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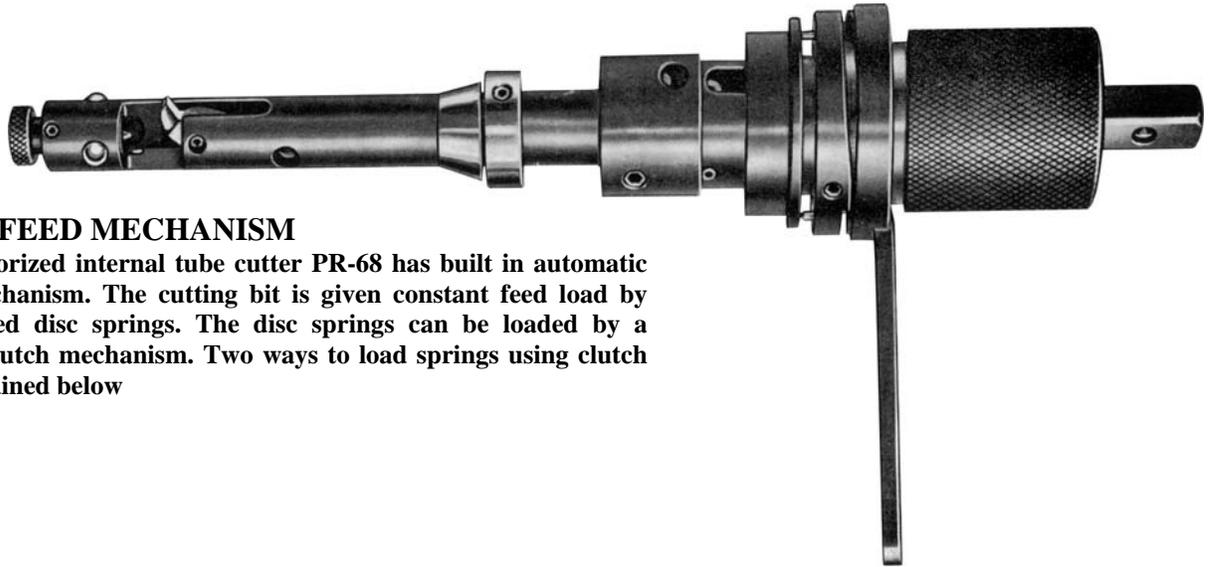
OPERATIONS MANUAL

FOR

INTERNAL TUBE CUTTER

TYPE PR-68

PR-68 INTERNAL TUBE CUTTER AUTO FEED MECHANISM



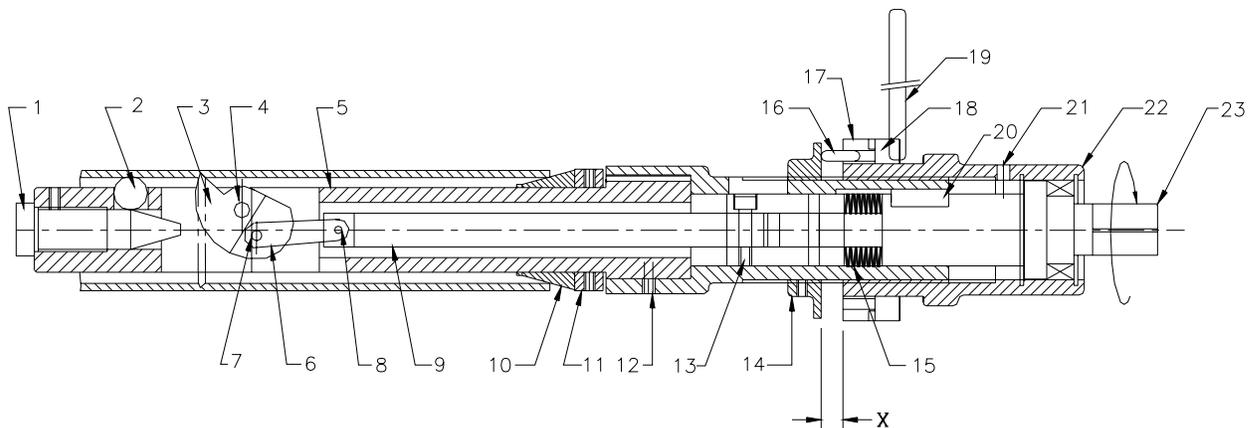
AUTO FEED MECHANISM

The motorized internal tube cutter PR-68 has built in automatic feed mechanism. The cutting bit is given constant feed load by pre-loaded disc springs. The disc springs can be loaded by a simple clutch mechanism. Two ways to load springs using clutch are explained below

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.

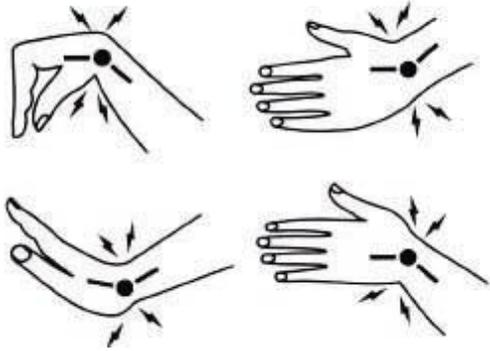
Keeping the tool bit in lowered position set the guide balls (2) to suit tube inner diameter. Insert tool into tube till the conical ring (10) contacts the tube face. Turn knurled nut (22) anti-clockwise till tool bit touches the tube inner wall, then turn knurled nut (22) 45° in clockwise direction. 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 slip 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) is 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

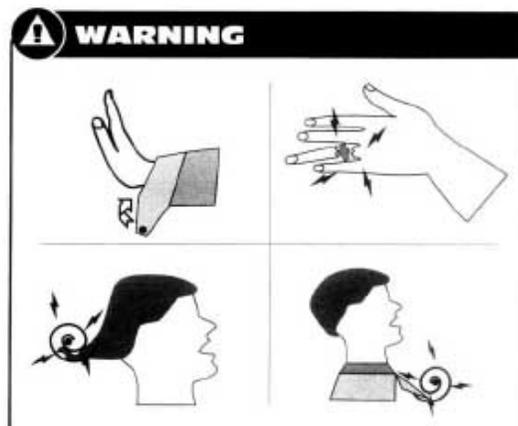
it. The feed movement will cause the pawl (17) to move against the pins (16) and eventually on to the adjustment collar (14) and thus the clutch dog (18) is disengaged. This means that the disc springs are loaded and they now push the tool bit resulting in automatic feed.



TASKS SHOULD BE PERFORMED IN SUCH A MANNER THAT THE WRISTS ARE MAINTAINED IN A NEATRAL POSITION WHICH IS NOT FLEXED, EXTENDED OR TWISTED



VIBRATIONS AND /OR IMPACT CAN INJURE HANDS AND ARMS. USE MINIMUM HAND GRIP FORCE CONSISTANT WITH PROPER CONTROL WHEN LOADING CLUTCH. AVOID CONTINUOUS VIBRATION EXPOSURE



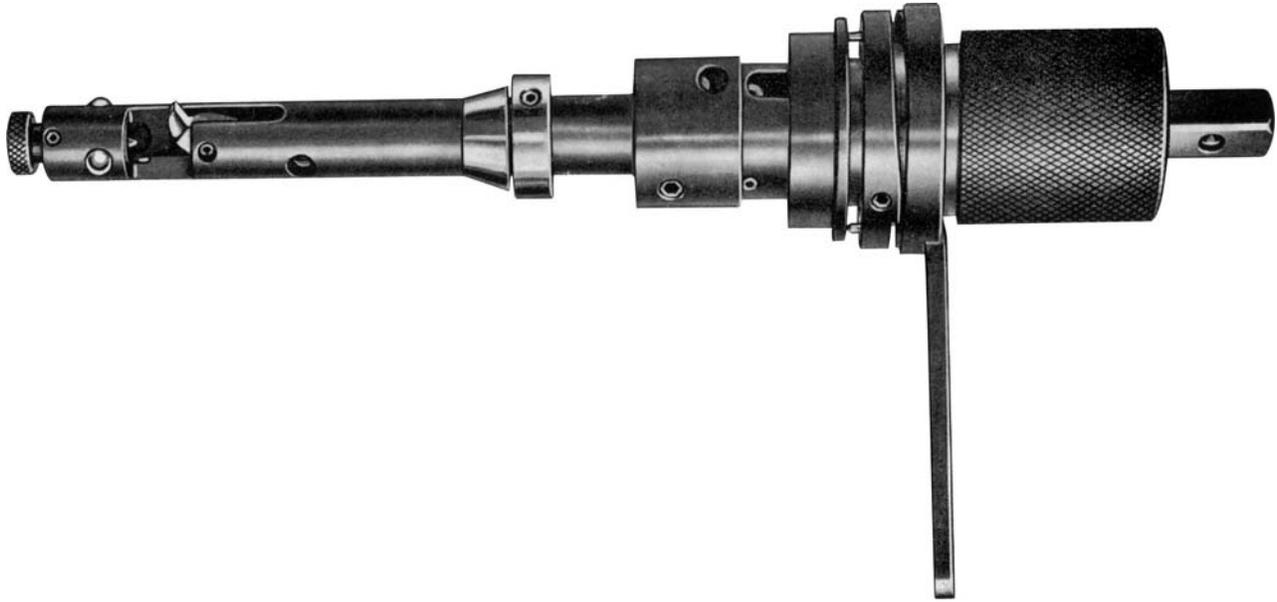
STAGE - ASSEMBLY

**FOR
INTERNAL TUBE CUTTER
TYPE PR-68**

POWERMASTER

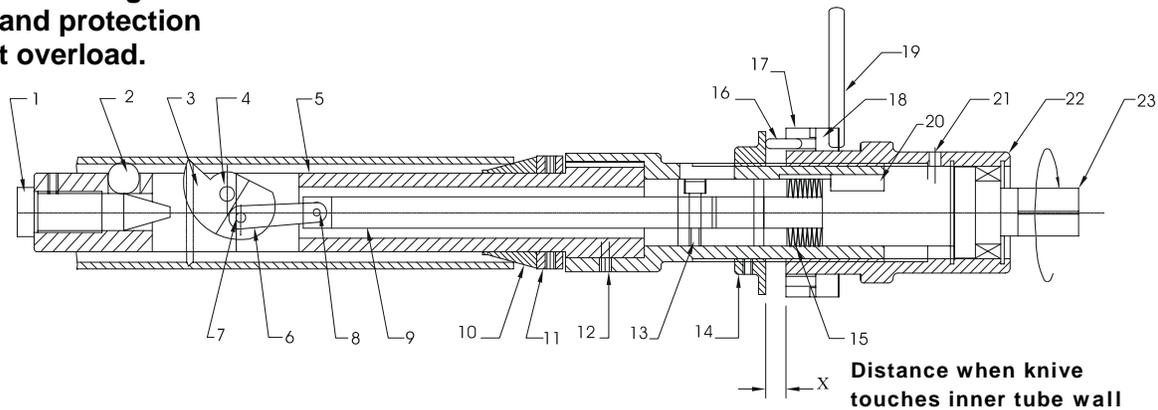
Type PR-68 Internal Tube Cutters

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.



Size	Tool Reference Number	Spare Bit Reference Number	Tube I.D. Range		Max. Tube O.D.		Body Diameters		Drive Square Male
			mm	Inches	mm	Inches	mm	Inches	
095	0680951	1680951	10-12	.394-.472	15	.591	9.5	.374	1/2"
105	0681051		11-13	.433-.512	18	.709	10.5	.413	
115	0681151	1681151	12-14	.472-.551	19	.748	11.5	.453	
125	0681251	1681251	13-15	.519-.591	20	.787	12.5	.492	
135	0681351		14-17	.551-.669	23	.906	13.5	.531	
155	0681551		16-19	.630-.748	25	.984	15.5	.610	
175	0681751	1681751	18-21	.709-.827	27	1.063	17.5	.689	
195	0681951	1681951	20-25	.787-.984	34	1.339	19.5	.768	
245	0682451	1682451	25-30	.984-1.181	38	1.496	24.5	.965	
290	0682901	1682901	30-35	1.181-1.378	43	1.693	29	1.142	
330	0683301		35-40	1.378-1.575	48	1.890	33	1.299	
380	0683801		40-50	1.575-1.969	58	2.126	38	1.496	
480	0684801		50-60	1.969-2.362	68	2.677	48	1.890	
530	0685301	1684801	55-65	2.165-2.559	73	2.874	53	2.087	3/4"
630	0686301	65-75	2.559-2.953	83	3.268	63	2.480		
730	0687301	1687301	75-85	2.953-3.346	93	3.661	73	2.874	
830	0688301		85-95	3.346-3.740	103	4.055	83	3.268	
930	0689301		95-105	3.740-4.134	113	4.449	93	3.661	

**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

Carbon Steel and Non-Ferrous Tubes		High alloy steels	
O.D.	RPM	O.D.	RPM
1.1/8" - 1.3/4" (28.58 - 44.45MM)	90-115	1.1/8" - 1.3/4" (28.58 - 44.45MM)	51-76
2" - 2.3/4" (50.8 - 69.85MM)	54-70	2" - 2.3/4" (50.8 - 69.85MM)	31-50
3" - 3.3/4" (76.2 - 95.25MM)	38-50	3" - 3.3/4" (76.2 - 95.25MM)	22-35
4" - 4.1/2" (101.6 - 114.3MM)	34-40	4" - 4.1/2" (101.6 - 114.3MM)	17-28

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).

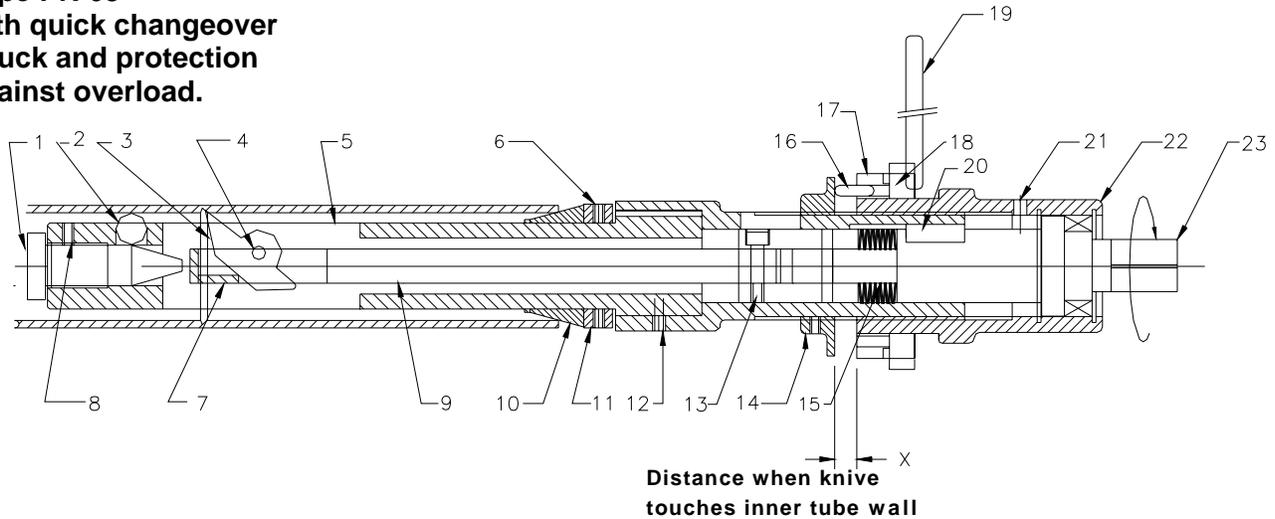
8. Lubrication

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.

**Internal Tube Cutter
Type PR 68
with quick changeover
chuck and protection
against overload.**



Distance when knife touches inner tube wall

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

Carbon Steel and Non-Ferrous Tubes		High alloy steels	
O.D.	RPM	O.D.	RPM
1.1/8" - 1.3/4" (28.58 - 44.45MM)	90-115	1.1/8" - 1.3/4" (28.58 - 44.45MM)	51-76
2" - 2.3/4" (50.8 - 69.85MM)	54-70	2" - 2.3/4" (50.8 - 69.85MM)	31-50
3" - 3.3/4" (76.2 - 95.25MM)	38-50	3" - 3.3/4" (76.2 - 95.25MM)	22-35
4" - 4.1/2" (101.6 - 114.3MM)	34-40	4" - 4.1/2" (101.6 - 114.3MM)	17-28

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.

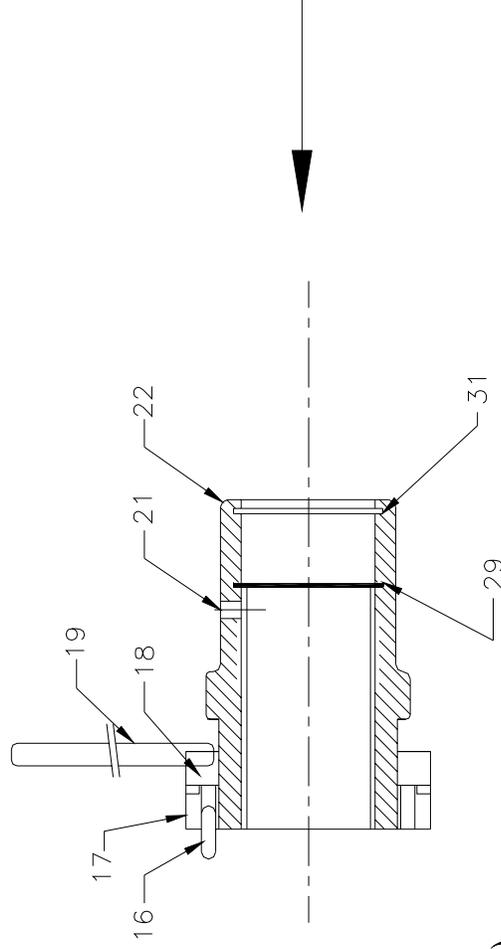
7. Lubrication

The feed thread of nut (22) should be greased via bore (21) with 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.

STAGE 2

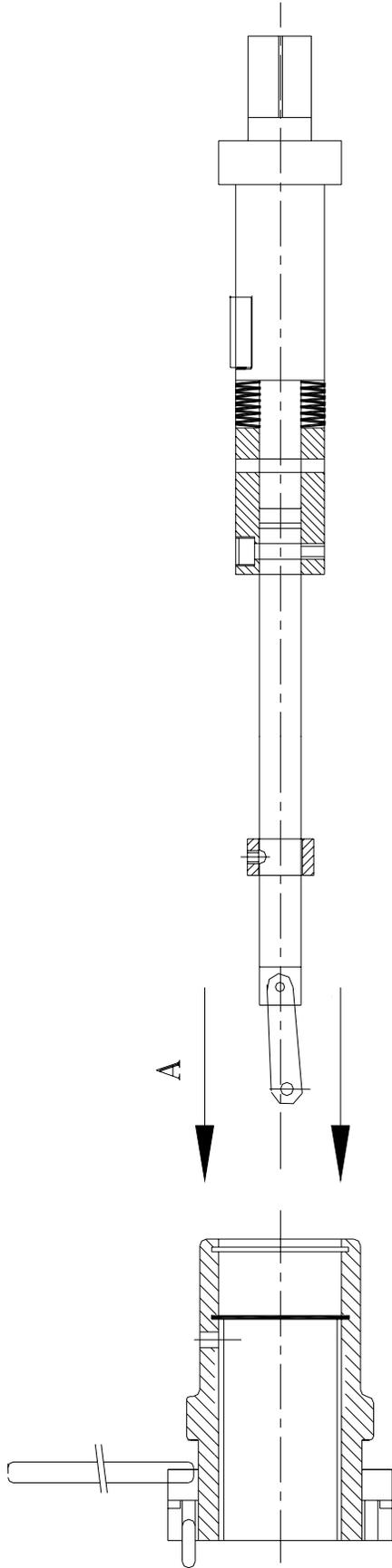


- 16 : PINS (QTY - 3 IN NOS)
- 17 : PAWL
- 18 : CLUTCH
- 29 : CIRCLIP IN ITS GROOVE
- 31 : GROOVE FOR SECOND CIRCLIP

NOTE : AS SHOWN IN THE STAGE(2), ASSEMBLE INORDER

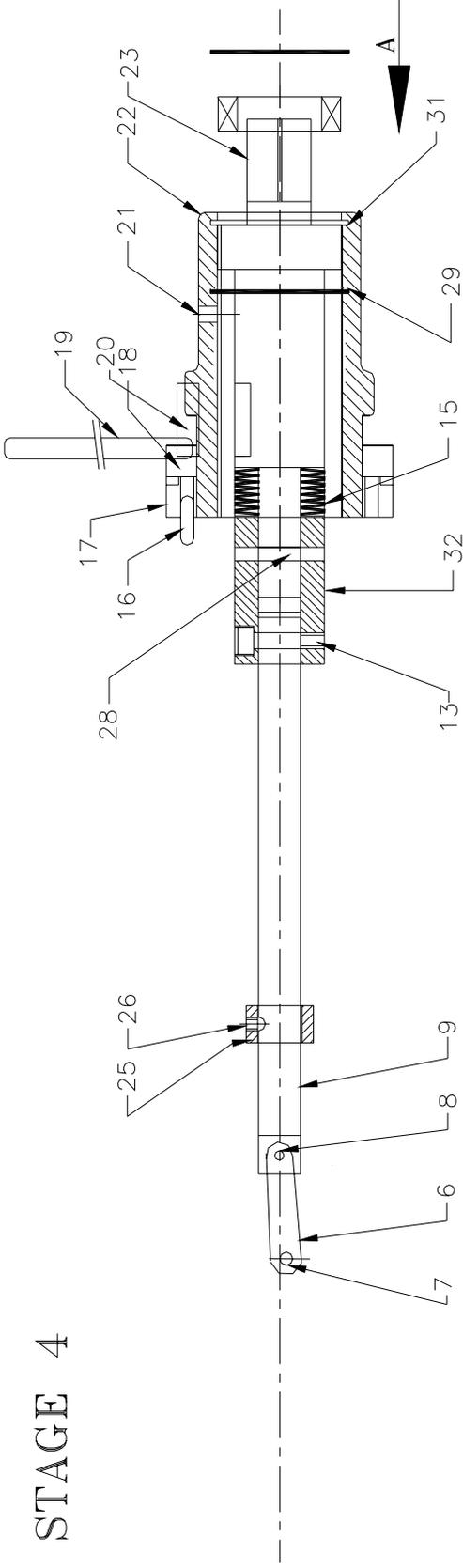
- * PLACE THE CIRCLIP(29) IN ITS GROOVE.
- * PLACE CLUTCH(18) ON FEEDNUT(22) AS SHOWN.
- * LOCK THE PAWL(17) BY GRUB-SCREWS AT THEIR RESPECTIVE POSITIONS.
- * PLACE THE PINS(16) IN ITS POSITION TAKING CARE THAT IT DOES'NT FALL DOWN.

STAGE 3



* NOW INSERT THE ASSEMBLY SHOWN IN STAGE(1) THROUGH 'A' .

STAGE 4

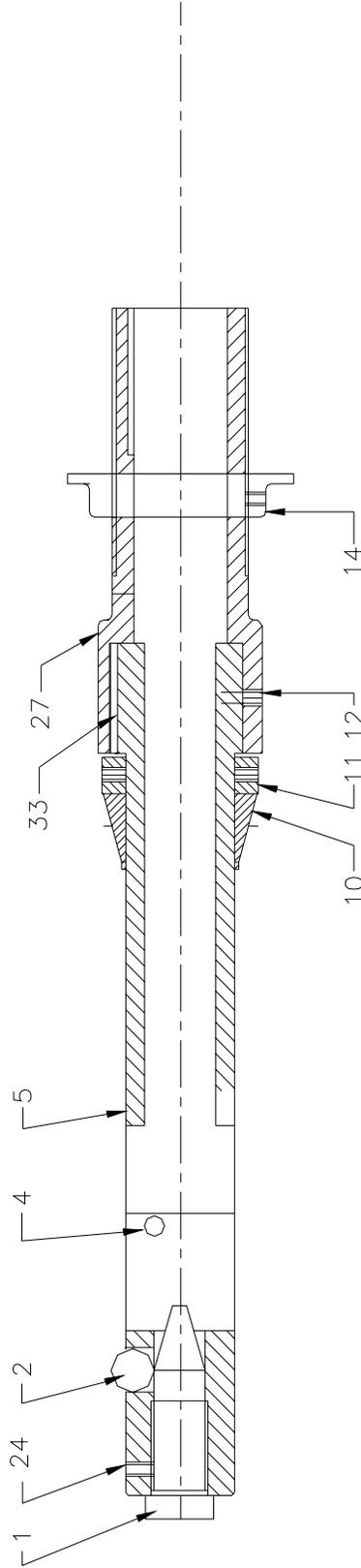


NOTE : ASSEMBLE AS SHOWN IN THE DRAWING

* INSERT THE BEARING(23) IN ITS POSITION.

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

STAGE 5

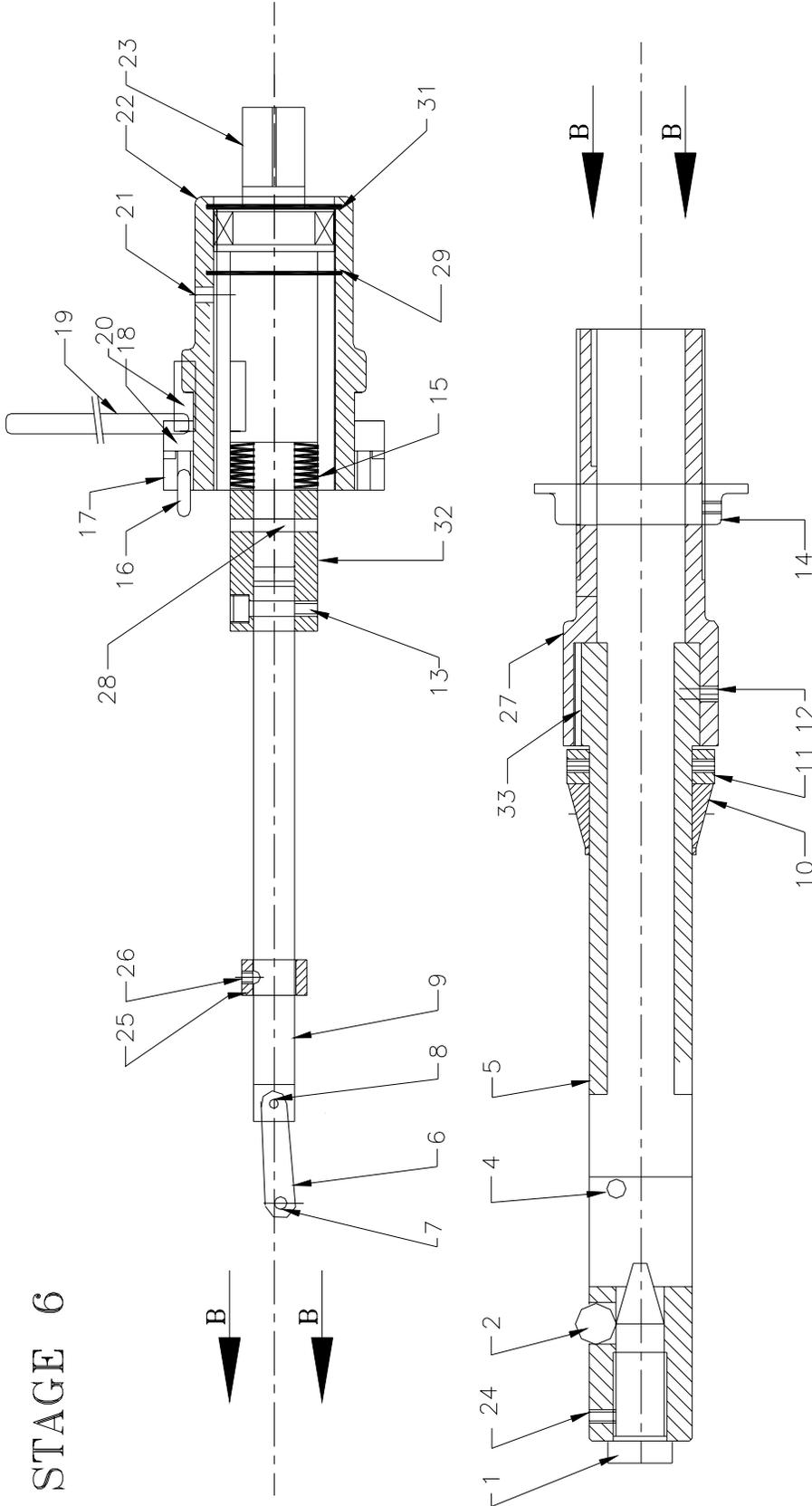


- 1 : GUIDESCREW
- 24 : SCREW TO TIGHTEN THE GUIDESCREW(1)
- 2 : BALLS
- 4 : PIN-HOLE
- 5 : BODY
- 10 : PILOT
- 11 : PILOT SUPPORT
- 14 : SET RING
- 33 : KEY

NOTE :

- * LOCK THE CAGE(27) TO BODY(5) BY USING GRUBSCREWS.
- * USE THE KEY (33) TO PLACE THE BODY(5) IN THE CAGE((27)

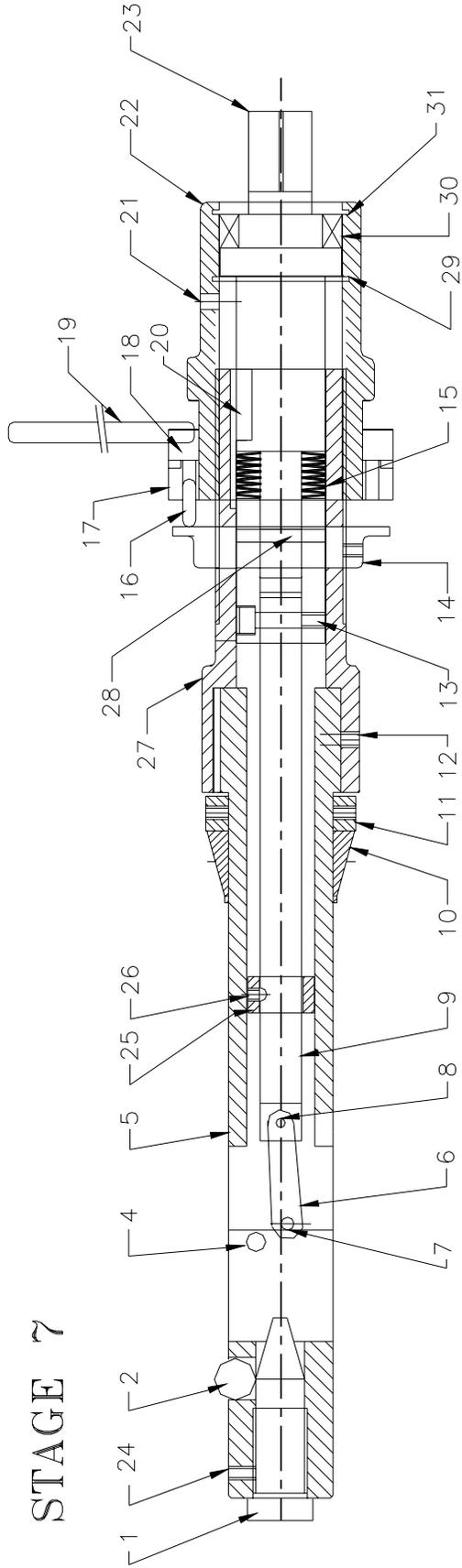
STAGE 6



* 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.

STAGE 7



NOTE : PIN THE TOOLBIT ACCORDING TO THE INSTRUCTIONS GIVEN IN THE OPERATION MANUAL.