OPERATIONS MANUAL

FOR
INTERNAL TUBE CUTTER
TYPE PR-68
1. **Using knurled nut before start of drive**
   This is safe and highly recommended way of loading the tool bit. The knurled nut (22) can be turned anti-clockwise to bring the tool bit out. When turned clockwise, the bit dips inside.
   Keeping the tool bit in lowered position set the guide balls (2) to suit tube inner diameter. Insert tool into tube till the conical ring (10) contacts the tube face. Turn knurled nut (22) anti-clockwise till tool bit touches the tube inner wall, then turn knurled nut (22) 45° in clockwise direction. Turn ON the driving machine and make sure it runs in clockwise direction. Grip the knurled nut by hand till gap ‘X’ is eliminated between adjustment nut (14) and pawl (17). After eliminating the gap knurled nut will slips from hand, then remove the hand from knurled nut. The tool bit is now loaded for auto feed. Automatic feed ensures smooth cutting till tube is cut.

2. **Using hand lever after start of drive**
   Keeping the tool bit in lowered position set the guide balls (2) to suit tube inner diameter. Insert tool into tube till the conical ring (10) contacts the tube face. Turn on the driving machine to run in clockwise direction. The hand lever (19) should be held by hand or stopped from turning. The hand lever is mounted on clutch (18). Insert the clutch (18) into pawl (17) by holding the lever. **This can be jerky at times. Apply controlled force to hold and release immediately to avoid injury incase of a jerk.** The left hand thread of the nut (22) will push the mandrel (23) forward, while the disc springs take up the feed and partly absorb...
it. The feed movement will cause the pawl (17) to move against the pins (16) and eventually on to the adjustment collar (14) and thus the clutch dog (18) is disengaged. This means that the disc springs are loaded and they now push the tool bit resulting in automatic feed.

**WARNING**

Tasks should be performed in such a manner that the wrists are maintained in a neutral position which is not flexed, extended or twisted.

Vibrations and/or impact can injure hands and arms. Use minimum hand grip force consistent with proper control when loading clutch. Avoid continuous vibration exposure.
STAGE - ASSEMBLY

FOR
INTERNAL TUBE CUTTER
TYPE PR-68
POWERMASTER

Type PR-68 Internal Tube Cutters

For cutting pipe or tubing from 0.394 (10mm) ID to 4.400" (113mm) OD. sizes indicated below accommodate a 4" (100mm) reach. 8" (200mm), 12" (300mm) and 16" (400mm) reaches are available on request. Tube cutter is driven by either electric, pneumatic or hydraulic motors. When ordering please specify tube OD and ID, coupled with the number of spare cutting bits desired.

<table>
<thead>
<tr>
<th>Size</th>
<th>Tool Reference Number</th>
<th>Spare Bit Reference Number</th>
<th>Tube I.D. Range</th>
<th>Max. Tube O.D.</th>
<th>Body Diameters</th>
<th>Drive Square Male</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mm</td>
<td>Inches</td>
<td>mm</td>
<td>Inches</td>
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<td>95-105</td>
<td>3.740-4.134</td>
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Internal Tube Cutter
Type PR 68
with quick changeover
chuck and protection
against overload.

1. Mechanical Drive
The Internal Tube Cutter PR 68 is driven via the
square on the end of the spindle (23) in a clockwise
direction using either an electric, pneumatic or
hydraulic driving machine.

2. Cutting Speed

<table>
<thead>
<tr>
<th>Carbon Steel and Non-Ferrous Tubes</th>
<th>High alloy steels</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D. (mm)</td>
<td>RPM</td>
</tr>
<tr>
<td>1.1/8&quot; - 1.3/4&quot; (28.58 - 44.45MM)</td>
<td>90-115</td>
</tr>
<tr>
<td>2&quot; - 2.3/4&quot; (50.8 - 69.85MM)</td>
<td>54-70</td>
</tr>
<tr>
<td>3&quot; - 3.3/4&quot; (76.2 - 95.25MM)</td>
<td>38-50</td>
</tr>
<tr>
<td>4&quot; - 4.1/2&quot; (101.6 - 114.3MM)</td>
<td>34-40</td>
</tr>
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</table>

3. Setting Up for Cutting
First of all adjust the guide balls (2) by turning screw
(1) until they fit the inside of the tube and can guide
the cutter. Then set the depth of cut using the setting
ring (11). Once the internal tube cutter has been
positioned inside the tube, the conical ring (10) will
act as a second centering device.

Turn the nut (22) to the left until the cutting knife (3)
touches the inside of the tube. When using carbon
steel or non-ferrous tubes with wall-thicknesses up to
5 mm (0.20") the distance "X" between the setting
ring (14) and the pawl (17) should be set at 7 mm
(0.275"). When using tubes with wall-thicknesses
above 5 mm (0.20"), especially if they are chrome-
nickel or other hard alloy steel tubes, the distance
"X" should be set at 10 mm (0.393").

If, for any other reason, 7 mm is not sufficient, it
can be increased up to a maximum of 10 mm
(0.393").

4. Cutting Operation
Turn on the driving machine and make sure that it is
running in a clockwise direction. The lever (19) should
be held by hand or stopped from turning in some
other way. The clutch (18) is inserted into pawl (17)
by holding the lever (19) and the automatic feed is
thus started. The left-hand thread of the nut (22) will
push the mandrel (23) forward, while the plate springs
(15) take up the feed and partly absorb it. The feed
movement will cause the pawl (17) to move against
the pins (16) and eventually on to the adjustment
collar (14), and thus the clutch dog (18) is
disengaged.

This means that the feed movement the mandrel (18)
has been completed. The plate springs (15) now push
forward the knife (3) by means of the rod (9) and the
link (6) until the tube has been cut.

Please Note:
If the distance "X" is set incorrectly, the plate
springs (15) can jam. Neither the clutch (18) nor the
pawl (17) will disengage. If, when this happens, the
lever (19) is held, the feed movement will be forced
by the left hand thread of the nut (22) and will cause
breakage of the knife (3). If this does happen,
immediately loosen the lever (19).

5. Release
The internal tube cutter should be disengaged by
turning the nut (22) in a clockwise direction by hand,
as far as it will go.
Please Note: Never disengage the cutter using a
power driven machine, as this may cause the knife to
break.

6. Changing of Link
Should the knife (3) have to be removed for any
reason or if the link (6) breaks, the following
sequence of operations must be done:
Knock out pins (4 and 7).
Remove knife (3). Undo screws (12).
Remove pin (8).
To re-assemble, put back together in reverse order,
taking care to ensure that pin (8) is flush on both
sides of the rod (9).

7. Removal of knife & Interchangeability of the
Cutter
The cutting section of the tube cutter can be
interchanged for one of a smaller or larger diameter
within the given range (see technical data). To
interchange the cutting section, remove knife (3) by
removing pins (4) & then (7) & then undo screws (12).

8. Lubrication
The feed thread of nut (22) should be greased via
bore (21) with Molycote or Liquid Moly Oil. Also the
knife (3) should be greased using any industrial high
speed cutting lubricant.

Attention:
The life time of this tool, especially of the knife will
increase tremendously if tool will be cleaned
thoroughly after each cutting operation.
1. Mechanical Drive
The Internal Tube Cutter PR 68 is driven via the square on the end of the spindle (23) in a clockwise direction using either an electric, pneumatic or hydraulic driving machine.

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3. Setting Up for Cutting
First of all adjust the guide balls (2) by turning screw (1) until they fit the inside of the tube and can guide the cutter. Then set the depth of cut using the setting ring (11). Once the internal tube cutter has been positioned inside the tube, the conical ring (10) will act as a second centering device.

Turn the nut (22) to the left until the cutting knife (3) touches the inside of the tube. When using carbon steel or non-ferrous tubes with wall-thicknesses up to 5 mm (0.20") the distance "X" between the setting ring (14) and the pawl (17) should be set at 5 mm (0.20").

If, for any other reason, 5 mm is not sufficient, it can be increased up to a maximum of 10 mm (0.393").

4. Cutting Operation
Turn on the driving machine and make sure that it is running in a clockwise direction. The wheel (19) should be held by hand or stopped from turning in some other way. The clutch (18) is inserted into pawl (17) by holding the wheel (19) and the automatic feed is thus started. The left-hand thread of the nut (22) will push the mandrel (23) forward, while the plate springs (15) take up the feed and partly absorb it. The feed movement will cause the pawl (17) to move against the pins (16) and eventually on to the adjustment collar (14), and thus the clutch dog (18) is disengaged. This means that the feed movement the mandrel (18) has been completed. The plate springs (15) now push forward the knife (3) by means of the rod (9) until the tube has been cut.

Please Note:
If the distance "X" is set incorrectly, the plate springs (15) can jam. Neither the clutch (18) nor the pawl (17) will disengage. If, when this happens, the wheel (19) is held, the feed movement will be forced by the left hand thread of the nut (22) and will cause breakage of the knife (3). If this does happen, immediately loosen the lever (19).

5. Release
The internal tube cutter should be disengaged by turning the nut (22) in a clockwise direction by hand, as far as it will go.

Please Note: Never disengage the cutter using a power driven machine, as this may cause the knife to break.

6. Removal of Knife
Should the knife (3) have to be removed for any reason the following sequence of operations must be done: Knock out pin (4). Remove knife (3). To Re-assemble, put back together in reverse order.

7. Lubrication
The feed thread of nut (22) should be greased via bore (21) with Molybdenum Disulfide. The knife (3) should be greased using any Industrial high-speed cutting lubricant.

Attention:
The life time of this tool, especially of the knife will increase tremendously if tool will be cleaned thoroughly after each cutting operation.
STAGE 1

6 : LINK
9 : CONNECTING ROD
25 : GUIDE
13 : HEADSCREW
32 : ROD ACTUATOR
15 : DISC–SPRINGS
20 : KEY
28 : PIN

NOTE: AS SHOWN IN THE STAGE(1), ASSEMBLE IN ORDER

* PLACE THE KEY(20) IN ITS SLOT.

* PIN THE ROD–ACTUATOR(32) TO THE MANDREL(23) AFTER PLACING THE DISC–SPRINGS(15).
  ENSURE THAT DISC–SPRINGS ARE PLACED AS SHOWN IN THE ENLARGED VIEW.
* BY USING THE HEADSCREW(13), ATTACH THE CONNECTING–ROD(9) TO ROD–ACTUATOR(32).
* ATTACH PILOT(25) TO THE CONNECTING ROD(9).
* PIN LINK(6) TO CONNECTING–ROD(9) WITH SMALLER DIAMETER INSIDE THE SLOT.
STAGE 2

16 : PINS (QTY - 3 IN NOS)
17 : PAWL
18 : CLUTCH
29 : CIRCLIP IN ITS GROOVE
31 : GROOVE FOR SECOND CIRCLIP

NOTE: AS SHOWN IN THE STAGE(2), ASSEMBLE IN ORDER
* PLACE THE CIRCLIP(29) IN ITS GROOVE.
* PLACE CLUTCH(18) ON FEEDNUT(22) AS SHOWN.
* LOCK THE PAWL(17) BY GRUB-SCREWS AT THEIR RESPECTIVE POSITIONS.
* PLACE THE PINS(16) IN ITS POSITION TAKING CARE THAT IT DOESN'T FALL DOWN.
* NOW INSERT THE ASSEMBLY SHOWN IN STAGE(1) THROUGH 'A'.
NOTE: ASSEMBLE AS SHOWN IN THE DRAWING

* INSERT THE BEARING(23) IN ITS POSITION.

* LOCK THE MANDREL(23) BY PLACING THE CIRCLIP(34) IN THE GROOVE(31).
STAGE 5

1 : GUIDESCREW
24 : SCREW TO TIGHTEN THE GUIDESCREW(1)

2 : BALLS
4 : PIN-HOLE
5 : BODY
10 : PILOT
11 : PILOT SUPPORT
14 : SET RING
33 : KEY

NOTE :

* LOCK THE CAGE(27) TO BODY(5) BY USING GRUBSCREWS.
* USE THE KEY (33) TO PLACE THE BODY(5) IN THE CAGE(27)
* NOW THREAD ON ASSEMBLY FROM UPPER FIGURE THROUGH B–B.

* WHILE THREADING ON THE FEEDNUT (ANTI-CLOCKWISE), ADJUST THE KEY ON MANDREL TO SLIDE IN THE KEY-WAY.
NOTE: PIN THE TOOLBIT ACCORDING TO THE INSTRUCTIONS GIVEN IN THE OPERATION MANUAL.