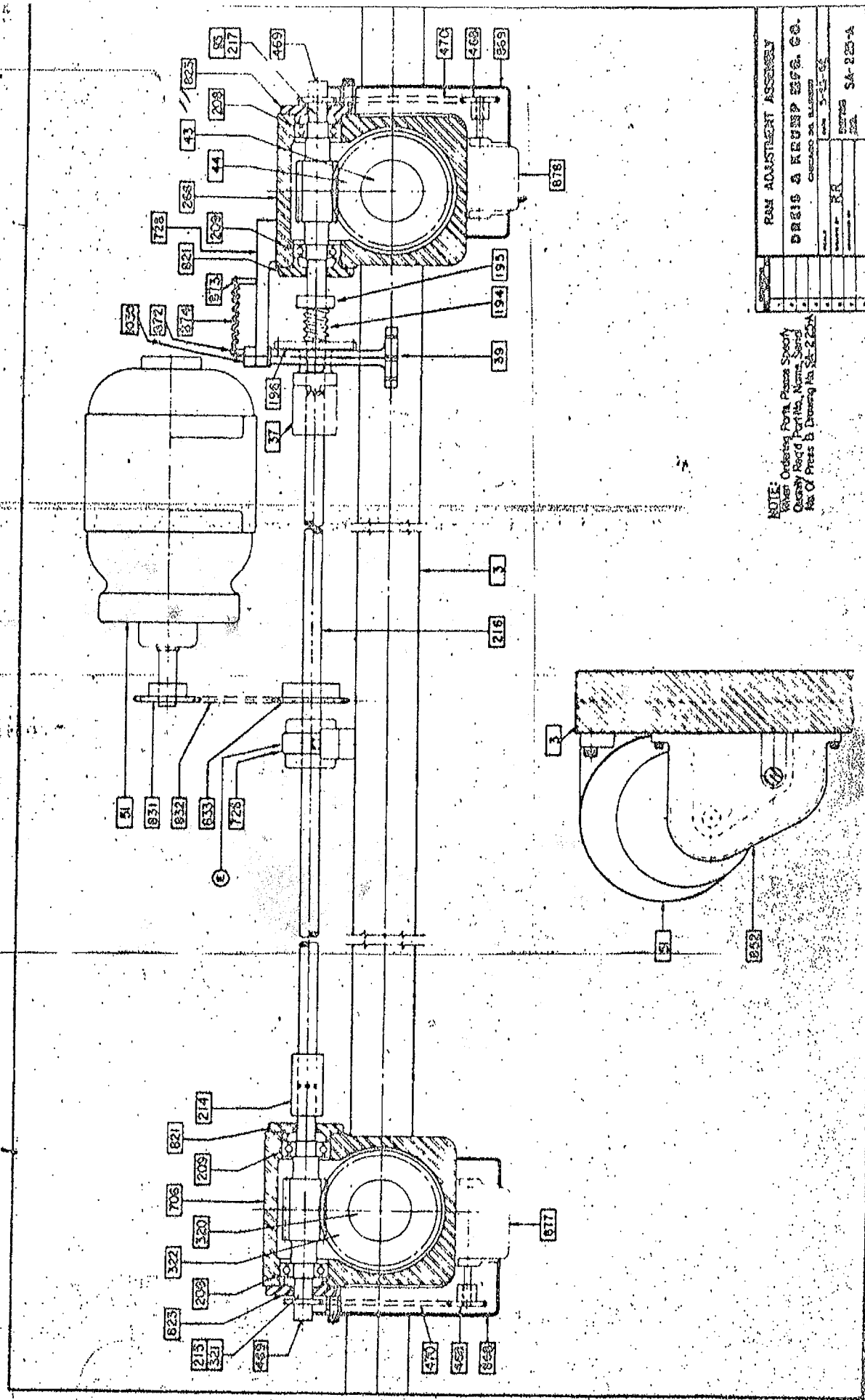


DK-1853.01



DREIS AND KRUMP MANUFACTURING COMPANY
7400 SOUTH LOOMIS BOULEVARD
CHICAGO, ILLINOIS 60636
TRiangle 4-1200





NOTE:
 When Ordering From Please Specify
 Capacity, Speed, Port Size, Name, Serial
 No. Of Parts B. Drawing No. SA-255-A

PUMP ADJUSTMENT ASSEMBLY	
DESIGNED BY	DR. E. B. KRUPP
CHECKED BY	DR. E. B. KRUPP
DATE	5-1-52
SCALE	SA-255-A

LUBRICATION CHART - "C/L" SERIES (STANDARD)

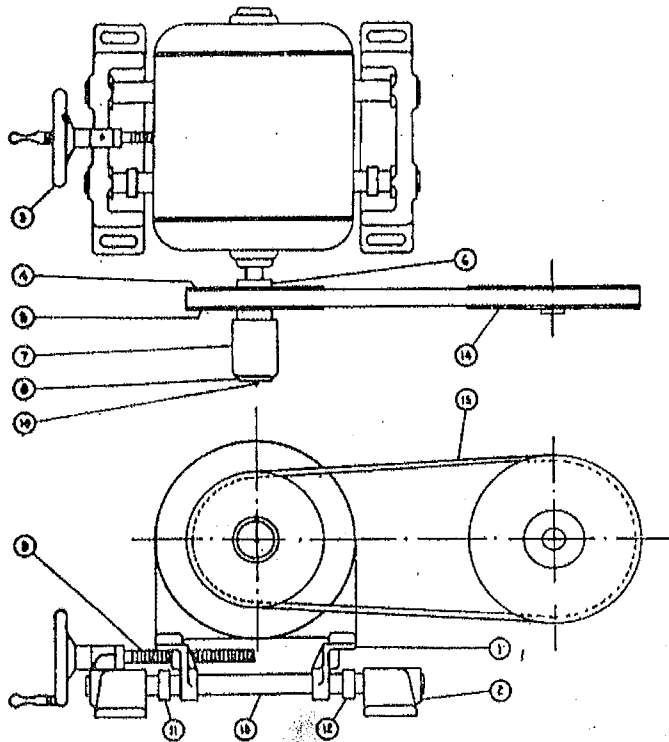
FREQUENCY SCHEDULE	MACHINE PART		DRAWING-FORM-PHOTO REFERENCE	METHOD OF APPLICATION	TYPE OF LUBRICANT		DRAWING SYMBOL
	NO.	NAME			SAE	SHELL OR OTHER EQUIVALENT	
Daily	132	Ram Counterbalance Cylinder	Dwg SA-175	Centralized System 1. Maintain reservoir oil level from one-half to full. 2. Remove filter twice a year and clean in gasoline. 3. Push handle up once for every 4 hours operation.	40	Shell Vitrea Oil 69 *	H
	313	Housing Gib	Dwg MA				
*	196/217	All Linkages Adj Shaft Clutch and Shaft	Dwg SA-225	Hand Applied	30	Shell Vitrea Oil 41 *	G
*	T/D-18G or 34G	Clutch Shifting Cone and Collar	Parts List on PMCD(MA-TD)-1	Pressure Grease Gun (Rotate adj screw up and down as grease is applied to it and to worm.)	--	Shell Alvania EP Grease-1	C
*	7	Drive Shaft (end)	Dwg MA & SA-224				
Weekly	43/320		Dwg MA				
	44/322	Ram Adj Screw, Worm & Gear	Dwg MA & SA-225				
	93/217		Dwg MA				
	215/321	Ram Adj Worm Brg	Dwg MA				
208/209	Knuckle Box - RH/LH						
266/706							
1000 Hours	36/65	Drive Shaft Brg - Outer/Inner	Dwg MA	Pressure Grease Gun	--	Shell Alvania EP Grease-1	B
	78	Flywheel Brg					
	8/319-275	Strap - RH/LH & Pin		Gear Box Oil Bath Before operating, fill with and maintain approximately 3 gals oil in RH Box and 3 1/2 gals oil in LH Box so Level in Sight Gauge shows half full.	90	Shell Mecoma Oil 72	I
	19/20	Main Gear/Pinion					
	21	Intermediate Gear					
	58/219	Inter Shaft Brg - Outer RH/LH					
	64/220	Inter Shaft Brg - Inner RH/LH					
	68	Gear Box					
	251/252	Main Gear Pin/Bushing					
	272/502	Plunger - RH/LH					
As Necessary	470	Ram Adj Indicator Chain	Dwg SA-225	Spray Can	--	Whitmore Open Chain Lube	E
	832	Ram Adj Motor Sprocket Chain					
	132	Ram Ctr Bal Cyl (Piston Rod)	Dwg SA-175	Pressure Grease Gun	--	Shell Alvania EP Grease-1	D
	853/857/876	Shoe Brake Pin/Rod/Roller	Dwg SA-223/224				
**	24	Drive Motor	----	Pressure Grease Gun	--	Shell Alvania EP Grease-1	-
	51	Ram Adj Motor	----	Permanently Greased by Supplier	--	--	-
	----	Norgren Air Line Lubricator	Form PRNL or PMLS (NOR)	Air Oil Feed Adj Screw set at factory for minimum flow of one drop per minute.	10	Shell Tellus 27	-

* Delete for Air Tube Clutch
** Delete for Air Tube Brake

* Corresponding grade of Shell Camea Oil may be used on West Coast.

INSTALLATION AND MAINTENANCE for **ROTO-CONE**®

Variable speed motor pulley



- | | | |
|----------------|-----------------------|-------------------|
| 1. MOTOR MOUNT | 6. SET SCREWS | 11. STOP COLLAR |
| 2. BAR SUPPORT | 7. SPRING COVER | 12. STOP COLLAR |
| 3. HANDWHEEL | 8. END CAP | 13. SLIDE ROD |
| 4. INNER DISC | 9. ADJUSTING SCREW | 14. DRIVEN SHEAVE |
| 5. OUTER DISC | 10. GREASE FITTING(S) | 15. BELT |

INSTALLATION

1. Bolt motor to mount 1 and turn the handwheel 3 to move motor to completely forward position.
2. Check motor shaft and key. Key length should be approximately same as the bore diameter. Tolerances on shaft extension diameters should be: $\frac{1}{4}$ " to $1\frac{1}{2}$ " inclusive $+.0000$ ", $-.0005$ "; $1\frac{3}{4}$ " to 2" inclusive $+.000$ ", $-.001$ ". Undersize shaft diameters will cause excessive vibration.
3. Mount ROTO-CONE pulley on motor shaft and tighten the two set screws 6 at the end of pulley shaft, then LUBRICATE through grease fitting(s) 10 until grease appears at opposite end of pulley shaft. In mounting, do not strike pulley disc 5 or exert undue force.
4. Wedge open the ROTO-CONE Pulley to allow the belt sufficient space to pass easily into the pulley and over the driven sheave. Avoid prying the belt.
5. Align ROTO-CONE Pulley and driven sheave and bolt feet of bar support 2 in position. *Alignment must be accurate* to avoid undue belt vibration and wear.
6. Turn on motor and turn handwheel until belt is at maximum speed position. Set stop collar 12 at this position.
7. Turn handwheel until belt is at minimum speed position . . . just above the hub but not touching . . . and set stop collar 11 at this position.

MAINTENANCE

1. The faces of the discs and belt should be kept clean and free from grease or other liquids.
2. Whenever possible, the pulley should be run through its speed range each day in order to renew the lubricant on all working surfaces.
3. If the pulley acts sluggish, that is, it does not close fast enough, it should be flushed out thoroughly with kerosene.

To FLUSH PULLEY . . . With pulley mounted on motor shaft or an arbor, force kerosene from a grease gun through the grease fitting(s) 10 until the kerosene flows from the various openings in the pulley. Open and close pulley several times to make sure the kerosene reaches all gummy or caked grease. Remove pulley from shaft and drain all kerosene. Relubricate with the proper lubricant.

4. The pulley should be flushed out approximately once every six months to remove any accumulation of dirt or old grease.

LUBRICATION

This pulley is guaranteed for workmanship and material. The manufacturer will not be held responsible for failures when greasing instructions are not followed.

1. Position outer edge of belt approximately flush with outside diameter of pulley disc.
2. Lubricate through fitting(s) 10 until sufficient lubricant has been applied. (Be sure grease gun is not pumping air.)
3. Run belt to minimum pitch diameter and return. If sufficient lubricant has been applied, a film of grease will be deposited on the motor end of the pulley shaft. Repeat until grease is indicated.
4. Lubricate regularly every week. Do not lubricate excessively.

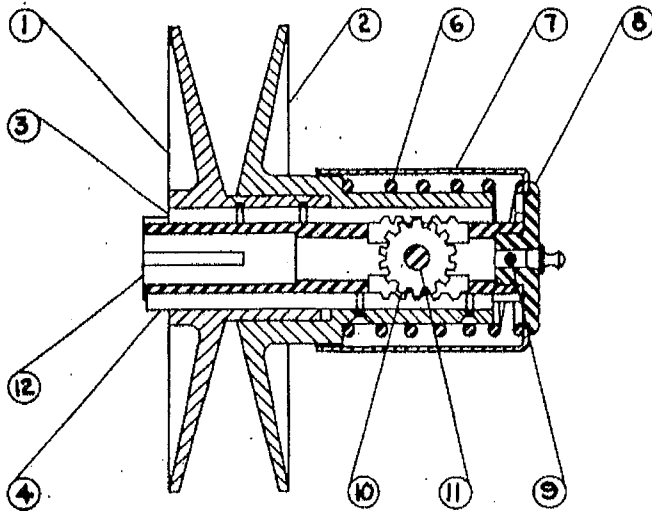
The lubricant to be used should be a neutral mineral grease, free of acid, alkali, or sulphur. The following is a list of recommended greases.

All Pulleys are Pre-lubricated
at the Factory with Lubriplate No. 107

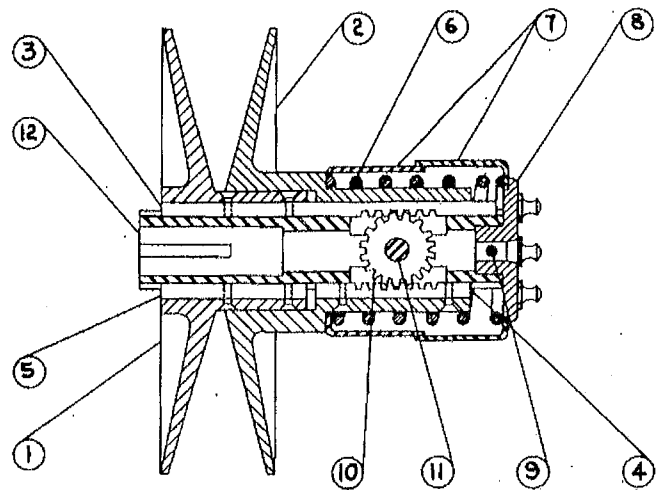
MANUFACTURER	TRADE NAME of GREASE
FISKE BROTHERS REFINING CO.	Lubriplate No. 107
ATLANTIC REFINING COMPANY.	Atlantic Lubricant 54
GULF REFINING COMPANY.	Precision Grease No. 2
SINCLAIR REFINING COMPANY.	Sincolube No. 2
SHELL OIL COMPANY.	Alvania Grease No. 2
STANDARD OF CALIFORNIA.	Shevron SA Grease 2

GERBING manufacturing corporation

ELGIN, ILLINOIS



Spring Loaded Pulleys
No. 55, 60, and 75



Spring Loaded Pulleys
No. 80, 100, 105, 125, 1310 and 1315

All pulleys are dynamically balanced therefore before disassembling mark all parts so they can be reassembled in the same relative position. If either disc is replaced the pulley should be rebalanced.

TO DISASSEMBLE:

- (A) - Depress spring cover (7) until end cap pin (9) is accessible. CAUTION - SPRING TENSION MAY BE AS HIGH AS 400 LBS. USE EXTREME CARE.
- (B) - Drive end cap pin (9) out with a punch and remove end cap (8), spring cover (7) and spring (6).
- (C) - Remove cap screws (four cap screws in #55 thru #75 pulleys; six cap screws in #80 thru #1315 pulleys).

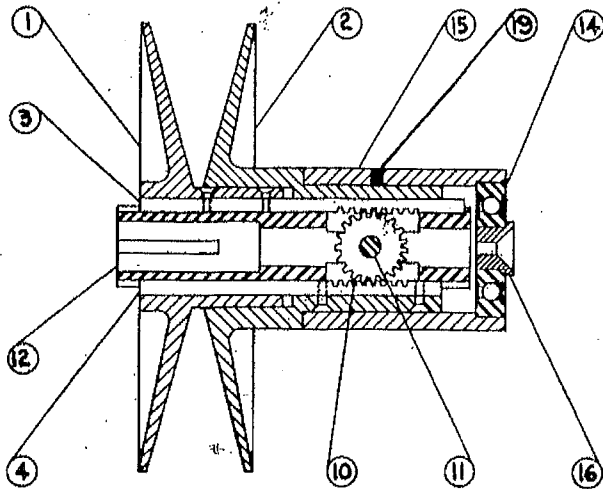
TO ASSEMBLE Pulley #55 thru #75

- (A) Insert gear (10) in slot in shaft (12) and insert gear pin (11). Be sure gear pin (11) is not protruding beyond periphery of shaft (12).
- (B) Place inner disc rack (3) in keyway of shaft (12) and locate approximately flush with bore end of shaft (12).
- (C) Place outer disc rack (4) in opposite keyway so that it is approximately flush with back end of shaft (12).
- (D) Insert this assembly into bore of inner disc (1) and insert and tighten two cap screws.
- (E) Slide outer disc (2) over back end of shaft (12) and insert and tighten two cap screws.
- (F) To mount spring (6), spring cover (7) and end cap (8) reverse procedure outlined under "TO DISASSEMBLE". After inserting end cap pin (9) be sure it does not protrude beyond periphery of shaft (12). BEFORE RUNNING PULLEY MAKE SURE IT IS THOROUGHLY GREASED.

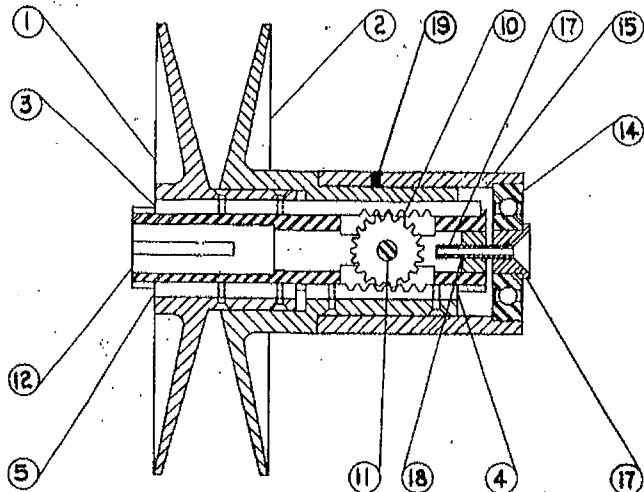
TO ASSEMBLE Pulley #80 thru #1315

- (A) Insert gear (10) in slot in shaft (12) and insert gear pin (11). Be sure gear pin (11) does not protrude beyond periphery of shaft (12).
- (B) Fasten inner disc key (5) to inner disc (1) with two cap screws.
- (C) Place inner disc rack (3) in keyway of shaft (12) and slide this assembly into bore of inner disc. Insert and tighten two cap screws.
- (D) Locate inner disc (1) approximately flush with bore end of shaft (12). Place outer disc rack (4) in keyway of shaft (12) so that it is approximately flush with back end of shaft (12).
- (E) Slide outer disc (2) over back end of shaft (12) and insert and tighten two cap screws.
- (F) To mount spring (6), spring cover (7) and end cap (8) reverse procedure outlined under "TO DISASSEMBLE". After inserting end cap pin (9) be sure it does not protrude beyond the periphery of shaft (12). BEFORE RUNNING PULLEY MAKE SURE IT IS THOROUGHLY GREASED.

ASSEMBLY AND DISASSEMBLY INSTRUCTIONS
FOR ROTO-CONE PULLEYS - TYPE A



Mechanically Operated Pulleys
No. 55A, 60A and 75A



Mechanically Operated Pulleys
No. 80A, 100A, 105A, 125A and 1315A

All pulleys are dynamically balanced therefore before disassembling mark all parts so they can be reassembled in the same relative position. If either disc is replaced the pulley should be rebalanced.

TO DISASSEMBLE:

- (A) - Loosen set screw (19) and remove bearing housing (15).
- (B) - Remove cap screws (four cap screws in #55A thru #75A pulleys; six cap screws in #80A thru #1315A pulleys)

TO ASSEMBLE Pulley #80A thru #1315A

- (A) Insert gear (10) in slot in shaft (12) and insert gear pin (11). Be sure gear pin (11) is not protruding beyond periphery of shaft (12).
 - (B) Place inner disc rack (3) in keyway of shaft (12) and locate approximately flush with bore end of shaft (12).
 - (C) Place outer disc rack (4) in opposite keyway so that it is approximately flush with back end of shaft (12).
 - (D) Insert this assembly into bore of inner disc (1) and insert and tighten two cap screws.
 - (E) Slide outer disc (2) over back end of shaft (12) and insert and tighten two cap screws.
 - (F) Slide bearing housing (15) over outer disc and tighten set screw (18).
- BEFORE RUNNING PULLEY MAKE SURE IT IS THOROUGHLY GREASED.

TO ASSEMBLE Pulley #55A thru #75A

- (A) Insert gear (10) in slot in shaft (12) and insert gear pin (11). Be sure gear pin (11) does not protrude beyond periphery of shaft (12).
 - (B) Fasten inner disc key (5) to inner disc (1) with two cap screws.
 - (C) Place inner disc rack (3) in keyway of shaft (12) and slide this assembly into bore of inner disc. Insert and tighten two cap screws.
 - (D) Locate inner disc (1) approximately flush with bore end of shaft (12). Place outer disc rack (4) in keyway of shaft (12) so that it is approximately flush with back end of shaft (12).
 - (E) Slide outer disc (2) over back end of shaft (12) and insert and tighten two cap screws.
 - (F) Slide bearing housing over outer disc and tighten set screw (18).
- BEFORE RUNNING PULLEY MAKE SURE IT IS THOROUGHLY GREASED.

before
it's
too late



BULLETIN S-66

MECHANICAL PRESS & PRESS BRAKE
POINT - OF - OPERATION
SAFETY

DREIS & KRUMP MANUFACTURING CO.
7400 S. Loomis Boulevard - Chicago, Illinois 60636
(312) TR 4-1200



OPERATIONAL SAFETY

BEFORE OPERATING MACHINE OBTAIN (AND UNDERSTAND) OPERATING AND SAFETY INSTRUCTIONS FROM YOUR EMPLOYER

Providing safe and proper working conditions and point of operation safety devices consistent with the use and operation of the machine are determinations to be made by, and the sole responsibility of, the user of the machine.

The user should familiarize himself with point of operation safety devices that are in common usage in the industry and equip the machine with such devices as are consistent with the user's operation of the machine. The user of the machine should specifically instruct all operating and maintaining personnel on the proper operating and maintenance instructions contained in operator's manual.

The following points and suggestions set forth herein are offered as an aid to the user in perfecting his responsibilities and are not intended to be complete or specific, nor to be relied upon exclusively by the user.

Tools should be designed with safety in mind and in many instances tools should be redesigned for safety.

The user must make the determination as to whether to use mechanical safety devices. Parts and stock feeding, from a safety standpoint, is best accom-

plished by mechanical means. Suitable feeds generally offer the best protection to operators and helpers, since it removes their persons from pinch-points on the machine or dies. Where mechanical feeds are considered impractical, whatever the reason might be, operators and helpers must be furnished with suitable handling devices such as tongs, suction cups, etc. Where this becomes impractical, a means should be provided for guaranteeing that no portion of the operators and helpers' persons should be exposed to hazard, by furnishing them with pull backs, extractors, die space safety devices, etc. The user alone, being most intimately familiar with the operation, must judge as to what is practical or impractical.

Due to the innumerable combination of tools, dies, feeds and feeding devices with which it is possible to equip the machine, the user must furnish as part of his tooling and dies those devices that best satisfy safe operation, considering the tools and dies being used. The following list of manufacturers of point of operation safety devices is not all inclusive and should not be construed as a recommendation or an approval by Dreis and Krump Manufacturing Company of the products themselves, nor their application or adaptability to any particular operation. We feel that several sources should be contacted for the best possible solution of the user's problems.

Data is also available from:

Local Safety Councils
National Safety Council
State Departments of Labor
United States Department of Labor
National Machine Tool Builders Association
Association of Casualty and Surety Companies



POINT OF OPERATION SAFETY DEVICES

Manufacturers (as listed in "BEST'S SAFETY MAINTENANCE DIRECTORY" 10th edition) Alfred M. Best, Inc. Post Office Box 600 Morristown, New Jersey	PRESS FEEDS				SLIDE	SUCTION CUP FEEDING TOOL	MAGNETIC FEEDING TOOL	TONG & PLIER TYPE FEEDING TOOL	MISCL. DEVICES	DIE SPACE DEVICES	CONTROLS	PULL BACKS & EXTRACTORS
	DIAL	ROLL	HOPPER	SHUTTLE								
American Actuator Corp. Press Automation Systems Inc. Benchmaster Mfg. Co. Perkins Machine Co. Air-Lock Eng. Co.	X X	X X X	X	X	X X	X	X X	X			X X X	
Cooper Weymouth Inc. H. E. Dickerman Mfg. Co. Durant Tool Co. Frank W. Egan & Co. Magni-Power Co. Inc.		X X X X		X X X	X X		X X		X X		X	
L. M. Lind Engineering F. J. Littel Machine Co. W. I. Martin & Co. Osborn Mfg. Co. Searjeant Metal Products Inc.		X				X X X X	X X X	X X X	X	X	X X	
Jess-Power Co. Inc. Permag Corp. Ullman Devices Corp. Atlantic India Rubber Works Inc. Industria Products Co.						X X	X X X					
Pendergast Safety Equipment Co. Magline Inc. Wolverine Tool Co. American Allsafe Co. Inc. John Humm Safety Equipment Corp.						X		X X	X	X	X X X	X
Clark Controller Co. Micro-Switch Div. of Honeywell Tape Switch Corp. of America A. Schraeder's Son Westinghouse Air Brake											X X X X X	
Junkin Safety Appliance Co. Inc. Safeguard Mfg. Co. Positive Safety Mfg. Co. A-1 Safety Supply Co. Inc. D & M Guard Co.										X X		X X X
Globe Products Corp. Shur-Safety Mfg. Co. Wiesman Mfg. Co. Inc. Luther Mfg. Co. Inc. Falstrom Co.									X X X X X			
Security Control Inc. Wintriss Controls Homestead Valve Mfg. Co. Parker-Hannifin Corp. Dilley Mfg. Co.									X		X X X	
Mine Safety Appliances Co. Mannis Winch & Steel Co. Inc. Acme Wire & Iron Works Kirk & Blum Mfg. Co.									X X X X			

KEEP OUT!!!
PRESS BRAKES NEVER REACH OUT TO HARM ANYONE
BUT
WHEN YOU REACH IN, ACCIDENTS CAN HAPPEN

SAFETY PROCEDURES

1. DO NOT eliminate or by-pass any of the safety devices installed on the machine.
2. DO NOT place fingers, hands, arms, elbows, heads (or even feet) in the dangerous die area or near any other moving part except the hand rail on forming press brakes. Use rail whenever possible for support.
3. ALWAYS use safety tools for loading and unloading, especially in narrow forming, piercing and notching operations.
4. ALWAYS provide palm buttons for each operator and helper to ensure that all hands are on the operating buttons, out of danger on the down-stroke of the ram. (This of course, requires an air-electric control to operate the machine.)
5. ALWAYS use protective hoods for foot pedals of treadle-actuated machines. NEVER use more than one pedal per machine.

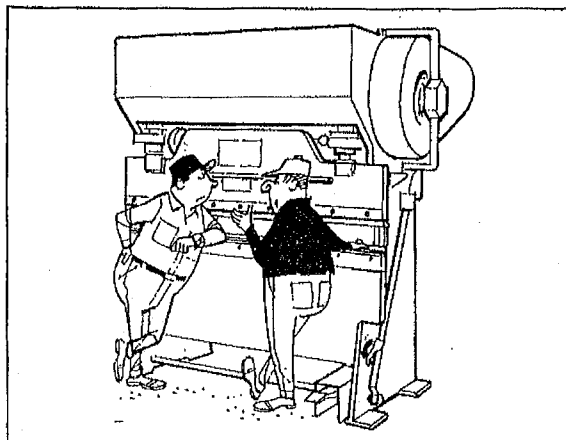


FIGURE 26. NEVER PLACE HANDS OR FINGERS IN THE DANGEROUS DIE AREA

6. NEVER "tie down" clutch actuating devices to provide continuous operation.
7. DO NOT tamper with factory-wired setting of any air pressure safety valve.

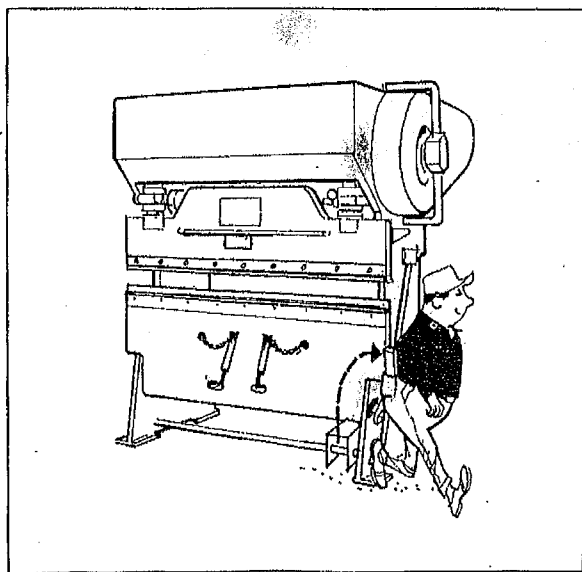


FIGURE 25. ALWAYS REMOVE FOOT PEDAL WHEN MACHINES ARE NOT TO BE OPERATED

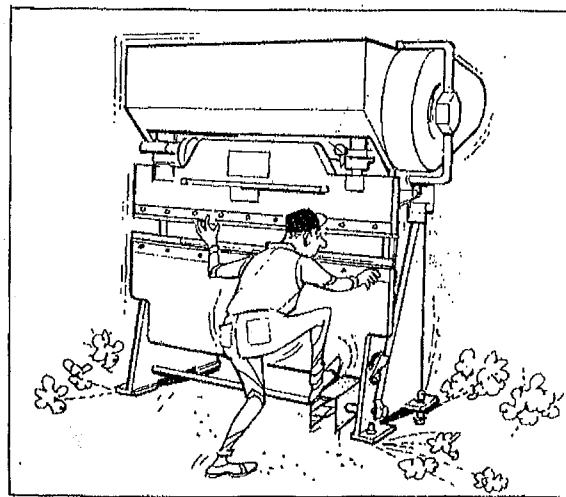


FIGURE 27. NEVER OPERATE MACHINE ON LEVELING SCREWS OR SKIDS



8. ALWAYS leave ram at bottom of stroke, when not operating the machine.
9. ALWAYS engage treadle safety lock and remove foot pedal when treadle-actuated machines are not to be operated.
10. ALWAYS leave selector switches in safest position and remove keys when machines are not to be operated. (See figure 30.)
11. ALWAYS disengage clutch, stop drive motor, open disconnect switch and allow flywheel to come to rest before making any adjustments, repairs, replacements or leaving machine.
12. NEVER rotate flywheel under power unless flywheel and clutch covers are in place.
13. NEVER use ram adjustment mechanism to release ram when dies are jammed at bottom of stroke.
14. NEVER stand or sit on anything while feeding machine lest you fall, slip or stumble into die area under ram.
15. NEVER store die bars, or the like, in gap of machine lest they fall out and upend into the ram stroke area.
16. NEVER operate machine on leveling screws or skids. Bolt securely and directly to foundation.
17. PROTECT auxiliary shop equipment so as to preclude any hazard to the operation of a machine. Eg- Provide skirts around the bottom of stools and rolling loading tables so they cannot jam the actuating mechanism of any machine.
18. NEVER let the rhythm of an operation lull you into carelessness or over-confidence.
19. NEVER remove WARNING PLATE, OPERATOR'S MANUAL or WORK HANDLING TOOLS from machine.
20. SEE precautions in SETTING DIES section, in addition to the procedures listed above.

DAILY CHECKS

The user should determine that the use of the machine on any particular day's operations does not require a change in point of operation safety devices before proceeding with other daily checks.

If the use of the machine or the tools, or the dies, have changed the operation safety requirements, that determination should first be made and appropriate devices should be fixed or attached to the machine before the day's operations are commenced.

ALL MACHINES

1. Before closing disconnect switch to turn on power, clean machine and inspect carefully for loose, worn, damaged, or broken parts, paying particular attention to linkages, oil lines, belts, springs and chains.
2. Inspect machine and dies for safe, operable condition. Remove tools, parts, etc., from working area. Check tightness of tooling and attaching parts on ram clamp bars, die holders, clamps, and all bolts and lock nuts.
3. Check operating devices and guards for proper placement, adjustment, and condition.
4. Check clutch and brake for proper operation.
5. Maintain close inspection of machine operation for overloading. Accidental or intentional operation above the maximum rated capacity results in excessive wear and abuse of machines and dies.
6. Report any questionable operation or unusual action of the machine to proper persons. Report any increasingly excessive bearing and gear noise.

NOTE: Capacity is based upon an evenly distributed load over the full length of the machine.

AIR-ELECTRIC CONTROLLED MACHINES

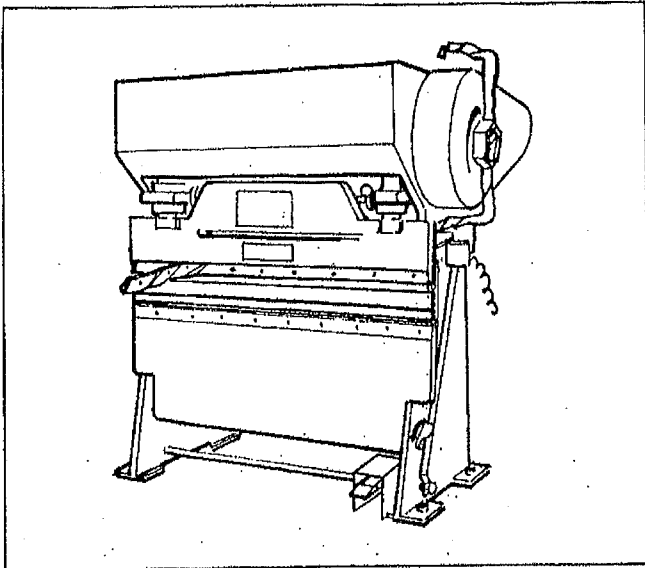


FIGURE 28. CAREFULLY INSPECT MACHINE FOR DAMAGE

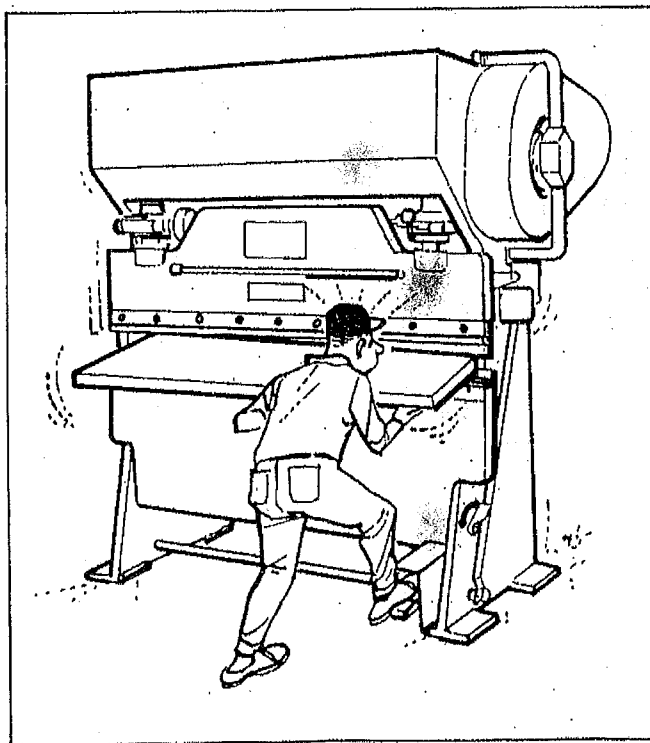


FIGURE 29. DO NOT OVERLOAD MACHINE

	DRIVE MOTORS "Forward" position-for proper rotation.
	RAM ADJUSTMENT MOTORS OFF position - so die settings are not disturbed.
	RAM CYCLE CONTROL INCH or ONCE position - to guard against inadvertent continuous operation.
	CLUTCH OPERATING STATION CONTROL USE position - to prevent inadvertent operation by a single station (in a multiple station arrangement).

FIGURE 30. KEYLOCK SELECTOR SWITCHES (SAFEST POSITION-KEYS REMOVED)

1. At start of every shift check the action of clutch and brake; and, correct ram cycle sequence in response to the various selector switch settings on the control panel, (INCH, ONCE, CONT, HI, HI-LO, LO, HI-STOP-LO).

If equipment does not function properly; or, if in operation the machine will not recycle after completing its selected cycle sequence, have maintenance man check electrical and air circuits as described in Maintenance Section.

2. Check air pressure gauge to ensure that the recommended pressure is being supplied and is adequate; or, if pressure should be varied for the particular operating condition.
3. Selector switch locking keys should be used by authorized persons only, and removed by them when no longer required for the operation, thus leaving switches in "safest" position.

NOTE: Keys can only be removed from selector switches in the safest position. (See typical examples in figure 30.)

4. After each inoperative period check all the key lock selector switches for proper position. Regardless of how short a period of time a machine is left unattended, upon an operators return he must check the position of the switches.
5. Do not attempt to circumvent the safety function of a two "RUN" button clutch operating station to permit operation with one hand.



MAINTENANCE SAFETY CHECKS

WARNING: Always disengage clutch to leave ram at bottom of stroke, turn off drive motor, open disconnect switch and allow flywheel to come to rest before attempting any inspection, repair or replacement.

ALL MACHINES

1. **BEARINGS.** Check bronze-bushed bearings for excessive wear and looseness; Replace worn bearings. Check anti-friction bearings for increasingly excessive noise and feel bearing housings for heat too hot for hand to rest on as symptomatic of possible trouble.
2. **BRAKE.** Check for lining wear, spring tension, shoe cocking, proper release and application. Check that unit is securely mounted.
3. **CAP SCREWS.** Check all cap screws and attaching parts for proper tightness, paying particular attention to the bed, flange bearings, and pitmans.
4. **CLUTCH.** Check for proper operation in engaging and disengaging. Operation must be smooth and positive.
5. **DRIVE GEARS AND TAPER KEYS.** Check gears, pinions and keys for evidence of wear and for tightness.
6. **DRIVE MOTOR.** Check for overheating.
7. **FLYWHEEL.** Check direction of rotation, and if free-running.
8. **GIBS.** Check gibs for proper clearance.
9. **GUARDS.** Inspect covers on moving parts for proper installation. Repair or replace if damaged. Report any conditions that would require additional operational guards. Report any by-passing of guards and safety devices by operators.
10. **LEVELNESS.** Check machine left to right and front to back. Check if secured to foundation.
11. **LINKAGE.** Inspect for loose, worn, damaged, or broken parts, especially springs, pins and retaining rings.
12. **LUBRICATION.** Check and lubricate according to chart.
13. **RAM ADJUSTMENT.** Check operation of any limit switches for maximum travel of adjustment screws. Check ram adjustment control box wiring for any changes that might impair operation of limit switches. Check adjustment screw action and threads for damage or foreign matter that might impair their operation.
14. **RAM CONNECTIONS.** Check for excessive play-clearance.
15. **RAM COUNTERBALANCE.** Check set screws on clevis-piston connection. Ensure adequate and constant air pressure is being supplied.
16. **RAM CYCLING.** Check for binding action.
17. **SAFETY VALVES.** Check for tampering with factory-wired setting of any air pressure safety valve.
18. **SHARP DIE EDGES.** Examine dies (when installed) for sharp edges and pinch points which may have developed as a result of use to prevent injury to operators and machine.

AIR EQUIPMENT

1. **CONNECTIONS.** Check for leakage and condition of fittings.
2. **GAUGES.** Check for proper pressure settings.
3. **LUBRICATOR.** Check and replenish oil supply. Clean filters.
4. **SUPPLY.** Ensure adequate and constant.
5. **VALVE AND SOLENOID.** Check for proper operation.

ELECTRICAL EQUIPMENT

WARNING: Replace components whenever doubtful about operating condition. Ensure components are always "clean" and free of oil, water etc., to lengthen service life. Check components at least once every two months.

COILS. Check solenoid, starter and relay operating coils for burn spots which indicate shorted turns in windings.

CONTROLS. Before each operating shift, check condition and operation response of panel selectors and push buttons, palm button and foot switch operating stations, as well as lever and rotary cam limit switches.

CAUTION: Report any unauthorized use of selector keys to supervision which controls their use for your own safety.

COVERS. Never leave covers off components.

DEVICES. Check operating devices for damage, binding and mounting. Ensure that limit switches function properly and are not worn or damaged. Check chain drive, sprockets etc. used with rotary cam limit switches. Ensure switch contacts are "clean".

FITTINGS. Tighten loose screws, nuts, washers, pins etc. and replace those that are missing. Check cords and conduit for damage, especially at fittings. Replace loose and burned wires.

MOTORS. Blow-out periodically with "clean" compressed air. Remove relief plug when greasing (per LUBE instructions) to prevent excess grease from damaging windings. Check bearings for heat and noise which indicate wear.

RELAYS. Check for burning, pitting, and, for metal dust in enclosure which indicates wear. Check for drag or binding when manually operated. Ensure helper springs have not lost tension through over-heating.

TRANSFORMERS. Check for excessive heat. Ensure control circuit fuse never exceeds capacity of transformer.



SETTING DIES AND RAM ADJUSTMENT

SAFETY PROCEDURES

1. Read and understand OPERATION section of operator's manual (including OPERATIONAL SAFETY) regarding proper operation of controls.
2. Before attempting to set dies, disengage clutch to leave ram at very bottom of stroke, shut off drive motor, open disconnect switch, and allow flywheel to come to rest.

On air-electric clutch controlled machines, turn clutch control switch to OFF and remove all foot switches from operating area.

On mechanical clutch controlled machines, engage treadle safety lock and remove foot pedal from operating area.

3. Clean bolster plate, dies, bed, and ram surfaces, before installing dies.
4. Fasten ram clamp bars, die holder and bolster plates firmly to machine. Bolts must be in good condition.
5. Do not install worn or damaged dies. Use proper and safe die for machine size to prevent overloading damage to machine and dies.

WARNING: Inadequate die opening is one of the primary causes of operational trouble and hazard.

6. Clamp dies to bolster plate with sufficient bolts of the proper size to hold dies firmly in position. Clamp forming dies securely in ram clamp bars and die holder.
7. Before cycling machine, perform all necessary adjustments during and after die installation.
8. Observe machine operation to determine machine is working properly.
9. Do not leave tools, bolts or other obstructions in or near the die area.