BENCH
PNEUMATIC
MECHANICAL
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MARKING

**Ets LONG S.A.S.** 80 rue du Loquois - ZAE Rumilly Sud
74150 MARIGNY SAINT MARCEL
Phone: +33(0)4.50.01.11.58 Fax: +33(0)4.50.01.14.85
www.emg.fr - e-mail: commercial@emgpresses.com
SAS with capital of 674,800€ - SIRET no 780 084 901 00039

# SERVICE MANUAL

# EMG 3 Tons Press

CE

N° 1176-b V2

# Contents

**Ets LONG S.A.S** ***Manufacturer of E.M.G. PRESSES***
**80 rue du Loquois – ZAE RUMILLY SUD**
**74150 Marigny St Marcel - FRANCE**
**Phone: + 33(0)4 50 01 11 58 Fax: +33(0)4 50 01 14 85**
**CAPITAL: 674 800 € - SIRET no: 780 084 901 00039 - RCS 73 B 109 - NAF: 2562B**

# EMG 3 Tons PRESS

## EC DECLARATION OF CONFORMITY
**COVERING EQUIPMENT SUBJECT TO SELF-CERTIFICATION**

The undersigned manufacturer **LONG S.A.S** declares that the machine

**« 3 Tons » » PNEUMATIC PRESS**

Mark : **E.M.G.** Type : **3 T**

having for function the cold working of metals,

satisfies all the requirements of the Machines Directive 2006/42/CE,

and complies with the following harmonised standards:
- EN 13736 :2009

The person authorised to prepare the technical file is Mr. Michel Puthod, 80 rue du Loquois, ZAE RUMILLY SUD, 74150 MARIGNY St MARCEL.

Issued in Marigny, on 31 OCT. 2018

**Michel Puthod**
**Technical manager**

# 1. Description

## ❖ General description

The EMG 3 Tons press is a pneumatic press comprising :

- a double acting cylinder actuating a slider by means of two lever arms ;
- a worktable,

both being connected by a swan-neck frame.
Clear height is fixed.
The working stroke is adjusted by changing the position of the cylinder arms stop.

| | | |
|---|---|---|
| MARK OF THE MACHINE | : | **E. M. G.** |
| TYPE | : | **3 T** |
| Power | : | 3000 Kg at 6 bars |
| | : | 4000 Kg at 8 bars |
| Stroke | : | from 0 to 54 mm |
| Height between the table and slider | : | 185 mm |
| Max. slider speed | : | 48 mm/s at 6 bars |
| Nature of control fluid | : | Oiled and filtered air |
| Consumption | : | 5.2 Litre for 1 cycle and for the whole stroke |
| Table dimensions | : | 305 x 190 mm |
| Machine weight | : | 150 Kg (in version 1) |

## ❖ Work station

The work station is designed to be in front of the machine fixed to a workbench, or base supplied by EMG as an option.
The operator can work in the sitting or standing position. Work station ergonomics should be considered when installing the press.

The machine is supplied either:

- In version 1 without controls.
- In version 2 with bi-manual control, 2 side guards and a top guard.
- In version 3 with bi-manual and pedal control, 2 side guards and a top guard.

## ❖ Normal use of the machine

The EMG 3 Tons press is designed for assembly, crimping, folding, cutting, forming, drawing, etc.
Its primary use is cold forming of metals. It can be used in the same way for working other sheet materials (such as cardboard, plastic, rubber or leather).

### ❖ Safety instructions

***Authorised personnel***

It is essential that adjustment, assembly and dismantling operations be done by qualified personnel.
Working or carrying out adjustment operations with two people on the machine is forbidden. Respect this rule and prevent third parties having access to the work area.

**ALL MAINTENANCE WORK MUST**
**BE DONE BY QUALIFIED PERSONNEL**

***Equipment***

Side guards must be in position: they can only be removed for work with embedded tools and must be refitted for all other types of work.
Never open the stroke adjustment guard except for tool setting.

***Working with the pedal is strictly forbidden except for embedded tools.***

***Definition: embedded tools must be intrinsically safe. Their openings and safety distances must be in compliance with the requirements in table 4 of the EN 294:1992 standard, or not exceed 6mm. Any additional risk of crushing when working with systems other than embedded tools should be avoided by following table 1 of the EN349:1993 standard appendix D.***

***Equipment***

Operators must be equipped with protection equipment appropriate to the work being done, in order to prevent injury (gloves, safety glasses, etc.).
If the noise caused by the operation performed on the machine is greater than 80 dB (A), they should wear ear protectors.

# 2. Instructions

### ❖ Handling and installation

When leaving our works, the machine in version 1, 2 and 3 is delivered fixed on an appropriate sized pallet.

We recommend positioning the machine with suitable lifting equipment (weight 150kg for version 1 of the press) lifting it with a sling under the press arms between the stem and slider.
It is necessary first to open the top guard.

Clean off the rust protection covering the machined parts.

The machine should be used on a flat and level surface.

Fix the press on a bench with suitable bolts (4 holes Ø 11 are provided).
Make sure that the press is stable.

## ❖ Connection

The machine needs a compressed air supply (clean and dry) to operate.

- If the machine is delivered in version 1

The whole of the compressed air circuit of the press must be constructed by the user (take care to observe the safety standards of the installation).

- If the machine is delivered in version 2 or 3

1. Connect an air supply to the filter-regulator-lubricator (1/4 gas) using a pipe with an inside diameter of at least 12 mm and an average pressure of 6 bars, that may vary from 3 to 7 bars according to need.
2. Turn on the isolation valve at the air treatment unit inlet.
3. Adjust the air pressure to 6 bars at the press (lockable adjustment knob on the air treatment unit).
4. The unit is ready to operate. Make a vacuous operating test.

## ❖ Noise and vibrations reduction

If the machine is fixed on a support base we advise fitting shock absorbers feet (supplied as an option) to reduce noise and vibrations.

A full set of filter and exhaust pipes is available to reduce the noise of the machine (supplied as an option).

## ❖ Use

**Various types of equipment are possible:**

***VERSION 1*** MACHINE DELIVERED BARE – WITHOUT ANY EQUIPMENT

**SAFETY IS UNDER THE USER'S SOLE RESPONSIBILITY,**
**To be checked before putting the machine into use.**

***VERSION 2*** BI-MANUAL PUSHBUTTON CONTROL
WITH SIDE AND TOP GUARDS FOR THE WORKING SURFACE.

Press the two push buttons simultaneously and hold them down during the operation to be performed.
Releasing either of the buttons results in the slider returning to its top position.

***VERSION 3*** BI-MANUAL PUSHBUTTON CONTROL + PEDAL CONTROL
WITH SIDE AND TOP GUARDS FOR THE WORKING SURFACE.
KEY OPERATED SELECTOR FOR CYCLE CHANGE

Position 1: Operation in bi-manual control.
Position 2: Operation controlled by the pedal
(for **working with embedded tools or with a stroke of less than 6 mm**).

***Reminder:***
***Embedded tools must be intrinsically safe. Their openings and safety distances must be in compliance with the requirements in table 4 of the EN 294:1992 standard, or not exceed 6mm. Any additional risk of crushing when working with systems other than embedded tools should be avoided by following table 1 of the EN349:1993 standard appendix D.***

## ❖ Settings

Adjusting the stroke (see drawing 030-00-1000 page 12)

1. With a 4mm Allen key, take apart the two Ø M 5 screws item 8 on the front mobile part of the guard item 7.
2. Unlock the nut item 34 with the spanner wrench provided.
3. Adjust the height stop of the swing arm by tightening or loosening the adjustment nut item 35 with the spanner wrench provided
4. Lock the nut with the spanner wrench provided
5. Close the guard item 7, re-tighten screws CHC M 5.

# 3. Tool mounting and characteristics

The tools should be stable and firmly fixed to the press.
Their attachment is provided for in the machine slider and on the press table by T-shaped grooves.

Maximum tool width 300 mm, maximum tool depth 185 mm
Slider Ø 30 h 7 Bore Ø 16 H7 depth 26, locking by an M8 clamping screw item 32
The stroke is adjustable from 0 to 54 mm in position 3 T and from 0 to 69 mm in position 1.9T.

Mounting of the top part of the tooling:

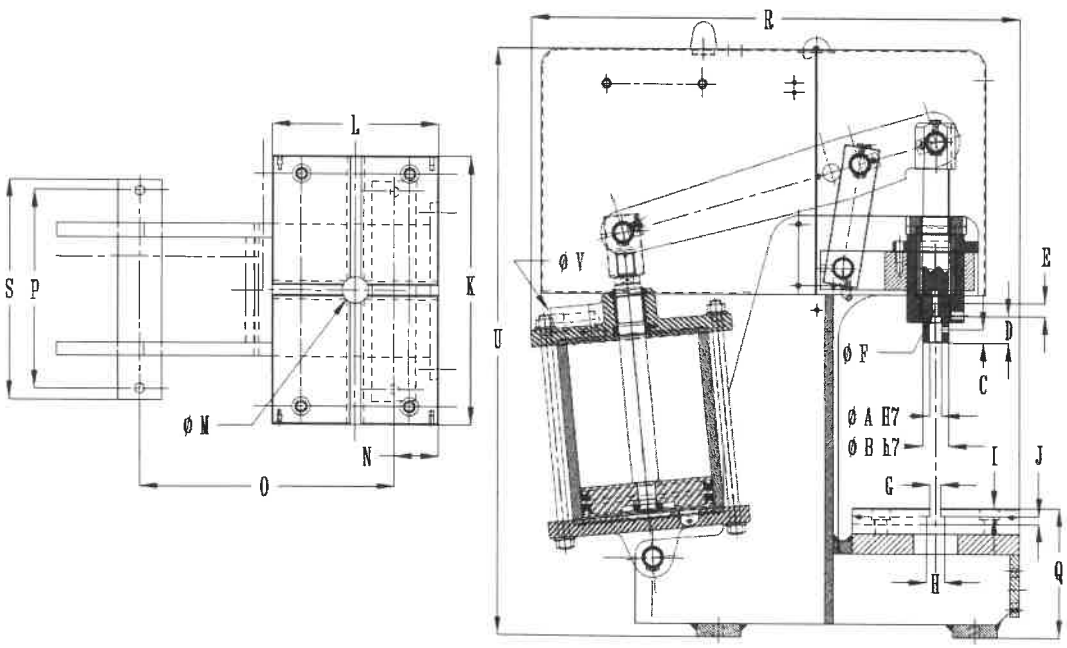
Use the Ø 16 H7 of the slider for centring and thread Ø M8 at the bottom of the bore to maintain up.
Rest the tool against the front face of the slider; then lock with a 4 mm Allen key using the grub screw on the side of the slider nearest the operator.

Mounting of the bottom part of the tooling:

Use the T-shaped groove with 2 M10 strips (option) to fix the bottom part of the tool to the press table.

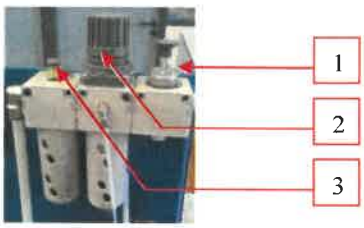
Dimensions of the press :

| | |
|---|---|
| A | 16 |
| B | 30 |
| C | 15 |
| D | 30 |
| E | 15 |
| F | M8 |
| G | 12 |
| H | 21 |
| I | 9 |
| J | 9 |
| K | 305 |
| L | 190 |
| M | 30 |
| N | 50 |
| O | 290 |
| P | 225 |
| Q | 147 |
| R | 550 |
| S | 250 |
| U | 675 |
| V | 1/2 GAZ |



# 4. Maintenance

## ❖ Maintenance




1- Isolation valve

This lock valve cuts off the supply and drains the air.
***All maintenance operations on the air treatment unit must be done with this valve closed and padlocked (oil level, parts replacement, etc).***

2- Filter-regulator

Pressure adjustment 3 to 6 bars. Maximum inlet pressure: 10 bars. Filtration level: 25um.
Adjustment knob with "pull-turn-push" type locking device. Inlet filter.
Condensate level visible by transparent bowl.
Possibility of manual action on the drain while the tank is under pressure.
Clean or replace the inlet filter as soon as its appearance justifies it (impurities, rust, dirt, etc).

3- Lubricator

This provides the lubrication for the elements downstream. The oil level is visible through the tank.
The oil flow is adjusted by a cone point set screw. The adjustment direction is shown by +/-.
The oil flow should be adjusted while the air is passing through: Allow for an average of one drop of oil approximately every 50 press cycles.
Type of oil: MOBIL – VELOCITE No 6. (Grade ISO 10).
The oil level is corrected either by unscrewing the tank or via the top plug (level = 2/3 max.).

## ❖ Preventive maintenance

### ➥ once a week

- Open the top guard (item 7).
  Using an oil pump "LUB", oil the axes of the lever arm (4 nipples are provided for this purpose). Recommended oil : MOBIL - VACTRA 4 or similar)
- Clean the machine

### ➥ Once a month

- Check the oil level in the FRL (Lubricator and Regulator Filter).
- Check that the bi-manual control locks if the two buttons are not pressed simultaneously (out of synchronisation > 0.5 second)
- Check that the press does not work when the top guard (item7) is open.
- Check that there are no air leaks in the circuit.

➥ **Once a year**

- Clean the FRL unit inlet filter (access by removing the tank).
- Clean the tank: never use solvent, but an alkaline solution (soapy water).
- Disconnect the Ø 4 Rilsan tube from the check valve situated at the bottom of the press cylinder, operate the bi-manual control and check that the press remains locked in its top position. Reconnect the Ø 4 Rilsan tube.
- Remove the axes of the lever arm, check that they are in good condition and oil before reassembly.

***These operations must only be done by qualified maintenance personnel***

## ❖ Instructions in the event of a breakdown or accident

In the event of a breakdown, check:

- That the inlet air pressure is at least 3 bars.
- That the top cap closing the access to the stroke adjustment is properly positioned (control valve engaged).
- That the cycle selector is in the desired position for version 3 (bi-manual or pedal).

If these conditions are fulfilled and your press still does not operate, contact the customer service: phone + 33 (0)4 50 01 11 58.

In case of accident:

Inform the SST (workplace first aid worker) of the company and/or the emergency services (phone 18 or 15 in France or 112 with mobile phone) and follow their advice.

Inform a company manager.

## ❖ Specifications for spare parts

Recommended spare parts

1 seal kit
1 controlled check valve
1 distributor 5/2
1 air treatment unit
2 litres of pneumatic oil

Note: To retain all the original qualities of your press, use only genuine manufacturer's spare parts.

**Important notes for dismantling the cylinder**

***This operation must only be done by qualified maintenance personnel***

The lower chamber of the press cylinder is kept under pressure by a controlled check valve, it is always under pressure. To dismantle the press cylinder safely, proceed as follows:

1. Turn off the air supply with the padlockable valve of the FRL unit and padlock the valve.
2. Disconnect the air supply to the press cylinder, and release the air under pressure from the cylinder before dismantling it completely:
   - Either by feeding the Ø4 orifice of the check valve with a pressure of six bars to bleed the air trapped inside (the air should leak from the valve for a brief instant),
   - Or by slowly and progressively loosening the cylinder flange holding nuts to create a slight leak to release the air under pressure. When the air has escaped, continue the dismantling slowly and progressively.
3. You can then separate the cylinder body from its flanges.

# 5. Information regarding noise

Operating conditions during **measurements when empty** :

- Control : by bi-manual
- Frequency : 10 strokes/minute

Operating conditions during **measurements when loaded**:

- Nature of metal : 0.2 mm steel
- Type of operation : cutting at an angle of 90° - 5 mm sides
- Rate : 10 strokes/minute
- Striking force : 1000 Kg

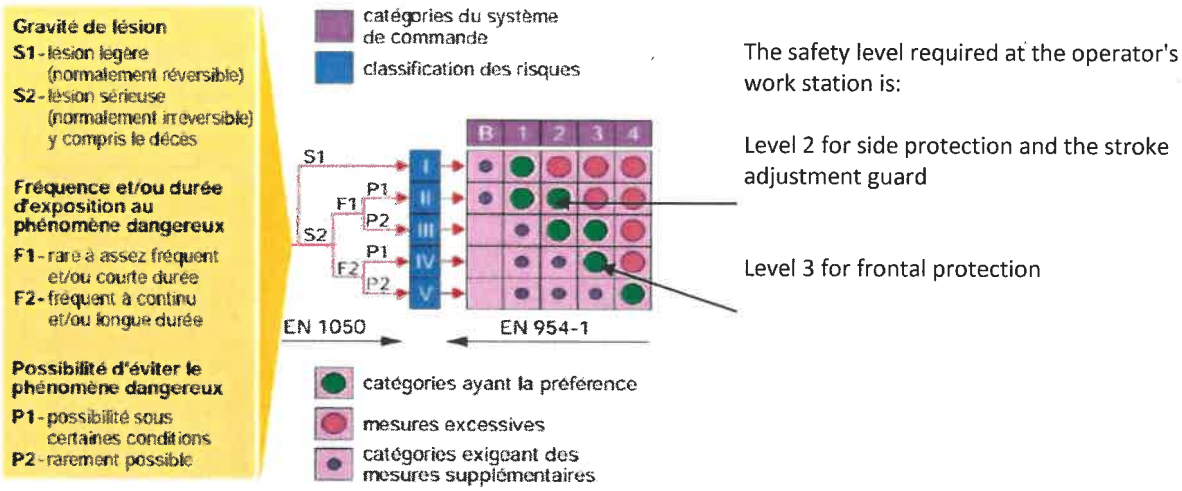
**Measurement results**:

- Empty : **LAeq = 87.1 dB (A)**
- Loaded : **LAeq = 89.4 dB (A)**

# 6. Information on residual risks

Despite the guards fitted to the machine, some risks may remain (swarf projection, tool breakage, etc). The operator should be equipped with suitable protection for the type of work to be done to ensure that he does not risk injury.

**Risk assessment and safety category table according to EN 954-1**




The safety level required at the operator's work station is:

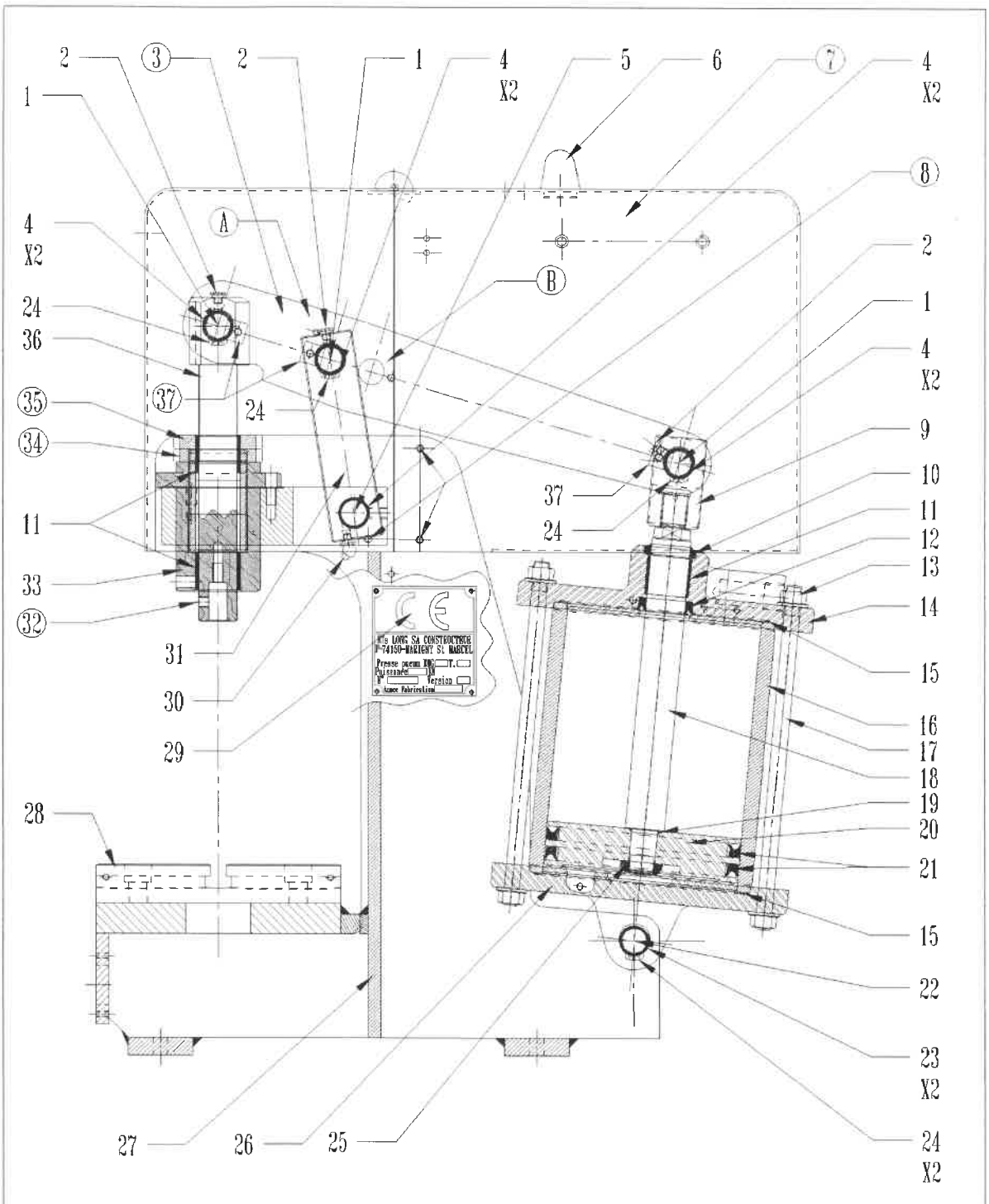
Level 2 for side protection and the stroke adjustment guard

Level 3 for frontal protection

| | RISKS | PROTECTION |
|---|---|---|
| **Work station** | Crushing, shearing/catching, cutting caused by the top plate | - continuous action on a bi-manual control required<br>-control system ensuring that the slider remains in its top position if a component is faulty.<br>- guards fixed to the sides and top |
| **Ejection of air under pressure** | Projection of compressed air, bursting of pipes to equipment | All components are generously dimensioned in relation to the press operating pressure. They are fixed and locked in their operating positions. |
| **Electrical** | N/A | No electricity supply to the machine |
| **Heat** | Burning by direct contact | In the event of heating over 50°, stop working, turn off and padlock the compressed air supply. Prevent access, and call in the maintenance department. |
| **Noise** | Damage to hearing capacity | It is specified in the service manual that personnel must be equipped with ear protection when performing noisy work or if the work station is in a noisy environment. |

## DRAWINGS, DIAGRAMS and DESCRIPTION
## (covering use, maintenance, repair and inspection)

# MECHANICAL DRAWING 030-00-1000



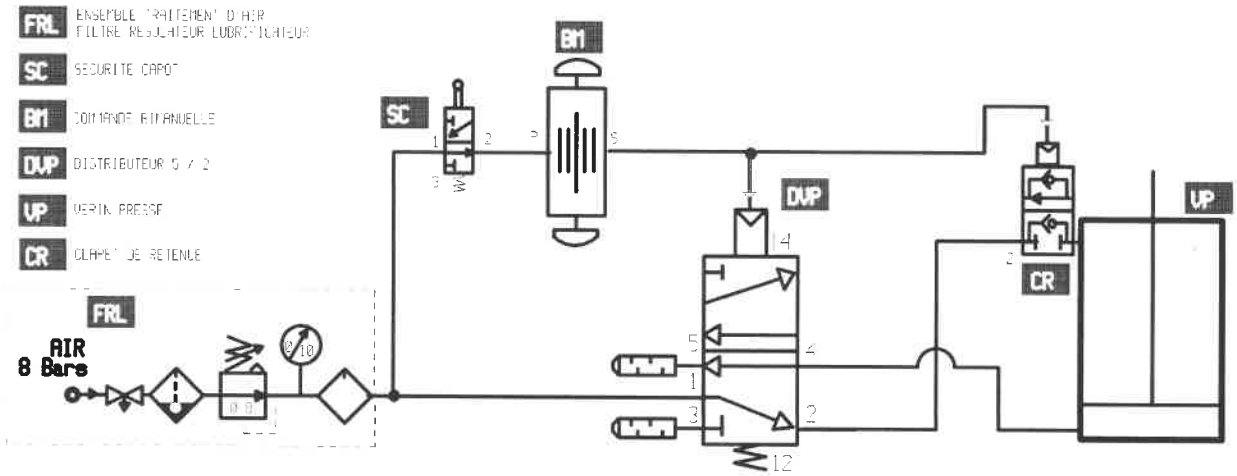
# MECHANICAL NOMENCLATURE 3 Tons

## Spare parts list for 3 Tons press

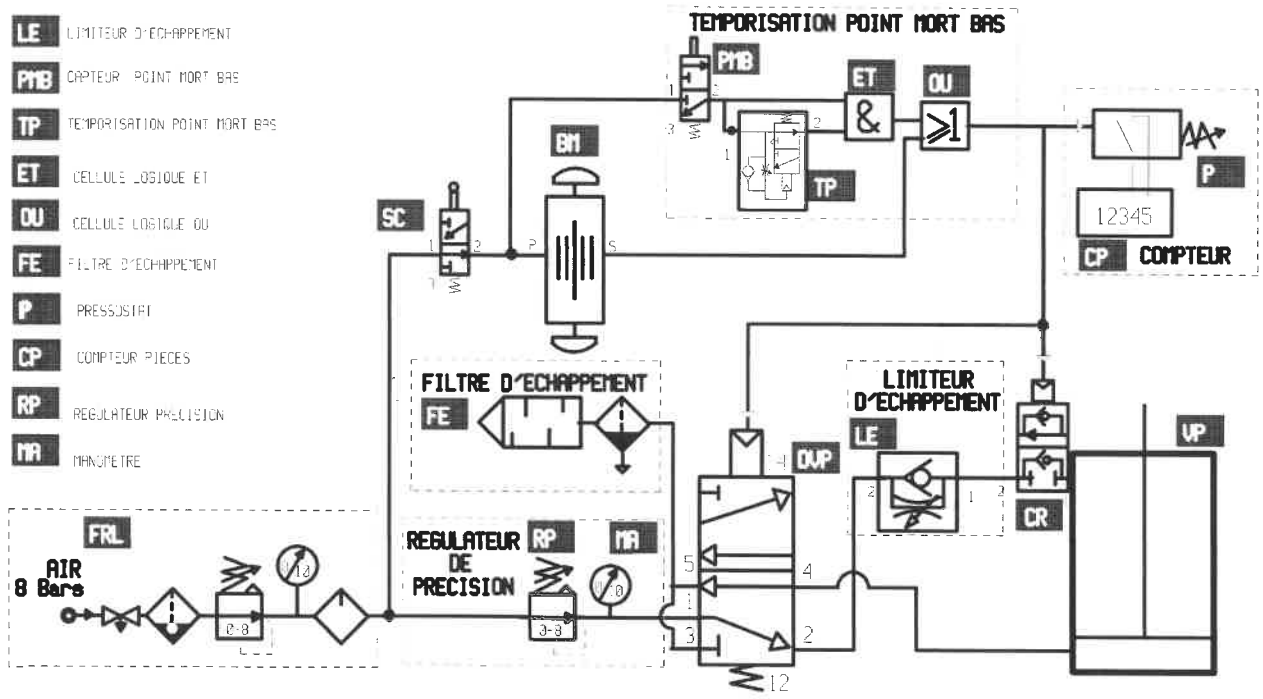
| N° | Article code | Description | Qty |
|---|---|---|---|
| 1 | 030.30.34071 | hinge axis | 3 |
| 2 | 020.30.4008 | right lubricator | 3 |
| 3 | 030.30.34067 | arm lever (1 set = 1 right arm + 1 left arm) | 1+1 |
| 4 | 030.30.4023 | ring INA | 8 |
| 5 | 030.30.34073 | axis bracket | 1 |
| 6 | 030.30.4030 | conical stop | 1 |
| 7 | 030.30.34077 | top guard | 1 |
| 8 | | top guard setting screw CHC Ø M6 X 10 | 6 |
| 9 | 030.30.34072 | link fork | 1 |
| 10 | 030.30.4021 | scraper ring (in 4,3 T gasket set 030.20.2101) | 1 |
| 11 | 010.30.4001 | ring DU | 3 |
| 12 | 030.30.4020 | seal "profil" (in 4,3 T gasket set 030.20.2101) | 1 |
| 13 | H-M12 / R-M12 | nut + washer M12 | 8+8 |
| 14 | 030.30.34019 | front flange | 1 |
| 15 | 010.30.3500 | seal (in 4,3 T gasket set 030.20.2101) | 2 |
| 16 | 030.30.34023 | cylinder housing | 1 |
| 17 | 030.30.34024 | screws | 4 |
| 18 | 030.30.34021 | cylinder rod | 1 |
| 19 | 030.30.4018 | seal (in 4,3 T gasket set 030.20.2101) | 1 |
| 20 | 030.30.34022 | piston | 1 |
| 21 | 030.30.4016 | seal "profil" (in 4,3 T gasket set 030.20.2101) | 2 |
| 22 | 030.30.34076 | support cylinder axis | 1 |
| 23 | 030.30.4022 | ring DU | 2 |
| 24 | 030.30.4013 | circlips | 5 |
| 25 | 030.30.4015 | locknut | 1 |
| 26 | 030.30.34020 | bottom flange | 1 |
| 27 | 030.30.31008 | frame | 1 |
| 28 | 030.30.32010 | slot table | 1 |
| 29 | 030.30.4088 | identification plate | 1 |
| 30 | 030.30.4006 | crooked lubricator | 1 |
| 31 | 030.30.34070 | potence | 1 |
| 32 | vis HC Ø M8 x 8 | tool locking screw in the slider | 1 |
| 33 | 030.30.34065 | guide ring | 1 |
| 34 | 030.30.34069 | adjustment locknut | 1 |
| 35 | 030.30.34068 | adjustment screw | 1 |
| 36 | 030.30.34066 | slider | 1 |
| 37 | 030.30.34089 | stopping plate + screw CHC Ø M 6 X 10 | 3 |

# PNEUMATIC DIAGRAM 3T IN VERSION 2

## VERSION 2

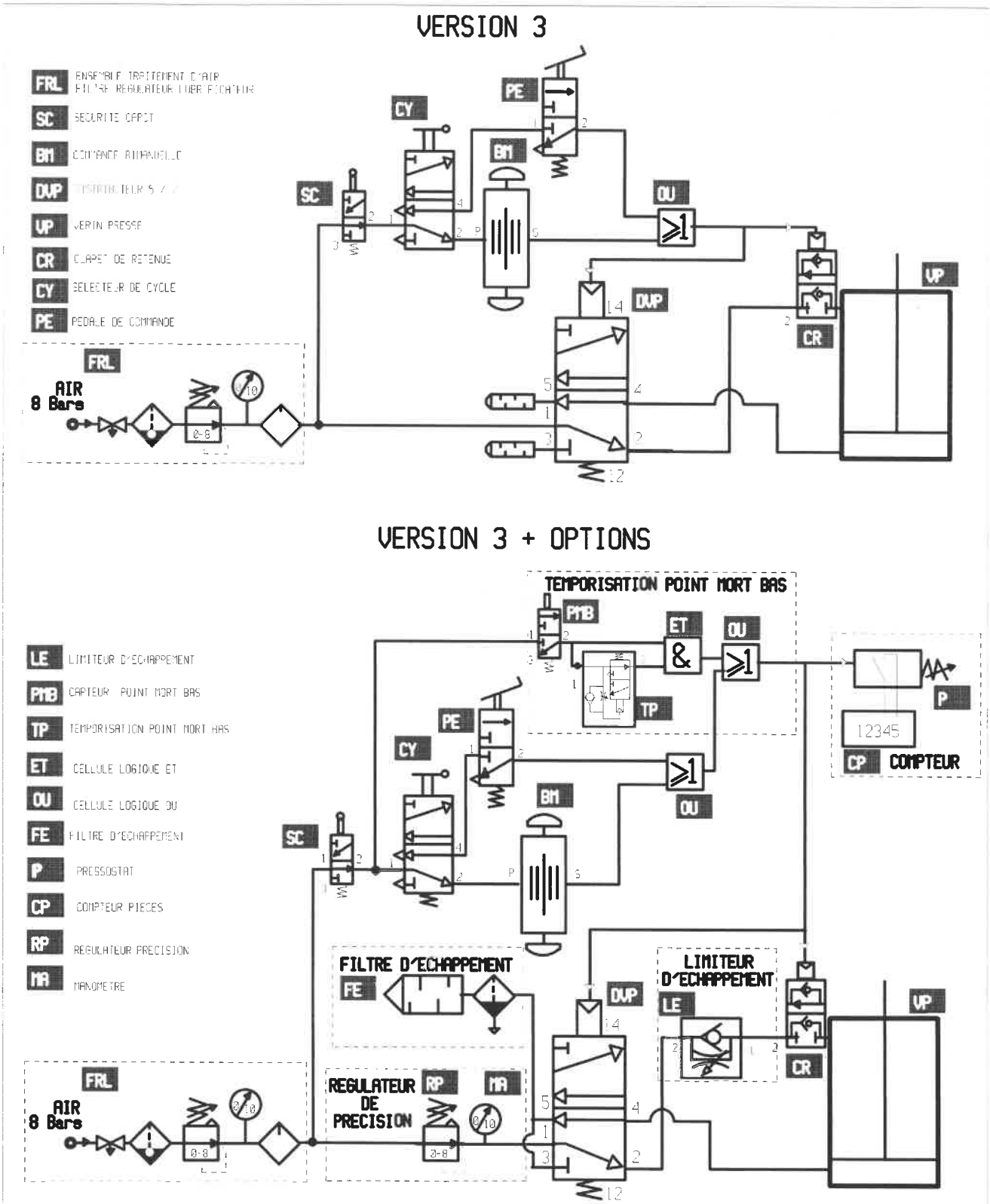



## VERSION 2 + OPTIONS




| | | | | |
|---|---|---|---|---|
| SCHEMA PNEUMATIQUE POUR PRESSES EMG 3T 6T<br>VERSION 2 COMMANDE BIMANUELLE + OPTIONS | | | | D<br>C<br>B |
| Ets. LONG S.A. 74150 Marigny st.Marcel | 3T CAB V2 | 10/06/2010 | MODIF. | A |

# PNEUMATIC DIAGRAM 3T IN VERSION 3

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|---|---|---|---|---|
| SCHEMA PNEUMATIQUE POUR PRESSES EMG 3T 6T<br>VERSION 3 COMMANDE BIMANUELLE ET PEDALE + OPTIONS | | | | D<br>C<br>B |
| Ets. LONG S.A. 74150 Marigny st.Marcel | 3T CAB V3 | 10/06/2010 | MODIF. | A |

# PNEUMATIC NOMENCLATURE 3 T

**List of pneumatic equipment on 3 Tons press**

| Item | Article code | Description | Qty |
|---|---|---|---|
| FRL | 008.30.2050 | Filter-regulator-lubricator | 1 |
| SC | 030.30.4025 | Roller microvalve, 3/2 NO | 1 |
| BM | 006.30.4010 | Bi-manual safety device | 1 |
| DVP | 008.30.2051 | Pneumatic distribution valve, 5/2 + base | 1 |
| VP | 030.30.2010 | Press cylinder 3 Tons | 1 |
| CR | 008.30.2053 | Controlled check valve | 1 |
| | | | |
| | | **Options** | |
| LE | 008.30.4020 | Flow regulator | 1 |
| PMB | 010.30.4011 | Plunger microvalve, 3/2 NF) | 1 |
| TP | 008.30.4001 | Pause at Dead Bottom Center | 1 |
| ET | 008.30.4013 | AND logic cell, | 1 |
| OU | 006.30.4029 | OR logic cell, | 1 |
| P | 006.30.4040 | Pressure switch | 1 |
| CP | 006.30.4030 | Counter | 1 |
| FE | 008.30.4031 | Exhaust filter | 1 |
| RP | | Precision regulator FDR 03 32 | 1 |
| MA | MN 2V 614 | Precision needle pressure gauge | 1 |
| MA | 1876 116 | Precision digital pressure gauge | 1 |
| CY | 006.30.2054 | Key operated selector switch | 1 |
| PE | 006.30.2052 | Pneumatic pedal | 1 |