TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST

FOR

SHEARING MACHINE
(NSN 3445-00-277-9100)
LODGE AND SHIPLEY CO.

HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1981

SAFETY PRECAUTIONS

WARNING: Each every one of the following items must be observed at all times for safe operation of this machine.

1 - Study this manual before attempting to operate this Shear.
2 - All guards should be secured in place before the machine is put in operation.
3 - Never place fingers under or behind the finger guard.
4 - Be sure Shear table is clear of tools, pieces of material, etc., before actuating Shear.
5 - Check behind Shear before making a cut to be sure no one is removing material or is under the back gauge.
6 - Never shear material between holddowns. Be sure to use at least one holddown.
7 - When shearing narrow strips under one holddown, the holddown should be adjusted to the “far away” position. Place hands on top of material to prevent fingers in case material tips up during shearing cycle.
8 - When feeding material into the shear, place hands on top of the material at the position of the hand slots.
9 - Never operate the machine buy tying down the foot switch.
10 - Always be aware of the location of the foot switch so that it is not accidentally tripped.
11 - Always turn the clutch selector switch to “OFF” when leaving the operator’s station or when material is being removed from behind or in front of the Shear.
12 - Be sure the main drive motor is “OFF” and the flywheel has stopped before making adjustments or performing maintenance of any kind.
13 - Never shear material beyond the rated capacity as shown on the capacity plate affixed to the front of the machine.
14 - Never shear material with the clutch selector switch in the “JOG” position.
15 - Be alert for loose, worn or broken parts. Report these items and any unusual noise or action of the machine to your supervisor.
16 - Keep machine properly maintained. Perform all operator’s maintenance as suggested in this manual. All other maintenance should be performed by authorized personnel only.
17 - Keep the machine clean.
18 - In order to clearly show details of this machine, some covers, shields, doors or guards have either been removed or shown in an “open” position. Be sure all such protective devices are properly installed before operating this equipment.

Technical Manual
No. 9-344465-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *31 July 1981*

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS LIST

FOR

SHEARING MACHINE
(NSN 3445-00-277-9100)

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located In the back of this manual direct to: Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished directly to you.

NOTE

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom this equipment is issued.

Manufactured by: Lodge & Shipley Co.,
3055 Colerain
Cincinnati, OH 45225

Procured under Contract No. DAA09-79-C-452

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

INSTRUCTIONS FOR REQUISITIONING PARTS

NOT IDENTIFIED BY NSN

When requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer.

1 - Manufacturer's Federal Supply Code Number - 80315

2 - Manufacturer's Part Number exactly as listed herein.

3 - Nomenclature exactly as listed herein, including dimensions, if necessary.

4 - Manufacturer's Model Number -

5 - Manufacturer's Serial Number (End Item)

6 - Any other information such as Type, Frame Number, and Electrical Characteristics, if applicable.

7 - If DD Form 1348 is used, fill in all blocks except 4:5. 6, and Remarks field in accordance with AR 725-50.

Complete Form as Follows:

(a) In blocks 4, 5, 6, list manufacturer's Federal Supply Code Number - 80315 followed by a colon and manufacturer's Part Number for the repair part.

(b) Complete Remarks field as follows:
Noun: (nomenclature of repair part)
For: NSN: 3445-00-277-9100
Manufacturer: Lodge & Shipley Co.

Model:
Serial: (of end item)

Any other pertinent information such as Frame
Number, Type, Dimensions, etc.

OPERATOR'S MANUAL

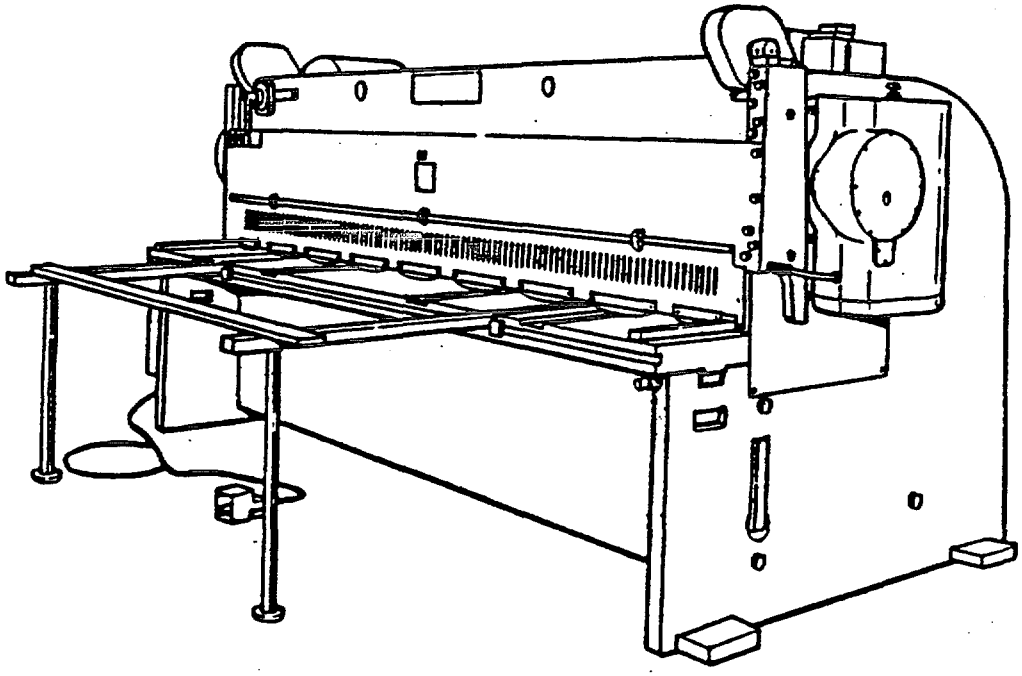
POWER SQUARING SHEARS

SERIES 0300

This manual was written to instruct the operator of a Power Squaring Shear in the proper care and operation of his machine. At the time of writing, the manual was completely up-to-date; however, due to continual improvement in design, it is possible that some descriptions may vary slightly from the machine delivered to you. This would imply nothing more than the fact that the machine has been improved to better fulfill your requirements.

Shears are classified as to series in connection with their constructions, features, standard equipment and general specifications. All shears in the same series are Similar in these respects. Note the series in which your particular model shear is listed as references in this manual pertain to series not model or capacity.

Series	Series	Series	Series	Series	Series
0200	0300	0400	0600	0800	1000
0204	0214	0314	0414	0614	1006
0206	0216	0404	0416	0616	1008
0208	0304	0406	0604	0806	1010
0210	0306	0408	0606	0808	1012
0212	0308	0410	0608	0810	
0310	0412	0610	0812		
	0312	0606H	0612		
	0406-H		0806-H		



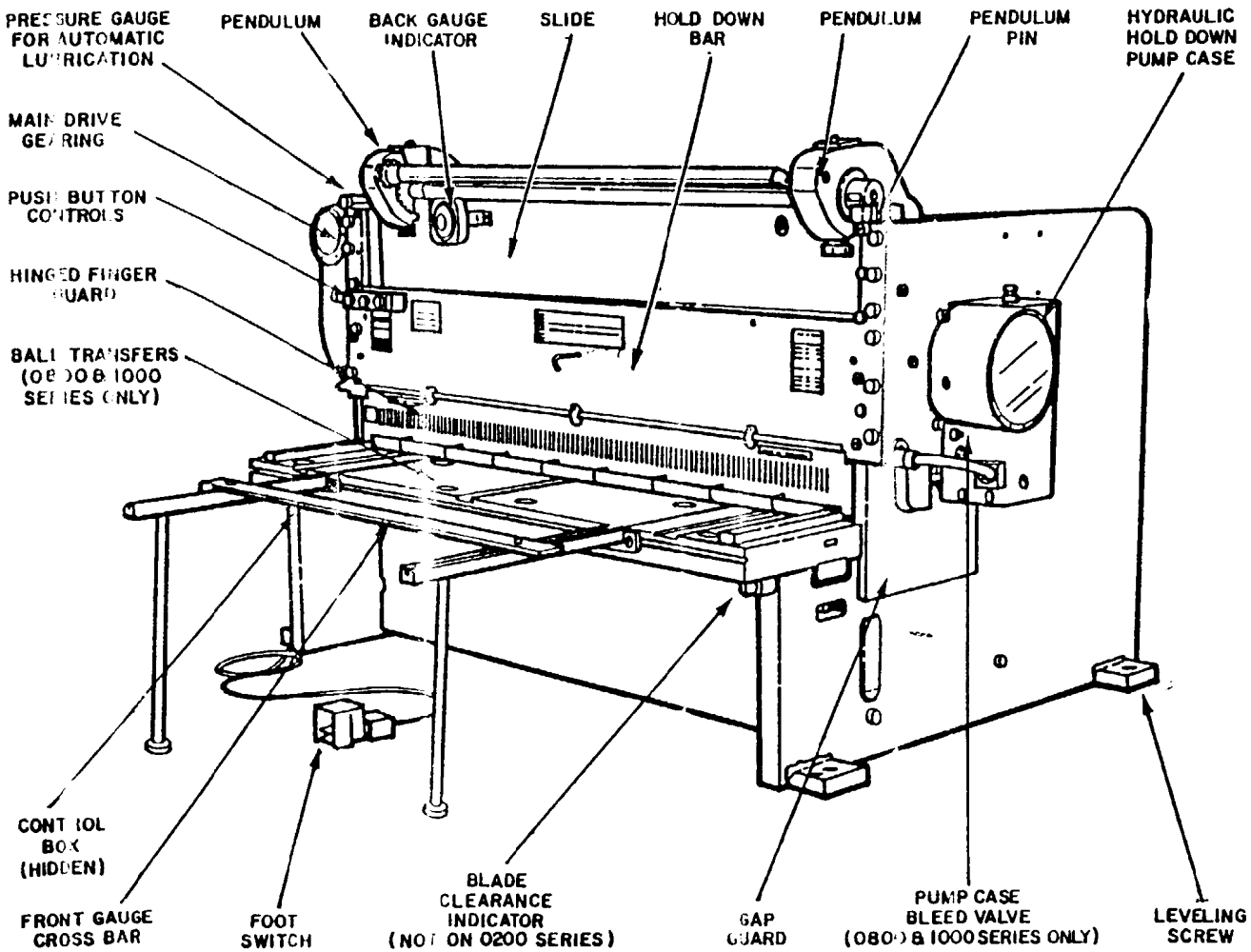


Figure 1. 0800 Series, Power Squaring Shear (Front View)

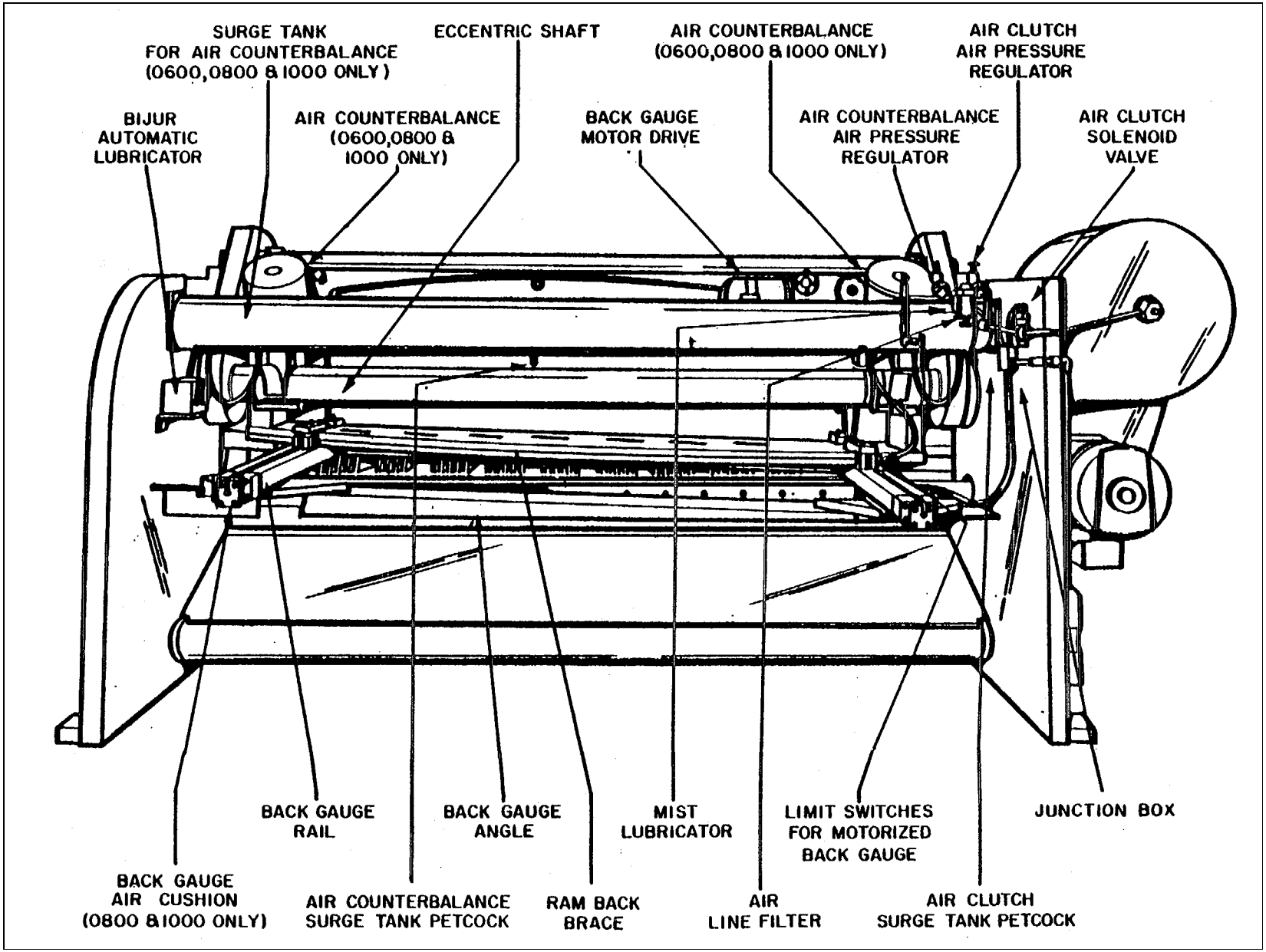


Figure 2. 0800 Series, Power Squaring Shear (Rear View)

FOUNDATION

A rigid foundation with sufficient base to support the shear against settling is necessary. Foundation plans are furnished with the instructions for new machines to help determine location of foundation bolts. Because supporting subsoil structure varies greatly from one locality to another, we recommend that you obtain the advice of a qualified construction engineer regarding the construction of your foundation. Regardless of the size or type of foundation that you use, we suggest leaving top 1/2" low for final grouting.

Important: Some sizes will require a pit in the floor. Make certain that you know the requirements for the foundation before starting construction. While the foregoing instructions cover recommendations for the ideal type of foundation for your shear, many successful installations have been made on substantial existing industrial floors. Because floors and sub-soil differ so greatly, we advise obtaining the opinion of a good civil or mechanical engineer before using an existing floor for a foundation.

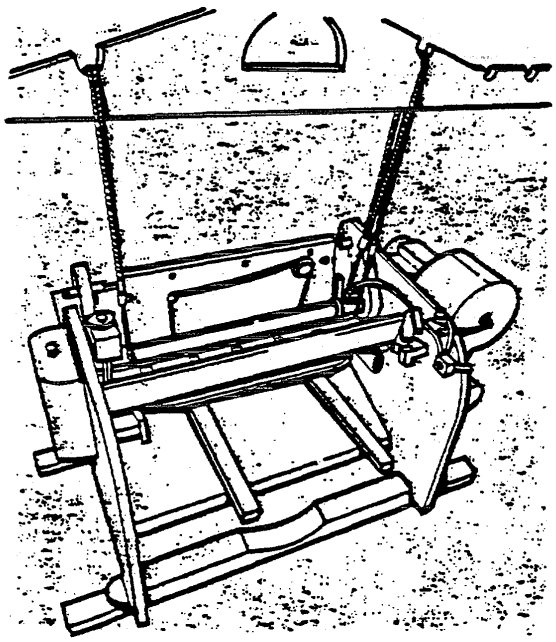


Figure 3. Method of Hooking Cables for Lifting

LIFTING

Power Squaring Shears can be easily and safely handled by cranes of sufficient capacity.

Primary lifting should be done with a cable passed under each end of the eccentric shaft (Figure 3), located as close to the side of the housings as possible. When lifting, make certain that the cable is in the clear and will not damage other parts of the shear. On some shears, it may be necessary to attach a third cable from the crane hook to the table of the shear to keep the shear from tilting.

If no crane facilities are available, the machine can be rigged into pace; however, we recommend that you obtain the services
of a qualified rigger for this work.

Skids should be removed only after the shear has been moved to location over the over the foundation bolts.

CLEANING

After the shear has been removed from the skids and set In place, It should be thoroughly cleaned of all protective grease and accumulated dirt. The best method of cleaning is to use rags saturated in good cleaning solvent; however, since most solvents will remove all traces of oil from the machined surfaces, It will be necessary to go over them lightly with an oiled rag to prevent rusting. Rags should be used rather than waste to do way with the danger of lint and threads. Never use an air hose in cleaning your machine because the pressure may force dirt and grit between bearing surfaces.

Lubrication

It is a good idea to lubricate the shear thoroughly after cleaning and the. importance of proper lubrication cannot be over emphasized. The continued accuracy and long life of the machine depends largely upon proper lubrication at all times. Lubrication of the shear should start as soon as it has been cleaned and before any of the mechanisms are operated.

The standard lubrication system on all series of shears is of the automatic type for main bearings and slide ways. It consists of a lubricator (pump) which periodically pumps a measured volume of oil, distribution tubing and metering units which supply a metered amount of oil to each main bearing. The lubricating pump is operated by a reciprocating motion from the machine. Each stroke of the shear operates an internal cam through a worm gear and ratcheting mechanism. After one complete revolution, the cam reaches a "step off" that allows the spring loaded pump piston to force oil through the lines. Because the piston operates intermittently, the lubricating pressure gauge will indicate oil pressure only after approximately 20 strokes of the machine.

Before a new machine is started, the Bijur reservoir should be filled and the "Instant Feed Button" (Figure 4) should be pulled several times until oil flows freely at all bearings.

The reservoir oil level should be checked daily and filled as required and the entire system should be checked periodically for loose or broken tubing, worn hoses, loose fittings and connections. Each fitting and connection is made to pass a specific amount of oil for the particular bearing it is to serve; therefore, should any replacements become necessary, make certain they are identical with the ones that are being replaced.

In ordering new parts direct from Bijur, the part number, name, type symbol and serial letters, as shown on the name plate, must be given.

Important: The filter assembly must be replaced at least once a year.

Although the automatic lubricating system lubricates all of the main bearings and slide surfaces, periodic oiling of other bearings is necessary for long life and ease of operation. All lubrication requirements are covered in Figure 5.

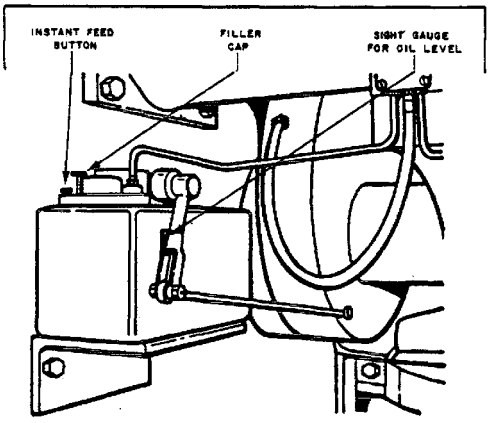


Figure 4. Bijur Automatic Lubricating System

A lubricator is supplied in the main air supply line between the regulator and filter on Series 0600, 0800 and 1000, and between the regulator and the air solenoid valve on Series 0200, 0300 and 0400. When the air clutch is engaged, air entering the clutch cylinder and air solenoid valve carries a small amount of oil in mist form. It is very important that the volume of oil is kept to a minimum to keep oil from reaching the brake and clutch facings. The quantity of oil can be reduced or increased by adjusting the needle valve in the top of the lubricator. Keep reservoir of lubricator full with type of oil indicated on Figure 5. '

PARTS LUBRICATED	Station Number	INSTRUCTIONS	TYPE OF LUBRICATION
Principal Bearings, Bushings, Air Counterbalance Cylinders, Slide Guides, and Gibs	1	Maintain level with non-compounded oil, Replace filter at least once a year.	EXAMPLES *: Socony-Mobil - Vactra Oil BB Sun Oil - Suntax 502 or equal VV-L-765-A Amendment 1 GR. 90
Ram Adjustment Mechanism for Slitting	2, 3	Hand oil - weekly.	
Air Line Lubricator	11	Keep Bowl filled.	
Air Clutch Rotary Seal	12	Hand oil - daily.	
Counterbalance Clevis Pins (0200, 0300 and 0400)	13, 14	Hand oil - weekly.	
Miscellaneous Back Gauge Bearings and Chain	15, 16 17, 18		
Back Gauge Screw	4, 5	Grease fittings weekly.	EXAMPLE: Shell Alvania Grease #2 Mobilux Grease #2 MIL-G-23549-A
Back Gauge Dial Shaft	8		
Back Gauge Screw Bearings, Spring Cushions (0200, 0300, 0400 and 0600) Air Cushions (0800 and 1000)	6, 7		
Back Gauge Rail	9, 10		
Flywheel Bearings (0600, 0800 and 1000)	22		
Flywheel Bearings (0200, 0300 and 4000) Back Gauge Screw - Front Bearings		BEARINGS SEALED AND LUBRICATED FOR LIFE	
Counterbalance Clevis Pins (0600, 0800 and 1000)	13, 14	One or two shots with grease gun --- every 80 running hours.	EXAMPLE: Mobilux Grease #2, Shell Alvania Grease #2 MIL-G-23549-A
Holddown Systems Pump Case	19	Maintain level with machine stopped. (See Note)	EXAMPLE: **Good quality HYDRAULIC oil 150 SSU at 100°F Sunvis 911, Mobil DTE 24 MIL-H-46001-B GR. 1
Main Drive Gears	20	Maintain level with machine stopped.	EXAMPLE: ***Mobilgear #634 Shell-Macoma oil #73 MIL-L-2105-B GR. 140
Motorized Back Gauge Reduction Gearing.	21	Maintain level at check plug.	

NOTE: A rise of 70° above room temperature is normal under operating conditions. Clean magnet drain plugs whenever oil is drained.

* For extreme cold weather operation, use MOBIL ARCTIC OIL - EXTRA HEAVY SAE 10 or equal.
** " " " " " " MOBIL ARCTIC OIL "C" or SUN OIL CO, Sunvis 911 or equal.
*** " " " " " " SOCONY Compound DD or SUN OIL CO. SUNET 70 or equal.

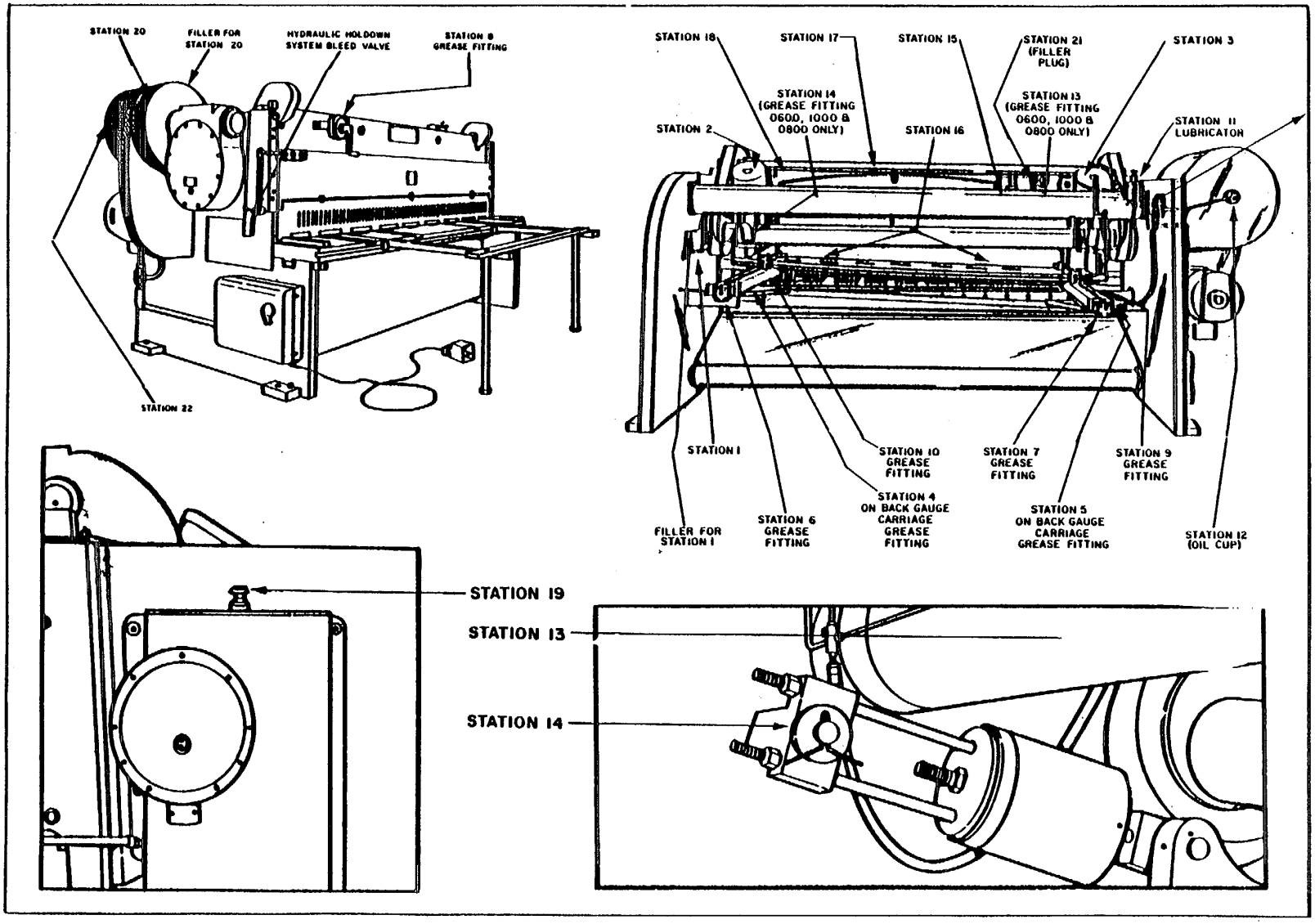


Figure 5. Lubrication Stations on All Models of Shipely Shears

RAM SLIDE BEARING PROTECTION

The ram slide bearings are protected during shipment by rigidly locking the ram in place with 1" socket set screws. These screws were installed through the holddown bar on each end and through the slide guides on back side of the shear. After the machine is set in place, remove these four (4) screws and insert them in the mounting feet, and use for leveling screws.

Series 0600, 0800 and 1000 - The ram slide bearings and gibs were properly set at the factory but should be checked for clearance after air has been piped to the machine.

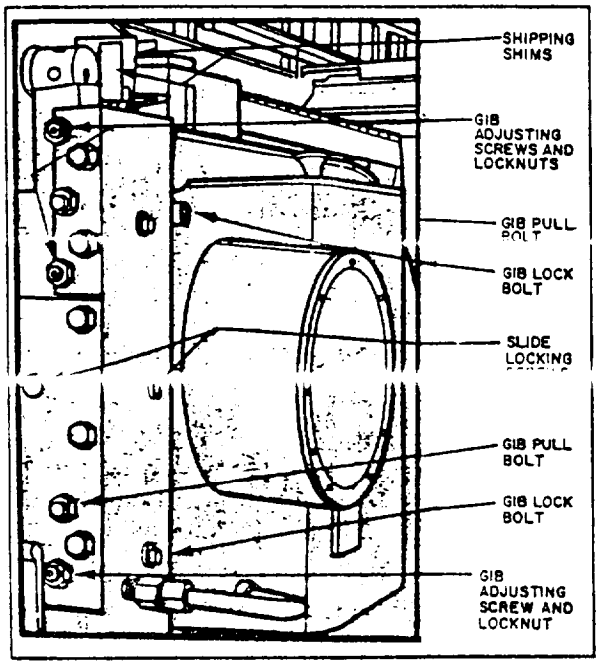


Figure 6. Shipping Shims and Locking Bolts

Series 0200, 0300 and 0400 - On these machines, additional protection during shipment has been provided by inserting brass shims in front and back of the hardened slideway on each end of the machine. To remove these shims, proceed as follows:

(1) Loosen the gib adjusting set screws and gib lock bolts.

(2) Tighten the gib pull bolts to pull the gibs away from the slide.

(3) With a pair of pliers, pull the (2) front shims out from the top.

(4) To pull the two (2) back shims out from the top, it might be necessary to rock the ram. This can be done by placing a timber between the eccentric shaft and the back brace. Sometimes this can be accomplished by someone standing on the back brace and shifting his weight up and down.

(5) The gibs and ram slide bearings should then be adjusted at the proper clearance (see page 11).

CAUTION - Do not operate machine before removing slide locking screws and on Series 0200, 0300, 0400 also the brass shipping shims.

LEVELING

It is important that your shear is properly leveled after installation. If a shear is operated out of level, damage to the bearings may occur. Shearing accuracy and blade life can also be affected by the shear being operated out of level.

Make certain the shear table is thoroughly' cleaned before beginning to level. Leveling is done by means of jack screws in the housing feet, one at each of the four corners.

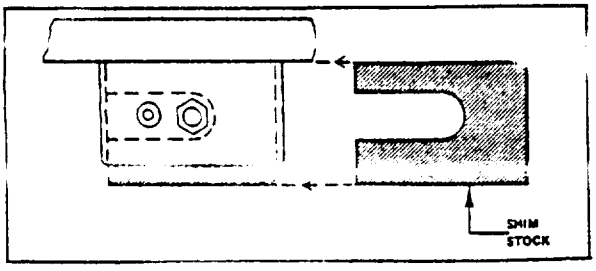


Figure 7. Suggested Method of Making Shims

In leveling, use a precision level, accurate to within 0.001" per ft., not a carpenter's or machinist level. Level lengthwise first, using the level parallel with the shear blades. Raise or lower one or the other end until a very accurate level is obtained. Next, use the level at right angles to the blades and level from front to back at each end of the machine to obtain level to within 0.001". The leveling procedure can be speeded up if two levels are used such as shown in Figure 8.

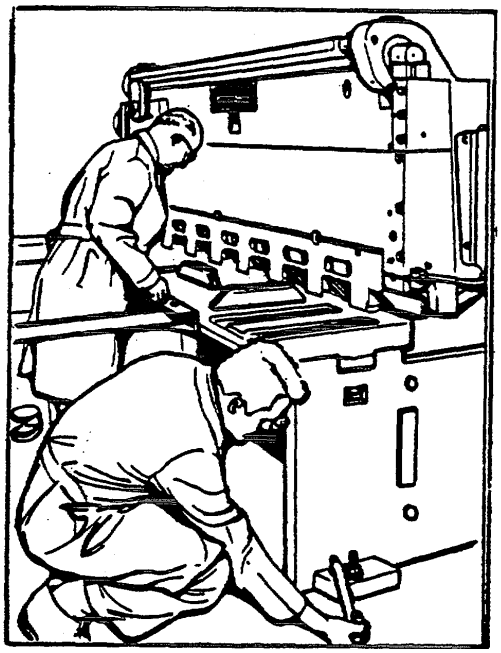


Figure 8. Leveling the Shear Using Two Levels

Insert shims under feet, as shown in Figure 7, so that the jack screws can be backed off without changing the level of the machine. The nuts on the foundation bolts can now be tightened. After-tightening, recheck level to make sure this operation did not disturb level condition.

Make certain the shear is resting on the shims and not on the jack screws. If grouting is used, do not place under the bed of the machine. It is a good idea to recheck the level of the machine from time to time since leveling is not necessarily permanent.

We do not recommend the use of isolation mounts under the mounting feet. The shear cannot be kept in level with any kind of resilient pad, and damage to the slide bearings will result.

ELECTRICAL CONNECTIONS

Your shear is delivered completely wired and is ready to attach to the main feed lines. In making this connection, it is important to check the direction of flywheel rotation. To determine proper flywheel rotation, rotate the flywheel by hand until a stenciled "arrow" comes into view. Flywheel must rotate in a clockwise direction when facing the rear of the machine.

CONNECTING THE COMPRESSED AIR SUPPLY

Compressed air supply for the air clutch and the air counterbalances (air counterbalances are provided on the 0600, 0800 and the 1000 series machines only) is connected through a "T" fitting located in the rear of the shear (Figure 9). Regulator "A" supplies compressed air to the air clutch. Regulator "B" supplies compressed air to the air counterbalances. The 0200 series, 0300 series, and the 0400 series shears use coil spring counterbalances; therefore, they will not be provided with regulator "B" (Figure 9). Pressure setting for the air clutch, Regulator "A", is 80 psi for all series of Lodge & Shipley shears. The pressure setting on Regulator "B" varies according to the length of the shear and type of back gauge. The pressure should be sufficient so that the air counterbalances hold the slide back against the slide guides, feeler tight at top and bottom.

A good supply of clean dry compressed air is essential to satisfactory operation of your shear. The volume of air required to operate the clutch efficiently varies with the size of the shear and the number of strokes per minute that the shear is to operate. The following chart (Figure 10) lists the maximum-volume of air that would be required for operation of the air clutch on various sizes of shears. We List the maximum volume of air required because this volume gradually changes. as the clutch and 'brake friction material wears to the replacement point.

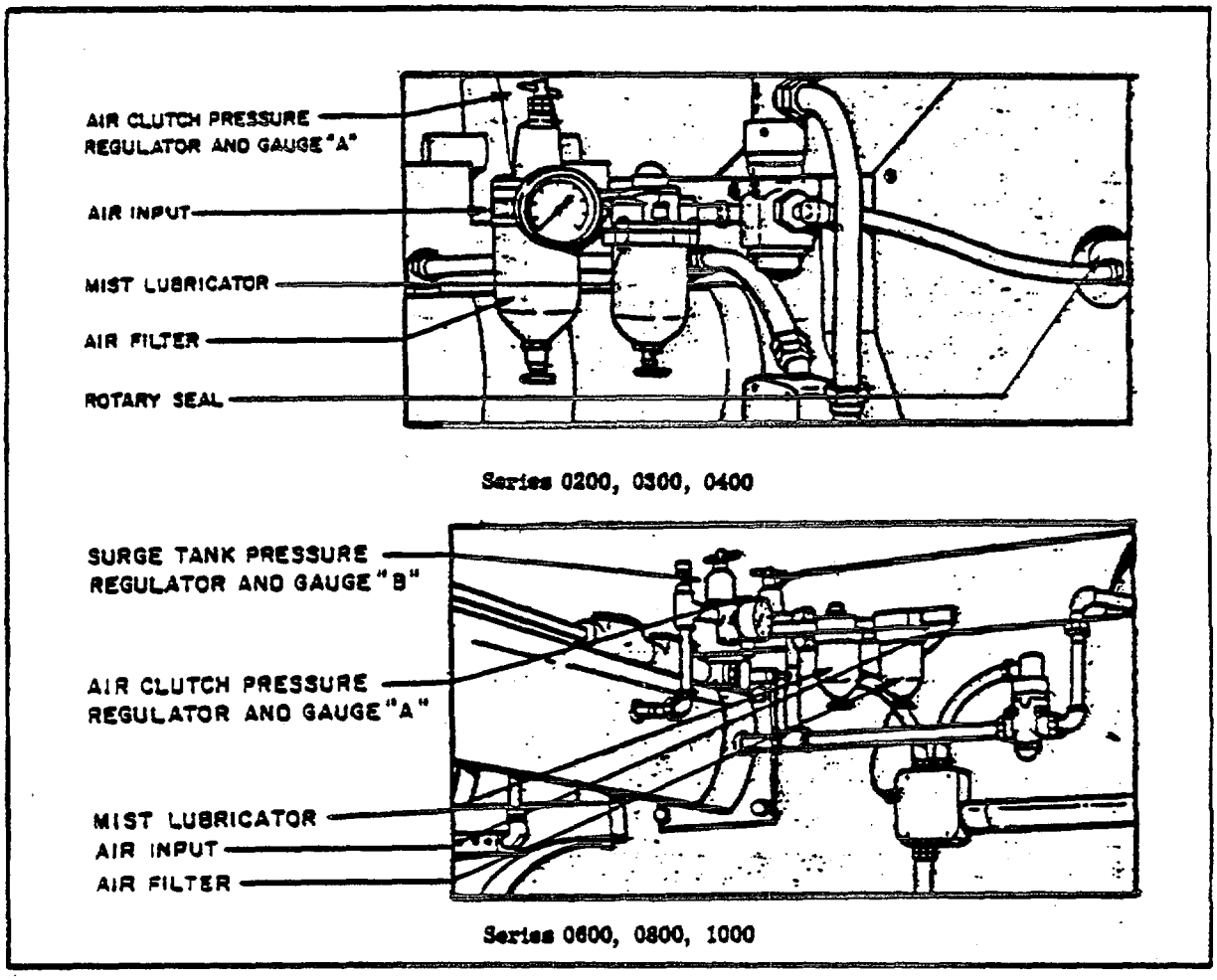


Figure 9. Compressed Air Connections

Air Clutch compressed air required Per Stroke Shears based on 75% volumetric efficiency, rated in free air.

MODELS	Maximum amount of air required with clutch and brake linings worn
0204 to 0212	.052 cu. ft
0214 to 0412	.106 cu. ft.
0414 to 0612	.284 cu. ft.
0614 to 1012	.580 cu. ft.

Figure 10. Compressed Air Requirements

To determine the compressed air requirements for a particular shear, use the information in the preceding cart and multiply the cu. ft. of air required by the number of strokes per minute that the shear is to operate. The requirements, as shown in Figure 10, are average, based on worn clutch and brake linings. New brake and clutch would require approximately 40 percent less vol.

If a separate air compressor and tank is to be used for the shear, it should be capable of a minimum of 100 psi discharge and should be equipped an "on-off' pressure switch to automatically maintain the required pressure.

The drain valve in the bottom of the surge tank (there is one for the counterbalance surge tank and one for the air clutch surge tank on Series 0600, 0800 and 1000 shear only) should be opened occasionally to drain accumulated condensation (Figure 2).

RAM SLIDE BEARING ADJUSTMENT

Before starting the shear, the ram slide bearing clearance should be checked and adjusted, if necessary. These clearances should also be checked periodically.

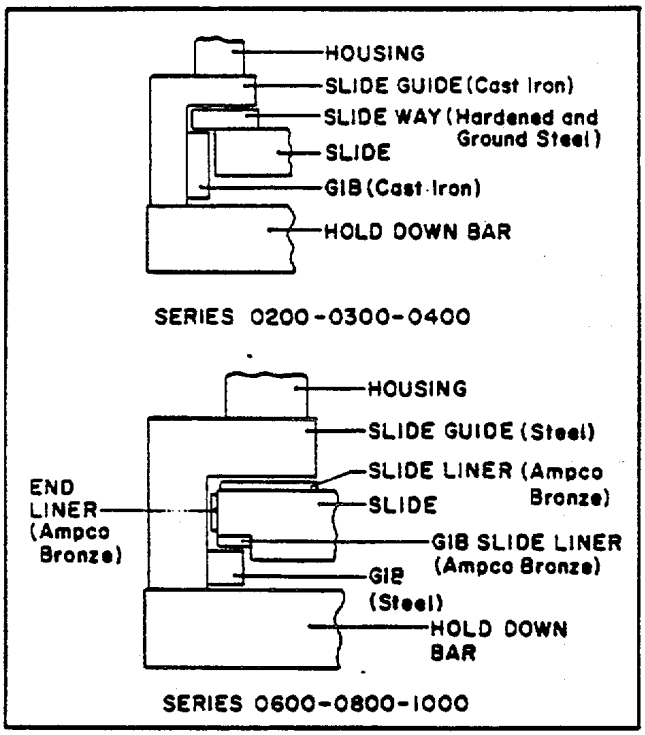


Figure 11. Slide Bearing Arrangements

Two different slide bearing arrangements are used on Shears. These are illustrated in Figure 11. Clearances are measured and adjusted with the slide at the top of the stroke. Measurements are made at the top of the slide bearings and also at the bottom. To obtain the proper clearances the gibs are adjusted in or out.

On each side of the Shear on the slide guides, there are two (2) hex head bolts with washers. These Lock the gib in position. These bolts should be loosened before adjusting gibs. (See Figure 6)

On each end of the Shear, in front, there are socket set screws and hex lock nuts (3 on 0200, 0300, 0400; 4 on 0600, 0800, 1000). These push the gib in. Between these set screws are two (2) hex head bolts. They are threaded into the gib and pull the gib out.

To pull the gib out, loosen the set screws (push screws) and tighten the hex head bolts (pull bolts). To move the gib in, loosen the hex head pull bolts and tighten the push set screws. After adjustment, tighten the hex lock nuts on the push set screws and tighten the hex lock bolts on the sides of the slide guides.

CAUTION - If the hex gib pull bolts are tightened without first loosening the push set screws, the gib will be broken.

Be sure air is at proper pressure on air counterbalances before setting clearances.

SERIES 0200. 0300, 0400	Clearance	SERIES 0600, 0800, 1000	Clearance
Top - Between gib and slideway	None	Top - between gib and gib slide liner	.004" - .006'1
Top - Between slideway and slide guide	.004" - .006"	Top - Between slide liner and slide guide	None
Bottom - Between gib and slideway	.004" - .006"	Bottom -'Between gib and gib slide Liner	.004" - .006"
Bottom - Between slideway and slide guide	None	Bottom-Between slide liner and slide guide	None

Figure 12. Slide Bearing Clearances
(With the Ram at the Top of the Stroke)

OPERATION

START-UP PROCEDURE

Before starting the She art any time:

(1) Check to be sure there is no material, tools or other objects in the point of operation area.
(2) Check behind the Shear to be sure there is no-one or any obstructions near the moving parts, such as back gauge, back brace, etc.
(3) Make sure all guards are in place.
(4) The Mode Selector Switch should be turned to "Off."
(5) The air supply to the machine should be an and the gauge for the clutch set at 80 psi.
(6) Foot Switch should be on the floor at the operator position and clear of any interference.
(7) Turn on the main electrical disconnect switch.
(8) Depress "Start' Butt for the main drive motor.
(9) Turn the Mode Selector Switch to "Continuous" and cycle the machine to determine if all systems are functioning properly.
(10) Any time the operator leaves his position, the Mode Selector Switch should be turned to "Off".
(11) lever shear material with the Mode Selector Switch in the '"inch" position.

Before starting shear for the first time, go over all the nuts and bolts to correct for looseness that might have occurred during shipment. Check these on a regular basis.

Before starting the shear, make certain that all items have been lubricated in accordance with the instructions on page. The Instant Feed Button located on the Bijur lubricator should be operated once or twice before each workday since the automatic feature of the lubricator operates only after approximately twenty strokes of the machine.

SHEARING CAPACITY

The capacity of al shears is based on mild steel having a shear strength of approximately 50,000 psi. As the shear strength of the material increases, the capacity of the shear decreases and this is just as true of material 1" or 2" wide as it is of the length of the shear, therefore, do not shear material thicker than the capacity of your machine, even for the short lengths.

The chart shown Figure 13 shows the shearing capacity of shears for various of the more commonly used materials. Actually, the capacities are approximate because of variations in shear strength and penetration. Shearing capacity for materials other than those given Figure 13 can be obtained by contacting the Lodge & Shipley Company.

BLADE CLEARANCE ADJUSTMENT

When our shear is delivered, you will find that it has unusually wide blade clearance. This exaggerated clearance is provided to prevent damage to the blades during shipment and the must be properly adjusted before a shearing can be done.

Before sure to make the blade clearance adjustment, remove the two bolts that secure the finger guard and raise it on its hinges. An “L” head bolt will hold it out of the way. Reduce the air clutch pressure (Regulator "A", Figure 9) to about 30 psi and start the main drive motor. When the main drive motor ad flywheel has attained full speed, slowly jog the ram through a complete cycle. Each time the clutch is jogged, make certain there is no interference to the movement of the ram and upper blade.

MATERIAL	TENSILE STRENGTH	10 ga. Shears	3/16" Shears	1/4" Shears	3/8" Shears	1/2" Shears	5/8" Shears
STEEL							
Carbon							
SAE r1015	60, 000	.135	.188	.250	.375	.500	.625
SAE 1045	90, 000	.127	.176	.234	.352	.470	.582
Nickel							
SAE 2330	130, 000	.091	.126	.169	.252	.338	.421
SAE 2340	140, 000	.086	.119	.158	.238	.316	.396
Nickel Chrome							
SAE 3130	150, 000	.091	.126	.169	.252	.338	.421
SAE 3240	170, 000	.078	.108	.144	.216	.289	.361
Chrome-Moly							
SAE 4130	150, 000	.101	.140	.186	.279.	.373	.466
WEAR RESISTANT STEEL							
Jalloy (water quench)	150, 000	.098	.136	.182	.272	.364	.455
Tr-Ten "E"	70, 000	.102	.141	.188	.282	.377	.470
Cor-Ten	70, 000	.102	.141	.188	.282	.377	.470
Man-Ten	75,000	.098	.136	.182	.272	.364	.455
Carilloy T_1	105, 000	.083	.115	.154	.230	.307	.384
Kaisaloy	70, 000	.102	.141	.188	.282	.377	.470
Inconel	125, 000	.098	.133	.177	.266	.354	.433
ALUMINUM							
2024-T3	70, 000	.184	.255	.340	.512	.681	.851
7075-T6	83, 000	.194	.269	.359	.540	.718	.898
Alclad 2024-T4	84, 000	.186	.258	.345	.517	.690	.863
Alclad 6061-T4	33, 000	.199	.275	.368	.566	.735	.920
STAINLESS STEEL							
302	80, 000	.102	.141	.188	.282	.377	.470
410	60, 000	.113	.157	.210	.315	.420	.525
BRASS (Yellow 1/2 Hard)	61, 000	.170	.236	.314	.471	.630	.786
COPPER (Pure)	62, 000	.203	.316	.377	.565	.754	.941
MONEL	108, 000	.102	.141	.188	.282	.377	.470
Monel X K	15, 000	.080	.101	.148	.222	.295	.369

Figure 13. Approximate Shearing Capacity of Shears

When blade clearance is set for the first time or after new or resharpened blades have been installed, it must be accomplished through the use of feeler gauges. After the initial setting and calibrating the Blade Clearance Indicators (not 0200 series), subsequent changes can easily be made.

CAUTION - Be careful not to place hands between blades or under holddowns at any time.

To adjust blade clearance for the first time, loosen Socket Head Bolt (B) (Figure 14) on each end of the table. Jog the ram down until the blades intersect about 1" from the left end. Using the Blade Clearance Adjustment (on 0200 series, Socket Head Cap Screw), move the left end of the table and lower blade to the desired clearance. Lock the table with Socket Head Bolt (B). Further jog the upper blade (making certain there is no interference)until the right end of the blades intersect approximately 1: from the right end. Adjust this end of the table and lower blade to the exact same clearance as the left end. Lock this adjustment.

When the proper clearance has been obtained at both ends, bolt (B) should be securely tightened to lock the adjustment and the Blade Clearance Indicators should be calibrated.

To calibrate the Blade Clearance Indicators (Series 0300, 0400, 0600, 0800, 1000), simply loosen socket headset screw "C" (Figure 14) and rotate the indicator by hand until the numerals on the indicator are the same as the blade clearance that has just been set at each end of the blade. It should coincide with scribe mark (D) (Figure 14). Retighten socket head set screw "C". This calibration must be done on each of the two indicators. Calibrations on the indicators read in thousandths. If settings less than 0.004: are to be used, use a feeler gauge to obtain accurate settings.

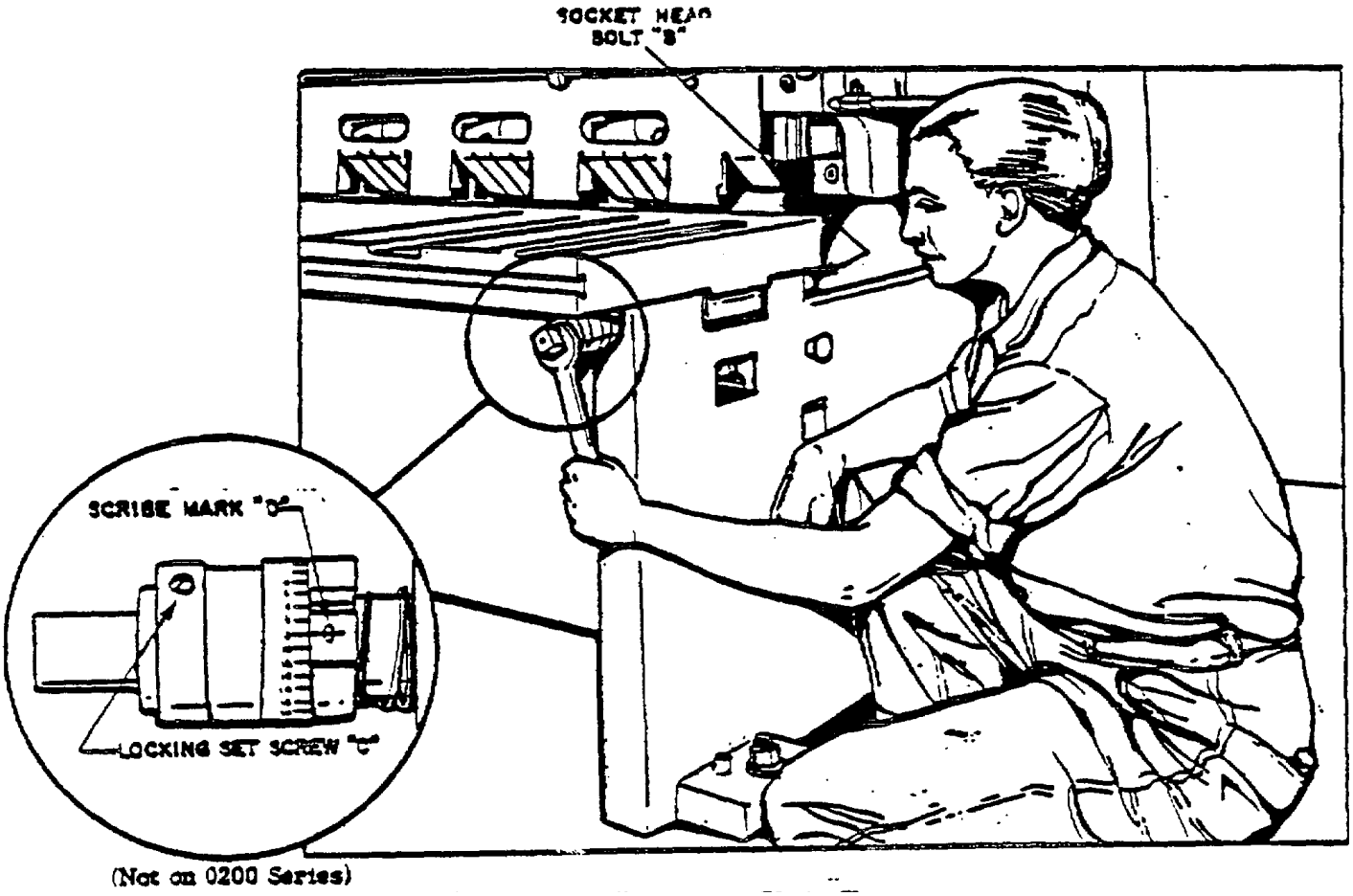


Figure 14. Adjusting the Blade clearance

When the two ends of the blades have been properly adjusted, It is then necessary to adjust the upper blade to compensate for the thrust developed against the upper blade during a capacity cut. To do this, the upper blade is purposely "bowed" towards the operator so that the thrust developed actually straightens the upper blade and produces a straight cut. While the upper blade and ram is only bowed about 0.001" to 0.003", the deflection to offset this bow will be developed only during a capacity cut; therefore, if very accurate and straight cuts are required on light material, the bow must be adjusted out of the ram and the same clearance maintained along the entire length of the blades.

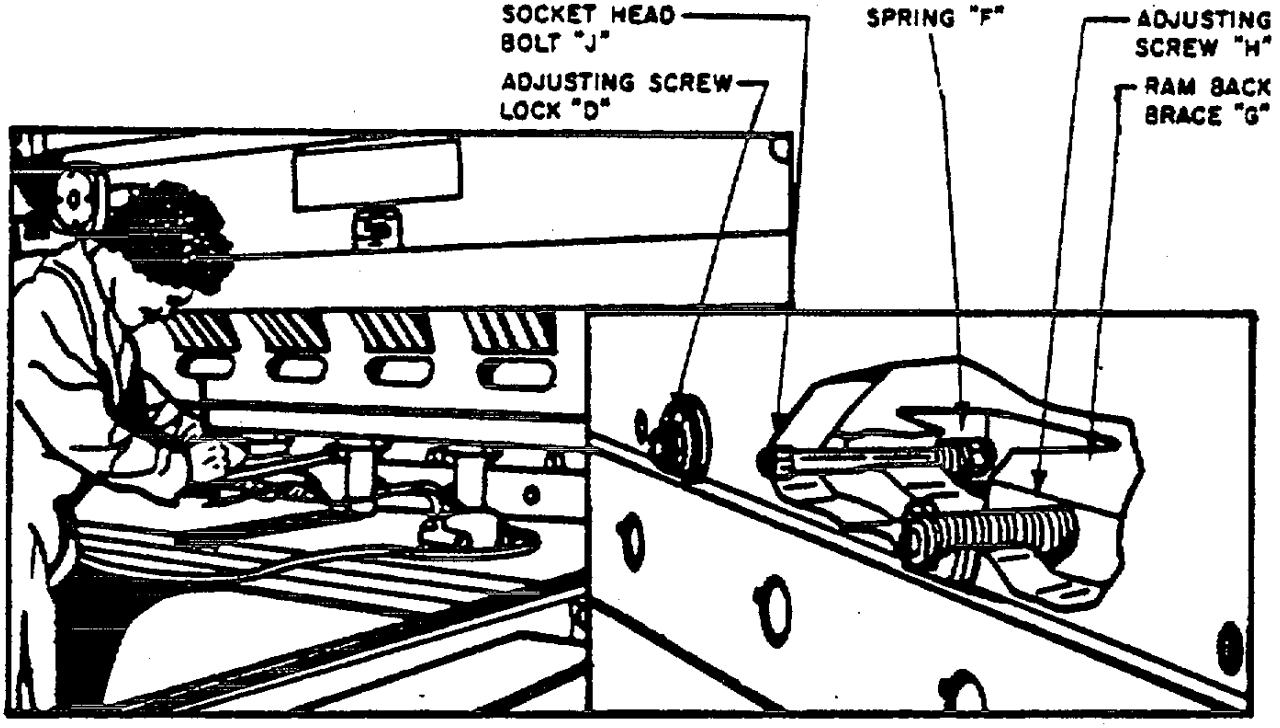


Figure 15. Adjusting the Upper Blade

To make the adjustment on the upper blade, proceed as follows:

CAUTION - For the sake of safety when adjusting the upper blade, place the foot switch on the shear table and use only the extra long hex wrenches furnished with the shear.

(1) Raise the ram and then lower it to a point where the blades intersect 1" to the right of the first ram adjusting screw "H", at the low end of the upper blade (Figure 15). Make an adjustment by turning adjusting screw "H" until the clearance between the blades is the same as the clearance at the end of the blades. It will be necessary to loosen the locking screw "D" before this adjustment can be made. Spring "F" should have sufficient tension to keep adjusting screw "H" solidly against the back brace.

(2) The next adjustment is made just beneath the second adjusting screw in the same manner as the adjustment in step 1; however, the clearance should be the same or slightly less, depending on the length of the machine. It is necessary to lower the ram further for this adjustment to a point where the intersection of the two blades is about 1" to the- right of the second adjusting screw.

(3) The third adjustment is made beneath the third adjusting screw in the same manner as the first and the second. This procedure is continued from left to right until the center of the blade is reached, at which point each successive adjustment is progressively increased to the right. Adjusting screws are placed on approximately 12: centers; therefore, the number of screws in any given shear and the adjustment from one check point to the next depends on the length of the shear.

A typical series of adjustments for cutting 3/4” mild steel on a 10’ shear would be:

1st Adj. .022"	2nd Adj. /022"	3rd Adj. .021"	4th Adj. .020"	5th Adj . .019"	6th Adj. .019"	7th Adj. .020"	8th Adj. .021"	9th Adj .022"	10th Adj. .022"1

After completing the initial adjustment, make a check after each succeeding adjustment to make sure the successive adjustments did not change previous ones. When all settings have been accurately made, tighten locking screw “D" on each adjusting screw. Make certain that there is clearance of about 1/16" between the locking washers and the recess in the ram.

NOTE: The preceding instructions apply to standard shears that cut from left to right. Some shears, on special order, cut from right to left. In this instance, the series of instructions for adjusting the blades should commence on the right end of the blades and progress in the same sequence of steps to the left.

IMPORTANT: After completing the blade clearance adjustment, make certain you readjust your air clutch pressure to the recommended pressure (80 psi) before using the shear, and return finger guard to its normal down position.

BLADE CLEARANCE RECOMMENDATIONS

Longer blade lift and better cuts will be obtained by adjusting blade clearance to suit the type and thickness of material to be sheared. If a variety of materials are to be sheared, satisfactory results can be obtained by adjusting the blade clearance to the thinnest material to be sheared and then using this adjustment for any thickness of material up to capacity.

The following suggested blade clearances are approximate and may be used as initial clearances to be increased or decreased as necessary for the best burr-free cut.

MATERIAL	BLADE CLEARANCE
Low Carbon Steels (C-1015 or less) Stainless Steels (half lard and hard) Stainless Steels (soft)	8 to 10% of thickness
Brass and Copper Alloys Aluminum Alloys High Carbon Steels Alloy Steels	5 to 7% of thickness
Soft Aluminums Titanium Silicon Steels	4 to 5% of thickness

SHUT-DOWN PROCEDURE

Before performing any maintenance inspection, adjustments, blade changing, etc. on the Shear, the following shut-down procedure should be followed.

(1) Turn Mode Selector Switch to "Off."

(2) Depress "Stop" Button for the Main Drive Motor.

(3) Turn the main electrical disconnect switch to the "Off" position.

(4) ALLOW THE FLYWHEEL TO COMPLETELY STOP. This is important. Check this.

BLADE CHANGING JIGS

To make maintenance easier and safer, a set of Blade Changing Jigs is furnished for use in removing or installing the upper blade. With these attachments (Figure 16), it becomes easy and safe to remove or replace the upper blade. To remove the upper blade, proceed in the following manner:

(1) Shut the machine down as described under SHUT-DOWN PROCEDURE.

(2) Raise the finger guard; a small "T" shaped bolt in the center of the holddown bar will hold it out of the way, and remove left gap guard.

(3) From the rear of the machine, install the Blade Changing Jigs "A" (Figure 16), using the bolts provided in the drilled and tapped holes located in the rear of the ram.

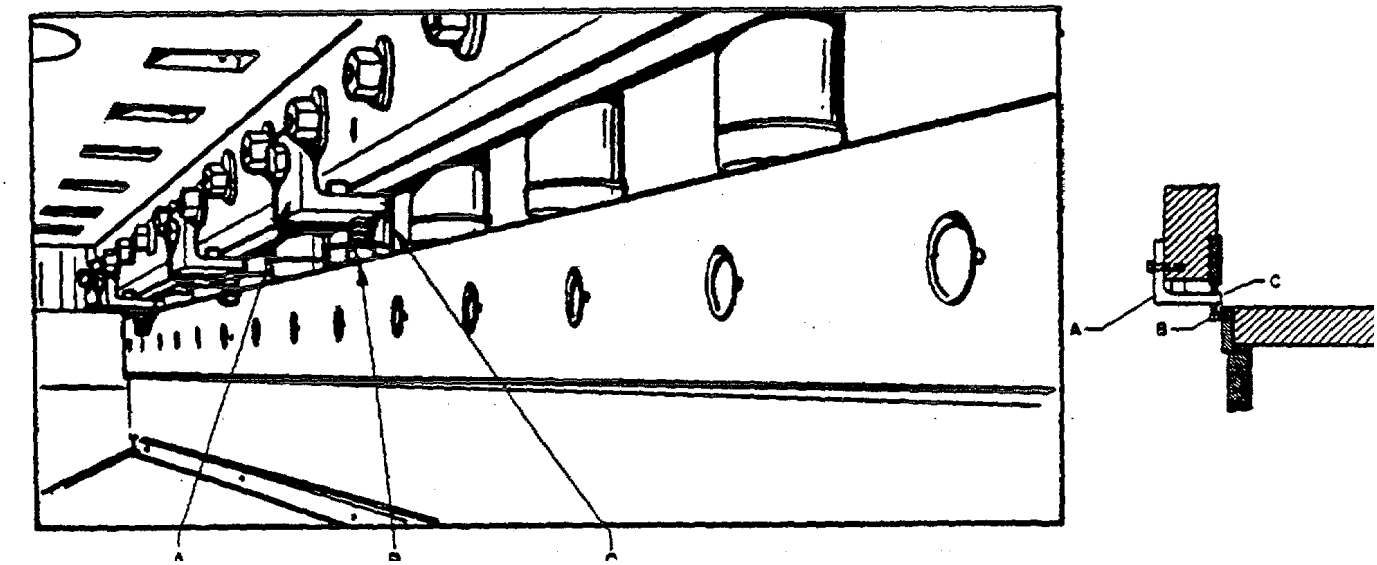


Figure 16. Blade Changing Jigs

(4) Adjust screw "B" until it touches the upper blade.

(5) Remove all nuts and washers from the blade bolts and remove those bolts that will pass the holddown fingers.

(6) Shove the blade as far to the right, or the left, as the remaining bolts will allow. Special slotted holes will allow removal of the remaining bolts.

(7) Lower the blade bracket surface “C" by unscrewing bolt "B” and slide the blade out through the LEFT end of the -machine.

To reinstall the upper blade, reverse the process.

To remove the lower blade, it Is necessary to first remove the cover at the rear edge of the shear table (not on 0200 series). If the blades have been reground, it will be necessary to place shims between the lower blade and its seat to make the top of blade flush with the top of the shear table. These shims are held in place on the blade seat by spring loaded pins. Notched shims are available from the factory in thicknesses of: 0.005”, 0.10”, 0.312”, 0.625” and 0.125”.

Be sure to return finger guard to its normal down position and replace gap guard.

POWER SQUARING SHEAR BLADES

The main feature desired in any blade regardless of its application is the ability to retain a keen edge at any economical price.

Shear manufacturers, as well as blade and knife manufacturers, offer various grades of blades to obtain economical use for different conditions. Basically, the industry has more or less standardized on three different grades of blades for Power Squaring Shears even though, ideally, there is a different type blade required for every condition.

The three grades of blades offered are:

No. 1 - Standard Grade for all thicknesses.

No. 2 - Alloy Grade for plate over 1/4”.

No. 3 - Alloy Grade for plate 1/4” and under.

The first grade, i.e., the Standard Grade, is recommended for average conditions, the shearing of all thicknesses of non-ferrous alloys, and mild steels. They are not recommended for high production or continuous shearing or for the shearing of hi-tensile steels. Hi-tensile steels reduce the life of these blades because of the abrasive action and toughness of the material and results in frequent resharpening, reducing their hardness. They are generally referred to as Standard High Carbon Tool Steel Blades or No. 1 grade.

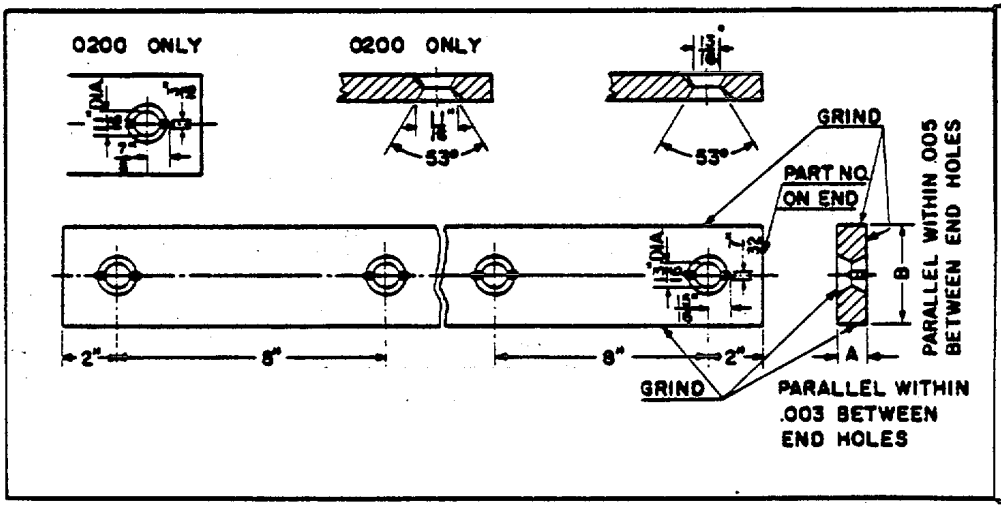
The second grade, i.e., the Alloy Grade for plate over 1/4" thick, is recommended for longer life when shearing the hi-tensile steels or for high production shearing. This recommendation applies only to plate over 1/4" thick; however, they are much more resistant to abrasion and indentation than the first grade and retain their hardness regardless of the number of times they are sharpened. As a general rule, their life is 3 to 4 times and the cost about 25% more than the Standard Grade 1. Common trade names for these blades are Electric Induction, Tufcut, E. I.S., Duro-Chrome, Century, Asko and No. 2 grade.

The third grade, i.e., the Alloy Grade for plate under 1/4", is recommended for long life when shearing the hi-tensile steels or when the shear is used on a continuous basis. They should not be used for plate over 1/4" thick as they are liable to chip or crack. Like the second grade, the third grade retains hardness throughout its thickness. As a general rule, they have a life of approximately 7 times that of the first grade and cost slightly over 50% more. The common trade names for this grade are High Chrome, High Carbon, Multi-Cut, leencut, Battle Axe, Peerless, Squarkeen and No. 3 grade.

It is essential, when the above selection has been made, that the blades are used properly. For clean cuts and long life, they should be adjusted for shearing various gauges of material and the edges should be turned when dull. When shearing thin sheets, dull blades show up as 'a burred edge on the sheared piece. On heavier sheets and plates, dull blades may cause the turning of metal between the blades, resulting in an extremely large burr. Dull blades increase the shearing resistance and therefore may overload the shear, cause it to stall, or even result in blade breakage. Improper grinding may also cause the blades to break; therefore, it is essential to have experienced grinders resharpen the blades. They should be kept clean from dirt, metal chips, etc. A lubricant is used by some to increase blade life, and there are many makes of satisfactory lubricants available. Those lubricants used on punches and dies are generally satisfactory. Blades should never be adjusted out of parallel excepting when required to counteract deflection, i. e., "center bow. "

Special blades are obtainable for special applications such as hot- shearing, magnesium shearing and other special alloys.

The trade names mentioned apply mainly to the Midwest. There are many Eastern and Western as well as Foreign makes of blades that we have no knowledge of; therefore, we cannot classify them into the three grades. Figure 17 shows dimensions of the blades used on Lodge & Shipley shears.



Series	A	B
0200	1	3
0300	1	4
0400	1	4
0600	1	4
0800	1-1/8	5
1000	1-1/8	5

Figure 17. Blade Dimensions for Shears

RAM AND UPPER BLADE COUNTERBALANCES

To assist the flywheel in maintaining maximum energy and to keep the ram tight against its slide bearings, each shear is provided with Ram and Upper Blade Counterbalances.

The counterbalances systems provided on the 0200, 0300, and 0400 series shears are of the coil spring type (Figure 18.) Very little attention is required of these counterbalances; however, if any looseness is noted between the ram and the slide bearings, tighten nuts “A” (Figure 18) a few turns on each counterbalance. This adjustment should only be made with the ram jogged to the bottom of the stroke.

The counterbalance system on the 0600, 0800, and 1000 series shears consists of two air cylinders (Figure 19), a surge tank, gauge and regulating equipment. the only adjustment necessary is the initial pressure adjustment. This pressure varies with the length of the machine and type of back gauge and should be set as described on page 10.

Lubrication of the air cylinder should be maintained as set forth In the lubricating instructions on page 6.

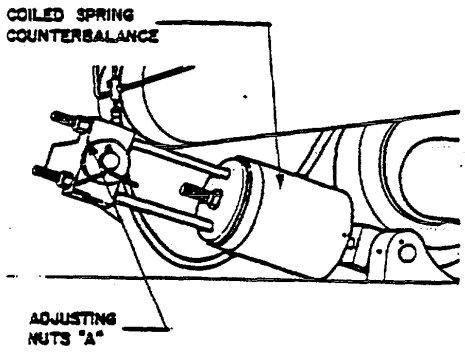


Figure 18. Coiled Spring Counter-balance System

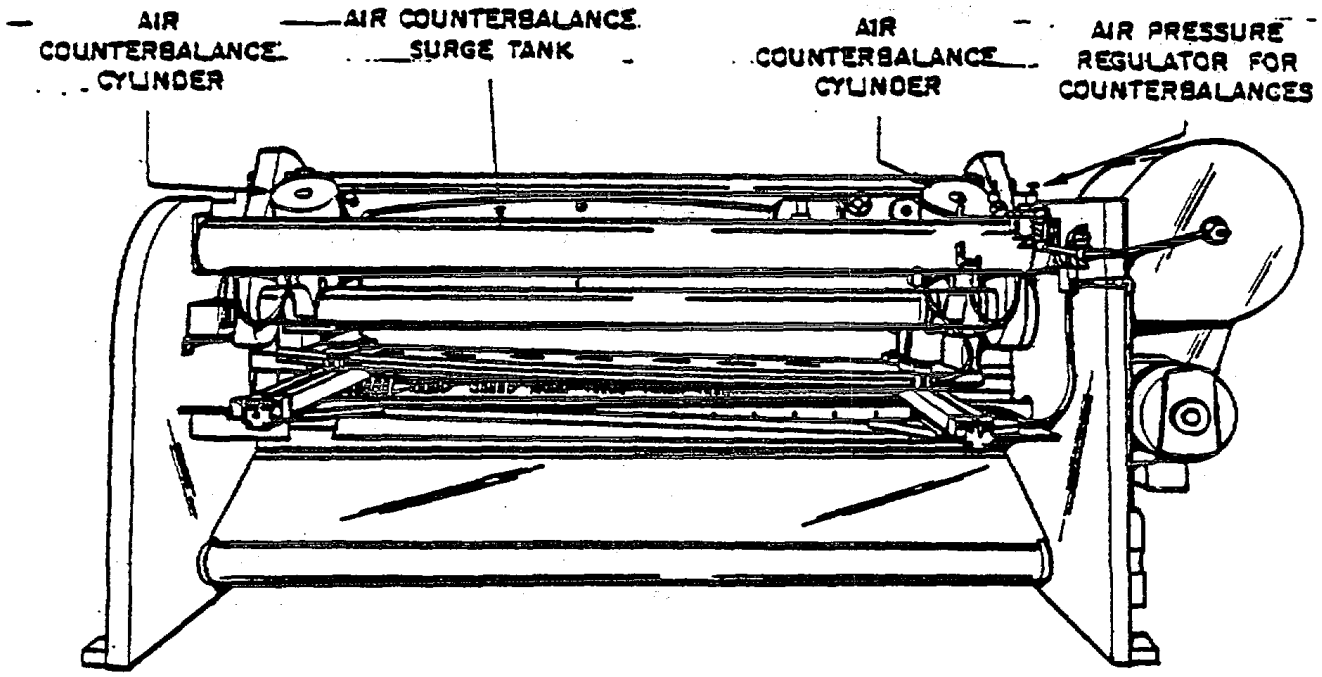


Figure 19. Air Counterbalance System.

COMBINATION AIR CLUTCH AND SPRING BRAKE

Your shear has been provided with the finest clutch and brake system in the industry (Figure 20).

The unit operates through the action of an air operated piston to engage the clutch and compression springs to apply the brake. The brake unit is actually built into the clutch and is so arranged that when the air pressure in the clutch is exhausted at the completion of the stroke, compression springs in the clutch apply pressure to a brake disc providing a positive braking action. This design is important not only because of its ease of operation but because there is no overlap between the clutch and brake resulting in a more efficient, longer life unit. In the event of electrical or air pressure failure, the brake will automatically be applied. There is no adjustment or maintenance required throughout the life of the friction material for either the clutch or the brake.

The clutch is operated at 80 psi of air pressure and is engaged by an electrically controlled three-way solenoid valve. This solenoid valve is operated through the foot switch for either one complete stroke or for jogging the slide. A limit switch (Figure 30) is operated by a cam on the eccentric shaft. This limit switch de-energizes the solenoid valve at the end of the stroke releasing the clutch and allowing the spring operated disc brake to stop the movement of the slide in its top position. Stopping position of the ram can be adjusted by advancing or retarding this cam. The friction material for the clutch should be replaced when it has worn to a thickness of 1/2" on Series 0300, 0400, 0600, 0800 and 1000; 1/4" on Series 0200. A new brake plate (it comes complete with the lining bonded to it) should be installed when the brake plate assembly has worn to a thickness of 1/2" on all series.

To replace either the clutch plate or the brake plate, proceed in the following manner:

(1) Remove air supply line "A", Figure 20.

(2) Remove cylinder air lines "B" and "C".

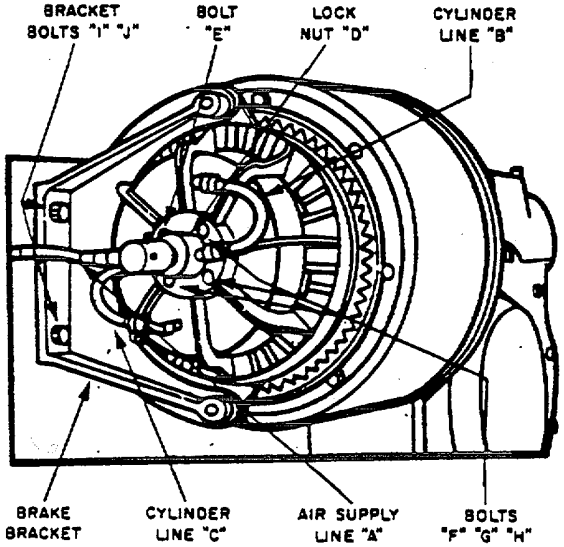
(3) Remove lock nut "D". In order to do this, an ear on the lock washer under the nut must be bent open.

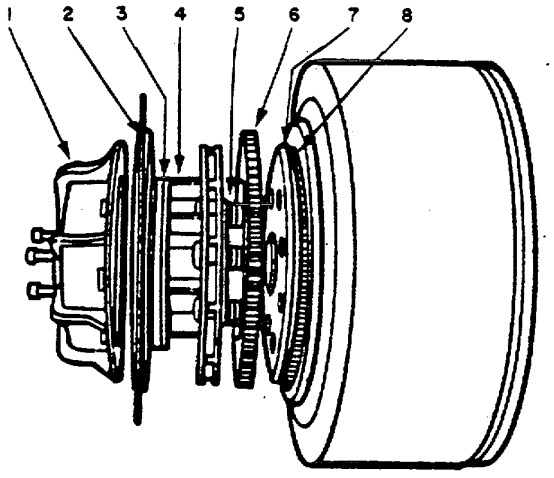
(4) Remove brake bracket bolts "r' and "J" and remove the bracket.

(5) The entire clutch and brake assembly can now be slipped off of the shaft as shown in Figure 31.

(6) Remove the four socket head bolts "E", "F' "G" and "H" (Figure 20). These bolts are long enough to completely release all compression on the brake springs before they are removed; therefore, no danger is incurred in removing these bolts. The unit can now be disassembled as shown in Figure 20.

When the clutch and brake plates have been replaced, reverse the procedure outlined above for reassembly. Always make sure you thoroughly clean and check the unit for wear whenever it is disassembled.





1. CYLINDER
2. BRAKE PLATE
3. PISTON PACKING
4. PISTON
5. BRAKE SPRINGS
6. CLUTCH PLATE
7 END PLATE
8 DRIVING RING

Figure 20. Combination Air Clutch and Spring Brake.

HYDRO-HOLD HYDRAULIC HOLDDOWN SYSTEM

It has two HYDRO-HOLD hydraulic holddown systems consisting of a cams, or cams, operating a pump, or pumps and hydraulically actuating fingers that will effectively clamp and securely hold irregular or different thicknesses of material during a cut. Each system is well designed for the particular work that it must do. For this reason, the 0200, 0300, 0400 and 0600 series shears use 2 one-pump system while the 0800 and 1000 series, because of the large volume and lighter pressure required, use a two-pump system.

To obtain trouble-free service, it, is necessary to use oil that is perfectly clean to prevent scoring the pistons and to assure positive closing of the check valves incorporated in the system.

When starting the machine for the first time or after it as been idle for a long period of time, it is necessary to bleed the hydraulic system of air. On the 0200, 0300, 0400, and 0600 series shears, a bleed valve is located at the left end of the holddown bar (Figure 5). When bleeding the system, open the valve and jog the slide down; close the valve and jog the slide up. Repeat this procedure during a sufficient number of times until the system is cleared of air. The 0800 and 1000 series are provided with two bleed valves, one at the left end of the holddown bar Like the smaller shears and the other on the pump case (Figure 1). The bleeding operation on the 0800 and 1000 series is the same as for the smaller shears except that first, the bleeding should be done on the pump case and then at the end of the holddown bar.

Hydraulic holddown pressure is set at the factory and generally, no further adjustment is necessary, however, it is sometimes desirable to reduce the pressure when shearing soft material or where a good surface finish is important.

The holdown system relief valve is set for maximum pressure, depending on the capacity of the shear, as follows.

0200 series and 0214, 0216 -	450 psi	0600 series and 0614, 0616, 0606-H	-800 psi
0300 series and 0314-	500 psi	0800 series	- 1400 psi
0400 series and 0414, 0416 -	600 psi	1000 series	- 1400 pat
		1012	- 1600 psi

The 0800 and 1000 series shear has a second pressure relief valve for its low pressure cylinder. This low pressure relief valve is set for a maximum of 230 psi at the factory, and this setting- should not be changed. Any hydraulic pressure change should be made by adjusting the high pressure relief valve.

To check pressure on the holddown system, the bleed valve located on the left end of the holddown bar has been provided with a threaded female connection to receive a pressure. When checking pressure a good quality gauge should be used having a dial reading higher than 1400 psi and preferably one with a dial reading of about 2000 psi. When checking pressure, always turn the Selector switch to ’Inch" to run the shear rough its cycle and remember to open the bleed valve after the pressure gauge has been installed.

If it is necessary to change the hydraulic pressure to the holddown the pressure relief valve is adjusted Do not attempt to adjust the relief valve without a pressure gauge.

To adjust the pressure relief valve, remove the pump case cover and proceed in the following manner: (See Figure 21)

(1) Loosen Lock Nut "C".

(2) Turn Adjusting Screw "B" clockwise to increase pressure, counterclockwise to decrease pressure.

(3) Tighten Lock Nut "C'"

Limit Collar (A) pre-set to maximum pressure to which valve should be adjusted.

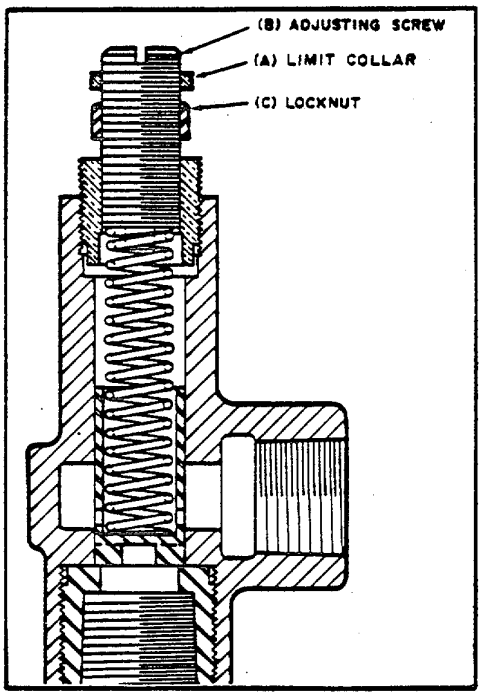


Figure 21. Pressure Relief Valve

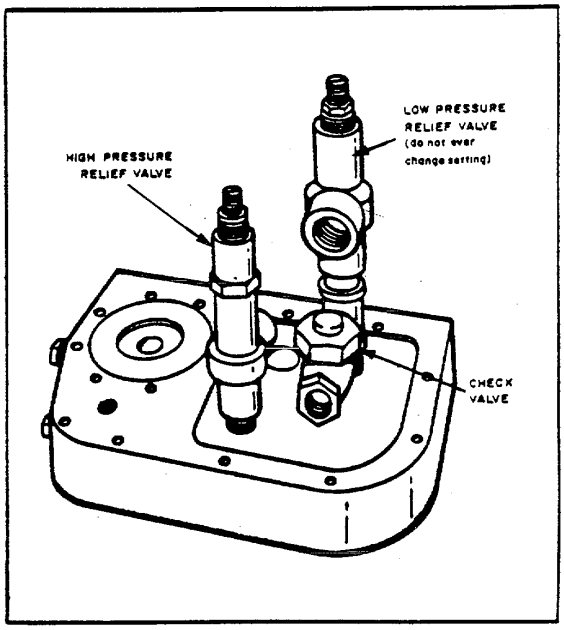


Figure 22. High Pressure Relief Valve Adjustment for 0800 and 1000 Series Shears

CAUTION - Remember that when you reduce the holddown pressure, you cannot cut capacity without danger of the material creeping. This will result in inaccurate shearing. As soon as you are finished using the holddown system at reduced pressure, readjust to recommended pressure.

Drain plugs in the pump cases are the magnetic type to retain any little bits of metal that may be in the hydraulic oil; therefore, when the hydraulic oil is drained, these plugs should be cleaned before being replaced.

HYDRAULIC HOLDDOWN FINGER ASSEMBLES

In order that we may utilize to the fullest extent the benefits of a hydraulic holddown system, we have developed a type of holddown finger that is trouble-free and easy to service.

Because of the difficulty in maintaining leak-free Joints in high pressure hydraulic systems, all connector tubes and Joints have been eliminated between the fingers (Figure 23) and each finger can be removed and replaced independent of the others. Should the occasion arise where a replacement finger is not immediately available, a damaged finger could be replaced with a flat steel plate and a gasket (available from the factory).

The distance from the blade cutting edge to the holddown finger is adjustable. Your shear was shipped from the factory with the holddowns in normal position. For making very narrow cuts, any of the holddown assemblies can be rotated 180° to decrease the distance. Since this reduces the holddown "leverage", when shearing capacity plate under one holddown, it should be adjusted to the "far away" position.

The holddown finger consists of a casting with the bore honed to provide a sliding surface for the packings on the plunger. The hydraulic pressure actuating the plunger in its travel is sealed from leakage around the plunger by a new chevron type of "'Teflon" packing for impact sealing. Action of a heavy spring is utilized to return the plunger to its "up" position after the pressure is released.

While the lower part of the plunger is carefully machined in order to avoid the possibility of indenting or marking polished surfaces, special provisions in the form of molded Urethane cups can be furnished at extra cost to insure mar-free work.

Occasionally, a holddown finger will develop a leak. If this occurs, insert a piece of material of capacity thickness under each finger of the shear, and operate the shear through 8 or 10 cycles. This should reseal the "'Teflon" packing. If the finger continues to leak, chances are that some dirt or residue

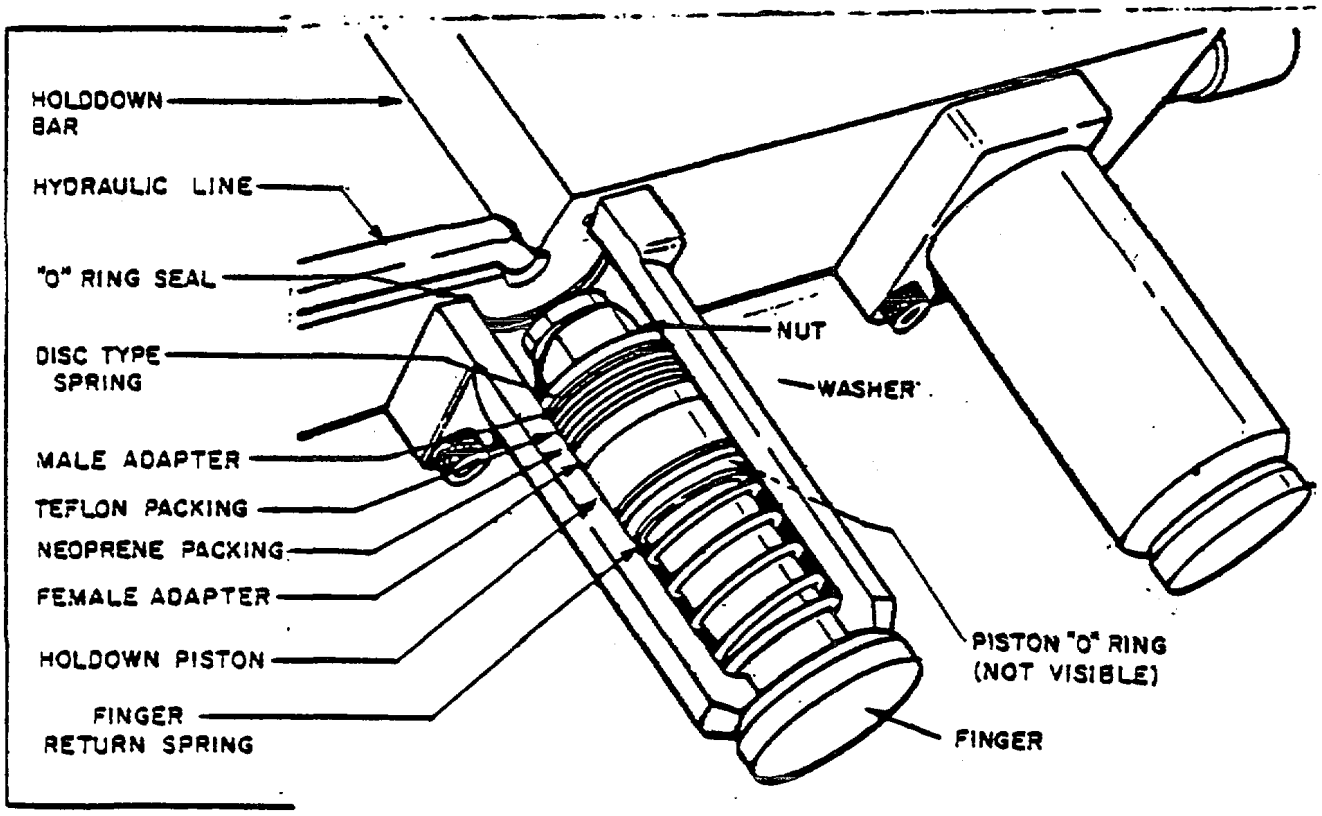


Figure 23. Hydraulic Holddown Finger Assembly

in the hydraulic system has marred the packing, causing the leak. If this is the case, the entire holddown. system should be drained, flushed and cleaned and new finger packing installed. It is important that the system be cleaned before any new packing is installed in the holddown fingers. The holddown system can be drained through the drain plugs. The remaining oil can be removed by operating the shear a few times which will force it out through the bleeder valve at the left end of the holddown bar.

For satisfactory operation of the hydraulic holddown system, make certain you only use the type of oil specified in the lubricating instructions. Ii the oil is too heavy, the plungers will not retract properly and, in some instances, full holddown pressure cannot be obtained.

FRONT OPERATED MICROMETER BACK GAUGE

The back gauge arrangement on the 0200, 0300, 0400, and 0600 series shears is manually operated by a crank, and the standard back gauge range for these shears is 36". Back gauge dials are graduated in fractions to 1/64" or in decimals to .002"

When adjusting the back gauge for a certain setting, for example 4", always move the back gauge beyond that setting, perhaps to 5" or 5-1/2", and then come back to desired setting. In this way, any backlash in the mechanism will be eliminated and an accurate back gauge setting can be made. After the setting is made, it should be locked in position by the hand operated binding screw on the side of the back gauge dial bracket.

The 0800 and 1000 series shears are provided with a motorized front operated back gauge as standard equipment (Figure 24) and have a back gauge range of 48". The motorized back gauge and 48" range may be furnished as an accessory on all other sizes of shears.

The motorized back gauge is equipped with two limit switches (Figure 2) for limiting travel in either direction and an automatic brake to lock the setting.

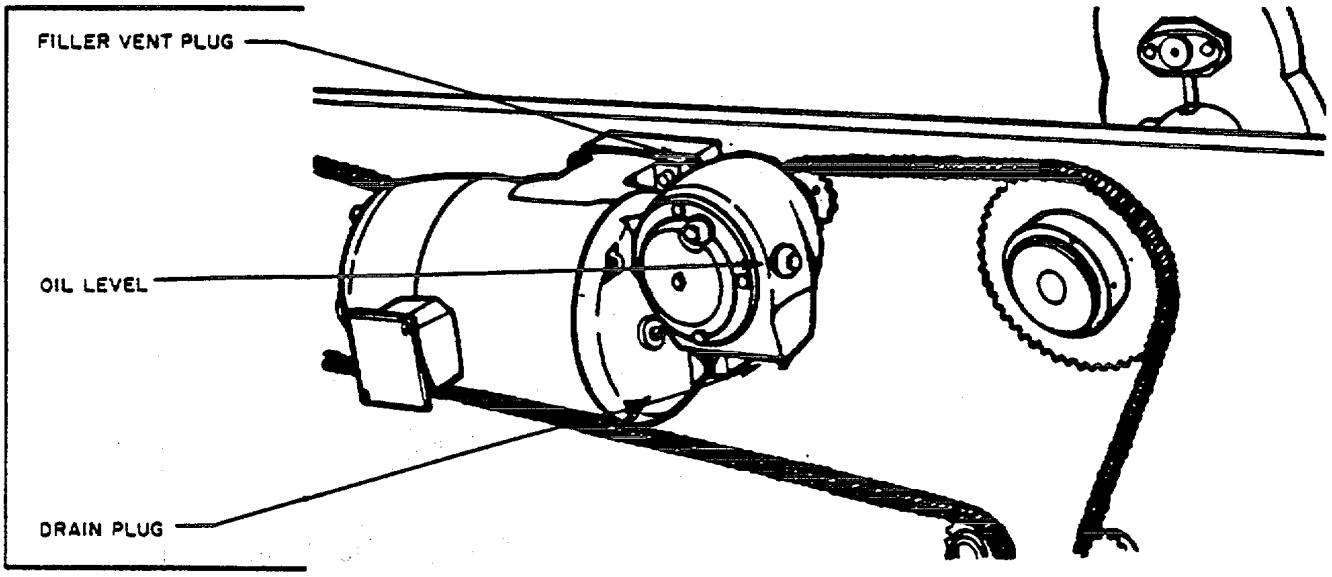


Figure 24. Motor and Drive for Front Operated Motorized Back Gauge

BACK GAUGE - ADJUSTMENT FOR PARALLELISM

After prolonged use or after resharpening the blades, it may become necessary to adjust the back gauge dial to obtain accurate shearing. If adjustment is necessary, adjust the back gauge angle for parallelism first and then check accuracy of the back gauge dial.

To adjust the back gauge, proceed in the following manner:

(1) For the sake of safety, make certain that the main disconnect switch is in the “OFF” position.

(2) Check the back gauge screw and nut for looseness by trying to move the back gauge angle back and forth by hand. If looseness is evident, remove this looseness before proceeding with the adjustment of the back gauge angle. Refer to Figure 25 and proceed as follows:

A. On the underside of the back gauge angle carriage, loosen Compensating Nut Lock Ring :A”.

B. Using a small pin, turn Compensating Nut “B” clockwise until all backlash has been eliminated. do not adjust any tighter than necessary to remove backlash.

C. Retighten Compensating Nut Lock Ring “A”. This adjustment should be made on both the right hand and the left hand carriages.

(3) Move the back gauge angle so that a gauge block, 4” for example, can be inserted between one end of the back gauge angle and the lower blade. Now check the spacing at the opposite end of the back gauge angle. If the spacing is not the same at both ends, the back gauge angle is out of parallel with the lower blade and adjustment is necessary.

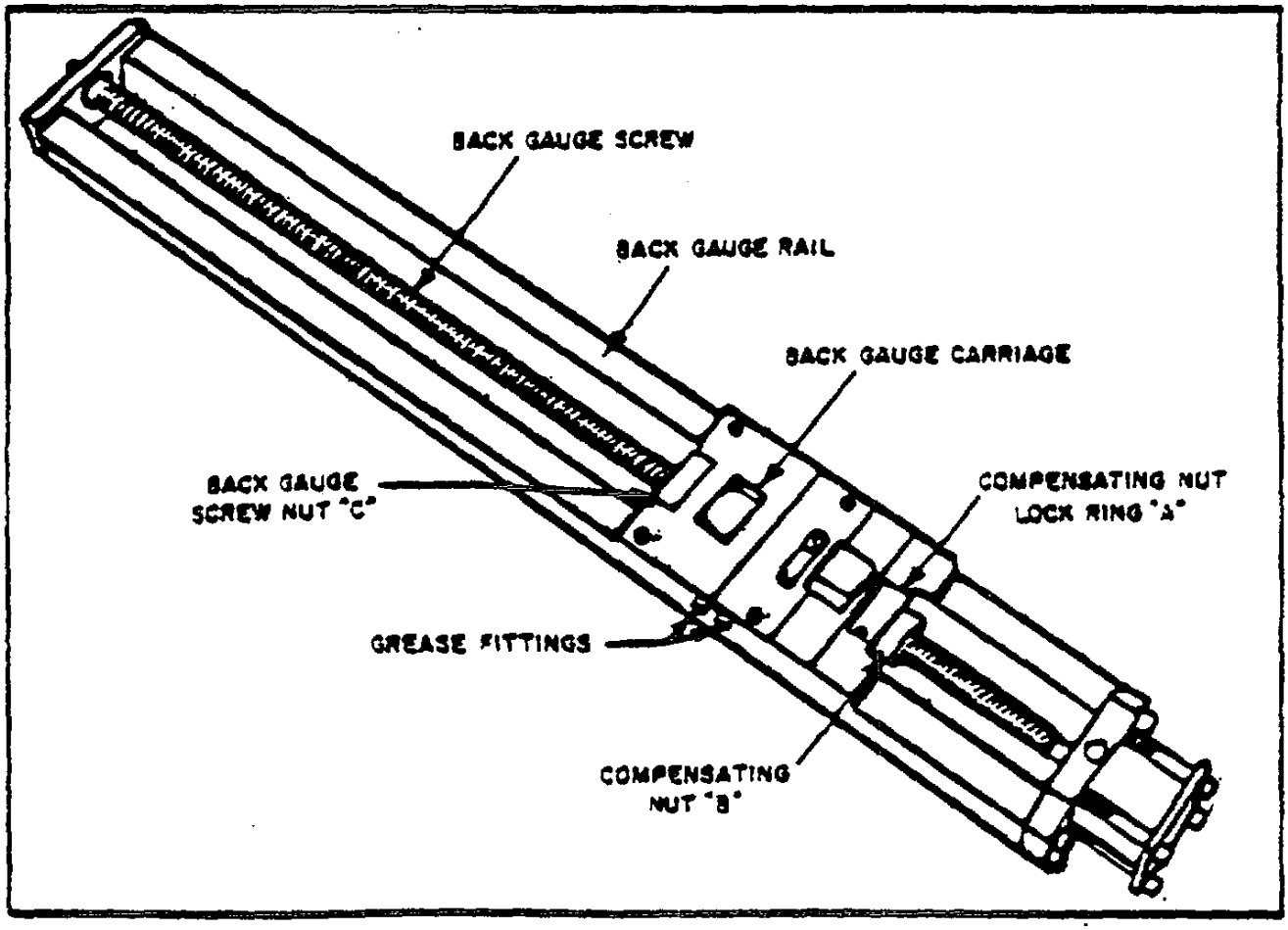


Figure 25. Back Gauge Angle - Backlash Eliminator.

To adjust the back gauge angle for parallelism:

A. Loosen bolt "A" and stud nuts "B" (Figures 26 and 27) on one back gauge angle carriage.

B. Using nuts "B", move the back gauge angle carriage "IN' or "OUT" until the back gauge angle is parallel with the lower blade. Retighten bolts "A" and nuts "B".

C. If the amount of adjustment required is more than 1/16", lock idler sprocket "D" (Figure 27) by placing piece of material between the slide and the sprocket. This will prevent sagging of the chain between the idlers while the next step is being performed.

D. Loosen chain tightening bracket “E" (Figure 27) allowing the chain to drop clear of the sprocket on the end of the back gauge screw.

E. Turn the screw by hand until the back gauge angle is parallel with the lower blade.

F. Tighten chain tightening bracket "E" making certain that the chain is-properly seated in the sprockets and taut.

Use care when re-engaging chain with screw sprocket teeth not to turn the back gauge screw more than is necessary. Make final adjustments as described in steps 3-A and 3-B.

To recalibrate the Indicator Dial, it is necessary to adjust the outer (fraction or decimal) dial to approximately "O". At this point a socket head setscrew will be located at the bottom and access can be had to it through a slot in the bottom of the Indicator Housing. Loosen this set screw and then move the outer dial to the actual back gauge setting. Retighten the set screw. The inner (inches) dial can be adjusted by loosening the 3 button head screws on the hub of the dial. Be sure to retighten.

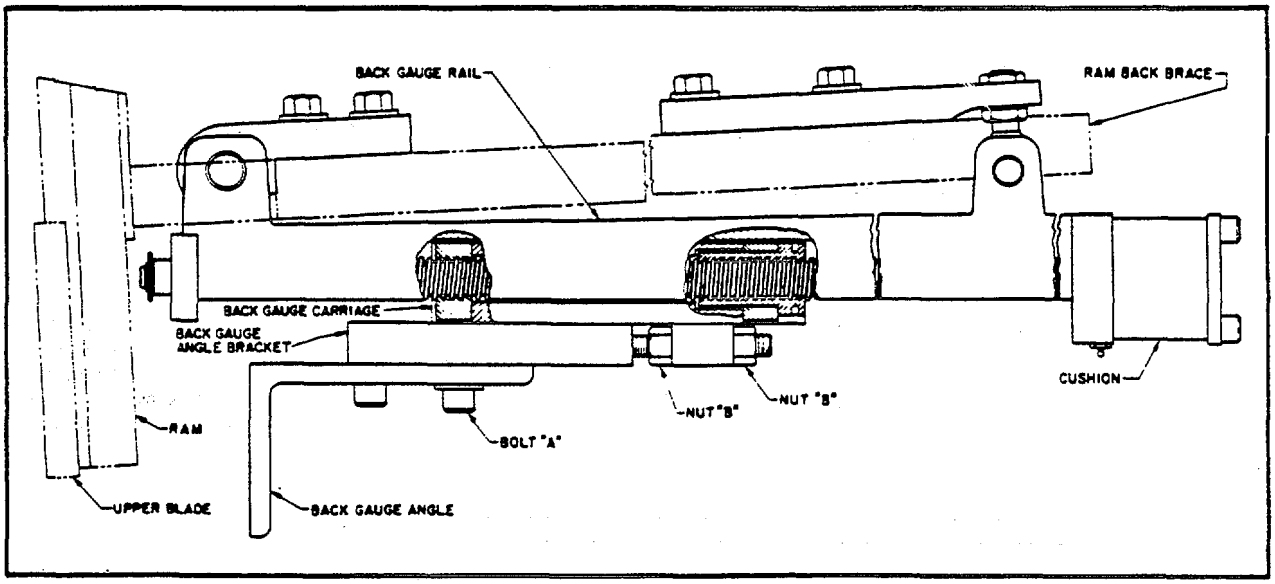


Figure 26. Back Gauge Angle

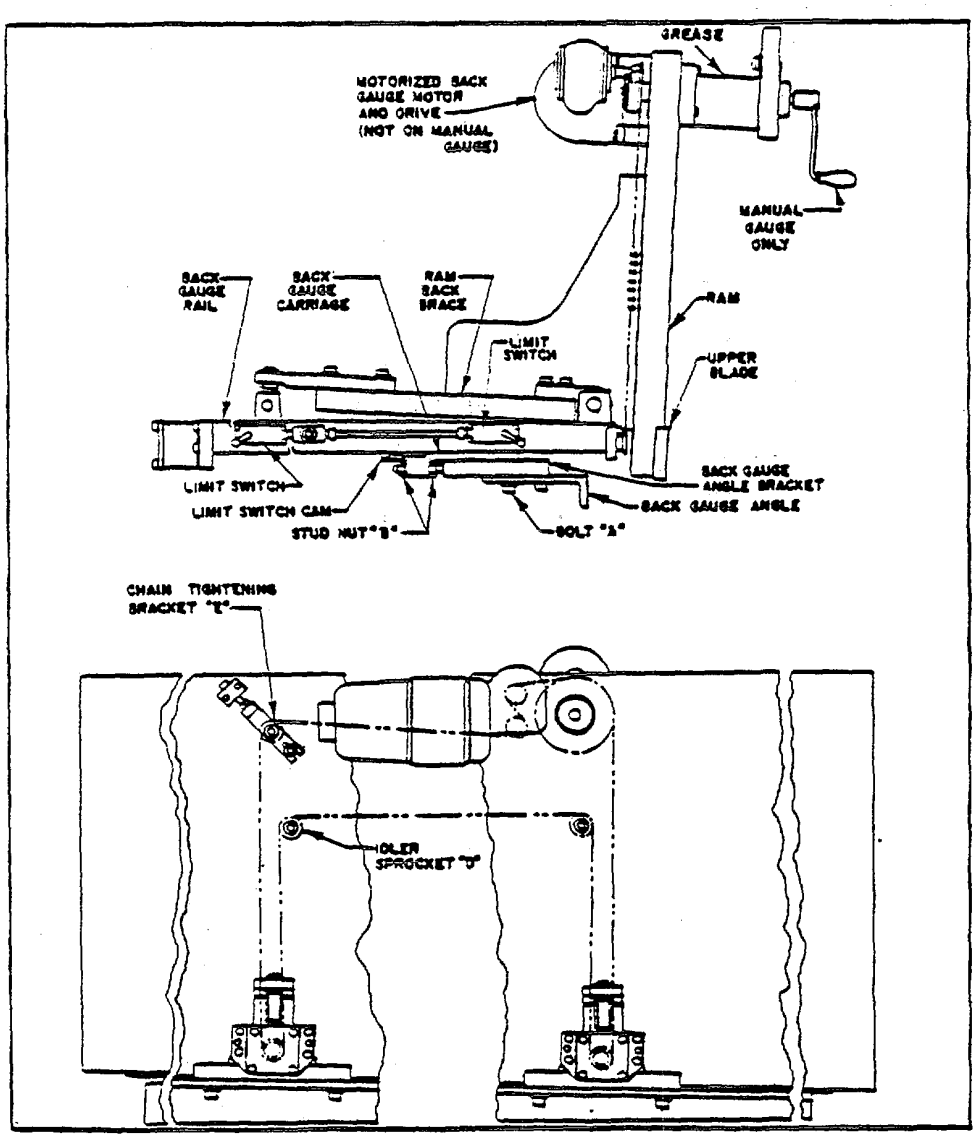


Figure 27. Back Gauge Angle - Adjustment for Parallelism

BACK GAUGE CUSHIONS

All shears have some method of protecting the back gauge screw from damage caused by material constantly striking the back gauge angle. On the 0200, 0300, 0400 and 0600 series shears, a Spring Cushion (Figure 28) has been provided. The spring at the end of the back gauge screw compresses when a heavy blow is made on the back gauge angle and then returns the angle to its proper setting. No maintenance is required on the Spring Cushions with the exception of lubrication as indicated on pages 6 and 7.

The 0800 and 1000 series shears are equipped with Air Cushions (Figure 29) on the end of the back gauge screws because of the heavier service that is required of these size machines. Compressed air in the cylinder of these cushions affords protection in the same manner as the spring in the Spring cushions.

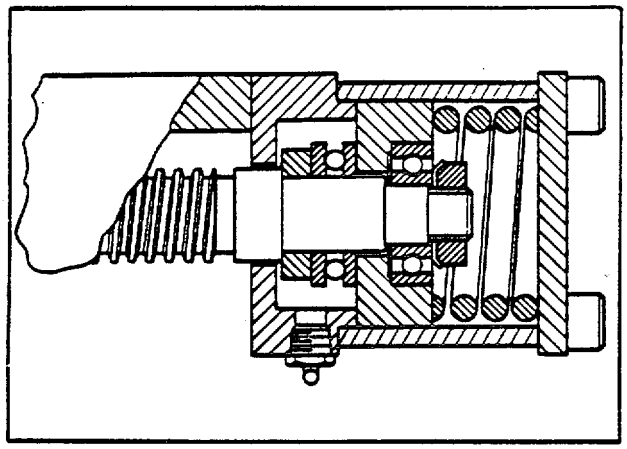


Figure 28. Spring Cushions
0200, 0300, 0400, 0600 Series

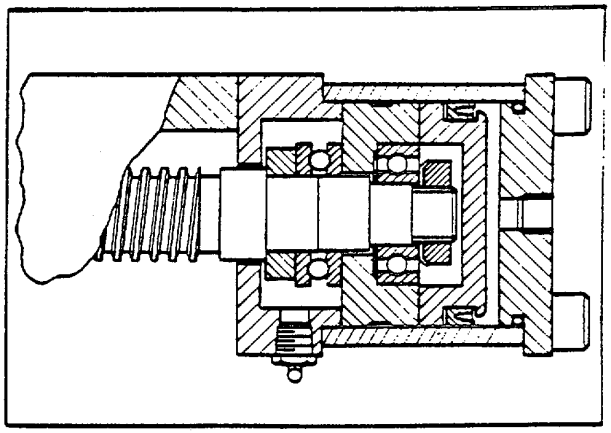


Figure 29. Air Cushions
0800, 1000 Series

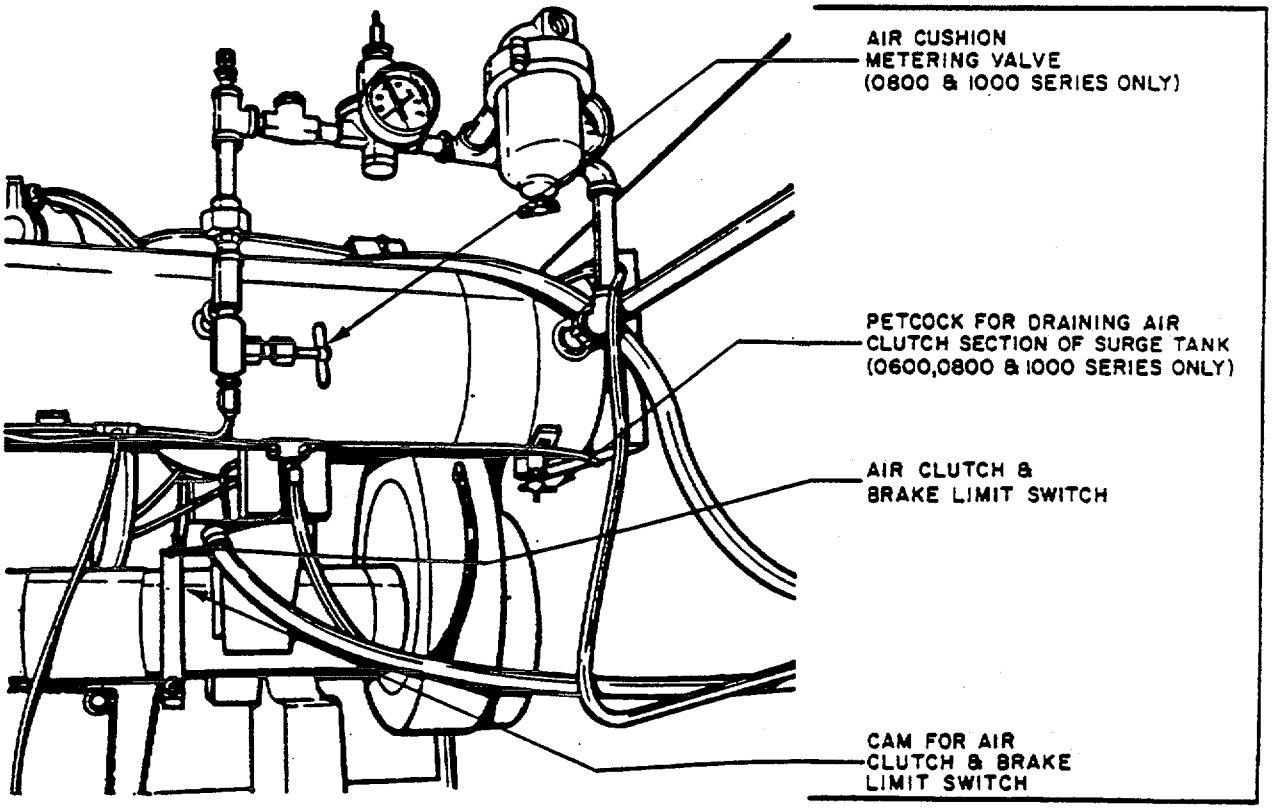


Figure 30. Cam for Operating Combination Air Clutch and Break

GEAR DRIVE ASSEMBLY

The Gear Drive Assembly for the shear is designed to provide maximum life with minimum maintenance (Figure 31).

Because of the method mounting the Combination Air Clutch and Brakes on the shear, the useful life of the gear train is materially increased over the type of drive used on other makes of shears. This is true because there are no moving parts in the gear case except when the shear is in a cutting cycle, and this occurs on only 180° of the driven worm gear.

Because of the greatest wear on the driven worm gear occurs on only 50% of the gear's circumference, the hub, which is keyed to the end of the eccentric shaft, has been provided with two keys. It is designed in this manner so that its position, in relation to the eccentrics, can be altered radially so as to bring different teeth into engagement with the driving worm during the cutting part of a cycle.

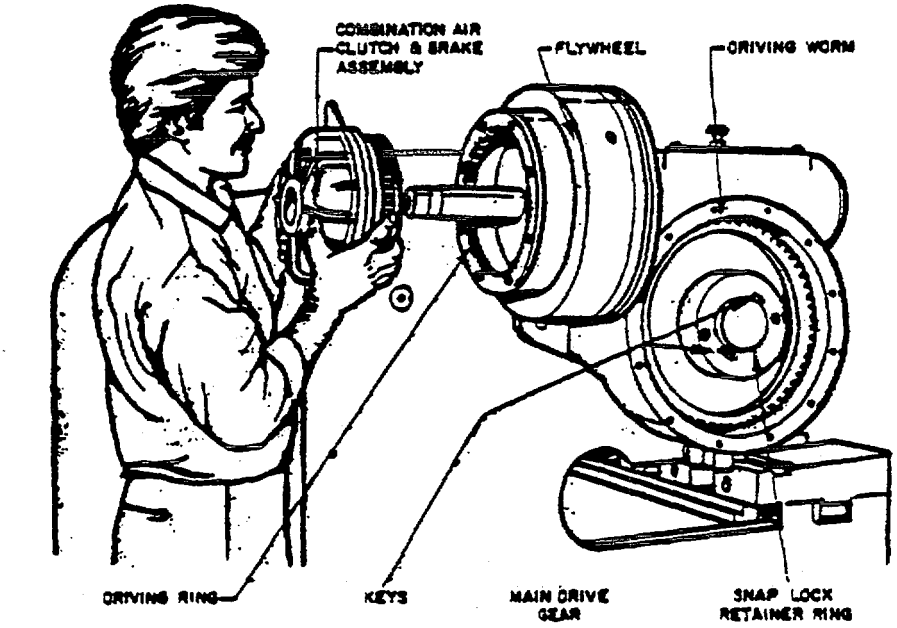


Figure 31. Gear Drive Assembly

If and when it becomes necessary to rotate the driven worm gear, follow these steps:

(1) Jog the slide to the bottom of the stroke.
(2) Stop Drive Motor and wait until flywheel comes to rest.
(3) Drain the oil and remove the gear case side cover.
(4) Remove the snap-lock ring and the two keys.
(5) With the main disconnect switch "ON", turn the selector switch to "INCH".

> CAUTION: DO NOT START DRIVE MOTOR DURING THIS OPERATION OR ANY TIME THE KEYS ARE REMOVED.

(6) Using the foot switch to engage the clutch, rotate the flywheel using V-belts. By rotating the fly wheel, the driven worm gear can be rotated until the next keyway is precisely lined up
(7) Replace the two keys and the snap lock retainer ring.
(8) Replace the cover and fill with fresh lubricant in accordance with lubricating instructions on pages 6 and 7.

OPERATION OF ACCESSORIES

RAM ADJUSTMENT FOR NOTCHING AND SLITTING (Not Available on 0200 Series)

When slitting or trimming the edge of a plate or sheet where the cut to be made is longer than the length of blades, it is necessary that the upper blade be raised so that it remains open on the high end slightly more than the thickness of the material being sheared. The reason for this is to prevent tearing or distorting the sheet at the end of each cut.

For regular shearing of material when the length of cut is within the blade length, the upper blade should close on the high end so as to completely cut off the material. To adjust the shear for slitting or notching, loosen bolts "A", Figure 32, until the engaging teeth of clamp "D" and pinion "C" are separated. It is not necessary to completely remove the clamp-a spring will raise the clamp as the bolts are loosened. With a wrench, turn pinion cross shaft "B", raising the ram all the way for slitting and to an intermediate position for notching. This adjustment will give the desired opening to the blades when the upper blade is at the lowest part of the stroke. It is imperative that bolts "A" be securely tightened before operating the shear. Full "Up" and full "Down" positions are noted by a "U" and a "D" on the eccentric gears opposite the pointers.

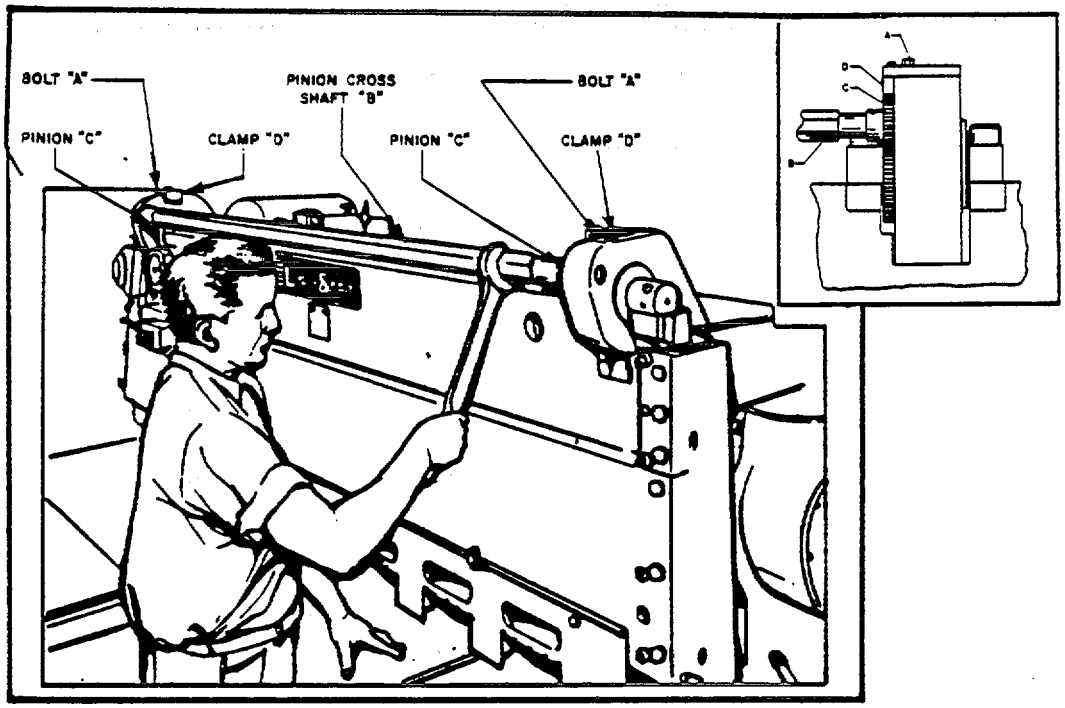


Figure 32. Making the Ram Adjustment for Notching and Slitting

For notching, Figure 33, the upper blade should be adjusted so that at the bottom of the stroke, the high end of the blade penetrates the top surface approximately one-half the thickness of the material being notched. This will cause a slight dent at the end of the cut and indicate the position for the second cut.

When performing slitting or notching through the gap in the housings, it is necessary to remove the Gap Guards. Be sure to replace the Guards as soon as these operations are concluded.

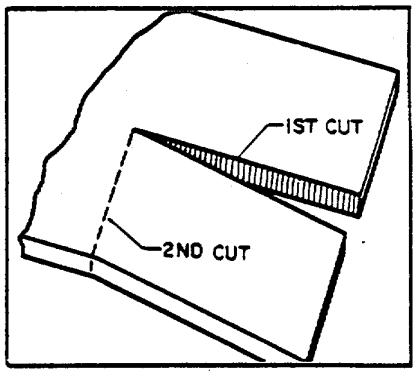


Figure 33. Method of Making a Notch

SOF-LOC HOLDDOWN SYSTEM

The Sof-Loc Holddown System provides a means of lowering the holddowns slowly to the work without impact, and clamping the work to the shear table before the upper knife and backgauge angle start to move. With this system. highly polished or soft material can be sheared without marking, and excessive noise and vibration from the holddowns are eliminated.

Your Shear is arranged so that the hydraulic holddowns can be operated with the Sof-Loc Holddown System or with the standard Hydro-old System.

Hydro-Hold Operation:

Turn the Holddown Selector Switch to HYDRO-HOLD. In this position the Sof-Loc Holddown System is inoperative and our machine wilt operate in the usual manner with the holddowns being operated entirely by the Hydro-Hold Pump Case. The machine will operate at the maximum strokes per minute as shown in the specifications. The UP and DOWN Buttons are inoperative.

Sof-Loc Operation:

Turn the Holddown Selector Switch to SOF-LOC. When the foot switch is depressed, the air solenoid valve on the air Line to the Sof-Loc Cylinder is opened and the Sof-Loc Cylinder will cause the holddowns to be lowered, without impact, lightly clamping the work to the table. The pressure switch on the left end of the holddown bar will close and activate the air clutch, starting the shearing cycle.

When the air clutch is activated, the Hydro-old Pump Case then takes over, quickly increasing the pressure in the holddowns before the upper blade makes contact with the material.

The approach speed of the Holddowns can be regulated by adjusting the Flo-Control Valve which is located between the Sof-Loc Cylinder and the Air Solenoid Valve. With the Flo-Control Valve al the way open, the m1achne will operate at approximately 20% fewer strokes per minute than shown in the specifications. As the Flo-Control Valve is closed, stowing the approach speed of the Holddowns, the strokes per minute will decrease.

Up and Down Buttons:

The UP and DOWN Buttons can be operated only when the Selector Switch is turned to SOF-LOC. When it is desirable to check the position of the work before making a shearing cut, the holddowns can be lowered by depressing the DOWN Button. U it is necessary to reposition the work, the UP Button is depressed to release the holddowns. The machine will not make cutting stroke until the Foot Switch is depressed. The Pressure Switch is preset at the factory to activate the Clutch Air Solenoid when proper clamping pressure is reached and there should be no need for readjustment of this setting.

BALL TRANSFERS

Ball transfers (Figure 34) are furnished as standard equipment on the 0800 and 1000 series shears and can be provided as an optional, extra cost accessory on all other areas.

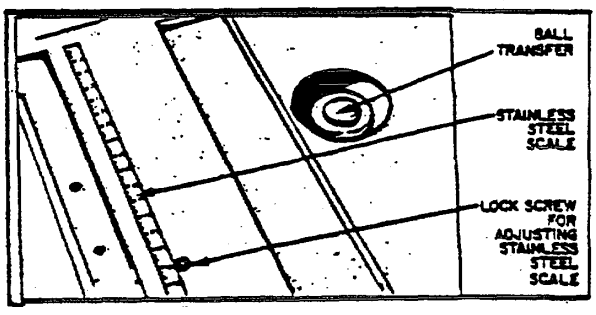


Figure 34. Ball Transfer

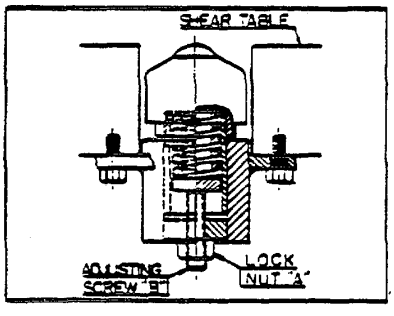


Figure 35. Ball Transfer Adjustment

It is important to occasionally clean the scale and dirt from the Ball Transfer sockets as this material may keep the transfers from depressing when the holddown fingers clamp the material to be sheared. The height of the ball above the surface of the shear table is adjustable (Figure 35) and should be just high enough to allow easy movement of a piece of capacity plate across the shear table.

To adjust the height of the balls, loosen lock nut "A" (Figure 35) and turn adjusting screw "B" either to the right or to the left depending on the adjustment required. Be sure to retighten lock nut '"A".

SQUARING ARM

Squaring Arms can be provided on any size machine in the following ranges: 72", 96", 120" and 144". Each squaring arm is provided with a stainless steel scale and an adjustable hinged stop (Figure 36). After the lower blade has been sharpened a number of times, it will become necessary to adjust the scale for accurate measurement. Lock screws (Figure 34) are provided to hold the scale in place. The screws are loosened to move the scale for adjustment. Adjustment should always be made for accurate measurement from the cutting edge of the lower blade. Make sure the scale in the squaring arm is adjusted at the same time as the two scales in the shear table.

The adjusting bracket is bolted to the side of the squaring arm and the front of the shear table. This is to help hold the squaring arm in position and square with the lower blade. Assuming the squaring arm is installed on the right end of the table, to adjust it to the left, loosen the bolt between the bracket and the table, move the arm in that direction and retighten the bolt. To adjust to the right, loosen the bolt between the bracket and the arm and move the arm in that direction. Place shims between the bracket and the arm and retighten the bolt. If the squaring arm is installed on the left end of the table, the above directions should be reversed:

The squaring arm can be used on either the right or left hand side of the shear. To use the squaring arm on the opposite side of the shear, remove the bolts from the gauge bar and move the gauge bar to the opposite edge of the Squaring Arm. The squaring arm assembly can now be moved to the opposite end of the shear.

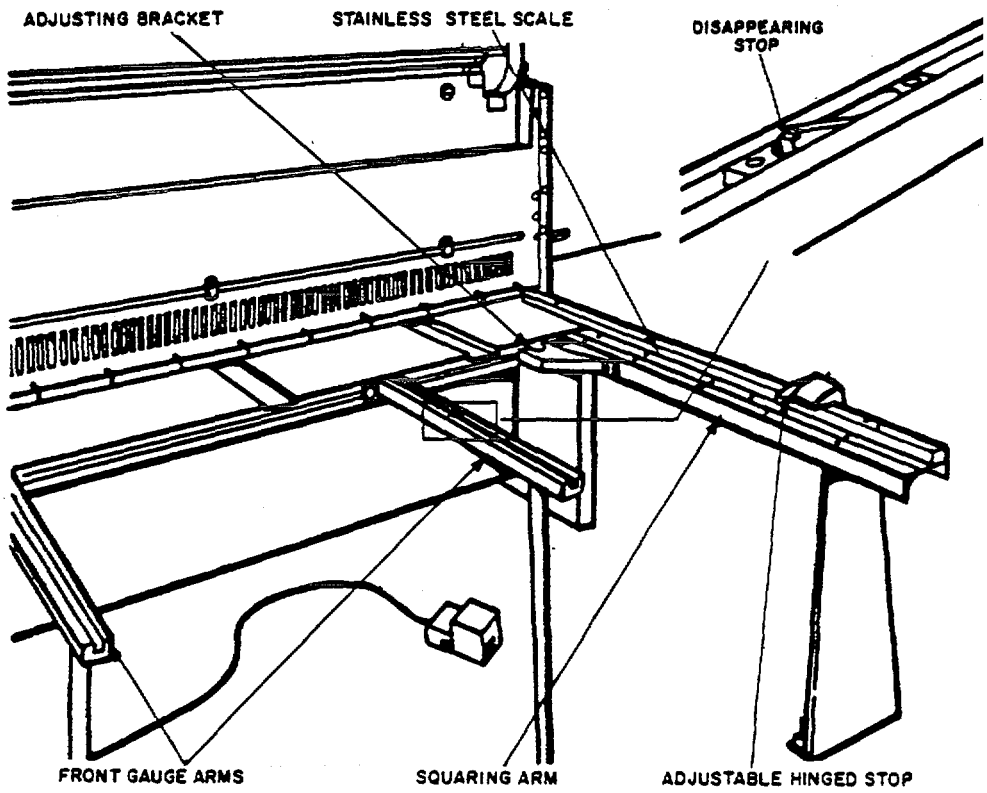


Figure 36. Using the Squaring Arm and Front Gauge Arm Equipped With Disappearing Stops

HINGE BACK GAUGE ANGLE

If material longer than the range of the back gauge is to be sheared, a Hinged Back Gauge Angle can be furnished at extra cost (Figures 37 and 38).

To change the back gauge angle from its use as a stop, it is swung up and out of the way. To accomplish this, remove the two bolts on each of the back gauge angle holding it to the back gauge carriage (Bolts ”A” and “B”, Figure 37). When the bolts have been removed, the back gauge angle will hinge on pivot pin “C”, Figure 37./ On the smaller, short length machined, it is easy matter to now swing the back gauge angle up and over as shown in Figure 38. On larger, longer machines, it is an advantage to use long handled adjustable end wrench to assist in turning the angle. Bolts “A” and “B” are then used to hold the angle in the “Up” position and are inserted from the top.

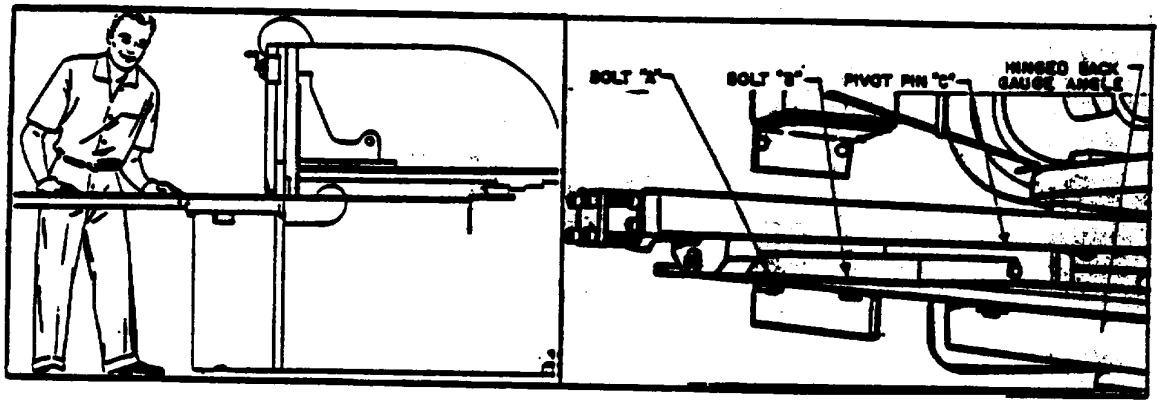


Figure 37. Hinge Back Gauge Angle in the “Down” Position When Being Used as a Back Gauge Stop

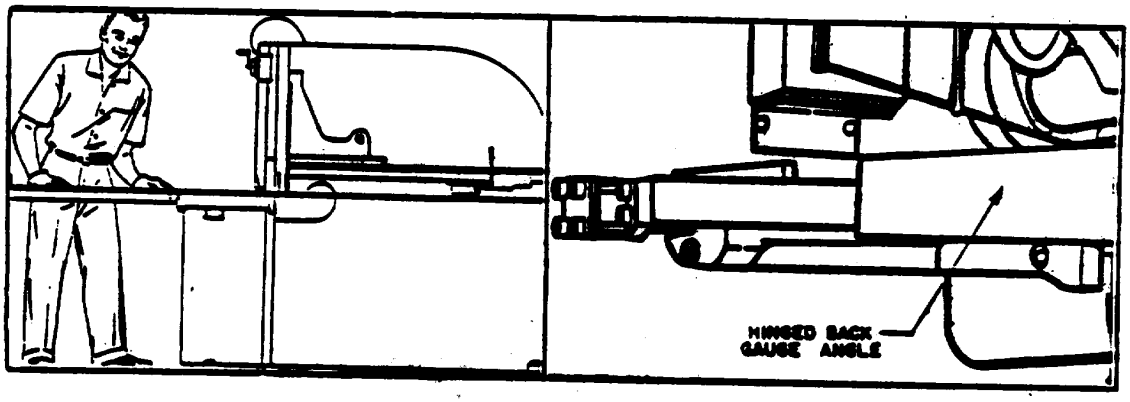


Figure 38. Hinge Back Angle in the “UP” Position When the Shear is Being Used to Shear Material Longer than the Back Gauge Range

SLITTING GAUGE

The Slitting Gauge (Figure 39) is an accessory that can be furnished at extra cost when ordered. Its primary purpose is to help guide material across the shear table during slitting operations. The Slitting Gauge is bolted to the left end of the shear table on shears that cut from left to right. Special order shears that cut from right to left would require a Slitting Gauge that is bolted to the right end of the shear table.

To properly use the Slitting Gauge, the following steps should be followed:

(1) Adjust ram for slitting (see previous instructions on page 31).
(2) Set front gauge bar to correct distance by measuring from cutting edge of the lower blade.
(3) Insert material into throat of machine from right side (from left side if the shear cuts from right to left) keeping it against the front gauge bar-about half-way the length of the table.

(4) Make a cut. One portion of the slit material will remain on the shear table, the other portion will bend down in the throat of the machine.

(5) Advance a material keeping the cut edge remaining on the table, against the inside lip of the slitting gauge. Make successive cuts.

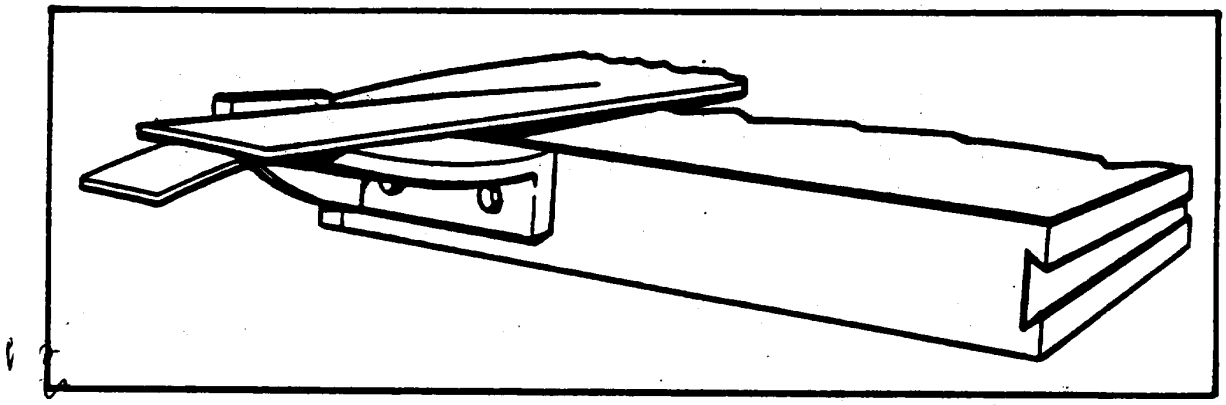


Figure 39. Slitting Gauge

MAGNETIC SHEET SUPPORT

The Magnetic Sheet Support is normally furnished with a capacity of 16 ga. Mild steel with either a 36” or 48” Back Gauge Range. (It can be furnished on special order for heavier capacity material.)

The proper adjustment of the magnetic channels is accomplished as follows:

(1) Cut a strip of material, of the type will be sheared in production, about 2” to 3” wide and no longer than 35”.

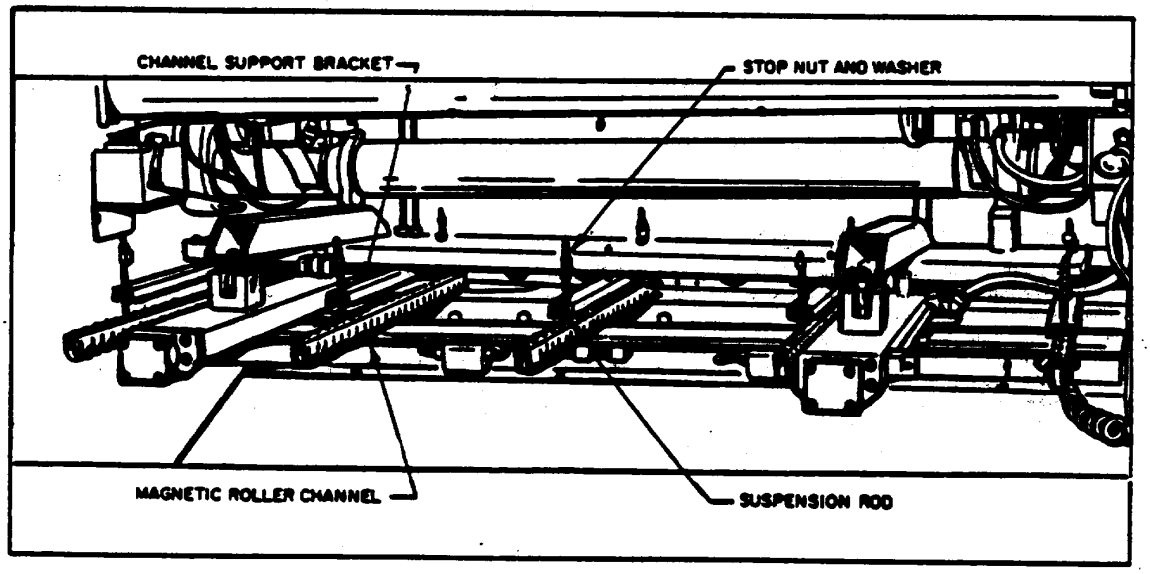


Figure 40. Magnetic Sheet Support

(2) Place this strip against the magnetic rollers from the rear of the machine on the first channel.

(3) Slide the strip toward the lower blade.

(4) Adjust the stop nuts on the channel support rods so that the strip will just clear the edge of the lower blade with the channel level (check with a machinist level.).

(5) Follow the same procedure with the other channels.

The magnetic rollers are mounted in the channels with clearance holes. This allows moderate variation in thickness of materials - it eliminates the necessity of a complete readjustment of all the channels when different gauge is sheared. The material should be reasonably flat. Kinked or bent material will have a tendency to fall off the magnetic materials.

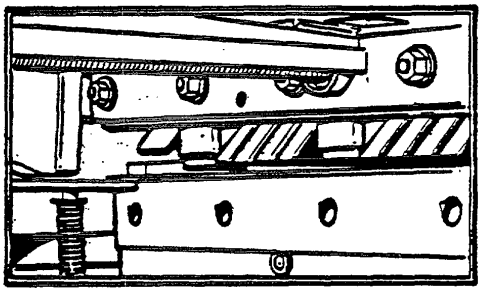
If very thin material fails to slip off the roller channels and fall to the water chute at the end of the cutting cycle, raise and clip some of the channels.

When not required, the magnetic channels should be pulled up out of contact with the material. Special clips are provided that are inserted on the front and rear rods between the stop nut and washer and will hold the channels up.

The magnetic rollers are guaranteed to hold their strength indefinitely.

PLATE SUPPORT ARM

The Plate Support Arm is valuable when cutting strips. The Support Arm is spring loaded and holds the material up until the cut is completed-eliminating distortion of the sheared edge. The Support Arm should be adjusted to the same height as the shear table.



MAINTENANCE HINTS

There are many superior design features built into your shear; however, without proper maintenance and adjustment, the machine will not perform as it should. To keep your shear operating at peak efficiency, the following hints may be helpful.

SHEAR NOT CUTTING CAPACITY

If your shear is not cutting capacity, the two things to check first are, the air pressure and condition of the blades. Air pressure for the air clutch should be set at 80 Psi. If the gauge reads 80 psi, shut off the main air line to the shear and let the flywheel come to rest. Set the selector switch on the control box to 'inch", and jog the foot switch repeatedly until all of the air bleeds out of the clutch and air lines. If the air gauge is reading correctly, it will drop to zero. If the needle remains at some position other than zero, the gauge is reading “light” by that amount. For example, if the needle stops at 20 when no air pressure is in the gauge, it will actually require only 60 pounds of air pressure to have It read 80 psi. It is, therefore, 20 psi “light”. To correct this condition, either compensate for the “lightness” in the adjustment of the gauge or replace the gauge with one known to be correct.

Dull or nicked blades will not only keep the shear from cutting capacity but will also overload the machine. MAINTAIN SHARP BLADES.

Another reason for a shear not cutting capacity is the possibility of the piston in the air clutch leaking or the clutch plate worn to point of replacement. To check the clutch for air Leakage, Let the flywheel come to rest, set selector switch to "Inch" and hold the foot switch depressed. Air will now enter the clutch and, if the packing is worn or excessively dirty, you will be able to hear air leaking past the packing. To correct this condition, dismantle the clutch, clean or replace this packing and reassemble. To replace a worn clutch plate, see instructions on page 21.

HOLDDOWNS COME DOWN AT END OF STROKE

The holddowns come up as the ram moves upward but drop down again at the end of the stroke. This is caused by the ram stopping past top center. To correct this, the cam for the air clutch should be adjusted to stop the ram sooner. Loosen the two bolts on the cam and rotate it slightly so the top moves toward the ram. Retighten the bolts and cycle the shear. Notice if the ram stops at the top. If the stopping point of the ram is erratic, this could be an indication of a worn brake plate. See page 21.

SHEAR REPEATING

(1) Air Solenoid dirty. Dismantle and clean.

(2) Clutch Limit Switch not contacting cam or broken. Adjust arm on Limit Switch or replace switch.

(3) Relay in control box has burned points. Replace points or relay.

(4) Clutch piston sticking. Dismantle clutch and clean internally. Apply lubricant to worm shaft and keys where piston slides.

HOLDDOWNS DO NOT HAVE PRESSURE

First check pressure by installing a pressure gauge on the hydraulic line at the left end of the holddown bar. Bleed the system to purge air. If the pressure is still low, check for a broken piston spring in the pump case observe if the piston roller is following the cam throughout the cycle. Check for improper operation of the check valve in the pump case. As a last resort increase the pressure setting on the pressure relief valve.

GENERAL MAINTENANCE

In order to provide many years of trouble-free service and accurately sheared parts from your Shear, it should be inspected and checked on a regular basis.

(1) Keep all bolts tight.

(2) Check oil levels in lubricating reservoir, gear case and hydraulic pump case.

(3) Check hydraulic holddown pressure.

(4) Check machine level.

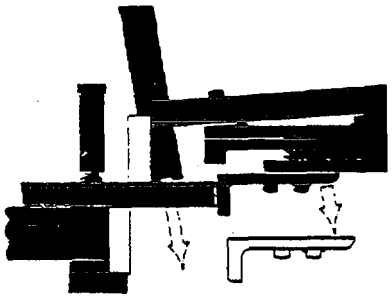
(5) Check slide bearing clearances.

(6) Check proper operation of all operating controls and electrical devices.

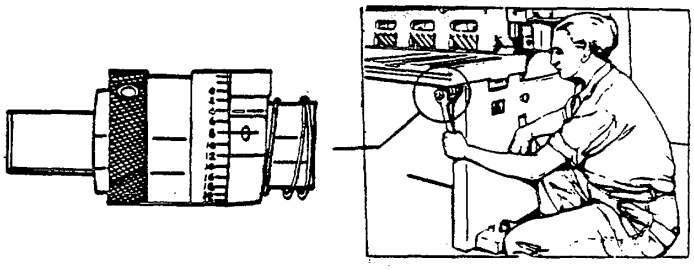
(7) Turn or change dull blades.

(8) Check parallelism of back gauge angle and reading of indicator.

(9) When turning or changing blades, recalibrate Blade Clearance Indicators.

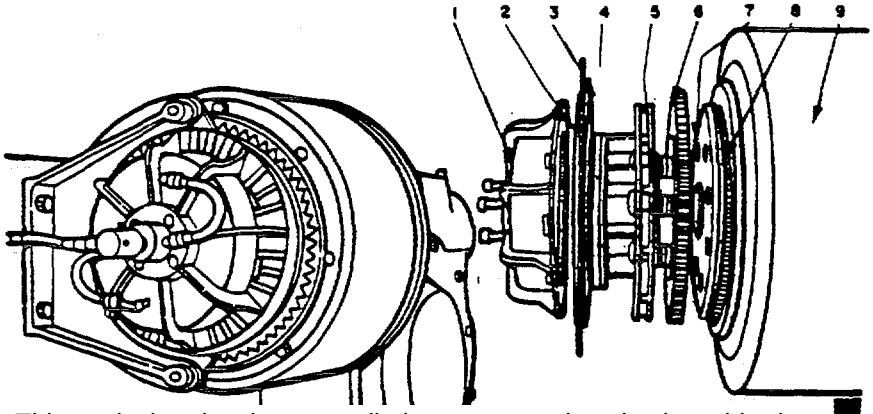


SLANT-BLADE CUTTING
...performed by inclined ram produces a true right angle cut, increases blade life, helps to maintain perfect blade clearance and gives automatic clearance between the metal being cut and the back gauge.



BLADE CLEARANCE INDICATORS
...make accurate blade clearance setting easy. Although Shears may be set for minimum sheet thickness and still shear all material to capacity, correct blade clearance assures square burr-fee cuts and prolongs life of blades. Indicators at each end of table read in thousandths, simplify setting, eliminate use of feeler gauges. (Not on 0200 Series)

EXCLUSIVE COMBINATION AIR CLUTCH & BRAKE



Elements of combination clutch and brake that provide high efficiency, low maintenance

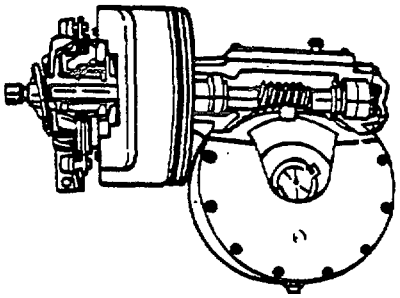
1. Clutch Cylinder
2. Brake Plate
3. Piston Packing
4. Clutch Piston
5. Brake Springs
6. Clutch Plate
7. Clutch End Plate
8. Driving Ring
9. Flywheel

...This exclusive development eliminates excessive clutch and brake maintenance common on heavy duty plate shears. It is self adjusting for fast, smooth staring and safe, positive stopping throughout the life of the friction material.

The clutch is designed to provide automatic overload safety. A "fool-proof" feature is also provided by the multiple spring loaded brake and single acting three-way valving that automatically applies the brake in the event of electrical power or air supply failure.

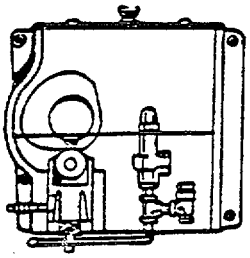
The single unit design eliminates "overlap" between clutch and brake. Multi-finned construction and hollow disc design provide for maximum heat dissipation. This exclusive design requires that only the flywheel be rotating when the clutch is not engaged. The multiple spring-loaded brake automatically stops and holds the ram at the top of the stroke after each cutting cycle.

RUGGED DRIVE

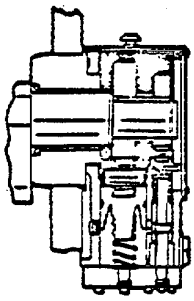


...with every component designed and proved for minimum life with minimum. maintenance. A heat treated alloy steel worm shaft on heavy anti-friction bearings drives a specially-cut high tensile, alloy bronze worm gear.

FEATURES

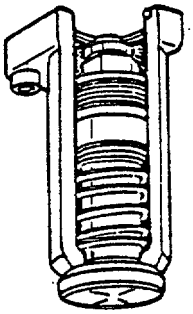


HYDRO-HOLD
HOLDDOWN SYSTEM
The entire system has been designed to eliminate leakage and to minimize maintenance time. Pump cam and roller have been designed to insure long, trouble-free service. All drain plugs are magnetic to guarantee clean hydraulic oil.



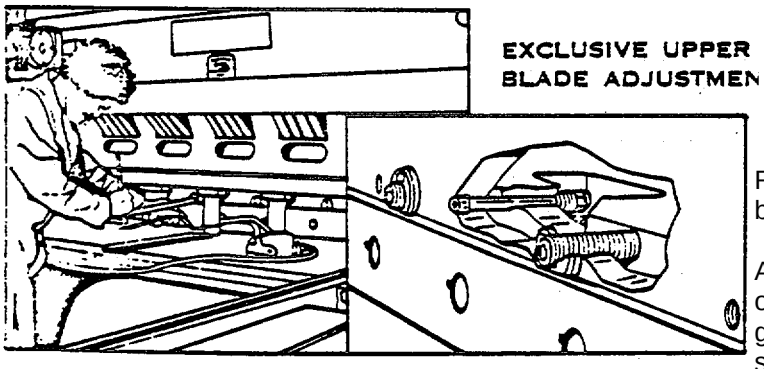
The Series 0800 Sheer is equipped with a specially designed hydraulic holddown system. The holddown pump case has two hardened cams attached to the end of the eccentric shaft.

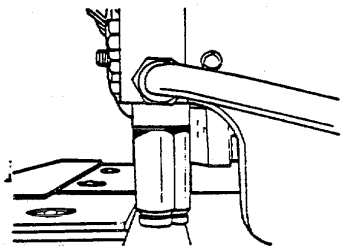
One cam actuates a large piston to furnish sufficient volume to bring all holddown fingers to the shear table. The second cam then actuates a small piston to build up the required pressure. This two-pump arrangement is used to eliminate the high cam-load concentration required of a one-pump system of sufficient size for the job.



NEW HOLDDOWN FINGERS
Holddown fingers have been completely redesigned to eliminate connector tubes, a constant source of high pressure oil leaks. A new, chevron type of "Teflon" is used for impact sealing. Should the occasion arise, individual fingers can be removed from the holddown bar and replaced with a flat steel plate also offers its exclusive, silent, positive "Sof-Loc" holddown system as an optional extra for use on soft or highly polished material or for extreme accuracy. This system, precisely controlled by the operator, prevents even the slightest impact mar.

HOLDDOWNS
INDIVIDUALLY ADJUSTABLE
Adding further holddown versatility and convenience, holddown fingers have an eccentric design which allows a 180' rotation and lets the finger be set as close as %' or as far away as 2' from the cutting edge, depending on the machine size.



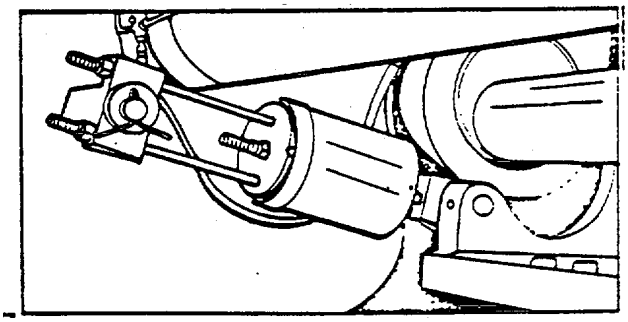


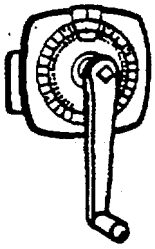
Ram construction assures straight, clean cuts. The back brace is machined from solid steel plate.

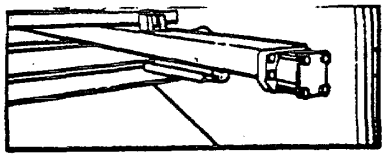
Adjustment of the upper blade provides a simple method of compensating normal deflection and errors in blade grinding without the use of shims. Easily accessible screws permit one man to make the adjustment in minimum time.

SPRING COUNTERBALANCES

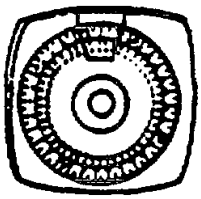
These support the weight of the ram, ram back brace and back gauge assembly. The counterbalances exert a backward and upward force to maintain -maximum ram and slide bearing contact, preventing improper blade clearance or blade damage caused by "floating" of the ram. Spring counterbalances are furnished on 0200, 0300 and 0400 series.

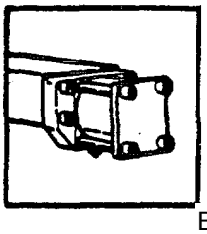






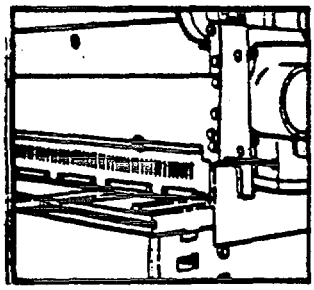
Similar to the motorized gauge, this gauge is operated by a convenient crank extending from the face of the dial. In all other respects, the two gauges are alike.





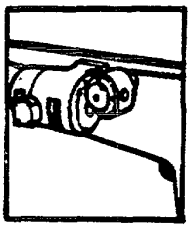
FRONT-OPERATED
MOTORIZED BACK GAUGE

Push-button operated back gauge with controls for fast forward, fast reverse and slow forward affords quick, easy, accurate setting to 1/128 inch (dial is graduated in 64ths or optional .002). Easy-reading dial shows full range of gauge. Motorized gauge is standard on series 0800 shears and is optional extra on other models.



FINGER GUARD
AND GAP GUARDS

The hinged finger guard and gap guards provide maximum safety, protecting the operator from both hold downs and blades. The entire guard is easily swung out of the way for blade adjustment. Meets O.S.H.A. and A.N.S.I B11.4 safety standards.

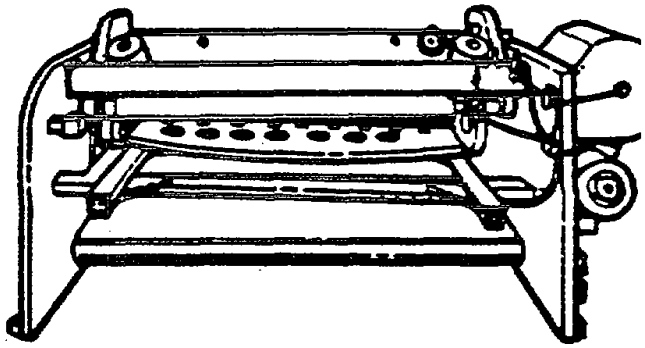


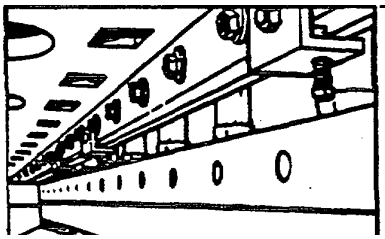
BACK GAUGE CUSHIONS

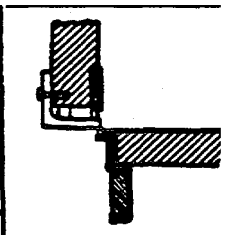
Insuring long life and accuracy of the back gauge, all shears are equipped with back gauge cushions. Series 0200 through 0600 models have spring cushions: the 0800 series has pneumatic cushions. The cushions absorb the shearing shock and the impact of heavy plates striking the gauge angle.

AIR COUNTERBALANCES

Reciprocating-type counterbalances offset the weight of the ram assembly and also hold the ram against the bearing surfaces, eliminating "floating" action and allowing extremely close blade clearance to be maintained The housing spacer is a two-section registered air vessel One serves as a surge tank for the clutch and the other section for the air counterbalances. Air counterbalances are furnished on 0600 and 0800 series.





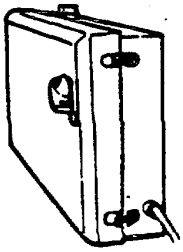


BLADE CHANGING JIGS

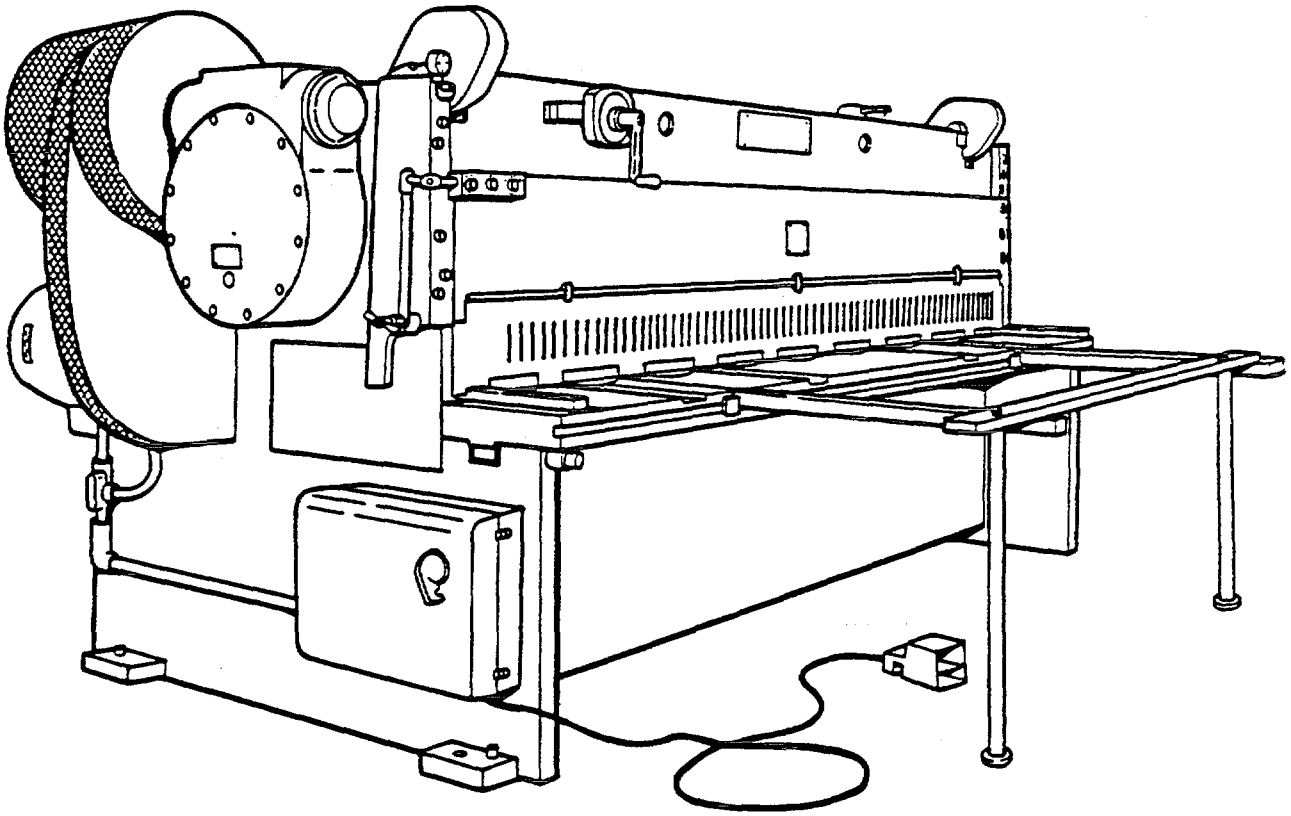
To make blade changing quicker, easier and safer, jigs are supplied for removing or installing the upper blade. In combination with the hinged finger guard these jigs greatly simplify blade changing.

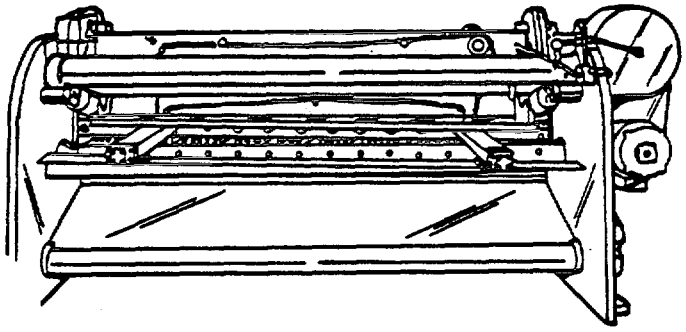
STANDARD ELECTRICAL EQUIPMENT

Motors are open, drip-proof, high torque, 8-13% slip. Controls are mounted in a NEMA 12 enclosure and include magnetic starter with overload and low voltage protection, 115V control circuit disconnect switch, conforming to J.I.C. Electric Standard 1967. Push buttons and selector switches are mounted separately on front of machine at operator's station. Moveable foot switch has guards on top and sides.



SERIES
3300
CAPACITY





SERIES
0300
POWER
SQUARING
SHEARS

S P E C I F I C A T I O N S

MODEL NUMBER	0214	0216	0304	0306	0308	0310	0312	0406-H
Capacity in Mild Steel	10 ga. x 14'	10 ga. x 16'	3/16" x 4'	3/16" x 6'	3/16" x 8'	3/16" x 10'	3/16" x 12'	1/4" x 6'
Distance Between Housings	14'4"	16'4"	4'4"	6'4"	8'4"	10'4"	12'4"	6'4"
Blade Size (4 Edge)	1" x 4" x 172"	1" x 4" x 196"	1" x 4" x 52"	1" x 4" x 76"	1" x 4" x 100"	1" x 4" x 124"	1" x 4" x 148"	1" x 4" x 76"
Blade Rake Per Foot	3/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	5/16"
Strokes Per Minute	60	60	60	60	60	60	60	60
Total Holddown Pressure—Tons	8½	9¾	3	4¼	5½	6½	7¾	5
Holddowns to Cutting Edge—Adjustable	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"	1/8" to 1 5/8"
Throat Depth	18"	18"	18"	18"	18"	18"	18"	18"
Motor Drive—H.P. Required	7½	10	5	5	5	7½	7½	5
Back Gauge Range	36"	36"	36"	36"	36"	36"	36"	36"
Front Gauge Range	55"	59"	50"	50"	50"	50"	55"	50"
Approximate Domestic Shipping Weight	22,000#	25,000#	10,400#	12,000#	14,000#	16,000#	19,000#	12,000#
APPROXIMATE DIMENSIONS								
Overall Length	205"	229"	85"	109"	133"	157"	181"	109"
Overall Width*	80"	84"	75"	75"	75"	75"	80"	75"
Overall Height	69"	69"	68"	68"	68"	68"	69"	69"
Floor to Top of Table	32"	32"	32"	32"	32"	32"	32"	32"
Depth of Bed Below Floor	0	0	0	0	0	0	0	0

Add 36: when Front Gauge Arms are attached

0314-1/8: x 14' - See Series 0400

BASE PRICE OF SHEAR INCLUDES:
Adjustable Hydraulic Holddowns.
Hinged Finger Guard for Holddowns and Blades
Front Gauge Extension Arms and Gauge Bar
Front Operated Back Gauge-Manually Adjusted. Spring Cushions
Side Gauge.
Fully Automatic Pressure Lubrication.
Air Clutch and Spring Brake with Solanoid Control.
Remote Foot Switch with Selector Switch for Jag Off, Run.
Adjustable Table for variable blade clearance with finger and
dovetail slots and Stainless Steel Scales.
Blade Clearance Indicators.
Blade Changing Jigs for top blade.
Spring Counterbalances.
Flywheel and V-belt guard.
Motor Sheave and V-belt guard.
Arranged for but not including Drive Motor and Controls.

OPTIONAL ACCESSORY EQUIPMENT
AVAILABLE AT EXTRA COST
Standard Tool Steel Blades.
High Chrome High Carbon Blade
Sof-loc Holddown System.
Motorized Back Gauge.
Hinged Back Gauge Angle.
489 Back Gauge Range.
Magnetic Sheet Support
Light Gauge for cutting to scribed line.
Ram Adjustment for Sitting or Notching.
Slitting Gauge.
Squaring Arm with Hinged Stop and Stainless Steel Scale.
Disappearing Stops for Front Gauge Arms and Table.
Urethane Protector Cups for Holddowns
Increased Throat Depth.
Non-Repeat Control.

r e p a i r

p a r t s

m a n u a l

P o w e r

s q u a r i n g

s h e a r s

series

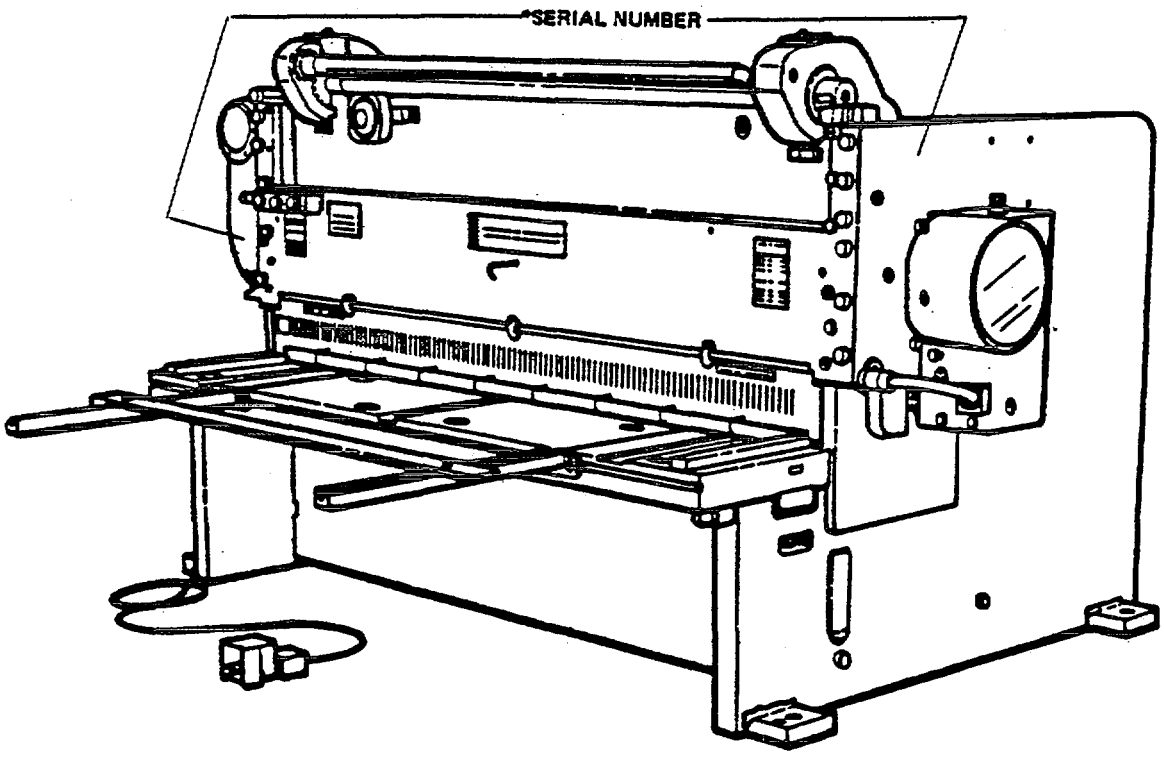
0300

ORDERING REPAIR PARTS

When ordering parts, the following information must be furnished for best service

- The model number and serial number* of your shear.
- The key number of the part. The part name and quantity of parts desired.
- Specify how and where to ship.

The serial number is stamped on the right hand end of the work table and on the capacity plate as shown below. Model number is also shown on the capacity plate.

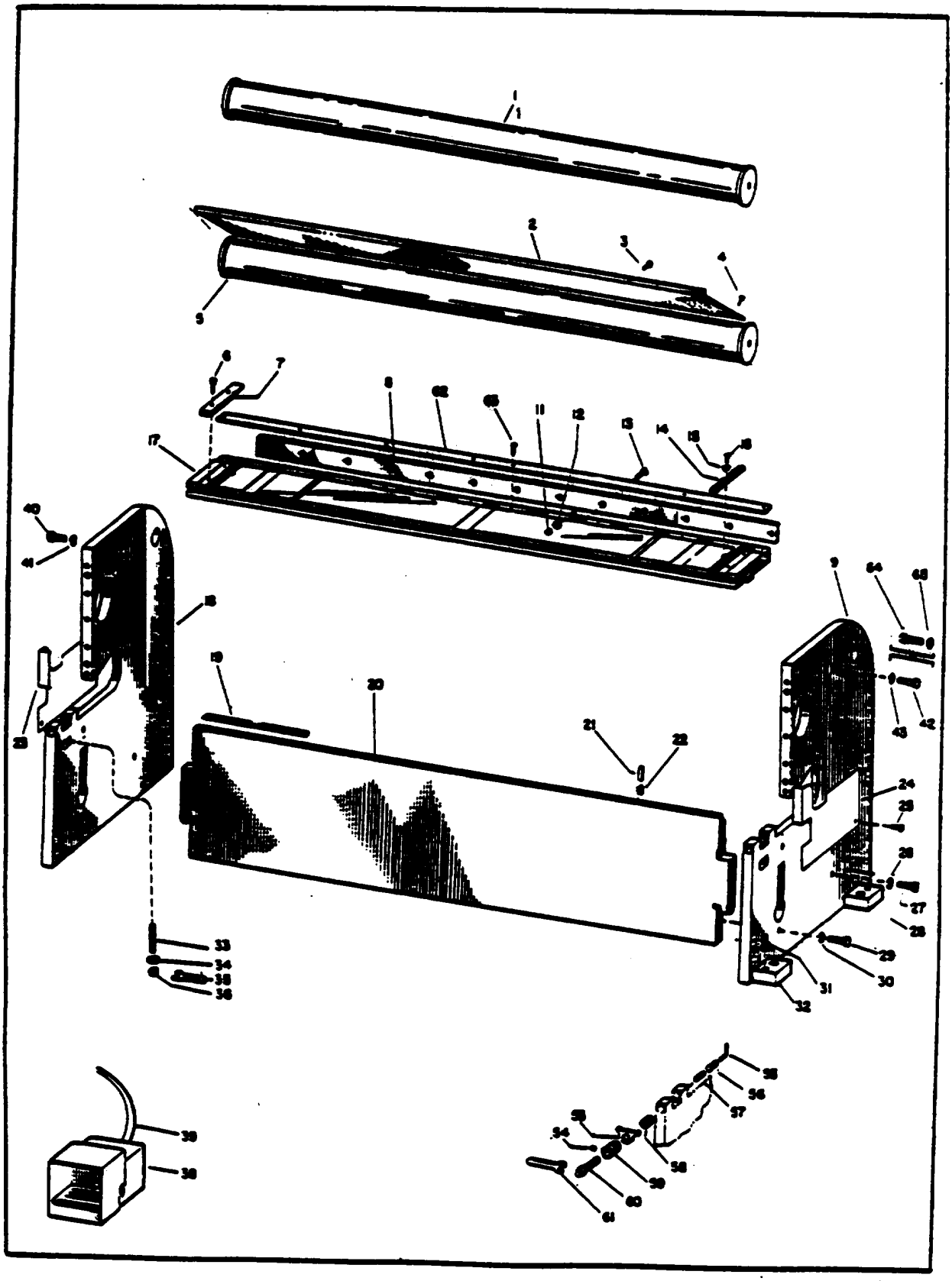


Power Squaring Shear
Model 0800 - Capacity 1/2" x 8' Mild Steel

Model No. Of Shears **0308**

Serial No. Of Shear _____

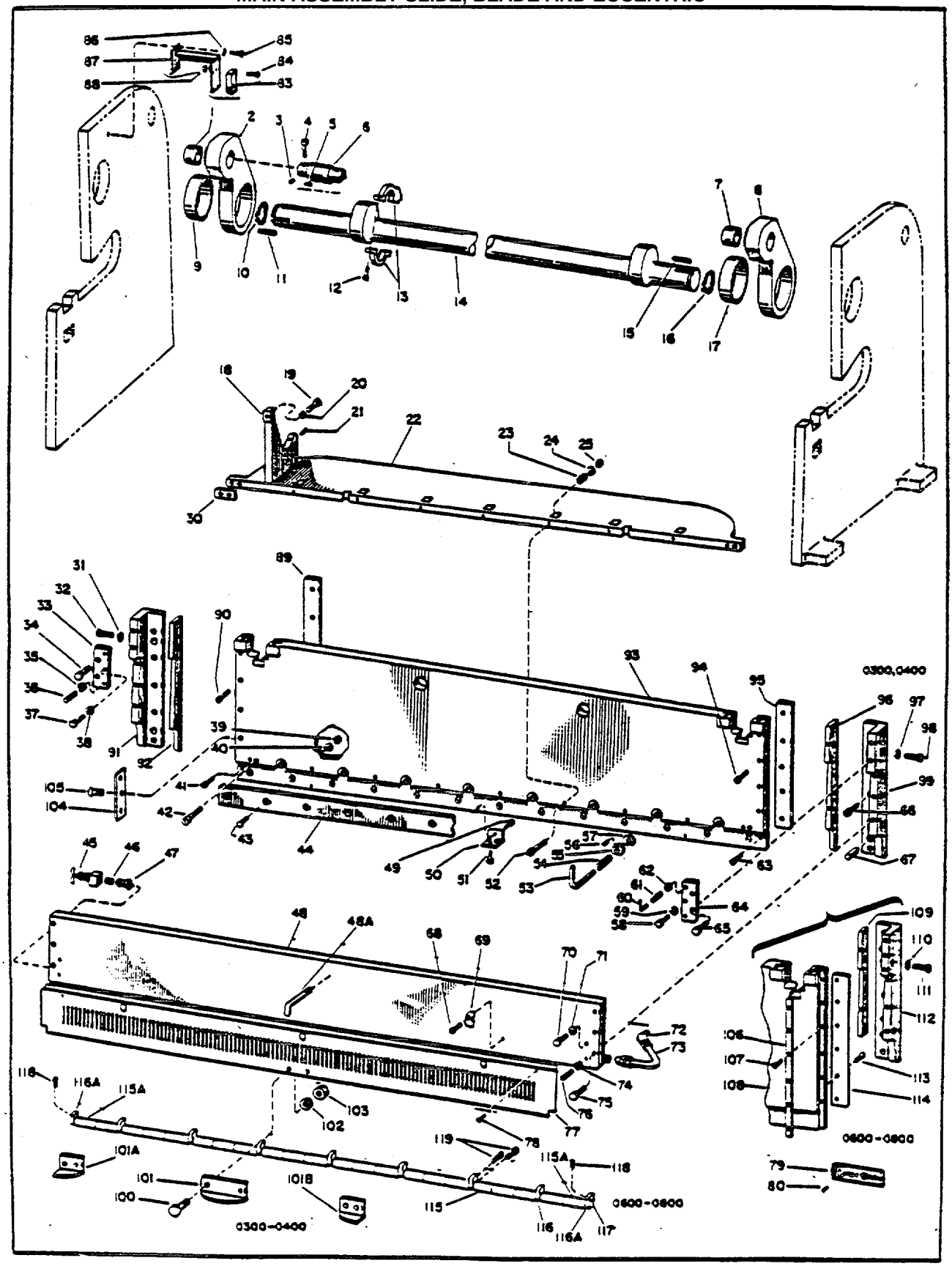
MAIN ASSEMBLY FRAME AND TABLE



MAIN ASSEMBLY FRAME AND TABLE

Key No	Part Name	Qty.
	All Machines	
1-1	Top Tie	1
1-2	Chute-Work	1
1-3	Screw-Socket Button Hd. Cap	AR
1-4	Screw-Socket Flat Hd. Cap	AR
1-5	Cross Tie	1
1-6	Screw-Socket Head Cap	4
1-7	Side Gauge	2
1-8	Blade-Table	1
1-9	Housing-Right	1
1-11	Nut-Hex AR	...
1-12	Washer-Blade Bolt	AR
1-13	Bolt-Blade	AR
1-14	Scale-Table	2
1-15	Clamp-Scale	2
1-16	Screw-Socket Flat Head	2
1-17	Table	1
1-18	Housing-Left	1
1-19	Shim-Lower Blade	AR
1-20	Base	1
1-21	Disappearing Pin	AR
1-22	Spring	AR
1-23	Guard-Gap (LH)	1
1-24	Guard-Gap (RH)	1
1-25	Screw-Hex Rd. Cap	8
1-26	Washer-Lock	2
1-27	Screw-Hex Hd. Cap	2
1-28	Foot-Left Frt. and Right Rear	2
1-29	Screw-Hex Hd. Cap	4
1-30	Washer-Lock	4
1-31	Screw-Socket Hd. Set	4
1-32	Foot-Right Front and Left Rear	2
1-33	Stud	2
1-34	Washer-Plain	2
1-35	Wrench-Open End	1
1-36	Nut-Hex	2
1-38	Switch-Foot	1
1-39	Cable-Rubber Covered	1
	Machines 0300 & 0400 Series	
1-40	Screw	1
1-41	Washer-Lock	1
1-42	Screw-Hex Hd. Cap	1
1-43	Washer-Lock	1
	Machines 0300, 0400, 0600, 0800 Series	
1-53	indicator-Blade Clearance	2
1-54	Screw-Socket Set	2
1-55	Wrench	1
1-56	Screw-Socket Set	2
1-57	Dowel	2
1-58	Spring	2
1-59	Da-Right Hand	2
1-60	Screw-Table Adjusting	2
1-61	Wrench-Open End	2
1-62	Cover-Table	1
1-63	Screw-Ft Hd. Cap	AR
	Machines 0600 & 0800 Series	
1-64	Screw-Hex Hd. Cap	8
1-65	Washer-Lock	8

MAIN ASSEMBLY SLIDE, BLADE AND ECCENTRIC



MAIN ASSEMBLY SLIDE, BLADE AND ECCENTRIC

All Machines

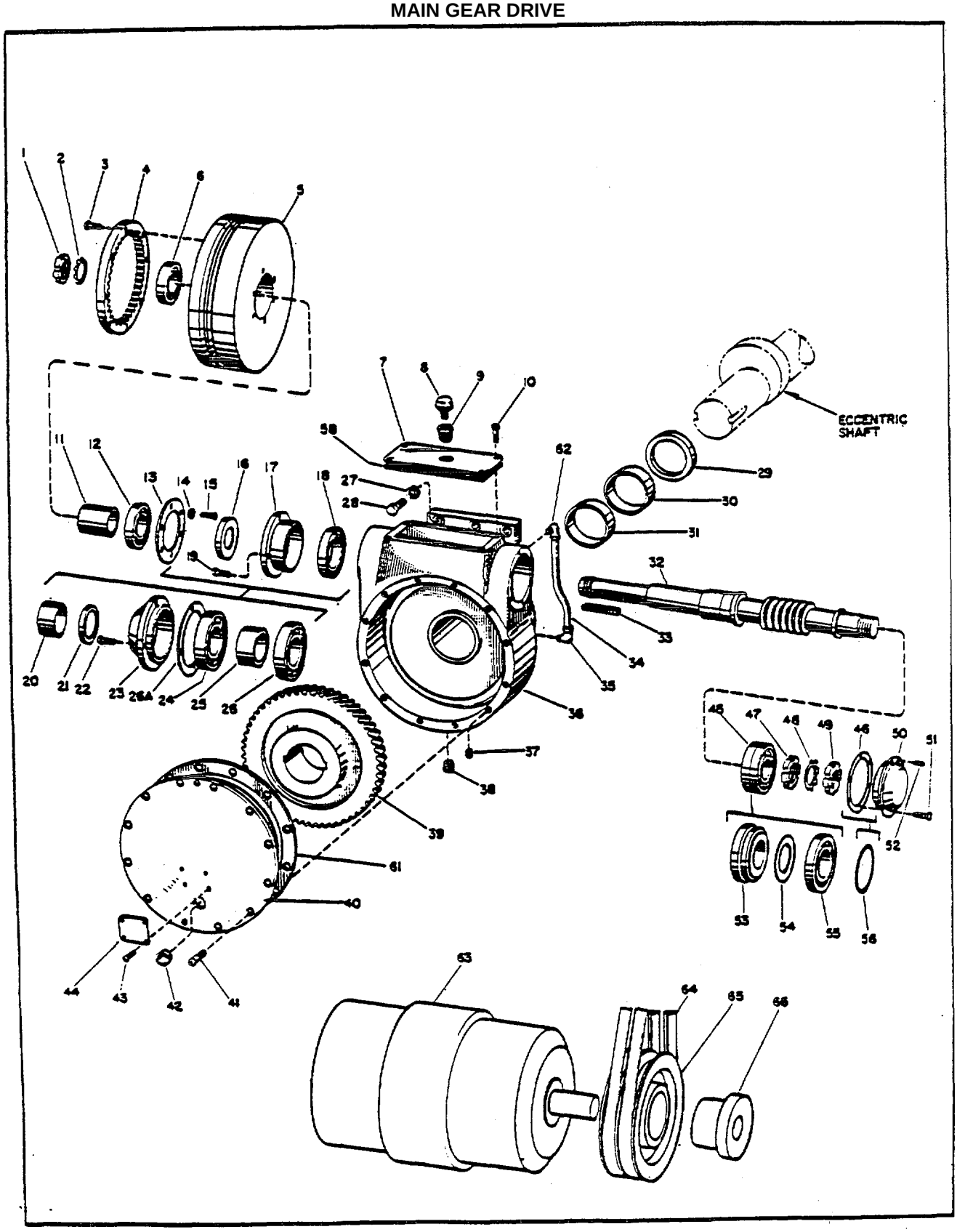
3-1 Bushing-Pendulum, Upper 1
3-2 Pendulum (Without Ram Adjustment) 1
3-3 Screw-Set AR
3-4 Screw-Socket Hd. Cap .AR
3-5 Key-Square . 4
3-6 Pendulum Pin 2
3-7 Bushing-Pendulum, Upper 1
3-8 Pendulum (Without Ram Adjustment) 1
3-9 Bushing-Pendulum, Lower 1
3-10 Ring-Retaining 1
3-11 Key-Square 2
3-12 Screw-Socket Hd. Cap 2
3-13 Trip Cam-Clutch Limit Switch .; 1
3-14 Shaft-Eccentric 1
3-15 Key-Square 1
3-16 Ring-Retaining 1
3-17 Bushing-Pendulum, Lower 1
3-18 Bracket-BackBrace, Left Hand AR
3-19 Screw-Hex Hd. Cap 1
3-20 Washer-Lock 1
3-21 Screw-Socket Hd. Set 2
3-22 Back Brace-Slide 1
3-23 Spring AR
3-24 Washer-Pain AR
3-25 Nut-Self-Retaining Hex ARA
3-30 Spacer-Slide Back Brace 2
3-31 Screw-Hex Hd. Cap 2
3-32 Washer-Plain 2
3-33 Face Plate-Slide Bearing, Left 1
3-34 Screw-Hex Hd. Cap 2or3
3-35 Nut-Hex 2
3-36 Screw-Socket Set 2
3-37 Screw-Hex Hd. Cap 1
3-38 Washer-Plain 1
3-39 Nut-Hex AR
3-40 Washer-Blade Bolt AR
3-41 Screw-Socket Hd. Cap 1
3-42 Screw-Socket Hd. Cap
3-43 Bolt-Blade AR
3-45 Valve-Needle 1Machines 0600 & 0800 Series Only
3-44 Blade-Slide 1
3-47 Bushing-Reducing 1
3-48 Bar-Hold Down 1
3-48A Latch 1
3-49 Screw-Hex Ed. Cap AR
3-50 Support-Blade Changing AR
3-46 Nipple-Close Pipe 1
3-51 Screw-Square Hd. Half Dog Point AR
3-52 Screw-Socket Hd. Cap AR
3-53 Wrench-Blade Adjustingcrew-Hx Hd Cap 4
3-54 Screw-Blade Adjusting AR
3-55 Lock-Slide Adjustment Screw, Tapped AR
3-56 Screw-Socket Hd. Set AR
3-57 Lock-Slide Adjustment Screw, Plain - AR
3-58 Screw-Hex Hd. Cap I
3-59 Washer-Plain 1
3-60 Wrench 1
3-61 Screw-Socket Set 2
3-62 Nut-Hex 2
3-63 Screw-Socket Hd. Cap 1
3-64 Face Plate-Slide Bearing, Right

All Machines

3-66 Screw-Socket Hd. Cap 10
3-67 Dowel 4
3-68 Screw-Hex Hd. Cap AR
3-69 Hinge-Finger Guard AR
3-70 Screw-Hex Hd. Cap 2
3-71 Washer-Planm - 2
3-72 Elbow-Connector Tube 1
3-73 Connector Tube-Hold Down 1
3-73A Fitting-Straight, Connector Tube 1
3-74 Nut-Hex AR
3-75 Screw-Hex Hd. Cap 6
3-76 Screw-Socket Set AR
3-77 Guard-Finger
3-78 Screw-Button Soc. Cap 2
3-79 Nameplate I
3-80 Screw-Drive
3-83 Switch-Limit 1
3-84 Screw-Rd. Hd. Cap 4
3-85 Screw-Hex Hd. Cap 2
3-88 Washer-Lock 2
3-87 Bracket-Limit Switch 1
3-88 Nut-Hex 4
3-89 Slide Way-Left
3-90 Screw-Socket Ed. Cap 4
3-91 Slide Guide-Left Hand I
3-92 Gib-Slide Guide
3-93 Slide 1
3-94 Screw-Socket Hd. Cap 4
3-95 Slide Way-Right 1
3-96 Gib-Slide Guide 1
3-97 Washer-Plain 2
3-98 Screw-Hex Hd. Cap 2
3-99 Slide Guide-Right Hand
3-100 Screw AR
3-101 Guard-Fixed (0300-0400) AR
3-10lA Guard-Fixed, Right End (0300-0400) 1
3-IOIB Guard-Fixed, Left End (0300-0400) 1
3-102 Washer-Lock AR
3-103 Nut-Hex AR
3-104 Thrust Plate 1
3-105 Flat Head Screws 3
3-106 Bearing Liner-Slide, Front 2
3-107 Screw-Brass Flat Hd 12
3-108 Slide 1
3-109 Gib-Slide Guide 2
3-110 Washer-Plain 4
3-112R Guide-Slide, Right 1
3-112L Guide-Slide, Left 1
3-113 Screw-Brass Flat Hd 13
3-114R Bearing Liner-Slide, Right 1
3-114L Bearing Liner-Slide, Left 1
3-115 Roler-Finger Guard AR
3-llSA Roller-End 2
3-116 Bracket-RollerAR
3-11A Bracket-Roller, End 2
3-117 Rod-Roller 1
3-118 Screw-St AR

3-65	Screw-Hex Hd. Cap	2	3-119	Screw		AR

MAIN GEAR DRIVE



MAIN GEAR DRIVE

AU MWachinesAU Machines
5-1i Nut-Lock 15-31 1
5-2 Waher-Loct , ft-Worm 1
5-3 Screw-HeX Hd Cap AR 5-33 y-Square 1
5-4 RLng-Driving 1 5-34 Tubing 1
5-5l 1 5-35 Elbow 1
5- Bain-Bll 1 5-36 CasGar 1
5-7 CoverGar Cas Top 1 5-37 Plug-Ptp 2
5-8 FUter-AIr 1 5-38 Plug-Ptp 1
5-9 Ba-king-_Cidng 1 1 5-39 Gar-Worm 1
5-10 Screw-BHex d Cap AR 5-0 Covr-r Ca
5-il Spacer 1 5-41 Scrw-uttlSodt Cap AR
5-12 Zarlng-Ba1l1 1 5-42 Window-OU 1
5-13 Retainer-Flyheel Bearing 1 5-4 3 Screw-Driv 4
5-14 Washer-Lock AR 5-44 Pat-Ienautio

Machines 0300 & 0400 Series Machines 0300, 0400 & 0600 Series
5-45 a-BlUa 2
5-15 Screw-Hex Hd Cap AR

5-16 Sea-Oi1 1
5-18 Barl - Ball AU YMachines
5-17 Cover-Worm Shlmt Rear 1

5-47 Nut-Locl 1
5-48 WNubr-g 1
Machlnes 08 Series5-49 N 1
II~~~~~~~~~5-50 Cowr-Worm St Fnt 1
5-19 Screw-Boxid Cap AR

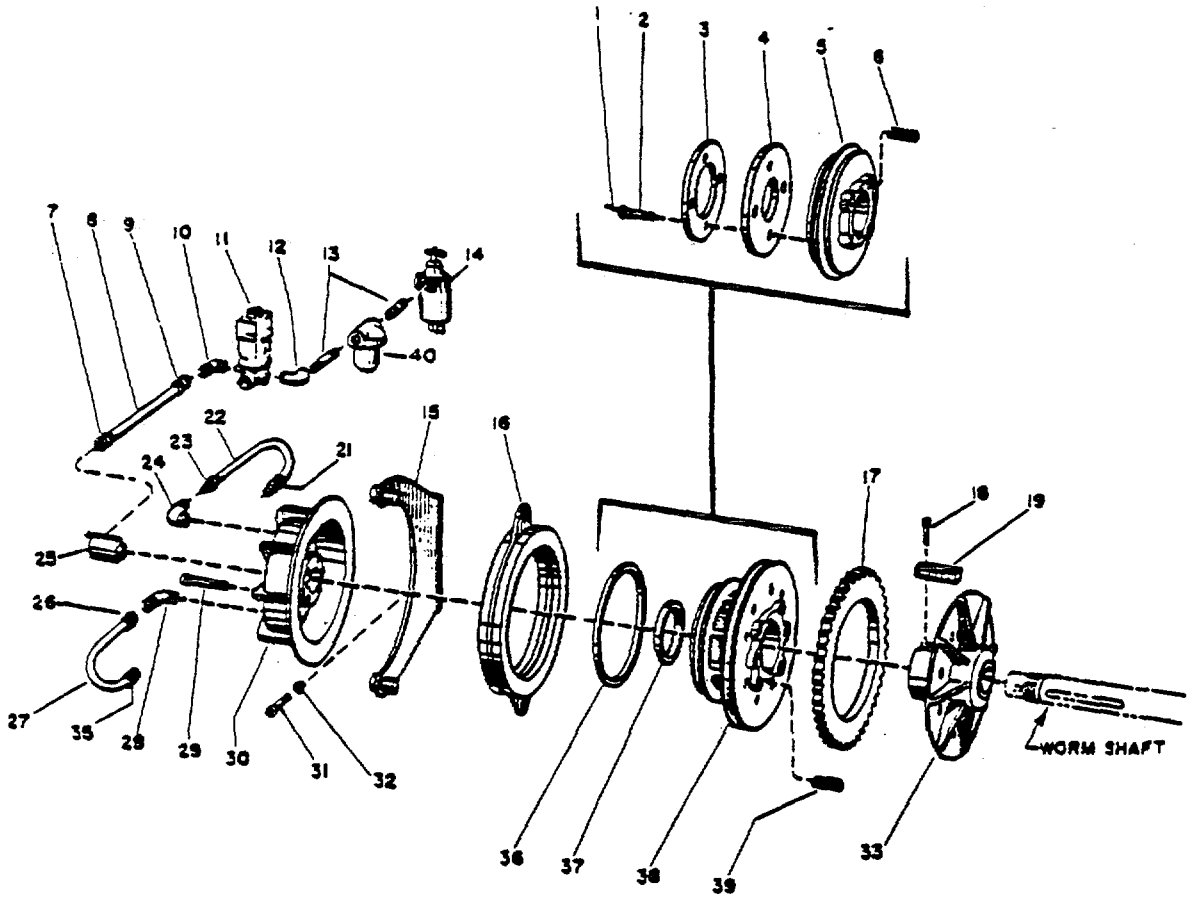
5-220 Sc-BEly"Cap 4 .5-52 Pa-Dl 1
S-19 Scr-Bex . R
S5-52 Gaslow 1
5-253 Covr-Rr Worm Au 1
B5-36 S&ng-DA
5-25 aL- 1O-S 1 5- 1
5-44 Ra-Belrs 1
JU1 IA~rhlfsS-58 Gaklset 1
-2 Gaset I A Machines

5-29 &a1- 5.82 Elbow (O ODO & S Serie) 1
5-8 AR
5-85aPuutp AR

5-30 Drh'g 1R 5-43 Motor AR

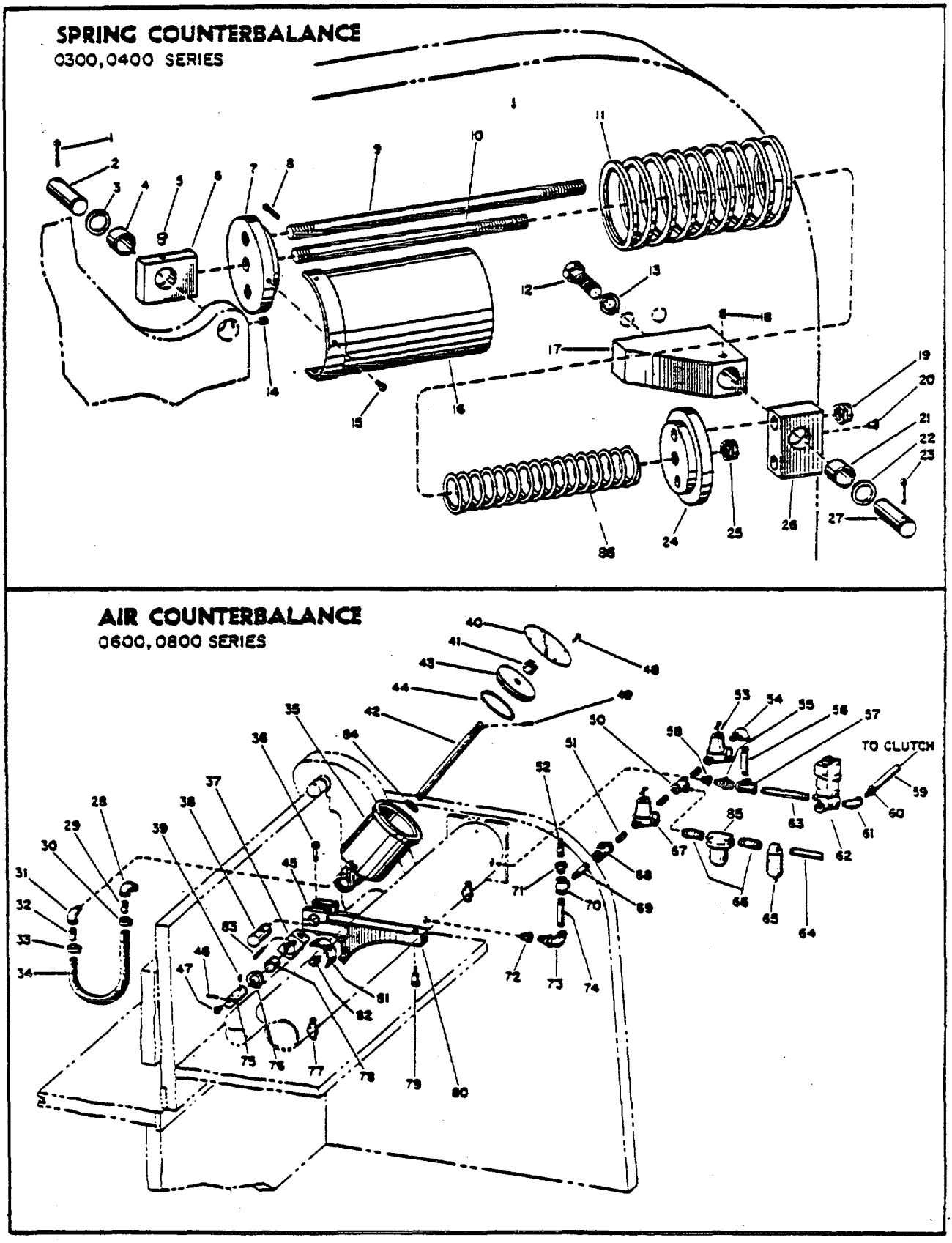
AR - Ashi. 5-6 BuMsing AR

AIR CLUTCH AND BRAKE



Key No	Part Name	Qty.
	Machines 0300 & 0400 Series	
7-1	Wire-Lock	1
7-2	Sorew	4
7-3	Plate-Packing Follower	1
7-4	Packing-Clutch	1
7-5	Piston-Clutch	1
7-6	Spring-Brake	4
	All Machines	
7-7	Fitting	1
7-8	Hose	1
7-9	Fitting	1
7- 10	Elbow	1
7-11	Valve-Air Solenoid	1
7-12	Elbow	1
7-13	Nipple	2
7-14	Regulator-Pressure and Filter	1
7-15	Bracket-Brake	1
7-16	Plate-Brake	1
7-17	Clutch-Friction	1
7-18	Screw-Socket Hd. Cap	4
7-19	Key-Piston	2

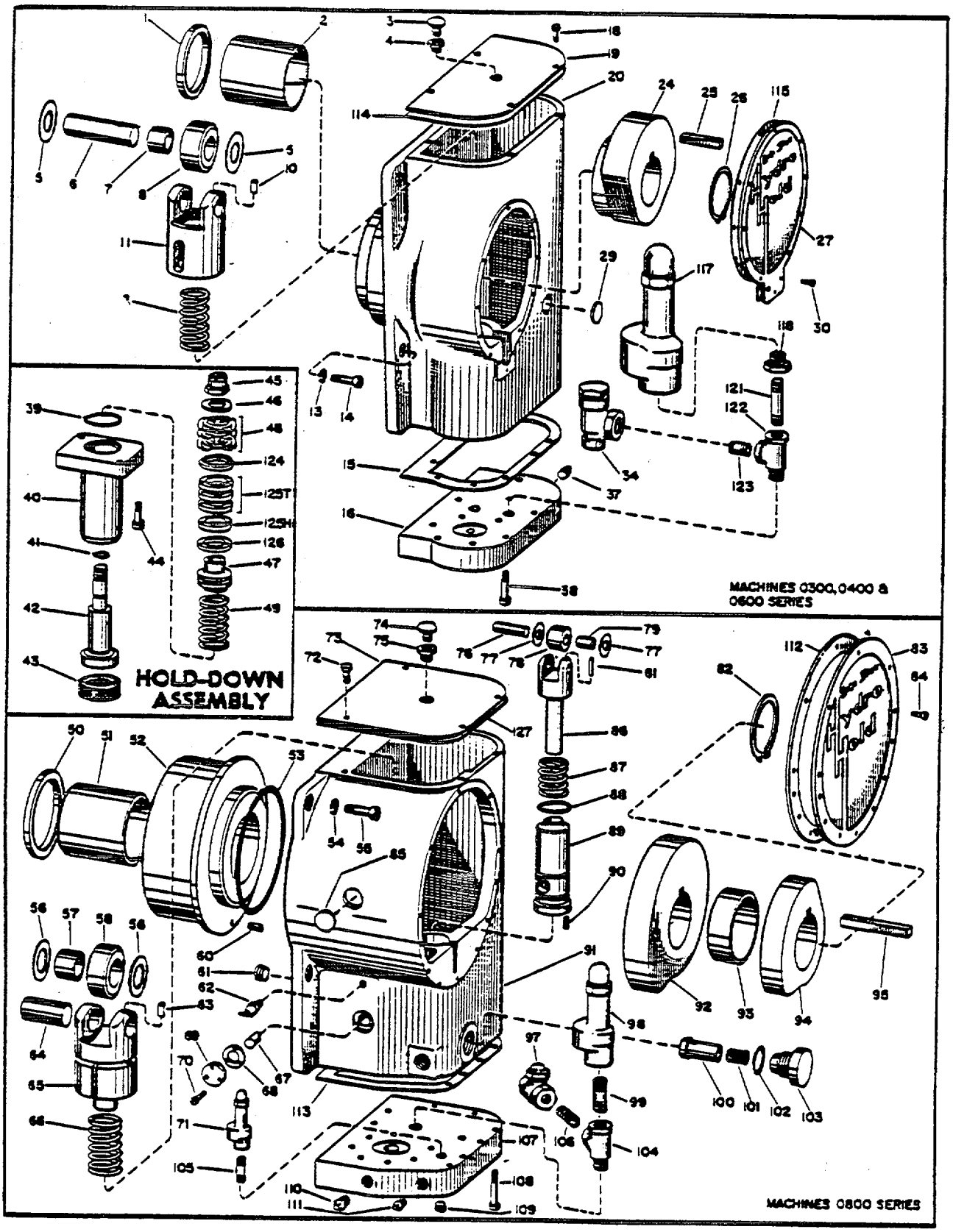
Key No .	Part Name	Qty.
7-21	Fitting	1
7-22 Hose		1
7-23	Fitting	1
7-24	Elbow	1
7-25	Union-Rotating Air	1
7-26	Fitting	1
7-27	Hose	1
7-28	Elbow	1
7-29	Screw-Socket Hd. Cap	4
7-31	Screw-Hex Hd. Cap	2
7-30	Cylinder-Clutch	1
7-32	Washer-Lock	2
7-33	Plate-Clutch End	1
7-35	Fitting	1
7-40	Lubricator	1
	Machines 0600 & 0800 Series	
7-36	Packing-Clutch Piston	1
7-37	Pac -Hub	1
7-38	Piston-Clutch	1
7-39	Spring-Brake	6


SPRING COUNTERBALANCE
0300, 0400 SERIES
AIR COUNTERBALANCE
0600, 0800 SERIES
TO CLUTCH

Machines 0300 & 0400 Series

9-1 Pin-Cotter, 3/16" x 1-1/2" 2 9-15 Screw- 10-24 x 3/8 Rd d Se-tappLg 6
9-2 Pin-Dowel 2 9c-16 Guard - Sprng 2
9-3 Wastir- 1" 2 9-17 Bracket-Plvot 2
9-4 Buhing 2 9 -.18 Screw-Socket 8d Set, 3/8-16 x 1/2" Ig 2
9-5 OUer 2 9-19 Nut- 1/2"-13 4
9-6 Block-Rod End Bearing 2 9-20 Oler 2
9-7 Holder-Lower Spring 2 9 -21 Buin g 2
9-a Pin-Cotter, 1/18" x 3/41" Ig 4 9-22 Washer- 1" 2
9-9 Rod-Side 4 9-23 Pin-Cotter, 3/16" x 1-1/2" 2
9-10 Rod-Center 2 9 -24 HoLder-Spring, Upper 2
9-11 Spring 2 9-25 Nut- 5/8"-1l. 2
9-12 Screw-He xd Cap 3/4-10 x 3" Ig 4 9 -26 Yoke-Rod 2
9-13 Washer-Lock, 3/4 4 9-27 Pin-Dowel 2
9-14 Screw-Socket lid Set, 3/8-18 T 1/2 2 9-86 Spring . 2
AIR COUNTERBALANCE
Machines 0800 & 0800 Series
Key No.Part Nname y No.lPut NameQty
9-28 Elbow- 3/4" Street 2 9-55 Union-Male, 3/8" 1
9-29 Coupling-H0e 2 9-58 Nipple - 3/8" 4-1/2"I 1
9-30 Clanp-Ho 2 9-57 To*- 3/8" 1
9 -31 Elbo"- 3/4" Stt 2 9-58 Buahig-Redacing, 1/2" x 3/8" 1
9-32 Coupln2g-Hom 2 9-59o 1
9-33 Clamp-o’ 2 9-60 Ftting-Ho 1
9-34 o 2 9-41 Elbow- 3/8" 1
9-35 Cylider 2 9-42 Valve-Air Solenoid I
9-36 Screw-Bt Nd Cap, 1/2’-13 2" . 8 9-63 NIpple- 3/8" 1
9-37 Clerv 2 9-84 Ult-Air, 3/8" 1
9-38 Pin-l Flelri 2 9-65 FIlter 1
9-39 9creo It 2 9-68 Nipple- 3/8" 2
9-40 Cover-Cylinr 2 9-87 Regulator-Preure 1
9-41 Nut-Stop 2 9- 8 Valv-Cect 1
9-42 Rod-Pisto 2 9 -9 Nipple- 3/8" 1
9-43 Pto 2 9-70 T- 3/8" 1
9-44 Packing-Piston 2 9-71-ing, 3//4 . 2 -1 Big- c, 3/SV" .
9-45 Bearing Cap.2 9-72 97eobI3g-R*Rcling, 1/2" 1 2 3/81 I
9-46 Pin-Cotter, 3/16" x 2-1/2" 9-73 Elbow- 3/8" (With Mal Unnon) 1
9-47 FIttizg-Gru, Il/8" 2 9-74 Nipple- 3/8’ 1
9-48 Screw 16 9-75 Pln-C1ei 2
9-49 Pin-Cottr, 1/8" 2 1-1/2" 2 9-76 Wasbr- 1-3/4" 2
9-50 Tee- 3/811 1 9-77 Petco 4
9-51 Nipple- 3/18" 1"" 3 9-7 rin 2
9-52 Valv-Rell e 1 9-79 Bt- ripr 2
9-53 Regultor-Pret9ret 1 9-80 Bracket-earing 2
9-8 Pla-Raning 2
9-83 Pn 2
9-84 Packing-Rod 2
9-85 Lubricator 1
9-54 Eibow- 3/8" Strt r 19-81 2

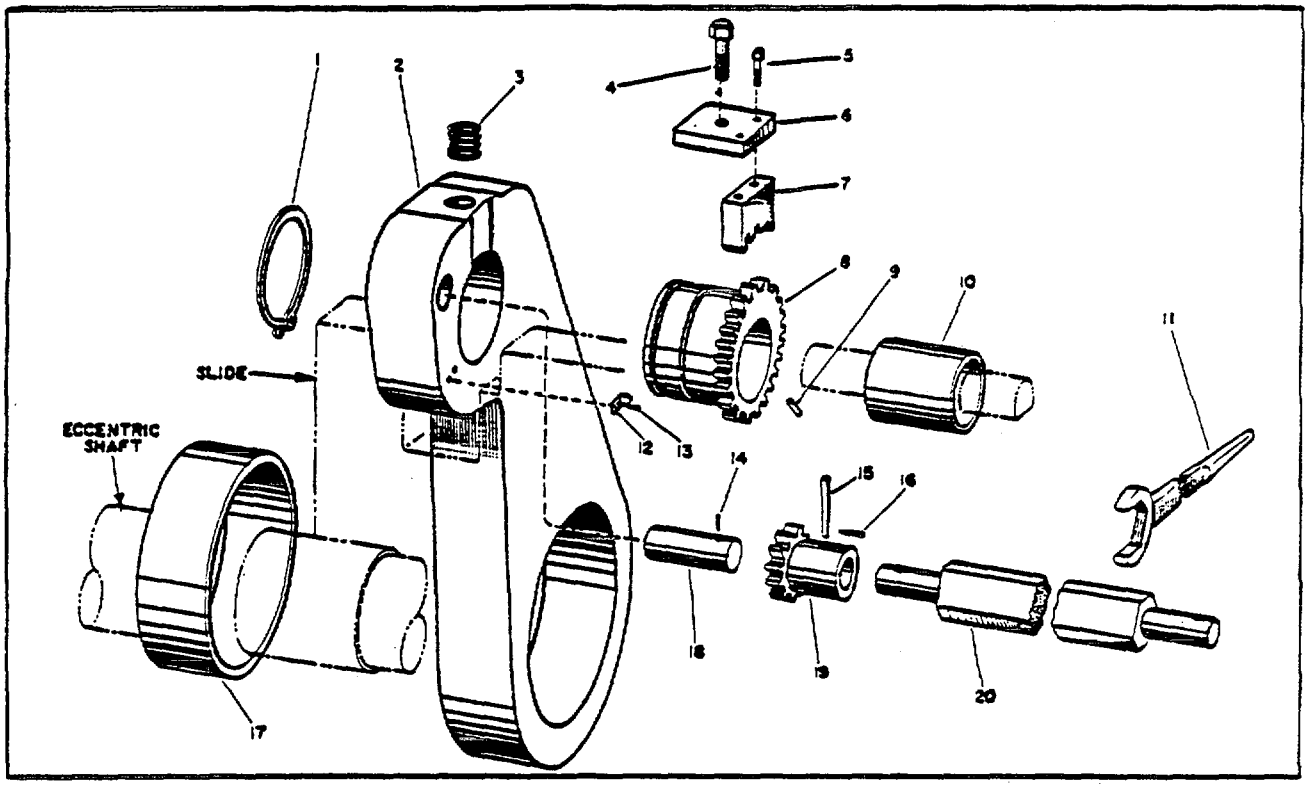
HYDRAULIC HOLD-DOWN PUMPING UNIT



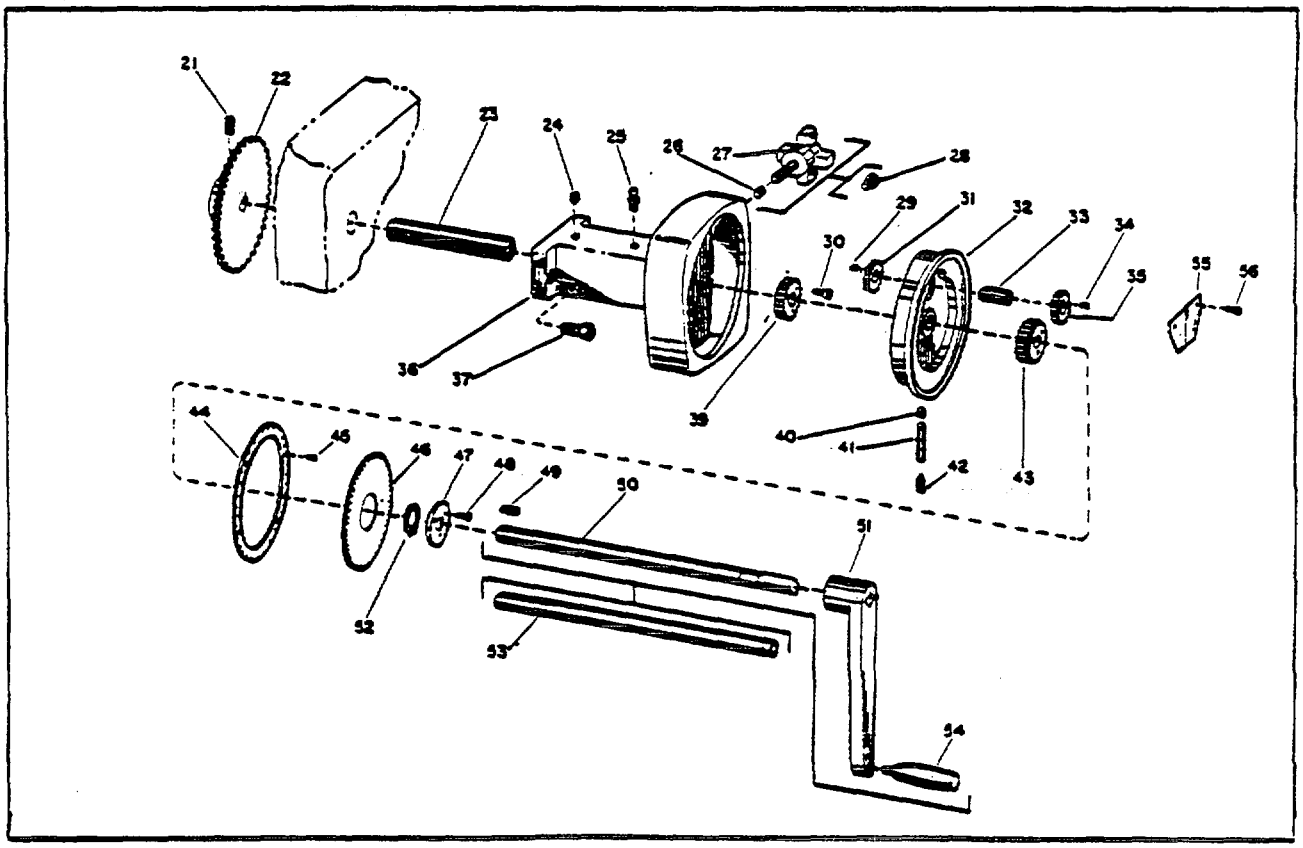
Key No.	Part Name	Qty
	HYDRAULIC HOLD-DOWN PUMPING UNIT Machines 0300, 0400 & 0600 Series	
11-1	Seal-Oil	1
11-2	Bushing	1
11-3	Filter-Air	1
11-4	Bushing-Reducing	1
11-5	Washer-Thrust	2
11-6	Pin-Piston	1
11-7	Bushing- Bronze	1
11-8	Roller-Piston	1
11-10	Pin	1
11-11	Piston	1
11-12	Spring-Piston	1
11-13	Washer-Lock	4
11-14	Screw-Socket Head Cap	4
11-15	Gasket	1
11-16	Bottom-Pump Case	1
11-18	Screw-Hex Head Cap	4
11-19	Cover-Top	1
11-20	Case-Pump	1
11-24	Cam	1
11-25	Key-Square	1
11-26	Ring-Snap	1
11-27	Cover	1
11-29	Window-Oil Level	1
11-30	Screw-Socket Head Cap	12
11-34	Valve-Check	1
11-37	Plug-Pipe	3
11-38	Screw-Socket Head Cap	11
11-114	Gasket-Top Cover	1
11-115	Gasket-Pump Case Cover	1
11-117	Valve-Relief	1
11-118	Bushing-Reducer	1
11-121	Nipple	1
11-122	Tee-Pipe	1
11-123	Nipple	1
	HYDRAULIC HOLD-DOWN FINGER ASSEMBLY All Machines	
11-39	Ring- "O"	1
11-40	Socket-Finger	1
11-41	Ring-8"O	1
11-42	Finger	1
11-43	Cup-Protector	1
11-44	Screw-Socket Head Cap	4
11-45	Nut-Hex Retaining	1
11-46	Washer-Flat	1
11-47	Piston	1
11-48	Spring-Disc	3
11-49	Spring	1
11-124	Adapter-Male	1
11-125T	Packing-Teflon	3
11-125H	Packing-Neoprene	1
11-126	Adapter- Female	1

Key No.	Part Name	Qty
	HYDRAULIC HOLD-DOWN PUMPING UNIT Machines 0800 Series	
11-50	Seal-Oil	1
11-51	Bushing	1
11-52	Housing-R.H. Eccentric Bearing	1
11-53	Ring-"O"	1
11-54	Washer-Lock	6
11-55	Screw-Socket Head Cap	6
11-56	Washer-Thrust (Low Pressure)	2
11-57	Bushing (Low Pressure)	1
11-58	Roller (Low Pressure)	1
11-80	Pin	1
11-61	Plug- Pipe	1
11-62	Draincock	1
11-63	Pin	1
11-64	Pin-Piston (Low Pressure)	1
11-65	Piston (Low Pressure)	1
11-66	Spring (Low Pressure)	1
11-67	Pin-Guide (Low Pressure)	1
11-68	Gasket	1
11-69	Retainer-Guide Pin	1
11-70	Screw-Socket Head Cap	3
11-71	Valve-Relief (High Pressure)	1
11-72	Screw-Hex Head Cap	4
11-73	Cover-Pump Case	1
11-74	Filter-Air	1
11-75	Bushing-Reducing	1
11-76	Pin-Piston (High Pressure)	1
11-77	Washer-Thrust (High Pressure)	2
11-78	Roller (High Pressure)	1
11-79	Bushing (High Pressure)	1
11-81	Pin-Roll	1
11-82	Ring-Retaining	1
11-83	Cover-Case	1
11-84	Screw-Socket Head Cap	12
11-85	Window-Oil	1
11-86	Piston (High Pressure)	1
11-87	Spring (High Pressure)	1
11-88	Ring-"O"	1
11-89	Liner-Cylinder (High Pressure)	1
11-90	Pin-Roll	1
11-91	CasePump	1
11-92	Cam (Low Pressure)	1
11-93	Spacer	1
11-94	Cam (High Pressure)	1
11-95	Key-Square	1
11-97	Valve-Check (Low Pressure)	1
11-98	Valve-Relief (Low Pressure)	1
11-99	Nipple-Pipe	1
11-100	Piston-Check Valve (High Pressure)	1
11-101	Spring	1
11-102	Ring- "O"	1
11-103	Bonnet-Check Valve	1
11-104	Tee-Pipe	1
11-105	Nipple	1
11-106	Nipple-Close	1
11-107	Bottom-Pump Case	1
11-108	Screw-Socket Head Cap	15
11-109	Plug-Pipe.	3
11-110	Plug-Pipe	1
11-111	Plug-Pipe	1
11-112	Gasket-Case Cover	1
11-113	Gasket-Bottom	1
11-127	Gasket-Top Cover	1

RAM ADJUSTMENT FOR SLITTING ASSEMBLY



BACK GAUGE INDICATOR



U.S. GOVERNMENT PRINTING OFFICE: 1991 - 281-486/42300

RAM ADJUSTMENT FOR SLITTING ASSEMBLY

All Machines

Key No.	Part Name	Qty
13-1	Ring-Retaining	2
13-2L	Pendulum, Left Hand	1
13-2R	Pendulum, Right Hand	1
13-3	Spring	2
13-4	Screw-Hex Hd Cap, 5/8-11 x 2-1/2"	2
13-5	Screw-Hex Hd Cap, 3/8-16 x 1-1/4"	4
13-6	Plate-Ram Adjusting Lock.	2
13-7	Lock-Ram Adjusting.	2
13-8L	Gear-Adjusting, Left Hand	1
13-8R	Gear-Adlusting, Right Hand.	1
13-9	Pin-Roll, 1/4" x 5/8"	2
13-10	Bushing-Upper	2
13-11	Wrench.	1
13-12	Pointer.	2
13-13	Screw-Drive, #4 x 5/16"	2
13-14	Pin-Roll, 3/16 x 3/4"	2
13-15	Pin-Taper, #8 x 2-3/4"	2
13-16	Pin-Cotter, 1/16 x 3/4"	2
13-17	Bushing, lower	2
13-18	Pin-Cross Shaft.	2
13-19	Pinion	2
13-20	Shaft	2

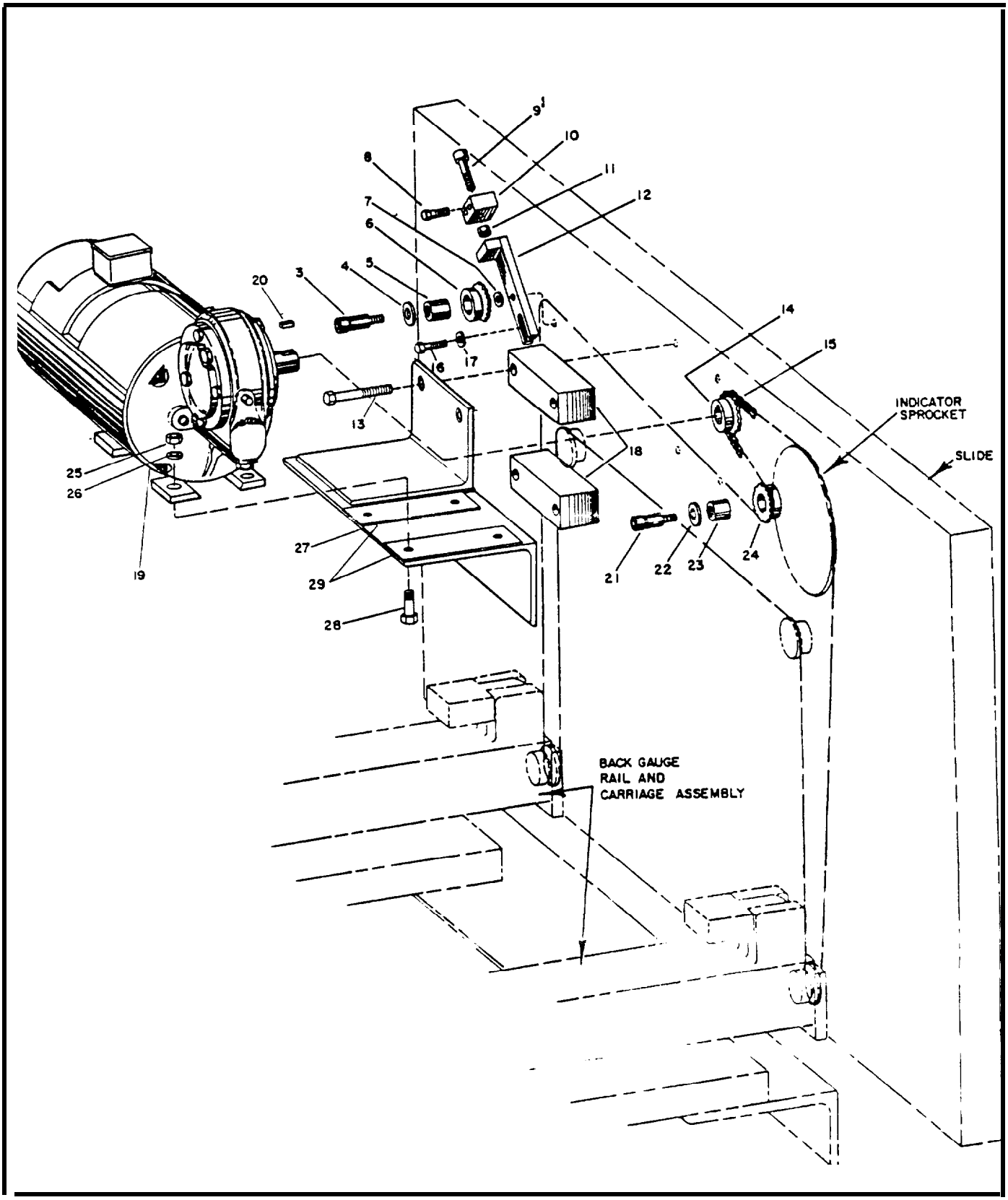
BACK GAUGE INDICATOR

All Machines

Key No	Part Name	Qty
13-21	Screw-Set.	1
13-22	Sprocket.	1
13-23	Extension-Indicator Housing.	1
13-24	Screw-Socket Hd. Set, 3/8" x 5/8" lg.	1
13-25	Fitting-Alemite, 1/8" x 67-1/2°.	1
13-26	Plug-Copper, 3/8" x 3/16"	1
13-27	Knob-Screw Assembly.	1
13-26	Screw-Button Hd., 1/2" x 1" lg.	1
13-29	Set Screw.	1
13-30	Screw-Socket Hd. Cap, #10-24 x 5/8" lg.	3
13-31	Pinion-Drive.	1
13-32	Plate-Dial	1
13-33	Shaft-Drive.	1
13-34	Set-Screw.	1
13-35	Pinion-Drive.	1
13-36	Housing-Indicator.	1
13-37	Screw-Hex Hd. Cap, 3/8" x 1-1/4" lg.	2
13-39	Gear-Housing	1
13-40	Button-Copper, 1/4" x 5/32" lg.	1
13-41	Pin-Straight, 1/4" x 1-5/8" lg.	1
13-42	Screw-Socket Hd. Set, 5/16" x 1/2" lg.	1
13-43	Gear - Dial	1
13-44D	Dial-Indicator, .002"	1
13-44F	Dial- Indicator, 1/64"	1
13-45	Screw-Self Tapping, #2-56 x 3/16" lg.	4
13-46	Dail-Indicator (Inches)	1
13-47	Clamp-Dial.	1
13-48	Screw-Button Hd., #10-24 x 3/8" lg.	3
13-49	Key-Square.	1
13-50	*Shaft-Indicator.	1
13-51	*Handle-Crank	1
13-52	Ring-Retaining.	1
13-53	Shaft-Indicator.	1
13-54	*Handle-Revolving.	1
13-55	Marker - Index	1
13-56	Screw - Drive	2

* Used on Manual Gauge Only.

BACK GAUGE DRIVE



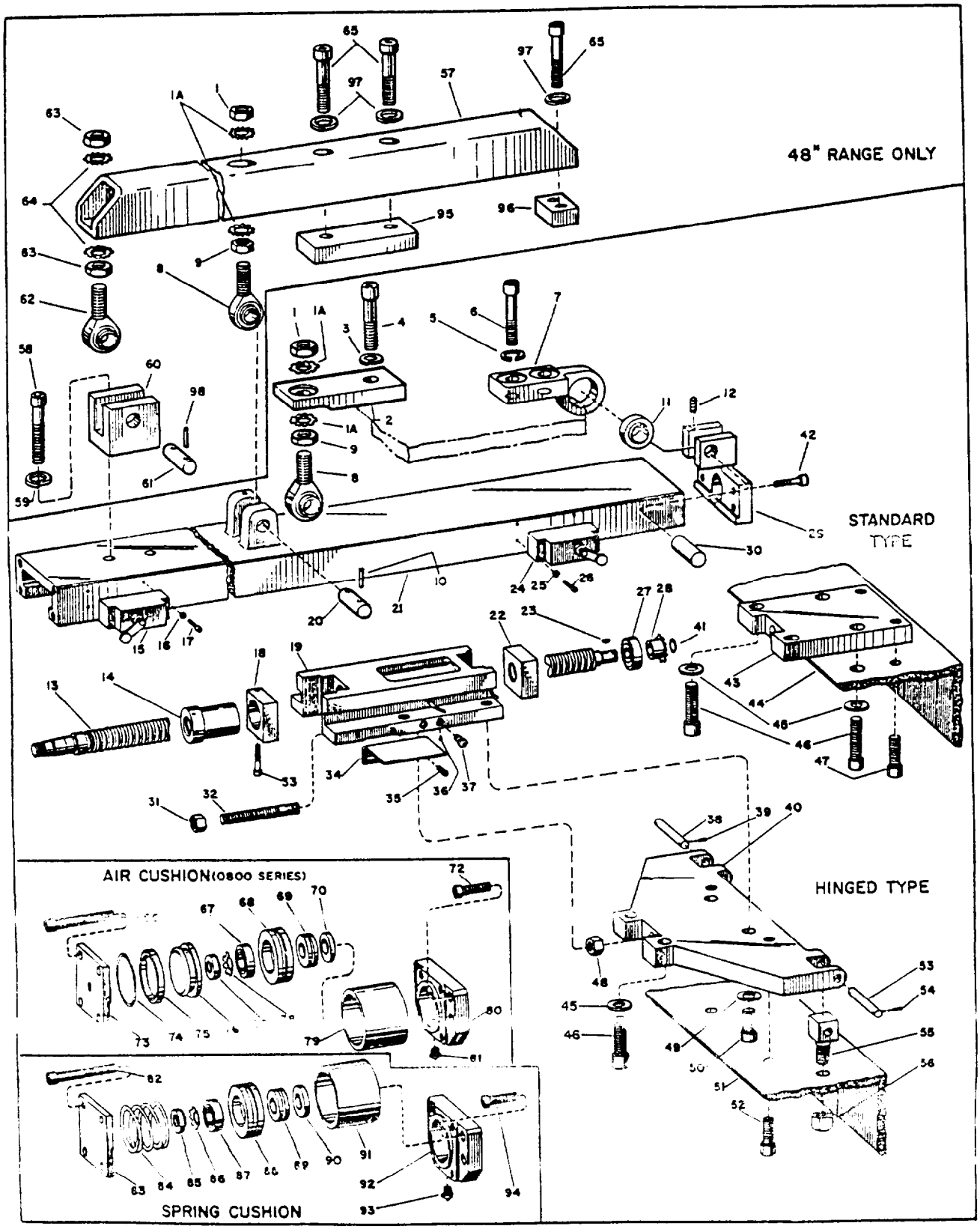
BACK GAUGE DRIVE

All Machines

Key No.	Part Name	Qty
15-3	Screw-Shoulder, 1/2" x 1" Shoulder, x 3/8"-16 x 5/8" lg.	1
15-4	Washer - l/2"	1
15-5	Bearing-Needle	1
15-6	Sprocket-Chain Adjusting	1
15-7	Washer - 3/8"	
15-8	Screw-Hex Hd. Cap, 3/8"	2
15-9	Screw-Socket Hd. Cap, 3/8"	1
15-10	Block-Chain Adjusting	1
15-11	Nut-Hex, 3/8"	1
15-12	Bracket-Chain Tightening	1
15-13	*Screw-Hex Hd. Cap, 3/8" x 2"	4
15-14	*Sprocket-Motor	1
15-15	Chain-Roller	1
15-16	Screw-Hex Hd. Cap, 3/8" x 1"	1
15-17	Washer - 3/8"	1
15-18	*Foot-Motor Bracket.	2
15-19	*Motor	1
15-20	*Key - 3/16" square x 5/8" lg.	1
15-21	Screw-Shoulder, 1/2" x 1" Shoulder, x 3/8"-16 x 5/8" lg.	3
15-22	Washer - l/2"	3
15-23	Bearing-Needle	3
15-24	Sprocket-Idler	3
15-25	Nut-Hex 5'16" .	4
15-26	Washer-'Lock, 5,/16"	4
15-27	Bracket-Motor	1
15-28	Screw-Hex Hd. Cap, 5/16" x 1-1/2"	4
15-29	Spacer	2

*Used only with Motorized Back Gauge

BACK GAUGE


48" RANGE ONLY
STANDARD TYPE
HINGED TYPE
AIR CUSHION(0800 SERIES)
SPRING CUSHION

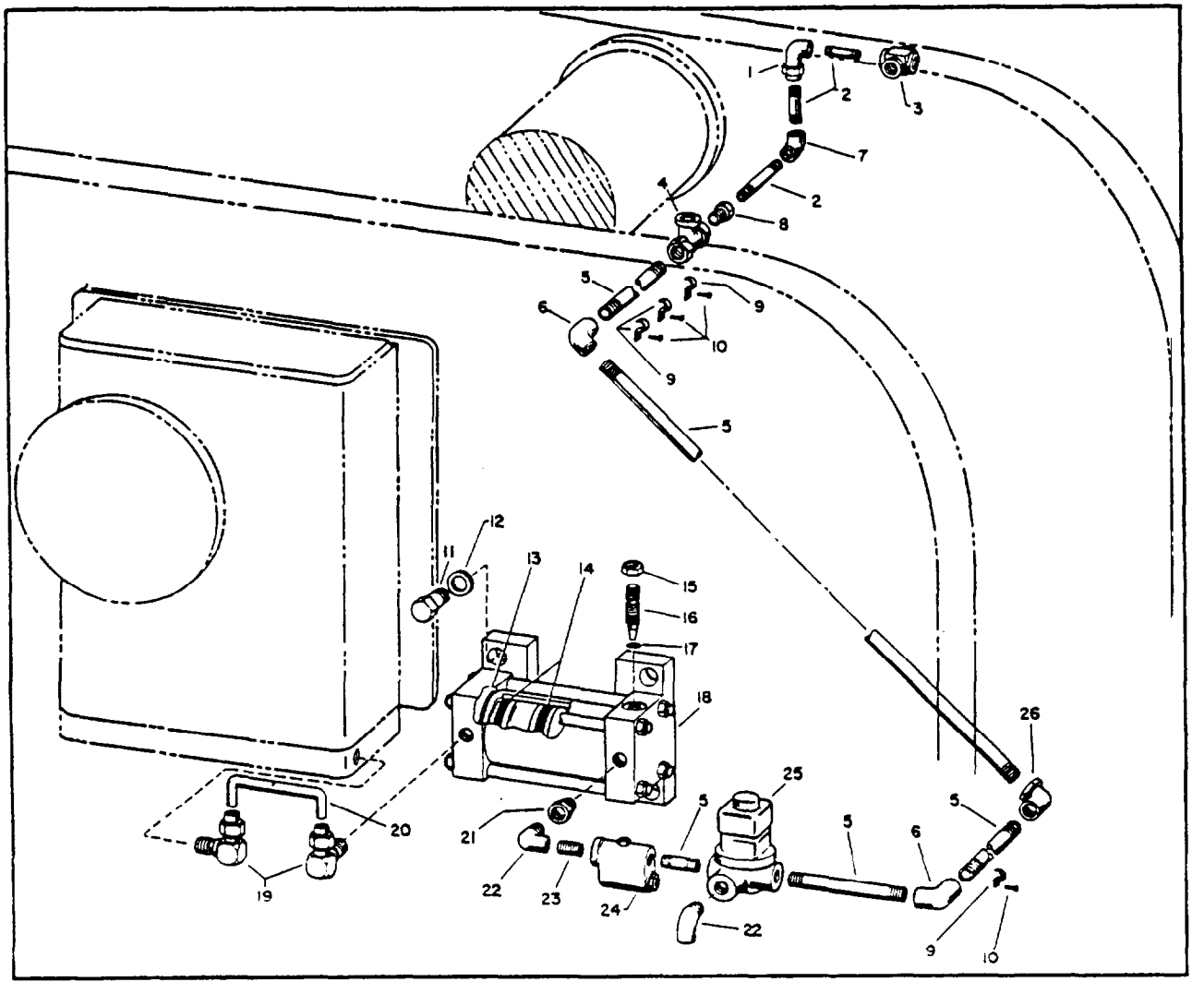
BACK GAUGE

Key No	Part Name	Qty
	All Machines	
17-1	Nut Check, 3/4-16	2
17-1A	Lockwasher-Tooth, 3/4	4
17-2	Bracket-Rear Mounting (Not on 48" Range Gauge).	2
17-3	Washer-Lock, 5/8"	4
17-4	Screw-Socket Head Cap, 5/8-11 x 3"	4
17-5	Washer-Lock 5/8"	4
17-6	Screw-Socket Head Cap, 5/8-11 x 2-1/4"	4
17-7	Bracket- Front Mounting	2
17-8	Rod End- Male (Spherco)	2
17-9	Nut-Check, 3/4-16	2
17-10	Roll Pin.	4
17-11	Bearing-Spherical (Spherco)	2
17-12	Screw-Socket Set, 5/16-18 x l/2"	2
17-13	Screw-Back Gauge Adjusting	2
17-14	Nut-Compensating	2
17-15	Switch-Limit.	1
17-16	Lockwasher, No. 10	4
17-17	Screw-Socket Head Machine, No. 10-24	4
17-18	Lock, Compensating Nut	2
17-19	Carriage	2
17-20	Pin- Steel	2
17-21	Rail	2
17-22	Nut-Adjusting	2
17-23	Key-Hi-Pro, 1/8" x 21/32"	2
17-24	Switch- Limit.	1
17-25	Lockwasher, No. 10	4
17-26	Screw-Socket Head Machine, No. 10-24.	4
17-27	Bearing- Ball.	2
17-28	Sprocket-Back Gauge Screw.	2
17-29	Support, Front Rail & Bearing	2
17-30	Pin	2
17-31	Nut-Hex, 5/8-18	2
17-32	Stud - 5/8-18 x 4-7/8"	2
17-33	Screw-Socket Head Cap, l/4-20 x 1-3/4".	2
17-34	Plate-Cam	1
17-35	Screw-Socket Head Cap, 1/4-20 x 5/8"	2
17-36	Plug-Copper	6
17-37	Nipple-Grease.	4
17-38	Pin-Hinge.	2
17-39	Pin-Cotter, 3/32 x 5/8"	4
17-40	Bracket-Cross Bar (Hinged Type).	2
17-41	Ring-Truarc	2
17-42	Screw-Socket Head Cap, 3/8-16 x 1-1/4".	8
17-43	Bracket-Cross Bar (Standard Type)	2
17-44	Bar-Cross (Standard Type)	1
17-45	Washer- Flat, 5/8".	8
17-46	Screw-Socket Head Cap, 5/8-11 x 2-1/2".	4
17-47	Screw-Socket Head Cap, 5/8-11 x 1-1/2".	4
17-48	Nut-Hex, 5/8-18	2
17-49	Washer-Flat, 5/8	4
17-50	Screw-Socket Head Cap, 5/8-11 x 1-1/4".	4
17-50A	Screw-Socket Hd. Cap, 5/8-11 x 2"	4
17-51	Bar-Cross (Hinged Type)	1
17-52	Screw-Socket Head Cap, 5/8-11 x 1-1/2	4
17-53	Pin-Hinge.	2
17-54	Pin-Cotter, 3/32 x 5/8"	4
17-55	Bolt- Pivot	4
17-56	Nut-Hex, 3/4-10	4
	48" Back Gauge Range Only All Machines	
17-57	Support, Rail.	2
17-58	Socket Head Cap Screw	4
17-59	Washer, Lock	4
17-60	Bracket, Support	2
17-61	Pin	2
17-62	Rod End, Male	2
17-63	Hex Nut	4
17-64	Lock Washer, Tooth.	4
17-65	Socket Head Cap Screw	8
17-95	Support Spacer, Rear (Not on 0800 Series)	2
17-96	Support Spacer, Front(Not on 0800 Series)	2
17-97	Washer, Lock	8
17-98	Pin, Roll	4
	Machines 0800 Series	
17-66	Screw-Socket Head Cap, 1/2-13 x 3-3/4".	8
17-67	Bearing- Ball.	2
17-68	Housing- Bearing, Rear.	2
17-69	Bearing-Thrust	2
17-70	Collar -Stop.	2
17-72	Screw-Socket Head Cap, 1/2-13 x 1-3/4".	8
17-73	Cap-End (Air Cushion)	2
17-74	Ring- "O"	2
17-75	Ring-"U" Packing	2
17-76	Piston	2
17-77	Nut- Lock	2
17-78	Washer- Lock	2
17-79	Tube- Cylinder.	2
17-80	Plate-Cylinder Mounting.	2
17-81	Nipple-Grease.	2
	Machines 0300, 0400, 0600 Series	
17-82	Screw-Socket Head Cap, 1/2-13 x 3-3/4".	8
17-83	Cap-End (Spring Cushion)	2
17-84	Spring (Spring Cushion).	2
17-85	Nut-Lock	2
17-86	Washer- Lock	2
17-87	Bearing- Ball.	2
17-88	Housing- Bearing, Rear.	2
17-89	Bearing-Thrust	2
17-90	Collar-Stop.	2
17-91	Tube- Cylinder.	2
17-92	Plate-Cylinder Mounting	2
17-93	Nipple-Grease.	2
17-94	Screw-Socket Head Cap, 1/2-13 x 1-3/4".	8

*Motorized Back Gauge only.

NOTE: When ordering parts for chain tightening bracket and sprocket, see page 15, for part identification.

SOF- LOC HOLD - DOWN SYSTEM



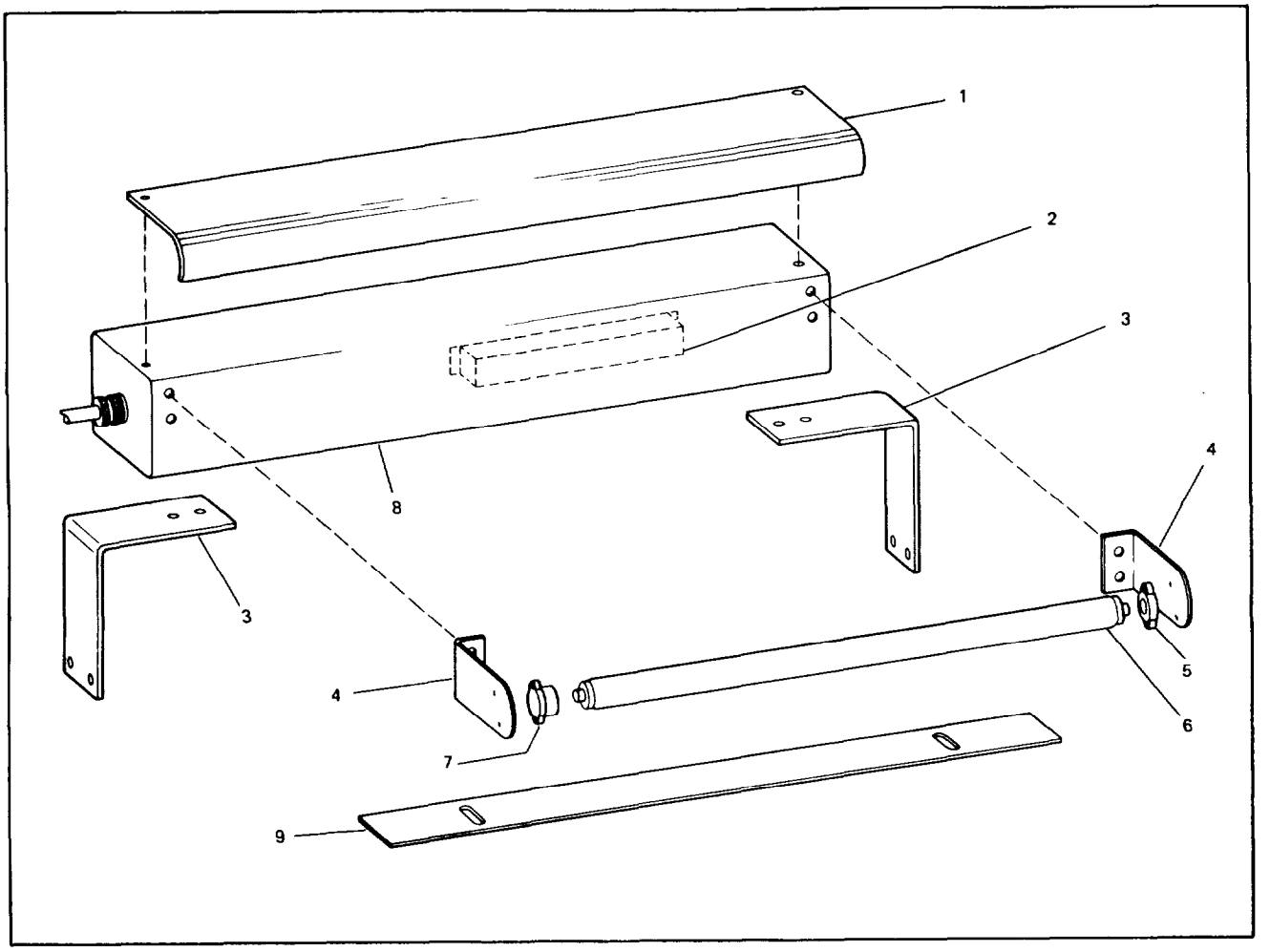
All Machines

Key No.	Part Name	Qty.	Key No.	Part Name	Qty.
29- 1	3/8" Union Ell	1	29-14	Quad. Ring	2
29- 2	3/8" Std. Pipe	AR	29-15	Locknut	1
[illegible]	[illegible]	1	29-16	Needle	1
29- 4	Check Valve	1	29-17	"O" - Ring	1
29- 5	1/2" Std. Pipe	AR	29-18	Cylinder	1
29- 6	1/2" Ell	2	29-19	L & L Fitting	2
29- 7	3/8" Ell	1	29-20	3/4" O. D. Connector Tube	1
29- 8	1/2" to 3/8" Reducing Bush	1	29-21	3/4" to 1/2" Reducing Bushing	1
29- 9	1/2" Pipe Strap	AR	29-22	1/2" Street Ell	2
29-10	1/4" Rd. Hd. Mach. Screw	AR	29-23	1/2" Pipe Nipple - Close	1
29-11	1/2" Hex. Hd. Screw	4	29-24	Flow Control Valve	1
29-12	1/2" Washer	4	29-25	Air Solenoid Valve	1
29-13	"O" - Ring	2	29-26	1/2" Union Ell	1

AR - As Required

NOTE: See page 11 for Hydraulic Hold-Down Pumping Unit

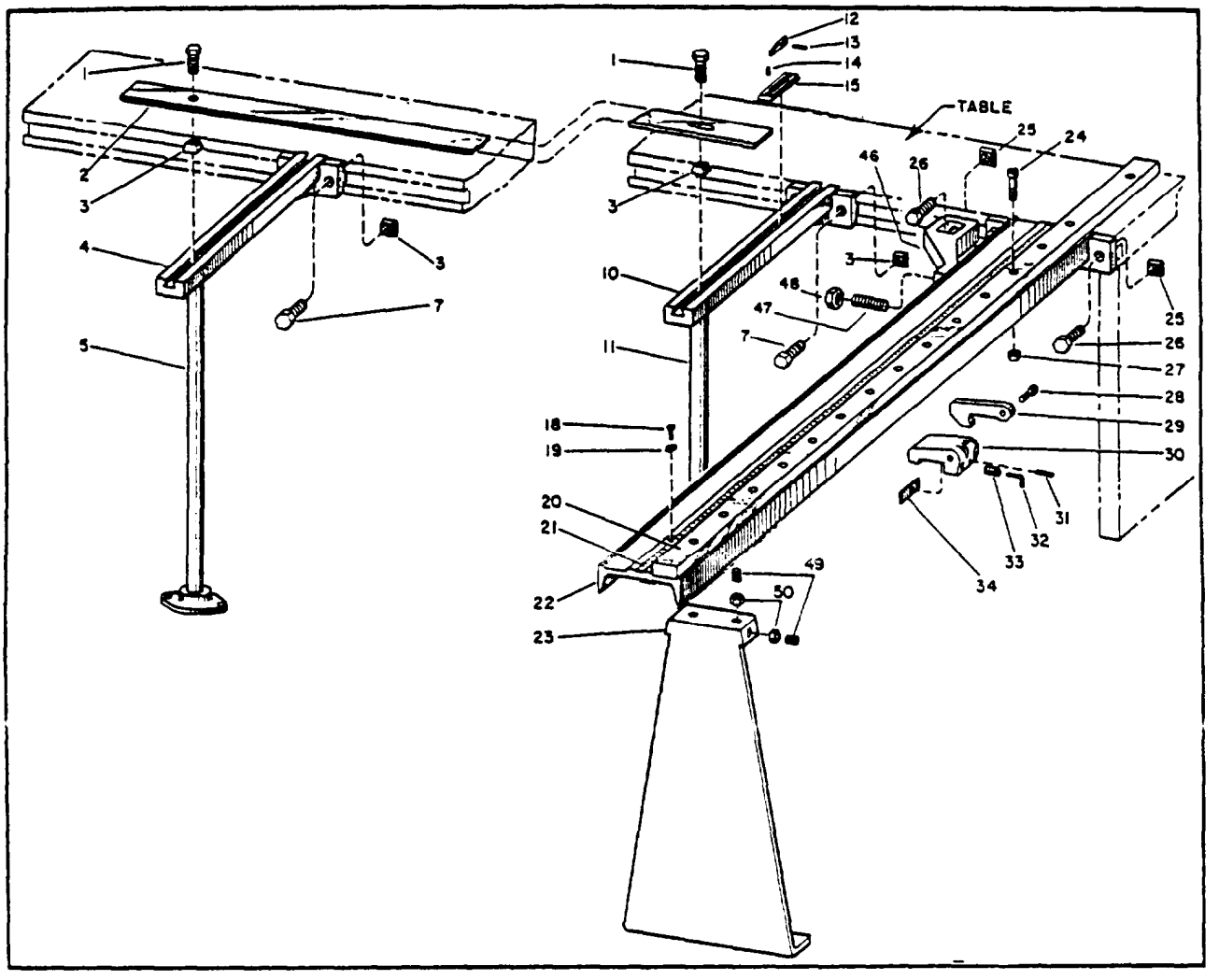
LIGHT GAUGE / AREA LIGHT



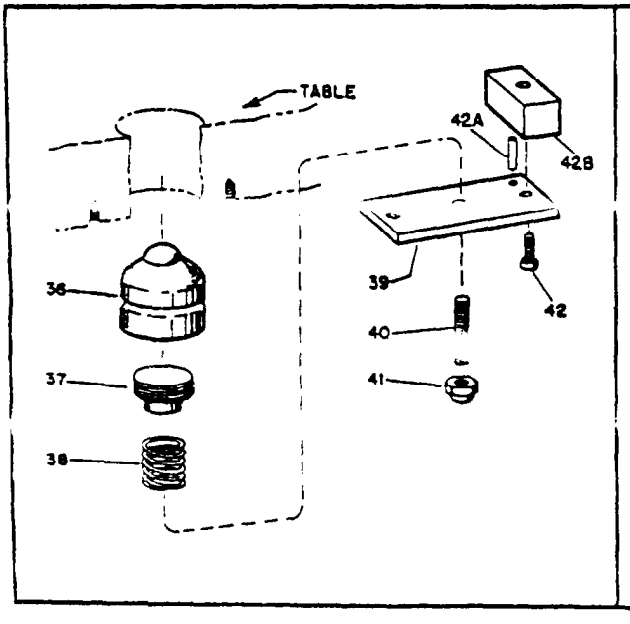
Key No.	Part Name	Qty.
20-1	Shade-Specify 4' or 6' Length	AH
20-2	Ballast-Specify Lamp Length	AR
20-3	Bracket-Light Gage Mounting	2
20-4	Bracket-Lamp Holder	AH
20-5	Lamp Holder-Plain	AH
20-6	Lamp-Specify 4' or 6' Length.	AR
20-7	Lamp Holder-Compressible	AR
20-8	Duct	AR
20-9	Shadow Plate-Specify 4' or 6' Length.	AR

AH = As Required.

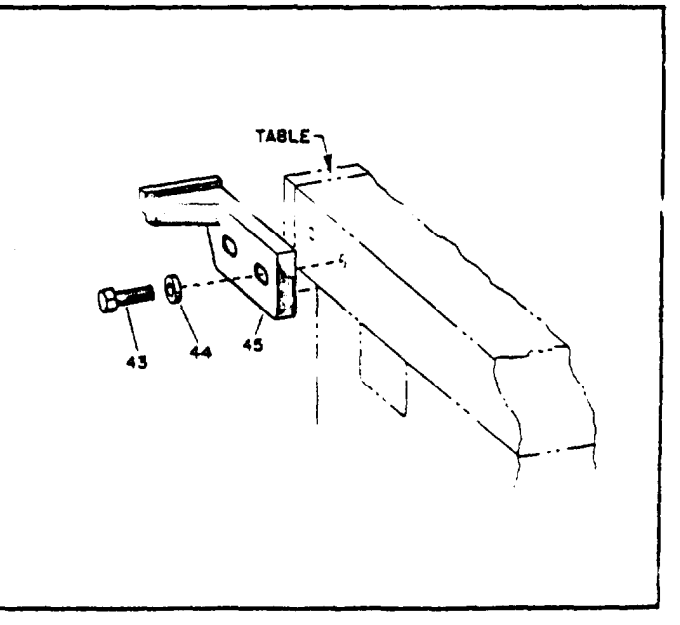
FRONT GAUGE AND SQUARING ARM



BALL TRANSFER UNIT



SLITTING GAUGE



FRONT GAUGE

All Machines

Key No.	Part Name	Qty
21-1	Bolt-Hex Hd., 5/8" x 1"	2
21-2	Bar-Front Gauge	1
21-3	Nut-Dovetail Tee	6
21-4	Arm-Front Gauge	1
21-5	Support-Front Gauge Arm	1
21-7	Bolt-Hex Hd., 5/8" x 1-1/4"	4
21-10	Arm-Front Gauge	1
21-11	Support-Front Gauge Arm	1

DISAPPEARING STOP

All Machines

Key No.	Part Name	Qty
21-12	Finger-Gauge	1
21-13	Pin-Roll, 3/16x 3/4".	1
21-14	Screw-Socket Hd Set.	2
21-15	Block-Finger.	1

SQUARING ARM

All Machines

Key No.	Part Name	Qty
21-18	Screw-Flat Hd, 1/4-20x 1/2"	2
21-19	Clamp-Gauge Scale.	2
21-20	Bar-Gauge	
	24"	AR
	48"	AR
	60"	AR
21-21	Scale-Gauge	1
21-22	Body-Squaring Arm	1
21-23	Leg-Squaring Arm	1
21-24	Screw-Socket Hd Cap, 1/2-13 x 1-1/2"	AR
21-25	Nut-Dovetail Tee	3
21-26	Bolt-Hex Hd., 5/8" x 1-1/4"	AR
21-27	Nut-Hex, 1/2-13	
	Screw-Shoulder	1
21-28	Stop-Squaring Arm Gauge	1
21-30	Holder-Squaring Arm Gauge Stop	1
21-31	Pin-Roll, 1/4 x 1"	1
21-32	Key-Hex.	1
21-33	Screw-Socket Hd Set, 5/8-11 x 1-1/2"	2
21-34	Plate-Clamp	1
21-46	Adjusting Bracket.	1
21-47	Bolt, Stud.	1
21-48	Nut, Hex	1
21-49	Screw-Socket Hd Set	4
21-50	Nut, Hex	4

BALL TRANSFER UNIT

All Machine.

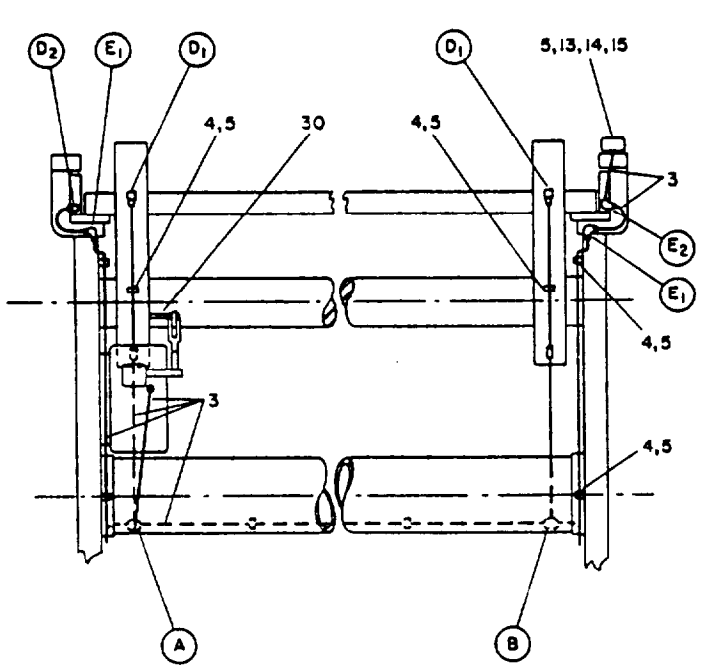
Key No	Part Name	Qty
21-36	Transfer-Ball	1
21-37	Retainer	1
21-38	Spring	1
21-39	Base-Ball Transfer	1
21-40	Screw-Socket Hd. Set, 1/2-13 x 3-1/2"	1
21-41	Nut-Hex, 1/2-13	1
	Machines 0300, 0400 & 0600 Series	
21-42	Screw-Socket Hd. Cap, 3/8"-16	2
21-42A	Pin-Roll	2
21-42B	Block-Spacer	2

SLITTING GAUGE

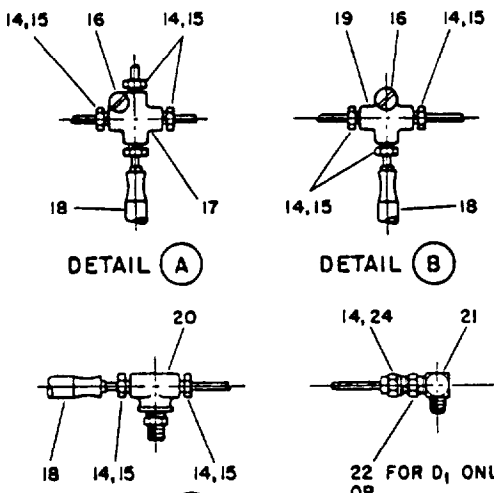
All Machines

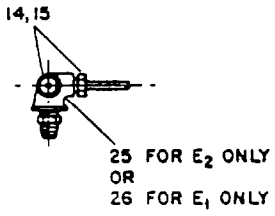
Key No.	Part Name	Qty
21-43	Screw-Hex Hd Cap, 1/2"-13 x 3/4"	2
21-44	Washer-1/2"	2
21-45	Gauge-Sitting	1

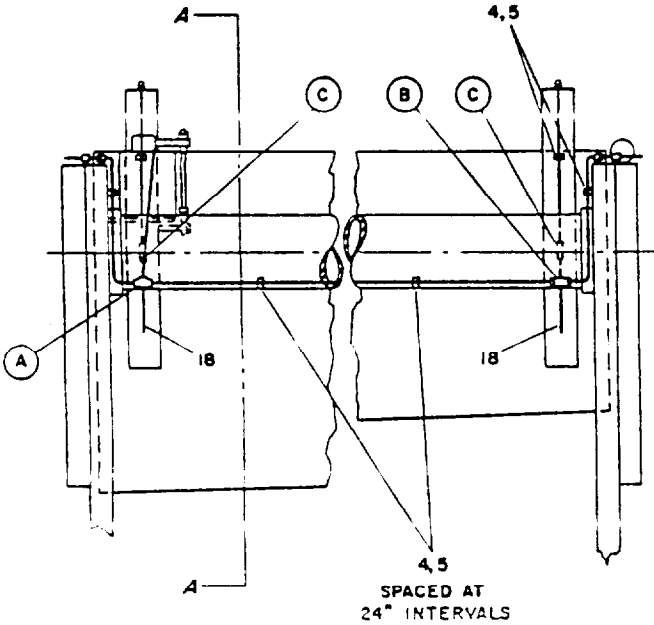
CENTRAL LUBRICATION SYSTEM



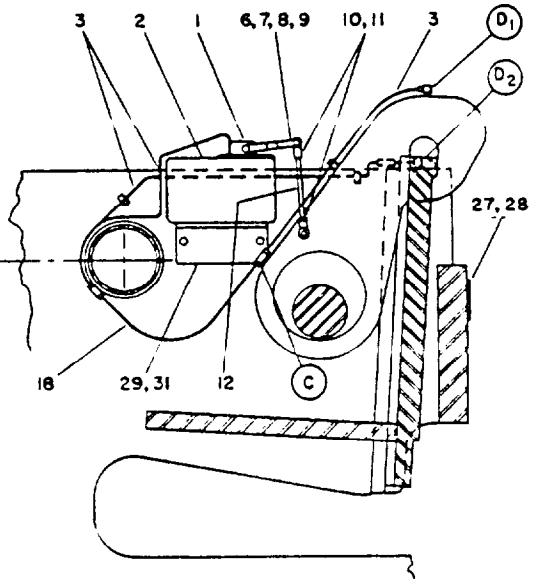
MACHINES 0300,0400 SERIES







REAR VIEW



SECTION AA

CENTRAL LUBRICATION SYSTEM

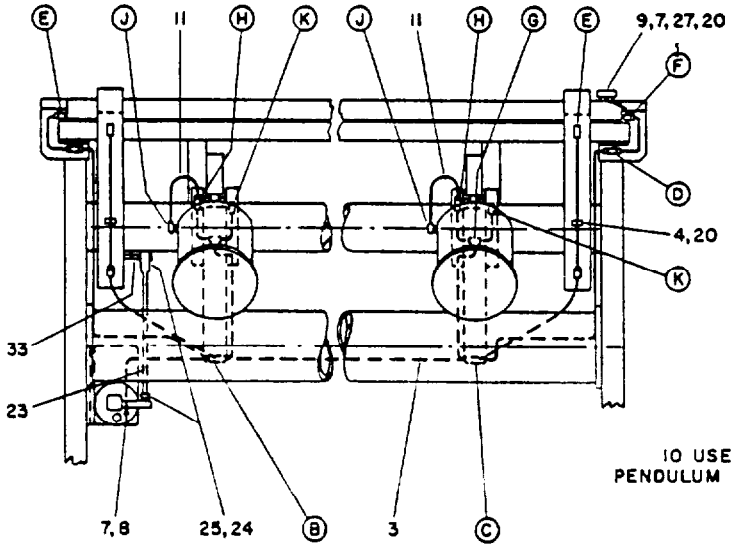
Machines 0300 & 0400 Series

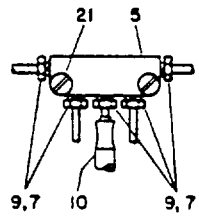
Key No	Part Name	Qty
23-1	Pump-Lubrication	1
23-2	Reservoir-Lubrication Pump	1
23-3	Tubing-Steel, 5/32 O.D. x 0.020 Wall.	AR
23-4	Clip-Tubing.	AR
23-5	Screw-Round Hd Self-tapping, No. 10-24 x 3/8	AR
23-6	Stud- 3/8-24 x 1	1
23-7	End-Yoke	1
23-8	Screw-Hex Hd Cap, 5/16-18 x 1-1/4"	1
23-9	Nut-Hex, 5/16-8	1
23-10	End-Rod.	2
23-11	Nut-Hex, 5/16-24	1
23-12	Stud- 5/16-24 x 9-1/2"	1
23-13	Gauge-Pressure.	1
23-14	Sleeve-Compression.	22
23-15	Bush-Compression.	18

Key No.	Part Name	Qty
23-16	Screw-Round Hd Self-tapping, l/4-20 x 1"	2
23-17	Junction- I-Way	1
23-18	Hose Assembly, 24".	2
23-19	Junction- 3-Way.	1
23-20	Meter Unit- FTA-1	2
23-21	Connector-90° Elbow	3
23-22	Meter Unit- FSA-0.	2
23-23	Meter Unit- FSA-1.	1
23-24	Nut-Compression.	4
23-25	Meter Unit- FTD-1.	1
23-26	Meter Unit- FTD-2.	2
23-27	Plate-Lubrication Instruction.	1
23-28	Screw-Drive, No. 4 x 5/16"	4
23-29	Bracket-Lubricator Mounting.	1
23-30	Stud-Pendulum.	1
23-31	Screw-Hex Hd Cap, 1/2-13 x 1"	2

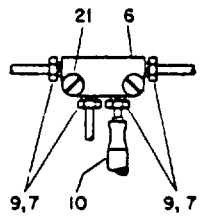
AR - As Required.

CENTRAL LUBRICATION SYSTEM

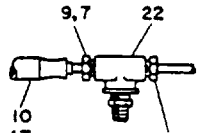




DETAIL (B)

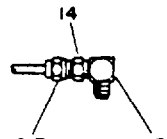


DETAIL (C)



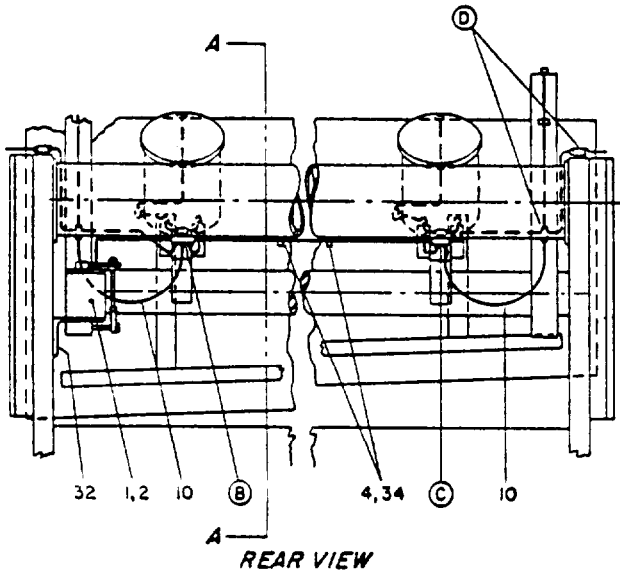
10 USED AT PENDULUM ONLY

DETAIL (D)

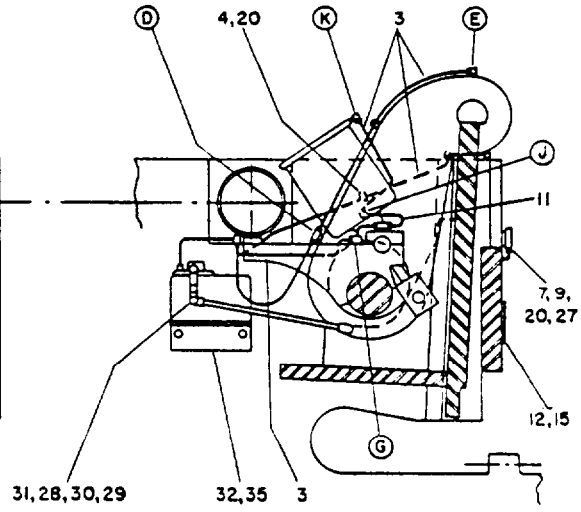


DETAIL (E)

MACHINES 0600 & 0800 SERIES

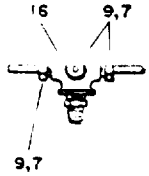


REAR VIEW

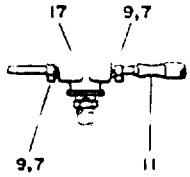


SECTION AA

DETAIL (F)



DETAIL (G)



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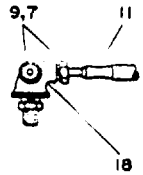

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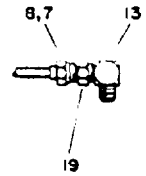


DETAIL (K)

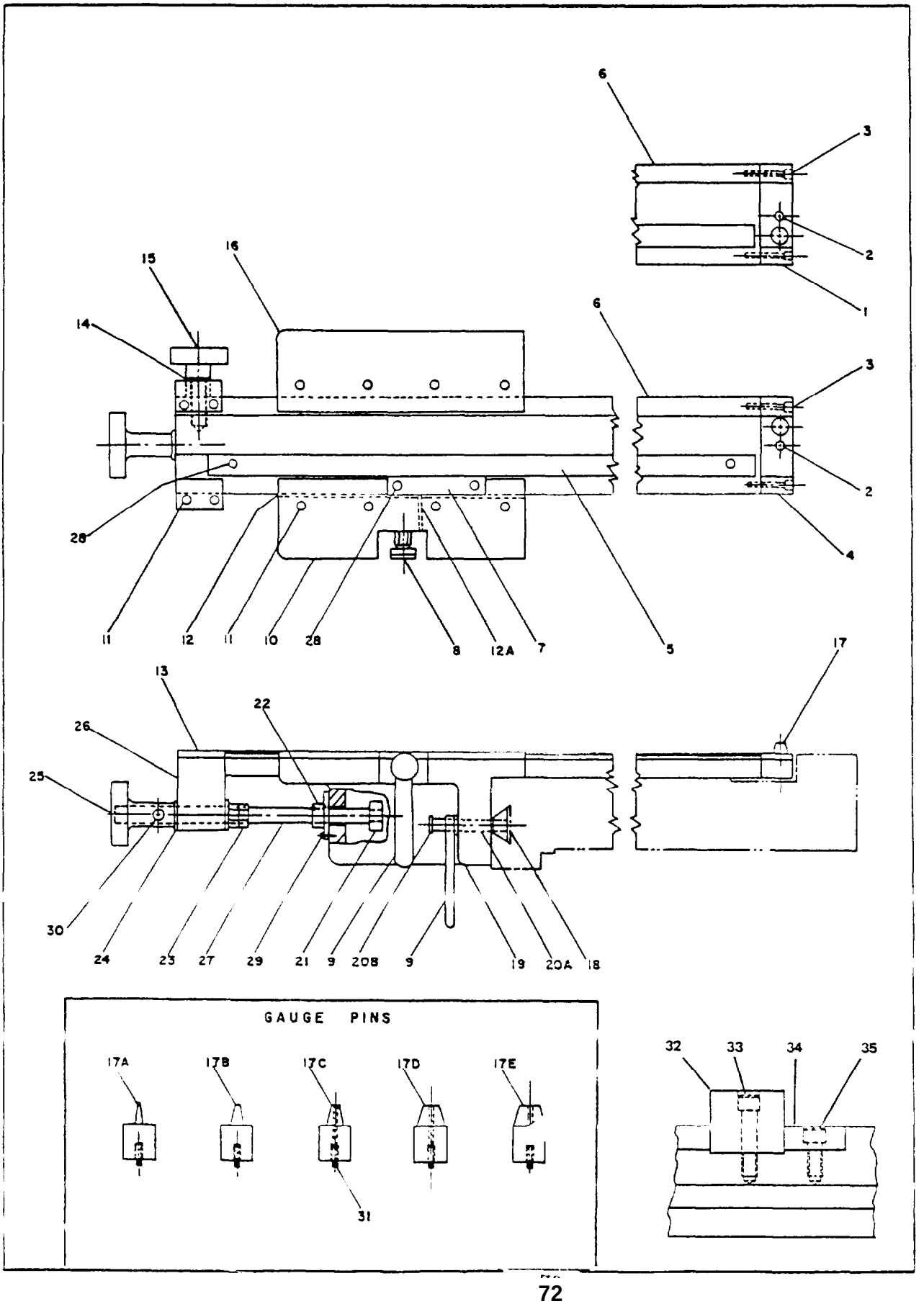
CENTRAL LUBRICATION SYSTEM

Machines 0600 and 0800 Series

Key No.	Part Name	Qty
25-1	Pump-Lubrication	1
25-2	Reservoir-Lubrication Pump	1
25-3	Tubing-Steel, 5/32 O.D. x 0.020 Wall.	AR
25-4	Clip-Tubing	AR
25-5	Junction- 5-Way.	1
25-6	Junction- 4-Way.	1
25-7	Sleeve-Compression.	42
25-8	Nut-Compression.	9
25-9	Bush-Compression.	33
25-10	Hose Assembly, 24".	2
25-11	Hose Assembly, 10"	2
25-12	Screw-Drive, No. 4 x 5/16"	4
25-13	Connector-90° Elbow	7
25-14	Meter Unit- FSA-1.	3
25-15	Plate-Lubrication Instruction.	1
25-16	Meter Unit- FTC-O.	2
25-17	Meter Unit- FTA-0.	2
25-18	Meter Unit- FTD-0.	2
25-19	Meter Unit- FSA-0.	4
25-20	Screw-Round Hd Self-tapping, No. 10-24 x 3/8"	AR
25-21	Screw-Round Hd Self-tapping, 1/4-20 x 1"	4
25-22	Meter Unit- FTA-3.	4
25-23	Stud- 5/16-24 x 18-1/2"	1
25-24	End-Rod.	2
25-25	Nut-Hex, 5/16-24.	1
25-26	Meter Unit- FTD-1.	1
25-27	Gauge-Pressure.	1
25-28	Stud- 3/8-24 x 1".	1
25-29	Screw-Hex Hd Cap, 5/16-18 x 1-1/4"	1
25-30	Nut-Hex, 5/16-18.	1
25-31	End-Yoke	1
25-32	Bracket-Lubricator Mounting.	1
25-33	Stud-Pendulum.	1
25-34	Block-Tubing Clip Mounting.	AR
25-35	Screw-Hex Hd Cap, 1/2-13 x 1"	2

AR - As Required.

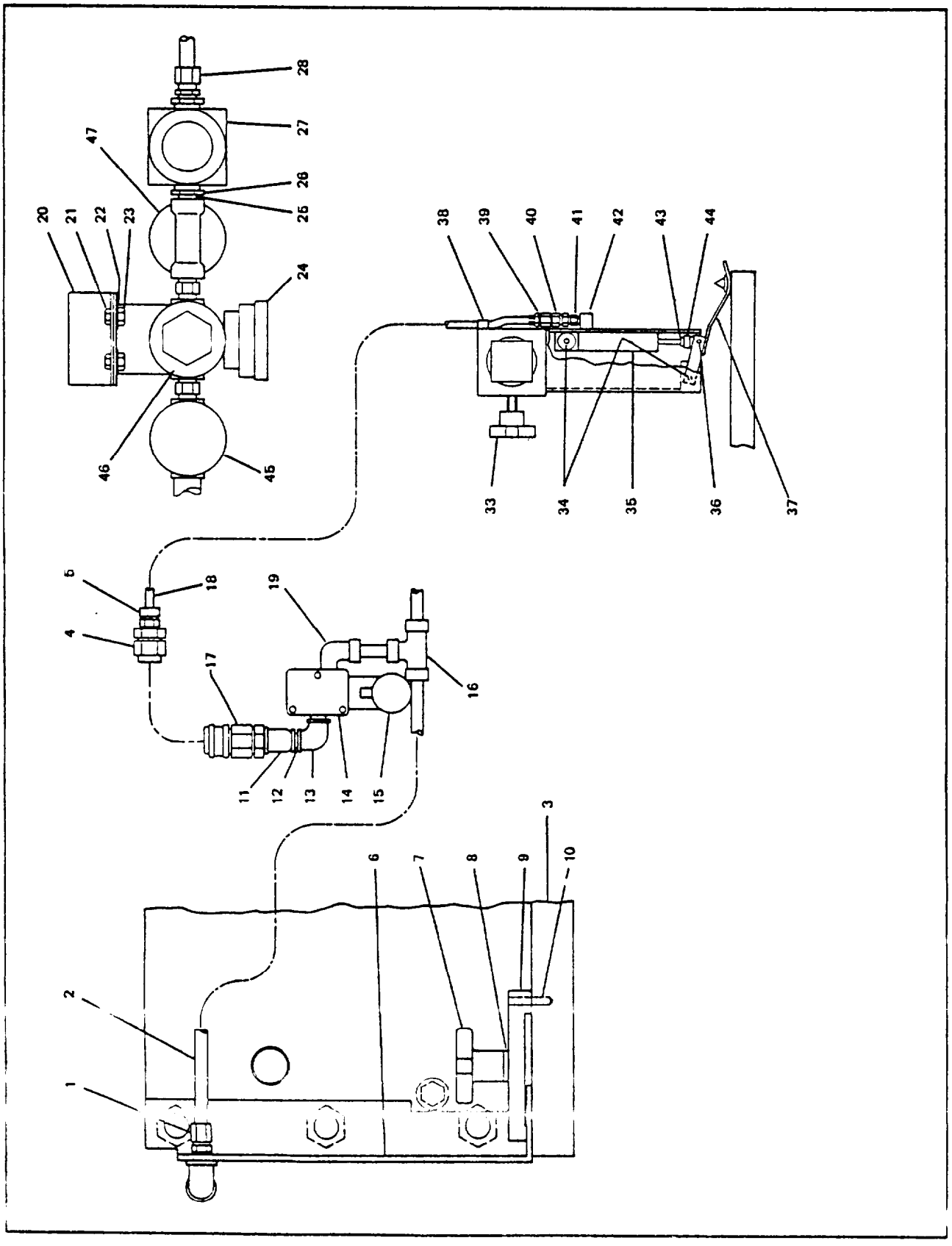
VERNIER GAUGE ASSEMBLY



VERNIER GAUGE ASSEMBLY

Key No.	Part Name	Qty.
27-1	Block-Pin, for Left Hand Assembly . .	1
27-2	Plug-Hex Socket Pipe, 1/8" . .	1
27-3	Screw-Socket Hd. Cap, #10-32 x 1-1/4"	2
27-4	Block-Pin, for Right Hand Assembly . .	1
27-5	Scale	1
27-6	Slide	1
27-7	Vernier Scale	1
27-8	Screw-Clamping	1
27-9	Wrench	3
27-10	Gib-Right Hand	1
27-11	Screw-Button Hd. Socket Cap. #8-32 x 3/8"	12
27-12	Gib-Clamping	1
27-12A	Pin-Roll 3/16" x 1/2"	1
27-13	Gib-Inching Block	2
27-14	Shoe-Binder.	1
27-15	Screw-Binder	1
27-16	Gib-Left Hand	1
27-17A	Pin-Gauge, #1, .080/. 180 range . .	1
27-17B	Pin-Gauge, #2, .160/.260 range . . .	1
27-17C	Pin-Gauge, #3, .240/ .340 range	1
27-17D	Pin-Gauge, #4, 320/ .420 range	1
27-173	Pm-Gauge, #5, .400/ .500 range	1
27-18	Nut-Dovetail	2
27-19	Body	1
27-20A	Screw-Dovetail	2
27-20B	Retainer	2
27-21	collar	1
27-22	Nut-Inching	1
27-23	Nut-Hex Jam, 1/2-20	2
27-24	Washer-Thrust.	2
27-25	Knob-Inching	1
27-26	Block-Inching.	1
27-27	Screw-Inching	1
27-28	Screw-Button Hd. Socket Cap, #6-32 x 3/8"	5
27-29	Screw-Socket Hd. Cap, #10-32 x 1/2" . . .	2
27-30	Pin-Roll, 3/16 x 3/4"	1
27-31	Screw-Socket Hd. Set, #10-32 x 1/2"	5
27-32	Gauge-Side	1
27-33	Screw-Socket Hd. Cap, 1/2" x 2"	2
27-34	Support-Material	1
27-35	Screw-Socket Hd. Cap, 1/2" x 1"	2

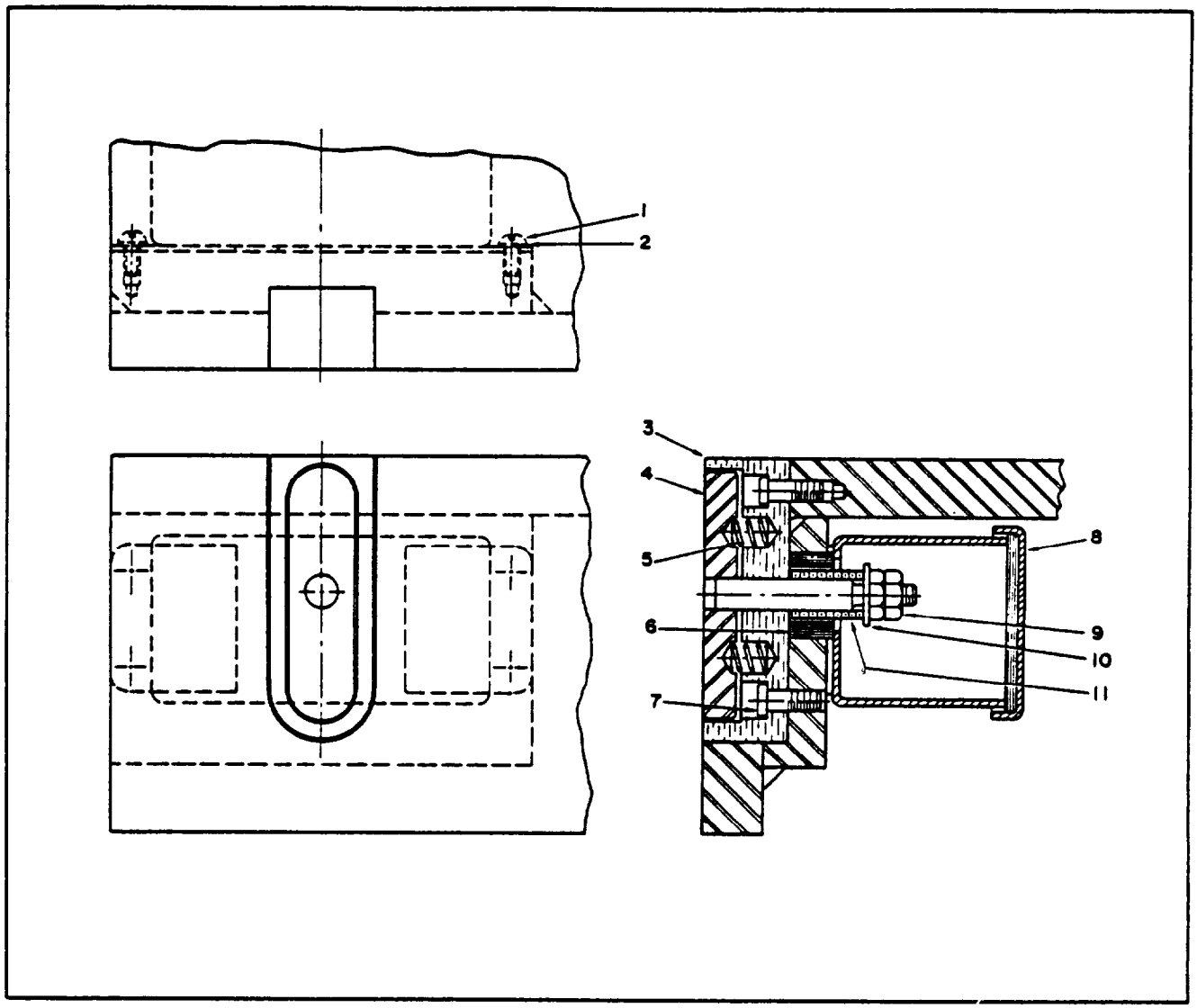
ACCRA-BLANK LOCATOR CLAMP ASSEMBLY



ACCRA-BLANK LOCATOR CLAMP ASSEMBLY

Key No.	Part Name	Qty.
30-1	Connector-Compression, 3/8"NPTx 3/8" Tube.	2
30-2	Tubing-Copper, 3/8" O.D.	
30-3	Bar-Support	1
30-4	Fitting-Snap-Tite #PHN-4F	3
30-5	Connector -Mate.	3
30-6	Bracket (R. H. & L. H.)	1
30-7	Knob-Clamp	2
30-8	Washer-Flat, 1/2".	2
30-9	Clamp	2
30-10	Pin-Straight, 1/4" Dia.	2
30-11	Coupling-Reducing, 1/4" to 1/8" NPT	3
30-12	Nipple-Pipe, 1/8" NPT x 3/4"	6
30-13	Elbow-Pipe, 1/8" NPT	3
30-14	Screw-Sot. Hd. Cap, #10-24	9
30-15	Valve-Hand.	3
30-16	Tee-Tube, 3/8" Tubs	2
30-17	Body-Coupler, Snap-Tite #VHC-4M	3
30-18	Tubing-Plastic, 1/4" O.D.	-
30-19	Elbow-Connector, l/8" NPT x 3/8" Tube.	3
30-20	Bracket-Support, RFL Unit	1
30-21	Screw-Hex Hd. Cap, 1/4"-20 x 5/8"	2
30-22	Washer-Wrought, 1/4"	2
30-23	Nut-Hex, 1/4"-20	2
30-24	Gauge-Air	1
30-25	Nipple-Pipe, Close 1/4" NPT	1
30-26	Bushing-Reducing, l/2" to 1/4" NPT	1
30-27	Valve-Solenoid	1
30-28	Connector-Compression, l/4" NPT x 3/8" Tube.	1
30-33	Knob	3
30-34	Pin, 3/16" Dia.	6
30-35	Cylinder-Miniature	2
30-36	Dowel, 1/8" x 1/2"	3
30-37	Foot-Clamping	3
30-38	Clip-Nylon	3
30-39	Connector, 1/8" NPTx 1/4" Tubing	3
30-40	Adapter, 1/8" NPT x #10-32	3
30-41	Coupling-Short, 10-32	3
30-42	Fitting-Ell	3
30-43	Nut-Hex, #10-32	3
30-44	Clevis	3
30-45	Filter-Air	1
30-46	Regulator-Air	1
30-47	Lubricator -Air	1

AUTO-CUT CLUTCH CONTROL

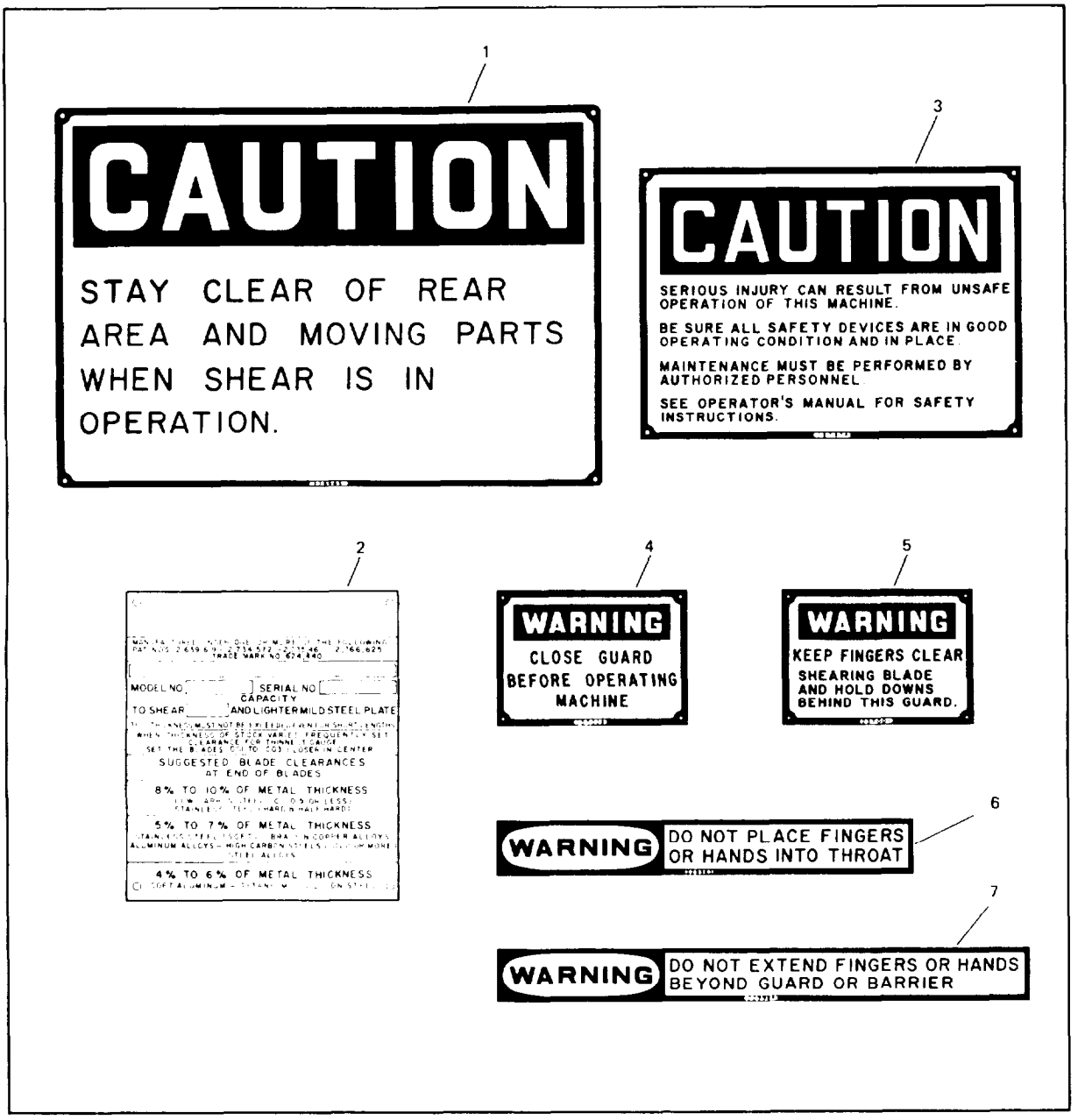


Key No.	Part Number	Qty.
31-1	Screw-Round Head Machine	4
31-2	Washer-Lock	4
31-3	Insulator	4
31-4	Contact	4
31-5	Spring	4
31-6	Insulator	4

Key No.	Part Name	Qty.
31-7	Screw	2
31-8	Box-Control	1
31-9	Nut-Hex	2
31-10	Washer	2
31-11	Insulator	1

Quantities listed are for one contact assembly only.

MACHINE SAFETY AND INSTRUCTION PLATES



Key No.	Part Name	Qty.
32-1	Plate-Caution. Back Brace	1
32-2	Plate-Instruction, Capacity and Table Adjusting - Holddown Bar	1
32-3	Plate-Caution - Holddown Bar	1
32-4	Plate-Warning, Finger Guard, Back .	1
32-5	Plate-Warning, Finger Guard, Front.	1
32-6	Plate- Warning, Throat	2
32-7	Plate-Warning, Finger Guard, Roller Type	2

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E.C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Brigadier General, United States Army
The Adjutant General

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