

# GENERAL OPERATING INSTRUCTIONS

## "HAN" KNIFE GRINDER

### PRECAUTION

Before starting or testing the machine, certain precautions should be taken for maximum safety. The operator should read these instructions carefully and familiarize himself with all operations of the machine.

### INSTALLATION

When purchased without the optional sub-base, it is important that the grinder be placed on a solid work bench or adequately constructed saw horses. Either natural or artificial lighting should be provided for the operator of the machine.

When installing the grinder, care should be used when removing the skid. The base should be lifted only at the points provided. Four of these points are in the top of the base; they have been tapped to receive eye bolts. There are two additional clearance holes in each end of the base. After the machine is located, remove the four eye bolts in the top of the base and install pipe plugs.

The grinder was completely wired and run-tested at the factory. It is necessary only to connect the single phase and three phase power supplies to the appropriate terminals in accordance with the wiring diagram provided with the machine. Prior to wiring in the supply lines, check all connections to make sure none have vibrated loose during shipment. After the electrical circuits have been checked and proven, and prior to operating the machine, a light coat of light-weight machine oil should be applied to the round ways.

The knife bar is the swiveling type and may be set at any desired angle for grinding a knife edge. A bevel indicator is located at the end of the bar to assist the machine operator in obtaining the desired angle. To adjust the angle setting of the knife bar, loosen the trunnion locking bolts (one in each knife bar sleeve bearing), set the desired knife bar angle, and re-tighten the locking bolts.

### INFEEED AND GRINDING HEAD

Before starting operations, check for clearance between grinding wheel and knife bar or mounted work piece.



The grinding wheel is retracted from the knife bar by turning the feed control handwheel at the operator's station in a counterclockwise direction.

For automatic infeed, adjust the predetermined stop on the ratchet wheel to the desired amount of total infeed required. Each tooth on the ratchet wheel is equivalent to .00028" infeed. The amount of infeed desired for each cycle is adjusted by turning the thumbscrew over the feed pawl. Turning this screw clockwise decreases the feed. Turning the screw counter-clockwise increases the feed. Two or three teeth of infeed is average.

The grinding wheel rotates counter-clockwise with all grinding being accomplished on the left hand edge of the wheel as viewed by looking into the grinding wheel. Wheel clearance at the trailing edge of the wheel is set at the factory.

## SET-UP, STARTING, AND GRINDING

The following procedure is applicable to most knife grinding operations. The results obtained depend very much on the skill of the machine operator, his understanding of the work, and what is required.

1. Loosen all trunnion locking bolts, being sure to have the knife bar under control when the last trunnion locking bolt is loosened.
2. Rotate the knife bar so that the face on which the knife is to be mounted is at the top and in a horizontal plane.
3. Place the knife on the knife bar so that when the knife bar is rotated to the grinding position, the bevel edge will be pointing up.
4. Align the knife (or series of knives) on the knife bar with the heel of the knife against a backing gauge bar, unless the knife is to be aligned from the cutting edge. Gauging from the heel will result in the cutting edge of the knife being parallel to the heel. If a backing gauge bar or edge gauge is not available, a machinist's square will serve the purpose. Depending on knife size, nicked edges, dullness, etc., allow the knife edge to extend approximately 1/8" to 3/4" over the edge of the knife bar. This must necessarily be left to the discretion of the machine operator.
5. After aligning the knives as near perfect as possible, clamp them securely in place, being careful not to disturb the alignment. Check for straightness after clamping. *Too* much clamping pressure can often push the knife or knives out of alignment. Where special clamping fixtures have been furnished, use the fixtures provided.



6. Retract the grinding head to obtain clearance to allow the knife bar to be rotated into the desired grinding position.
7. Check the grinding wheel to ensure that all hold down bolts are tight.
8. Rotate the knife bar to the desired angle of bevel for the cutting edge.
9. Tighten all trunnion bolts to lock the knife bar in its set position.
10. Set the length of stroke for the carriage by positioning the moveable trip dog on the right end of the machine at a point where the entire leading edge of the grinding wheel has cleared the last knife by approximately four inches.
11. Feed the grinding head into the work by hand until the edge of the grinding wheel touches the knife edge, then back the grinding head off slightly.
12. Start the grinding head motor.
13. Start the carriage motor and set the carriage speed to the desired rate.
14. Start the coolant pump and adjust the amount and direction of flow. Use sufficient flow to the grinding wheel. Direct coolant to a point just above point of contact of the grinding wheel and the knife. Locate the coolant tank with pump under the drain opening in the machine base.
15. At this point, the automatic infeed can be set to grind the knife automatically or the operator can feed the head to the work piece by hand.
16. When a new edge has been formed, disengage the feed pawl from the ratchet wheel if grinding automatically. Permit the grinding head to "spark out."
17. Shut off power to the grinding head motor, carriage motor, and coolant pump. Power to the carriage motor should be shut off when the carriage is at the extreme left end of its travel, which will allow the knife bar to rotate back to a horizontal position where the knife can be removed.

Grinding is only part of the process of sharpening a knife, but a most important one. We do not recommend that the operator do other work or leave the machine during the grinding process. A knife edge should be watched very closely during the grinding for many reasons.

## HEAD MOUNTED WHEEL DRESSER

Adjust the vertical stroke of the wheel dresser so that the grinding wheel edge can be dressed parallel to the knife bar. This adjustment is made by loosening the slot bolt on the side of the dresser body, swiveling to position, and tightening the bolt.

To dress or clean the grinding wheel face, operate the dresser vertically while feeding the cutters into the grinding wheel slowly.

After dressing the grinding wheel, return the dresser to its original position and replace the pin.

## MAINTENANCE

The knife bar should be kept as clean as possible at all times. To grind with accuracy, wipe off any grit or accumulated swarf between grinds or before mounting the knife on the knife bar. Clean the machine thoroughly at the end of the day or as necessary. Remove all traces of water oxidation when not in use. To protect knife bar sleeve bearing surfaces do not allow dirt to collect on top of caps and grease **daily**.

Do not permit the drain to the coolant tank to become clogged. Remove accumulated swarf from drip pans and slides as often as necessary to permit coolant to drain freely back to the coolant tank.

Apply a light coat of light weight machine oil to the round ways at the beginning of each eight-hour shift of operation.

Check the machine bed periodically for proper leveling. A level bed will assure accuracy in grinding.

When the grinder is not in use (such as overnight), park the carriage in the center of the base to distribute the weight evenly.