

# Instruction manual

**ECO LOAD**



**LNS**<sup>®</sup>

**LNS SA**

CH-2534 Orvin

Tél : +41 (0)32 358 02 00

Fax: +41 (0)32 358 02 01

service@Lns-world.com

<http://www.Lns-world.com>

**ENG**



## TABLE OF CONTENTS

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1.	Safety instructions	1
1.2.	Floor plans	2
1.3.	Technical data	3
<b>2.</b>	<b>Installation</b>	<b>4</b>
2.1.	Lifting plan	4
2.2.	Distance between the feeder and the lathe	4
2.3.	Vertical alignment	5
2.4.	Horizontal alignment	6
2.5.	Securing to the floor	6
<b>3.</b>	<b>Mechanical Installation</b>	<b>7</b>
3.1.	Assembling the loading system	7
3.2.	Assembling the bar magazine	7
<b>4.</b>	<b>Commissioning</b>	<b>8</b>
4.1.	Connections	8
4.2.	Pneumatic diagram	9
4.3.	Safety	10
<b>5.</b>	<b>Electrical Components</b>	<b>11</b>
5.1.	Electrical equipment	11
5.2.	Electrical control cabinet	12
5.3.	Diagrams	13
5.4.	Layout	24
5.5.	Inputs / Outputs	25
5.6.	Standard interface CE	27
5.7.	Standard interface USA	29

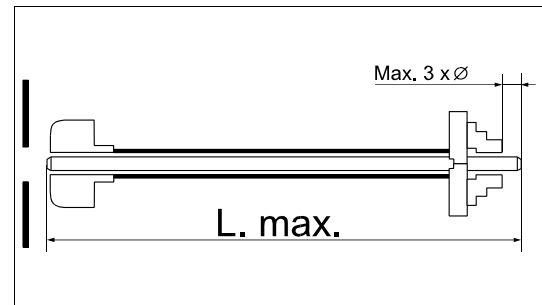
<b>6.</b>	<b>Start-up Procedure</b>	<b>31</b>
6.1	General comments	31
6.2	Adjusting the machine	31
6.3	Adjusting the rake of the loading table	32
6.4	Adjusting the loading hooks	33
6.5	Adjusting the stops	34
6.6	Pusher-bar selection	35
6.7	Optimising bar remnant	36
<b>7.</b>	<b>Manipulations</b>	<b>37</b>
7.1	Control panel	37
7.2	Operation of the control panel TD 200	37
7.3	Functions F1 - F8	38
7.4	Remote control	40
7.5	Manual mode	41
7.6	Automatic mode	41
7.7	List alarms	42
<b>8.</b>	<b>Programming</b>	<b>44</b>
8.1	Function switches	44
8.2	Description of the function switches	45
8.3	Description of wiring	46
8.4	Description for working mode	46
8.5	Interface signals	47
8.6	Programming example	49
<b>9.</b>	<b>LNS agencies</b>	<b>50</b>
<b>10.</b>	<b>Spare parts</b>	<b>51</b>

## 1. INTRODUCTION

### 1.1 Safety instructions

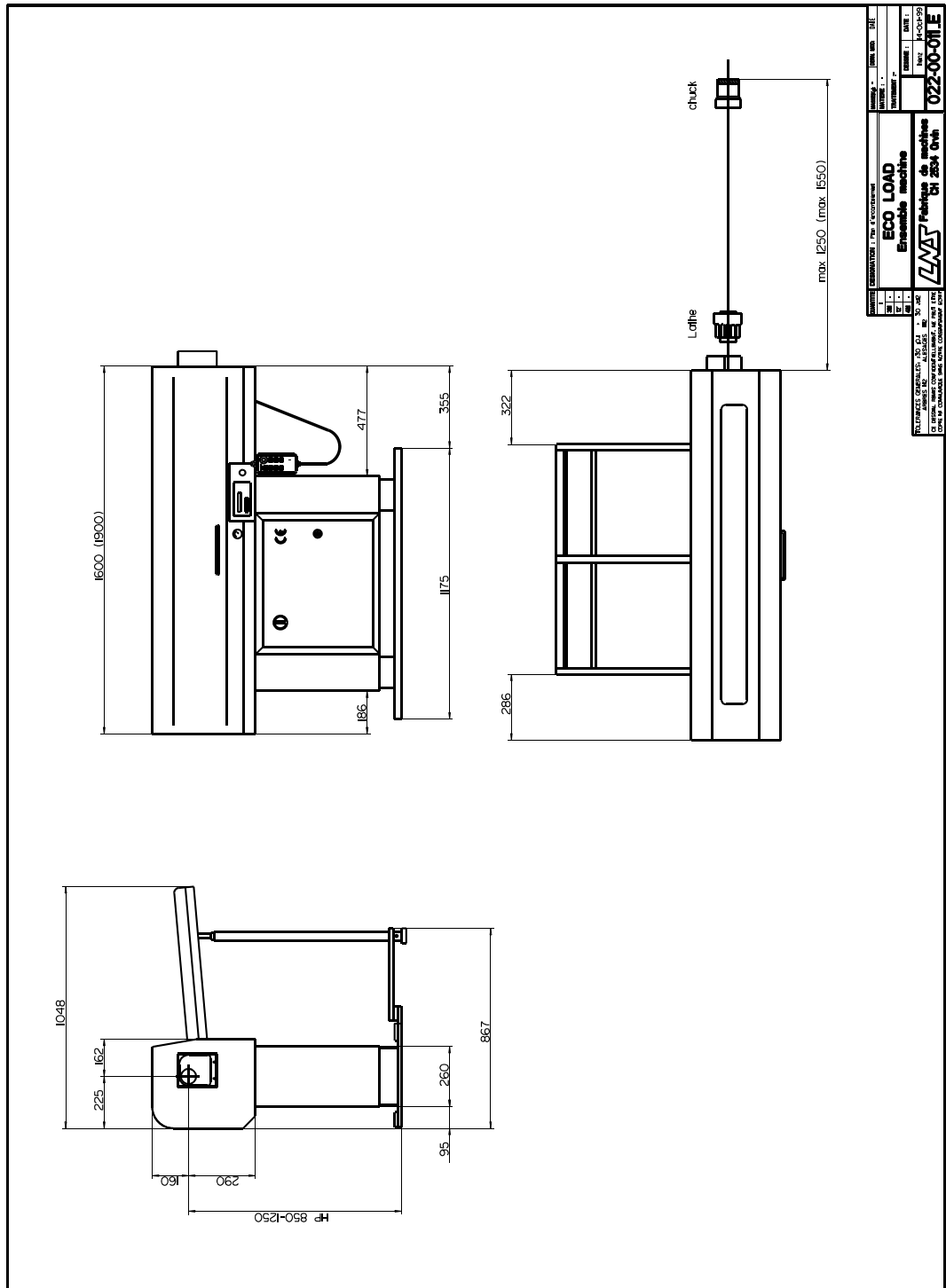
- Do not handle the equipment without having knowledge of the safety instructions and the instructions for use. Safety instructions for the bar feed system, as well as the CNC lathe, must be strictly observed.
- Non-qualified personnel, children, and persons under the influence of alcohol or medication should not handle the equipment.

- Ensure that, regardless of the type of lathe-clamping device, the bar never extends beyond the rear of the spindle.  
The maximum length (max. L) the bar feeder system is allowed to load is given by the length of the lathe spindle. The bar should never extend more than 3 times its diameter beyond the lathe clamping device without support.



- Do not grasp moving or rotating objects, or nearby elements.
- Do not remove any covers while the bar feeder or the machine is under electrical power.
- It is strictly prohibited to jump wire or remove circuit breakers, main switches, and especially safety switches.
- To avoid any harm to persons, or damage to components, use only the indicated points for lifting and moving the bar feeder system. No one should be near the hanging load, or within the operating range of the overhead hoist/crane, forklift, or any other means used for lifting and transportation. Do not knock the bar feeder while moving it as this could damage it.
- Do not move the bar feeder while it is electrically powered on.
- Loose garments, long hair and jewelry can be dangerous
- No servicing should be carried out on the interface or inside the electrical cabinet while the bar feeder or the lathe is under electrical power.
- Contact your agent if the machine does not work properly.
- Do not place the machine in a damp area and make sure that water or oil does not come into contact with the electrical equipment.

## 1.2 Floor plan

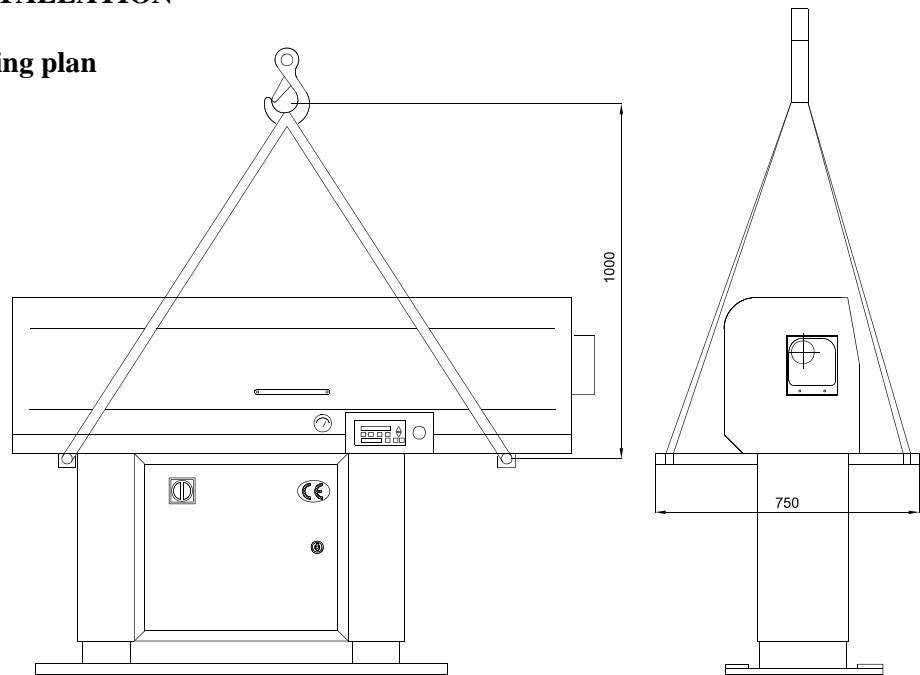


### 1.3 Technical data

	<b>ECO LOAD</b>	<b>ECO LOAD L</b>
<b>Bar diameter</b>	6 mm (1/4") - 65 mm (2.5")	
<b>Bar length</b>	Min. 280 mm (11") Max. 1200 mm (47.2")	Min. 280 mm (11") Max. 1500 mm (59")
<b>Spindle height</b>	850 mm (33.5") 1250 mm (49.2")	
<b>Weight</b>	210 Kg (476 lbs)	240 Kg (544 lbs)
<b>Compressed-air supply</b>	6 kg / cm	
<b>Air consumption</b>	< 10 l / loading cycle	
<b>Power supply</b>	200 / 480 V - 0.4 A - 50/60 Hz	

## 2. INSTALLATION

### 2.1 Lifting plan



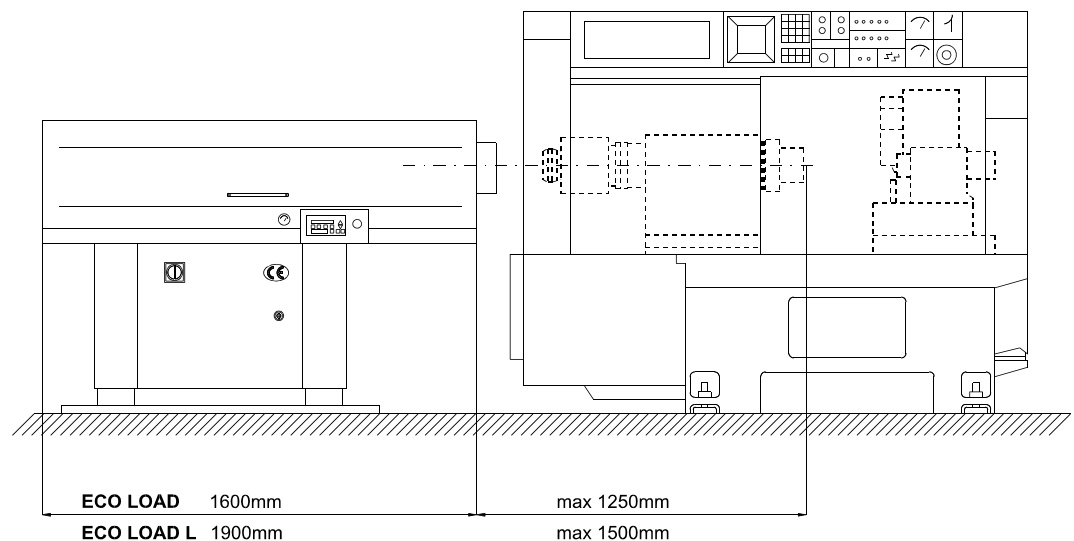
### 2.2 Distance between the feeder and the lathe

To use the ECO LOAD to best advantage, the distance between the feeder and the lathe should not exceed 20 mm (0.8"). Should any obstacle necessitate a wider gap, please contact LNS.

The maximum length of the bars must not exceed the length of the spindle. The bar must be fed completely into the spindle before starting rotation

If the bar length exceeds 1200 mm (47.2"), you will have to consider replacing the ECO LOAD by the ECO LOAD **L**.

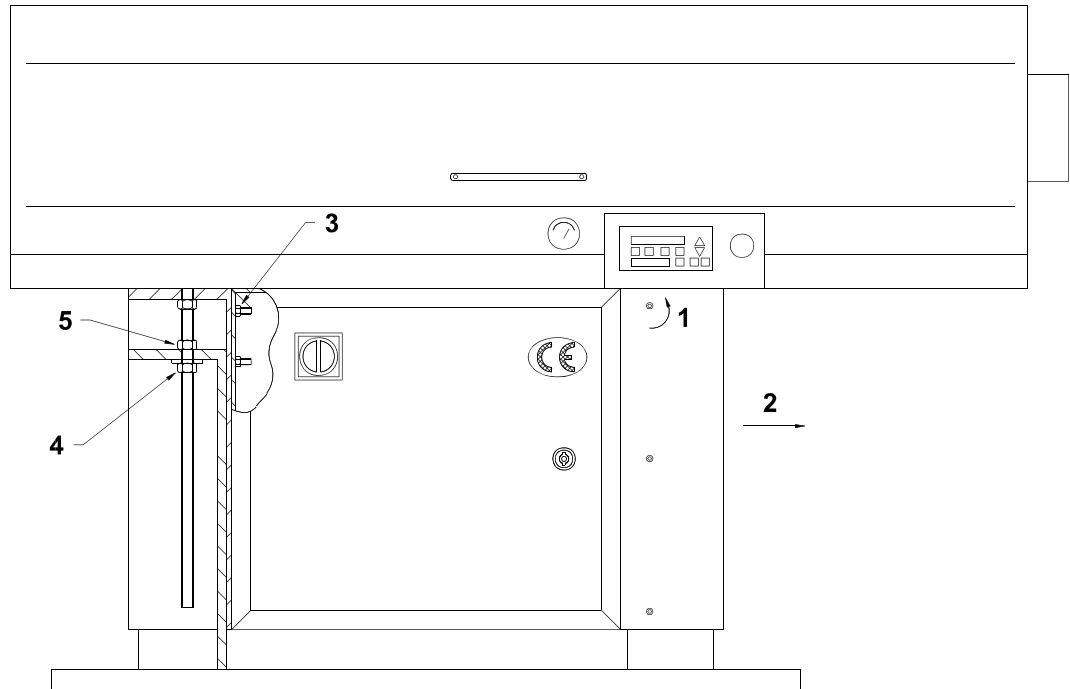
**IMPORTANT :** Regardless of the type of lathe-clamping device, the bar must never extend beyond the rear of the spindle.





### 2.3 Vertical alignment

1. Unscrew the screws holding the side panels.
2. Remove the side panels and open the electrical housing
3. Loosen the clamping bolts.
4. Loosen the locknuts.
5. Adjust the height according to the spindle axis.

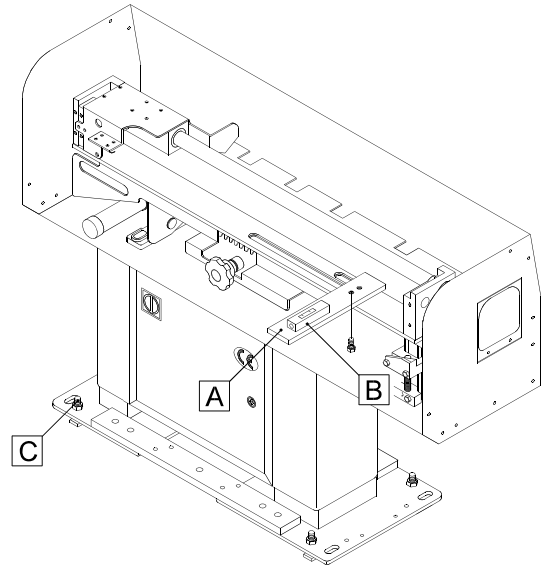


## 2.4 Horizontal alignment

### Setting the level:

Fit the plate (A) that is supplied with the accessories to the feeder. Place a spirit-level (B) thereon and adjust with the bolts (C). Ensure that the weight is evenly distributed over all the bolts.

For retraction device, refer to the spare parts diagrams 11 (at the end of this manual).



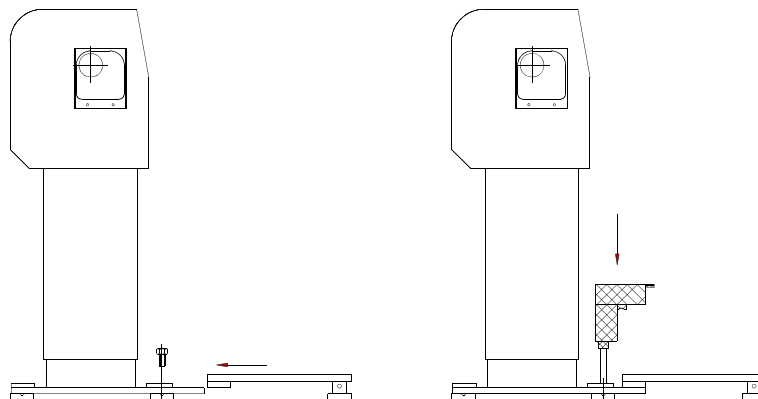
### Alignment :

Once the level is correct, move the pusher-bar forward until it is behind the lathe spindle. Move the feeder laterally until the Pusher-bar can enter the spindle without touching it. You can now check by sighting down the inside of the lathe towards the point where the spindle enters.

Correct the alignment of the ECO LOAD until you are satisfied with it.

## 2.5 Securing to the floor

Once the feeder has been aligned, secure the leveling bolts on their plates (even pressure) and drill into the floor. Bolt the machine to the floor using the appropriate anchors. For retraction device, refer to the spare parts diagrams 11 (at the end of this manual).



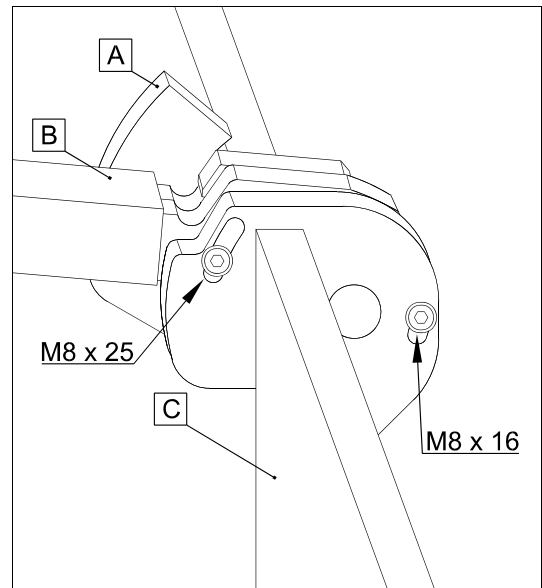
### 3. MECHANICAL INSTALLATION

#### 3.1 Assembling the loading system

Once the device has been unpacked, assemble the loading system with the enclosed bolts

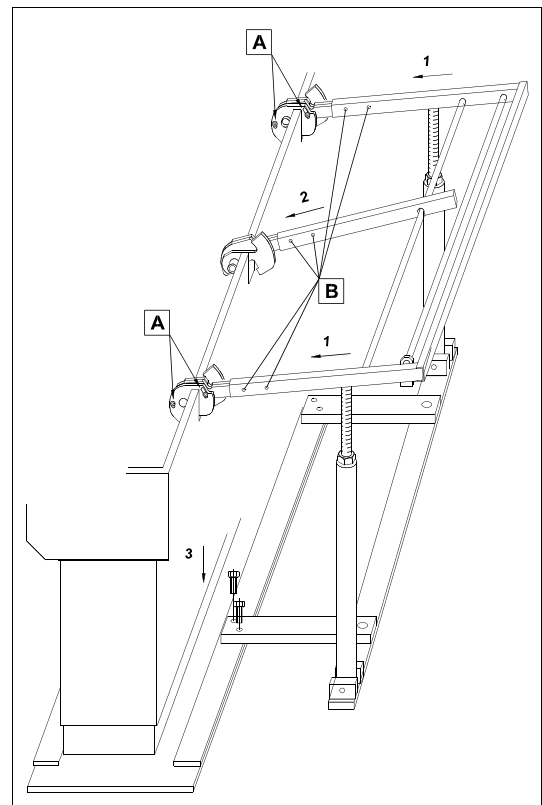
A : Ejector  
 B : Loading arm  
 C : Rear end of feeder.

Follow the instructions below



#### 3.2 Assembling the bar magazine

- Remove screws(B)
- Loosen screws (A)
- Install ramps (1) and the central support (2) and secure with screws (B).
- Fix (3) the 2 magazine anchor-plates to the feeder pedestal
- Adjust rake.



## 4. COMMISSIONING

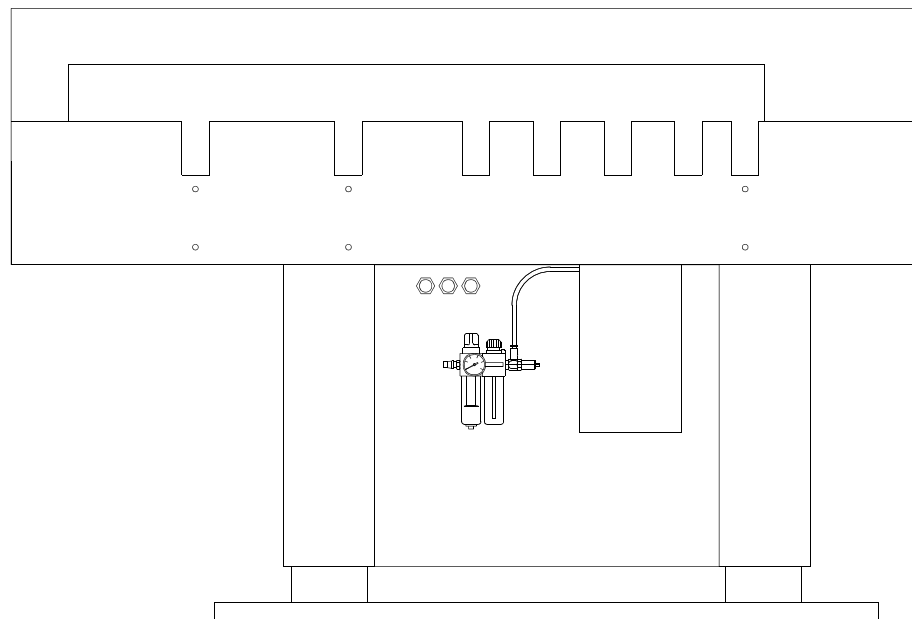
### 4.1 Connections

#### a) Power supply

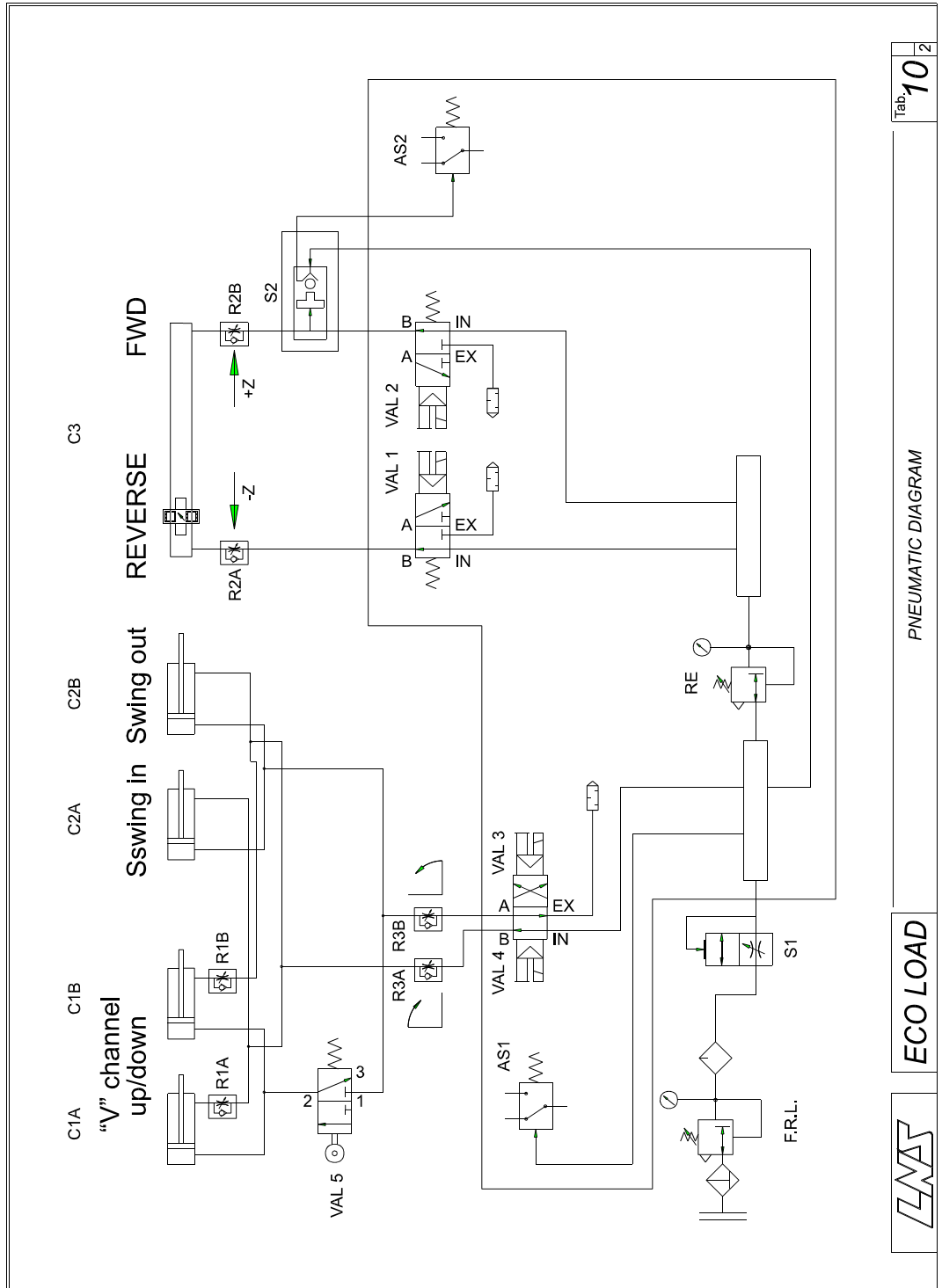
- 220 V or 380 V, 50/60 Hz
- For the feeder to work, the master-switch must be in position 1.

#### b) Compressed air supply

- Minimum pressure: 6 bar (80 Psi)
- Consumption: 50 lt per hour (13.15 us. gal)
- Minimum cross-section of supply tubes: 8 mm (0.31")
- Service pressure must be set to 6 bar
- The feeder has a rise-delay valve (AS1) built into the pneumatic unit. It consequently takes about 8 seconds after turning on the feeder for it to become operational. The rise-delay valve will be active even after an emergency stop.



4.2 Pneumatic diagram



### 4.3 Safety

#### c) Emergency stop

Press the emergency stop button, the lathe and the barfeeder will stop.

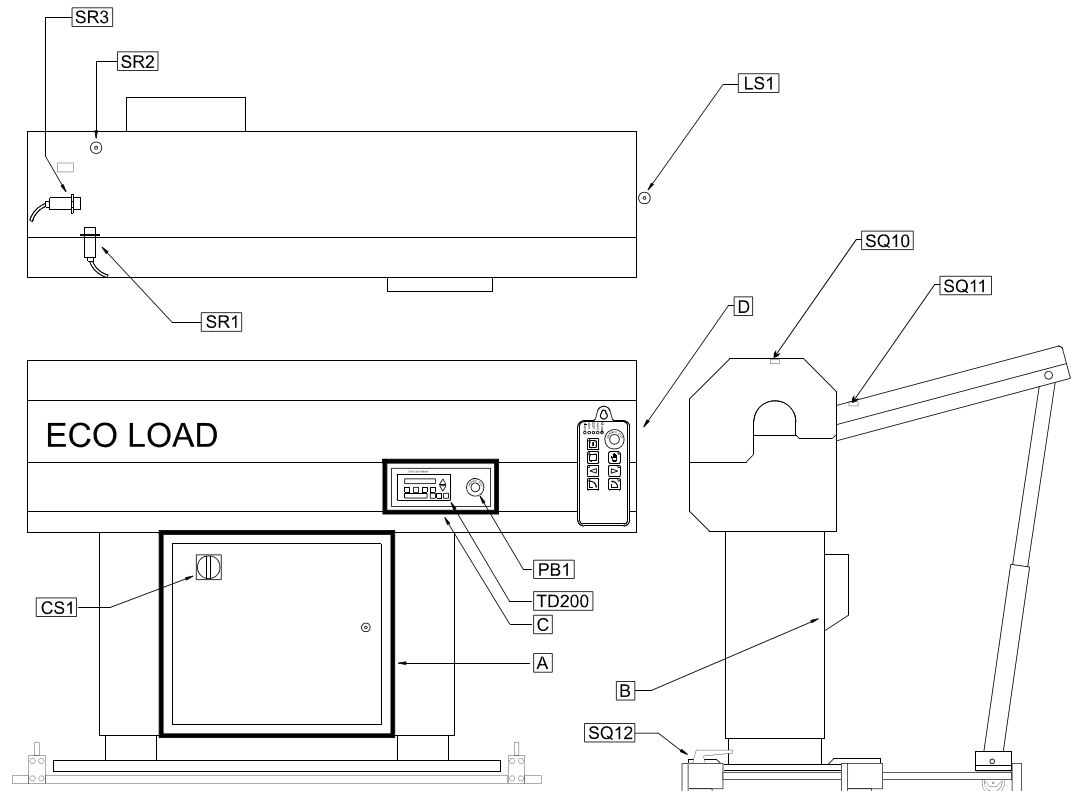
#### d) Safety switches

There is a safety switch under the hood of the feeder :

- The feeder can work in **manual** mode with the cover open.
- The feeder can work in **manual and automatic** mode with the cover shut.

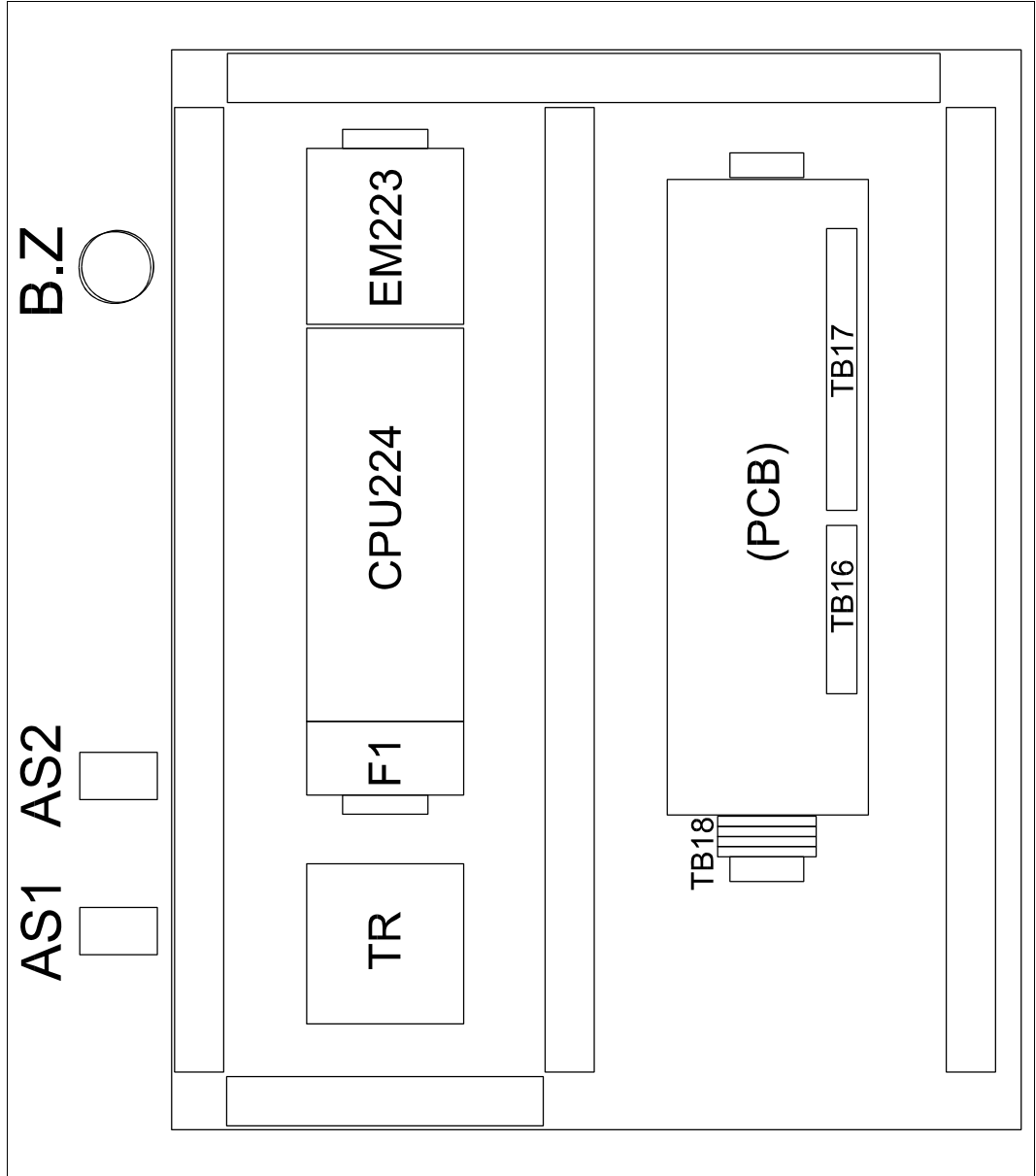
## 5. ELECTRICAL COMPONENTS

### 5.1 Layout of electrical components



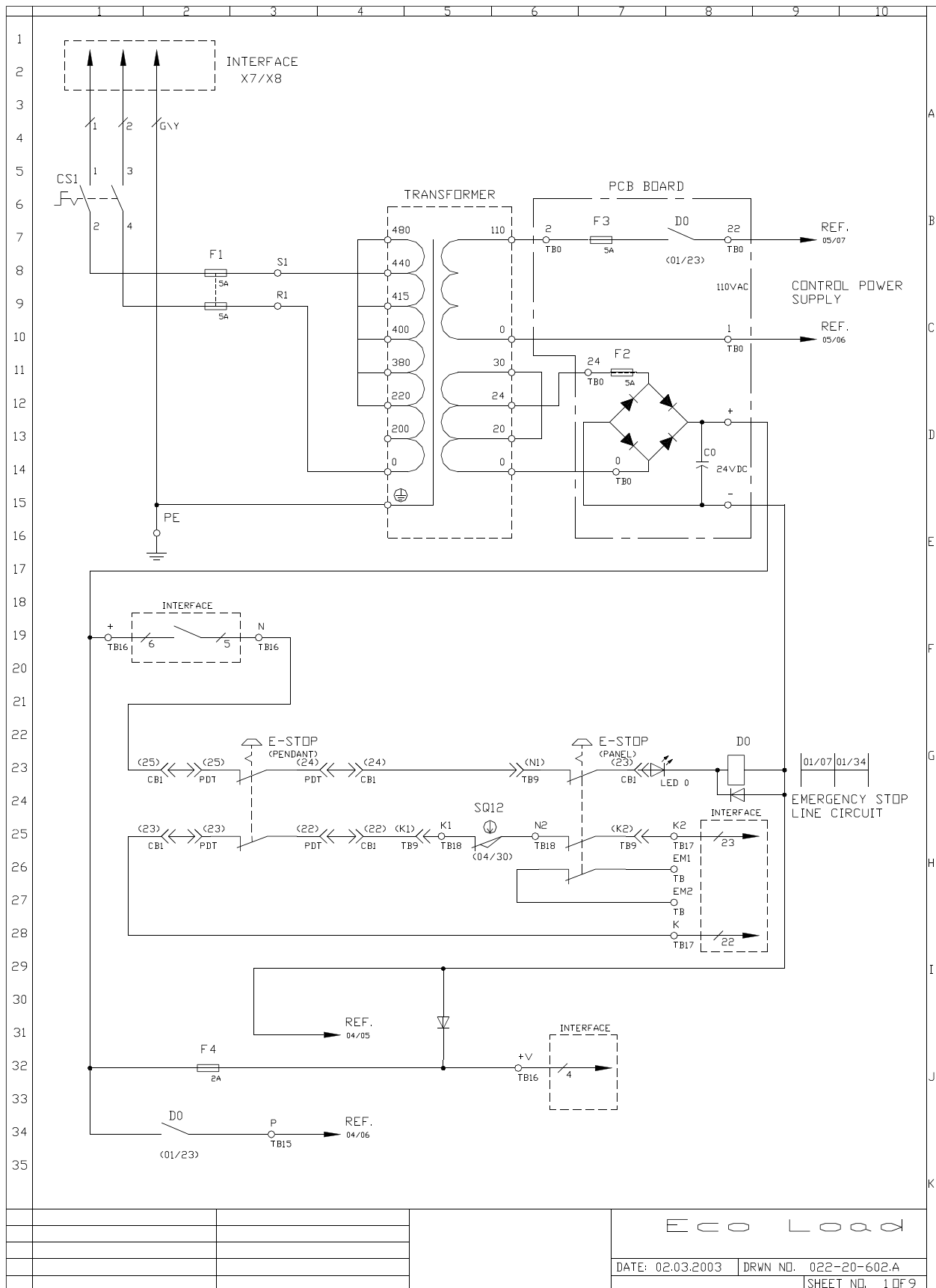
Item	Description
A	Electrical enclosure
B	Electrovalves
C	Control panel
D	Remote control
CS1	Main disconnect switch
LS1	Measuring stop switch
PB1	Emergency stop button
SQ10	Main cover safety switch
SQ11	Bar magazine cover safety switch
SQ12	Retraction safety switch
SR1	Confirmation switch : "V" channel swing in
SR2	Home positions switch
SR3	Encoder
TD 200	Control panel

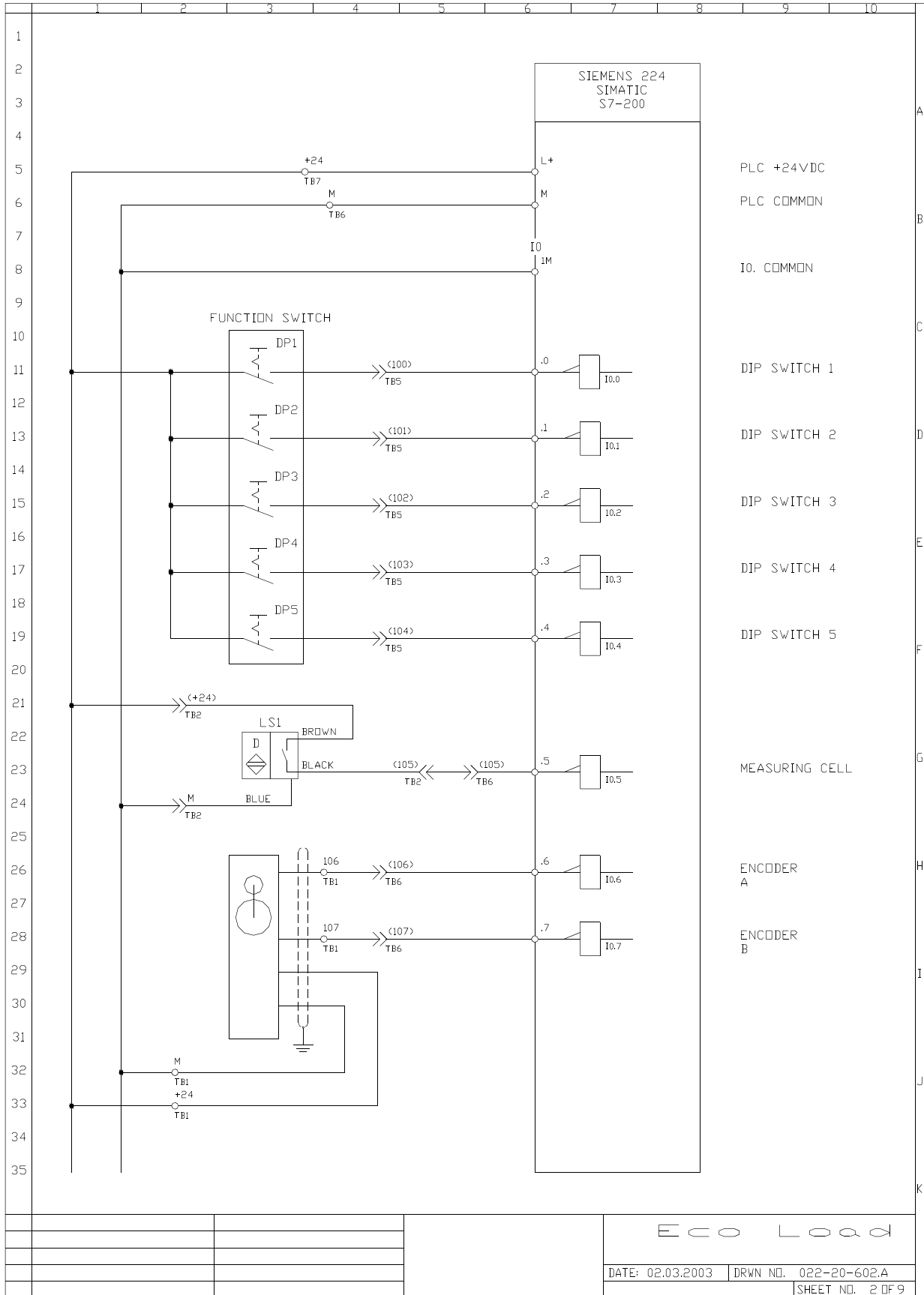
## 5.2 Electrical control cabinet

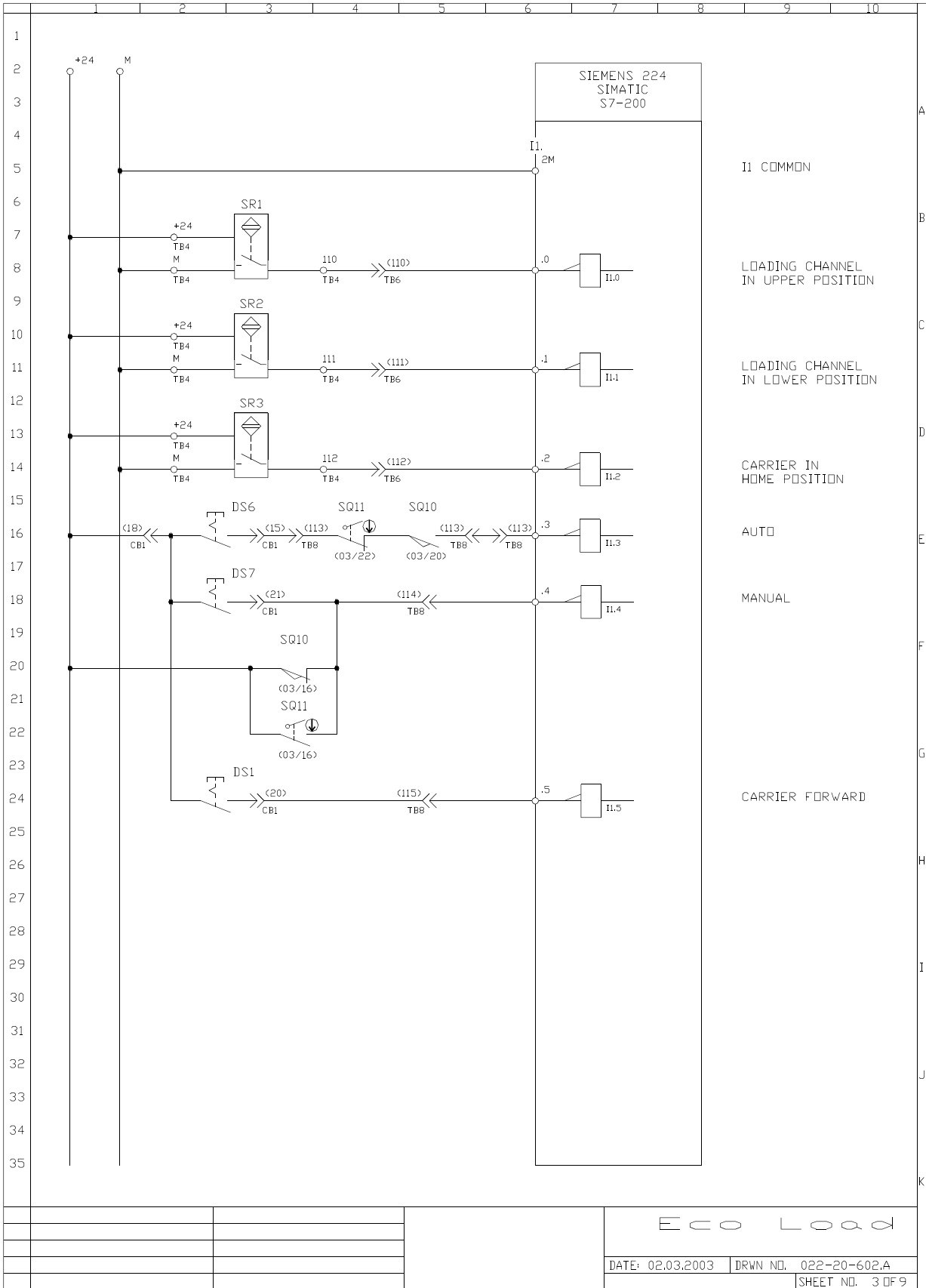


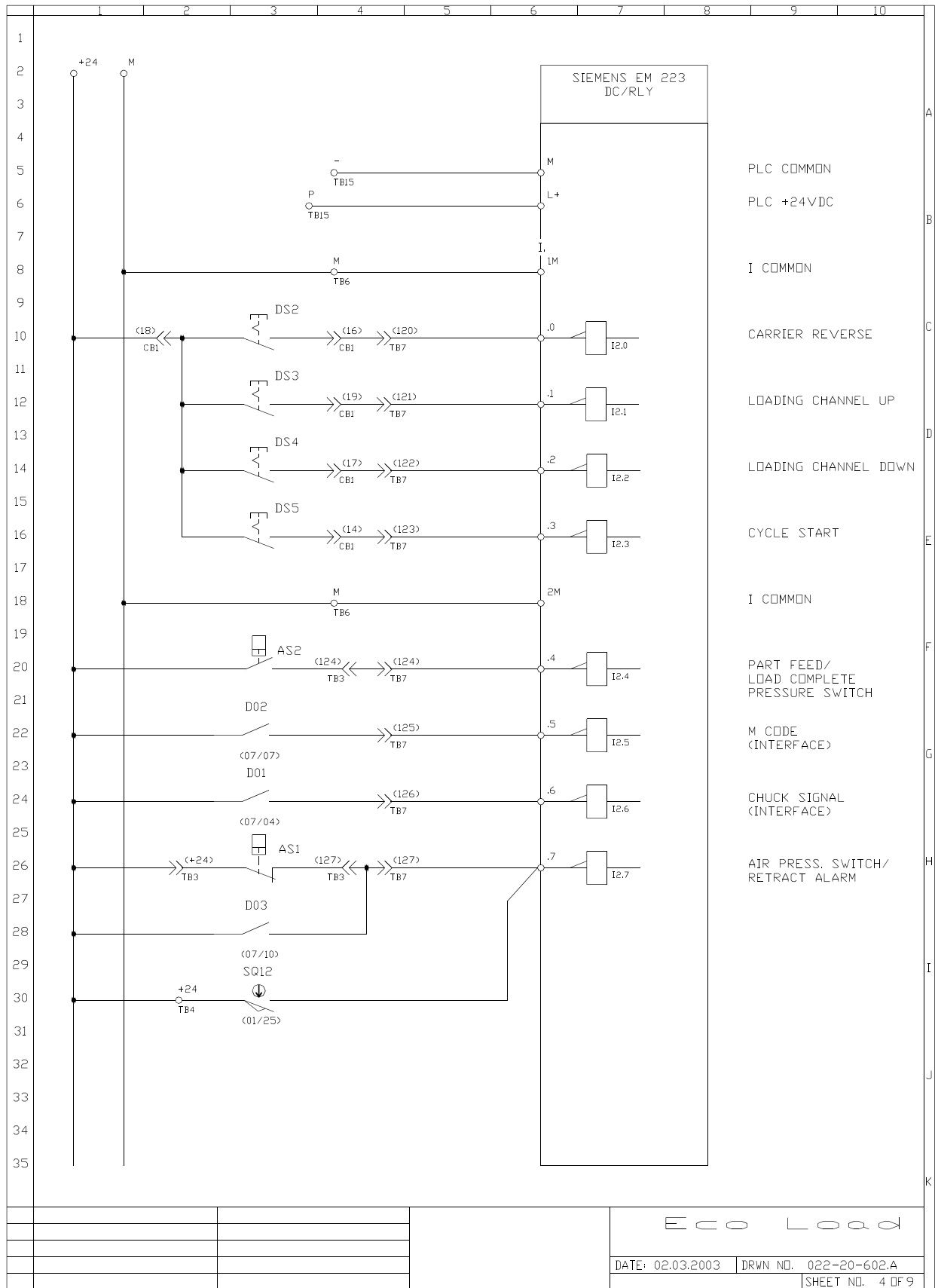


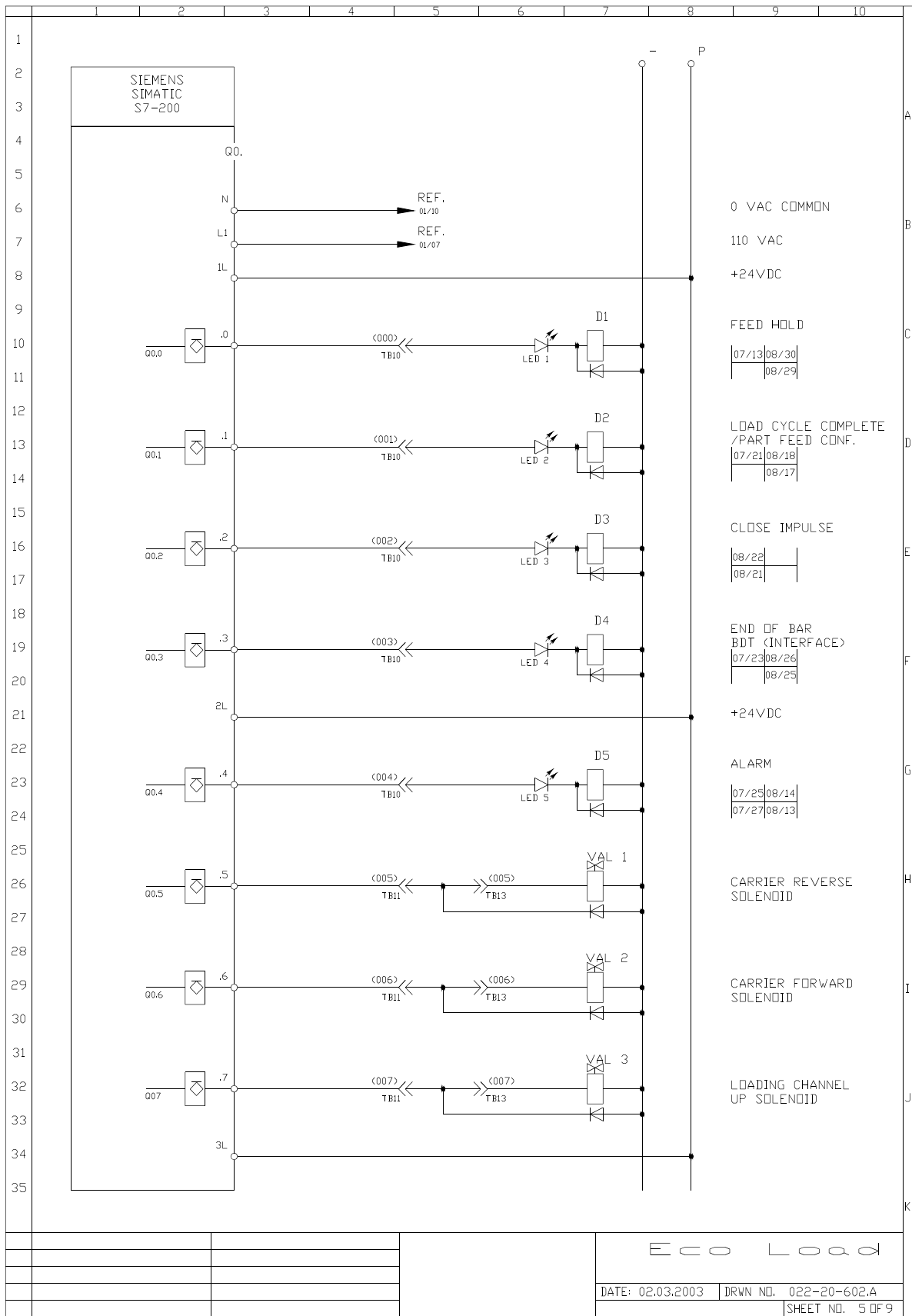
5.3 Diagrams

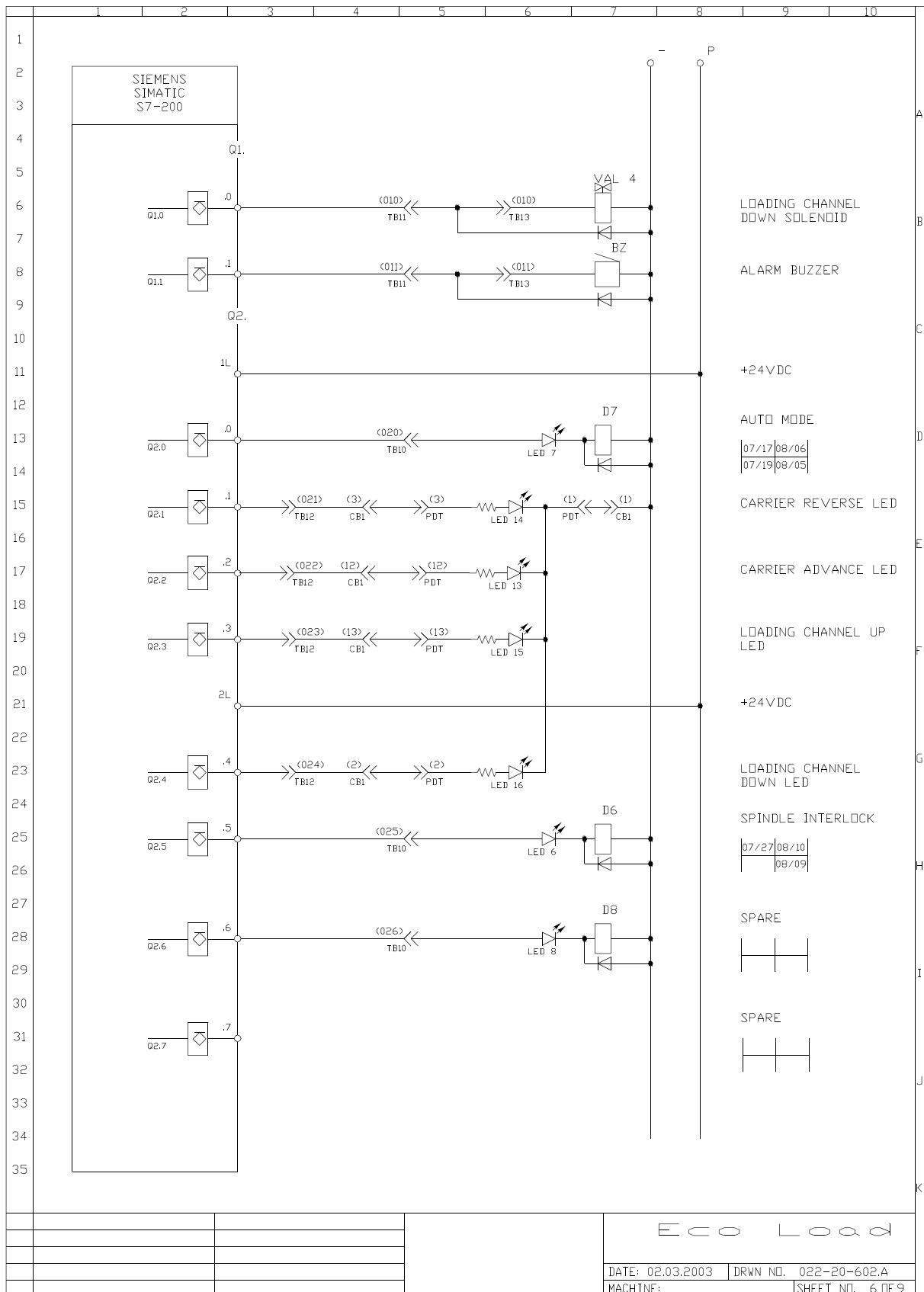


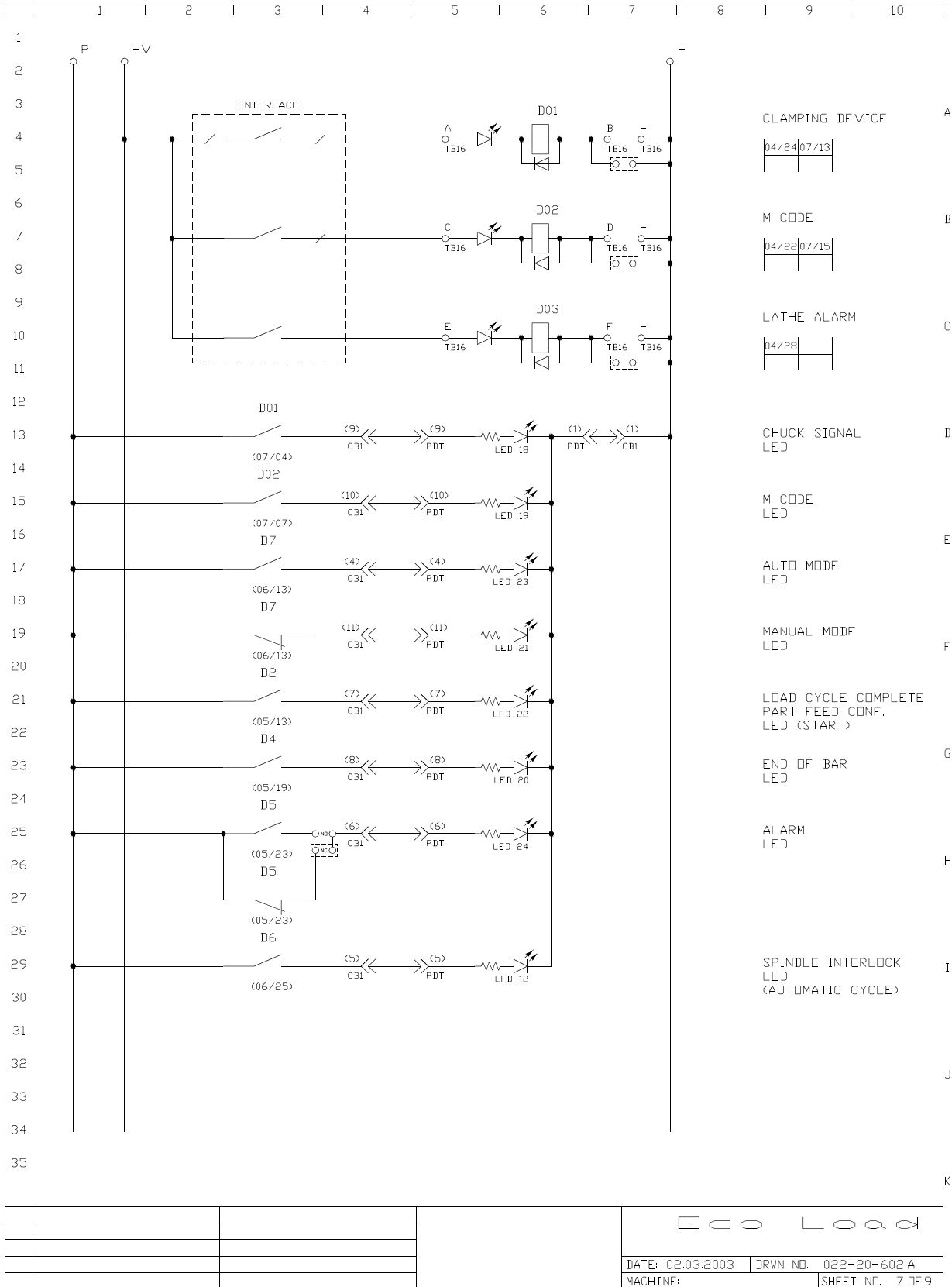


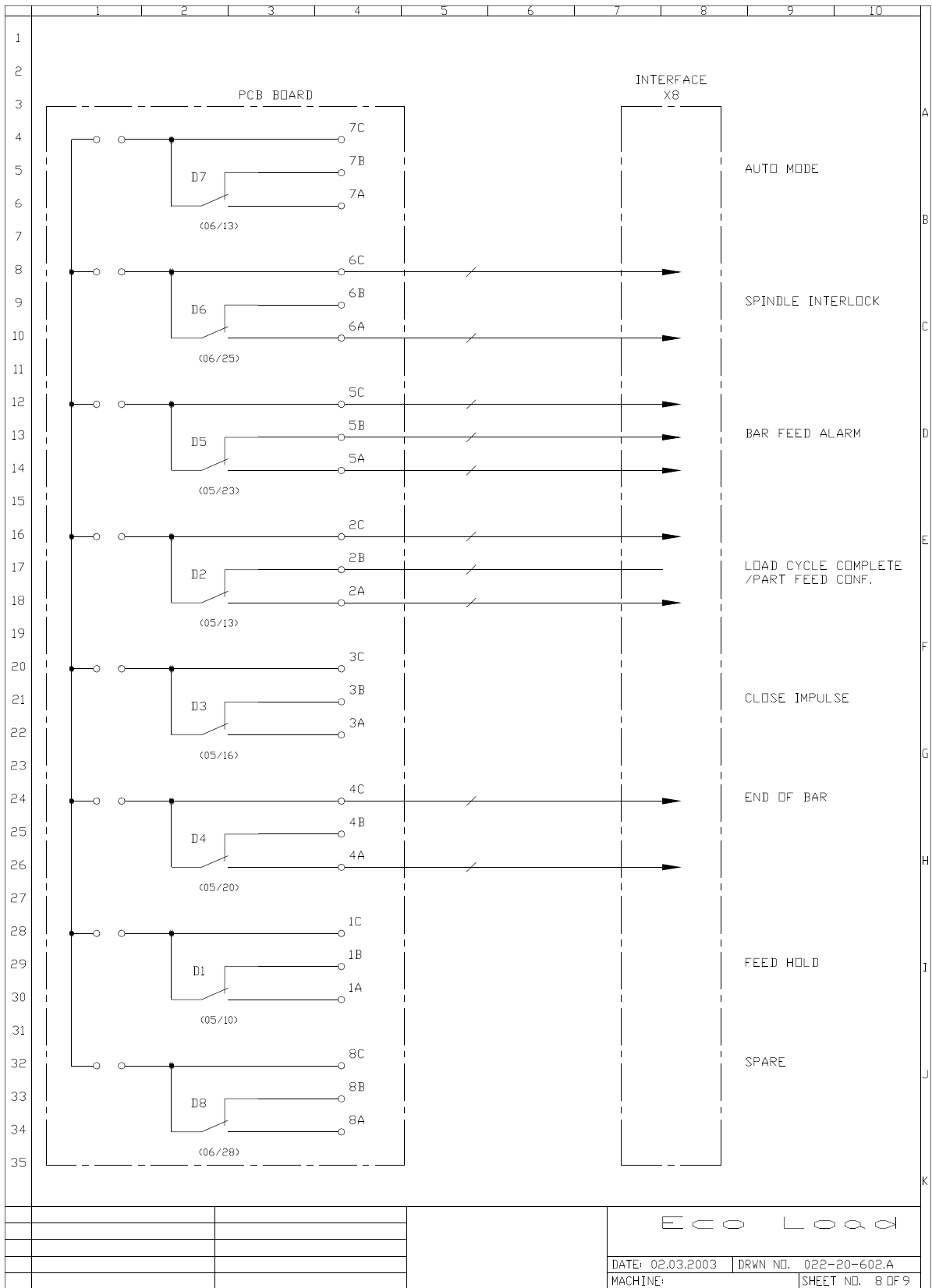




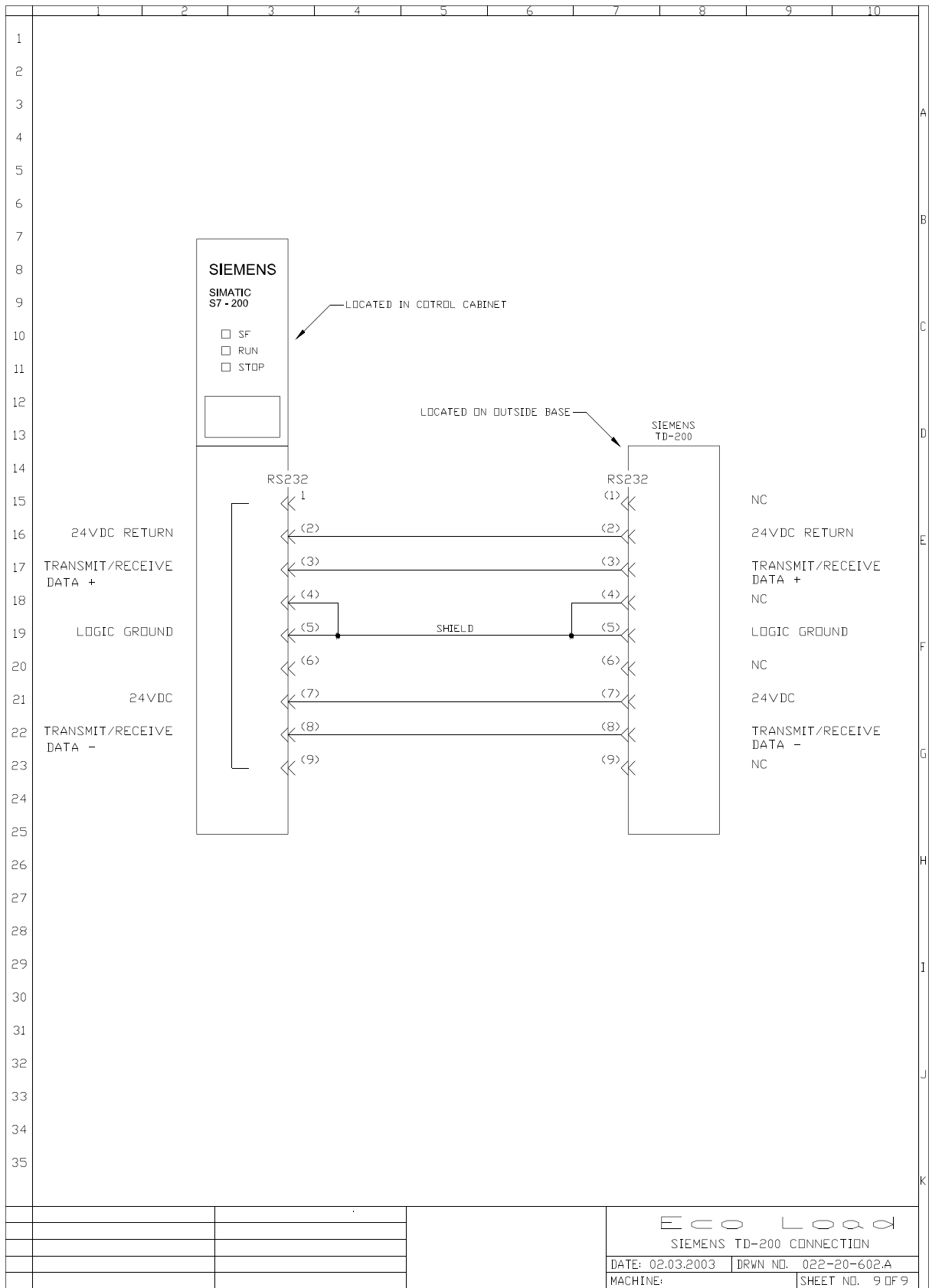




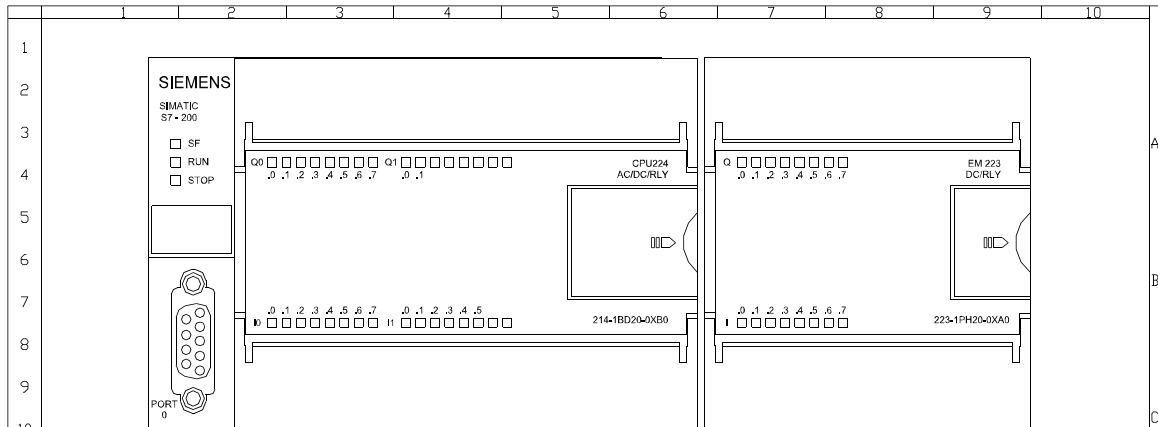












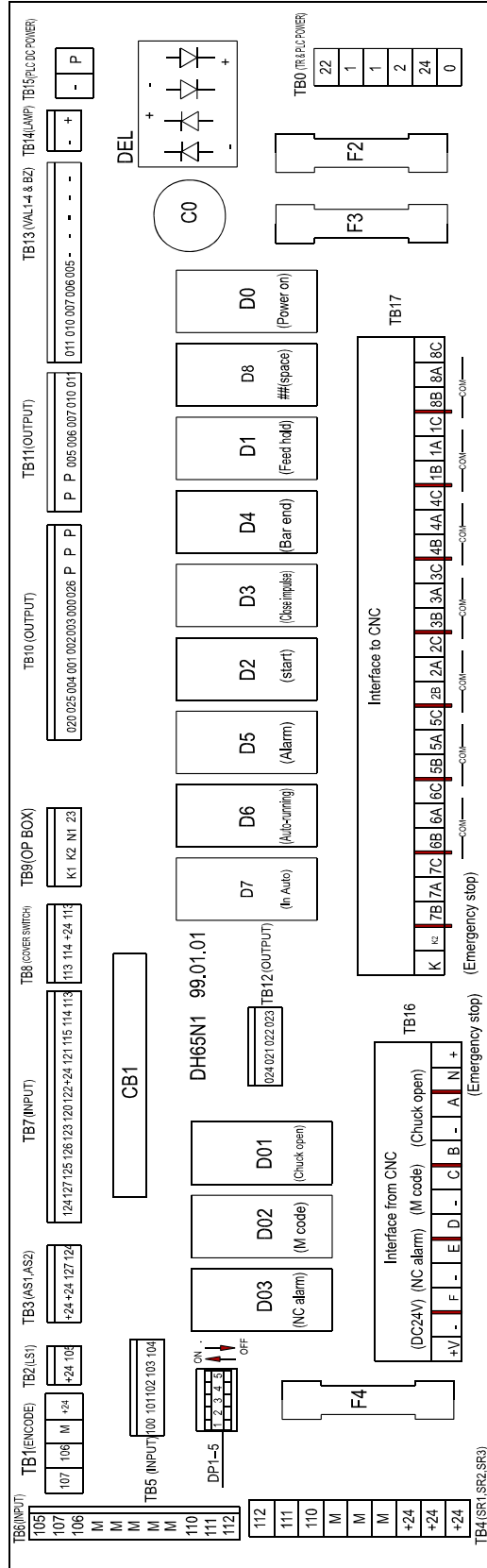
MODULE: CPU224 INPUTS

DESIGNATION	I/O	DESCRIPTION	DESIGNATION	I/O	DESCRIPTION
DP1	I0.0	DIP SWITCH 1	D1	Q0.0	FEED HOLD
DP2	I0.1	DIP SWITCH 2	D2	Q0.1	CYCLE START
DP3	I0.2	DIP SWITCH 3	D3	Q0.2	CLOSE IMPULSE
DP4	I0.3	DIP SWITCH 4	D4	Q0.3	END OF BAR
DP5	I0.4	DIP SWITCH 5	D5	Q0.4	ALARM
LS1	I0.5	MEASURING CELL	VAL. 1	Q0.5	CARRIER REV. SOL.
A	I0.6	ENCODER	VAL. 2	Q0.6	CARRIER FWD. SOL.
B	I0.7	ENCODER	VAL. 3	Q0.7	CHANNEL UP SOL.
SR1	I1.0	CHANNEL IN UPPER POSITION	VAL. 4	Q1.0	CHANNEL DOWN SOL.
SR2	I1.1	CHANNEL IN LOWER POSITION	BZ	Q1.1	ALARM BUZZER
SR3	I1.2	CARRIER IN HOME POSITION	D7	Q2.0	AUTO MODE
DS6	I1.3	AUTO MODE PB	LED14	Q2.1	CARRIER HOME PB LED
DS7	I1.4	MANUAL MODE PB	LED13	Q2.2	CARRIER MAX. FWD. PB LED
DS1	I1.5	CARRIER FORWARD PB	LED15	Q2.3	CHANNEL UP PB LED
DS2	I2.0	CARRIER REVERSE PB	LED16	Q2.4	CHANNEL DOWN PB LED
DS3	I2.1	CHANNEL UP PB	D6	Q2.5	AUTOMATIC CYCLE
DS4	I2.2	CHANNEL DOWN PB	D8	Q2.6	SPARE
DS5	I2.3	CYCLE START PB		Q2.7	SPARE
AS2	I2.4	FEED/LOAD COMPLETE			
D02	I2.5	M CODE			
D01	I2.6	CHUCK SIGNAL			
AS1/D03/SQ12	I2.7	NC ALARM/AIR SWITCH			

Eco Load  
SIGNAL DESCRIPTION

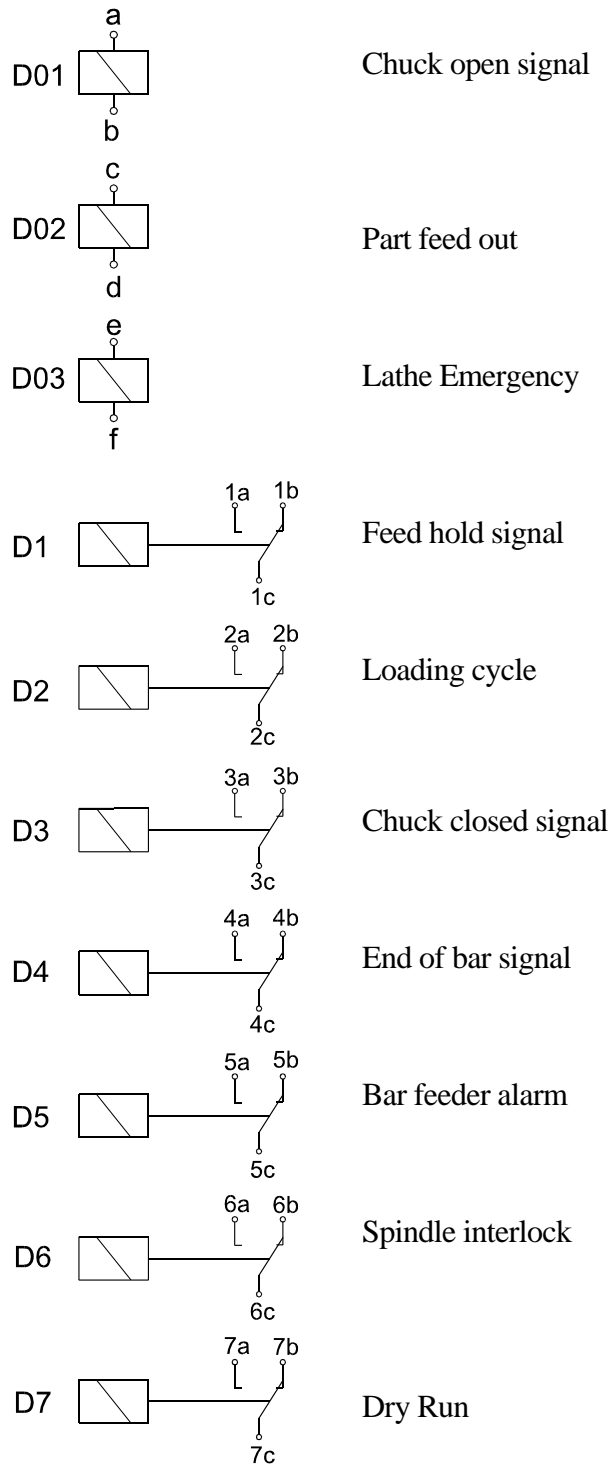
DATE: 02.03.2003 | DRWN NO. 022-20-602.A  
SHEET NO. OF

### 5.4 Layout

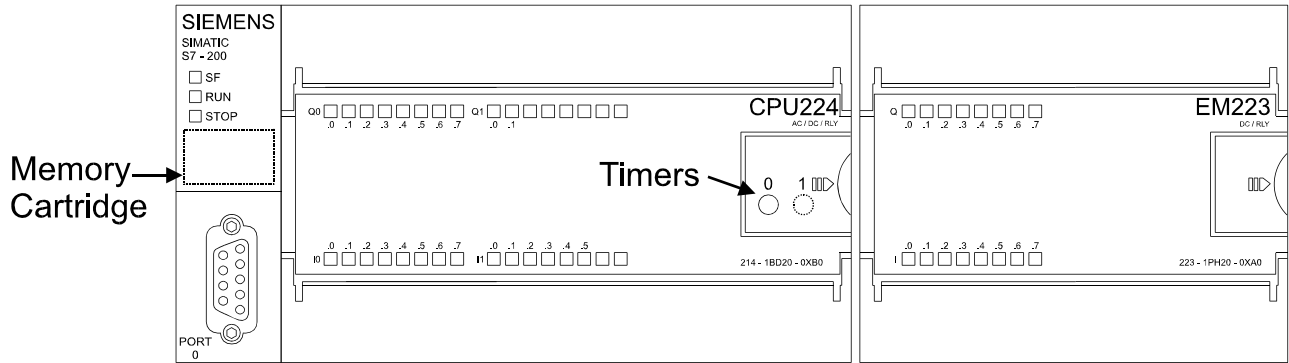


## 5.5 Inputs / Outputs

### 5.5.1 Signals description



### 5.5.2 CPU



- Timers      0      Timer for clamping device close (adjustable from 0-5 seconds)
- 1      Timer for remnant eject (adjustable from 0-5 seconds)

#### I/O Description CPU 224

- SF      =      System Fault
- RUN    =      PLC Ready
- STOP   =      PLC Not ready

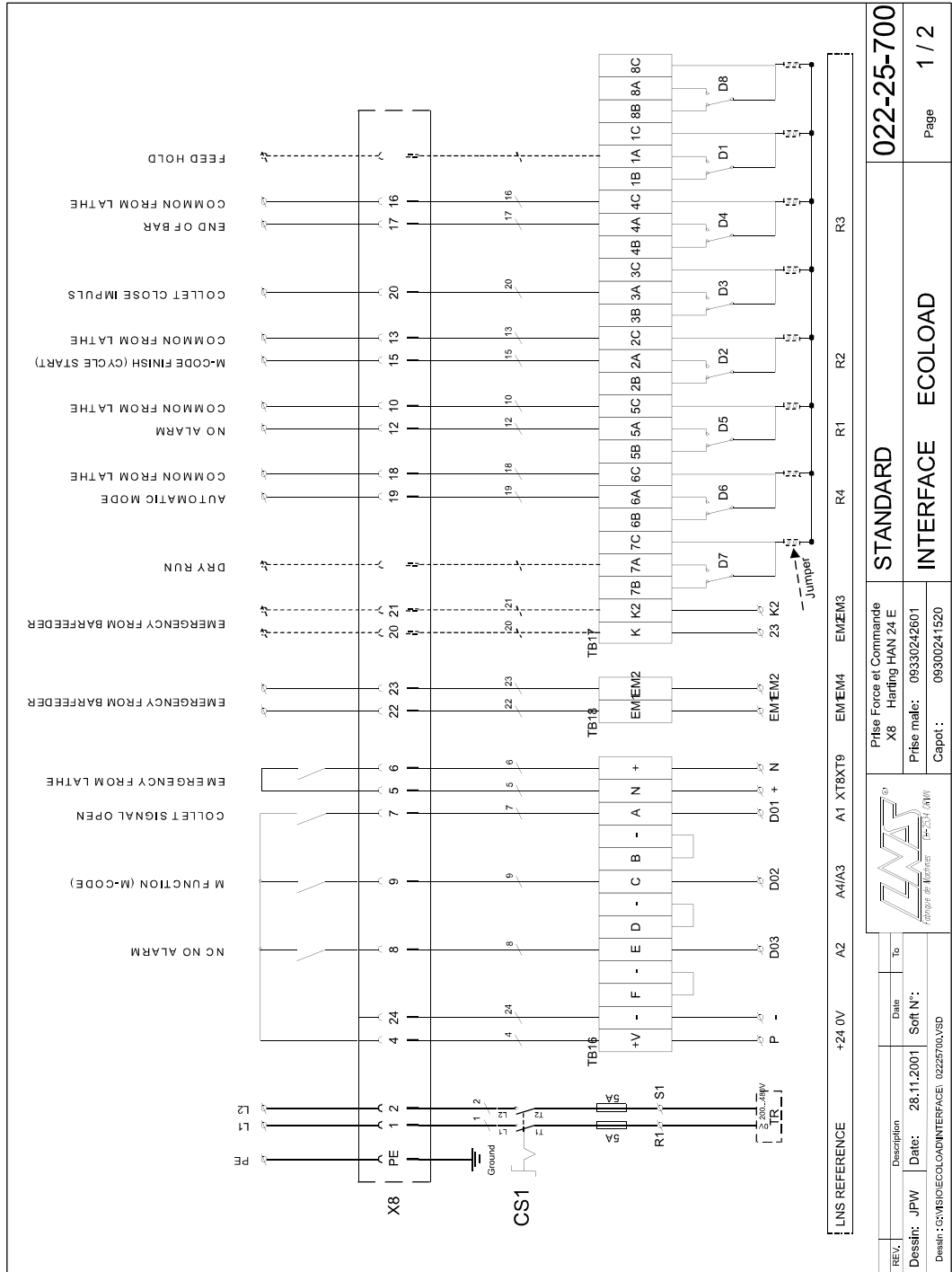
I/O	Signal	Description	I/O	Signal	Description	I/O	Signal	Description	I/O	Signal	Description
I0.0	DP1	Dip Switch 1	I1.0	SR1	Channel Up. Prox	Q0.0	D1	Feed Hold	Q1.0	Val.4	Channel Down Sol.
I0.1	DP2	Dip Switch 2	I1.1	SR2	Channel Down Prox	Q0.1	D2	Cycle Start	Q1.1	BZ	Alarm Buzzer
I0.2	DP3	Dip Switch 3	I1.2	SR3	Carrier Home Prox.	Q0.2	D3	Close Impulse			
I0.3	DP4	Dip Switch 4	I1.3	DS6	Auto Mode PB	Q0.3	D4	End of Bar			
I0.4	DP5	Dip Switch 5	I1.4	DS7	Man Mode PB	Q0.4	D5	Alarm			
I0.5	LS1	Measuring cell	I1.5	DS1	Carrier Fwd. PB	Q0.5	Val. 1	Carrier Rev. Sol.			
I0.6	A	Encoder				Q0.6	Val. 2	Carrier Fwd. Sol.			
I0.7	B	Encoder				Q0.7	Val. 3	Channel Up. Sol.			

#### I/O Description EMM 223

I/O	Signal	Description
I2.0	DS2	Carrier Rev. PB
I2.1	DS3	Channel Down PB
I2.2	DS4	Channel Up PB
I2.3	DS5	Cycle Start PB
I2.4	DS6	Feed/Load Complete
I2.5	D02	M Code
I2.6	D01	Chuck Signal
I2.7	AS1	NC Alarm/Air Switch

I/O	Signal	Description
Q2.0	D7	Auto mode
Q2.1	LED14	Carrier Home PB LED
Q2.2	LED13	Carrier Max. Fwd. PB LED
Q2.3	LED15	Channel Up PB LED
Q2.4	LED16	Channel Down LED
Q2.5	D6	Automatic Cycle
Q2.6	D8	Spare
Q2.7		Spare

### 5.6 Standard interface Europe



ERKLÄRUNGEN	DESIGNATION	DESIGNATION
+V	24 VDC Lademagazin	+V
-	0 VDC Lademagazin	-
N/+	Not-Stop Drehmaschine	N/+
K2/K	Not-Stop Lademagazin	K2/K
EM1/EM2	Not-Stop Lademagazin	EM1/EM2
A	Zange der Drehmaschine geöffnet	A
C	Start schieben (M-code mit Rückgabe D2)	C
E	Drehmaschine in Automatik Zyklus	E
D1	Relais Vorschub	D1
D2	Relais Start (Quittierung M-Code Signal C)	D2
D3	Hélas Spätnzüge zu	D3
D4	Relais Stangenende	D4
D5	Relais Lader keine Störung	D5
D6	Alarm-Relais	D6
D7	Signal Schieben EIN	D7
		Input 12.6
		Input 12.5
		Input 12.7
		Output Q0.0
		Output Q0.1
		Output Q0.2
		Output Q0.3
		Output Q0.4
		Output Q0.5
		Output Q0.6

DESIGNATION	DESIGNATION
+V	24 VDC Ravitailleur
-	0 VDC Ravitailleur
N/+	Arrêt d'urgence du tour
K2/K	Arrêt d'urgence du ravitailleur
EM1/EM2	Arrêt d'urgence du ravitailleur
A	Signal pince ouverte
C	Signal ordre de pousse (M-Code avec reset D2)
E	Signal tour en auto
D1	Relais poussée
D2	Relais Start (reset M-Code signal C)
D3	Relais pince fermée
D4	Relais fin de barre
D5	Relais pas d'alarme
D6	Relais ravitailleur en auto
D7	Relais ravitailleur prêt

F1	F2	F3	F4	F5	F6	F7	F8
							1294 / 1594 L

1	2	3	4	5

ON ↑  
OFF ↓

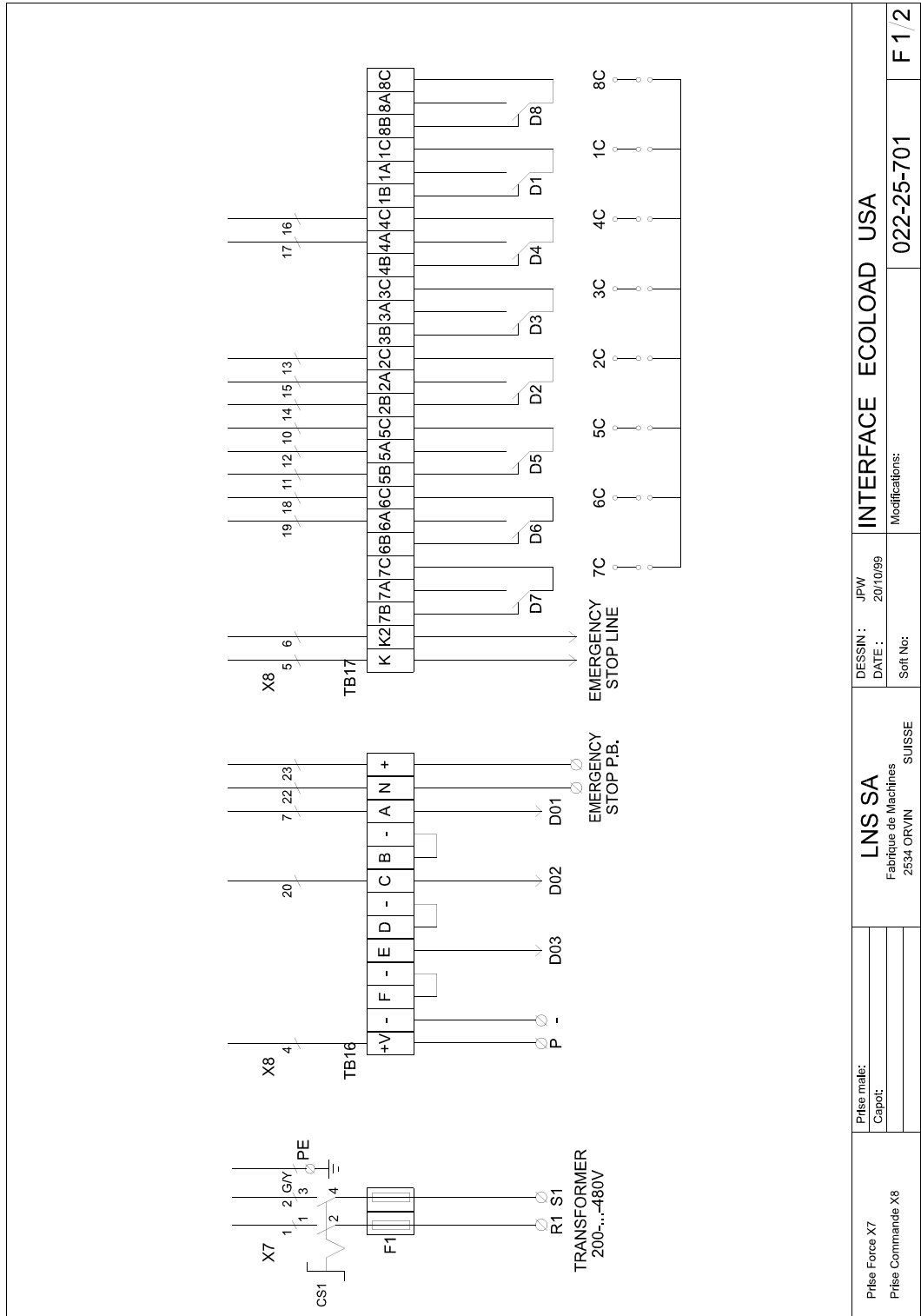
Switch 1-2 working with M-Code  
 Switch 3-4 Relay End of Bar (see manual book)  
 Switch 5 ON signal collet open is energized  
 Switch 5 OFF signal collet close is energized

REV	Description	Date	To
Dessin: JPW	Date: 28.11.2001	Soft N°:	
Dessin: G:\VISIO\ECOLOAD\INTERFACE\2225700_VSD			
			022-25-700
*Prise Force et Co. commande AS - Ha Sing - AM 24 E Prise male: 09300242601 Capot: 09300241520			Page 2 / 2
STANDARD			
INTERFACE			ECOLOAD



### 5.7 Interface USA



Prise Force X7 Prise Commande X8	Prise malic:	LNS SA Fabrique de Machines 2534 ORVIN SUISSE	DESSIN : JPW	INTERFACE ECOLOAD USA	
	Capot:		DATE : 20/10/99	Modifications:	022-25-701
			Soft No:		F 1 / 2

Erklärungen	Désignation	Description
+V	24 V DC Lademagazin	24 V DC Bar feeder
-	0 V DC Lademagazin	0 V DC Bar feeder
N	Sicherheitsskette Drehmaschine	E-Stop line
+	Sicherheitsskette Drehmaschine	E-Stop line
K2	Not-Stop Lademagazin	E-Stop PB
K	Not-Stop Lademagazin	E-Stop PB
A	Zange der Drehmaschine geöffnet	Clamping Device Open
C	Start Ladezyklus	M-Code Part Feed Out
E	Kein Alarm	NC alarm
D1	Relais Vorschub	Feed hold signal
D2	Relais Ende Ladezyklus	Load Complete, NC Restart
D3	Relais Spannzange zu	Close Impulse
D4	Relais Stangenende	End of Bar
D5	Relais Alarm Lader	Bar feeder Alarm
D6	Relais Lader Automatik	Spiralle Interlock
D7	Relais Lader bereit	Auto Mode
D8	Relais //Frei	Spare
		Output Q0.0
		Output Q0.1
		Output Q0.2
		Output Q0.3
		Output Q0.4
		Output Q2.5
		Output Q2.0
		Output Q2.6

INTERFACE PARAMETER	VALUE
F1	
F2	
F3	
F4	
F5	
F6	
F7	
F8	1594

INTERFACE PARAMETER	VALUE
ON	
1	
2	
3	
4	
5	
OFF	

Prise malér: Prise Commande X8	LNS SA Fabrique de Machines 2534 ORVIN SUISSE	DESSIN : JPW DATE : 20/10/99 Soft No:	INTERFACE ECOLOAD USA Modifications: 022-25-701	F 2 / 2
-----------------------------------	--	---	---	---------

## 6. START-UP PROCEDURE

### 6.1 General comments


The bar must be pushed right into the spindle. There is no mechanical connection between the feeder and the lathe. The Pusher-bar must pass through the clamping system to ensure that the bar remnant is ejected.

### 6.2 Adjusting the machine



#### 6.2.1 Setting the diameter


The diameter is adjusted by means of the hand-wheel II while checking on the scale I :

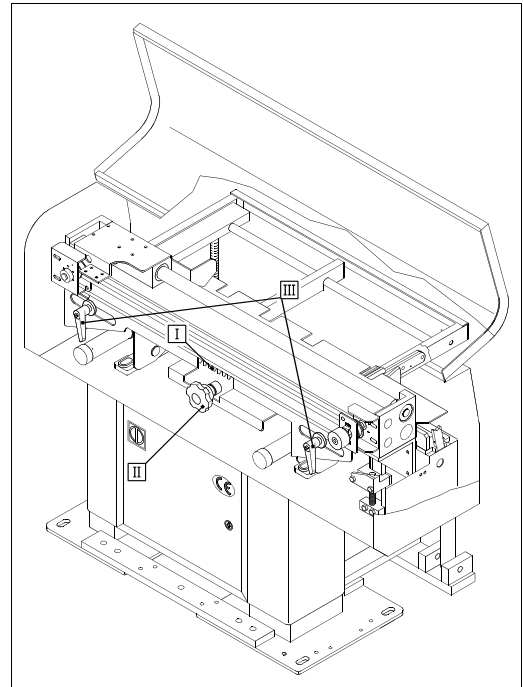
#### Procedure :

- Press the  button to switch to manual mode then place the button in the home position.
- Release the locking handles III
- Set the new diameter using the scale I
- Secure the locking handles III

Check setting and fine-tune, if necessary.

- Press the  button.
- Place bar stock in the magazine
- Move the bar stock forward and check that it enters the lathe spindle properly
- Remove the bar stock from the magazine.
- If necessary, readjust by pressing the  button and repeat the above procedure.

ATTENTION : The bar stock must be removed from the feeder before pressing the  button.



### 6.3 Adjusting the slant of the loading table



**ATTENTION :** Before starting to adjust the loading table, you must ensure that the compressed air is connected and the pressure is at least 6 bar.

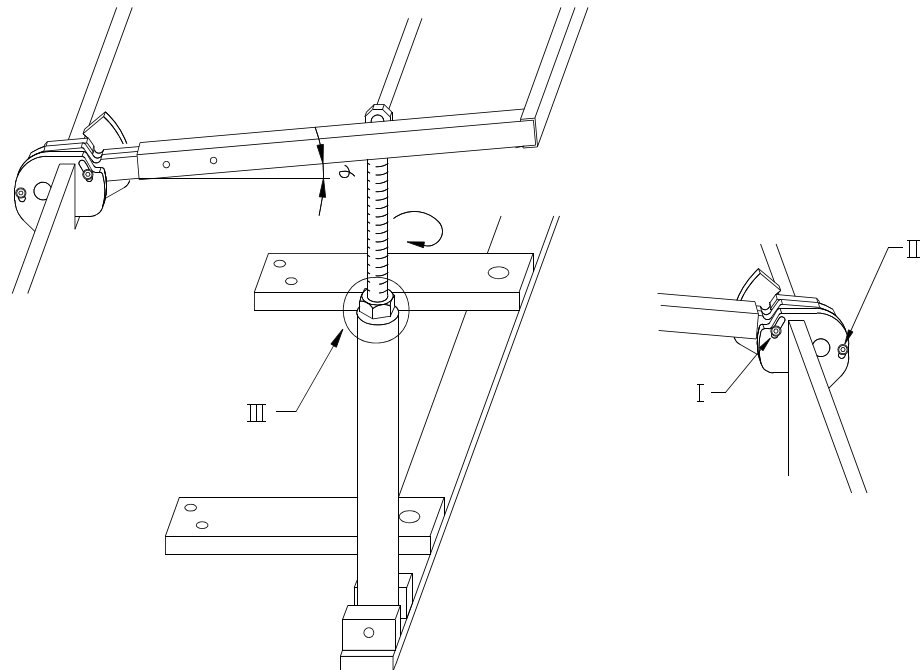
The slant of the bar magazine will depend on the cross-section of the bar stock to be loaded :

Round bar stock : 3 - 5 degrees

Hex bar stock : 20 degrees





#### Procedure :

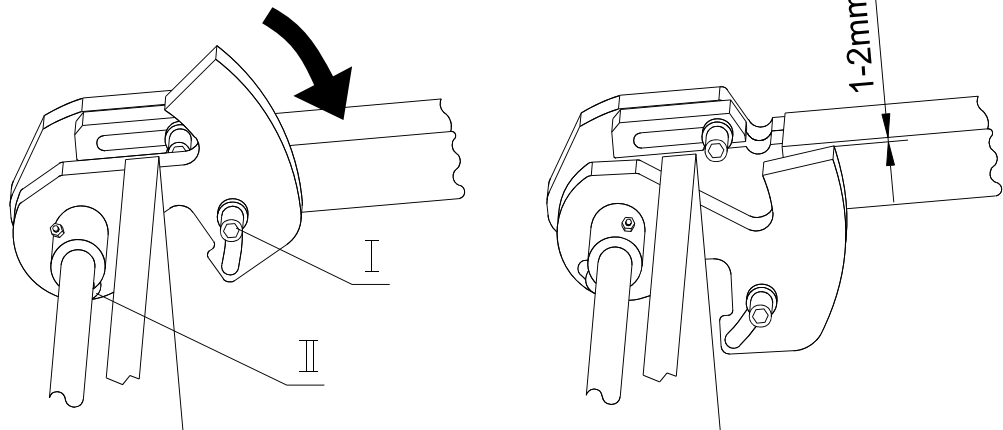
- Press the  button to switch to manual mode
- Press the  button to set the rake to 0°
- Loosen screws I and II
- Adjust the rake by raising or lowering nut III
- Retighten screws I and II





## 6.4 Loading fingers adjustment

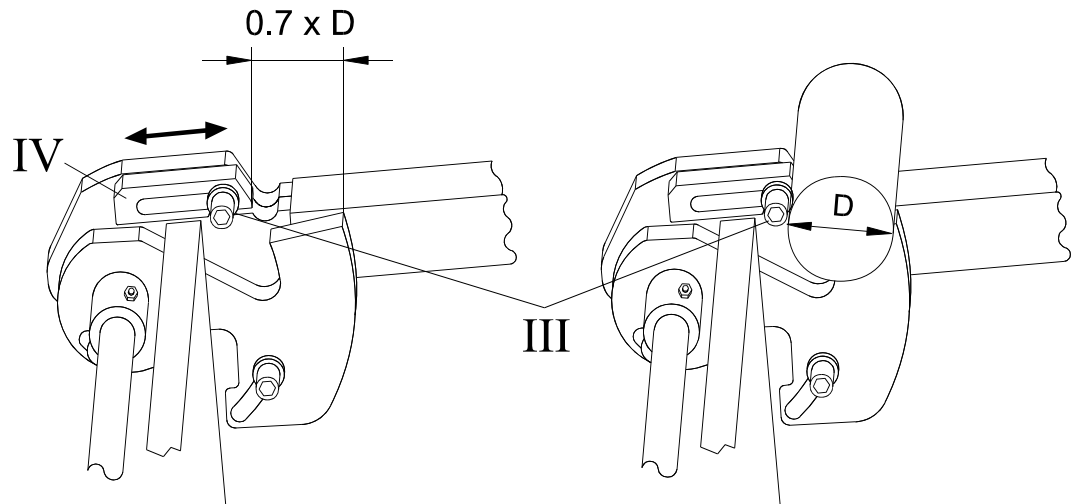
**ATTENTION :** Before adjusting the loading levers, you must ensure that the compressed air is connected and the pressure is at least 6 bar.

- Press the  button to switch to manual mode
- Press the  button to set the rake to 0°
- Loosen the 2 screws I.
- Loosen the 2 screws II.
- Press the  button to set the rake to 15°
- Adjust the ejection levers to 1-2 millimeters (0.04" - 0.08") below the surface of the loading table
- Secure one of the 2 screws I
- Press the  button to set the rake to 0°
- Secure the second of the 2 screws I and the 2 screws II



## 6.5 Adjusting the bar stops

- Press the  button to switch to manual mode
- Press the  button to set the rake to 15°
- Loosen the 4 screws III
- Adjust the stops IV so that only one bar is loaded at the time ( $0.7 \times$  bar diameter)
- Secure the screw III



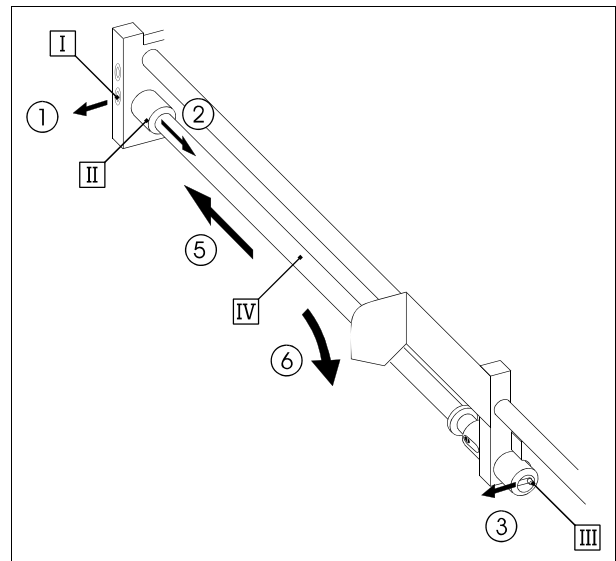
## 6.6 Pusher selection

The diameter of the pusher-bar must always be adapted to that of the bar stock..

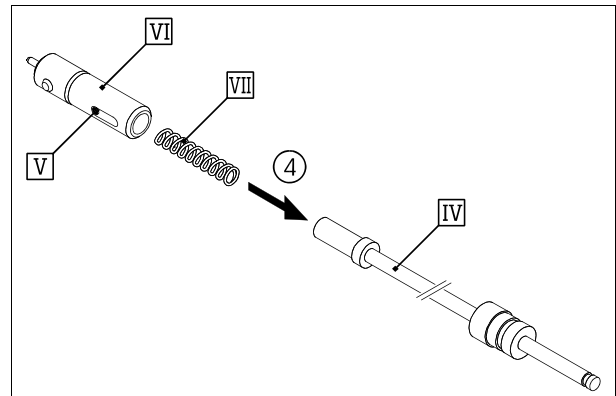
Pusher	Bar stocks
# 6 mm (0.236")	< 16mm (0.63")
# 12 mm (0.472")	16 mm - 25 mm (0.63"-1")
# 19 mm (0.75")	> 25 mm (1")

### a) Replacing the pusher

1. Loosen screw I to disengage bushing II
2. Move the bushing II backward
3. Pull pin III left side to disengage the pusher IV
4. Loosen screw V, remove the pusher IV from its support VI. **Take care to the spring VII located inside of the support**
5. Pull the pusher IV forward
6. Extract the pusher



Insert the new pusher by reversing the above procedure. Store the pusher that has just been removed into the cover (whence you took the new pusher-bar)



### b) Setting the pusher-bar pressure (force exerted)

Recommended settings :

Diameter	Pressure
up to 10 mm (0.4")	3 bar (45 Psi)
from 11 to 30 mm (0.43" - 1.18")	3 - 4 bar (45 - 60 Psi)
above 31 mm (1.22")	4 - 6 bar (60 - 80 Psi)

## 6.7 Optimising bar remnant

By observing the following recommendations, it is possible to reduce bar remnants to make best use of the material.

- Precisely adjust bar end
- Machine close to the chuck (clamping device)
- Calculate optimum bar length

### Calculating optimum bar length

A	:	maximum bar length
a	:	length of workpiece feed
b	:	minimum clamping length
l	:	optimum bar length
L	:	initial bar stock length
W	:	number of workpieces that can be cut from a bar

Example : A bar of length 3100 mm (122") is to be cut in order to be loaded by ECO LOAD. The feed length per part (part + face trimming + tool width) is 80 mm (3.15"). The minimum chuck clamping length (chuck length + projecting part) is 40 mm (1.57").

A = 1200 mm (47.2")	W = (A-b) / a
L = 3100 mm (122")	W = (1200 mm - 40 mm) / 80 mm ; (47,2" - 1.57") / 3.15"
a = 80 mm (3.15")	W = 14.5
b = 40 mm (1.57")	we opted for : 14 pieces per bar
W x a + b = A	l = W x a + b
W x a = A - b	l = 14 x 80 mm (3.15") + 40 mm (1.57")
	l = 1160 mm (45.7")

$$W = (A-b) / a$$

The bar of initial length 3100 mm (122") has to be cut as follows:

Two lengths of 1160 (45.7") will leave bar remnants of 40 mm (1.57") and a third length of 780 mm (30.7") will leave a 60 mm (2.36") bar remnant.

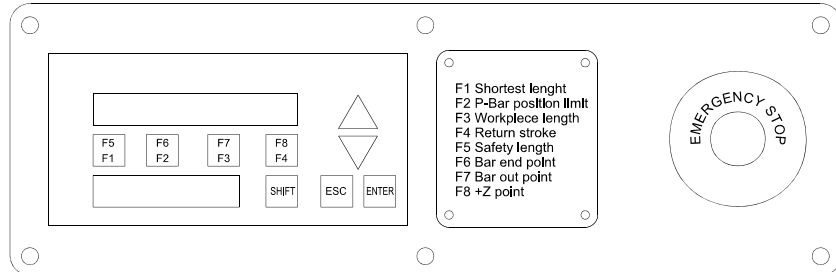
The waste from the original bar stock is the total of the 3 bar remnants, which is 140 mm (5.5").



## 7. OPERATING PROCEDURE


### 7.1 Control panel

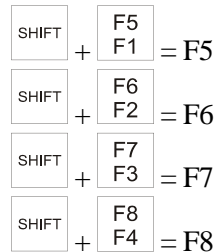
Once the connections between the lathe and the feeder have been completed, functions F1 to F8 have to be set so that the feeder can work in optimum conditions.






### 7.2 Operation of the control panel TD 200

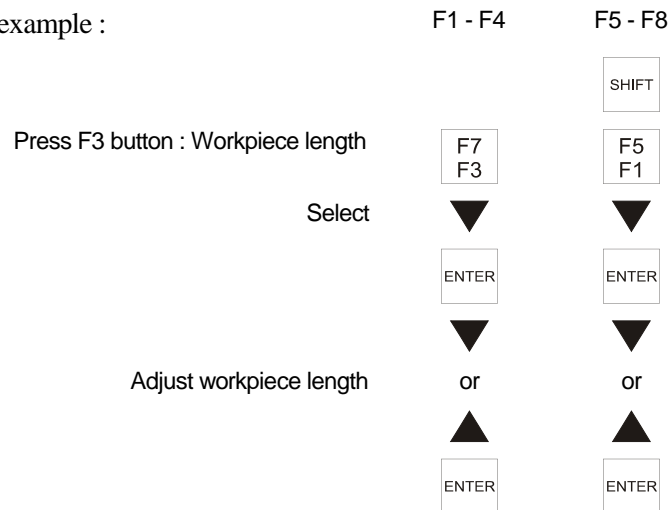
- To access functions F1 to F4, directly press the buttons.

To access functions F5 to F8, you have firstly to press the  button :



- The display shows two items of information at two levels.  
The  and  buttons are used for selecting one or other of these items.
- To confirm, press the  button.

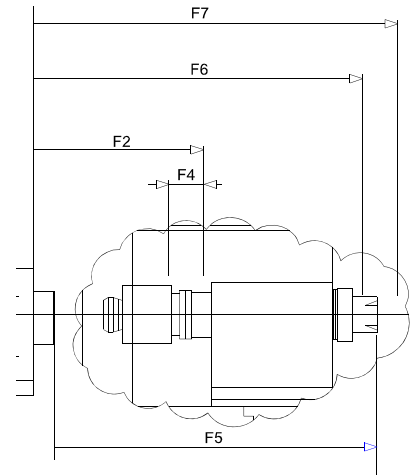
For example :



### 7.3 Functions F1 - F8

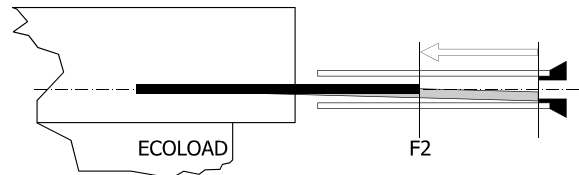
(All measurements given are in millimeters)

**F1 : Software version including date issued**  
(press for 2 seconds)



#### F2 : Pusher-bar position limit

The pusher-bar tends to flex as it leaves the device. As a result, in a given position, it might touch the inside of the spindle. Parameter F2 serves to limit the position of the pusher-bar when the spindle is rotating.

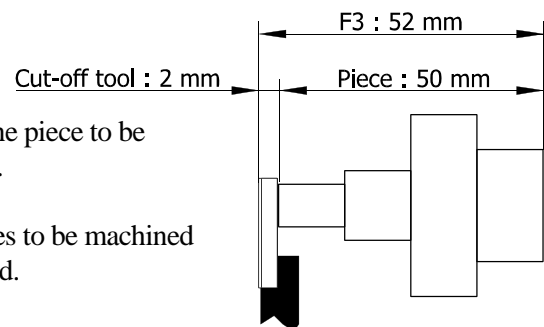


Each time the chuck closes at the beginning of the bar, the pusher-bar withdraws by the amount entered under parameter F4 in order that it not be in contact with the rotating bar. After a given number of workpieces, the pusher-bar will withdraw to the position defined in parameter F2 each time the chuck closes.

#### F3 : Workpiece length

The workpiece length includes the length of the piece to be machined and the thickness of the cut-off tool.

At each start-up, if the length of the workpieces to be machined changes, this parameter will have to be adapted.

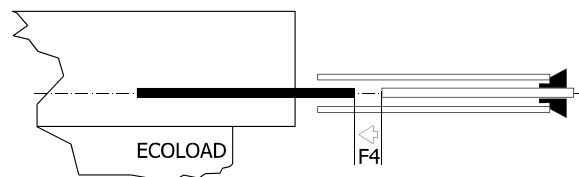


#### F4 : Pusher-bar return stroke

Each time the chuck closes, the pusher-bar returns by the amount set in parameter F4 in order that it does not come into contact with the rotating bar.

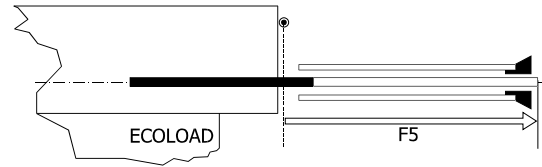
Enter a setting of over 1 mm.

The pneumatic cylinder will always withdraw to a distance greater than the distance set.



### F5 : Safety length

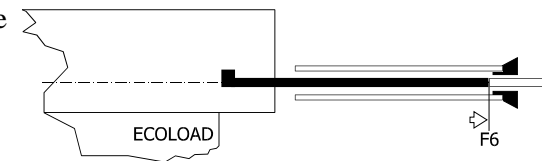
The parameter F5 confirms the position of the new bar in the lathe chuck. If the bar is blocked somewhere, the feeder will sound an alarm. Enter the correct setting:



F5 = Distance between the positioning sensor LS1 and the tip of the lathe chuck.

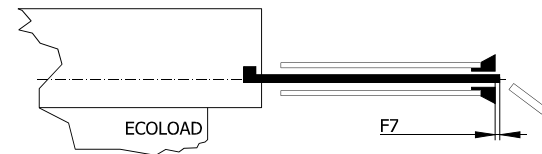
### F6 : End of bar point

This parameter indicates the limit to which the pusher-bar may advance behind the lathe chuck. When, during the work cycle, the pusher-bar reaches this position, the feeder knows that the material has been used up.



### F7 : Bar out point

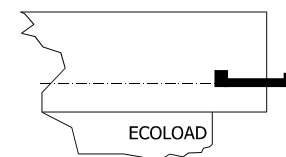
The pusher-bar is advanced until it projects 15 mm beyond the tip of the lathe chuck. Set parameter F7 to this position. Parameter F7 must always be greater than parameter F6, failing which the feeder will sound an alarm.



### F8 : +Z point

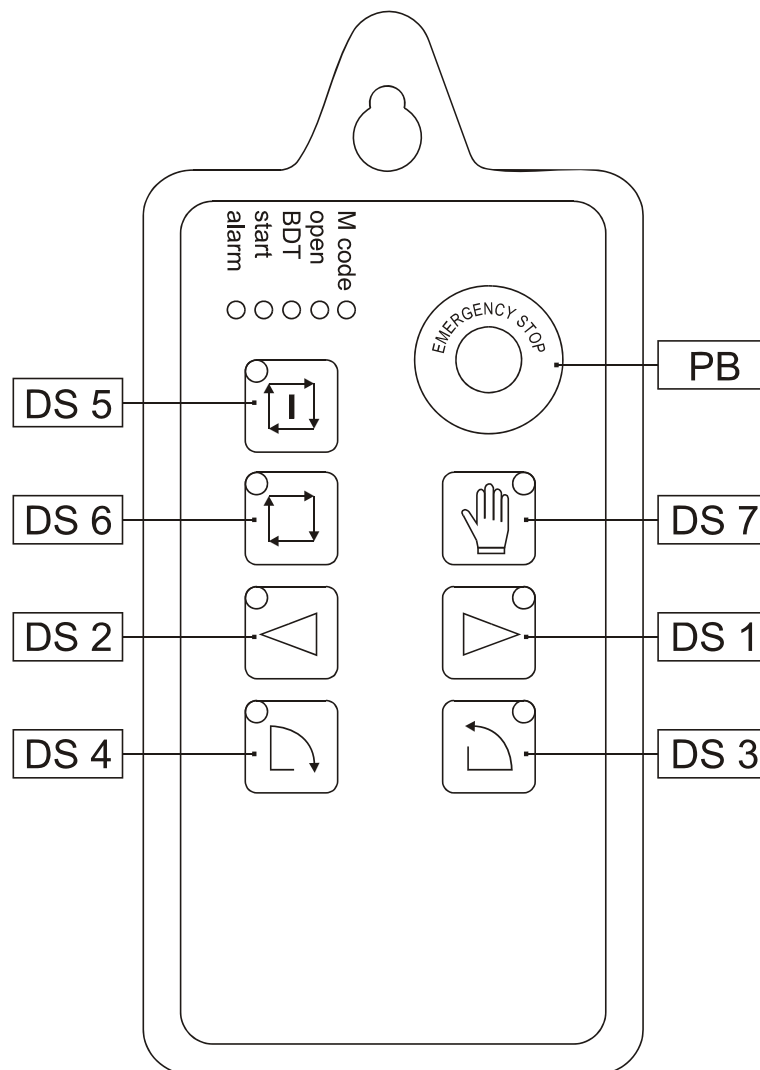
This parameter is factory set and will vary according to the type of feeder:

ECO LOAD : 1294  
ECO LOAD L : 1594








#### 7.4 Remote control

Designation	Description
DS 1	Forwards
DS 2	Backwards
DS 3	Position 0°
DS 4	Position 15°
DS 5	START button, for automatic mode. In this position the LED is on.
DS 6	Automatic mode
DS 7	Manual mode
PB	Emergency stop









## 7.5 Manual mode

- Press the  button and the button will light
- The buttons    and  are now active.


## 7.6 Automatic mode

### a) Start-up position

in manual mode :


- Press the  button
- If the  button does not light, press the  button until it lights.
- Press the  button and bring the pusher to its forward position
- Press the  button and bring the pusher to its home position
- Now press the  button again until it does light.



in automatic mode :


- Press the  button to bring the feeder to the start position..

### b) Start-up

IMPORTANT : This is possible only if the  button is lit.

- Press the  button and the feeder is in automatic mode.

To interrupt automatic mode, press the  button or the .

Automatic mode will resume on pressing the  button.

## 7.7 Alarms list

Alarms	Alarm text	Description
e01	SR1 or SR2 broken	SR1 and SR2 be ON simultaneously. It means one of those sensors is broken.
e02	SR1 or SR2 not active	S2/SR1 is not ON after SR1/ SR2 be OFF after internal timer is ON. ( which means the channel does not go to 0° / 15° degree position from 15° / 0° )
e03	First feed	Pusher cannot reach FIRST FEED position during first feed action.
e04	-	F7 is smaller than F6 (F6 must always smaller than F7)
e05	-	1) Pusher cannot TOP CUT position during TOP CUT process. 2) TOP CUT device ( as "measuring cell" in QLS ) was not reset before TOP CUT process is proceeded.
e06	-	The bar feeder does receive chuck open signal before: - A new bar stock arrives TOP CUT position - FIRST FEED action was proceeded.
e07	-	Magazine is empty
e08	-	Pusher current position was checked larger than F7 setup when chuck is open.
e09	-	Check if the chuck is open when the chuck opened during the BAR END signal is currently arising. The alarm will arise if the chuck open signal is less than 1 second.
e10	-	Remnant cannot be ejected. ( the pusher cannot arrive F7 position during the ejection process )  NOTE> uring bar change process. The bar feeder will proceed checkpoint e09, e10 then e05.

<b>Alarms</b>	<b>Alarm text</b>	<b>Description</b>
e11	Emergency stop	<p>1) Bar feeder emergency stop button was pressed.</p> <p>2) The lathe emergency stop button was pressed ( the emergency stop loop must be connected to the lathe )</p> <p>3) Air pressure is missing. The actual problem could be air pressure missing, AS1 or AS2 sensor is malfunction or soft start fitting is broken.</p> <p>4) The safety switch sensor is OFF/OPEN ( sensors attached in the main access cover or bar feeder retraction rail )</p>
e12	-	F1 is smaller than F3.
e13	-	<p>The pusher does not return to home position after</p> <p>1) FIRST FEED</p> <p>2) remnant ejection</p>
e14	-	<p>Part too short. This alarm will be activated when</p> <p>1) the feeding length is 10mm smaller than the part length setup</p> <p>2) the part length is longer than 15mm</p> <p>3) F1 be set "1"</p>

## 8. PROGRAMMING

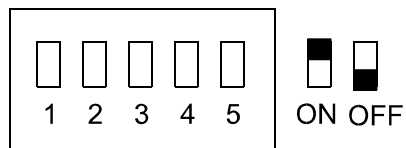
### 8.1 Function switches

The function switches are set by the technician and should, as a matter of principle, not be changed !

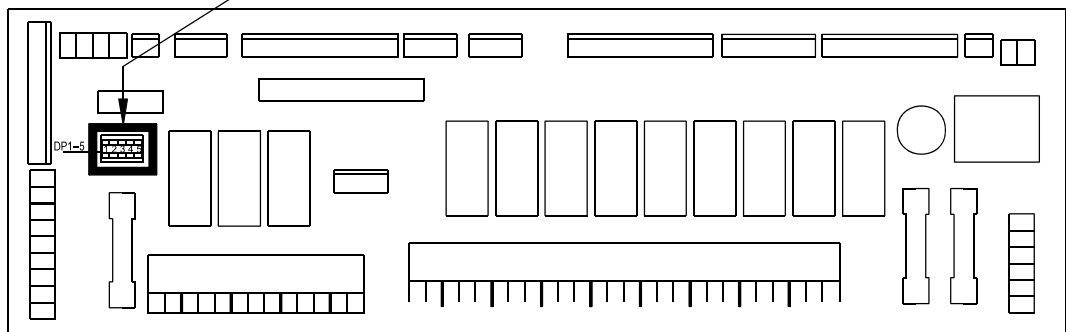
However, should this prove necessary :

- Turn off the machine at the master switch
- Open the electrical housing
- Set the parameters as indicated in the table below.
- Close the electrical housing
- Turn on the feeder.

Setting the machine :



PCB

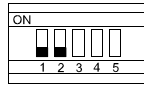


Function switch configurations		
Switch No.	Function	Switch position
1 - 2	Select program	OFF / OFF = START / STOP ON / OFF = with M-Code OFF / ON = single-bar cycle ON / ON = test program
3 - 4	Signal block delete	OFF / OFF = permanent signal ON / OFF = double pulse OFF / ON = double pulse ON / ON = permanent signal
5	Chuck selection	ON = If signal is "1" with Chuck closed OFF = If signal is "1" with Chuck open



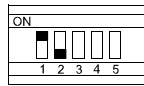
## 8.2 Description of the function switches

switch 1,2



### Program 1

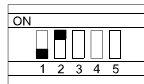
Start signal by D01 only



### Program 2

With M-code

Start signal by D01 and D02



### Program 3

Single bar cycle

A new bar is loaded with each cycle

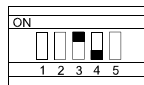


### Test program

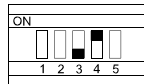
switch 3,4



Relay D4 is constantly active during loading



When the end of bar is detected, the feeder sends a pulse to the lathe. When the feed cycle ends, the feeder sends another pulse.

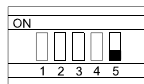


When the end of bar is detected, the feeder sends a pulse to the lathe. When the feed cycle ends, the feeder sends another pulse

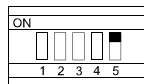


Same principle as with the previous configuration, but the D4 output signal is activated before the chuck closes..

switch 5



Input I 2.6 (signal D01) is activated when the collet of the lathe is open



Input I 2.6 (signal D01) is activated when the collet of the lathe is closed

### 8.3 Description of wiring

#### General comment

The interface diagram located in the door to the electrical housing will help you to simply interface.

The relays, D1-D7, on the control card are not live.

Inputs D01-D03 require a 24VDC power supply.  
Use the 24v from the feeder and free power terminals in the lathe.

#### Description for working mode

### 8.4

#### Working mode

#### 8.4.1

#### Connection by the chuck signal only (D01).

If switches 1 & 2 are OFF, the working program requires an "open chuck" signal (D01) to feed in the workpieces.

When the "Bar-end point" is activated, the feeder awaits signals (D01) and (D02) to start the feed cycle.

The end of the loading cycle is confirmed by relay D2 as soon as the bar has reached position "F6".

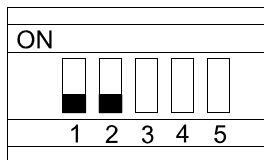
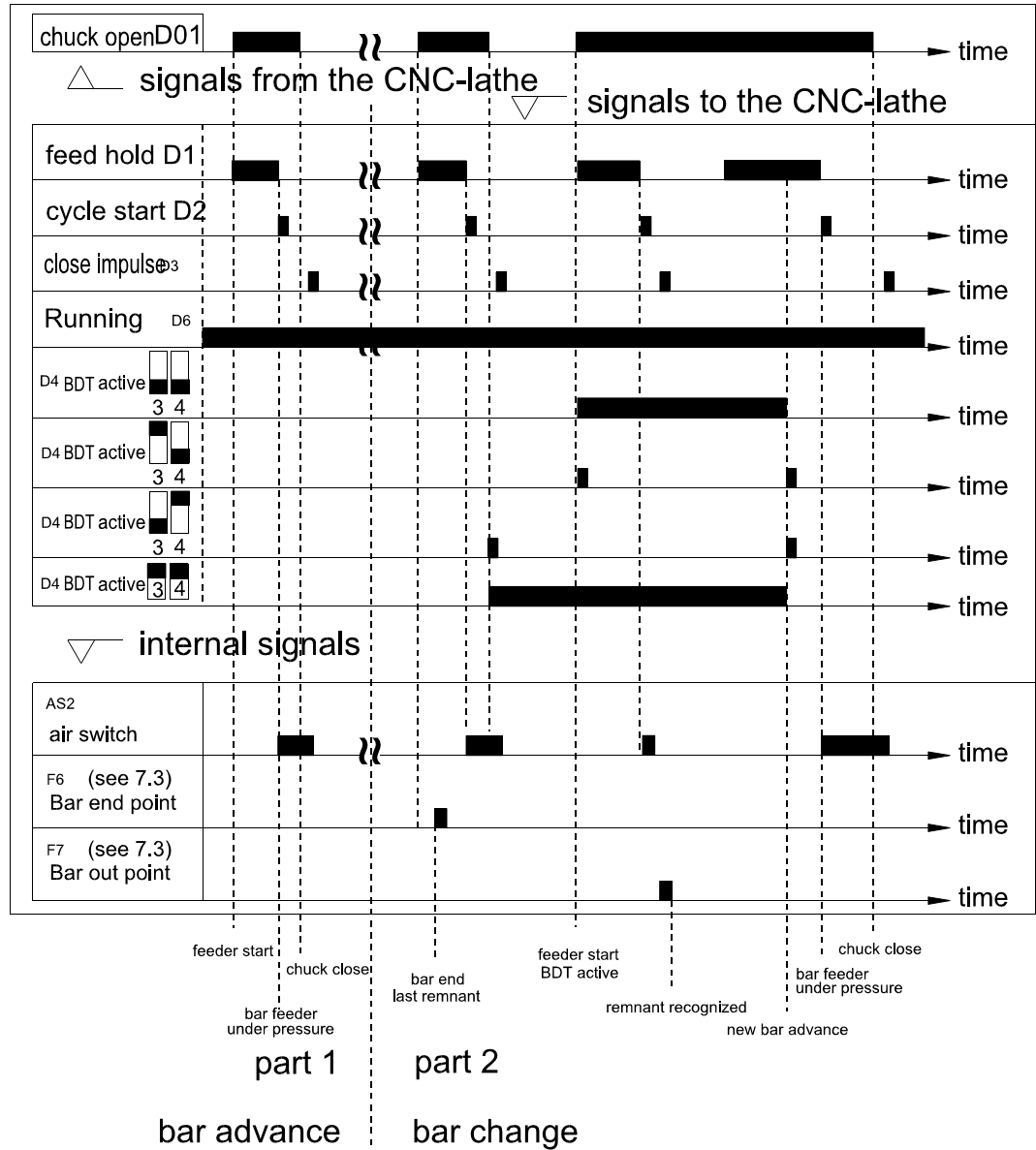
#### Connection with the chuck signals (D01) and M-code (D02)

If switch 1 = ON and switch 2 = OFF, the work program now requires a chuck signal (D01) and an M-code signal (D02) to feed the workpieces.

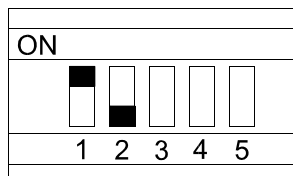
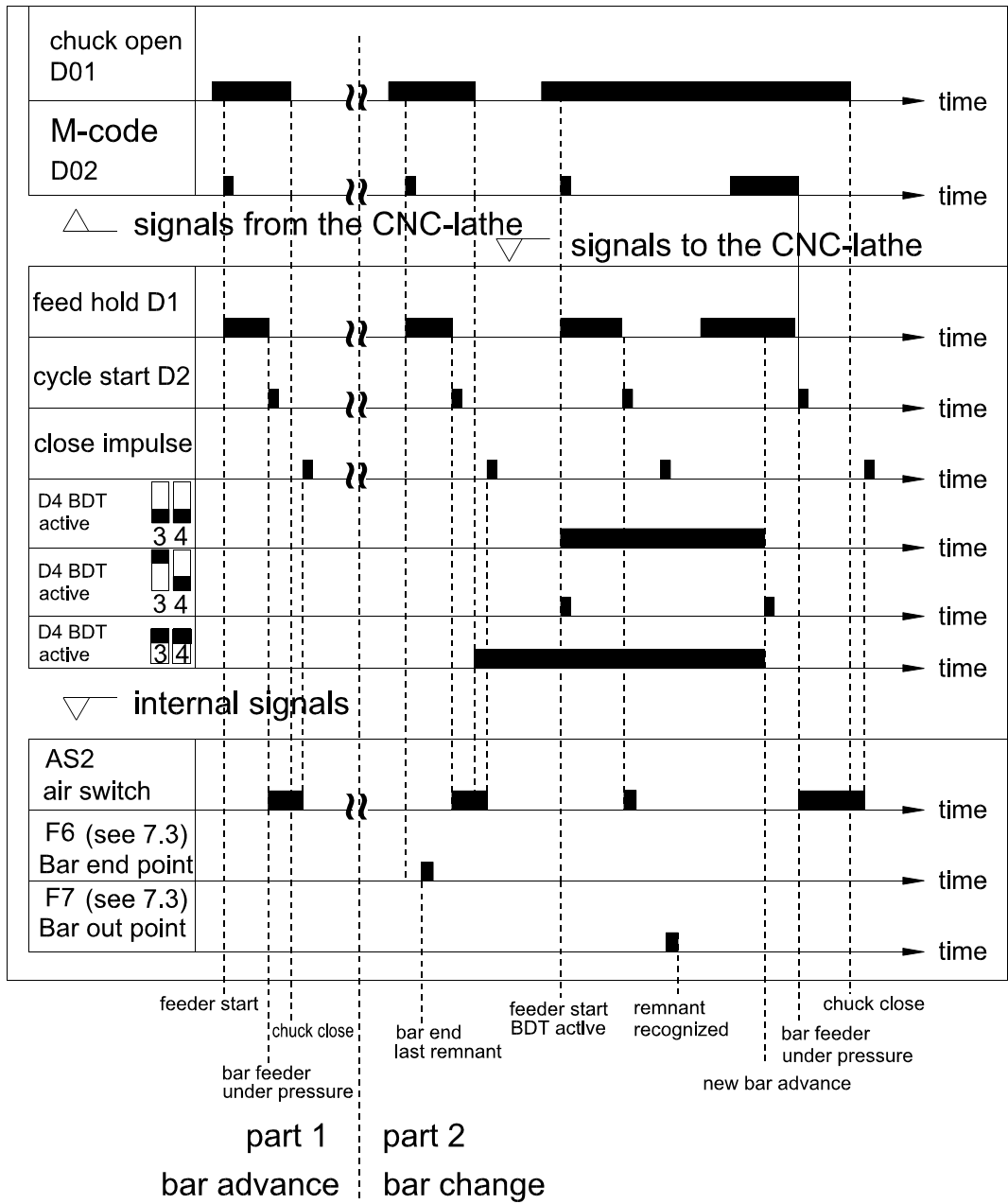
The "M-code" will be confirmed once the bar-pushing screw-jack is supplied with compressed air.

## 8.5 Interface signals

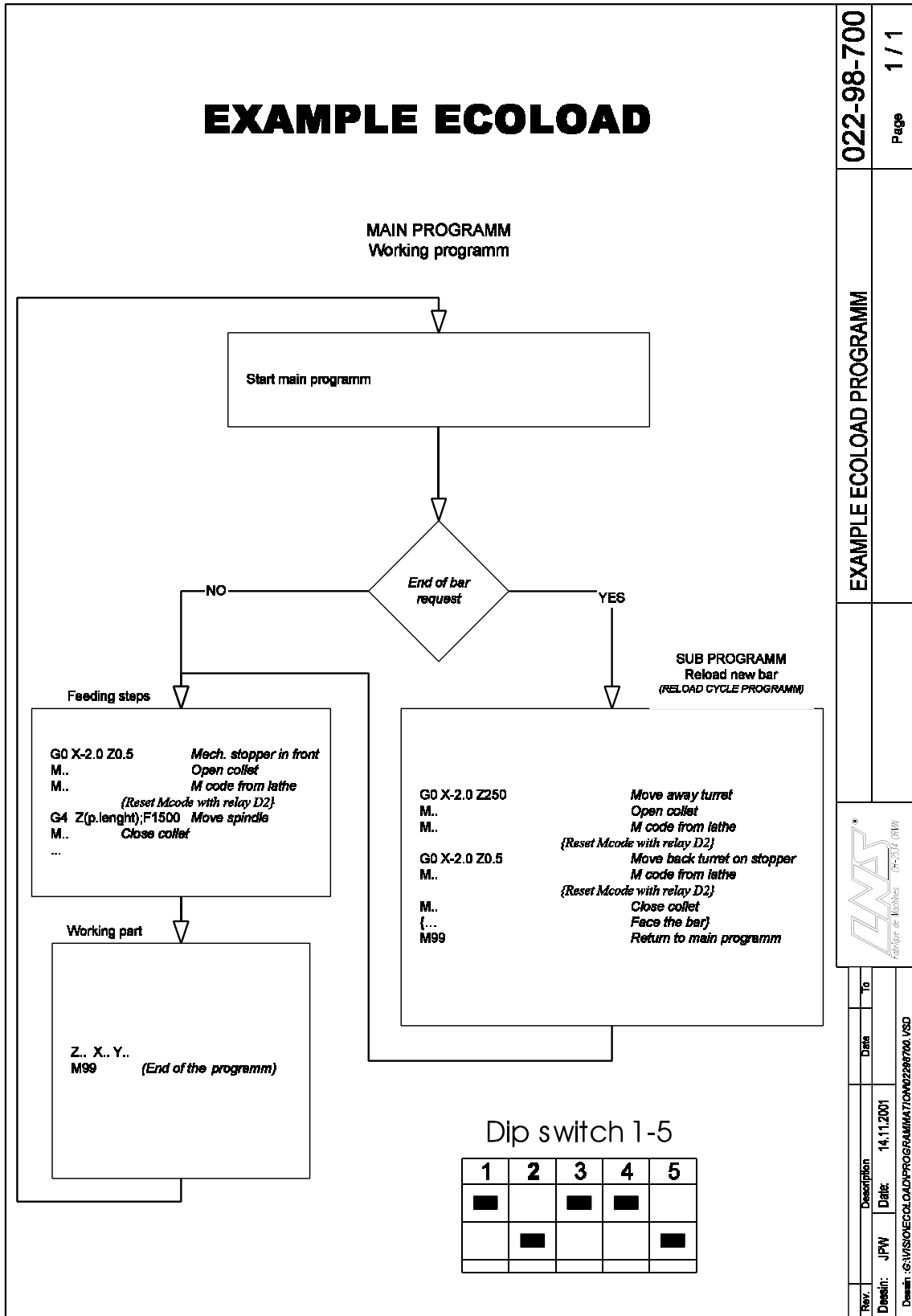
### 8.5.1 Program 1 (without M-function)



8.5.2 Program 2 (with M-function)



8.6 Programming example



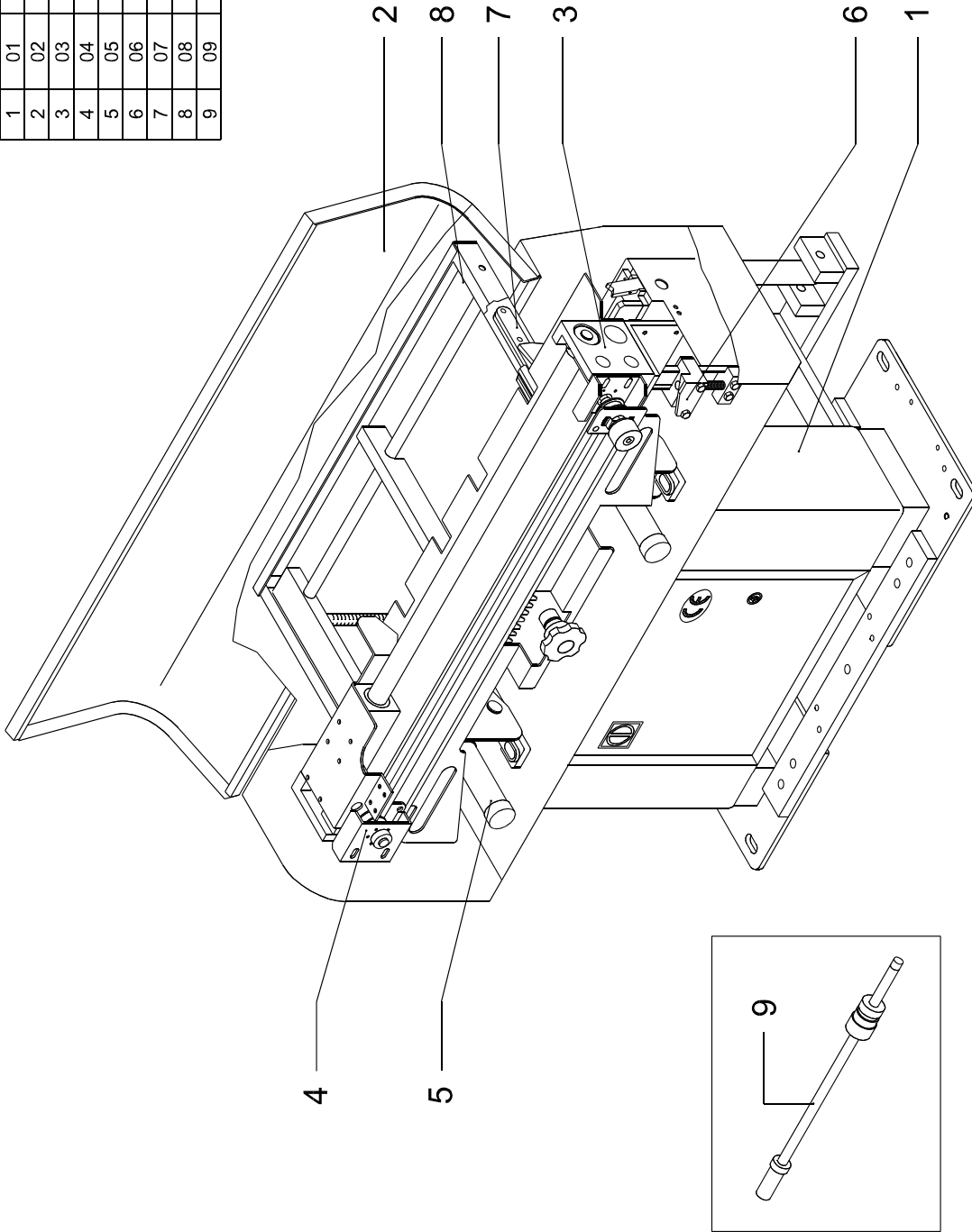
## 9. LNS AGENCIES

<b>BELGIUM</b>		
SL-TECH Industrial Automation & Services Avenue du Bois Jacquet 15 BE - 7711 DOTIGNIES	TEL. +32 56 845 699 FAX +32 56 845 609	<a href="mailto:stephane.leloup@sltech.be">stephane.leloup@sltech.be</a>
<b>BRAZIL</b>		
SYSTEC Metalúrgica Ltda. Rua Luiz Brisque, 980 BR - 13280-000 – Vinhedo – SP	TEL. +55 19 3886 6900 FAX +55 19 3886 6970	<a href="mailto:systec@systemetal.com.br">systec@systemetal.com.br</a> <a href="http://www.systemetal.com.br">www.systemetal.com.br</a>
<b>DENMARK</b>		
N.L. TOOLS Kuldysen 13 I. Sal DK - 2630 TASTRUP	TEL. +45 43 71 17 29 FAX +45 43 71 23 59	<a href="mailto:nltools@vip.cybercity.dk">nltools@vip.cybercity.dk</a>
<b>FINLAND</b>		
GROENBLOM AB P.O. Box 81 Mekaanikonkatu 6 FI - 00811 Helsinki	TEL. +35 89 755 8240 FAX +35 89 780 715	<a href="mailto:gronblom@gronblom.fi">gronblom@gronblom.fi</a> <a href="http://www.gronblom.fi">www.gronblom.fi</a>
<b>FRANCE</b>		
LNS FRANCE Pae les Jourdiés BP 355 St-Pierre en Faucigny FR - 74807 LA ROCHE S/FORON CEDEX	TEL. +33 4 50 03 93 32 FAX +33 4 50 03 93 34	<a href="mailto:lnsfrance@lns.fr">lnsfrance@lns.fr</a>
<b>GERMANY</b>		
MAW WERKZEUGMASCHINEN GMBH Industriestrasse 6 Postfach 60 01 64 DE - 71050 SINDELFINGEN	TEL. +49 703 17 37 60 FAX +49 703 13 82 005	<a href="mailto:info@maw-gmbh.de">info@maw-gmbh.de</a> <a href="http://www.maw-gmbh.de">www.maw-gmbh.de</a>
<b>GREAT BRITAIN</b>		
LNS TURBO UK Limited Waterside Park, Valley Way Wombell GB - Barnsley S73 0BB	TEL. +44 1226 27 00 33 FAX +44 1226 27 00 44	<a href="mailto:sales@lnsturbo.uk">sales@lnsturbo.uk</a> <a href="http://www.turbosystemsinc.com">www.turbosystemsinc.com</a>
<b>HUNGARY</b>		
Prevotex Hungary Kft. Lágymányosi út 6. HU - 1111 BUDAPEST	TEL. +36 1 279 26 50 FAX +36 1 279 26 59	<a href="mailto:info@prevotex.hu">info@prevotex.hu</a> <a href="http://www.prevotex.hu">www.prevotex.hu</a>
<b>INDIA</b>		
TETRAMA CONSULT PVT LTD Flat 523, The Embassy 15, Ali Asker Road IN - 560 052 BANGALORE	TEL. +91 80 220 48 87 FAX +91 80 220 23 37	<a href="mailto:contact@tetrama.com">contact@tetrama.com</a> <a href="http://www.tetrama.com">www.tetrama.com</a>
<b>ISRAEL</b>		
M.T.M. Machine Tool Marketing Ltd. Habazel Str, 31 P.O. Box 13334 IL - 61132 TEL AVIV / RAMAT-HACHAYAL	TEL. +97 23 647 9560 FAX +97 23 647 9578	<a href="mailto:sales@mtm.co.il">sales@mtm.co.il</a> <a href="http://www.mtm.co.il">www.mtm.co.il</a>
<b>ITALIA</b>		
LNS AUTOMAZIONE S.R.L. Via Mons. Colombo 34 IT - 21053 CASTELLANZA – VA	TEL. +39 0 331 501 901 FAX +39 0 331 482 101	<a href="mailto:lns@lnsautomazione.it">lns@lnsautomazione.it</a>

<b>NORWAY</b>		
VEMA BRYNILDSRUD Maskin As Postbox 114 Vestre Nes 2 NO - 1378 NESBRU	TEL. +47 669 83 634 FAX +47 669 83 640	<a href="mailto:vema@vema.no">vema@vema.no</a> <a href="http://www.vema.no">www.vema.no</a>
<b>PHILIPPINES</b>		
MESCO INC. P.O. Box 1688 MCPO 1256 MAKATI METRO MANILA PHILIPPINES	TEL. +632 631 17 75 FAX +632 631 40 28	
<b>POLAND</b>		
Prevotex Service Sp. z.o.o. ul. Brukselska 44/21A PL - 09-973 Warszawa	TEL. +48 22 672 91 81 FAX +48 22 616 55 81	<a href="mailto:info@prevotex.pl">info@prevotex.pl</a>
<b>PORTUGAL</b>		
ITALMATIC S.A. Paseo Donostia 82 POL. 26 CP 4 ES - 20115 ASTIGARRAGA GUIPUZCOA	TEL. +34 943 33 56 33 FAX +34 943 33 55 65	<a href="mailto:italmatic@italmatic.es">italmatic@italmatic.es</a>
<b>SLOVAKIA</b>		
MRG spol. sr.o. Jizni 57 CZ - 37010 CESKE BUDEJOVICE	TEL. +420 386 321 829 FAX +420 386 222 702	
<b>SPAIN</b>		
ITALMATIC S.A. Paseo Donostia 82 POL. 26 CP 4 ES - 20115 ASTIGARRAGA GUIPUZCOA	TEL. +34 943 33 56 33 FAX +34 943 33 55 65	<a href="mailto:italmatic@italmatic.es">italmatic@italmatic.es</a>
<b>SWITZERLAND</b>		
LNS S.A. Case postale 33 CH - 2534 ORVIN	TEL. +41 / 32 358 02 00 FAX +41 / 32 358 02 01	<a href="mailto:service@lns-world.com">service@lns-world.com</a>
<b>SOUTH AFRICA</b>		
EDWIN ROTH & CO. LTD 6 Derrick Road Spartan ZA - 1620 KEMPTON PARK	TEL. +27 11 970 19 30 FAX +27 11 394 11 32	<a href="mailto:edwinroth@icon.co.za">edwinroth@icon.co.za</a>
<b>SWEDEN</b>		
AB BONTHRON & EWING Box 18 Gymnasievägen 2 SE - 18 621 VALLENTUNA	TEL. +46 8 514 307 60 FAX +46 8 514 307 61	<a href="mailto:info@bonthron-ewing.se">info@bonthron-ewing.se</a> <a href="http://www.bonthron-ewing.se">www.bonthron-ewing.se</a>
<b>TAIWAN</b>		
FEDEK MACHINES Co. LTD. 13-10, Chi Nan Rd. Wujih Hsiang TAICHUNG SIEN	TEL. +88 642 335 49 20 FAX +88 642 335 49 29	<a href="http://www.fedek.com.tw">www.fedek.com.tw</a>
<b>USA / CANADA / MEXICO</b>		
LNS AMERICA INC 4621 East Tech Drive CINCINNATI, OHIO 45245 USA	TEL. +1 513 528 56 74 FAX +1 513 528 57 33	<a href="mailto:sales@lnsamerica.com">sales@lnsamerica.com</a> <a href="http://www.lnsamerica.com">www.lnsamerica.com</a>

## 10. SPARE PARTS

n.	Code	Denomination
1	01	STAND
2	02	COVER
3	03	FEEDING DEVICE
4	04	ENCODER DEVICE
5	05	BRACKET DEVICE
6	06	FEEDING-EXTRACTION CONTROL DEVICE
7	07	FRAME
8	08	BAR PUSHER
9	09	PULLEY DEVICE



Tab. 001

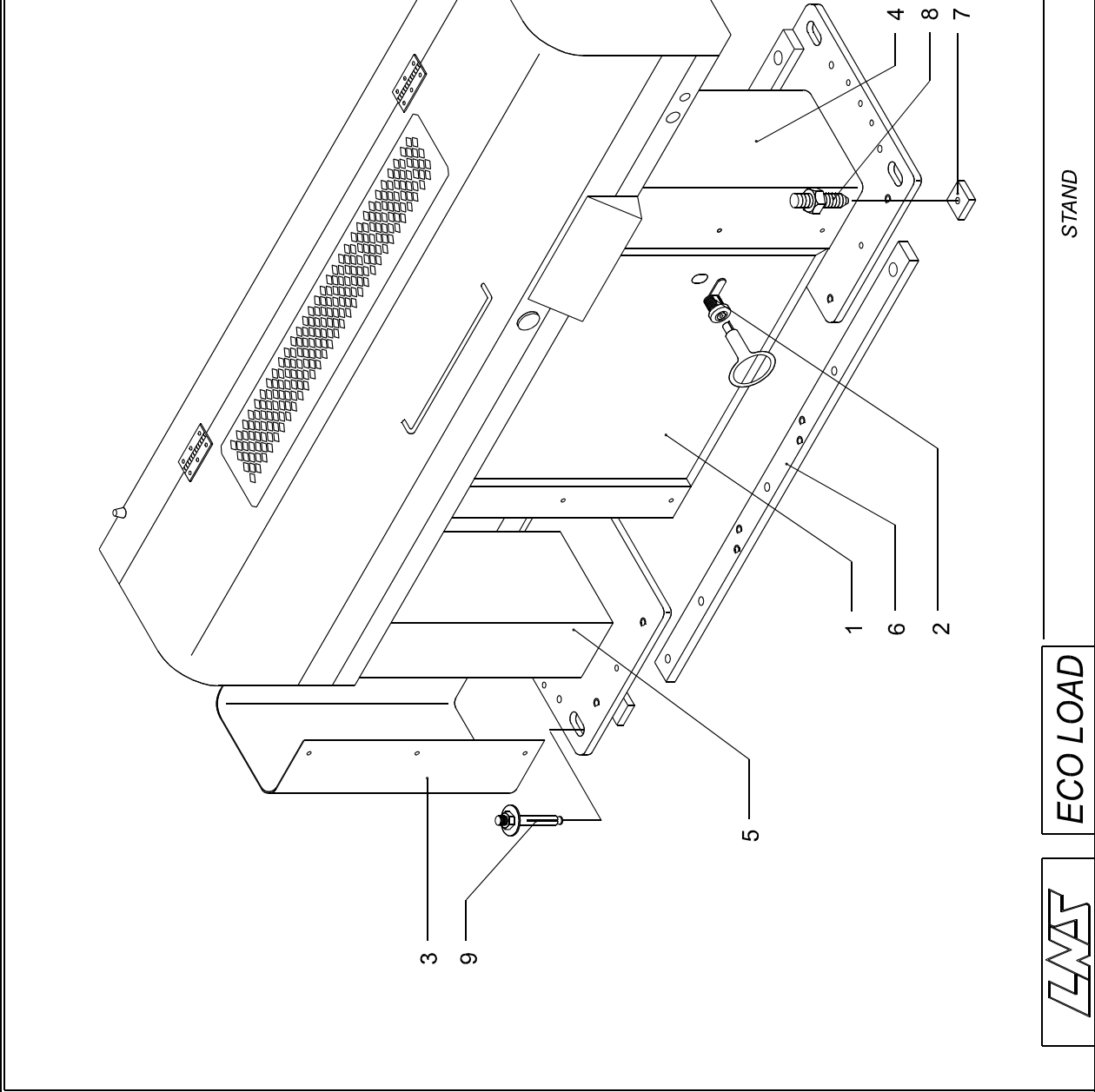
FRAME

ECO LOAD





n.	Code	Denomination
1	D6331200	Operatton box
2	M20351900	Lock
3	D6331300	Cover
4	D6331600	Stand
5	D6331700	Stand
6	D6331900	Block
7	D6332000	Gasket
8	D6332100	Bottom screw
9	D6332300	Bottom



Tab. 01 2

STAND

ECO LOAD



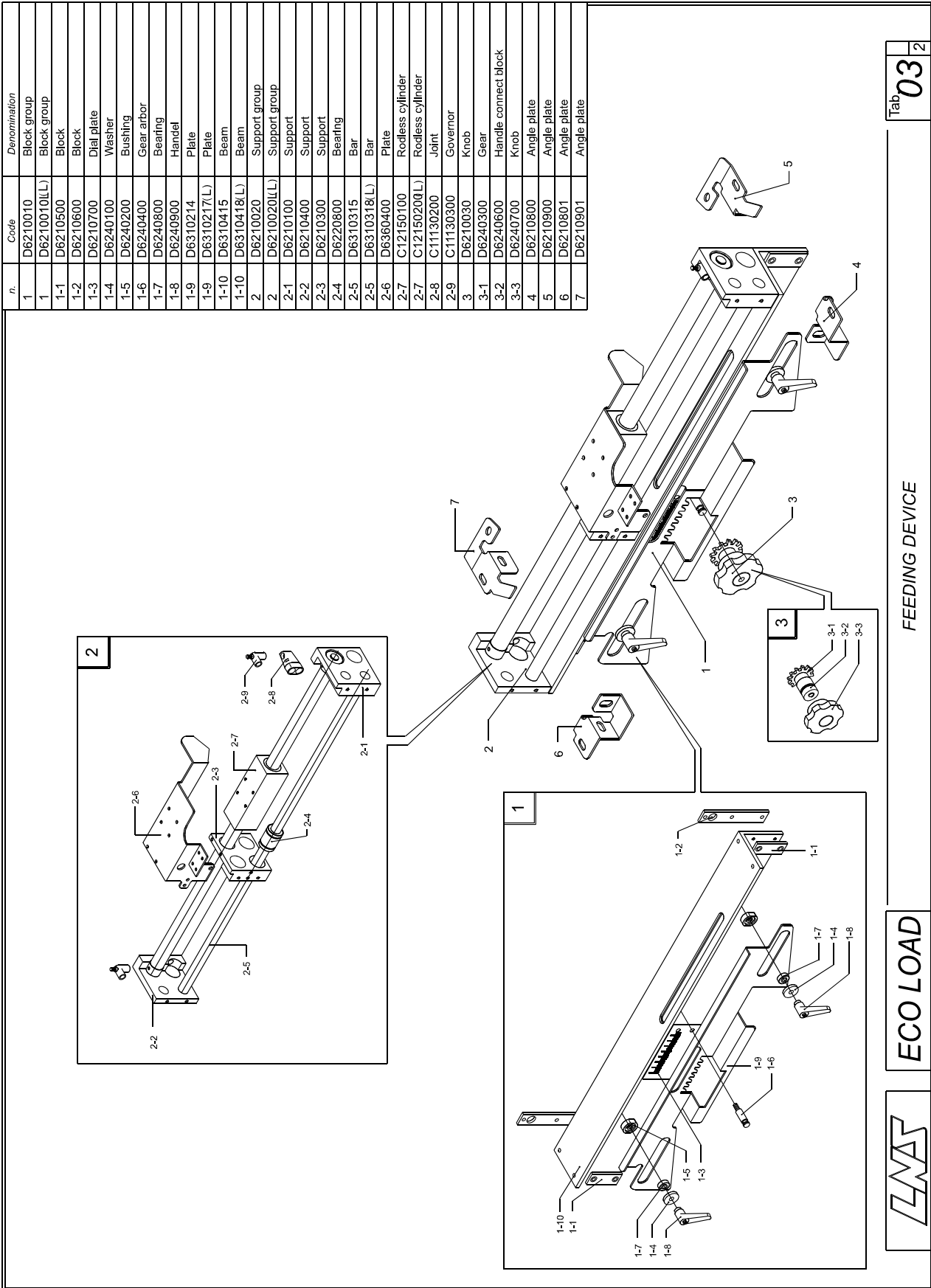
n.	Code	Denomination
1	D6420100	Plate
2	D6420200	Plate
3	D6420300	Cover
3	D6420400(L)	Cover
4	D6420500	Cover
4	D6420600(L)	Cover
5	D6420700	Cover
5	D6420800(L)	Cover
6	D6420900	Cover
7	D6421000	Cover
8	D6421100	Cover
9	D6421200	Cover
9	D6421300(L)	Cover
10	D6421400	Support
11	D6421500	Plate
12	D6421600	Rubber mounting
13	D6421700	Handle
14	D6341011	Cover
14	D6341014(L)	Cover
15	D6341111	Cover
15	D6341114(L)	Cover
16	M20351800	Hinge
17	D6331400	Beam
17	D6331500(L)	Beam

Tab. 02  
1

COVER

ECO LOAD



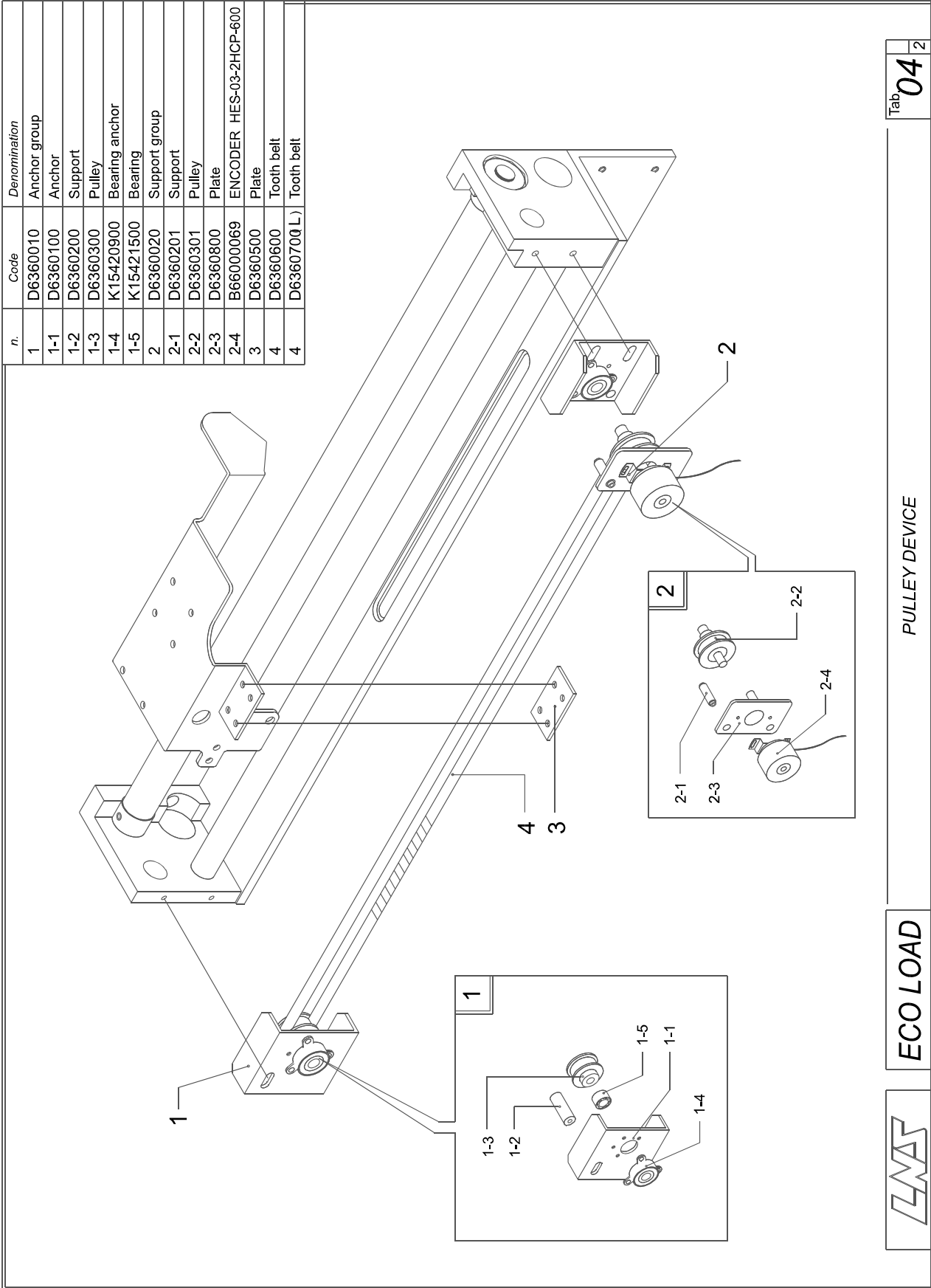


Tab 03 2

FEEDING DEVICE

ECO LOAD





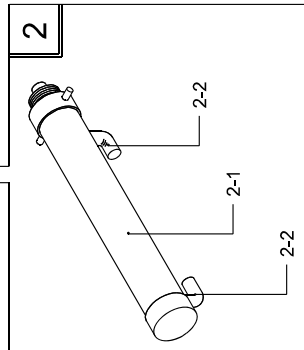
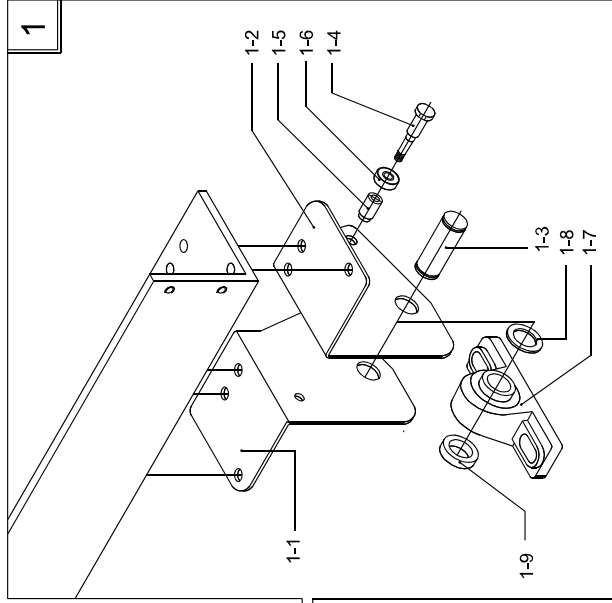
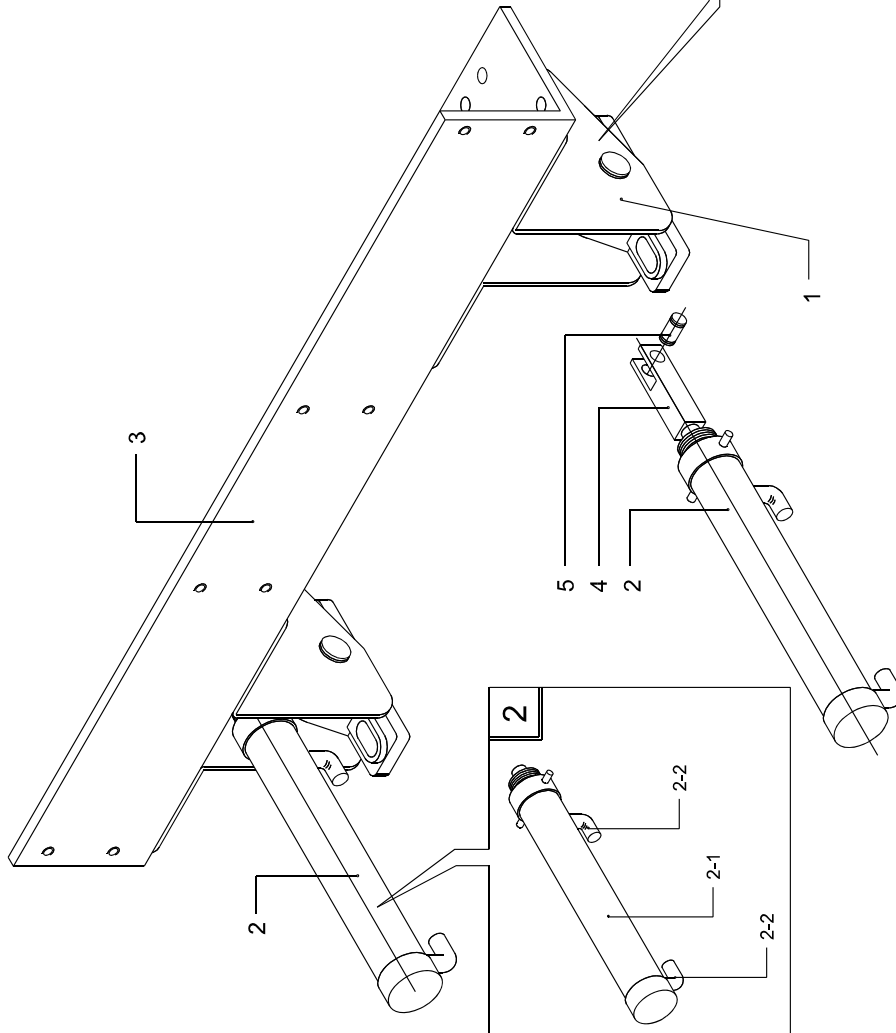
Tab. 04 2

PULLEY DEVICE

ECO LOAD



n.	Code	Denomination
1	D6230010	Angle group
1-1	D6230100	Angle plate
1-2	D6230200	Angle plate
1-3	D6230300	Arbar
1-4	D6230400	Screw
1-5	D6230500	Spacer
1-6	D6230800	Bearing
1-7	D6230900	Rocking plate
1-8	D6231000	Spacer
1-9	D6231100	Spacer
2	D6230020	Piston cylinder
2-1	C12120100	Piston cylinder
2-2	C13110200	Joint
3	D6310511	Beam
3	D6310514 L)	Beam
4	D6230600	Cylinder connector
5	D6230700	Arbor

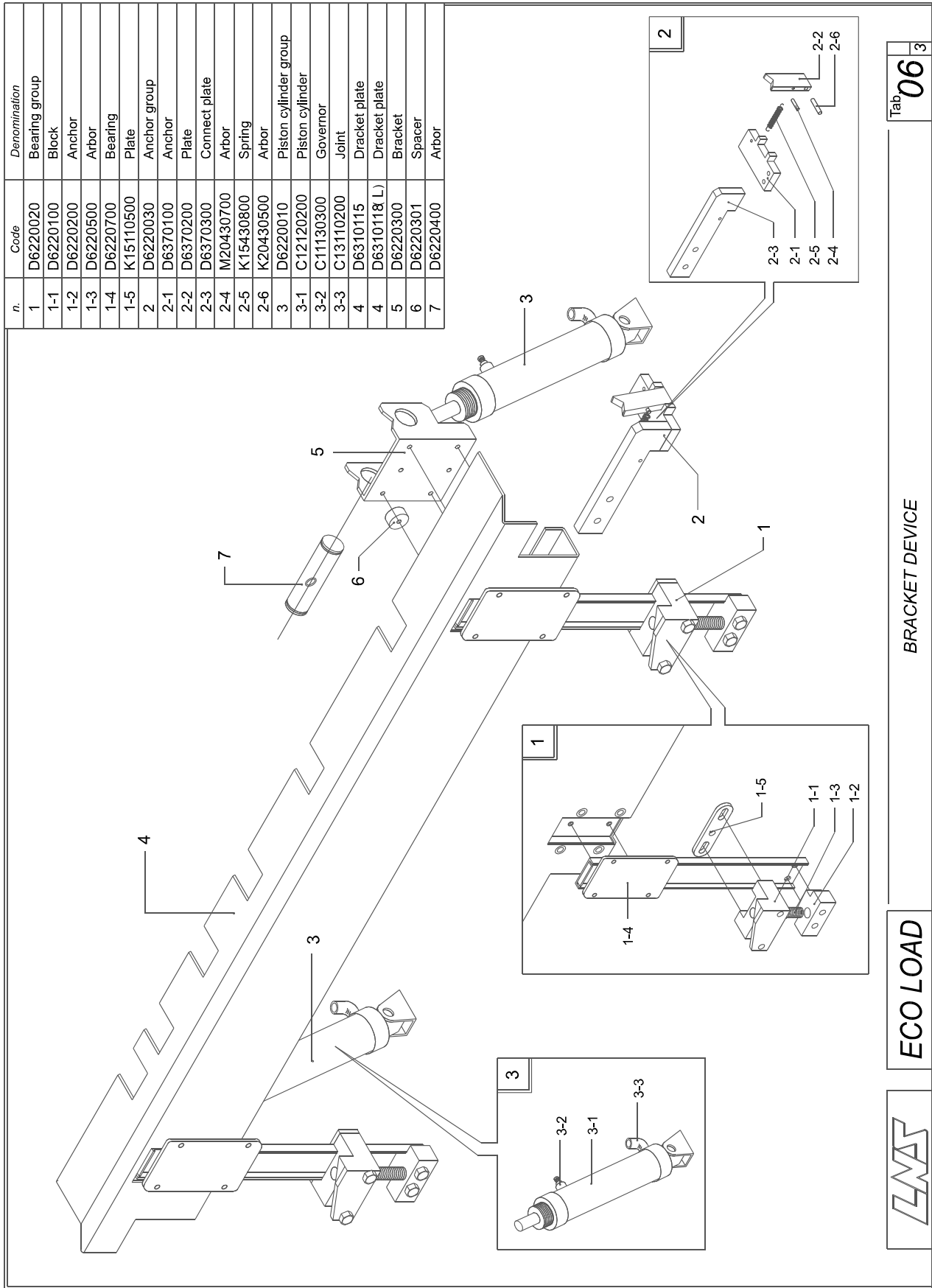


Tab 05 3

ROCKING PLATE DEVICE ·n@y°t,m

ECO LOAD





n.	Code	Denomination
1	D6220020	Bearing group
1-1	D6220100	Block
1-2	D6220200	Anchor
1-3	D6220500	Arbor
1-4	D6220700	Bearing
1-5	K15110500	Plate
2	D6220030	Anchor group
2-1	D6370100	Anchor
2-2	D6370200	Plate
2-3	D6370300	Connect plate
2-4	M20430700	Arbor
2-5	K15430800	Spring
2-6	K20430500	Arbor
3	D6220010	Piston cylinder group
3-1	C12120200	Piston cylinder
3-2	C11130300	Governor
3-3	C13110200	Joint
4	D6310115	Dracket plate
4	D6310118 L	Dracket plate
5	D6220300	Bracket
6	D6220301	Spacer
7	D6220400	Arbor

Tab 06 3

BRACKET DEVICE

ECO LOAD



n.	Code	Denomination
1	D6110010	Anchor group
1-1	D6110100	Anchor
1-2	D6110101	PE ring
1-3	D6110400	Plate
1-4	D6110500	Bar block
1-5	D6110600	Connect plate
2	D6110900	Lever
3	D6110030	Lever group
3-1	D6110200	Loading arm
3-2	D6110300	Lever
4	D6110700	Bar
4	D6110713(L)	Bar
5	D6110800	Stopper
6	D6110400	Plate
7	D6110500	Bar block
8	D6110600	Connect plate

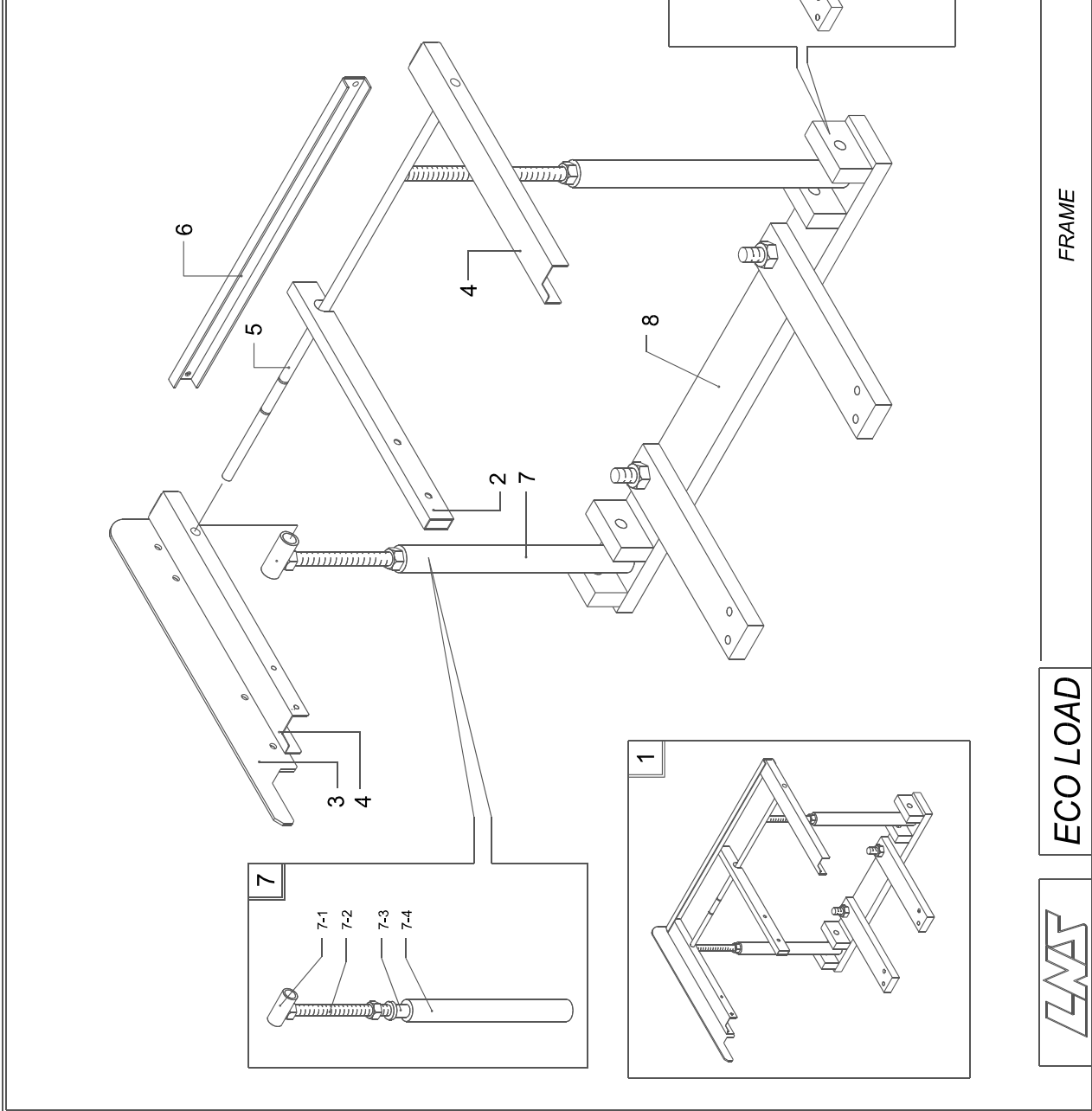
Tab. **07** 2

FEEDING-EXTRACTION CONTROL DEVICE

**ECO LOAD**



n.	Code	Denomination
1	D6120000	Frame group
1	D6120000(L)	Frame group
2	D6120201	Feeding frame
3	D6120501	Stopper
4	D6130101	Plate
5	D6130202(L)	Bar
5	D6130203(LL)	Bar
6	D6130300(L)	Plate
6	D6130301(LL)	Plate
7	D6120010	Bushing group
7-1	D6130400	Bushing
7-2	D6130500	Thread bar
7-3	D6130600	Bushing
7-4	D6130700	Support
8	D6120020	Anchor group
8-1	D6331800	Anchor
8-2	D6332200	Plate
8-3	D6332400	Bottom screw



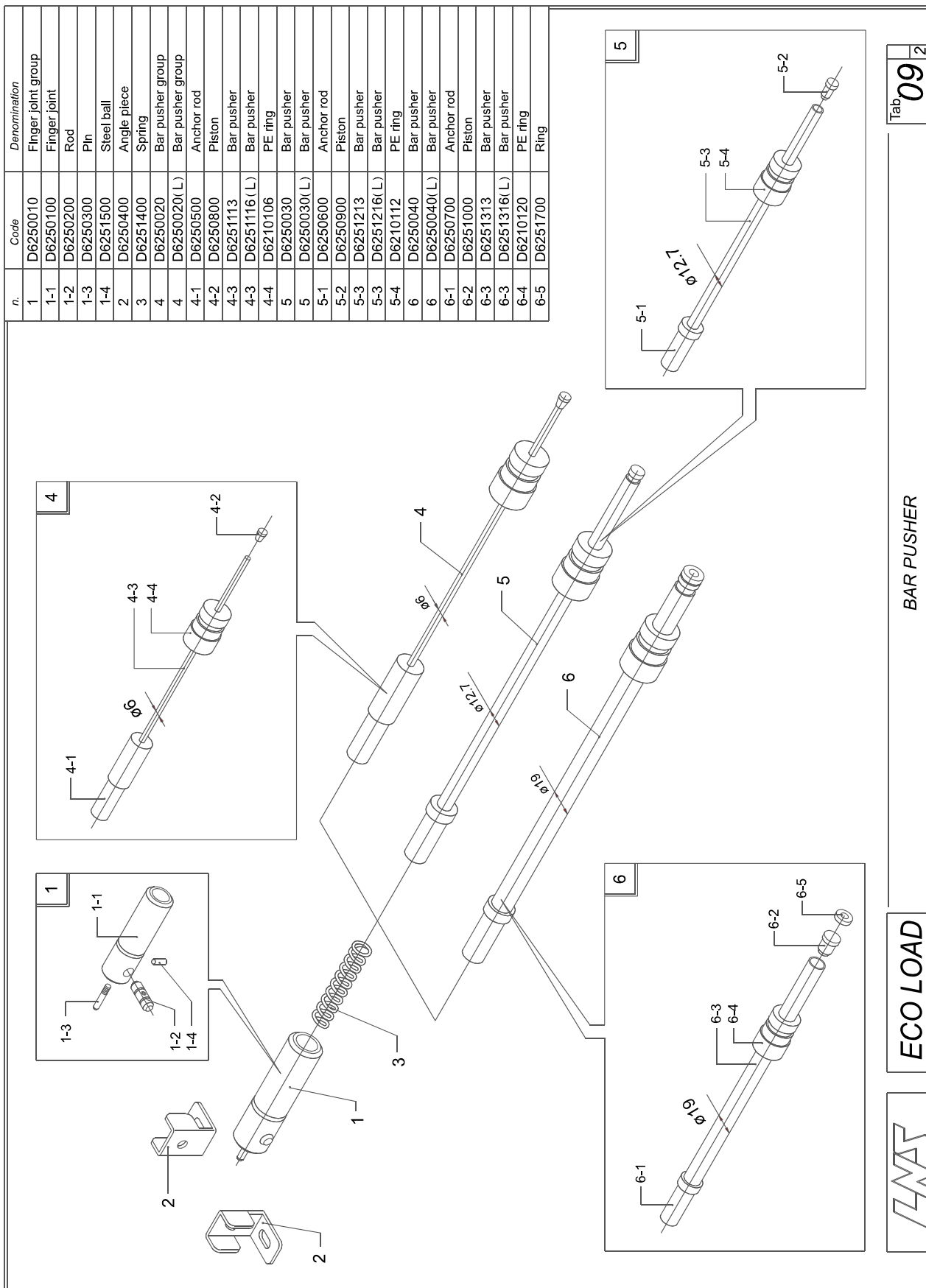
Tab. 08 2

FRAME

ECO LOAD

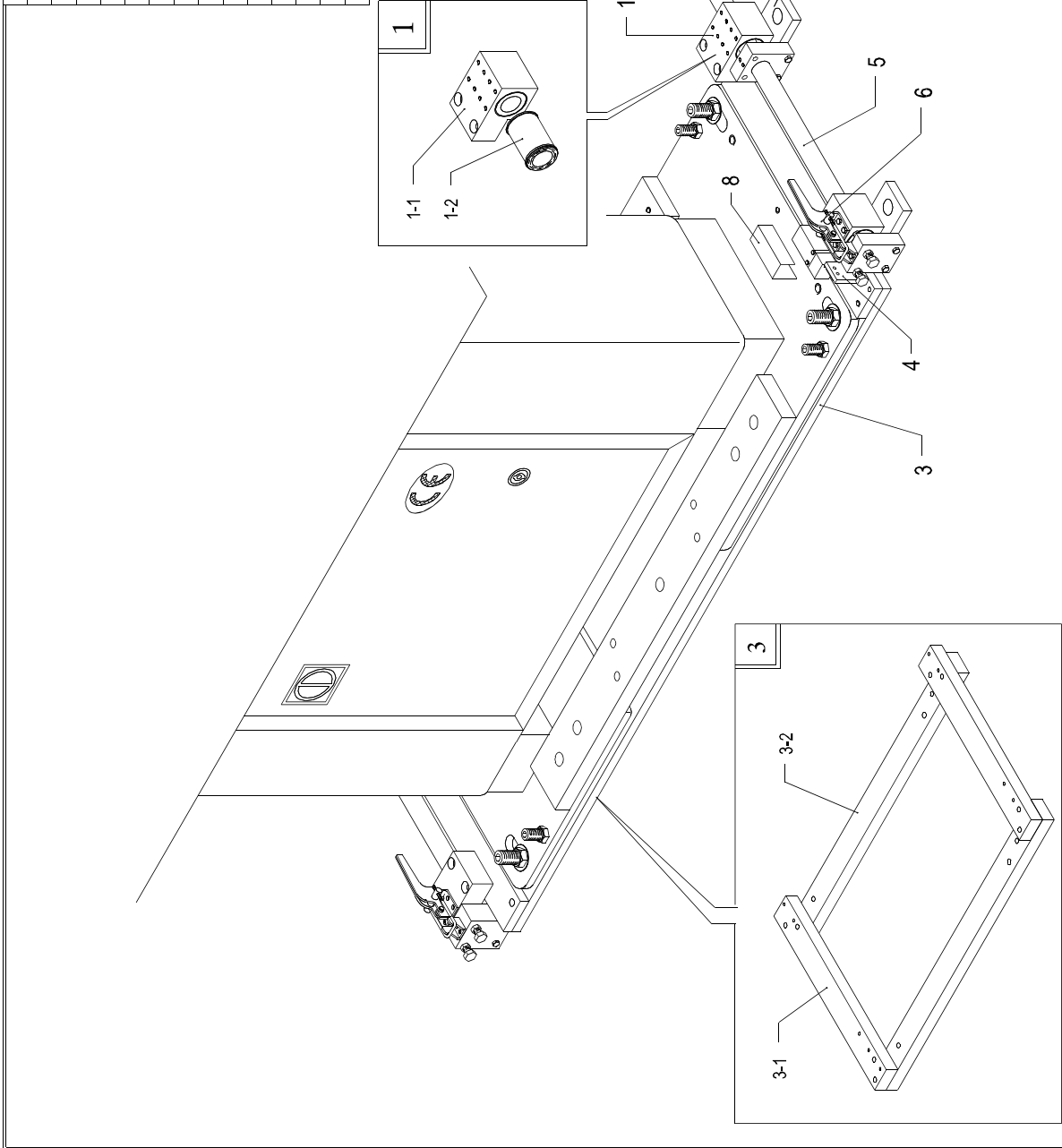






n.	Code	Denomination
1	D6250010	Finger joint group
1-1	D6250100	Finger joint
1-2	D6250200	Rod
1-3	D6250300	Pin
1-4	D6251500	Steel ball
2	D6250400	Angle piece
3	D6251400	Spring
4	D6250020	Bar pusher group
4	D6250020(L)	Bar pusher group
4-1	D6250500	Anchor rod
4-2	D6250800	Piston
4-3	D6251113	Bar pusher
4-3	D6251116 (L)	Bar pusher
4-4	D6210106	PE ring
5	D6250030	Bar pusher
5	D6250030(L)	Bar pusher
5-1	D6250600	Anchor rod
5-2	D6250900	Piston
5-3	D6251213	Bar pusher
5-3	D6251216 (L)	Bar pusher
5-4	D6210112	PE ring
6	D6250040	Bar pusher
6	D6250040(L)	Bar pusher
6-1	D6250700	Anchor rod
6-2	D6251000	Piston
6-3	D6251313	Bar pusher
6-3	D6251316 (L)	Bar pusher
6-4	D6210120	PE ring
6-5	D6251700	Ring

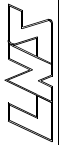
n.	Code	Denomination
1	D6380010	Bearing group
1-1	D6380100	Bearing anchor
1-2	D6381300	Bearing
2	D6380020	Anchor
2-1	D6380200	Support
2-2	D6380600	Support
3	D6380030	Frame group
3-1	D6380300	Plate
3-2	D6380400	Plate
4	D6380700	Switch group
5	D6381100	Bar
6	D6381200	Bolt
7	D6380201	Plate
8	D6381400	Cover



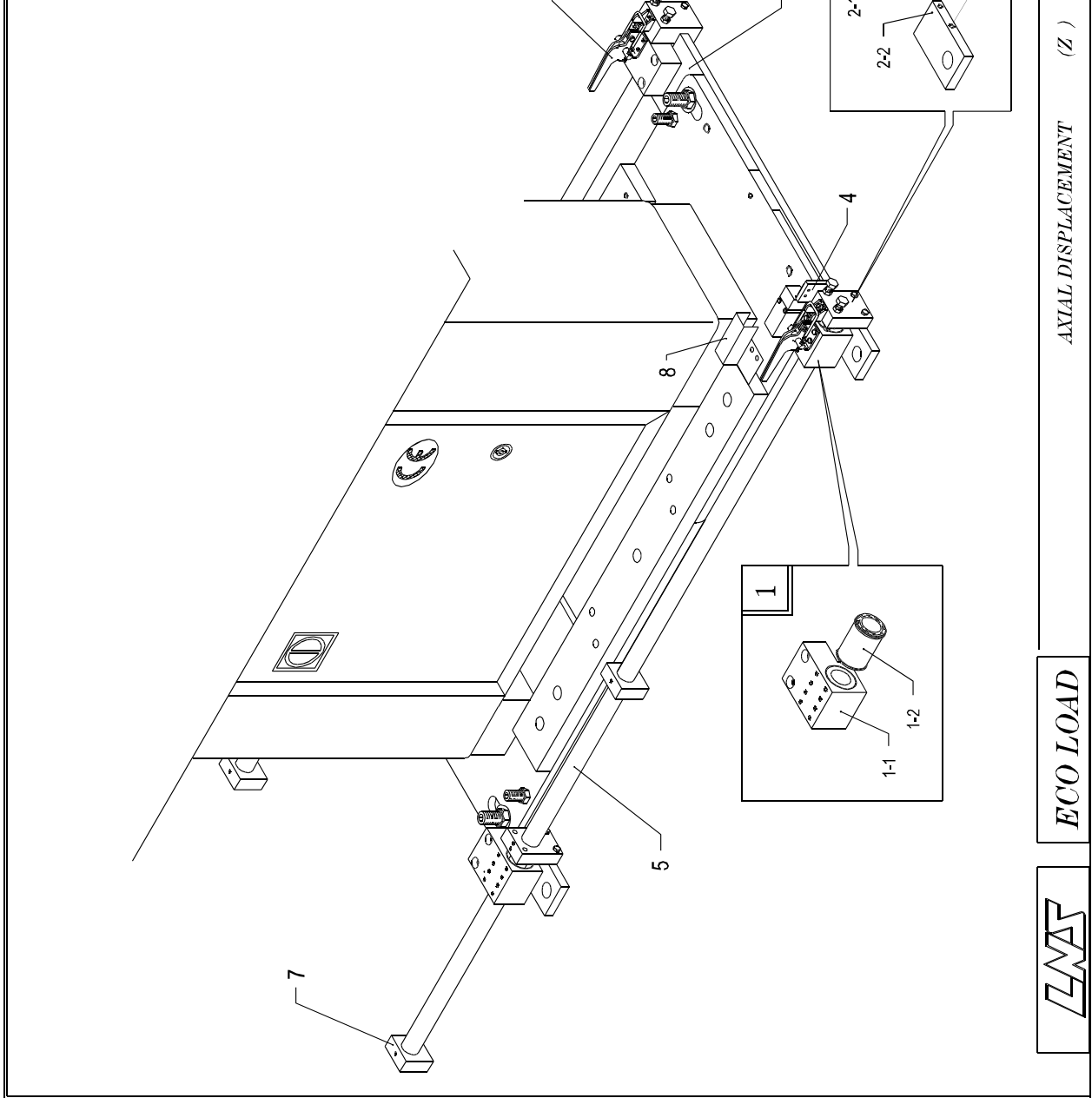
Tab. 11  
1

AXIAL DISPLACEMENT

ECO LOAD



n.	Code	Denomination
	D6380001	Axial displacement
1	D6380010	Bearing group
1-1	D6380100	Bearing anchor
1-2	D6381300	Bearing
2	D6380020	Anchor
2-1	D6380200	Support
2-2	D6380600	Support
3	D6380401	Plate
4	D6380700	Switch group
5	D6380501	Bar
6	D6381200	Bolt
7	D6380201	Plate
8	D6381400	Cover



Tab. 11

AXIAL DISPLACEMENT (Z)

ECO LOAD

