

GENERAL

The #33 and #34 Automatic Cut-off Machines are designed to chamfer and cut off pipe, tubing and bar stock in lengths up to approximately 30 in. The maximum number of pieces that can be cut off per minute depends not only on the diameter, but also on the length required. Maximum production can be expected only on lengths up to about 8 in. To cut off longer pieces, 8 in. to 16 in., the rapid traverse stroke must be increased to allow more feed out time. Pieces longer than 16 in. may be cut off automatically by using the Remote Slide Control. This feature is described in the Set Up section of this booklet.

INSTALLATION

1. Place machine close as possible to final location before removing skids.
2. Thoroughly remove all rust preventative from finished surfaces.
3. Connect terminals in the magnetic starter, through a disconnect switch, to main power lines carrying same voltage as indicated on motor. If motor shaft does not rotate in direction indicated by arrow on top of motor end bell, then reverse the main power lines to magnetic starter.
4. Lubricate completely according to lubrication instructions and at least once every four hours of continuous operation.

LUBRICATION

Grease fittings are located as follows, and should be greased at least once every four hours of continuous operation:

Cut-Off Slides	(4)
Column	(2)
Roller Stock Feed	
Stock Stop	
Wedge	(1)
Roller Cut-Off	

Oil must be maintained at proper level and should be drained and replaced with fresh oil after every 300 hours of operation:

Main Drive Transmission	--	Highly refined straight mineral oil of turbine oil grade SUV at 100° F 145-155 seconds
Cut-Off Knee (Hydraulic Oil Reservoir)	-	Highly refined straight mineral oil of turbine oil grade SUV at 100° F 145-155 seconds

OPERATION

After bolting down, wiring and lubrication, machine should be started by pushing MAIN DRIVE & COOLANT PUMP "START" BUTTON. Allow machine to operate without feeding any stock into the roller stock feed. Observe the sequence of operations as set up at the factory:

1. Slides rapid traverse in
2. Collet closes
3. Feed rolls open
4. Stock stop recedes
5. Slides feed in
6. Slides rapid traverse out
7. Feed rolls close
8. Collet opens
9. Stock stop advances
10. Repeat cycle

OPERATION & ADJUSTMENT OF HYDRAULIC EQUIPMENT

SAFETY OVERLOAD VALVES

The feed pump safety overload valve is used in the feed circuit, and its function is to keep the piston pump pressure from exceeding the setting of the valve. When the pressure in the system reaches the setting of the valve, the valve will open sufficiently to bypass the oil to the knee. This valve is set at 600 PSI when passing 300 cu. in./min. Adjustment can be made by removing the hollow hex cap and turning the hollow hex adjustment screw. Turn the screw clockwise for higher pressures and counter-clockwise for lower pressures. Test pressure at check point "C". Be sure to replace and tighten the cap after adjustment has been made.

The rapid traverse pump safety overload valve is used to keep the traverse pressure from exceeding the setting of the valve. This valve has no adjustment, but is set for 150 PSI when passing 12 GPM.

ACCUMULATOR

The accumulator is used to provide traverse motion to the collet chuck mechanism. For best operation and life, air pressure in the accumulator bladder when the oil pressure is zero should be between 75 and 100 PSI. For checking the actual air pressure inside the accumulator, use a standard air or tire gauge at the air valve when the oil pressure is zero. At check point "D" and oil pressure gauge should not exceed 500 PSI after the collet pump has filled the accumulator with oil. This pressure is limited by the setting of the combination valve.

If the traverse rate in the accumulator circuit is slow, it may be caused by the loss of air precharge. To restore air precharge, stop machine, loosen pipe plug at check point 'D' until oil pressure is zero. Charge accumulator with clean, dry air to 75 to 100 PSI. Tighten pipe plug at check point 'D'. Accumulator circuit is now ready for operation. During normal operation, the precharge pressure should be checked every month using the same procedure as restoring air precharge.

COMBINATION VALVE

The combination valve (check, sequence and overload) is used with the accumulator to permit a rapid flow of oil from the accumulator followed by a direct pump holding action at the cylinder while the accumulator is being restored to full pressure. This valve is provided with an adjustment for controlling the holding pressure. This adjustment can be made by removing the hollow hex cap screw on the face of the valve and turning the hollow hex adjustment screw. Turn the screw clockwise for higher pressures and counter clockwise for lower pressures. Pressure should be adjusted when pump is operating and then sufficient time should be allowed to permit the accumulator to become fully charged at the pressure setting. This time interval is approximately 15 seconds.

PISTON TYPE FEED PUMP

The feed pump is the 5 piston type adjustable by an eccentric bearing. It is possible to conveniently adjust the pump to 1/15 of the maximum volume as indicated on the graduated spacer on the left end of the pump shaft.

TRAVERSE PUMP

The traverse pump is the roto-blade type for delivering 12 GPM at 1800 RPM.

COLLET CHUCK PUMP

This pump is a gear pump tandem mounted on the traverse pump for delivering 3 GPM at 1800 RPM.

THE REVERSING VALVE AND CONTROL DOGS

The reversing valve is controlled by the hand control lever and control dogs on the front slide. When operating the cutoff slides in "Single Cycle", the forward traverse dog is removed from the T slot bracket. The operator pulls the hand control lever and the cutoff slides rapid traverse "Forward" until the feed dog operates the valve into "Feed" forward. After the required feed stroke the return dog operates the valve to "Return" the slide. The cutoff slides will remain in this position until the operator again pulls the hand control lever, Figure 1. In "Automatic Cycle" the forward traverse dog instead of the operator is used to operate the reversing valve.

COLLET CHUCK SETUP

After the cutoff slide dogs are set up, the dog for operating the collet must be adjusted so that the collet closes just before the slides begin to feed. Moving the dog closer toward the spindle makes the collet close sooner, moving the dog farther away from the spindle makes the collet close later.

Figure 2 clearly indicates the parts and operation of the collet and roller feed mechanism. The collet, collet pads, collet ring and screws are of conventional design. About every 250 hours of operation the collet assembly should be removed and cleaned. The spindle bore should be cleaned at the same time. In order to remove the collet it is necessary to remove the collet pads and install the loading ring. This loading ring keeps the collet leaves from flying apart when the collet ring is removed. After the collet ring is removed the collet, loading ring, and hinge ring can be pulled out as a unit.

When a different setup is to be made, bring the slides back and remove the cutters. Install the proper size inner plunger and collet pads. Adjust the feed rolls so that the tube of pipe pulls through the spindle and up against the stock stop. Set the stock stop so that the tube makes contact only on the upper third of the tube, Figure 3. Now set up the work trough so that the piece cut off will pass under the stock stop when pushed by the work in the spindle.

SPEEDS & FEEDS

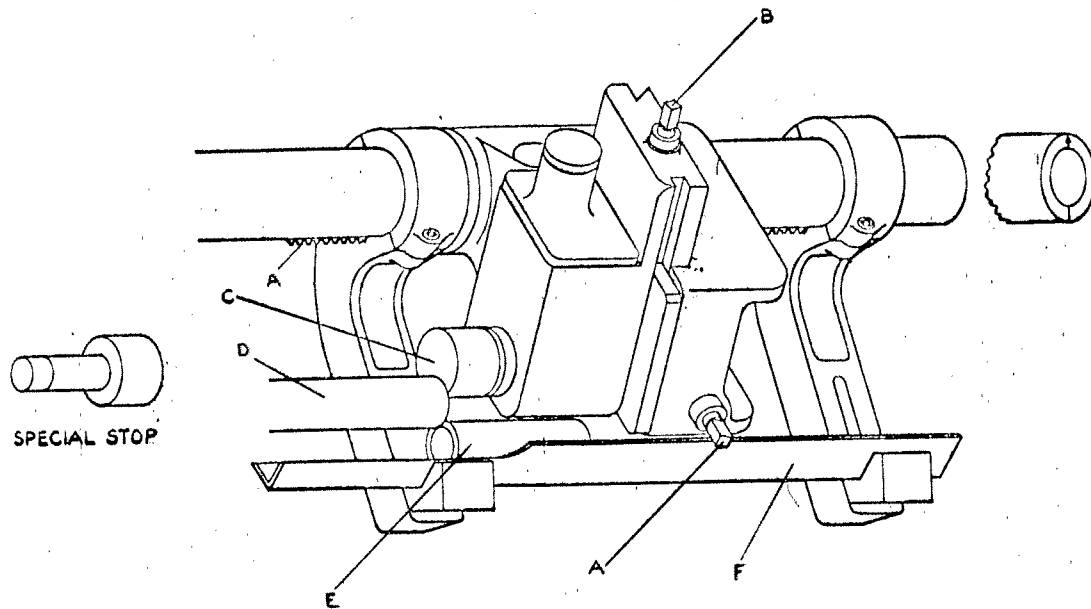
With the proper change gears in the spindle drive transmission, see B-51555, select the gear shift lever positions to give a cutting speed of about 100 feet per minute. Now set the feed pump control on the third long mark on the dial. This determines the chip thickness and may be varied later after the machine has been setup and operating, Figure 4.

CUTTER SETUP

The cut off blades are now setup to project about 1-1/4 inches cut from the toolholder. For tubing the cutting edge of the front cutter should be 1/16 inch above the center of the spindle and for the rear cutter 1/16 inch below the center of the spindle. Set the dogs so the feed stroke begins when the front cutoff blade is about 1/32 inch from the outside diameter of the work. Now take a trial cut to determine the position of the return dog so that the slides return soon after the piece is cut off.

For cutting off bar stock, both cutters are set on the center. However, make sure that the cutters will pass by each other by about .010 inch.

STOCK STOP AND WORK CHUTE



The hydraulic stock stop is designed with adjustment along the bar by means of rack and pinion A for cutting off different lengths of work. Screw B provides adjustment in setting the stop for different diameters of work.

Normally the stock stop is brought up to the work and set for the correct length to be cut off. This setting must be made when stop C is in the out position. The work D should contact the lower third of the stop while pushing the previous cutoff piece E underneath the stock stop.

The work chute F is set so that the cutoff pieces will clear the bottom of the stock stop by about 1/2 inch. Note that the end of the bar is stamped with an arrow and this arrow must be vertical for proper setting. Close nipples or very short length work with a diameter of less than two inches require the use of a special stop with a smaller nose diameter.