

## **FROMM**

OPERATION MANUAL / SPARE PARTS LIST

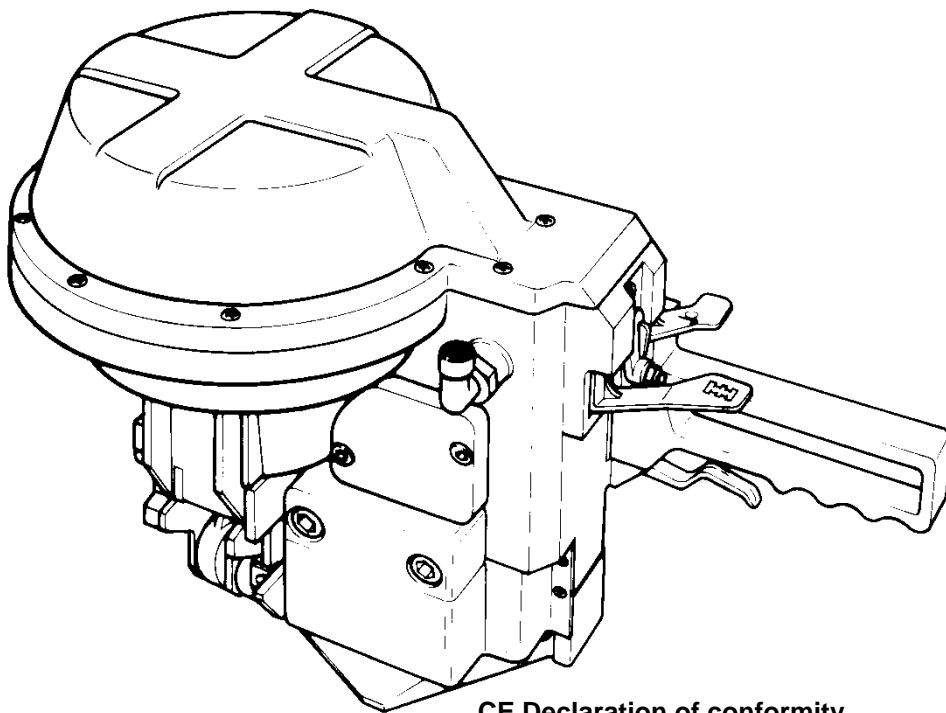
**PNEUMATIC COMBINATION**

**PUSHER TYPE TOOL**

**SEMI - AUTOMATIC**

**MODEL A483.0001**

13.4760.01



### **CE Declaration of conformity**

We declare that the machine A483  
is in conformity with the following standard or  
standardised documents:  
98/37/EEC

FROMM Holding AG  
Hinterbergstrasse 26  
CH - 6330 Cham  
19.09 2003

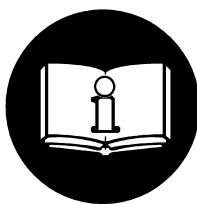
R.Fromm  
Director



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# 1 SAFETY INSTRUCTIONS

Read these instructions carefully. Failure to follow these instructions can result in severe personal injury.



## Eye injury hazard

Failure to wear safety glasses with side shields can result in severe eye injury or blindness. Always wear safety glasses with side shields which conform to ANSI Standard Z87.1.



## Operation

Tool must not be used by persons not properly trained in their use. Before tensioning strap, read and understand the tool operating instructions. Failure to follow the operating instructions or improper load positioning could result in strap breakage.

Become familiar with your tool and keep fingers away from areas that can pinch or cut.

## Joints

You are fully responsible to review the joints made by your tool. Become familiar with the seal control and seal adjustment described in this operation manual. Misformed joints may not secure the load and could cause serious injury. Never handle or ship any load with improperly formed joints.

## Dispensing strap

Only dispense strap from a dispenser specifically designed for strap.

Tuck strap end back into dispenser when not in use.

## Protective gloves

When handling strap, always wear protective gloves.



## Strap warnings

Never use strap as a means of pulling or lifting loads. Failure to follow these warnings can result in severe personal injury.

## Strap breakage hazard

Improper operation of the tool, excessive tensioning, using strap not recommended for this tool or sharp corners on the load can result in a sudden loss of strap tension or in strap breakage during tensioning, which could result in the following:

- A sudden loss of balance causing you to fall.
- Both tool and strap flying violently towards your face.

Note as follows:

- If the load corners are sharp, use edge protectors.
- Place the strap correctly around a properly positioned load.
- Positioning yourself in-line with the strap, during tensioning and sealing, can result in severe personal injury from flying strap or tool. When tensioning or sealing, position yourself to one side of the strap and keep all bystanders away.
- Use the correct strap quality, strap width, strap gauge and strap tensile strength recommended in this manual for your tool. Using strap not recommended for this tool can result in strap breakage during tensioning.

## Cutting tensioned strap

When cutting strapping, use the proper strapping cutter and keep other personnel and yourself at a safe distance from the strap. Always stand to side of the strap, away from the direction the loosened strap end will fly. Use only cutters designed for strap and never hammers, pliers, hacksaws, axes, etc.

## Fall hazard

Keep your working area tidy. Untidiness of your working area may cause a risk of injury. Maintaining improper footing and/or balance when operating the tool can cause you to fall. Before tensioning and especially in elevated areas, always establish good balance. Both feet should be securely placed on a flat, solid surface, especially when working in elevated areas. Do not use the tool when you are in an awkward position.

Pay attention to the rules and regulations for preventions of accident which are valid for the work place.

## Tool hazards

A well maintained tool is a safe tool!

Check tool regularly for broken or worn parts. Do not operate a tool with broken or worn parts.

Never modify any tool. Modification can result in severe bodily injury.

## 2 WARRANTY CONDITIONS AND LIABILITY

FROMM Holding AG warrants all its strapping tools and machine heads during a period of 24 months from the date of installation at the end-user's sight by the distributor, however, not later than 30 months from the date of shipment to the distributor of FROMM Holding AG.

The warranty includes all deficiencies clearly resulting from poor manufacturing or faulty materials. Damage claims as a result of production shutdowns and claims for damage to persons and to property resulting from warranty deficiencies cannot be asserted by the customer.

The warranty excludes:

- wearing parts,
- deficiencies resulting from improper installing, incorrect handling and maintaining the tool,
- deficiencies resulting from using the tool without or with defective security- and safety devices,
- disregard of directions in the operation manual,
- arbitrary modifications of the tool,
- deficient control of wearing parts,
- deficient repair works of the tool.
- Use of consumable products not recommended by FROMM Holding AG

We reserve the right to modify the product at any time in order to improve its quality.

## 3 APPROPRIATE USE

The tool model A483 has been designed to strap packages with steel strapping exclusively.

The warranty / liability excludes:

- non appropriate use of the tool,
- disregard of directions in the operation manual,
- disregard of control- and maintenance instructions.

## 4 CHART OF TYPES

### 4.1 A483.0001 Semi-automatic

| Item-No. | Model                     | Strap width    | Strap thickness          | Strap - quality | Max. tension |      | Speed |        |
|----------|---------------------------|----------------|--------------------------|-----------------|--------------|------|-------|--------|
|          |                           |                |                          |                 | N            | lbs. | mm/s  | inch/s |
| 13.4710  | A483/25/0.80-0.90/ULT/7.0 | 25 mm / 1"     | 0.8-0.9 mm / .031"-.035" | ULT             | 7000         | 1570 | 200   | 8.0    |
| 13.4730  | A483/25/0.80-1.00/UNI/7.0 | 25 mm / 1"     | 0.8-1.0 mm / .031"-.040" | UNI             | 7000         | 1570 | 200   | 8.0    |
| 13.4750  | A483/32/0.80-0.90/ULT/7.0 | 32 mm / 1 1/4" | 0.8-0.9 mm / .031"-.035" | ULT             | 7000         | 1570 | 200   | 8.0    |
| 13.4760  | A483/32/0.80-0.90/ULT/9.0 | 32 mm / 1 1/4" | 0.8-0.9 mm / .031"-.035" | ULT             | 9000         | 2020 | 160   | 6.5    |
| 13.4770  | A483/32/0.80-1.00/UNI/7.0 | 32 mm / 1 1/4" | 0.8-1.0 mm / .031"-.040" | UNI             | 7000         | 1570 | 200   | 8.0    |
| 13.4780  | A483/32/0.80-1.00/UNI/9.0 | 32 mm / 1 1/4" | 0.8-1.0 mm / .031"-.040" | UNI             | 9000         | 2020 | 160   | 6.5    |

### 4.2 A483.0002 Automatic

| Item-No. | Model                       | Strap width    | Strap thickness          | Strap - quality | Max. tension |      | Speed |        |
|----------|-----------------------------|----------------|--------------------------|-----------------|--------------|------|-------|--------|
|          |                             |                |                          |                 | N            | lbs. | mm/s  | inch/s |
| 13.4711  | A483/25/0.80-0.90/ULT/7.0/A | 25 mm / 1"     | 0.8-0.9 mm / .031"-.035" | ULT             | 7000         | 1570 | 200   | 8.0    |
| 13.4731  | A483/25/0.80-1.00/UNI/7.0/A | 25 mm / 1"     | 0.8-1.0 mm / .031"-.040" | UNI             | 7000         | 1570 | 200   | 8.0    |
| 13.4751  | A483/32/0.80-0.90/ULT/7.0/A | 32 mm / 1 1/4" | 0.8-0.9 mm / .031"-.035" | ULT             | 7000         | 1570 | 200   | 8.0    |
| 13.4761  | A483/32/0.80-0.90/ULT/9.0/A | 32 mm / 1 1/4" | 0.8-0.9 mm / .031"-.035" | ULT             | 9000         | 2020 | 160   | 6.5    |
| 13.4771  | A483/32/0.80-1.00/UNI/7.0/A | 32 mm / 1 1/4" | 0.8-1.0 mm / .031"-.040" | UNI             | 7000         | 1570 | 200   | 8.0    |
| 13.4781  | A483/32/0.80-1.00/UNI/9.0/A | 32 mm / 1 1/4" | 0.8-1.0 mm / .031"-.040" | UNI             | 9000         | 2020 | 160   | 6.5    |

UNI = Uniflex (Regular Duty max. 850 N/mm<sup>2</sup> / 123'000 psi)

ULT = Ultraflex (High Tensile max. 1100 N/mm<sup>2</sup> / 160'000 psi)

## 5 TECHNICAL DATA

### 5.1 Tool size (without suspension bracket)

|         | Tool               | Package        |
|---------|--------------------|----------------|
| Length: | 412 mm / 16.2"     | 435 mm / 17.1" |
| Width:  | 238 mm / 9.4"      | 265 mm / 10.4" |
| Height: | 278 mm / 11"       | 355 mm / 13.9" |
| Weight: | 18.0 kg / 39.7 lbs | 4 kg / 8.8 lbs |

### 5.2 Compressed air

|                       |   |
|-----------------------|---|
| Working pressure:     | 5.5 bar / 79.75 psi (for tools with 32x0.8 Ultraflex Steel strap) |
| Maximum air pressure: | 6.0 bar / 87 psi  |

### 5.3 Air consumption

|             |                                 |
|-------------|---------------------------------|
| Tensioning: | ~ 22 NI/sec. / 0.77 cu.ft./sec. |
| Sealing:    | ~ 10 NI/0.353 cu.ft./cycle      |

### 5.4 Steel strap

|            |   |
|------------|---|
| Width:     | 25 - 32 mm / 1 - 1 1/4" (see chart of types)  |
| Thickness: | 0.8-1.0 mm / .031 -.039" (see chart of types)   |
| Quality:   | The A483 model allows the use of all current steel straps ranging from 600 - 1100 N/mm <sup>2</sup> / 87 000 - 160 000 psi in tensile (see chart of types). Strap with less than 600 N/mm <sup>2</sup> / 87 000 psi in tensile is not suitable for the A483 tool. |

### 5.5 Seals

| Strap width    | Seal   |
|----------------|--|
| 25 mm / 1"     | 25x0.9x45 mm / 1"x.035"x1 3/4", push-type with overlapping flanges |
| 32 mm / 1 1/4" | 32x0.9x45 mm / 1"x.035"x1 3/4", push-type with overlapping flanges |

### 5.6 Joint

Joint strength: approx. 75% of the tensile strength of the steel strap  
 A double-notch (two pairs of cut notches) is made per cycle.

### 5.7 Sound information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 83 dB (A).  
 This value was determined according to DIN 45 635 T3 (11.85).

### 5.8 Vibration information

The weighted effective value of the acceleration typically amounts to less than 2,5m/s<sup>2</sup>.  
 This value was determined according to DIN EN 28 662 T1 (01.93).

## 6 INSTALLATION

### Compressed air connection

The compressed air is connected to the hose angle N6.5624 using a coupling.

An air-unit consisting of a separator for water and dirt, a pressure regulator with a manometer and a lubricator should be installed within a range of 15 ft/5 meters.

The compressed air must be free from dirt, rust and moisture.

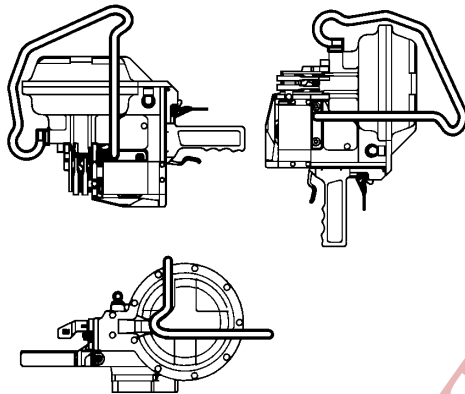
### Suspension of tool

It is possible to suspend the tool on a spring loaded balancer using various suspension brackets.

The following four types of suspension brackets can basically be used for all three working positions; their difference is in the working comfort. If the tool is frequently changed to a second or a third working position the appropriate suspension bracket should be mounted. Please refer to the sketches.

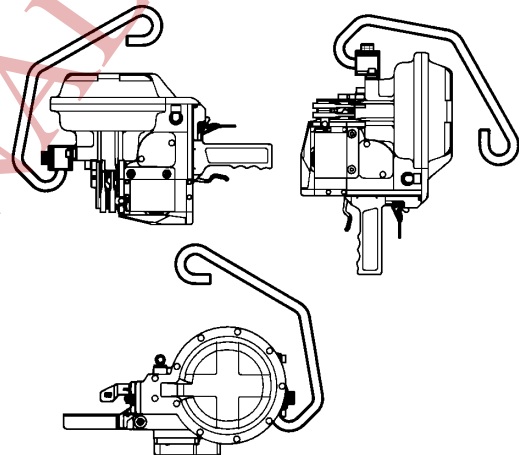
#### A48.3401

Not suitable for frequent swivelling.



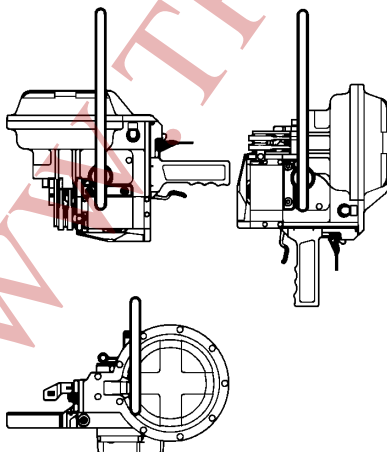
#### A48.3406

Suitable for frequent swivelling from „normal“ to „horizontal“.



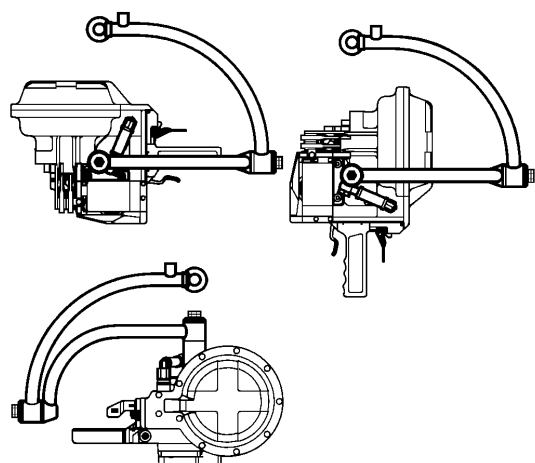
#### A48.3413

Suitable for frequent swivelling from „normal“ to „vertical“.

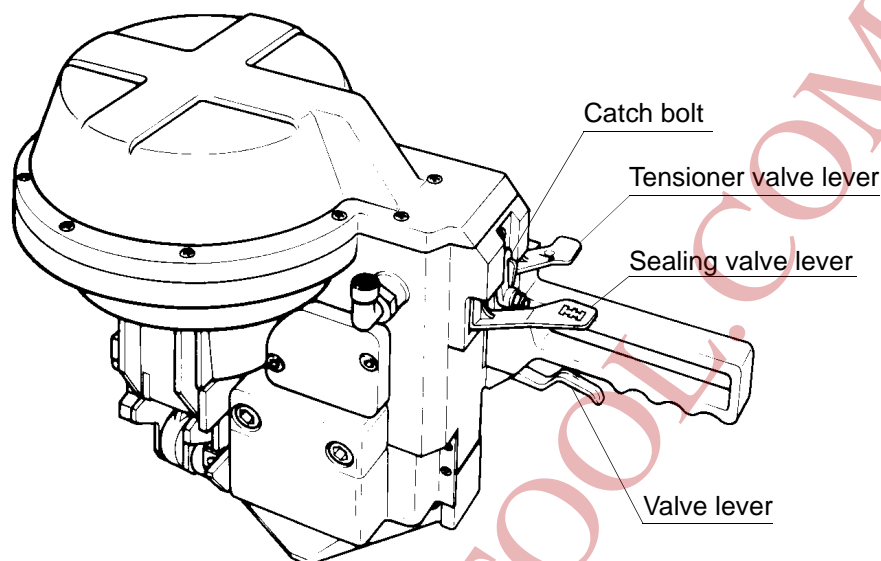


#### A48.3419

Suitable for frequent swivelling from „normal“ to „vertical“ and to „horizontal“.  
Incl. air supply



## 7 OPERATING CONTROLS



## 8 OPERATION

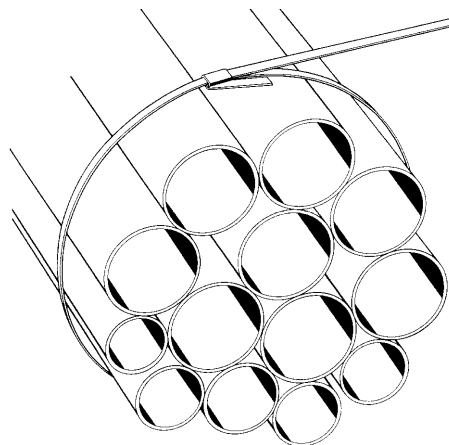


When handling strap, always wear protective gloves and safety glasses with side shields which conform to ANSI Standard Z87.1.



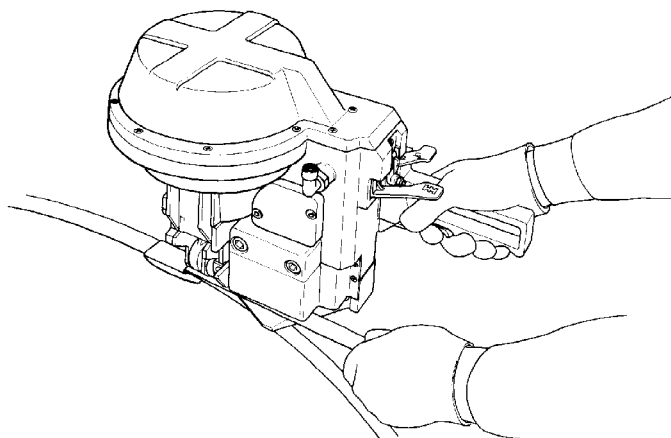
### 8.1 Feeding the strapping

The strap is fed through the seal, around the package to be strapped and again through the seal. The strap end is then bent. The operator then tensions the loose hoop manually making sure that the bent strap end is adjacent to the object to be strapped.



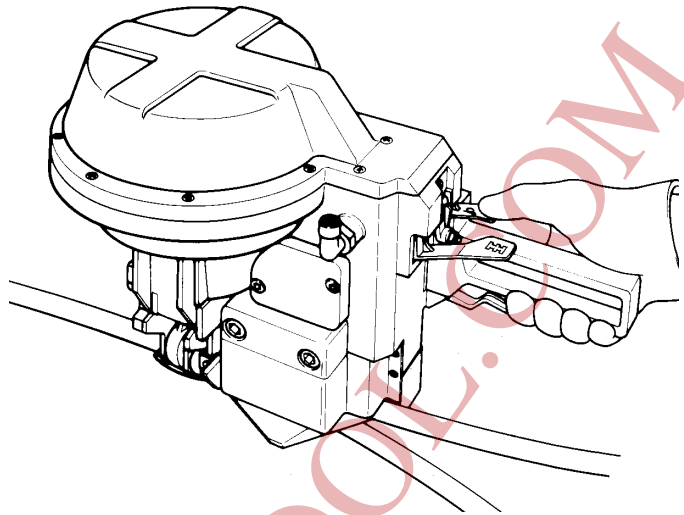
### 8.2 Introducing the tool

The upper strap is held with the left hand. With the index finger of the right hand the valve lever is activated (pulled) and the tool is introduced from right to left and from back to front resp. The valve lever is then released.



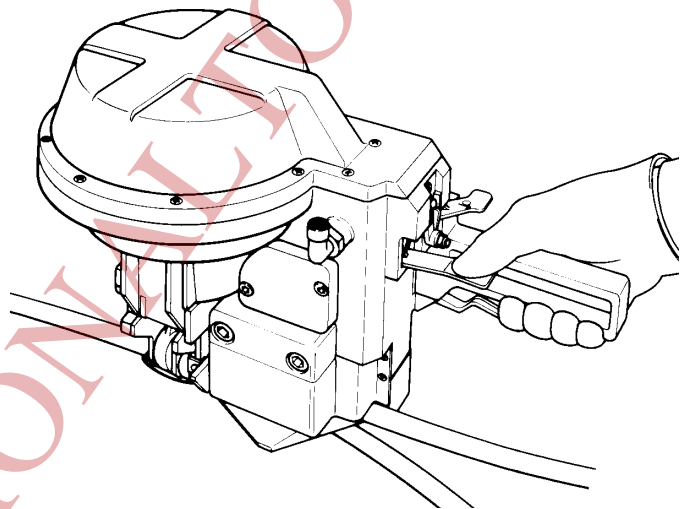
### 8.3 Tensioning the strapping

With the thumb of the right hand the tensioner valve lever is pressed so that it catches. The strap is tensioned until the air-motor stalls.  
If for any particular reason the tensioning cycle has to be interrupted the catch bolt has to be pressed to the left.



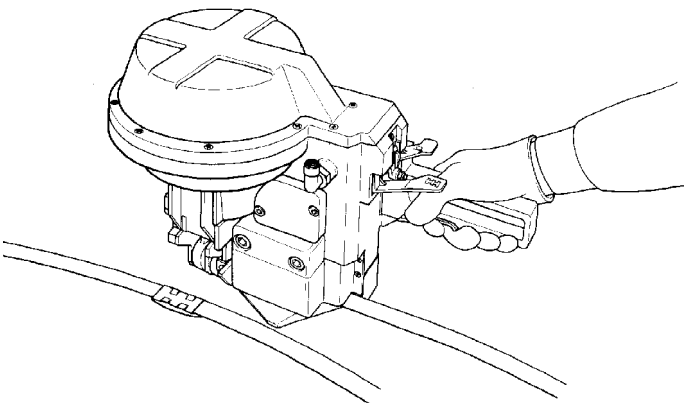
### 8.4 Sealing the strapping

With the thumb of the right hand the sealing valve lever is pressed so that it catches. The tensioning cycle is then interrupted automatically, the sealing process is executed and the strap is cut off.



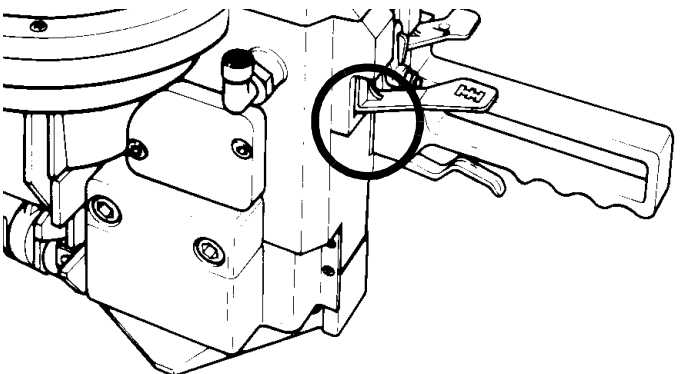
### 8.5 Releasing the tool

When the sealing process has been completed the tool can be released from the tensioned strap without any further action.  
By lifting the valve lever again, the strap end can be removed from the tool.



### 8.6 Tension regulation

Turning the set screw under the sealing valve lever in a clockwise direction results in a higher tension.  
The range of adjustment is within approx. 25 %.





## 9 MAINTENANCE

Depending on the working conditions and the use of the tool the following maintenance has to be made periodically:

### 9.1 Air-unit

- Checking the air-pressure daily (never exceed 87 psi / 6.0 bar).
- Checking the oil-level daily.
- Draining the separator daily (unless automatic).
- Cleaning the filter following the instructions of the manufacturer of the air-unit

### Oil for the air unit

HL or CL ISO-VG 10

### 9.2 Cleaning

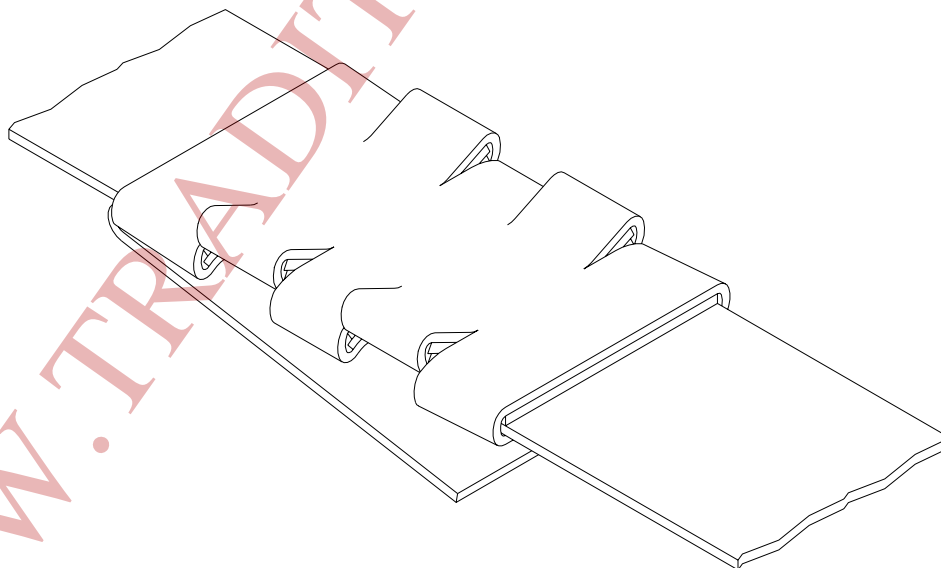
If impact of dirt and dust is considerable and if painted straps are used the feed wheel must be cleaned regularly. Normally it is sufficient to blow it out by the use of an air gun.

### 9.3 Lubrication

The gears are filled with MOLYKOTE BR2 PLUS. Use the same type of grease after repairs. When being exchanged, all valve parts and other movable parts have to be lubricated with grease of type ESSO BEACON 2 or with any equivalent product. The diaphragm must always be rubbed in with TALCUM before being installed.

## 10 JOINT CONTROL

A regular control of the joint is necessary. The joint can be checked visually and the person controlling can easily judge the quality of the joint. Following illustration shows a proper joint:



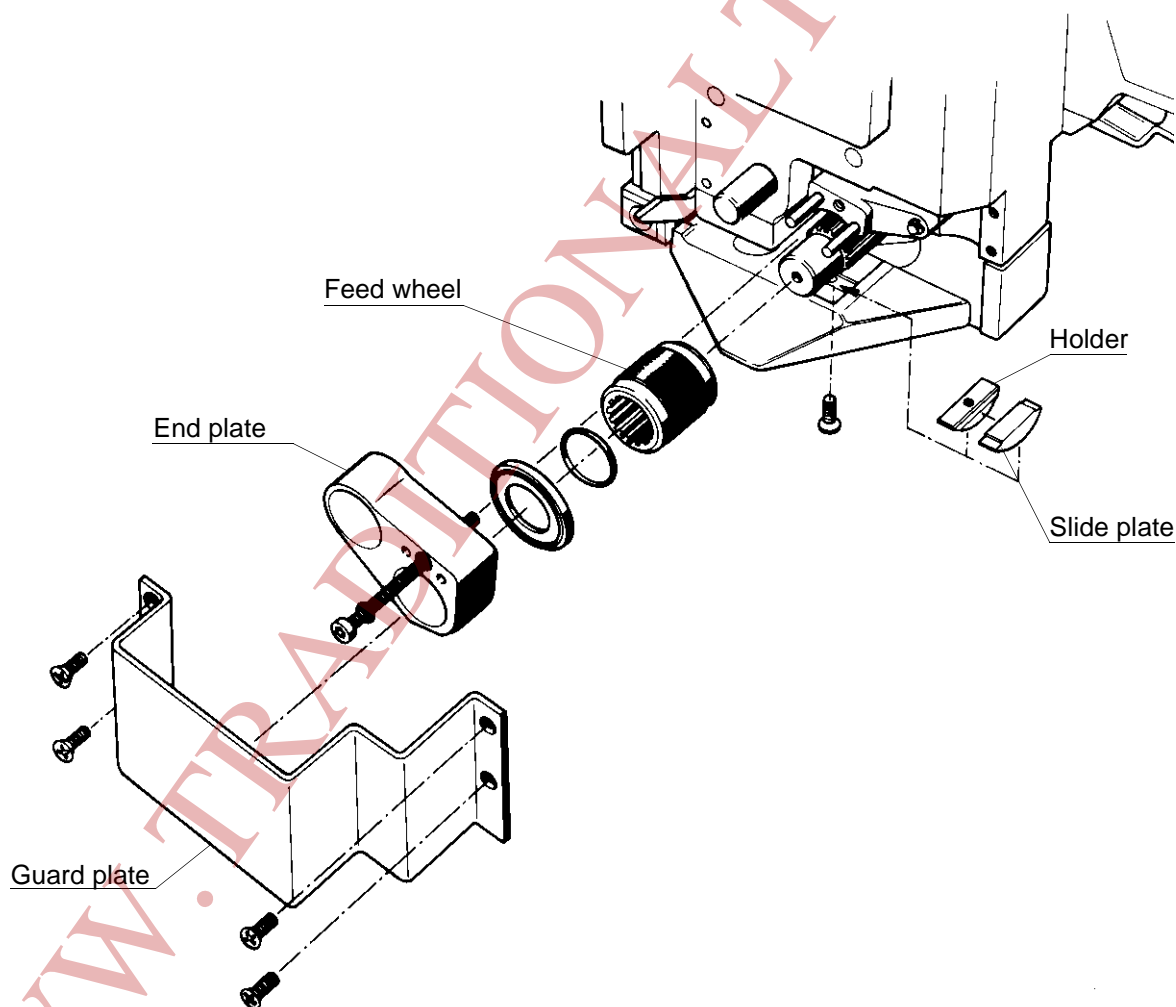
Sharp edged or misformed joints which do not appear as shown have to be taken away from the load immediately. The tensile strength of these joints is insufficient and they could cause serious injury. Having faulty joints proceed as follows:

- Checking the sealing cycle for improper use.(see 8. OPERATION)
- Having faulty joints in spite of proper use inspect the tool for worn or damaged parts. In case of wearing out or damaging replace tool parts as needed.

## 11 EXCHANGE OF WEARING PARTS

### 11.1 Exchange of feed wheel and slide plate

- Unscrew guard plate (4 recessed countersunk head screws N1.1808).
- Unscrew end plate (1 socket head cap screw N1.1169).
- Remove front distance ring and O-ring.
- Exchange feed wheel (please check correct position; inner toothing has to face towards end plate).
- To exchange the slide plate the holder has to be removed in addition (1 recessed countersunk head screw N1.1807).
- Reassemble in opposite order!



## 11.2 Exchange of cutting jaws, notching knives and cutter

- Unscrew cylinder cover A48.3111 (11 recessed countersunk head screws N1.1815).
- Remove diaphragm A48.3109.
- Unscrew piston plate A48.3107 (1 socket head cap screw N1.2114), push piston plate against the pressure springs at the same time).
- Remove disc and pressure springs.
- Unscrew cover plate A48.3105 (2 socket head cap screws N1.1108).
- Unscrew both cutting jaw guides A48.3106 (1 each recessed countersunk screw N1.1813).
- Remove cutting jaw assembly downwards in a diagonal position.
- Exchange cutter.
- In order to be able to exchange the notching knives and the cutting jaws one side plate of the cutting jaw assembly has to be unscrewed too (1 recessed countersunk head screw N1.2108 as well as 2 socket head cap screws A48.2132).
- Reassemble in opposite order!
- 

**When reassembling make sure that:**

**The screws N1.1108 on the cover plate are tightened with 83 Nm.**

**The piston rod must be assembled meeting the groove of the piston plate.**

**All screws screwed in steel are secured with Loctite 222.**

## 11.3 Exchange of tension body / strap stop

- Slightly loosen cover plate A48.3105 (2 socket head cap screws N1.1108).
- Unscrew tension body (2 screws N1.1174) and pull it out towards the bottom.
- Remove and exchange strap stop by pulling out the 4 mm cylinder bolt from the tension body.
- Exchange tension body. Release 2 cylinder bolts, pressure spring, holder and slide plate.
- Reassemble in opposite order!

**When reassembling make sure that you:**

**The screws N1.1174 on the tension body are tightened with 90 Nm.**

**The screws N1.1108 on the cover plate are tightened with 83 Nm.**

**All screws screwed in steel are secured with Loctite 222.**

**12 SPARE PARTS LIST 13.4760.01**

| 13.4760.01 | A483/32/0.80-0.90/ULT/9.0 |      | A483.0001.01          |            | 27/07/98 |
|------------|---------------------------|------|-----------------------|------------|----------|
| Item-No.   |                           | Pcs. | Description           | Dimension  | Field    |
| [A38.0132] |                           | 1    | MOTOR CELL            | EXC. 3,0   | A19      |
| A38.1148   |                           | 1    | SHAFT                 |            | C27      |
| A38.1207   | ->[A48.0205]              | 1    | TENSIONER VALVE SHELL |            | A17      |
| A38.1209   | ->[A48.0205]              | 1    | VALVE BOLT            |            | B17      |
| A38.1215   | ->[A48.0208]              | 1    | GUIDE RING            |            | C21      |
| A38.1216   | ->[A48.0208]              | 5    | SUSTAINING RING       |            | C21+     |
| A38.1217   | ->[A48.0208]              | 1    | GUIDE RING            |            | D21      |
| A38.1218   | ->[A48.0208]              | 1    | VALVE PISTON          |            | C22      |
| A38.1219   | ->[A48.0208]              | 1    | BRIDGE                |            | B21      |
| A38.1220   | ->[A48.0208]              | 1    | VALVE LEVER           |            | C22      |
| A38.1351   | * ->[A38.0132]            | 8    | VANE                  |            | B20      |
| A38.1352   | ->[A38.0132]              | 1    | END PLATE             |            | A19      |
| A38.1374   | ->[A38.0132]              | 16   | FELT                  |            | B20+     |
| A38.1376   | ->[A38.0132]              | 1    | ROTOR                 |            | B20      |
| A38.1377   | ->[A38.0132]              | 1    | COUPLING              |            | A19      |
| A38.1378   | ->[A38.0132]              | 1    | DOWEL                 |            | A19      |
| A38.2301   | ->[A38.0132]              | 1    | END PLATE             |            | B19      |
| A38.2302   | ->[A38.0132]              | 1    | JACKET                |            | A19      |
| A38.2308   | ->[A48.0207]              | 1    | TENSION SHAFT         |            | B29      |
| A38.2310   | *                         | 1    | TENSIONING WHEEL      |            | C27      |
| A38.2311   |                           | 1    | SPACER RING           |            | D26      |
| A38.2317   |                           | 1    | HOLDER                |            | C10      |
| A38.2318   |                           | 1    | SPACER RING           |            | C27      |
| A38.2319   | ->[A48.0208]              | 1    | PINION                |            | B23      |
| A38.2320   | ->[A48.0208]              | 1    | INTERMEDIATE WHEEL    | 1-2        | B22      |
| A41.2120   | ->[A48.0202]              | 1    | ROD BAR BOLT          |            | D10      |
| A46.2117   | ->[A48.0202]              | 2    | JAW PIN               |            | C2       |
| A46.2118   | ->[A48.0202]              | 4    | FRONT TOGGLE LINK     |            | A3       |
| A46.2132   | ->[A48.0208]              | 1    | LEVER SHAFT           |            | C23      |
| A46.2145   | ->[A48.0202]              | 4    | LEVER BOLT            |            | A3+      |
| [A48.0202] |                           | 1    | JAW ASSEMBLY          | 32/0,8-0,9 | A4       |
| [A48.0205] |                           | 1    | CYLINDER BOTTOM       |            | A13      |
| [A48.0207] |                           | 1    | INTERMEDIATE GEAR     |            | A28      |
| [A48.0208] |                           | 1    | GEAR                  | 1 60.8     | A24      |
| A48.1237   | ->[A48.0205]              | 1    | SIEVE                 |            | B11      |
| A48.2113   | ->[A48.0202]              | 2    | SPACER BUSH           |            | B4       |
| A48.2120   | *                         | 1    | CUTTER JACK           |            | D6       |
| A48.2132   | ->[A48.0202]              | 4    | SCREW                 |            | A2+      |
| A48.3102   |                           | 1    | CONNECTION PLATE      |            | C6       |
| A48.3104   | *                         | 1    | CUTTER                | 32 MM      | C5       |
| A48.3105   |                           | 1    | COVER PLATE           |            | A1       |
| A48.3106   |                           | 2    | TONG GUIDE            |            | D5+      |
| A48.3107   |                           | 1    | PISTON PLATE          |            | B8       |
| A48.3108   |                           | 1    | DISK                  |            | B8       |
| A48.3109   |                           | 1    | DIAPHRAGM             |            | A8       |
| A48.3110   |                           | 1    | SEAL PLATE            |            | B11      |
| A48.3111   |                           | 1    | CYLINDER COVER        |            | A8       |
| A48.3113   | * ->[A48.0202]            | 4    | CUTTING JAW           | 32X0.8-0.9 | B2+      |
| A48.3116   | * ->[A48.0202]            | 4    | NOTCHING KNIFE        | 32 MM      | C2+      |
| A48.3117   | ->[A48.0202]              | 1    | PISTON ROD            |            | D9       |
| A48.3119   | ->[A48.0202]              | 1    | DISTANCE SUPPORT      |            | C3       |
| A48.3121   | ->[A48.0202]              | 1    | SIDE PLATE            |            | B5       |

[ ] = Group

\* = Wearing parts

| 13.4760.01 | A483/32/0.80-0.90/ULT/9.0 |      | A483.0001.01            |              |       | 27/07/98 |
|------------|---------------------------|------|-------------------------|--------------|-------|----------|
| Item-No.   |                           | Pcs. | Description             | Dimension    | Field |          |
| A48.3123   | ->[A48.0202]              | 1    | SIDE PLATE              |              | B1    |          |
| [A48.3125] | ->[A48.0205]              | 1    | CYLINDER BOTTOM         |              | B10   |          |
| A48.3127   | ->[A48.0205]              | 1    | VALVE STEM              |              | B15   |          |
| A48.3128   | ->[A48.0205]              | 1    | EXHAUST RING            |              | B15   |          |
| A48.3129   | ->[A48.0205]              | 1    | SUSTAINING RING         |              | A14   |          |
| A48.3130   | ->[A48.0205]              | 1    | CYLINDER SLEEVE         |              | B16   |          |
| A48.3131   | ->[A48.0205]              | 1    | END RING                |              | B16   |          |
| A48.3132   | ->[A48.0205]              | 1    | LEVER BODY              |              | C18   |          |
| A48.3133   | ->[A48.0205]              | 1    | LEVER SHAFT             |              | C18   |          |
| A48.3134   | ->[A48.0205]              | 1    | TENSIONER VALVE LEVER   |              | D18   |          |
| A48.3135   | ->[A48.0205]              | 1    | SEALING VALVE LEVER     |              | D17   |          |
| A48.3136   | ->[A48.0205]              | 1    | CATCH SHAFT             |              | C16   |          |
| A48.3137   | ->[A48.0205]              | 1    | CATCH LEVER             |              | C18   |          |
| A48.3138   | ->[A48.0205]              | 1    | PISTON ROD              |              | B26   |          |
| A48.3139   | ->[A48.0205]              | 1    | SEALING PLUG            |              | B26   |          |
| A48.3140   |                           | 1    | FORK                    |              | C27   |          |
| A48.3141   |                           | 1    | GIB                     |              | C9    |          |
| A48.3142   | ->[A48.0205]              | 1    | PISTON                  |              | B15   |          |
| A48.3143   | ->[A48.0205]              | 1    | VARIABLE PISTON         |              | C15   |          |
| A48.3144   | ->[A48.0205]              | 1    | VALVE FACE RING         |              | C15   |          |
| A48.3145   | ->[A48.0205]              | 1    | VALVE SUPPORT           |              | C16   |          |
| A48.3146   | ->[A48.0205]              | 1    | ADJUSTING SCREW         |              | C17   |          |
| A48.3148   | ->[A48.0205]              | 1    | COVER DISK              |              | B17   |          |
| A48.3157   |                           | 1    | JAW GUIDE               |              | B11   |          |
| A48.3158   |                           | 1    | JAW GUIDE               |              | C10   |          |
| A48.3201   |                           | 1    | PIVOT PIN               |              | C26   |          |
| A48.3202   |                           | 1    | CAM ARM                 |              | C26   |          |
| A48.3203   |                           | 1    | FORK BOLT               |              | D26   |          |
| A48.3204   | ->[A48.3227]              | 1    | END COVER               |              | C25   |          |
| A48.3205   |                           | 1    | GUARD-PLATE             |              | D9    |          |
| A48.3206   |                           | 1    | COUPLING                |              | B30   |          |
| A48.3207   |                           | 1    | SEAL PLATE              |              | C11   |          |
| A48.3208   |                           | 1    | MOTOR COVER             |              | C19   |          |
| A48.3209   | *                         | 1    | SLIDE JAW               |              | C11   |          |
| A48.3211   |                           | 1    | STRAP STOP              | 32 MM        | D10   |          |
| A48.3213   | *                         | 1    | TENSIONING BODY         | 32 MM        | D11   |          |
| A48.3214   | ->[A48.3225]              | 1    | INTERMEDIATE GEAR BODY  |              | C28   |          |
| A48.3215   | ->[A48.3226]              | 1    | INTERMEDIATE GEAR COVER |              | B30   |          |
| A48.3216   | ->[A48.0207]              | 1    | PINION                  |              | B29   |          |
| [A48.3217] | ->[A48.0208]              | 1    | GEAR BODY               |              | C23   |          |
| A48.3218   | ->[A48.3217]              | 1    | GEAR BODY               |              | C22   |          |
| [A48.3219] | ->[A48.0208]              | 1    | GEARING COVER           |              | C24   |          |
| A48.3220   | ->[A48.3219]              | 1    | GEARING COVER           |              | B24   |          |
| A48.3221   | ->[A48.0208]              | 1    | INTERMEDIATE WHEEL      | 2-3          | B22   |          |
| A48.3222   | ->[A48.0208]              | 1    | SPUR WHEEL              | 3            | C23   |          |
| A48.3223   | ->[A48.0208]              | 1    | LEVER BODY              |              | D22   |          |
| [A48.3225] | ->[A48.0207]              | 1    | INTERMEDIATE GEAR BODY  |              | D28   |          |
| [A48.3226] | ->[A48.0207]              | 1    | INTERMEDIATE GEAR COVER |              | C30   |          |
| [A48.3227] |                           | 1    | END COVER               |              | B25   |          |
| N1.1123    |                           | 2    | SCREW                   | M8 X 30      | D8    |          |
| N1.1169    |                           | 1    | SCREW                   | M5 X 60      | C25   |          |
| N1.1174    |                           | 2    | SCREW                   | M10 X 1 X 40 | D11   |          |
| N1.1180    |                           | 2    | SCREW                   | M6 X 90      | B19   |          |
| N1.1198    |                           | 2    | SCREW                   | M10 X 65     | A1    |          |

[ ] = Group

\* = Wearing parts

| 13.4760.01 | A483/32/0.80-0.90/ULT/9.0 |      | A483.0001.01                  |                  | 27/07/98 |
|------------|---------------------------|------|-------------------------------|------------------|----------|
| Item-No.   |                           | Pcs. | Description                   | Dimension        | Field    |
| N1.1807    |                           | 1    | SCREW                         | M5 X 12          | D10      |
| N1.1808    |                           | 4    | SCREW                         | M4 X 10          | D8       |
| N1.1811    |                           | 3    | SCREW                         | M6 X 40          | B21+     |
| N1.1813    |                           | 2    | SCREW                         | M5 X 16          | C6+      |
| N1.1814    | ->[A48.0205]              | 2    | SCREW                         | M5 X 25          | C18      |
| N1.1814    | ->[A48.0207]              | 4    | SCREW                         | M5 X 25          | B30+     |
| N1.1814    | ->[A48.0208]              | 2    | SCREW                         | M5 X 25          | A24      |
| N1.1815    |                           | 11   | SCREW                         | M6 X 25          | A8       |
| N1.1817    | ->[A48.0208]              | 4    | SCREW                         | M5 X 40          | B24      |
| N1.2108    | ->[A48.0202]              | 2    | SOCKET COUNTERSUNK HEAD SCREW | M6 X 16          | B1+      |
| N1.2114    |                           | 1    | SOCKET COUNTERSUNK HEAD SCREW | M10 X 40         | B8       |
| N1.2212    | ->[A48.0208]              | 3    | SOCKET COUNTERSUNK HEAD SCREW | M4 X 25          | D22      |
| N1.5301    | ->[A48.0205]              | 1    | RETAINING NUT                 | M6               | A14      |
| N1.5302    | ->[A48.0205]              | 1    | RETAINING NUT                 | M5               | C18      |
| N1.5608    | ->[A48.0205]              | 1    | SLOTTED ROUND NUT             | M8 X 1           | B28      |
| N1.6103    | ->[A48.0205]              | 1    | WASHER                        | 5.3 X 9.5 X 1    | C18      |
| N1.6114    | ->[A48.0205]              | 1    | WASHER                        | 6,4 X 12,5 X 1,6 | B15      |
| N1.6201    |                           | 2    | SPRING LOCK WASHER            | M10              | A1       |
| N1.6206    |                           | 2    | SPRING LOCK WASHER            | M8               | C8       |
| N1.6207    |                           | 1    | SPRING LOCK WASHER            | M5               | C25      |
| N1.6220    |                           | 2    | SPRING LOCK WASHER            | M6               | B19      |
| N1.6502    |                           | 2    | SAFETY WASHER                 | M10              | D10      |
| N2.1125    |                           | 4    | SECURITY RING                 | E3.2             | C27+     |
| N2.1219    | ->[A48.0205]              | 1    | SECURITY RING                 | I34              | B26      |
| N2.1701    | ->[A48.0205]              | 1    | SECURITY RING                 | 17 MM            | B28      |
| N2.2109    |                           | 2    | PARALLEL PIN                  | 8 M6 X 30        | D11      |
| N2.2125    |                           | 1    | PARALLEL PIN                  | 4 M6 X 20        | C9       |
| N2.2155    |                           | 2    | PARALLEL PIN                  | 5H6 X 70         | D26      |
| N2.2164    | ->[A48.0202]              | 1    | PARALLEL PIN                  | 6 M6 X 40        | C4       |
| N2.2172    | ->[A48.0207]              | 2    | PARALLEL PIN                  | 5M6 X 30         | B29+     |
| N2.2174    | ->[A48.0208]              | 2    | PARALLEL PIN                  | 6M6 X 60         | B23      |
| N2.2175    |                           | 2    | PARALLEL PIN                  | 6M6 X 22         | C5+      |
| N2.2175    | ->[A48.0208]              | 1    | PARALLEL PIN                  | 6M6 X 22         | B23      |
| N2.2413    | ->[A38.0132]              | 1    | DOWEL PIN                     | 4 X 20 MM        | A20      |
| N2.2445    | ->[A38.0132]              | 1    | DOWEL PIN                     | 2,5 X 6 MM       | B19      |
| N2.3208    | ->[A48.0205]              | 1    | WOODRUFF KEY                  | 2 X 2,6 X 6,76   | C17      |
| N2.4407    | ->[A48.0208]              | 4    | RIVET                         | 2 X 3            | B22      |
| N2.4902    |                           | 4    | HAMMER HEAD BOLT              | 1,85 X 4,76      | A9+      |
| N2.5160    | ->[A48.0208]              | 1    | PRESSURE SPRING               | 1 X 12 X 26      | B21      |
| N2.5161    | ->[A48.0205]              | 1    | PRESSURE SPRING               | 1 X 12 X 20      | A16      |
| N2.5176    |                           | 1    | PRESSURE SPRING               | 0.6 X 5.5 X 31   | C10      |
| N2.5201    |                           | 1    | PRESSURE SPRING               | 4.5X74.5X195     | A11      |
| N2.5202    |                           | 1    | PRESSURE SPRING               | 5X98X220         | C8       |
| N2.5203    | ->[A48.0205]              | 1    | PRESSURE SPRING               | 1X6X24           | C16      |
| N2.5609    |                           | 2    | CUP SPRING                    | 45X22.5X1.75     | B20      |
| N2.5815    | ->[A48.0205]              | 1    | TORSION SPRING                |                  | C18      |
| N3.1102    | ->[A48.3225]              | 1    | BALL BEARING                  |                  | B28      |
| N3.1109    | ->[A48.3217]              | 1    | BALL BEARING                  |                  | B22      |
| N3.1109    | ->[A48.3219]              | 1    | BALL BEARING                  |                  | B23      |
| N3.1123    | ->[A38.0132]              | 1    | BALL BEARING                  |                  | A20      |
| N3.1133    | ->[A38.0132]              | 1    | BALL BEARING                  |                  | B19      |
| N3.1144    | ->[A48.3217]              | 1    | BALL BEARING                  |                  | B22      |
| N3.1144    | ->[A48.3219]              | 1    | BALL BEARING                  |                  | B23      |
| N3.1144    | ->[A48.3226]              | 1    | BALL BEARING                  |                  | B29      |

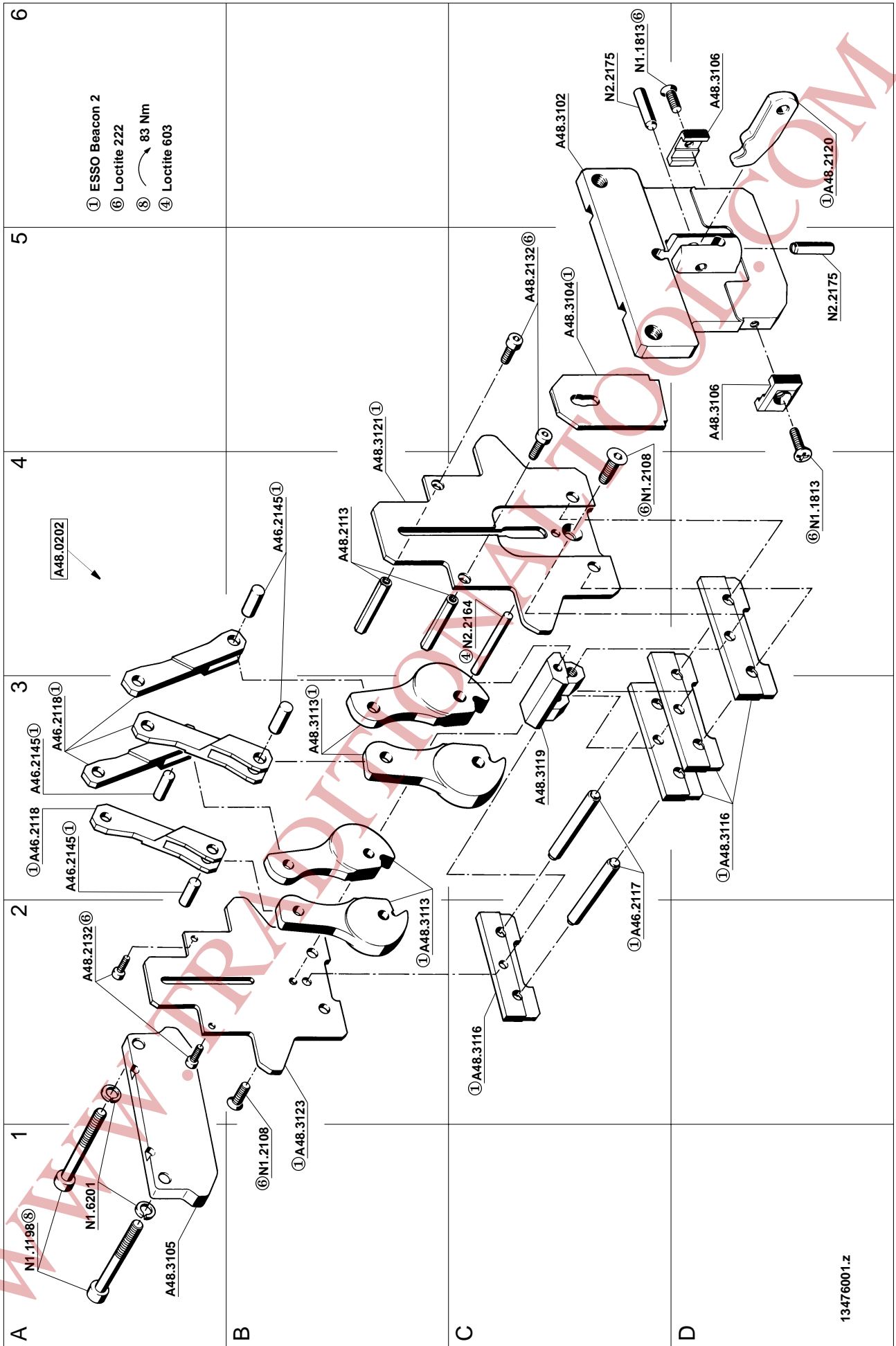
[ ] = Group

\* = Wearing parts

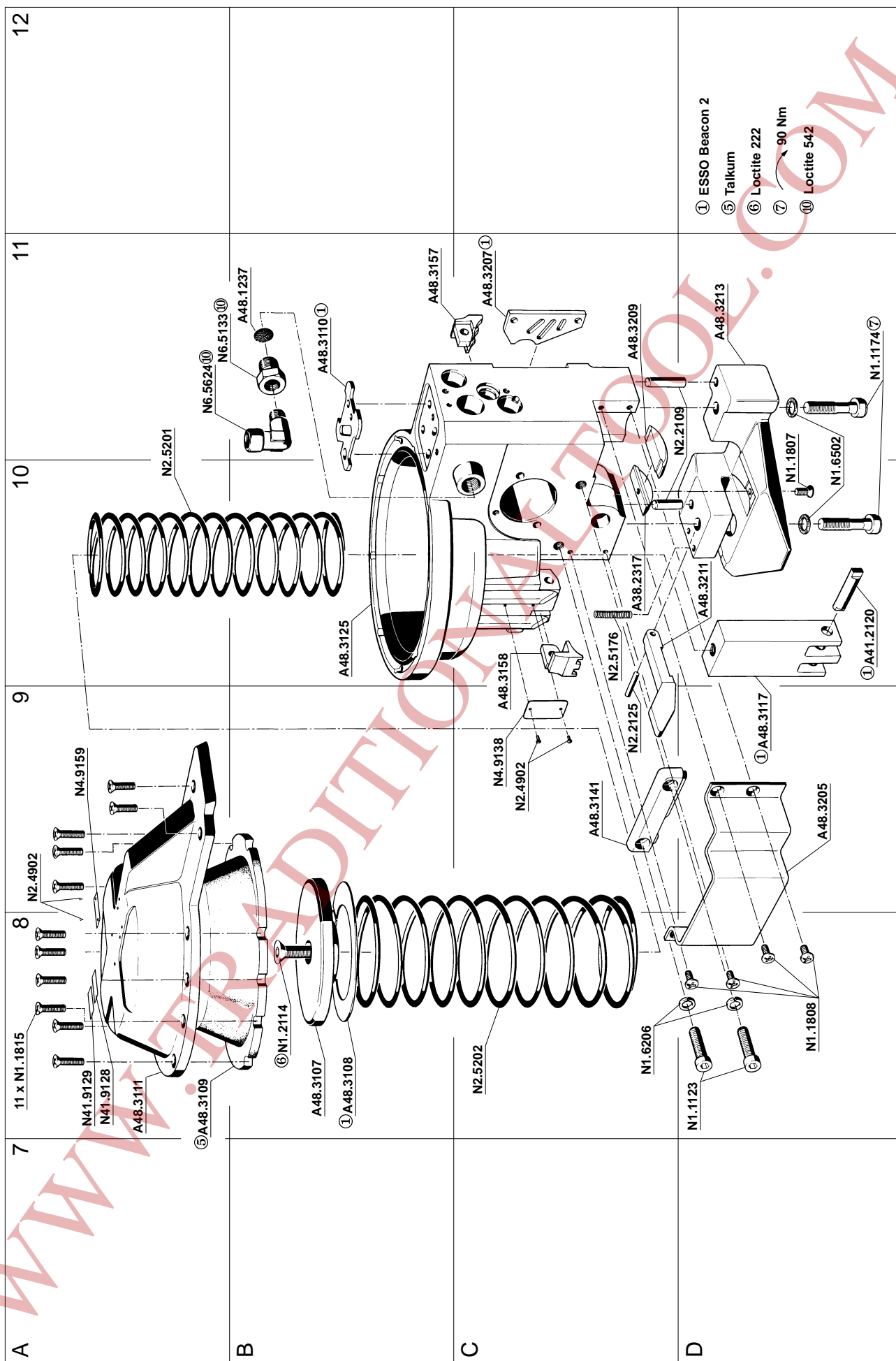
| 13.4760.01 | A483/32/0.80-0.90/ULT/9.0 |      | A483.0001.01          |               |  | 27/07/98 |
|------------|---------------------------|------|-----------------------|---------------|--|----------|
| Item-No.   |                           | Pcs. | Description           | Dimension     |  | Field    |
| N3.1703    | ->[A48.0205]              | 1    | BALL                  | 5 MM.         |  | C17      |
| N3.1706    | ->[A48.0205]              | 1    | BALL                  | 15 MM         |  | A16      |
| N3.2322    | ->[A48.3217]              | 1    | NEEDLE CASE           |               |  | B20      |
| N3.2322    | ->[A48.3219]              | 1    | NEEDLE CASE           |               |  | B24      |
| N3.2323    | ->[A48.3217]              | 1    | NEEDLE CASE           |               |  | C20      |
| N3.2323    | ->[A48.3219]              | 1    | NEEDLE CASE           |               |  | B24      |
| N3.3130    | ->[A48.3226]              | 1    | HEADED PRESS FIT BUSH |               |  | C29      |
| N3.3140    | ->[A48.3225]              | 1    | HEADED PRESS FIT BUSH |               |  | C28      |
| N3.3141    | ->[A48.3227]              | 1    | HEADED PRESS FIT BUSH |               |  | D26      |
| N4.9138    |                           | 1    | LABEL                 | <<A483>>      |  | C9       |
| N4.9159    |                           | 1    | LABEL                 | <<CE>>        |  | A9       |
| N41.9128   |                           | 1    | ADHESIVE LABEL        |               |  | A8       |
| N41.9129   |                           | 1    | ADHESIVE LABEL        |               |  | A8       |
| N6.3207    | ->[A48.0208]              | 1    | JOINT                 |               |  | B21      |
| [N6.3405]  | ->[A48.0205]              | 1    | PISTON PLATE          |               |  | B28      |
| N6.3504    | ->[N6.3405]               | 1    | INNER PACKING         | 8.3X12.1X4    |  | B28      |
| N6.3509    | ->[N6.3405]               | 1    | EXTERNAL PACKING RING | 32            |  | B28      |
| N6.5133    | ->[A48.0205]              | 1    | REDUCING COUPLING     |               |  | A11      |
| N6.5624    | ->[A48.0205]              | 1    | ANGLE                 |               |  | A11      |
| N6.6113    | ->[A48.0205]              | 1    | PACKING RING          | 10 X 16 X 4.5 |  | B28      |
| N6.6117    | ->[A48.0208]              | 5    | SEAL                  | 6 X 13 X 2.3  |  | C21+     |
| N6.6121    | ->[A48.0205]              | 1    | SEAL                  | 8 X 15 X 2.3  |  | B17      |
| N6.6122    | ->[A48.0205]              | 1    | SEAL                  | 20 X 13 X 2.3 |  | B16      |
| N6.6146    | ->[A48.0205]              | 1    | SEAL                  | 15 X 22 X 2.3 |  | B16      |
| N6.6147    | ->[A48.0205]              | 1    | SEAL                  | 10 X 17 X 2.3 |  | C16      |
| N6.6148    | ->[A48.0205]              | 1    | SEAL                  | 18 X 25 X 4.5 |  | B14      |
| N6.6202    |                           | 1    | O-RING                | 25 X 2,5      |  | C27      |
| N6.6204    | ->[A48.0205]              | 4    | O-RING                | 18 X 2        |  | A16+     |
| N6.6210    | ->[A48.0205]              | 1    | O-RING                | 30 X 2        |  | B26      |
| N6.6213    |                           | 1    | O-RING                | 20 X 2        |  | D27      |
| N6.6217    | ->[A48.0208]              | 7    | O-RING                | 15 X 2        |  | B21+     |
| N6.6223    |                           | 1    | O-RING                | 50 X 2        |  | A20      |
| N6.6233    | ->[A48.0205]              | 1    | O-RING                | 6 X 2         |  | B15      |
| N6.6235    | ->[A48.0205]              | 1    | O-RING                | 12 X 2        |  | B17      |
| N6.6241    | ->[A38.0132]              | 2    | O-RING                | 46 X 2        |  | B19      |
| N6.6255    | ->[A48.0205]              | 4    | O-RING                | 21 X 2        |  | A14+     |
| N6.6255    | ->[A48.0207]              | 1    | O-RING                | 21 X 2        |  | B29      |
| N6.6803    | ->[A48.3217]              | 1    | PACKING RING          | 10 X 19 X 9.8 |  | B20      |
| N7.1106    | ->[A48.3225]              | 1    | BUSH                  |               |  | C27      |
| N7.1106    | ->[A48.3227]              | 1    | BUSH                  |               |  | D26      |
| N7.1204    | ->[A48.3227]              | 2    | SEALING DISK          |               |  | D25      |
| N7.1205    | ->[A48.3226]              | 1    | SEALING DISK          |               |  | C30      |

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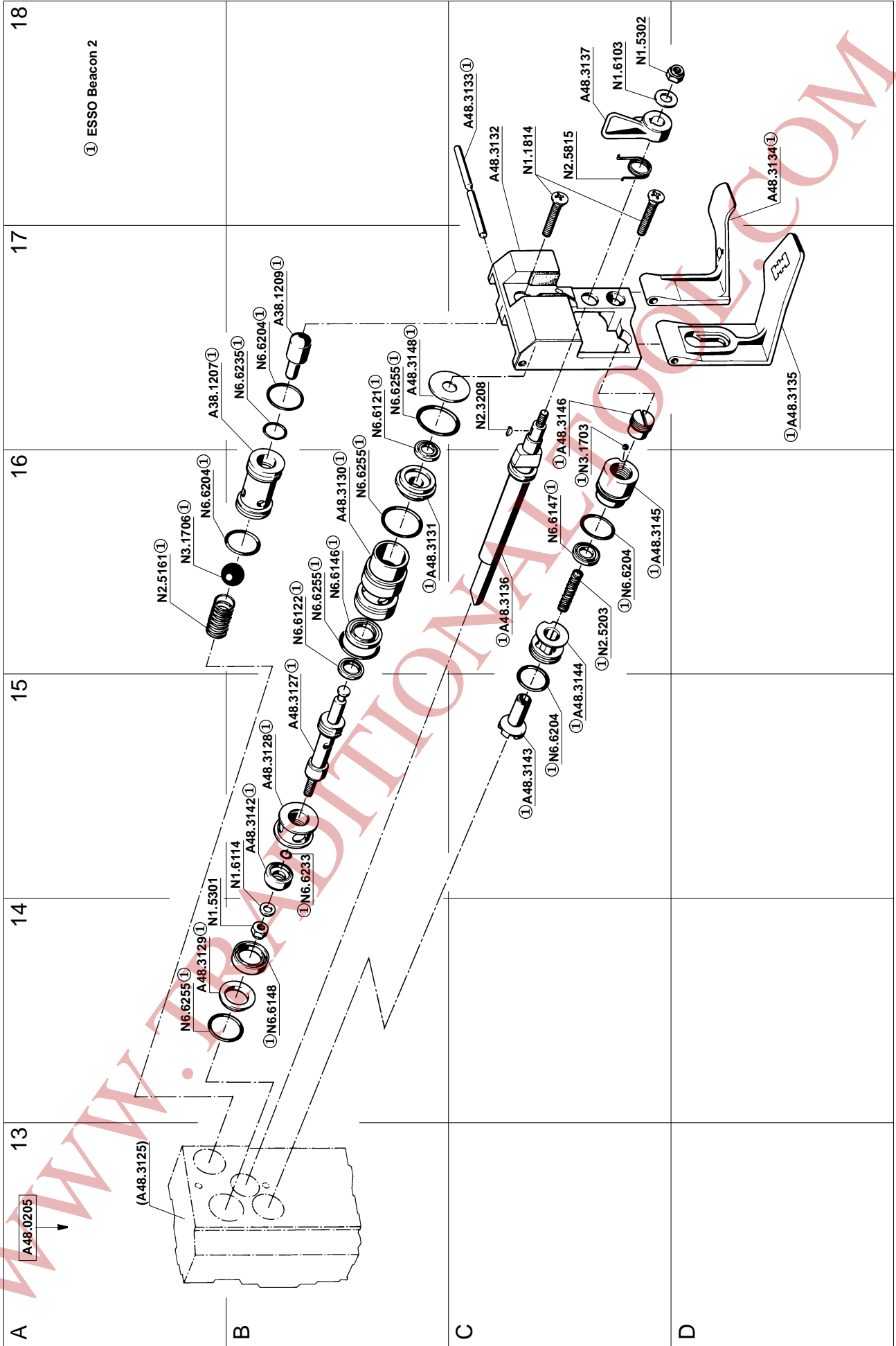
\* = Wearing parts







- ① ESO Beacon 2
- ⑤ Talkum
- ⑥ Loctite 222
- ⑦ 90 Nm
- ⑩ Loctite 542



① ESO Beacon 2

