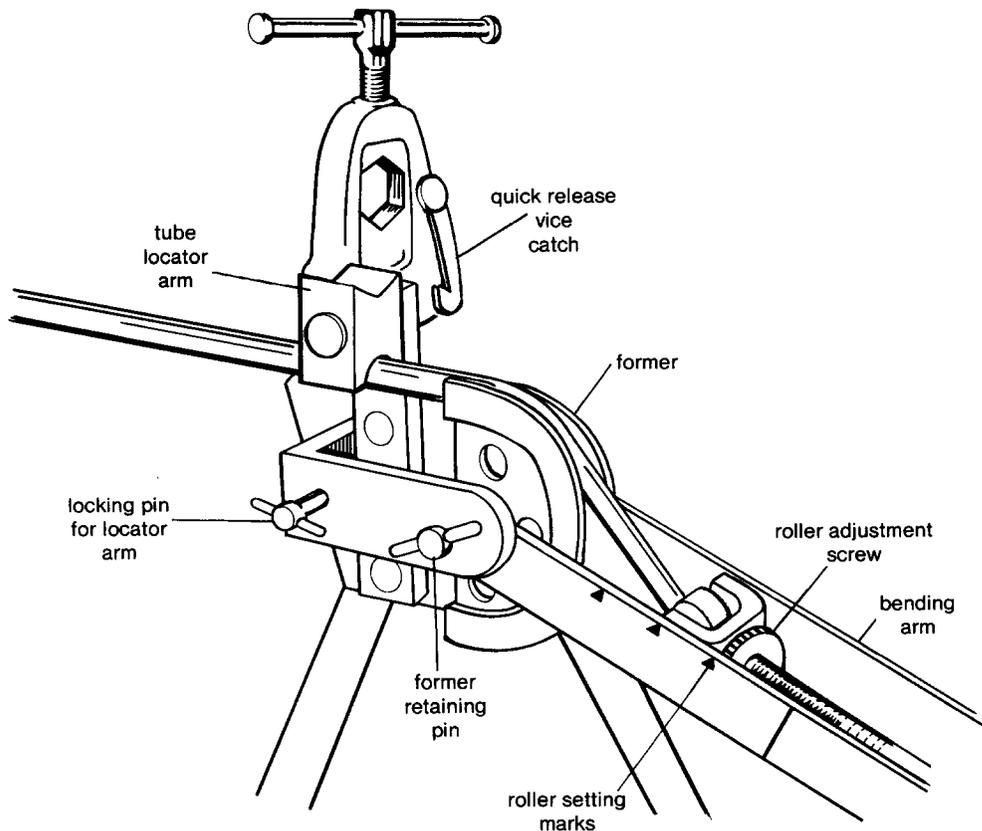


# RS Portable Pipe Bender and Vice

Stock No. 607-128

## Recommended Procedure

The bender is supported on two legs, and for additional stability the hinged leg should be locked in position using the pin attached to the bender. The second pin will retain the bending arm in the upright position for loading and setting.



1. Select the former to be used and with the bending arm locked in the upright position, position and retain the former as shown above.
2. Place the tubing to be bent into the former, and holding the tube horizontally, adjust the tube locator arm so that it supports the top side of the tube as shown above. Using the spring loaded pin, lock the tube locator at the correct height position.
3. Using the roller adjustment screw, move the roller so that the bottom edge of the roller housing aligns with the roller setting mark ▲ appropriate to the diameter of tube used (see label on the side of the bending arm).
4. Release the bending arm and feed the tube under the roller to the desired position and commence bending.
5. The hinged 'V' grip vice supplied with the bender may be mounted either at right angles or parallel to the bending operation. The vice has a convenient quick release catch.

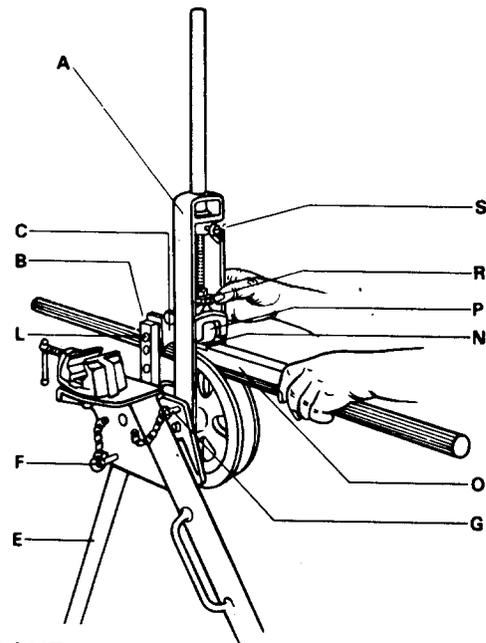
## Bender Capacity

Steel Conduit :	up to 25mm o.d. or 1 in. o.d. (to BS 4568:1970)
Steel steam, gas, water pipe : (nominal bore-black or galvanised)	up to ½in. nom. to BS 1387
Soft steel rod :	up to 12mm or ½ in. diameter

## CONTENTS

223 Series identification of components	1
Step by step operating instructions for 223	2-5
Up bending	6
Repetition bending UL223	7
Roller over run prevention	7
224 Identification of components	8
224 Assemble & prepare for roller setting	9
Tube locator arm & positions	10-14
Bar bender specifications	
228BS Identification of components	15-17
Step by step operating instructions for 228BS	18-19
Tube specification table (metric sizes)	20
Tube specification table(imperial sizes)	21
Capacities and Former & Guide sets	22
Radius of standard formers	23
Close radius (Pot Floor) conduit bends (223+224)	24

## 223 SERIES TUBE BENDER



## COMPONENTS

- |                         |                           |
|-------------------------|---------------------------|
| A. Swivel Loading Arm   | *J. Locking Nut           |
| B. Tube Locator Arm     | L. Tube Locator Spindle   |
| C. Tube Locator         | *M. Quadrant (UL223 only) |
| D. Tube Locator Arm Pin | N. Guide Setting Piece    |
| E. Rear Leg             | O. Guide                  |
| F. Rear Leg Stop Pin    | P. Roller                 |
| G. Safety Stop Pin      | R. Adjusting Wheel        |
| H. Swivel Spindle       | S. Wing Nut               |

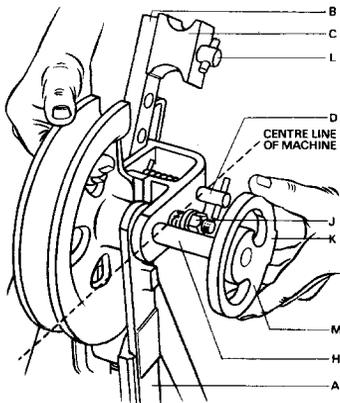
## STEP BY STEP OPERATING GUIDE FOR THE 223 & 224 RANGE OF TUBE AND PIPE BENDERS



### 1. To Position the stand.

Support in the upright position, swing the rear leg to the appropriate position and insert the stop pin.

The swivel loading arm is hanging downwards and ready to accept the former.

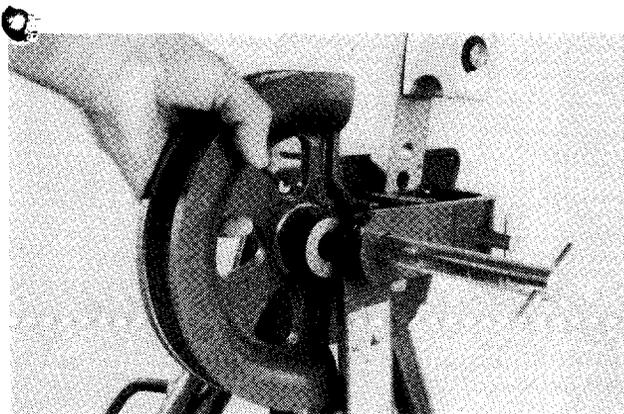


### 2A Fit Former; UL223

To withdraw the former loosen quadrant locking nut and turn quadrant fully anti-clockwise, partially withdraw the spindle. Select and position the former, insert the spindle and reset the quadrant if required.

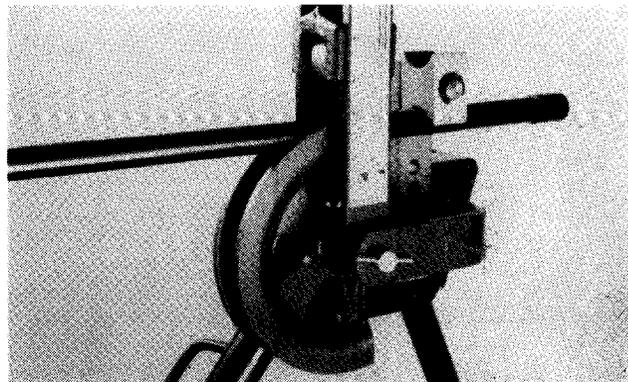
(A straight spindle is fitted in place of the quadrant in the CT & CR range.)

2



### 2B Fit former CT/CR223

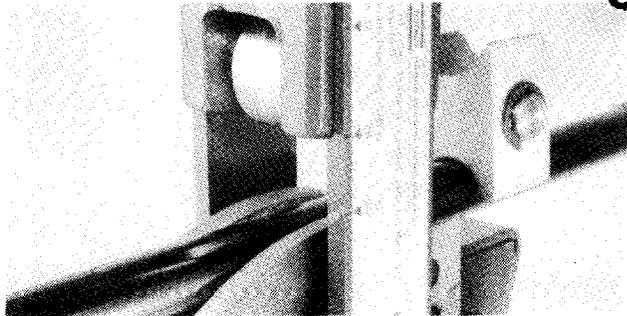
Partially withdraw the spindle, select and position the former, insert the spindle.



### 3 Position the tube-locator

Swing the swivel loading arm into a vertical position and insert safety stop pin. Select appropriate arm and tube locator position. The tube should lay in a horizontal position.

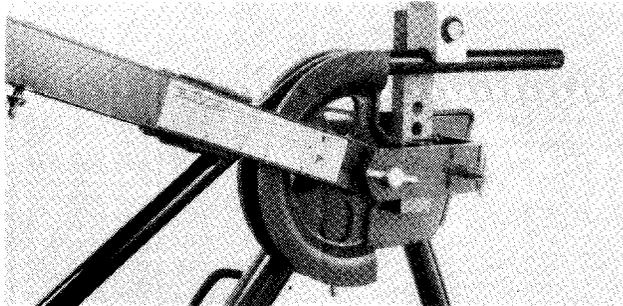
3



#### 4 Roller setting conduit and steel pipe.

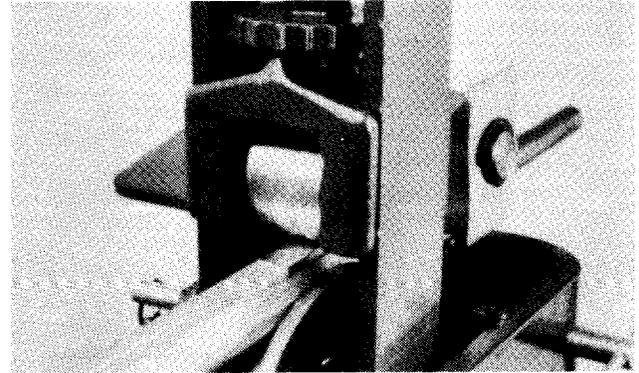
Bottom edge of roller housing is quickly set against appropriate datum mark on the side of the arm.

Soft Steel Rod:- Set the roller to leave a gap between the top of the rod and the hollow in the roller, approximately equal to the rod diameter. Any former up to 20mm or 3/4 o.d. can be used. No guide required.



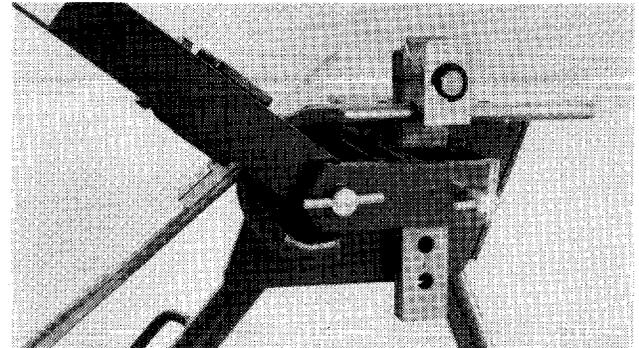
#### 5 Making the bend

Set the pipe in the required position for the bend and then remove the safety stop pin. Pull the loading arm down to produce an accurate ripple-free bend of up to 180°, take the loading arm back to the upright position and replace the safety stop pin.



#### 6 Roller setting copper and stainless steel

Adjust the roller to the guide setting piece finger tight, back off the appropriate number of divisions on the adjusting wheel. The number of required divisions are displayed on the side of the loading arm.



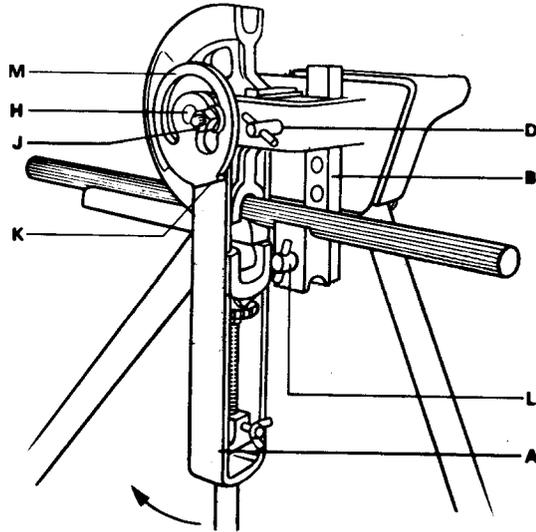
#### 7 Making the bend

Reverse and position the guide with the setting piece at the end furthest from the roller. The dual-purpose setting piece acts as a stop to prevent over-run and tube damage.

## TO UP-BEND

1. Complete roller setting as for down bending.
2. Withdraw safety stop pin and lower the loading arm until hanging downwards then similarly invert the tube locator arm.
3. Insert the tube into the lower part of the former and the upper side of the tube locator as illustrated below.
4. Place the radiused form of the guide (when required) on the under-side of the tube, plain end first, and whilst holding in position, move the loading arm upwards until roller makes contact with the guide or pipe. The required bend may now be made by continuing upward pressure on the loading arm.

**Note:** For repetition up-bending, the quadrant abutment stop requires re-positioning on the opposite side of the loading arm. Fully unscrew locking nut, withdraw swivel spindle about 1/2 in. and rotate quadrant fixture clockwise. Press spindle fully home and lock in the required position.



6

Regular lubrication of the former profile, roller spindle and swivel spindle will ensure good quality bends and will considerably reduce the effort required when bending the larger diameters.

## REPETITION BENDING UL223

### DOWN BENDING

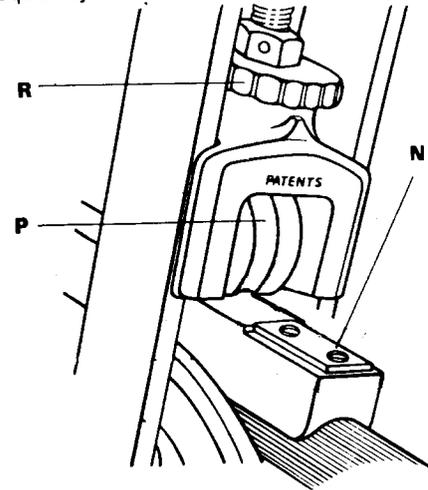
For repetition bending, the quadrant, which has an abutment stop (K) on the inner face, can be fixed in the required position by fully tightening the locking nut (J)

### UP BENDING

For repetition up-bending, the quadrant abutment stop requires re-positioning on the opposite side of the loading arm. Fully unscrew locking nut, withdraw swivel spindle about 1/2 in and rotate quadrant fixture clockwise. Press spindle fully home and lock in the required position.

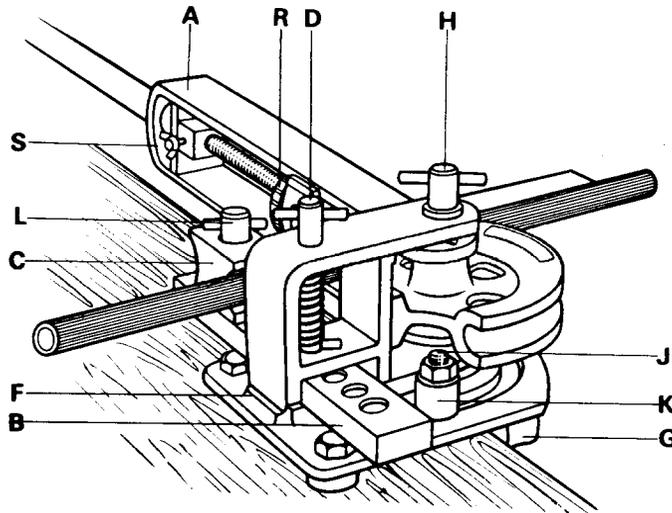
### ROLLER OVER RUN PREVENTION

Reversing the guide ensures that the setting piece will prevent the roller over-running when bending. Consequently the tube cannot be damaged.



7

## OPERATING INSTRUCTIONS 224 BENCH BENDER



### COMPONENTS

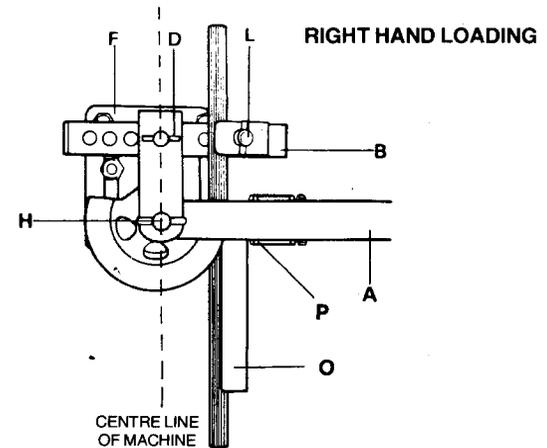
- |                          |                                 |
|--------------------------|---------------------------------|
| A. Swivel Loading Arm    | K. Quadrant Stop                |
| B. Tube Locator Arm      | L. Tube Locator Screwed Spindle |
| C. Tube Locator          | *O. Guide                       |
| D. Tube Locator Arm Pin  | *P. Roller Housing              |
| F. Main Housing          | *R. Adjusting Wheel             |
| G. Base Abutment         | S. Wing Nut                     |
| H. Swivel Spindle        |                                 |
| J. Quadrant Bolt and Nut |                                 |
- \* See page 9

## TO ASSEMBLE AND PREPARE FOR ROLLER SETTING

1. Bolt *main housing* (F) to a bench using three ½ inch (or 12mm) Hex bolts or grip base abutment in the jaws of a heavy bench vice. Fit *loading arm* (A) and the appropriate former as illustrated and insert *swivel spindle* (H) ensuring it is fully engaged.
2. Insert *tube locator arm* (B) from the right for right hand loading and conversely for left hand loading. Engage the *pin* (D) and *tube locator spindle* (L) in the appropriate holes to suit the diameter of tube as detailed on the *tube locator arm*. (Also shown on page 10)
3. Position the *loading arm* (A) in line with the *tube locator arm* (B) and insert the tube so that it seats into the radiused form of the tube locator and the former (THE ROLLER SETTING POSITION)

### 224 ROLLER SETTING & BENDING

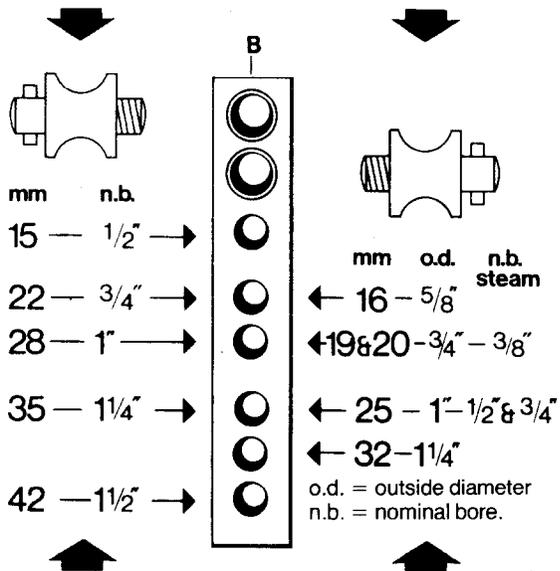
The procedure for roller setting, with or without guides is the same as that of the 223 series (see page 2-5) pictures No. 4 to 7. But in the horizontal plane.



## UL 223, & 224 TUBE LOCATOR ARM & TUBE LOCATOR POSITIONS

METRIC OUTSIDE  
DIAMETER AND INCH  
NOMINAL BORE.  
LIGHT GAUGE COPPER  
AND STAINLESS STEEL  
FOR WATER AND GAS  
SERVICES.

METRIC AND INCH  
OUTSIDE DIAMETER  
TUBE AND CONDUIT.  
NOMINAL BORE  
STEEL STEAM, GAS  
AND WATER PIPE.



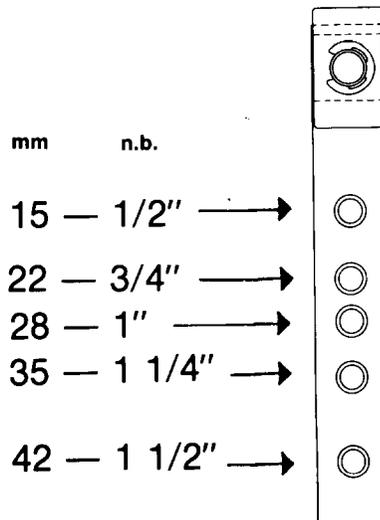
### TUBE LOCATOR ARM PIN POSITIONS

Holes in Tube Locator Arm (B) are spaced to ensure that all sizes of tube listed can be positioned approximately parallel with centre line of machine.

FOR MACHINE CAPACITIES SEE PAGE 22

## C.R. 223/42 LOCATOR ARM POSITIONS

METRIC OUTSIDE  
DIAMETER AND INCH  
NOMINAL BORE  
LIGHT GAUGE COPPER  
AND STAINLESS STEEL  
FOR WATER AND GAS  
SERVICES.



n.b. = nominal bore.

### TUBE LOCATOR ARM PIN POSITIONS

Holes in Tube Locator Arm are spaced to ensure that all sizes of tube listed can be positioned approximately parallel with centre line of machine.

**C.T. 223/32**  
**LOCATOR ARM POSITIONS**

METRIC AND INCH  
 OUTSIDE DIAMETER  
 TUBE AND CONDUIT.  
 NOMINAL BORE  
 STEEL STEAM, GAS  
 AND WATER PIPE.



	mm		o.d.		n.b.
←	16	—	5/8"		
←	19 & 20	—	3/4"	—	3/8"
←	25	—	1 — 1/2"	&	3/4"
←	32	—	1 1/4"		

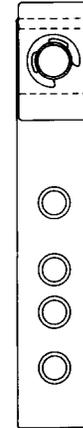
o.d. = outside diameter  
 n.b. = nominal bore

**TUBE LOCATOR ARM PIN POSITIONS**

Holes in Tube Locator Arm are spaced to ensure that all sizes of tube listed can be positioned approximately parallel with centre line of machine.

**C.R. 223/35**  
**LOCATOR ARM POSITIONS**

METRIC OUTSIDE  
 DIAMETER AND INCH  
 NOMINAL BORE  
 LIGHT GAUGE COPPER  
 AND STAINLESS STEEL  
 FOR WATER AND GAS  
 SERVICES.



	mm		o.d.	
→	15	—	1/2"	→
→	22	—	3/4"	→
→	28	—	1"	→
→	35	—	1 1/4"	→

n.b. = nominal bore

**TUBE LOCATOR ARM PIN POSITIONS**

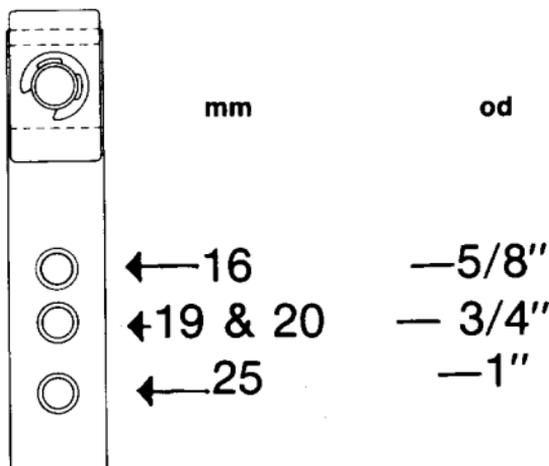
Holes in Tube Locator Arm are spaced to ensure that all sizes of tube listed can be positioned approximately parallel with centre line of machine.



# C.T 223/25

## LOCATOR ARM POSITIONS

METRIC AND INCH  
OUTSIDE DIAMETER  
TUBE AND CONDUIT.  
NOMINAL BORE  
STEEL STEAM, GAS  
AND WATER PIPE.



o.d. = outside diameter

### TUBE LOCATOR ARM PIN POSITIONS

**Holes in Tube Locator Arm spaced to ensure that all sizes of tube can be positioned approximately parallel with centre line of machine.**