# OPERATOR'S MANUAL

# APPLETON

# SEMIAUTOMATIC TUBE CUTTER

# SERIES S

May 1977

**Appleton Manufacturing**

MENASHA CORPORATION

P. O. Box 329, Menasha, Wisconsin 54952 • Phone 414/731-1231

"specialists in service and equipment for the paper industry"

# SERIES S TUBE CUTTER SPEC SHEET

OUR ORDER # _____ CUSTOMER ORDER # _____

CUSTOMER NAME: _____ SERIAL # _____

| FEATURE | DESCRIPTION | SYMBOL | MODEL |
|---|---|---|---|
| | | | S- |
| | | | |
| CORE I.D. RANGE | 3/4 to 10 | 10 | |
| | 3/4 to 12 | 12 | |
| | 3 to 16 | 16 | |
| | 12 to 20 | 20 | |
| STOCK CORE | 121-1/2" | 10 | |
| LENGTH | 96" | 8 | |
| (FRAME) | 72" | 6 | |
| | 60" | 5 | |
| | 48" | 4 | |
| | 36" | 3 | |
| | SPECIAL LENGTHS (WRITE IN) | | |
| | | | |

OPTIONAL EXTRA-COST EQUIPMENT

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| CORE I.D. (MANDREL SIZE) | SER. NO. | MANDREL O.D. |
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MOTOR — VOL. HZ PHASE

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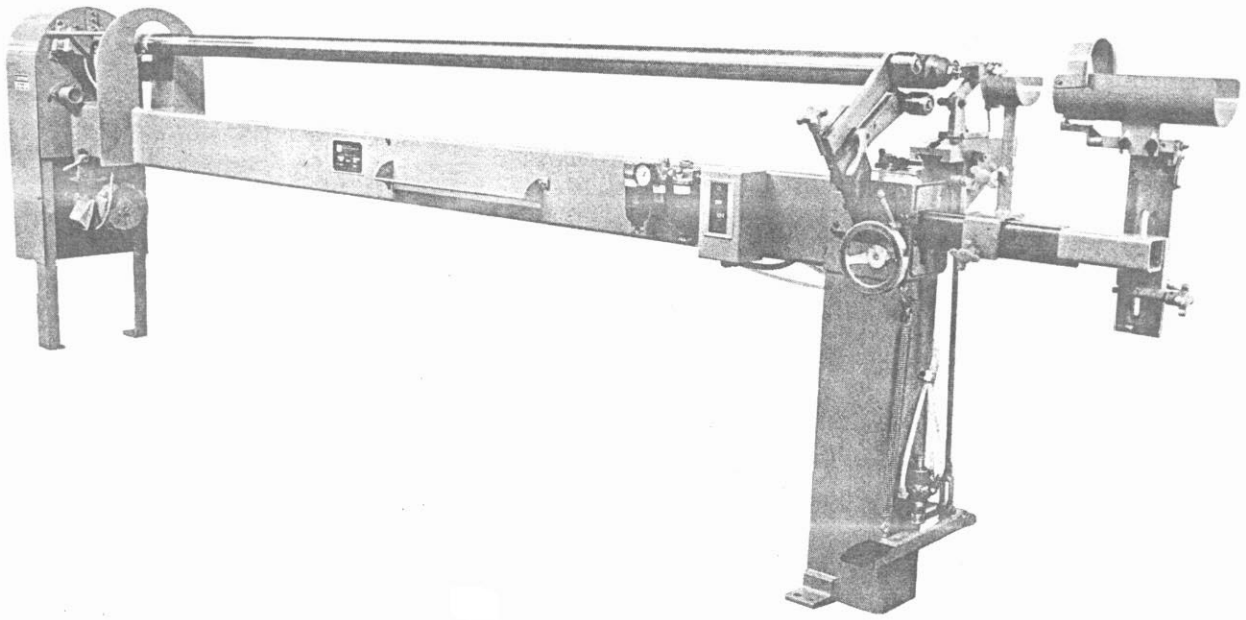
# APPLETON

# SEMIAUTOMATIC TUBE CUTTER

# SERIES S



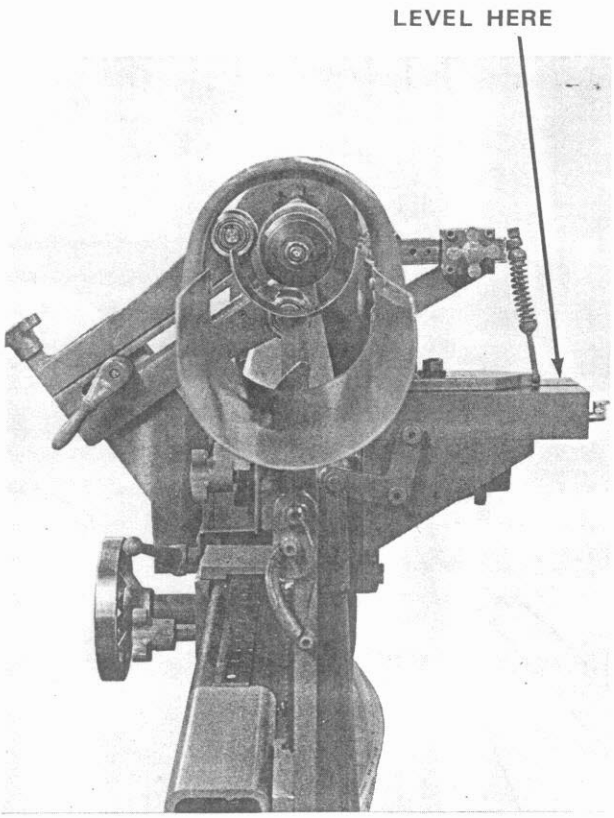



ILLUSTRATION 1

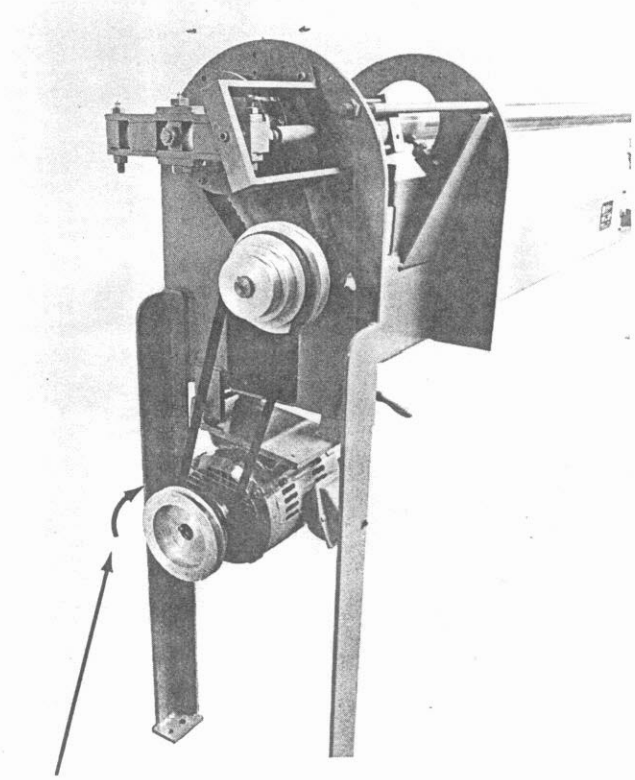



ILLUSTRATION 2

## ERECTION OF THE MACHINE

1. The machine should be bolted to the floor and leveled. 1/2" — 13 tapped holes are provided in the feet for leveling jackscrews. For floor plans, see General Assembly Drawing #D-74-102.
2. Leveling is accomplished by leveling on the knife cross slide with the tool holder removed.
3. Electrical Connections — The only connections necessary to make in your plant are the primary motor connection, 220-440-550 etc. to the motor starter.
4. The proper motor rotation is clockwise, viewed from the pulley end.

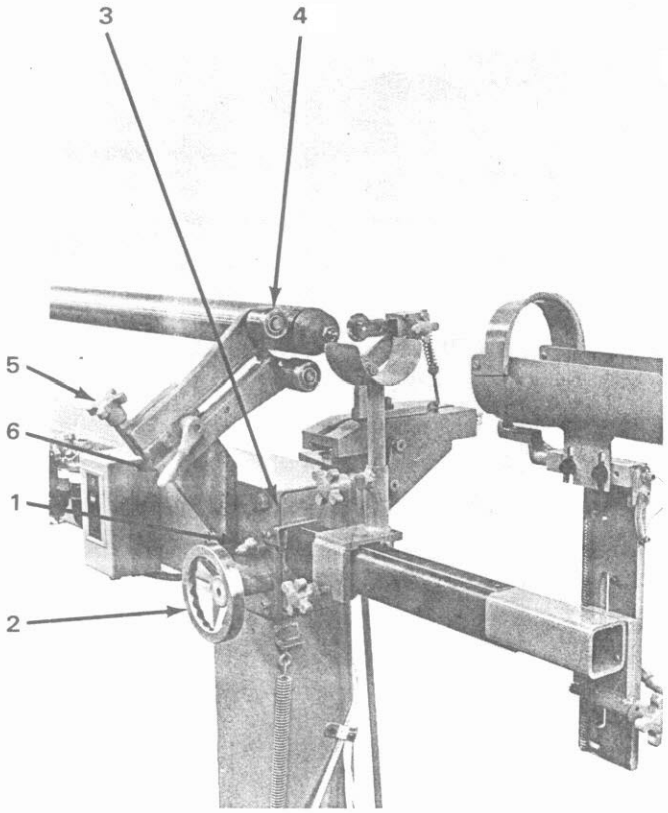



ILLUSTRATION 4

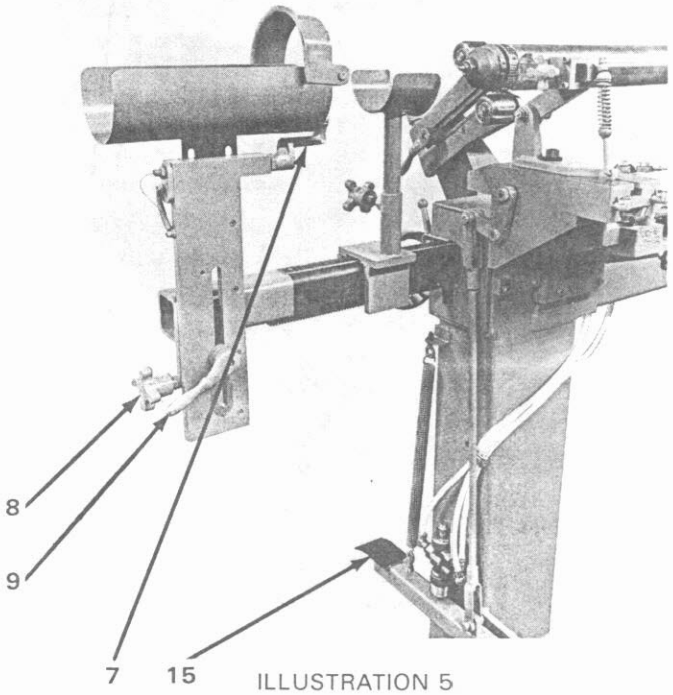



ILLUSTRATION 5

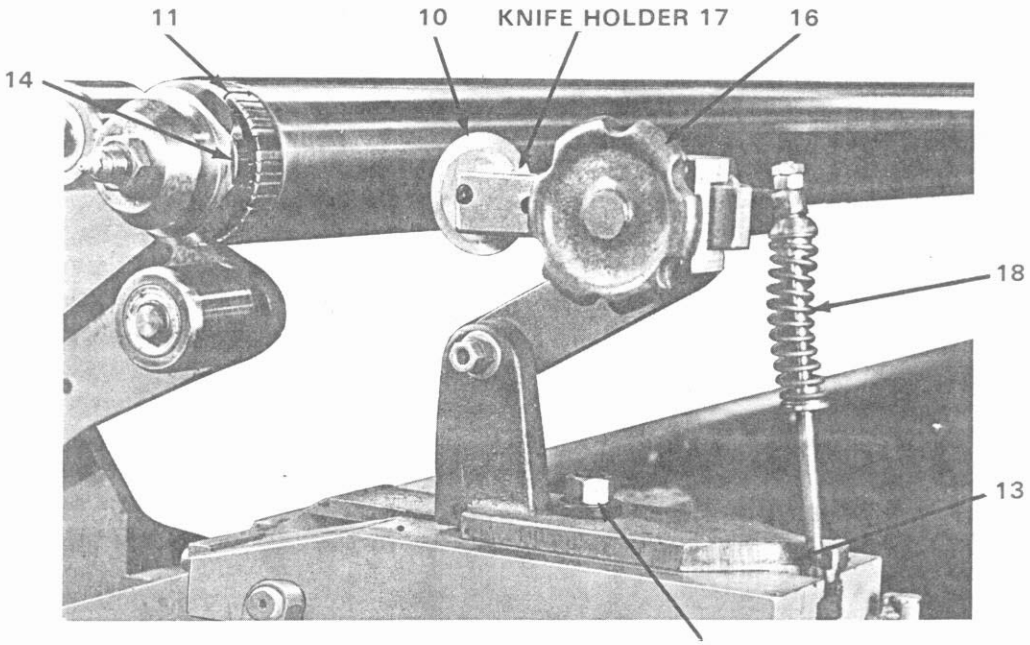



ILLUSTRATION 6

## SETTING UP FOR CUTTING
### Please Refer to ILLUSTRATIONS (See Pages 6,7,8,9)

1. Release target lock lever (1) and set target to desired length, using handwheel (2) reading scale on target tube at pointer (3). Tighten lock lever (1).
2. With long length of tubing on *mandrel*, set support rollers (4) against tubing with a slight pressure, using handwheel (5) and lock lever (6). The tube should engage the rollers equally.
3. Slide tubing out to target (7). Position target by engaging tube approximately 3/16" with target (7) using handwheel (8) and lock lever (9). This and the preceding adjustment need be made only when changing to tubes of a different wall thickness or diameter.
4. Set knife (10) as follows (for initial setting only. All subsequent adjustments may be made as in e):
   a. Position tube over the expanding head (11) with front edge even with front face of the expanding segments. Thus the tube does not extend across the cutoff area.
   b. Loosen tool post binding nut (12) and move tool post (13) to the rear far enough so the knife (10) will not strike the carbide pad (14) when the foot pedal (15) is depressed.
   c. With foot pedal (15) depressed, adjust tool post (13) forward until the knife contacts the carbide pad (14). Tighten tool post binding nut (12). Release foot pedal (15).
   d. Loosen handwheel (16) and adjust knife holder (17) forward approximately 1/16". Again depress foot pedal (15). The spring (18) on the back of the tool post (13) should be compressed from 1/16" to 1/4" as required to cut off the core.
   e. Small adjustments are made by loosening handwheel (16) and moving knife holder (17) in or out as needed.
5. Hard tubes require a stronger spring than a thin soft wall tube. Four tool post springs are furnished with the machine. Use as required to cut core.
   Part # A-79-106 Light
   Part # A-79-107 Medium
   Part # A-79-108 Heavy
   Part # A-79-109 Extra Heavy
6. The head expanding cylinder is equipped with a *stroke limit screw* (19). On thin wall tubes, it will be necessary to cut down the amount of head expansion by limiting the cylinder stroke in order to prevent bursting the tube.**
7. Changing rotational speed of the tube. Series S Cutters are equipped with step pulleys (20) for changing rotary speed to maintain nearly the same peripheral speeds on various size tubes.

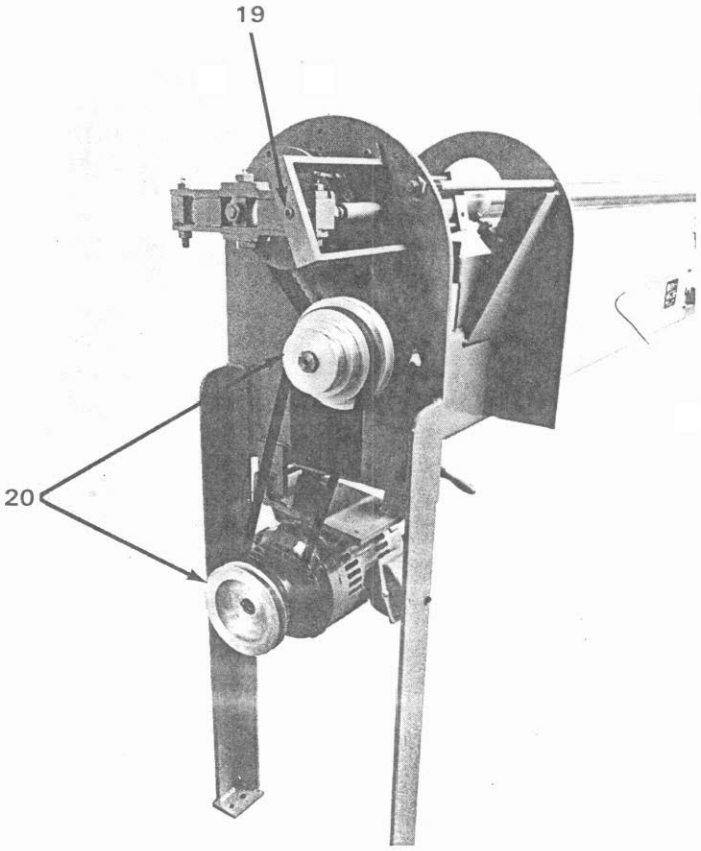



ILLUSTRATION 7

THIS KNIFE WAS TURNED SLIGHTLY TOO FAR, BUT MUCH BETTER THAN KNIFE SHOWN AT RIGHT. A PROPERLY TURNED KNIFE WILL LOOK JUST AS ROUND AS A NEW ONE.

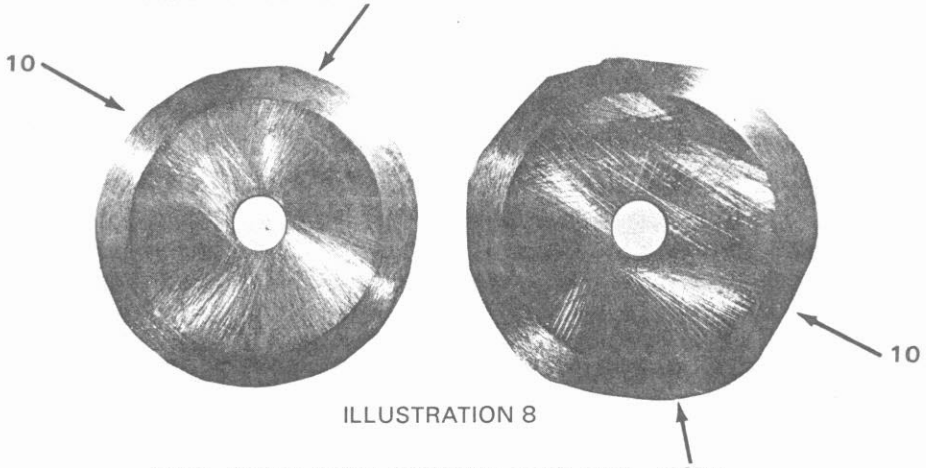



ILLUSTRATION 8

THIS KNIFE WAS TURNED TOO FAR, NOTE SCALLOPED EDGE. A PROPERLY TURNED KNIFE WILL LOOK JUST AS ROUND AS A NEW ONE.

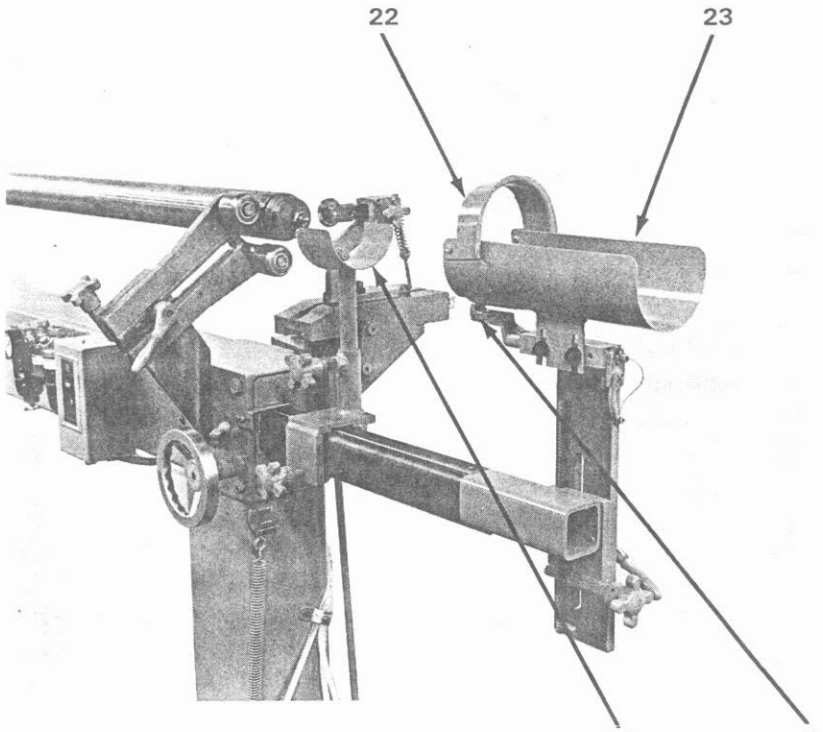



ILLUSTRATION 9

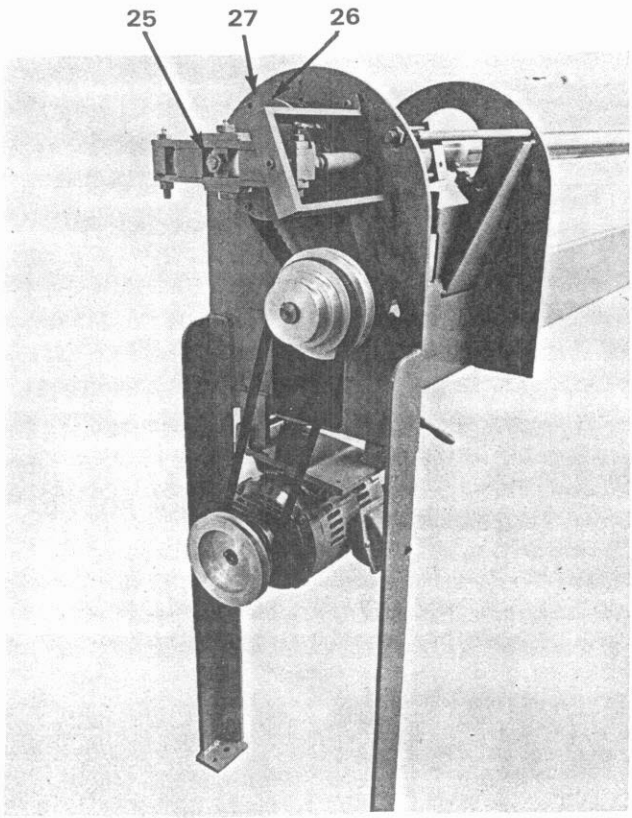



ILLUSTRATION 10

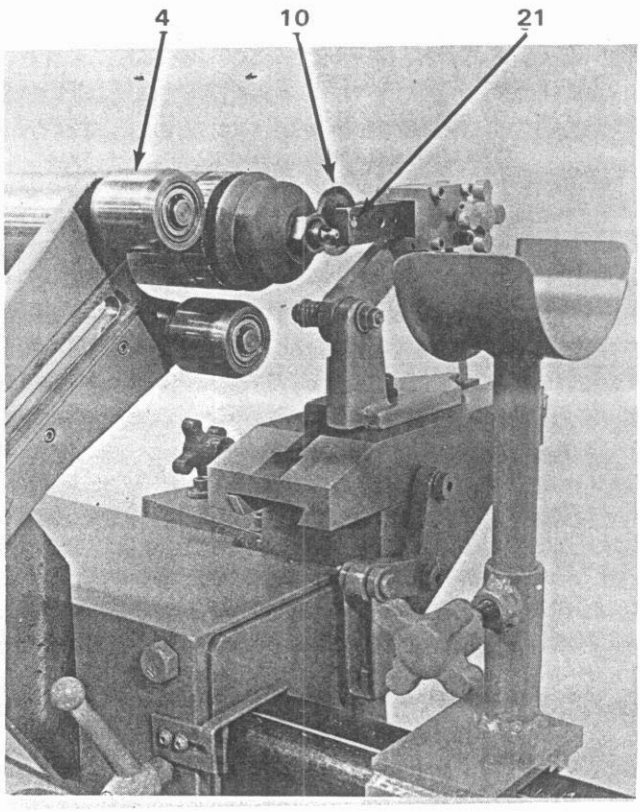



ILLUSTRATION 11

8. When knife (10) becomes worn in one position, loosen its *binding screw* (21) and rotate it slightly away from the operator (turn so that worn spot rises). *Important:* Do not bring up a full new position, but turn only enough to bring up 1 degree or approximately 1/64 of an inch. This will provide longer life per setting and many more settings per regrind. The resultant cuts are just as satisfactory and the length will be more consistent than if the knife is turned to a full new position. Also, knife will not have to be turned as often, thereby yielding more cuts.
9. The *hinged section* (22) of the large trough (23) is kept down except for very short tubes.
10. The steady rest (24) is used only for longer length of cutoffs. Its relative position is roughly one-third (1/3) of the distance from the end of the mandrel to the target (7).
11. Changing Mandrel — All series S cutters are equipped so that different sized mandrels can be interchanged.
    1) Back the support rollers (4), knife (10) and target (7) away from the mandrel, to allow clearance when removing the mandrel.
    2) Remove the *lock nut* (25) located on the end of the mandrel pull rod on the drive end of the machine.
    3) Loosen the *set screw* (26) located behind the top pulley (27) at the rear of the machine. The mandrel may now be removed toward the front and a different one inserted in its place. Replace nut (25) and tighten set screw (26).

The support rollers (4) may have to be moved closer together or farther apart, in holes provided (use either outside or inside holes, do not use one outside hole and one inside hole or misalignment will occur). Also (22), (23) and (24) may have to be exchanged with a larger or smaller trough depending on O.D. of the tube being cut.

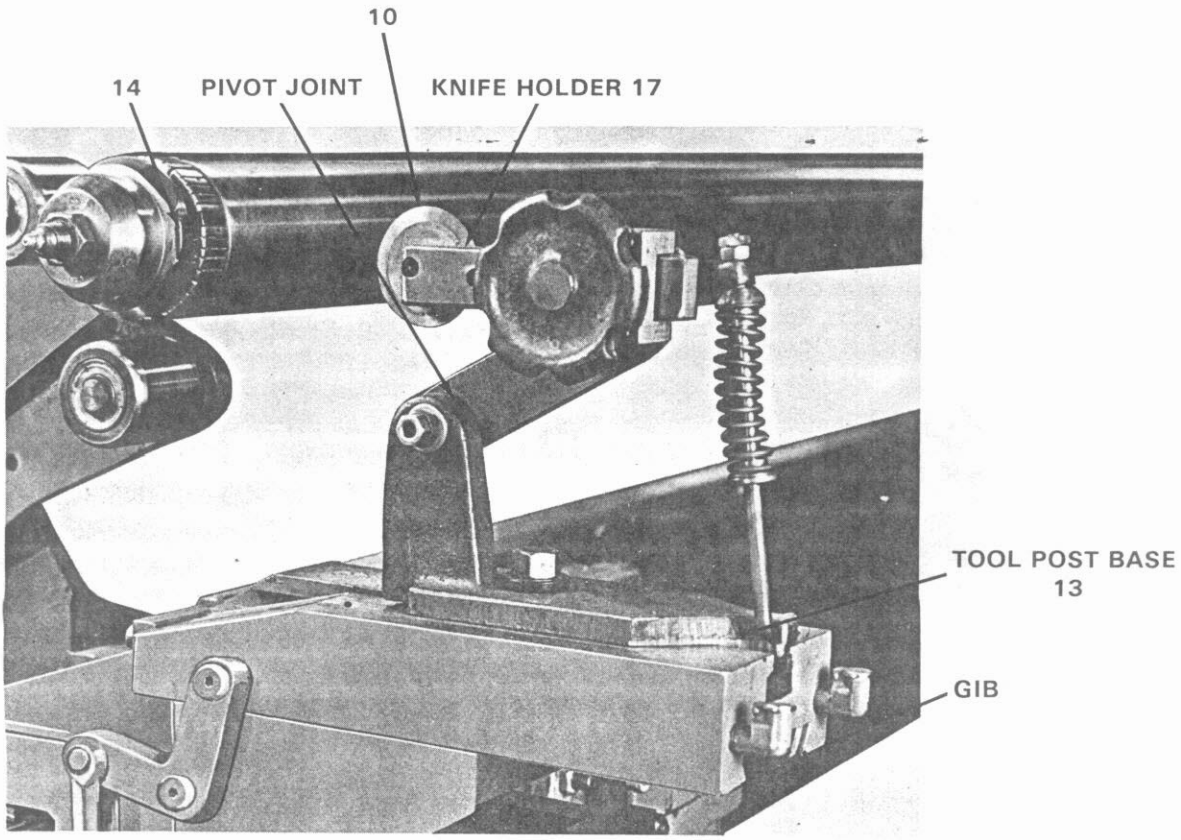



ILLUSTRATION 12

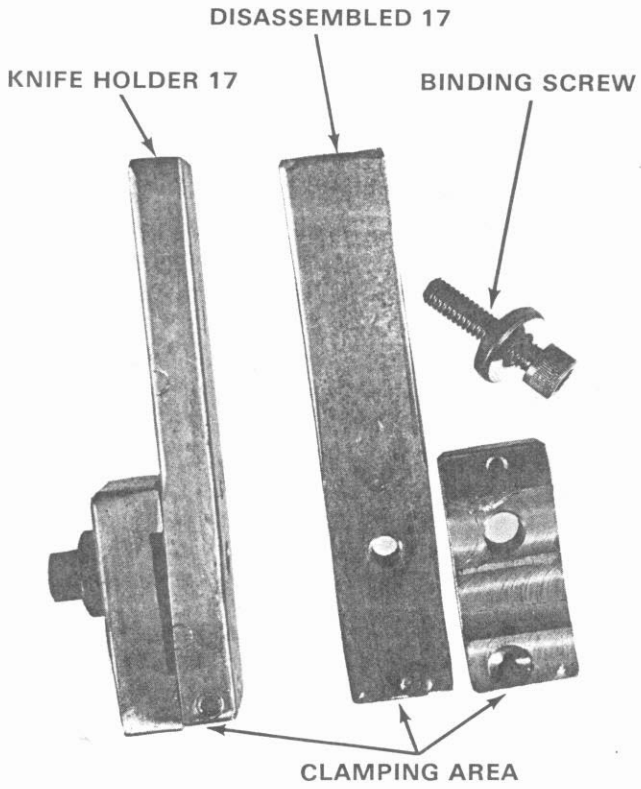



ILLUSTRATION 13

## CUTTING PROBLEMS

**See ILLUSTRATIONS on Page 10,12,13**

I. Spiral Cut or Slivers at the Edge of Cut on O.D.

A. Caused by knife not being 90° to axis of tube rotation, due to one or more of the following:

1. Mandrel not properly aligned. See Paragraphs 2 and 4 in Trouble Shooting Section.
2. Worn *Pivot Joint* on Tool Post. Replace Tool Post.
3. Burr on edge of knife at area of contact with *carbide pad* (14) on mandrel. (A flat area here is normal but a hooked burr is not.) Hone contact area of knife.
4. Worn *clamping area* on knife holder (17). Replace.
5. Warped Knife. Turn knife over in holder; if this does not help, replace.
6. Loose Gibs on Cross Slide. Tighten Gibs.

A temporary repair for the above is to shim under, the *tool post base* (13) so as to tilt knife to 90° to axis of rotation of tube. The thickness of shims and which side to place shims on are determined by trial and error. See Paragraph 4 in trouble shooting section.

If sliver is on drive side of cut off piece, then tilt top of knife toward the drive end of machine.

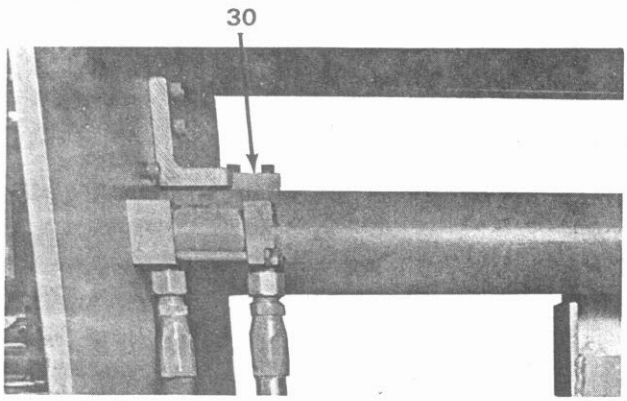



ILLUSTRATION 14

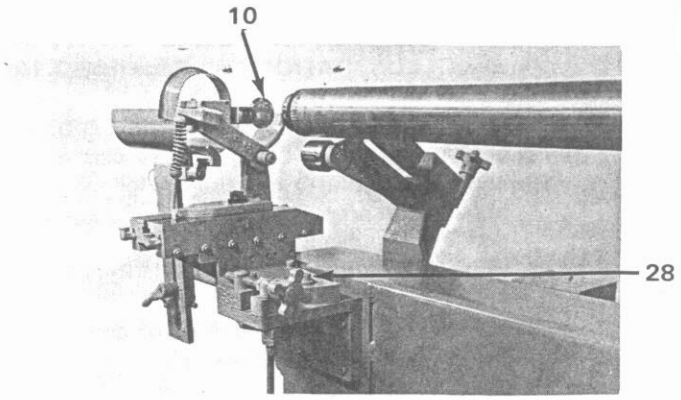



ILLUSTRATION 15

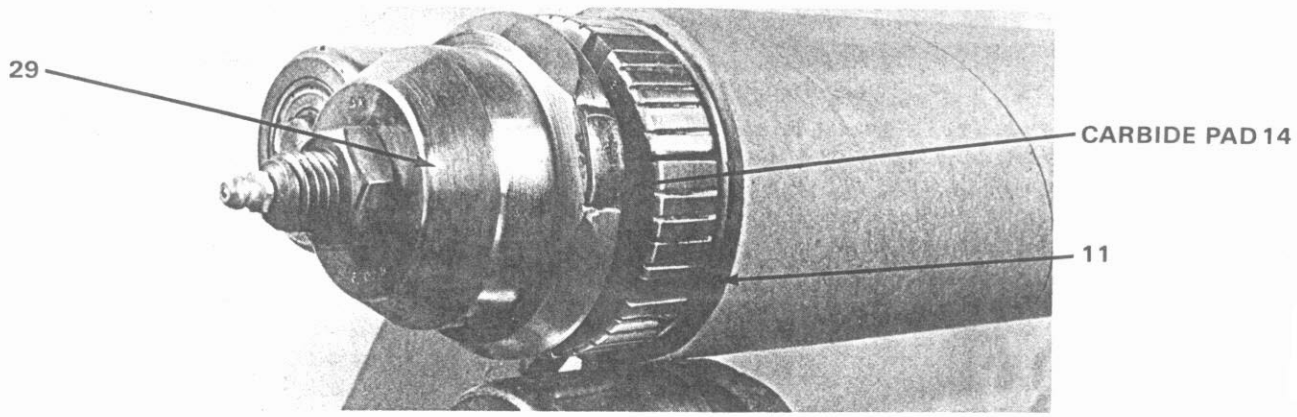



ILLUSTRATION 16

II. Angle on Face of Cut.

An angle on the face of the cut is normal and cannot be done away with. However, the angle should be equal on both sides of the knife.

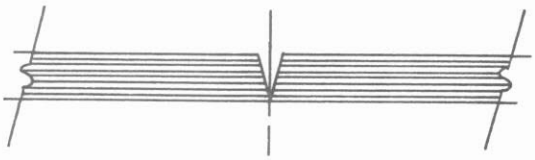


**Figure 1: tube wall cross-section shows normal cut that is equal on both sides of the blade.**

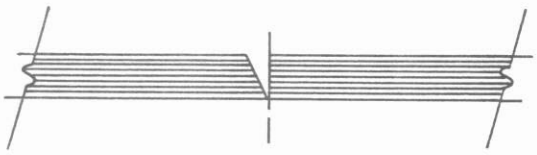


**Figure 2: shows undesirable cut.**

This condition can be overcome by adjusting the angle of the cross slide relative to the mandrel. Make adjustment with handwheel (28) (Illustration 15).

When making the above adjustment, it may be necessary to readjust the knife (depth of penetration). Also, the knife will change location relative to the center of the *Carbide Pad* (14) on the pad mounting cup (29). This is corrected by screwing the pad mounting cup forward or backward as needed, then moving the mandrel forward or backward in order to maintain 5/16"* between the head jaws (11) and pad mounting cup (29). When everything is properly set, the knife should contact the center of the pad (14) when at the end of the cut stroke.**

When adjusting the mandrel forward or backward, the set screw in male mandrel guide (30) must be adjusted by the amount that the mandrel is to be moved.

*9/16 on mandrels for tubes smaller than 2-5/16" diameter.

**See Paragraph 4 under Trouble Shooting.

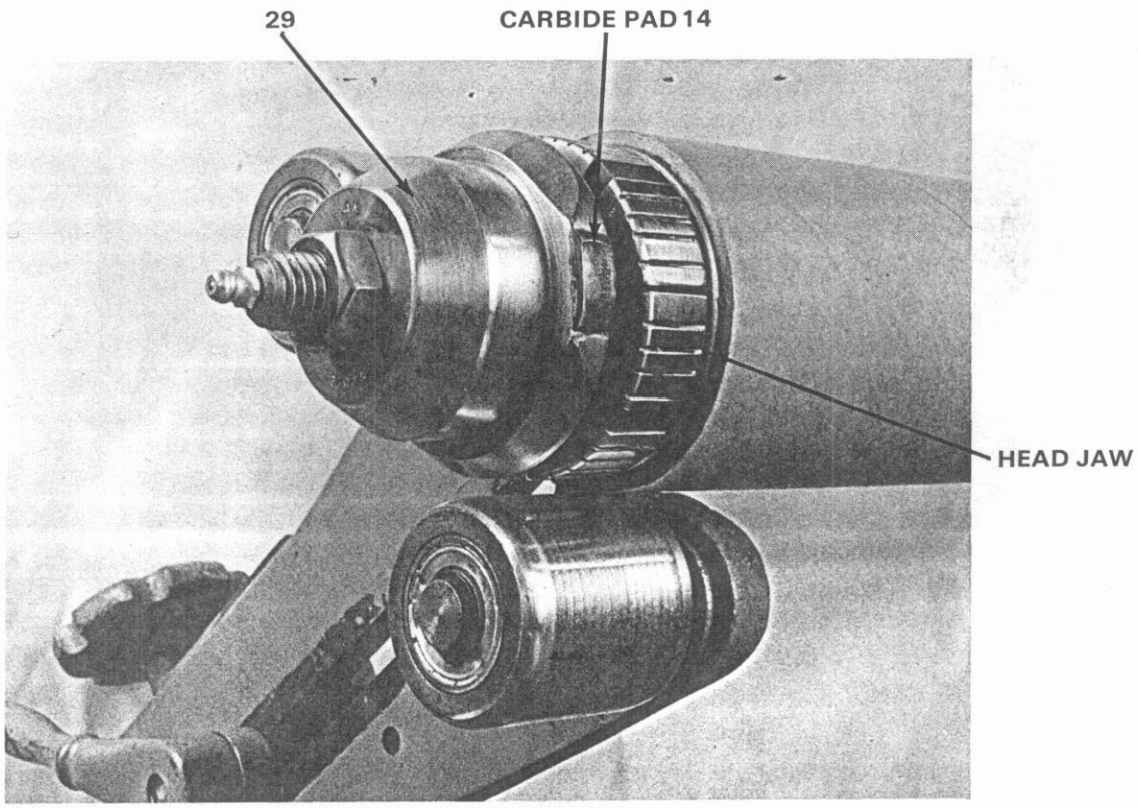



ILLUSTRATION 17

III. Rough Edge on O.D. of Cut.
Usually caused by one or more of the following:
A. Dull knife (10).
Turn up new cutting edge. Rotate knife only 1 degree or approximately 1/64". See (B) of Number V this section.
B. Penetrating speed too fast.
Slow cross slide speed.
C. Rough surface on ground angle of knife.
Replace knife.

IV. Rough Edge on I.D. of Cut.
Usually caused by one of the following:
A. Knife (10) not penetrating inside wall completely. Advance knife holder (17) or slow penetrating speed; or turn knife to a new position (rotate knife only 1 degree or approximately 1/64"). See (B) of Number V this section.
B. Pocket worn in *Carbide Pad* (14).
Replace pad or pad mounting cup.
C. Knife does not strike pad (14) in center.
Adjust Mandrel — See Number II this section, and Paragraph 4 under Trouble Shooting.

V. Rough or Scaley Appearance on Face of Cut.
A. Improperly sharpened knife.
Replace.
B. Knife is dull.
Rotate knife 1 degree or 1/64" to new cutting area.
*CAUTION:* Always rotate knife away from operator, bringing the new cutting area up from the bottom.

VI. Tube is not completely Cut Off.
A. See (A) of Number IV this section.
B. Allow knife to dwell at end of cut stroke.
C. Advance knife holder (17).

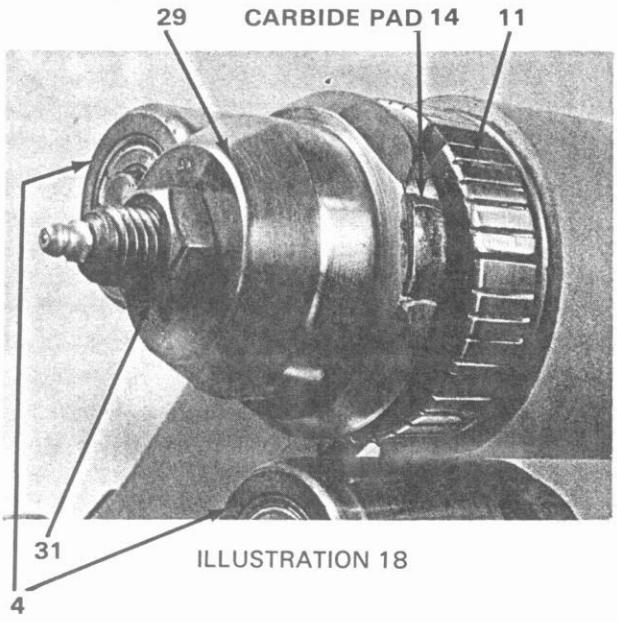
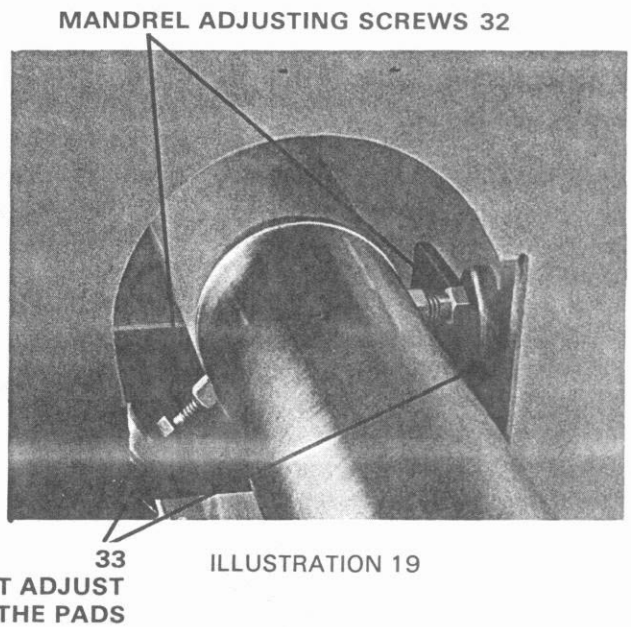



ILLUSTRATION 18

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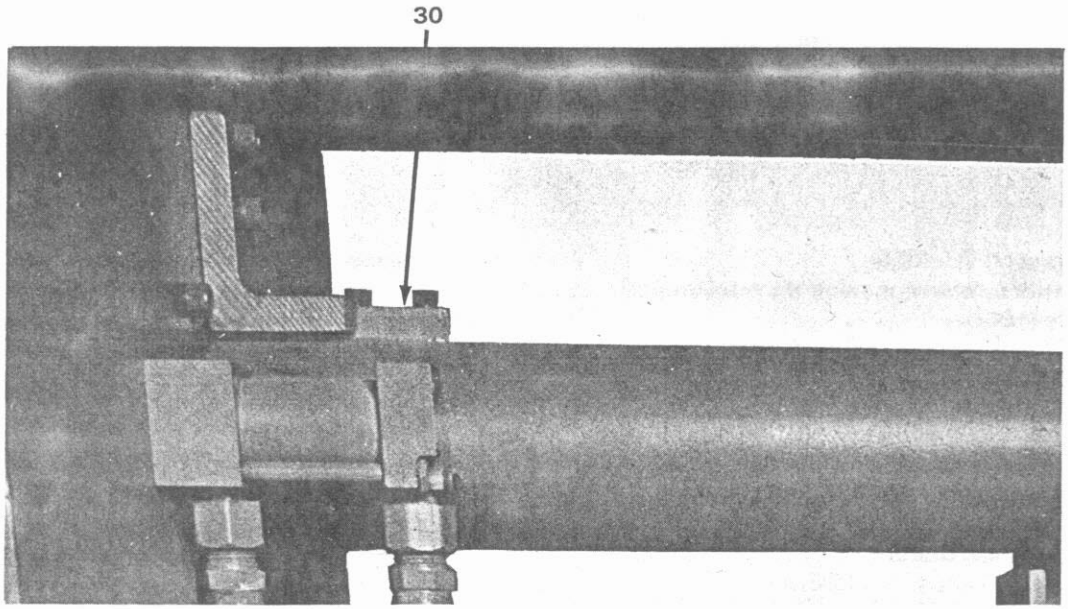



ILLUSTRATION 20

Hydraulic cylinder shown.

## TROUBLE SHOOTING

**See ILLUSTRATIONS on Page 14**

1. If the head-expanding collet (11) fails to retract fully, remove the *lock nut* (31) and pad mounting cup (29). The expanding collet (11) segments may then be removed by pulling them forward as a unit toward the end of the shaft. They may then be cleaned and lubricated and reassembled. Also check for a broken or fatigued spring and replace if required.
2. If the mandrel should lose alignment with the support rollers (4) to the extent that the tube rides harder on one roller than on the other, it may be adjusted with the *screws* (32) provided on the mandrel. When mandrel is properly aligned, it will contact both rollers (4) with equal pressure and be parallel with the frame. Do not adjust the pads (33) on the frame.
3. If target (7) fails to trip out of the way of the tube, so that the tube may be fed forward for next cut, the probable cause is that:
   a. core was not firmly in contact with the target (7). Advance core faster and hold in contact with the target.
   b. teeth on target are worn. Restore teeth or replace target.
4. If the knife does not strike the center of the carbide pad (14) on part (29), the mandrel should be adjusted forward or backward as needed, by adjusting the set screw in male mandrel guide (30) at the top rear of the mandrel. The 5/16"* spacing between (29) and (11) must be maintained by turning (29) forward or backward as needed & adjusting mandrel in or out with set screw in male mandrel guide (30).

*9/16" on mandrels for tubes smaller than 2-5/16".

## LUBRICATION

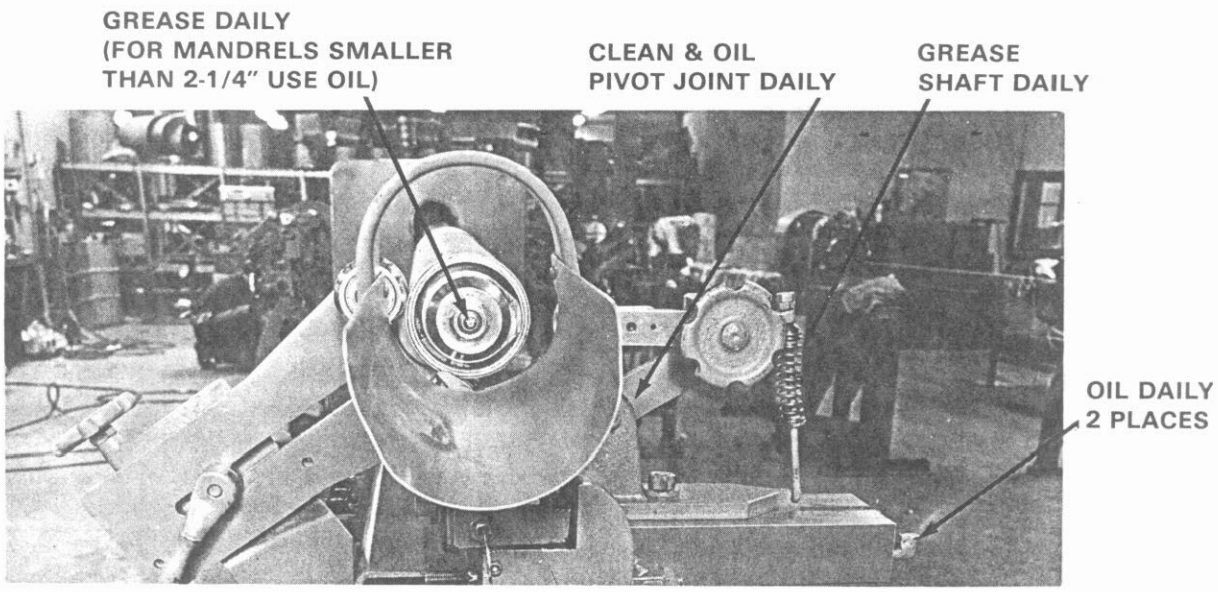
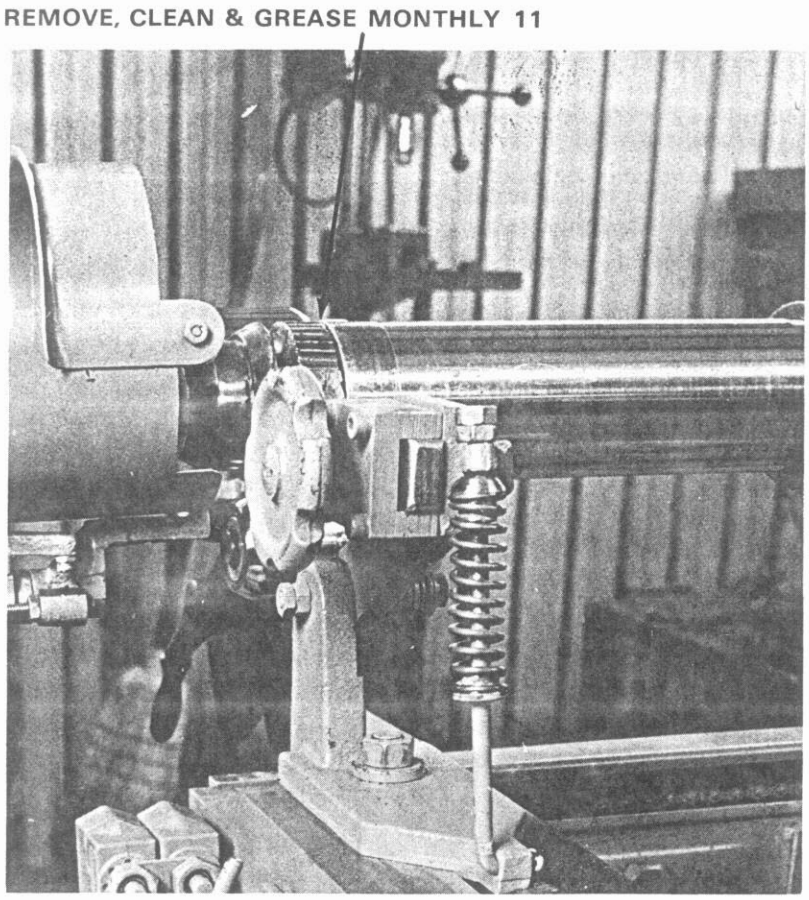



ILLUSTRATION 21

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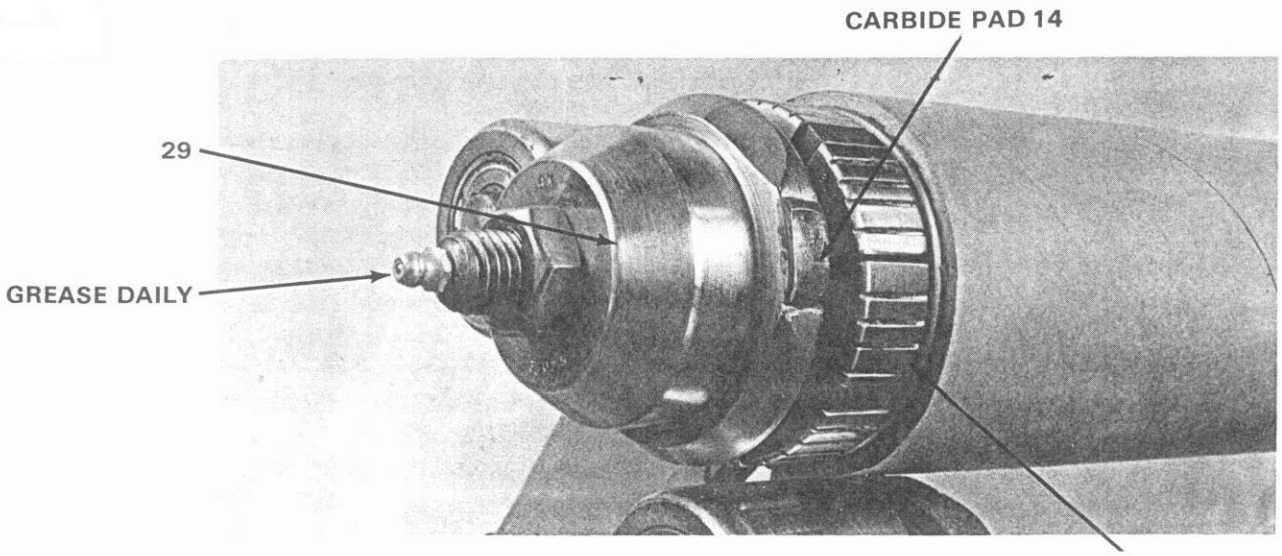
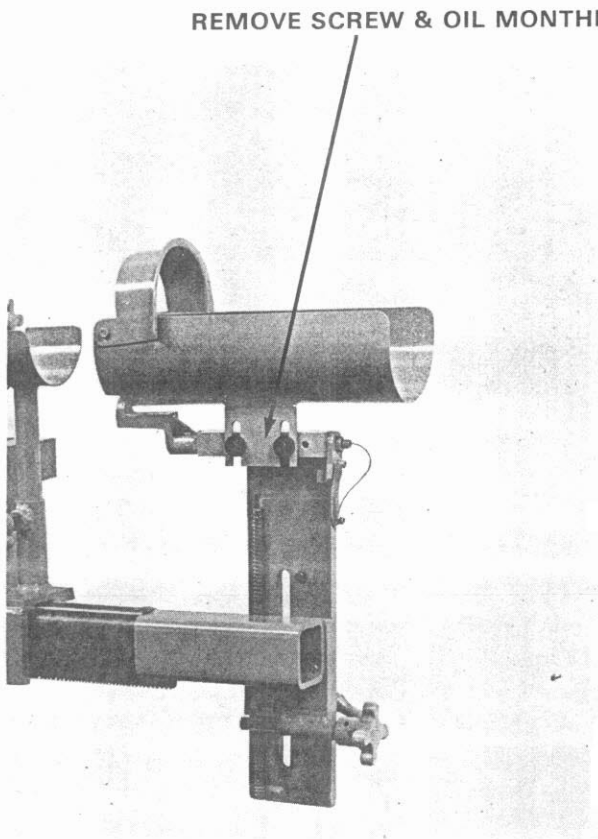



ILLUSTRATION 23

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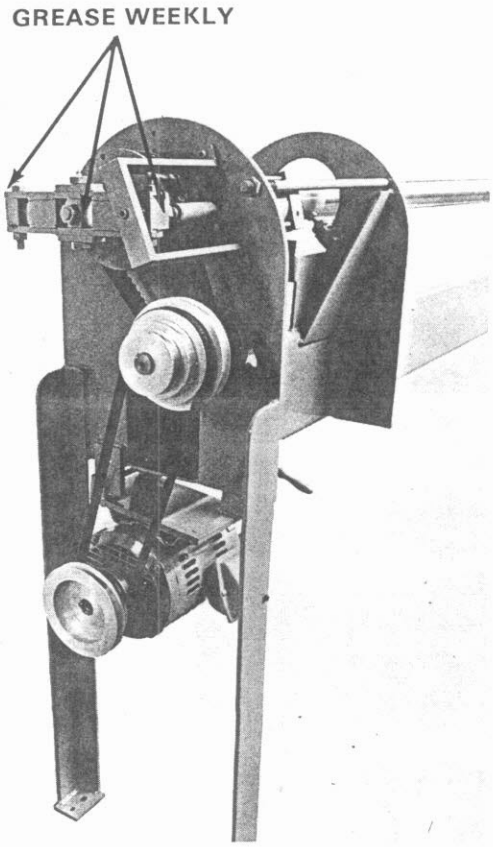
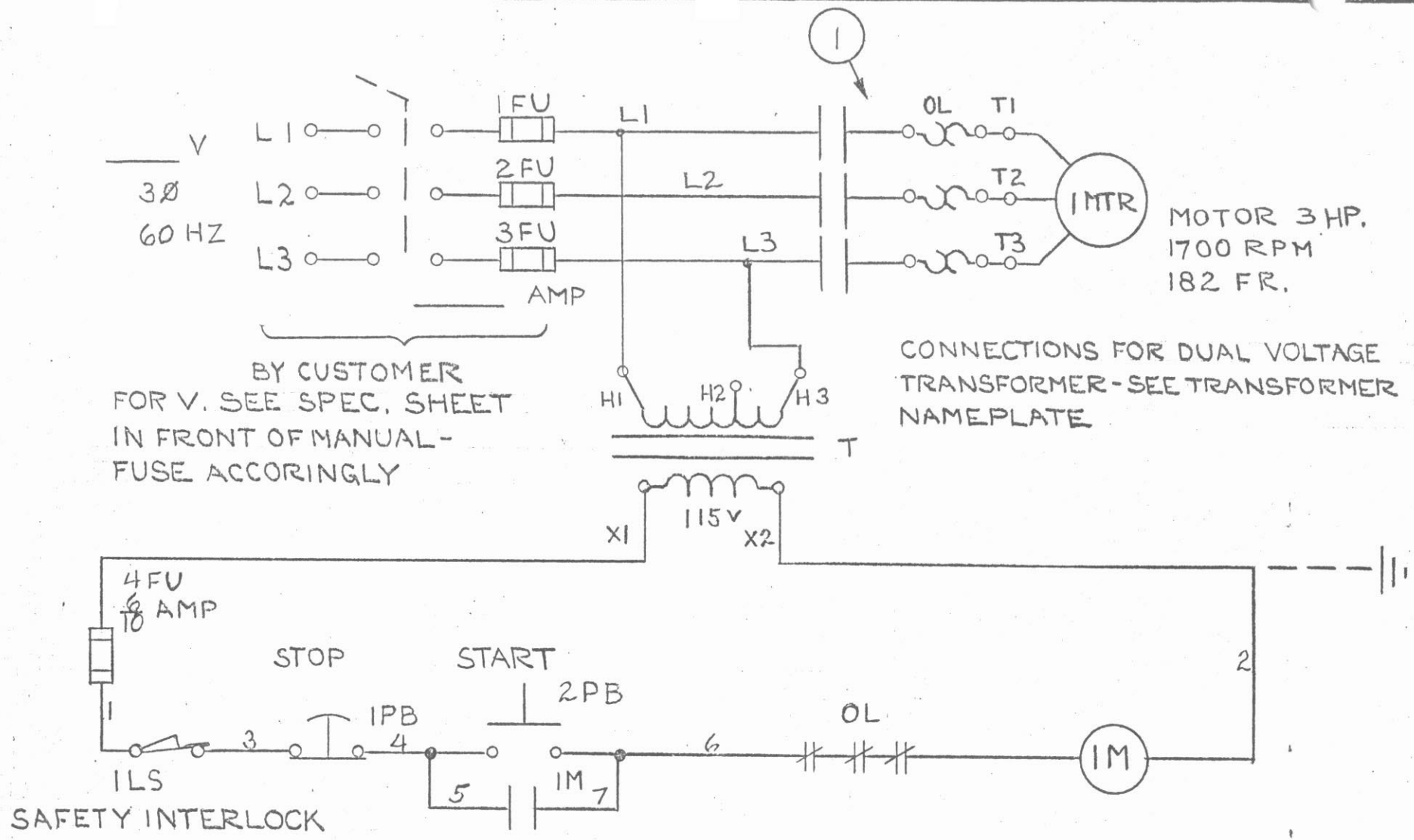



ILLUSTRATION 25




| REV | CHANGE | DATE | BY |
|---|---|---|---|
| 1 | THIS DWG. SUPERSEDES A-75-143 | 1 13 78 | RH |

SHEET 1 OF 2

| | | | |
|---|---|---|---|
| TOLERANCE UNLESS SPEC'D FRAC'S ± 1/64 ANGULAR ± 1/2° | BREAK ALL SHARP EDGES REMOVE ALL BURRS | SCALE NONE | DWN RH |
| | | | CHD |
| | | | APP |

DATE 1-13-78

TUBE CUTTER - SERIES S

WIRING DIAG.

MAT'L SEE SHEET 2

Appleton Manufacturing,
MENASHA CORPORATION
Menasha, Wisconsin

NUMBER A-75-200

| ITEM NO. | DESCRIPTION | REQ'D | PART NO. |
|---|---|---|---|
| 1 | MOTOR CONTROL<br>CUTTLER-HAMMER | 1 | A10BGB0G |
| 1MTR | MOTOR-3HP-1700 RPM<br>SINGLE SHAFT-182 FRAME | 1 | |
| 1PB<br>2PB | PUSH BUTTON STATION<br>CUTTLER HAMMER | 1 | H5207 |
| 1LS | MICRO SW. | 1 | BZE6-2RQ |

SHEET 2 OF 2

| REV | CHANGE | DATE | BY |
|---|---|---|---|
| | | | |

TOLERANCE UNLESS SPEC'D
FRAC'S ± 1/64
ANGULAR ± 1/2°

BREAK ALL SHARP EDGES
REMOVE ALL BURRS

SCALE NONE

DATE 1-13-76
DWN RH
CHD
APP

TUBE CUTTER-SERIES S

WIRING DIAG.

MAT'L

Appleton Manufacturing,
MENASHA CORPORATION
Menasha, Wisconsin

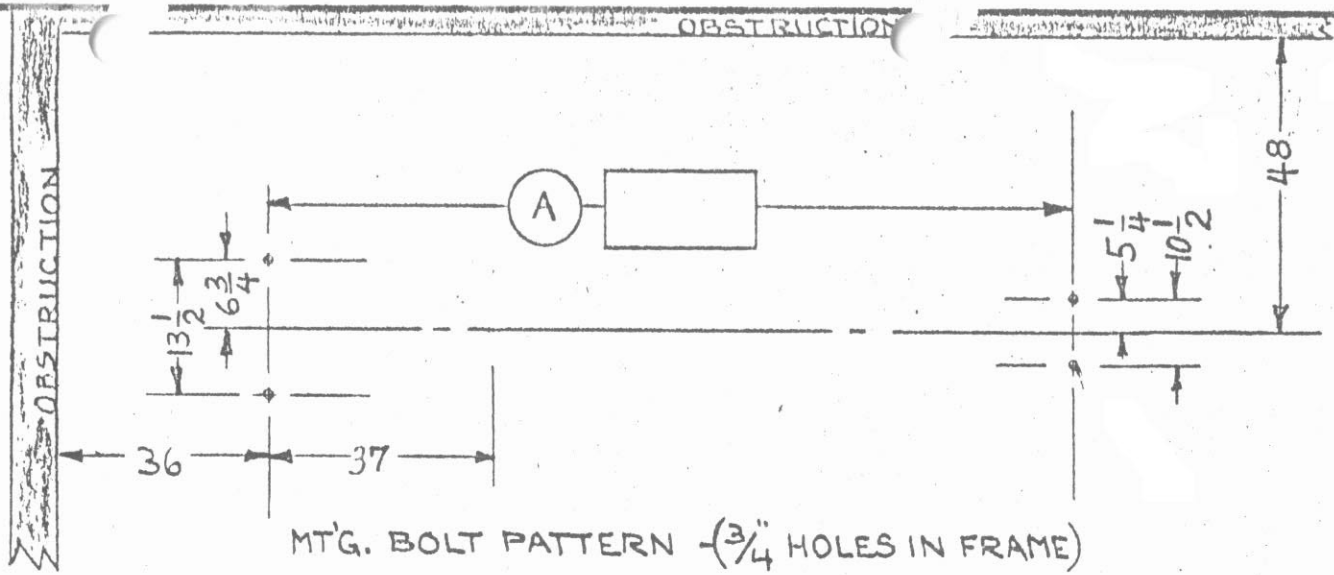
NUMBER A-75-200



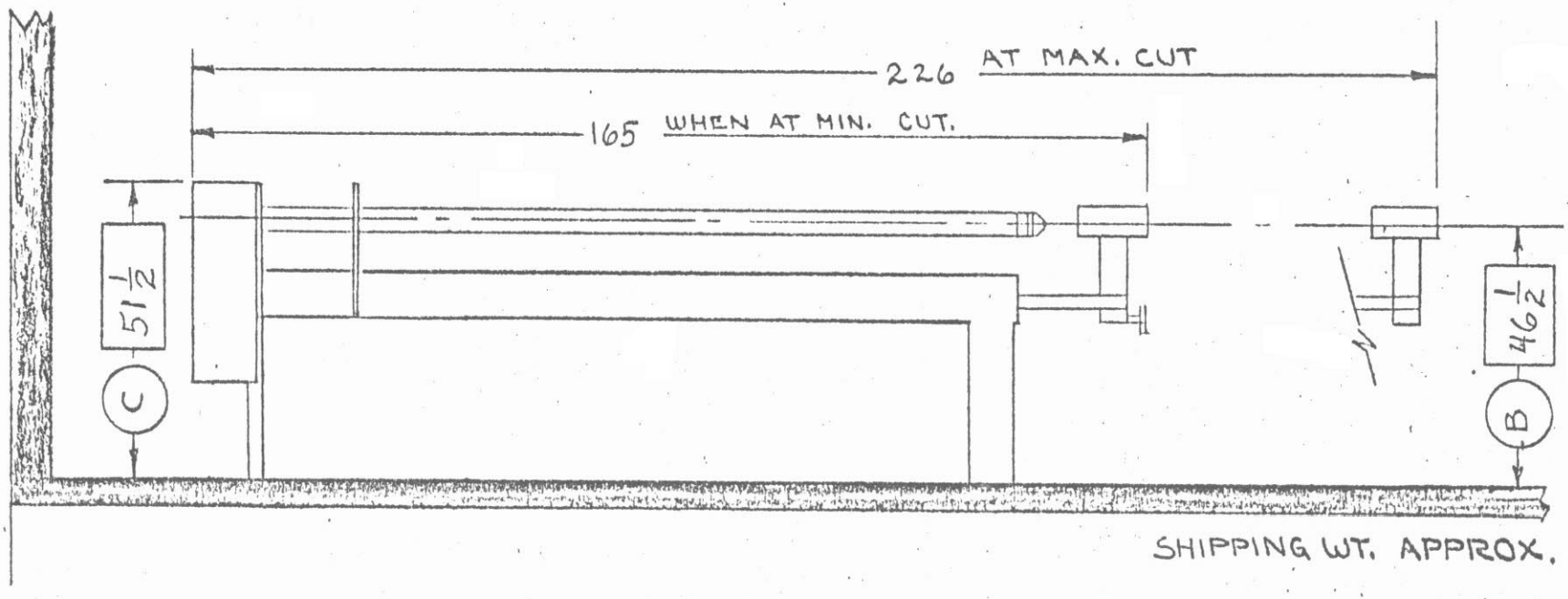
DESIGN PRODUCTS CO.
21-31-02 500 4 75 OUR ORDER CUST ORDER

18A

A-71-101




| MAC SIZE | A | |
|---|---|---|
| 36 | 54 | |
| 48 | 66 | |
| 60 | 78 | |
| 72 | 90 | |
| 96 | 114 | |
| 120 | 138 | |




SHIPPING WT. APPROX. 2000#

| REV | CHANGE | DATE | BY |
|---|---|---|---|
| | | | |

TOLERANCE UNLESS SPEC'D
FRAC'S ± 1/64
ANGULAR ± 1/2°

BREAK ALL SHARP EDGES
REMOVE ALL BURRS

SCALE

DATE 10-3-78
DWN RH
CHD
APP

TUBE CUTTER - SERIES S
MT'G. BOLT PATTERN &
GEN. OUT-LINE (3/4 - 12.)

MAT'L

Appleton Manufacturing,
MENASHA CORPORATION
Menasha, Wisconsin

NUMBER
A-71-101



DESIGN PRODUCTS CO.

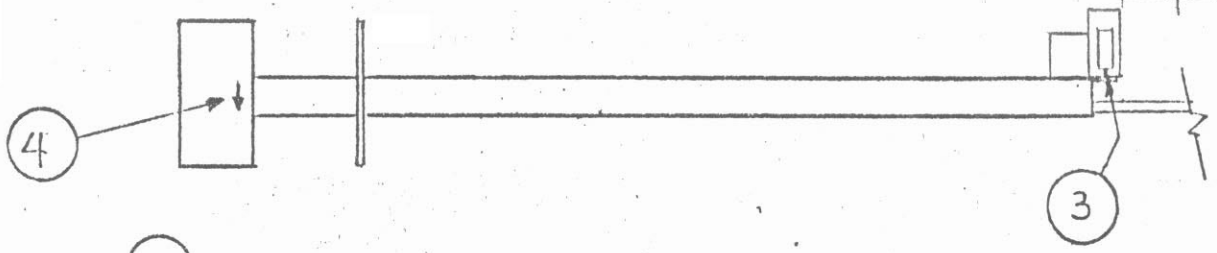
OUR ORDER

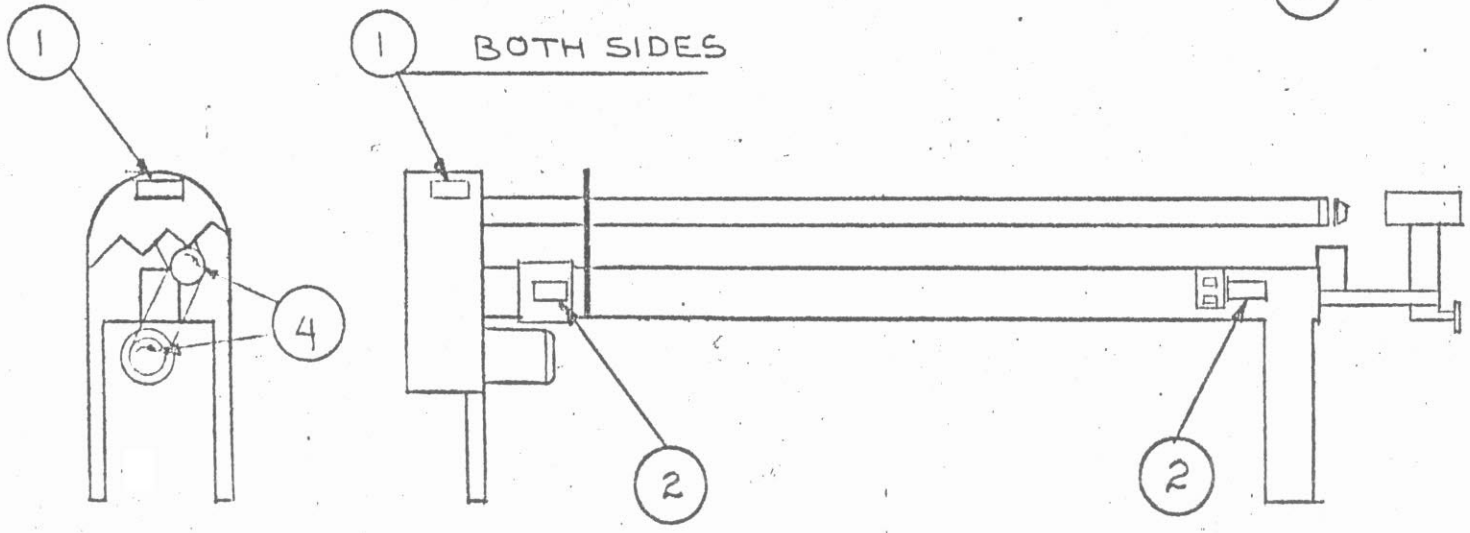
CUST ORDER

A- 71 - 105

CUSTOMER NOTE:
IF ANY STICKERS ARE REMOVED OR DEFACED, APPLETON WILL REPLACE FREE OF CHARGE

| | | PART NO |
|---|---|---|
| 1 | CAUTION<br>SHUT MACHINE OFF<br>BEFORE OPENING GUARD | |
| 2 | CAUTION<br>DISCONNECT POWER<br>BEFORE OPENING COVER | |
| 3 | CAUTION<br>SHUT MACHINE OFF<br>BEFORE MOVING GUARD | |
| 4 | ⇒ (ROTATION) | |




| REV | CHANGE | DATE | BY |
|---|---|---|---|
| | | | |

TOLERANCE UNLESS SPEC'D
FRAC'S ± 1/64
ANGULAR ± 1/2°

BREAK ALL SHARP EDGES
REMOVE ALL BURRS

SCALE NONE

DATE 1-16-79
DWN RH
CHD
APP

TUBE CUTTER SERIES S
SAFTY STICKER LOCATIONS

MAT'L

Appleton Manufacturing,
MENASHA CORPORATION
Menasha, Wisconsin

NUMBER
A- 71 - 105

CHANGING MANDRELS:

# APPLETON MANUFACTURING

MENASHA CORPORATION

1. Remove lock nut located on the end of the mandrel pull rod at the drive end of the machine.

2. Disconnect the feed follower by removing the nuts from the spring rod or removing the screws in the two-part feed arm.

3. Loosen the set screw located behind the top pulley at the drive end of the machine. The mandrel may now be removed toward the front of the machine and a different one inserted in its place. Replace and/or tighten nuts and screws.

The support rollers may have to be moved closer together or farther apart in the holes provided. (Use either outside or inside holes, do not use one outside and one inside hole or misalignment will occur) Also, a larger or smaller discharge scoop may have to be used.

For mandrels 3/4" to 2" it will be necessary to mount a 3rd support roller opposite the two support rollers. Adjust as follows:

With a core covering the head jaws, adjust the support rollers so that the mandrel is parallel (in vertical & horizontal planes) to the frame of the machine. Check the alignment of the hex drive sleeve on the mandrel with the female hex in the drive pulley. It is very important that there is some clearance at this point or bending moments will be applied to the drive shaft. This could cause the drive shaft to break off near the rear bearing. If there is no clearance between the male and female hex, adjust the jack screws located in the support section of the mandrel.

For mandrels larger than 2", the 3rd roller is not required. The mandrel can be adjusted to lay equally in the two support rollers by adjusting the jack screws located in the support section of the mandrel. Again, be sure there is clearance between the male and female hex drive. Also, the mandrel should be parallel with the frame.

If the back side of the pad does not line up with the back side of the knife, the pad mounting cup should be screwed in or out as needed to line up. Check the distance between the head jaw & pad mounting cup, it should be 9/16 for mandrels 3/4 to 2-5/16 and 5/16 for mandrels larger than 2-5/16. If the distance is not correct, the mandrel must be moved forward or backward as needed. Loosen set screw located behind the final drive pulley, remove the male mandrel guide from the top of the rear mandrel support section and adjust the set screw forward or backward as needed and replace. Now reset the mandrel against the stop and tighten the set screw.

Be sure that the jam nuts on the front and rear end of the pull rod are tight or the pad could be moved out of location by rotational action of the core. Also, be sure the jam nuts on the jack screws are tight.

P. O. BOX 329 • MENASHA, WISCONSIN 54952 • PHONE 414-731-1231