



# AE 45

## OPERATING INSTRUCTIONS

### METRIC TOOL



PennEngineering®



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- Read the instructions carefully before using the tool.
- For all maintenance and/or repairs please contact PennEngineering and use only original spare parts. PennEngineering may not be held liable for damages from defective parts caused by failure to use original spare parts.
- The tool must be used only by expert workers.
- A protective visor and gloves must be put on when using the tool.
- Use equipment recommended in the maintenance chapter to do any maintenance and/or regulation of the tool.
- For topping off the oil, we suggest using only fluids in accordance with the features specified in this working book.
- If any drop of oil touches your skin, you must wash with water and alkaline soap.
- The tool can be carried and we suggest putting it into its box after using.
- The tool needs a thorough six-monthly overhaul.
- Repairing and cleaning operations must be done when the tool is not fed.
- If it is possible, we suggest a safety balancer.
- The tool is made so that acoustic pressure level continuous equivalent weighted A is not more than 75 dB (A) where people works.
- If the noise level is more than 85 dB (A), you must use some hearing protections (anti-noise headset, etc.).
- The workbench and the work surface must be always clean and tidy.
- Do not allow unauthorized persons to use the working tools.
- Make you sure that the compressed air feeding hoses have the correct size to be used.
- Do not carry the connected tool by pulling the hose. The hole must be far from any heating sources or from cutting parts.
- Keep the tools in good conditions; do not remove either safety parts or silencers.
- After repairing and/or adjusting, make sure you have already removed the adjusting spanners.
- Before disconnecting the compressed air hose from the tool make sure that there is no pressure in the hose.
- These instructions must be carefully followed.

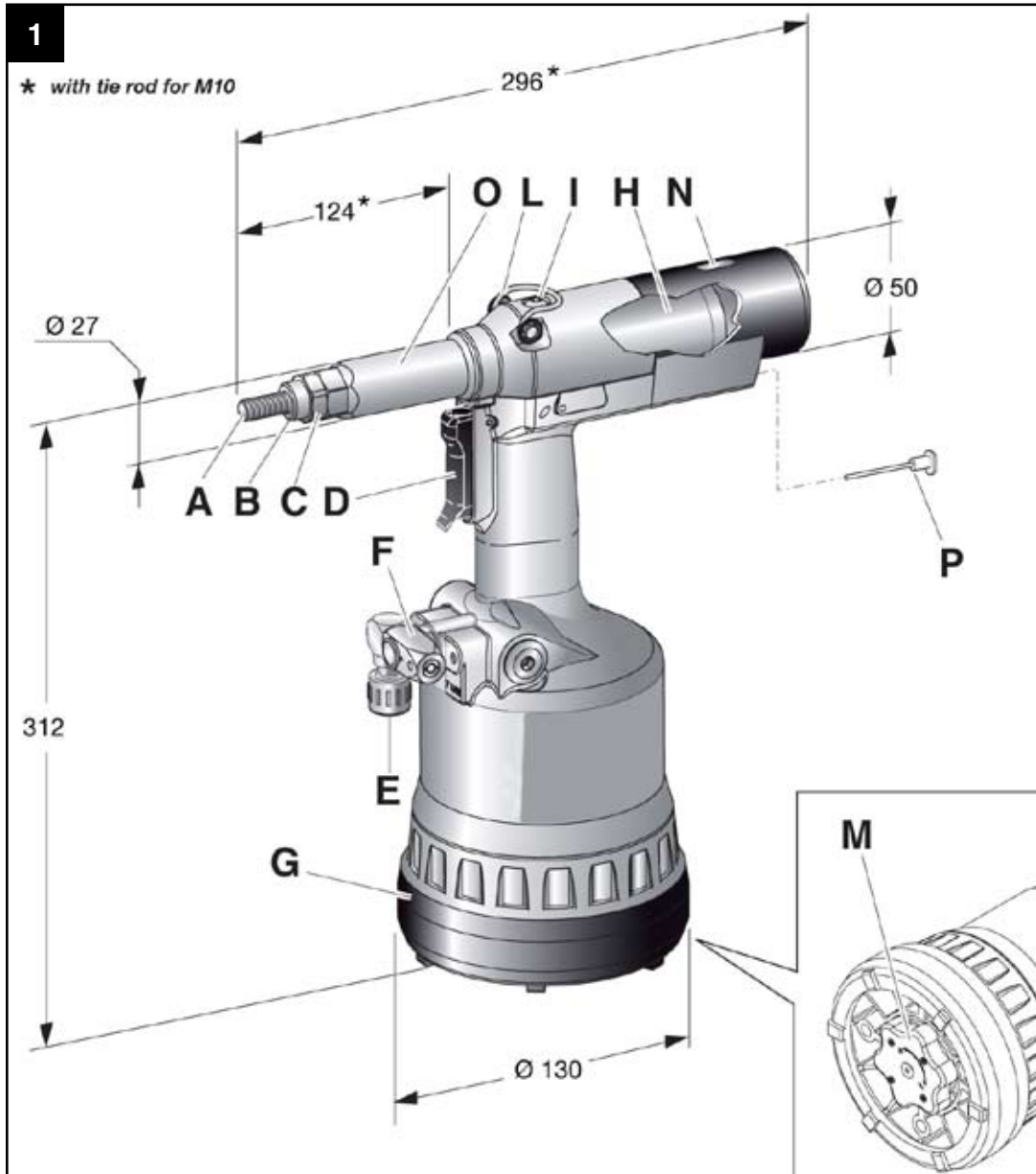
## GENERAL NOTES AND USE

The tool can be employed only for threaded inserts with thread of M4 to M12 diameter. The AE 45 oil pneumatic system assures more power than the pneumatic system used for other models. That means a reduction in the problems due to the wear and tear of the components, therefore, there will be an increase in reliability. The technical solutions adopted reduce the dimensions and the weight of the tool which, for these reasons, make it very handy. The possibilities of leakage from the oil-dynamic system, are eliminated by some sealed gaskets, which solve this problem.

# MAIN COMPONENTS



- A)..... Threaded tie rod
- B)..... Head
- C)..... Ring-nut clamping head
- D)..... Control push-button
- E)..... Compressed air connection
- F)..... Pressure control valve
- G)..... Protection bottom
- H)..... Pneumatic motor
- I)..... Oil tank plug
- L)..... Balancer connection
- M)..... Stroke-adjusting knob
- N)..... Stroke indicator
- O)..... Tube carrying head
- P)..... Forced unscrewing rod



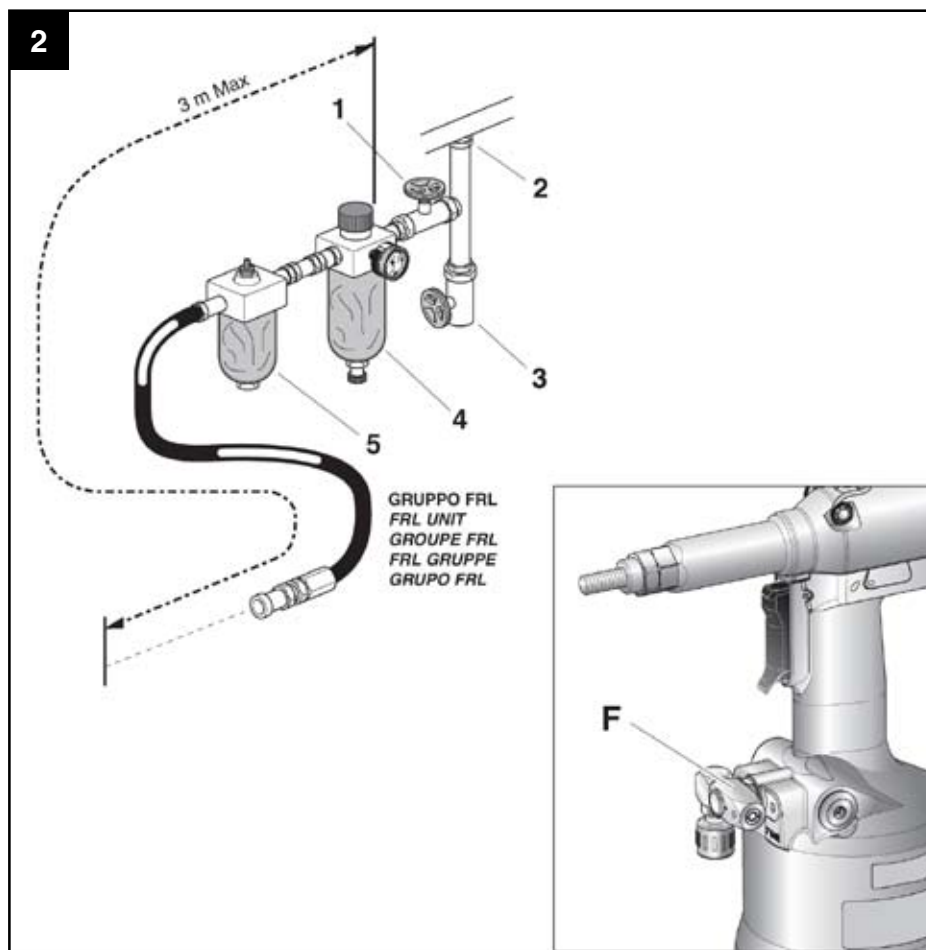
- Working pressure..... 6 - 7 BAR
- Min. int. diam. of the compressed air feeding hose.....  $\varnothing$  min. = 8 mm
- Max free air consumption per cycle..... 11 NI
- Force (6 BAR)..... 28 KN
- Noise..... < 75 db(A)
- Weight (with equipment for M10)..... 2.9 Kg
- Working temperature.....  $-5^{\circ}/+50^{\circ}$  C
- Root mean square in total acceleration frequency (Ac)  
to which the arms are subjected..... < 2.5 m/sec<sup>2</sup>

## AIR FEED

The compressed air system must be provided with air cleaners and condensation drains and must guarantee that the air supplied to the feeder has a constant pressure of min 6 bars. The regulator must be set at a pressure of 6.5 bars.

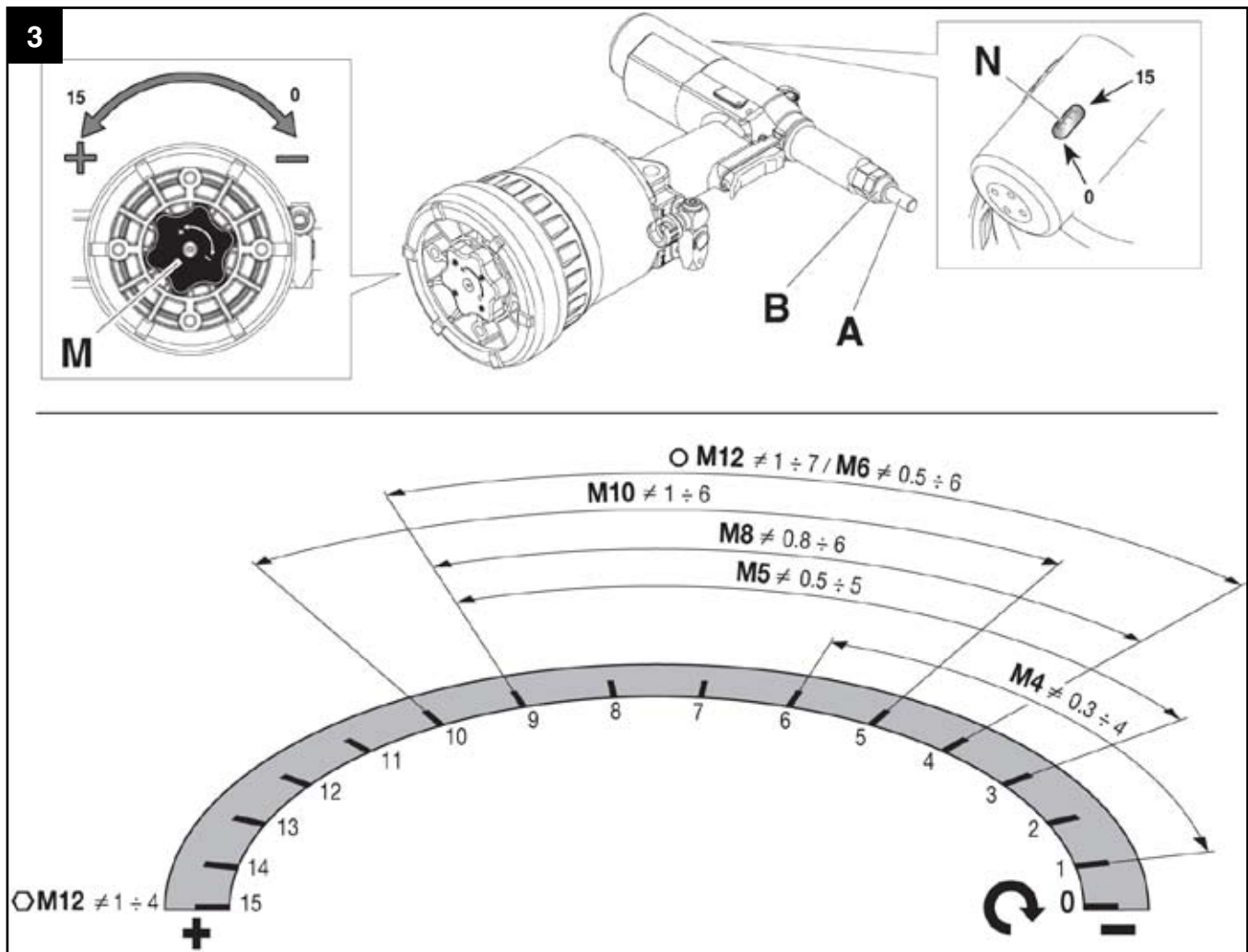
Connect the machine to the main compressed air supply as shown in the diagram (2):

- 1) Stop cock (used during maintenance of the regulator filter or of the lubricating unit)
- 2) Main supply inlet
- 3) Main supply bleed
- 4) Pressure regulator and filter (bleed daily)
- 5) Lubricating unit



Check that the threaded tie rod (A) and head (B) couple assembled on the riveting tool is suitable to the size of the insert to clamp; otherwise change the size. The couple tie rod (A) + head (B) assembled on this riveting tool, corresponds to a M10 thread. Before using the riveting tool and after each change of size, the stroke should be adjusted according to the dimensions, size of the insert and thickness of the material to clamp. Before carrying out this operation rotate the knob (M) according to the direction of the arrow, (+) for increasing the stroke and (-) for decreasing it. Increasing the stroke [rotation of knob (M)] in the direction indicated with the symbol (+), the distance “h” decreases increasing the clamping action. For verifying that the stroke is correctly adjusted check the indicator (N) [comparing it with the values of the table (fig. 3)].

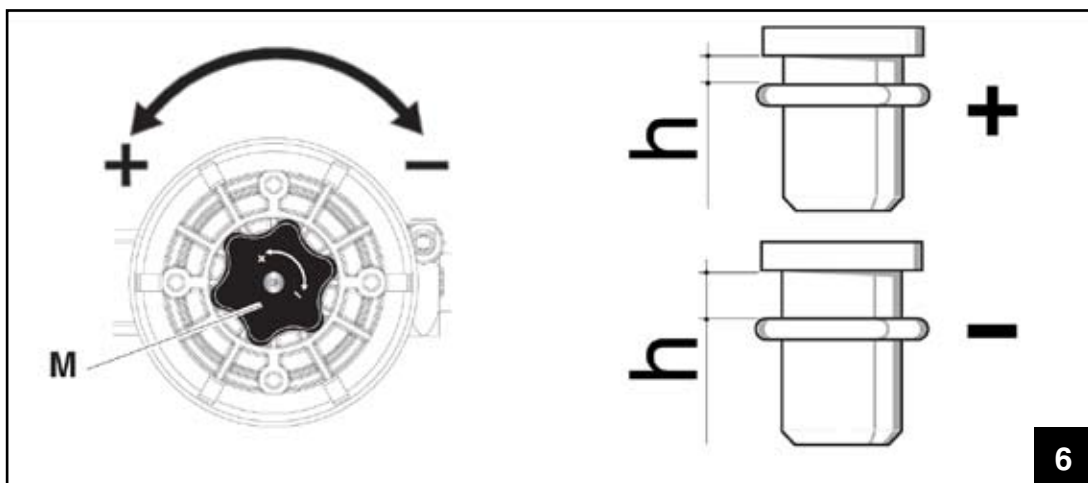
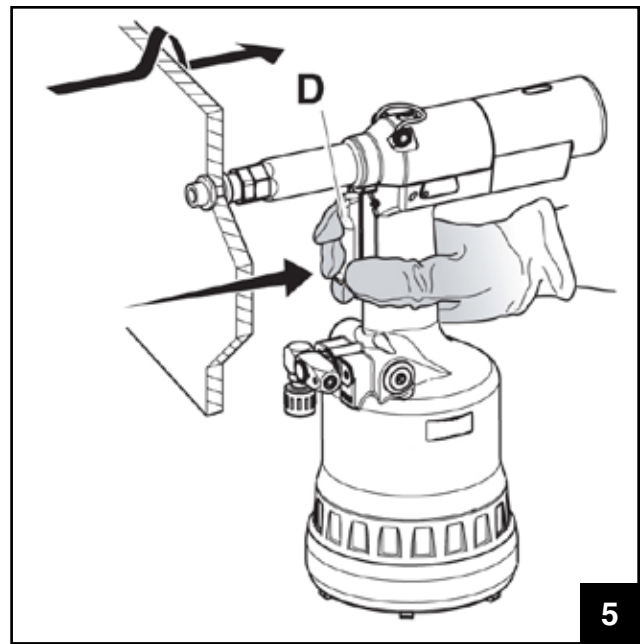
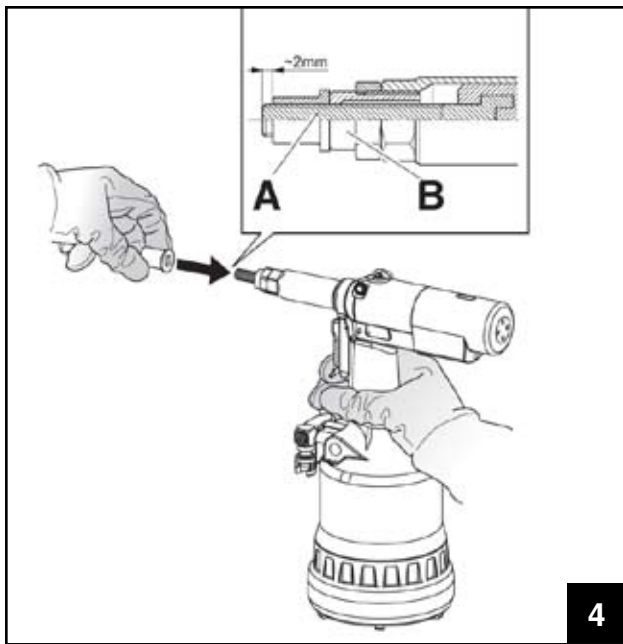
**NOTE:** Before the definitive placing of the insert, its clamping on the thicknesses involved should be checked, carrying out other adjustments, as shown at page 9 (the specified adjustments are just an indication, it is advisable to see the technical data of the inserts used).



Check that the threaded tie rod (A) and head (B) couple assembled on the riveting tool is suitable to the size of the insert to be used. Adjust the stroke as indicated on page 5. Introduce the insert on the tie rod (A) and push slightly on it as indicated in figure 4, so as to make it clamp automatically on the threaded-tie rod. Make sure that the insert head touches the head (B) checking that the tie rod (A) comes out of 2mm from the insert. In case of further adjustments of the tie rod (A) follow the instructions of page 9. It is possible to place the insert pushing the button (D) and keeping it pushed up to the complete release of the tie rod. For a correct placing and right working of the machine, the inserts to be used should be properly cleaned.

**NOTE:** According to the desired clamping, carry out other adjustments of the riveting tool stroke, rotating the knob (M) (page 5), if necessary.

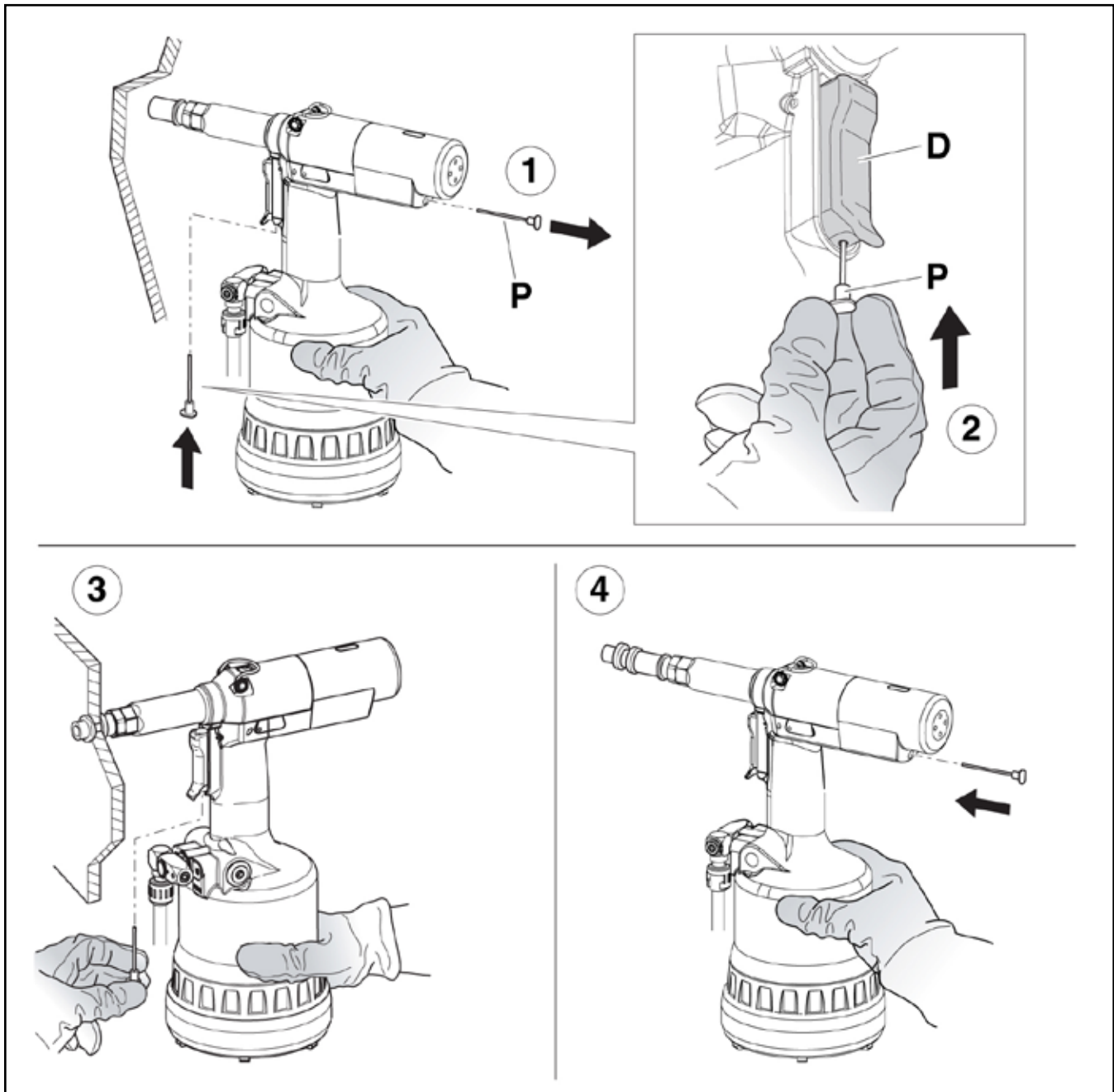
**Insufficient deformation** = the insert could rotate inside the housing compromising its use and resistance.  
**Excessive deformation** = possible damages of the insert and tie rod (A) with eventual breaks of both components.



When the conditions cause a forced unscrewing of the tie rod from the insert, act as follows: remove the push rod (P) from its seat (1) and introduce it into the hole in the lower part of the tensile-strength button pushing it slightly (2).

**WARNING!** Carry out this operation keeping the riveting tool firmly in order to avoid sharp movements which could cause injury or damage (3).

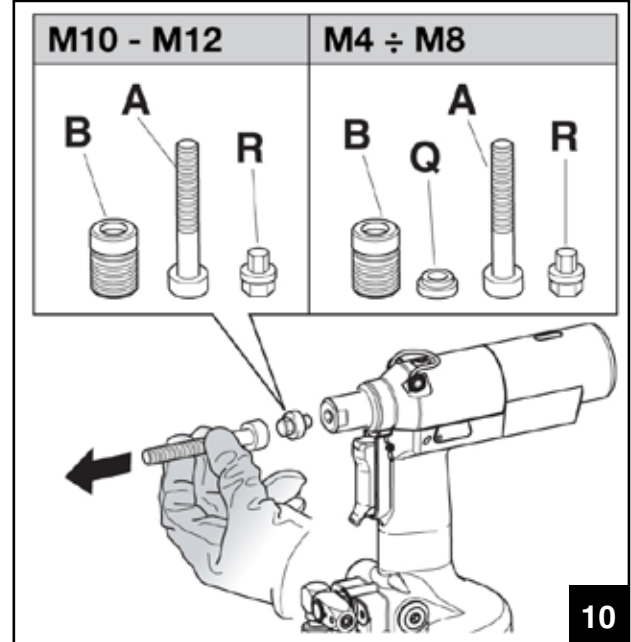
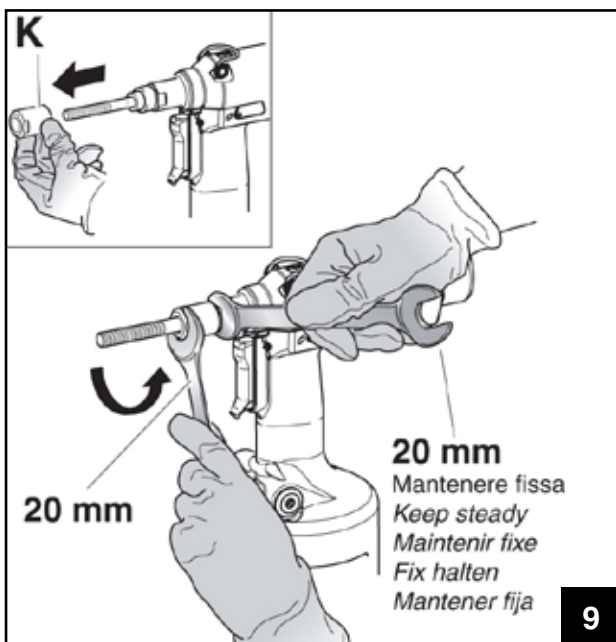
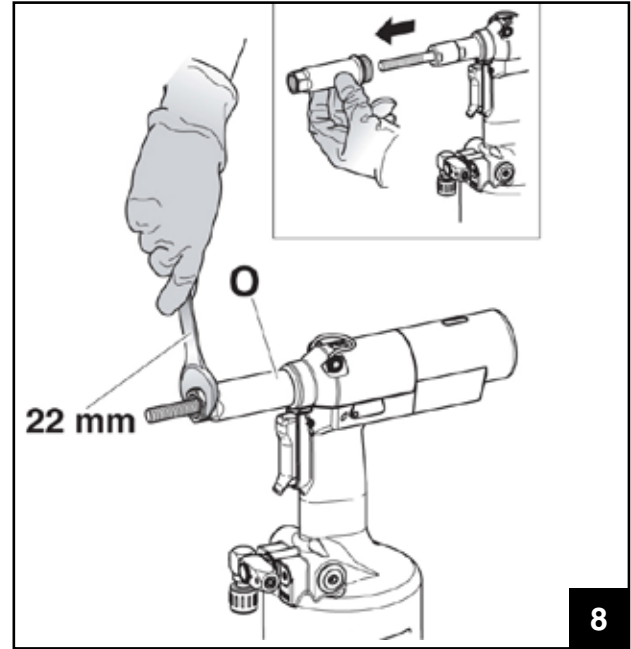
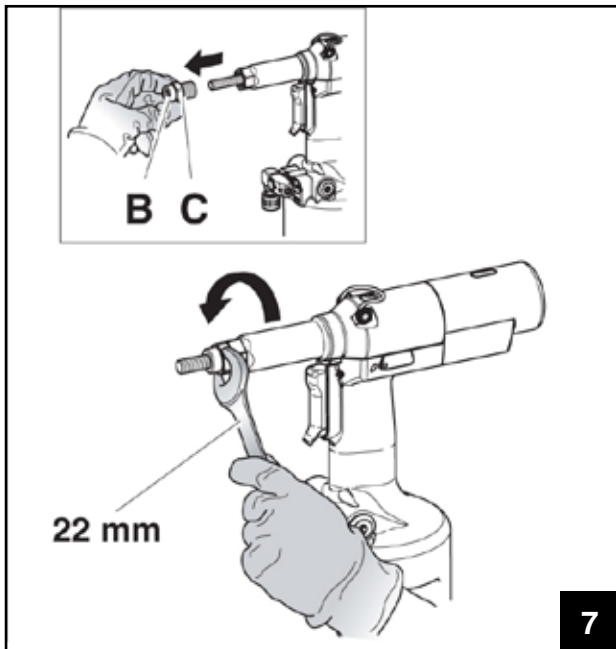
When the tie rod is free from the insert, put the rod back in its seat for not losing it (4).



The riveting tool is supplied with 6 pairs of threaded tie rods (A) and heads (B), for tightening a range of threaded inserts from M4 to M12. Depending on the thread size, it is necessary to replace the threaded tie rod (A) and head (B) group, as follows: loosen the ring nut (C) with a 22 mm. standard spanner and remove the riveting tool head (B) [and spacer (Q) if it ranges from M4 to M8]. With the same spanner, unscrew the tube carrying head (O). Use two 20 mm. standard spanners for disassembling the ring nut (K) and extract the threaded tie rod (A).

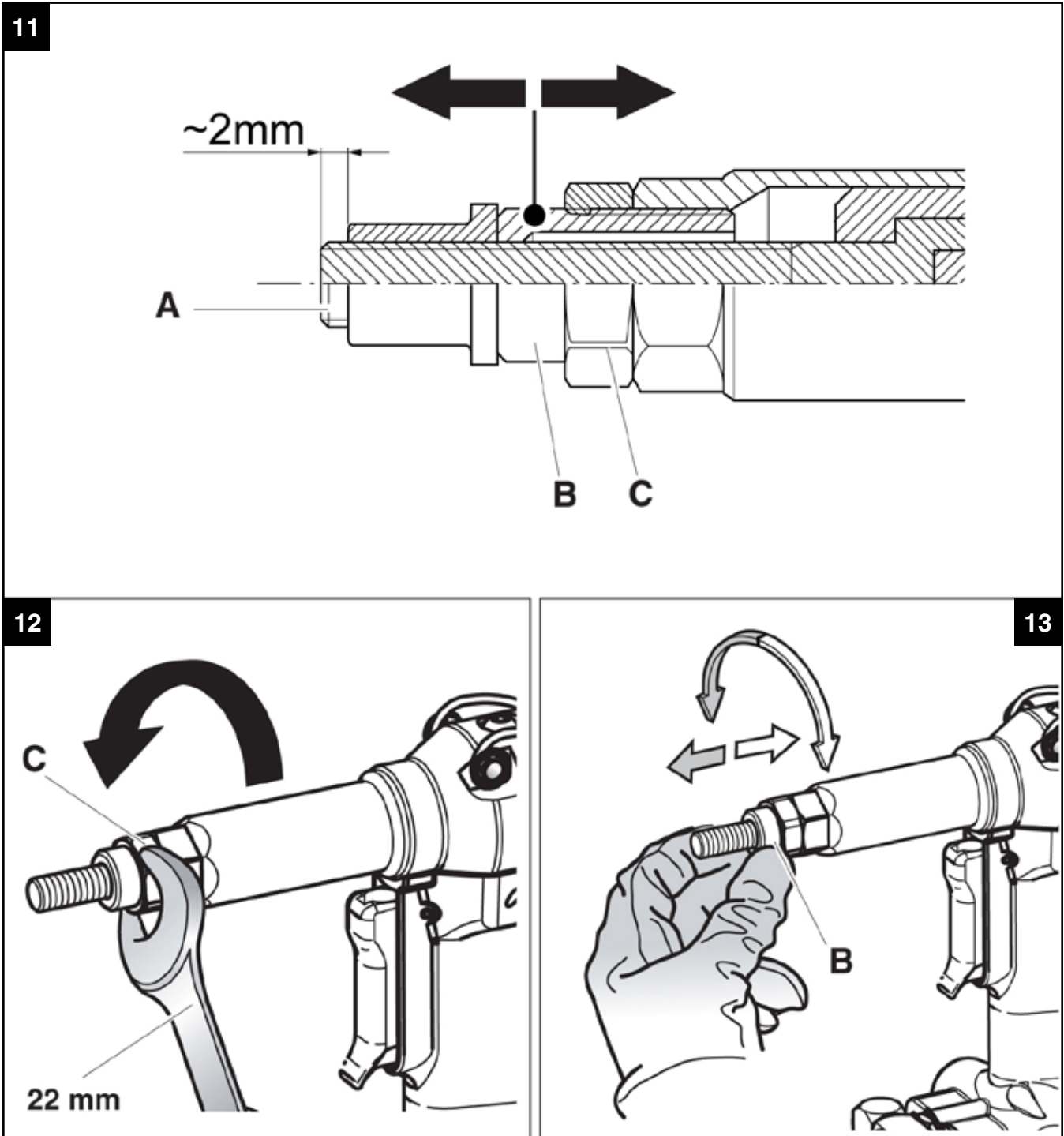
**NOTE:** Use two spanners for unblocking the ring nut (K) as indicated in figure (9); the inobservance of this procedure can damage the riveting tool.

After having replaced the threaded tie rod (A) with that one of the right size, assemble the ring nut (K) again and carry out the above-mentioned operations in reverse order, being sure that the component (R) is the right one. Every time you carry out any change of size, repeat the adjustment operations as indicated on page 9.



# ADJUSTMENT OF THE COUPLE TIE ROD/HEAD

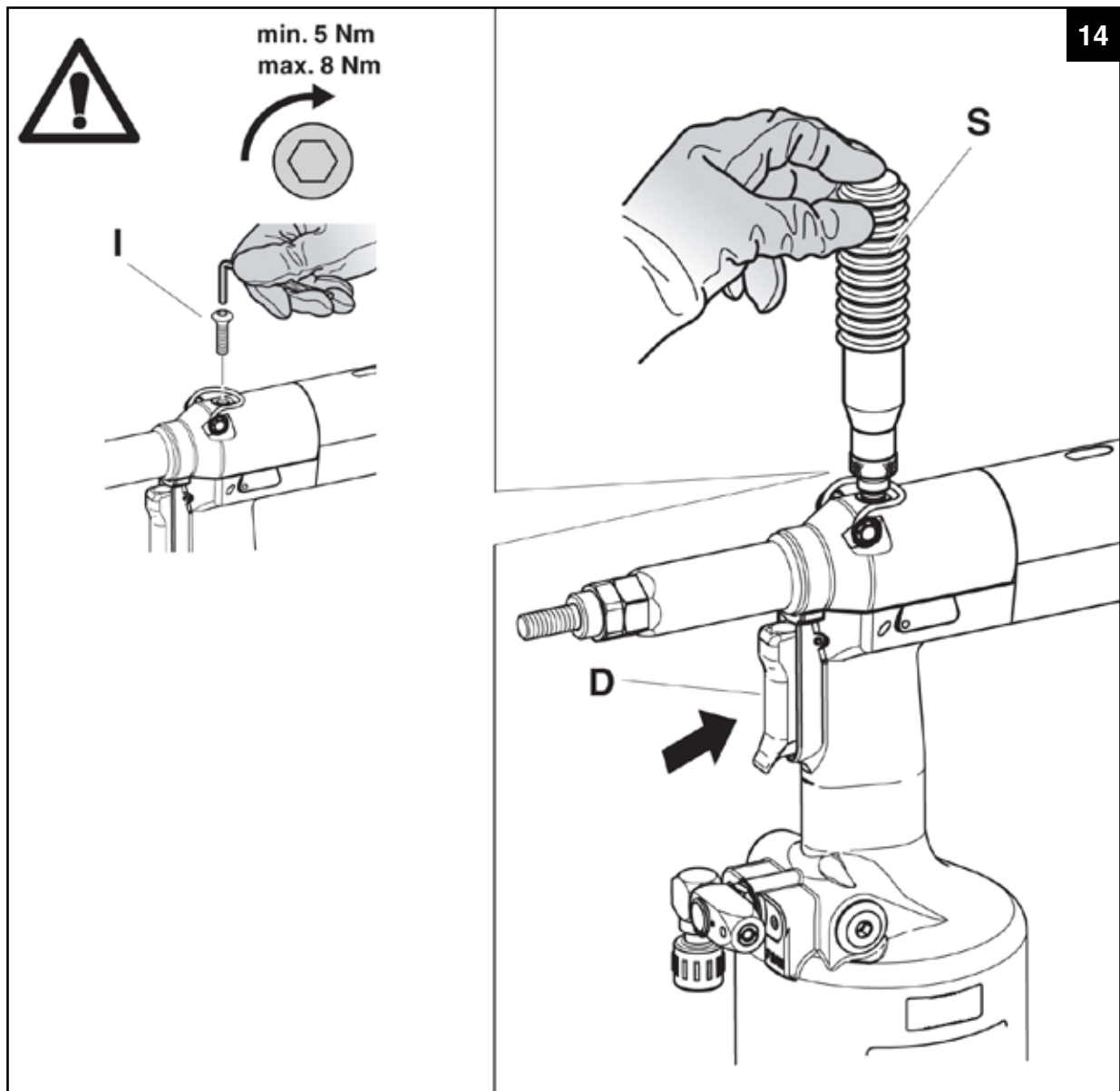
Changing the length of the insert to clamp, the position of the head (B) compared to the threaded tie rod (A) should be adjusted. Disconnect the riveting tool from the compressed-air supply. Screw an insert of the desired length on the threaded tie rod manually until the insert head touches the riveting tool head (B). The head is adjusted correctly if the threaded tie rod comes out of the insert screwed on it of about 2 mm. Otherwise unblock the ring nut (C) with a 22-mm standard spanner then screw or unscrew the head (B) up to the right position, and block the ring nut (C).



The oil-dynamic circuit should be topped up after a long period of work or when there is a power loss of the riveting tool. Put the riveting tool (not fed) in a vertical position rotating the knob (M) towards the sign “+” up to the end of stroke, and remove the plug (I) by means of a 4 mm Allen wrench (equipped). During this operation check the oil level in order to avoid any overflowing. Then pour the oil VISCOSITY 32° into the oil container (S) (equipped) which shall be screwed to its seat on the plug (I).

While keeping the riveting tool in vertical position and starting air feeding, push the button (D) and make the riveting tool carry out some cycles until air bubbles inside the container stop coming out. This condition indicates that the topping up of the oil has been fully achieved. At this point stop the air feeding and while keeping the riveting tool in a vertical position, unscrew and close the oil container (S) and the plug (I) checking the soundness of the hermetic washer and repeat all the adjustments for placing the insert as indicated at page 5.

**WARNING:** It is very important to follow the above-mentioned instructions and use gloves during oil topping off. If you need to empty completely the hydraulic circuit, you must put the oil in a suitable container and contact a company authorized to dispose of wastes.



## Daily maintenance

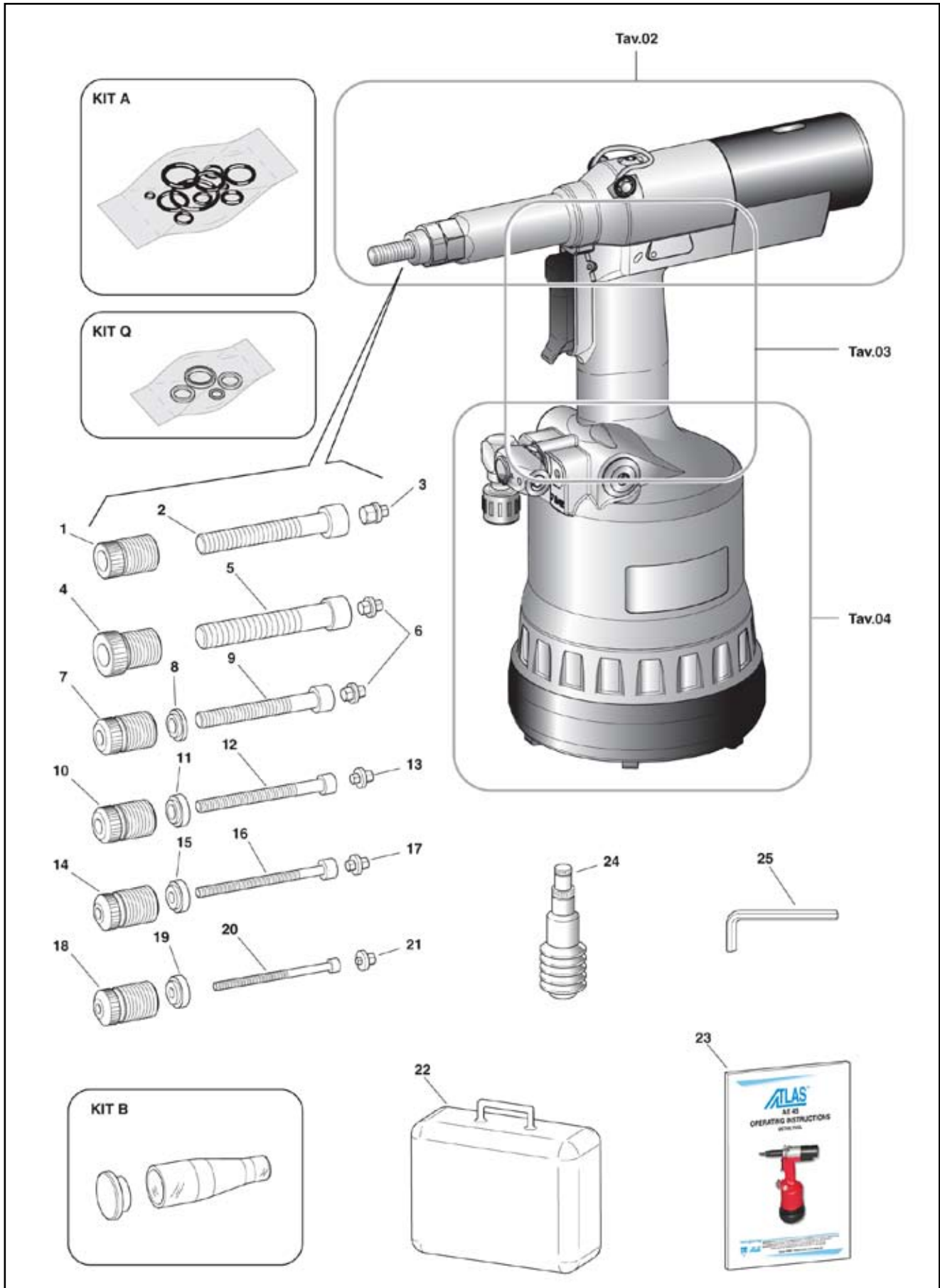
- Check that the threaded tie rod is not damaged
- Check the supply system of the compressed air
- Check that the stroke of the tool is suitable for the selected insert to clamp (see the pertaining instructions for adjusting the stroke, indicated at page 5).
- Check that there are neither air nor oil leakages. In this case replace possible damaged connectors or seals
- Check that the supply pressure of the compressed air does not exceed 7 bar.

## Weekly maintenance

- Check the oil level controlling the stroke of the riveting tool. If necessary fill up for preventing failures of the riveting tool as indicated at page 10.

## Overhaul of the riveting tool

It is advisable to carry out a complete overhaul of the riveting tool after 600,000 cycles or every year. In this case apply only to centres authorized by PennEngineering.

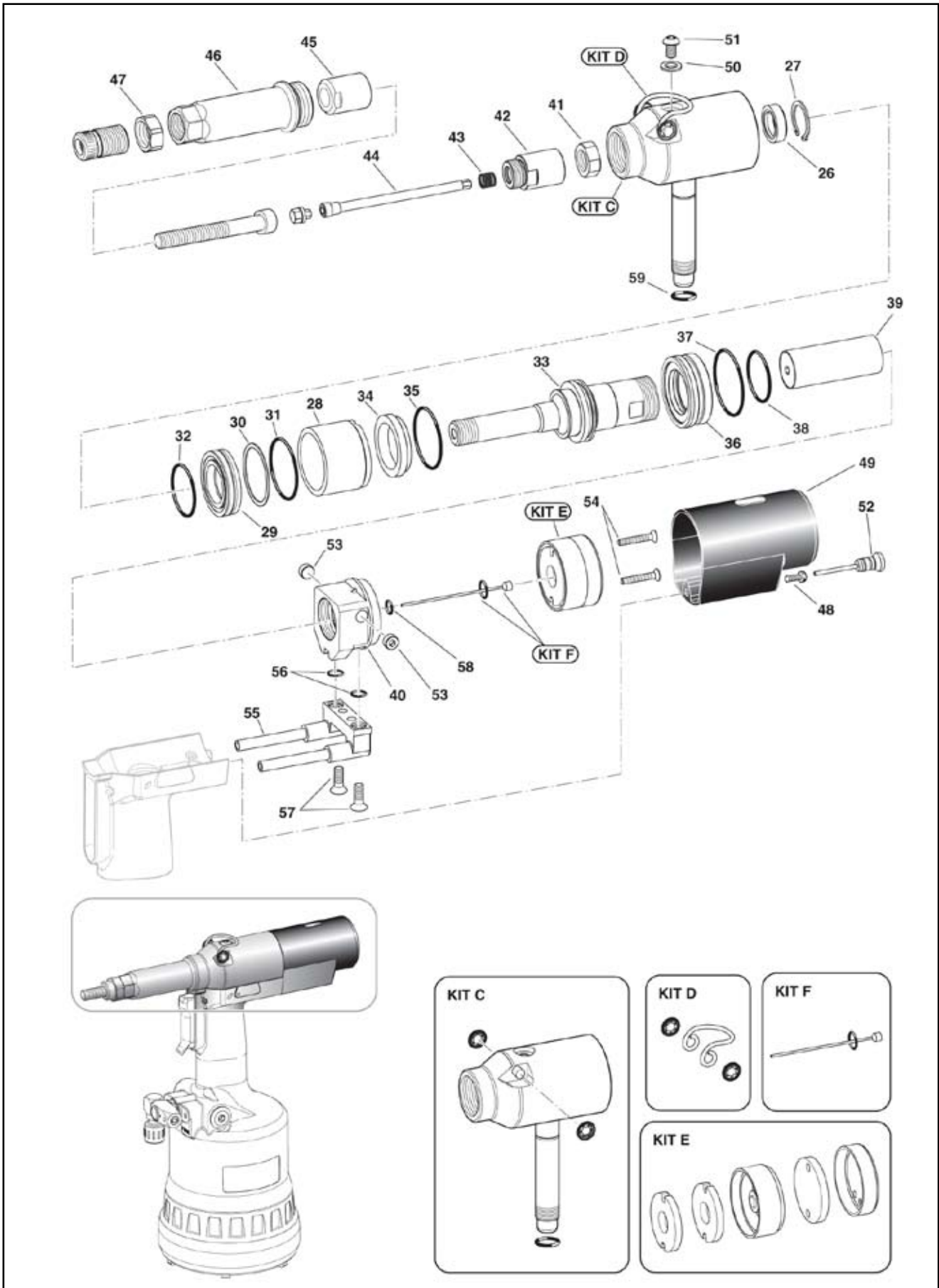


NO.	CODE	QTY.	DESCRIPTION
01	713291	1	Head M10
02	71C00281	1	Screw TCEI M10x70 UNI 5931
03	713176	1	Hexagonal reduction M10
04	713292	1	Head M12
05	713177	1	Tie rod M12
06	713030	1	Hexagonal reduction M8-M12
07	713290	1	Head M8
08	71345277	1	Spacer for screw
09	71C00514	1	Screw TCEI M8x70 UNI 5931
10	713289	1	Head M6
11	71345276	1	Spacer
12	71C00279	1	Screw TCEI M6x70 UNI 5931
13	713029	1	Hexagonal reduction M6
14	713288	1	Head M5
15	71345275	1	Spacer
16	71C00278	1	Screw TCEI M5x70 UNI 5931
17	713027	1	Hexagonal reduction M5
18	713287	1	Head M4
19	71345274	1	Spacer
20	71C00277	1	Screw TCEI M4x65 UNI 5931
21	713025	1	Hexagonal reduction M4
22	709033	1	Vase
23	75036001	1	Instructions for use
24	72A00053	1	Oil container
25	712225	1	Allen screw 4mm

## KIT

NO.	CODE	QTY.	DESCRIPTION
<b>KIT A</b>	<b>74000026</b>	<b>1</b>	<b>Pneumatic Kit</b>
01	71C00297	2	Gasket OR 6-700 PARKER (N674-70)
02	713400	7	Gasket OR-5-616 PARKER (N674-70)
03	71C00355	2	Gasket OR 1.78x8.73 (N674-70)
04	71C00356	2	Gasket OR 1.78x7.66 (N674-70)
05	710921	1	Gasket OR 2-115 PARKER (N674-70)
06	713399	1	Gasket OR-5-614 PARKER
07	71C00295	1	Ring PARBAK 8-028 N300-90 PARKER
08	71C00296	1	Gasket OR 5-670 PARKER (N674-70)
09	710925	1	Gasket OR 027 DOWTY (N674-70)
10	711062	1	Gasket OR-2-126 PARKER (N674-70)
11	710244	1	Gasket OR-2-130 PARKER (N674-70)
12	713275	1	Gasket OR-2-122 PARKER (N674-70)
13	710367	1	Gasket OR 2-008 PARKER (N674-70)
14	710258	1	Gasket OR-5-612 PARKER (N674-70)
15 AC	711338	2	Gasket OR-2-003 PARKER (N674-70)
16	7 10528	1	Gasket OR 008 DOWTY
17 AD	710918	2	Gasket OR-2-005 PARKER (N674-70)
18	710572	1	Gasket OR 2-120 PARKER (N674-70)
19	710385	2	Gasket OR 2-006 PARKER (N674-70)
20	713394	1	Gasket OR 2-106 PARKER (N674-70)
21	710376	2	Gasket OR 2-009 PARKER (N674-70)
22 AB	716060	5	Gasket OR 2-010 PARKER (N674-70)
23	713390	2	Gasket OR 2-007 PARKER (N674-70)
26	710931	1	Gasket OR-5-615 PARKER (N674-70)
27	710914	1	Gasket OR-2-116 PARKER (N552-90)
28	710350	1	Gasket OR 2-109 PARKER (N674-70)
29	713398	1	Gasket OR-2-340 PARKER (N674-70)
30	713192	5	Cage
<b>KIT B</b>	<b>74000027</b>	<b>1</b>	<b>Tie rod container kit</b>
<b>KIT Q</b>	<b>74000037</b>	<b>1</b>	<b>Oil-dynamic kit</b>
01	711827	1	Gasket TS 12 - 19 - 5.7 / L
02	710390	1	Gasket BALSELE B 0750471
03	711722	1	Gasket BALSELE B 094063 (B-NEI)
04	7 13389	1	Gasket BALSELE B 157118(B-NEI)

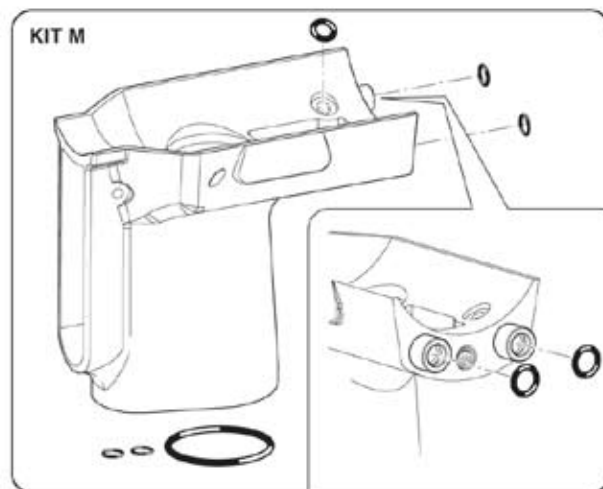
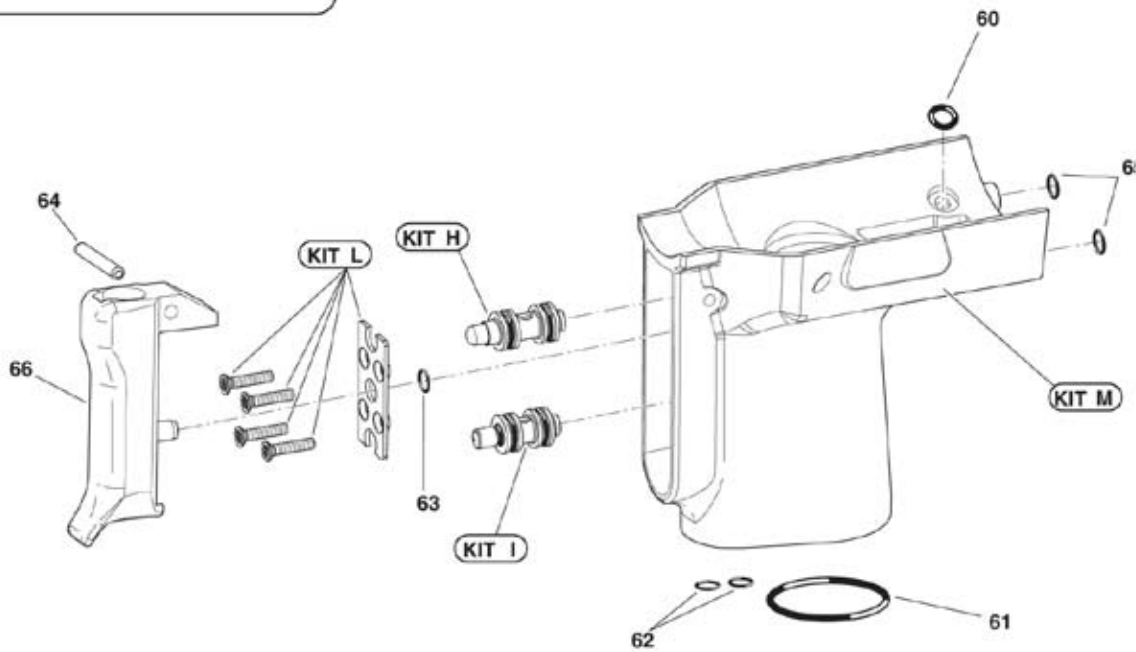
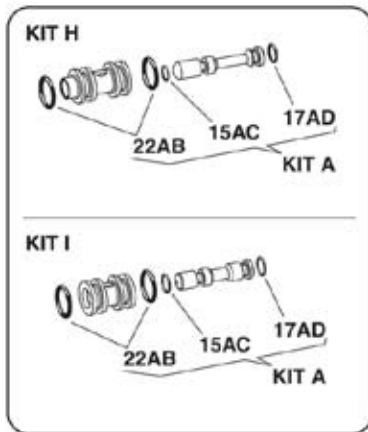
*KIT indicates that the part is sold in kits consisting of different parts in different quantities.*



NO.	CODE	QTY.	DESCRIPTION
26	711722	1	Gasket BALSELE B 094063 (B-NEI)
27	713402	1	Seeger ring JV-25
28	71345258	1	Jacket
29	71345261	1	Flange
30	71C00295	1	Ring PARBAK 8-028 N300-90 PARKER
31	71C00296	1	Gasket OR 5-670 PARKER (N674-70)
32	710925	1	Gasket OR 027 DOWTY (N674-70)
33	71345264	1	Oil-dynamic piston
34	713389	1	Gasket BALSELE B 157118(B-NEI)
35	711062	1	Gasket OR-2-126 PARKER (N674-70)
36	71345260	1	Ring nut
37	710244	1	Gasket OR-2-130 PARKER (N674-70)
38	713275	1	Gasket OR-2-122 PARKER (N674-70)
39	713348	1	Motor AM-0001
40	72A00022	1	Valve unit for motor control
41	71345263	1	Nut M 16 x 1
42	71345265	1	Reduction
43	713333	1	Spring for tie-rod
44	71345259	1	Driving shaft
45	71345271	1	Tie-rod ring nut
46	71345266	1	Canotto Tube Canne Röhrrchen
47	713170	6	Ring nut
48	716198	1	Screw TCEI M4x12 UNI 5931
49	72A00009	1	Fender motor Protection
50	710555	1	Washer ERM 400-004-4490
51	713405	1	Button head screw M6x10 UNI-ISO 7380
52	72A00043	1	Push-button Bouton
53	713308	2	Cap
54	713406	2	Screw TSEI M4X25 UNI 5933
55	72A00007	1	Air connector
56	713390	2	Gasket OR 2-007 PARKER (N674-70)
57	7 16150	2	Screw TSEI M4x12 UNI 5933
58	7 10258	1	Gasket OR 5-612 PARKER (N674-70 )
59	7 10921	1	Gasket OR 2-115 PARKER (N674-70)

NO.	CODE	QTY.	DESCRIPTION
KIT C	74000024	1	Oleodynamic cylinder kit
KIT D	74000025	1	Hook kit
KIT E	74000021	1	Silencer kit
KIT F	74000029	1	Rod kit

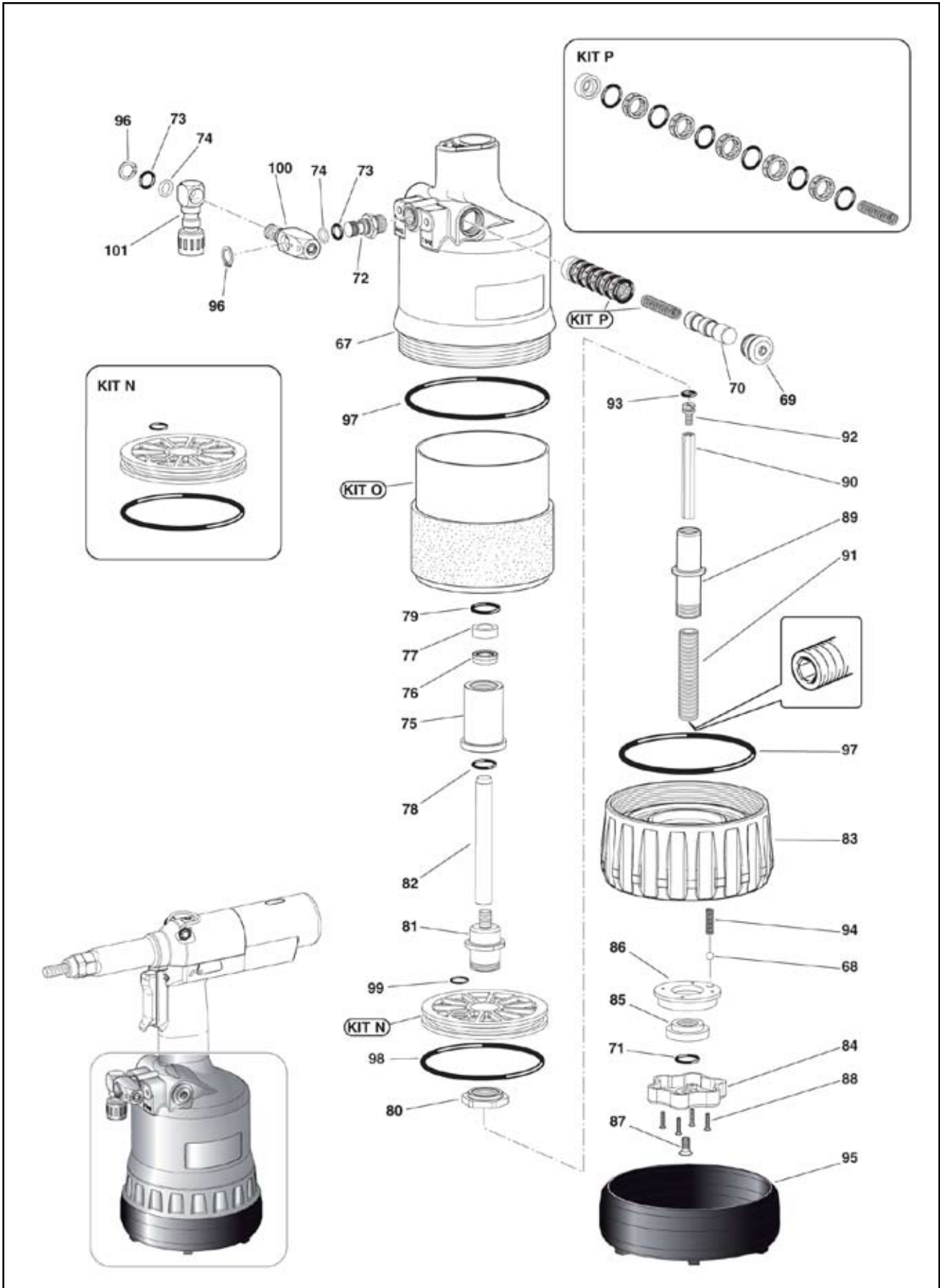
*KIT indicates that the part is sold in kits consisting of different parts in different quantities.*



NO.	CODE	QTY.	DESCRIPTION
60	710528	1	Gasket OR 008 DOWTY
61	710572	1	Gasket OR 2-120 PARKER (N674-70)
62	710385	2	Gasket OR 2-006 PARKER (N674-70)
63	713394	1	Gasket OR 2-106 PARKER (N674-70)
64	713401	1	Roller NRB ø3x19.8
65	710376	2	Gasket OR 2-009 PARKER (N674-70)
66	74000020	1	Push-button unit

NO.	CODE	QTY.	DESCRIPTION
KIT H	74000033	1	Upper piston kit
KIT I	74000034	1	Lower piston kit
KIT L	74000035	1	Retaining plate kit
KIT M	74000036	1	Handgrip kit

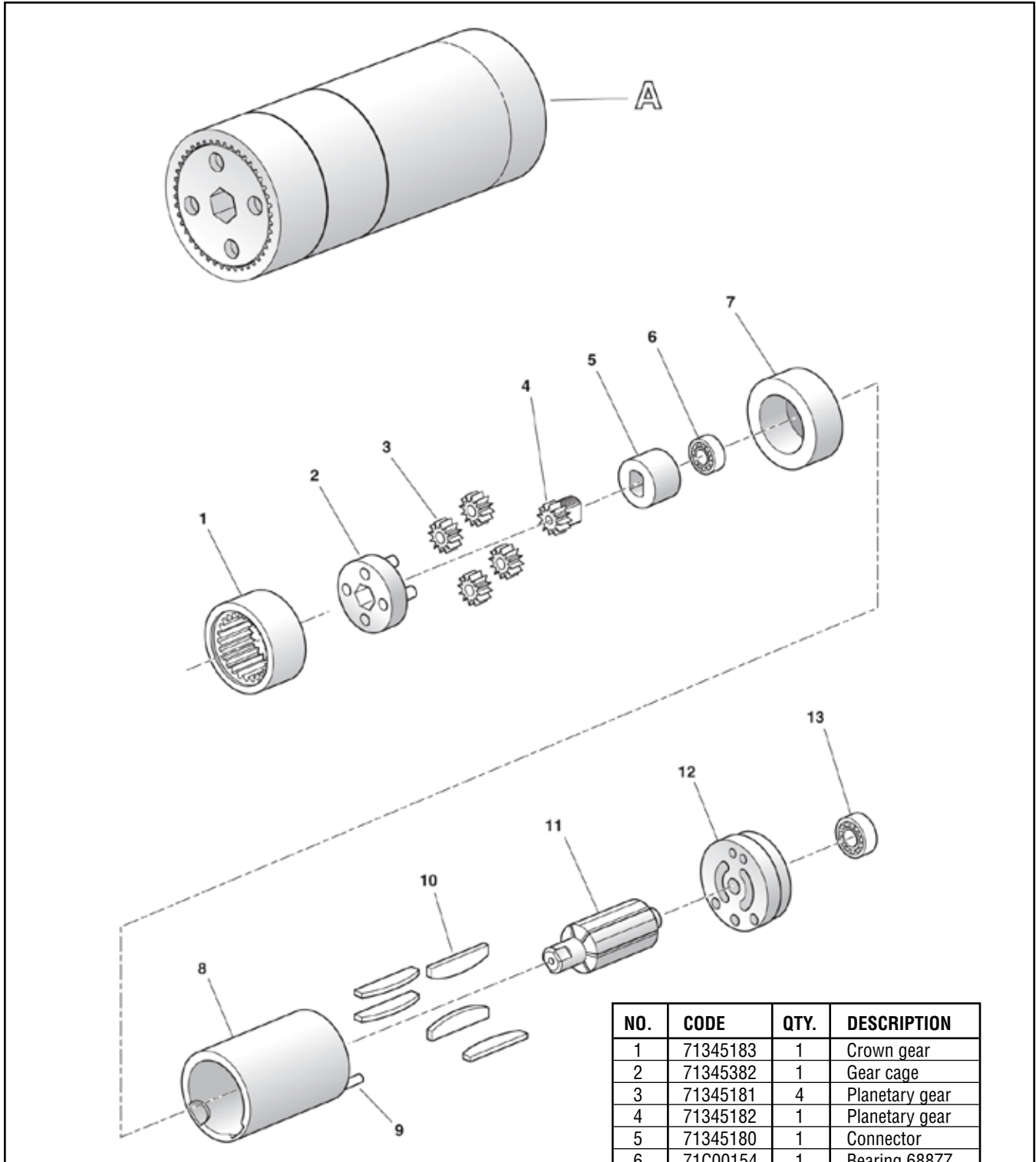
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NO.	CODE	QTY.	DESCRIPTION
67	72C00003	1	Body
68	713403	1	Ball ø 5.5
69	71345272	1	Valve cap
70	71345273	1	Coil
71	713400	1	Gasket OR-5-616 PARKER (N674-70)
72	71345299	1	Air connector
73	71C00355	2	Gasket OR 1.78x8.73 (N674-70)
74	71C00356	2	Gasket OR 1.78x7.66 (N674-70)
75	713304	1	Guide stem connector
76	711827	1	Gasket TS 12 - 19 - 5.7 / L
77	710390	1	Gasket BALSELE B 075047
78	710931	1	Gasket OR-5-615 PARKER (N674-70)
79	710914	1	Gasket OR-2-116 PARKER (N552-90)
80	713319	1	Nut M22 X 1.25
81	713320	1	Connector
82	713315	1	Stem
83	713197	1	Cover
84	713194	1	Knob
85	713316	1	Ring nut
86	713191	1	Disc
87	712575	1	Screw TSEI M5X12 UNI 5933
88	713404	4	Tapping screw TSP ø2.5x12 for plastic
89	713317	1	Flanged connector
90	713318	1	Driving shaft
91	713321	1	Double-thread screw
92	713322	1	Screw M5
93	716060	1	Gasket OR 2-010 PARKER (N674-70)
94	713199	1	Spring
95	713196	1	Protection bottom
96	713434	2	Seeger ring ø 11 UNI 7435
97	71C00297	2	Gasket OR 6-700 PARKER (N674-70)
98	713398	1	Gasket OR-2-340 PARKER (N674-70)
99	710350	1	Gasket OR 2-109 PARKER (N674-70)
100	72A00020	1	Overpressure valve unit
101	72A00029	1	Air connector unit

NO.	CODE	QTY.	DESCRIPTION
KIT N	74000030	1	Pneumatic piston kit
KIT O	74000031	1	Pneumatic jacket kit
KIT P	74000023	1	Coil kit

*KIT indicates that the part is sold in kits consisting of different parts in different quantities.*



NO.	CODE	QTY.	DESCRIPTION
1	71345183	1	Crown gear
2	71345382	1	Gear cage
3	71345181	4	Planetary gear
4	71345182	1	Planetary gear
5	71345180	1	Connector
6	71C00154	1	Bearing 688ZZ
7	71345179	1	Front cap
8	71345176	1	Outside body
9	7 1345171	1	Roll pin
10	7 1345177	5	Tongue
11	7 1345173	1	Rotor
12	7 1345172	1	Back cap
13	7 10943	1	Bearing 624ZZ
A	7 13348	1	Complete motor