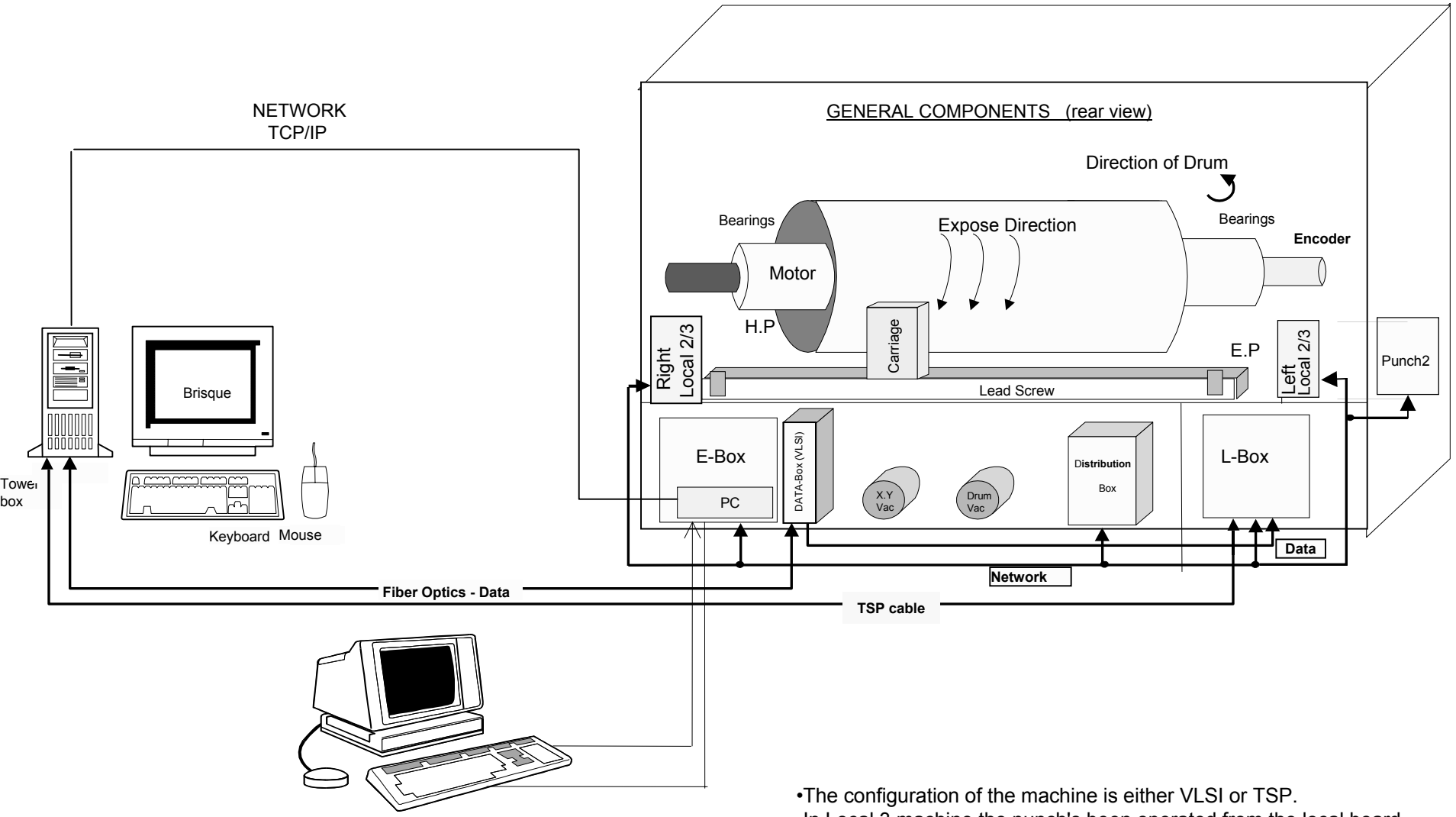
Electronics

Chapter 1

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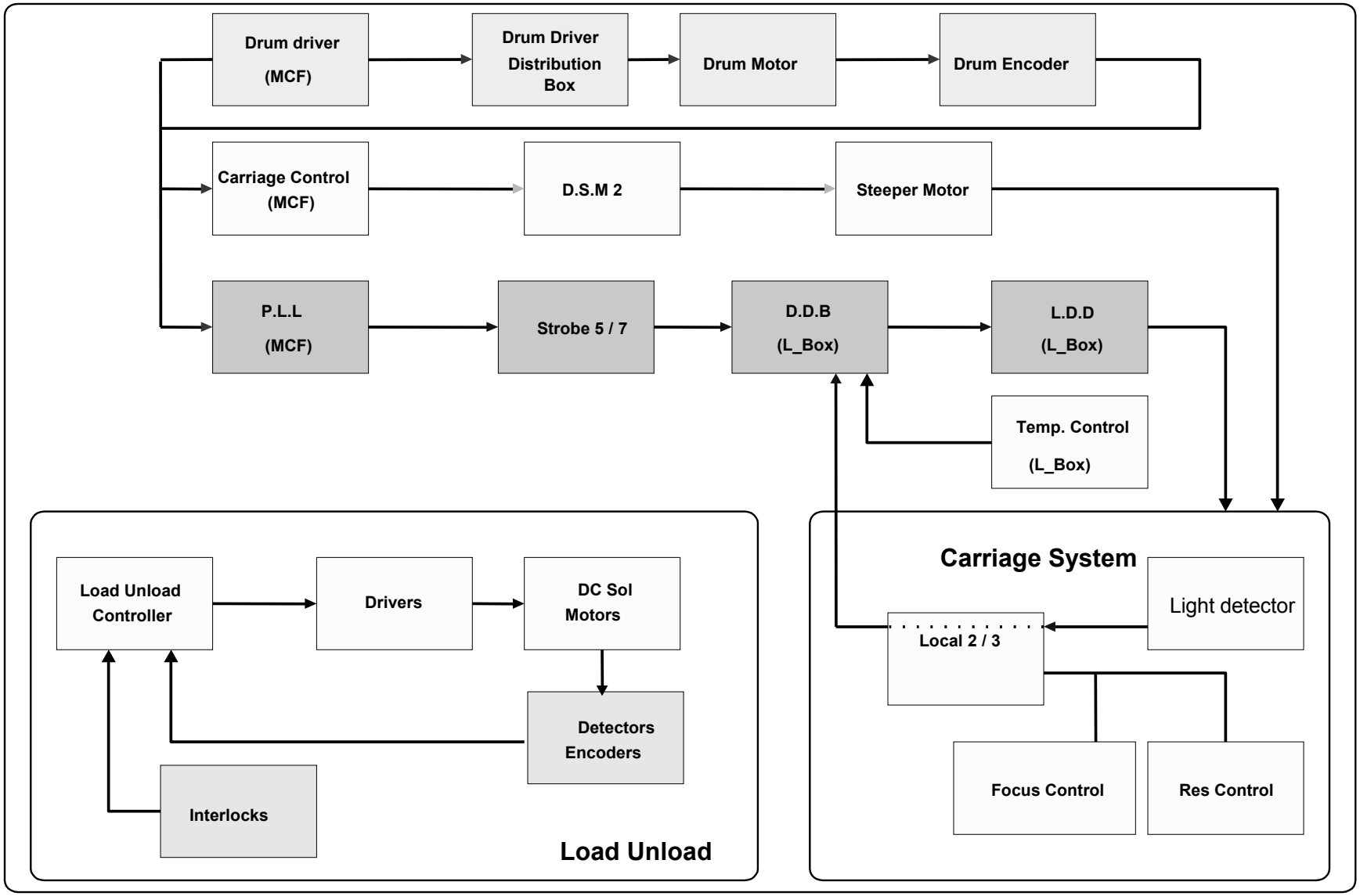
Lotem Component Positions



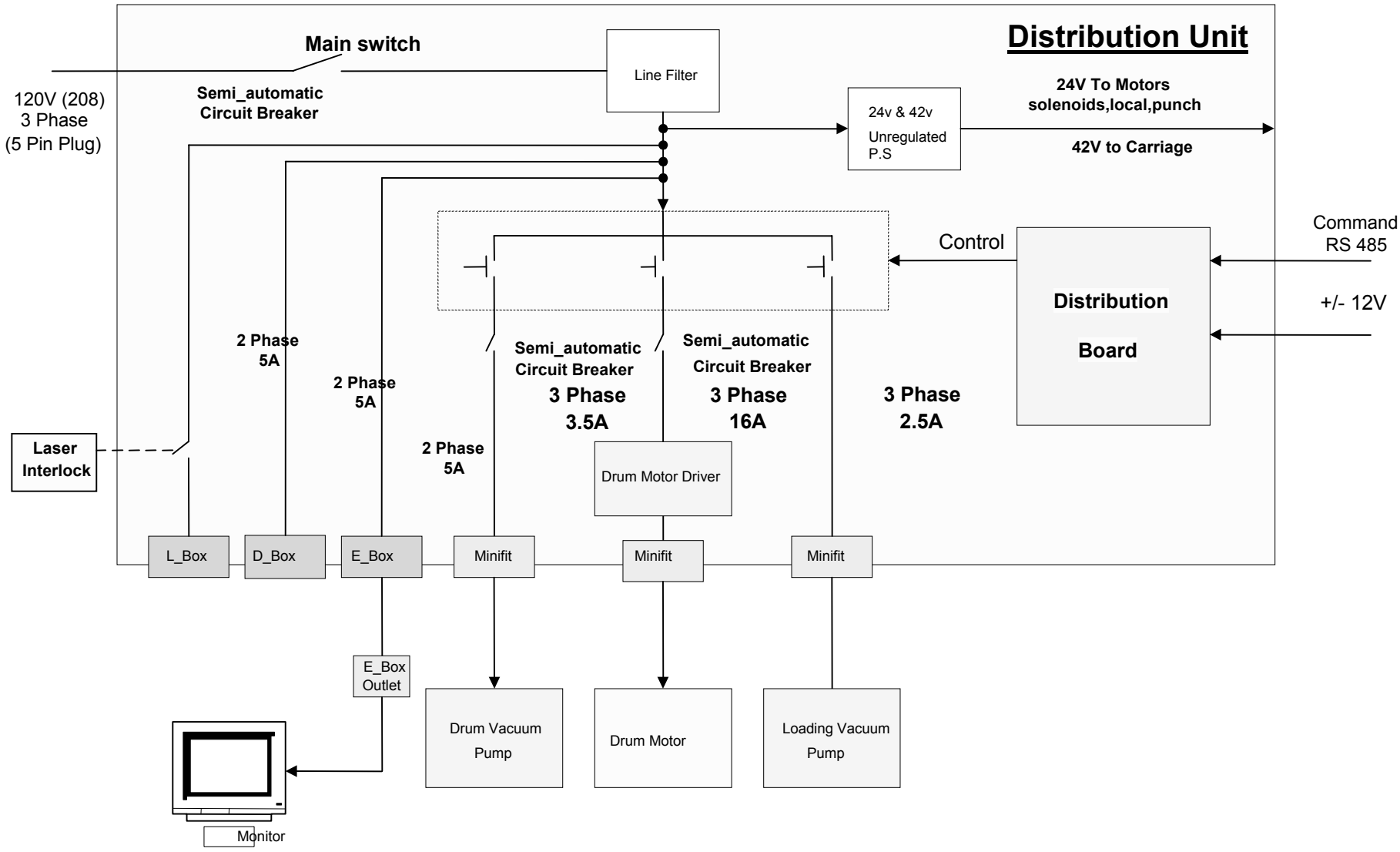
•The configuration of the machine is either VLSI or TSP.
•In Local 3 machine the punch's been operated from the local board ,and the punch unit is removed.

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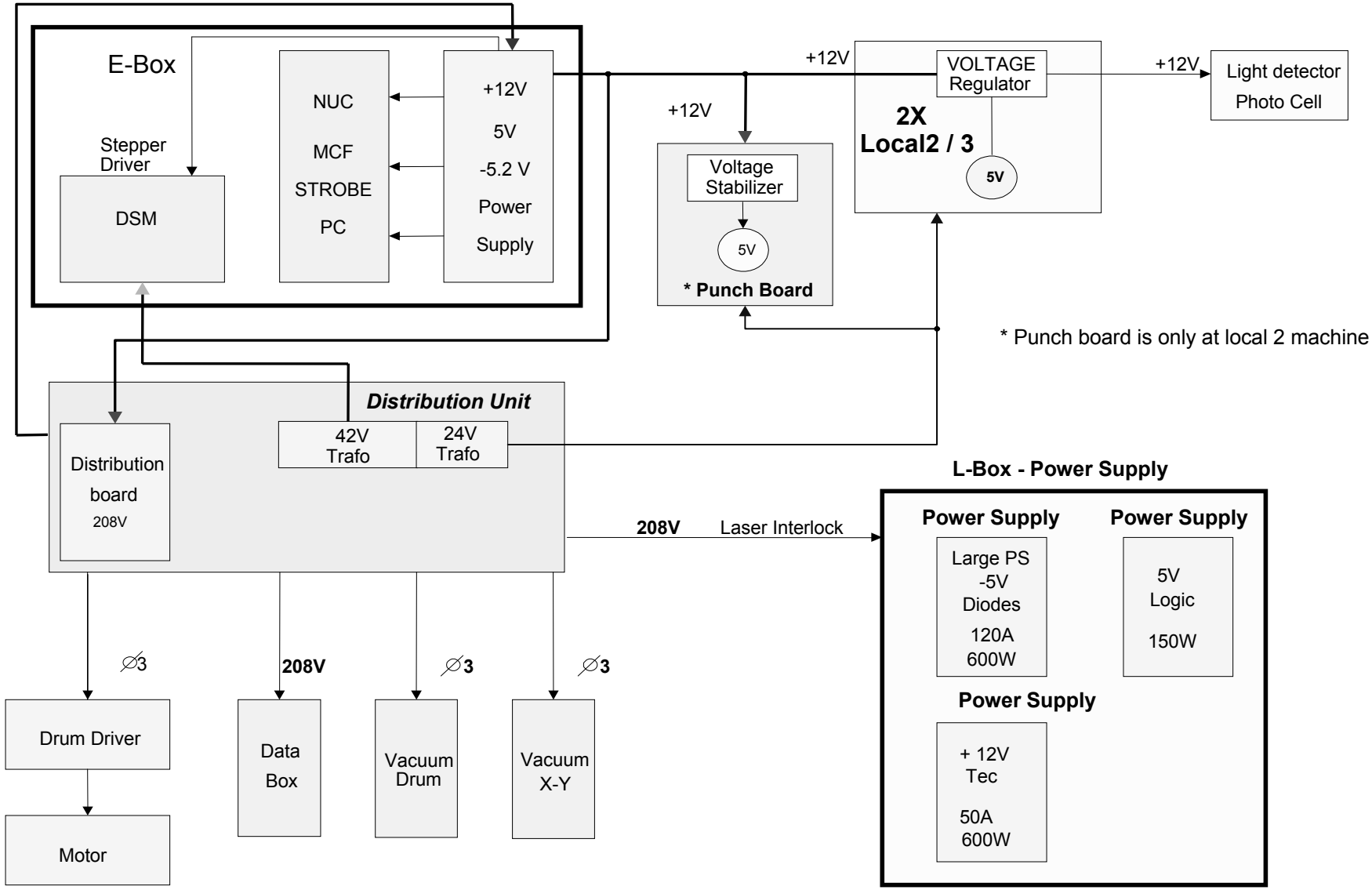
Main System Flow



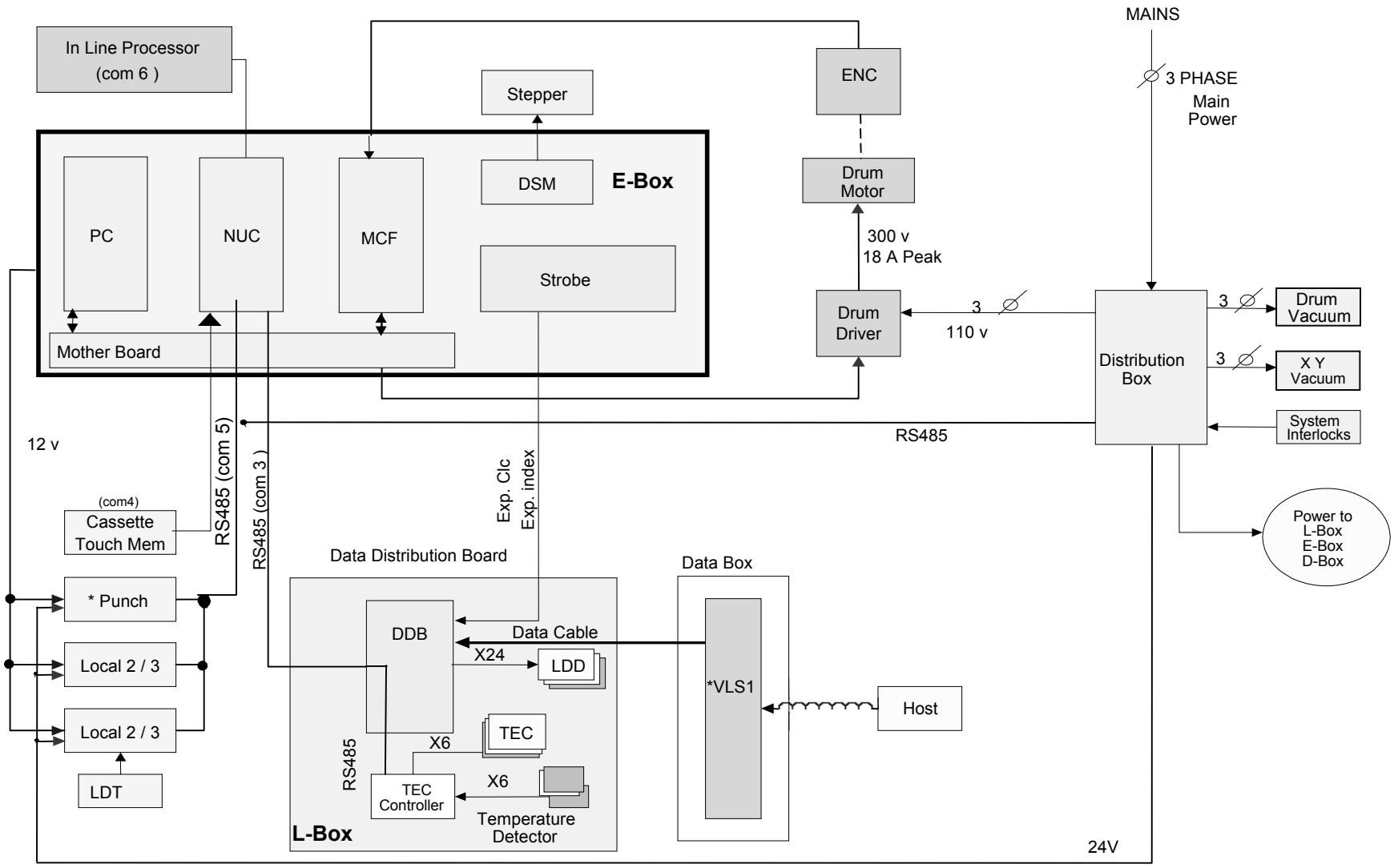
Power Distribution



Power Supply from the Distribution Box



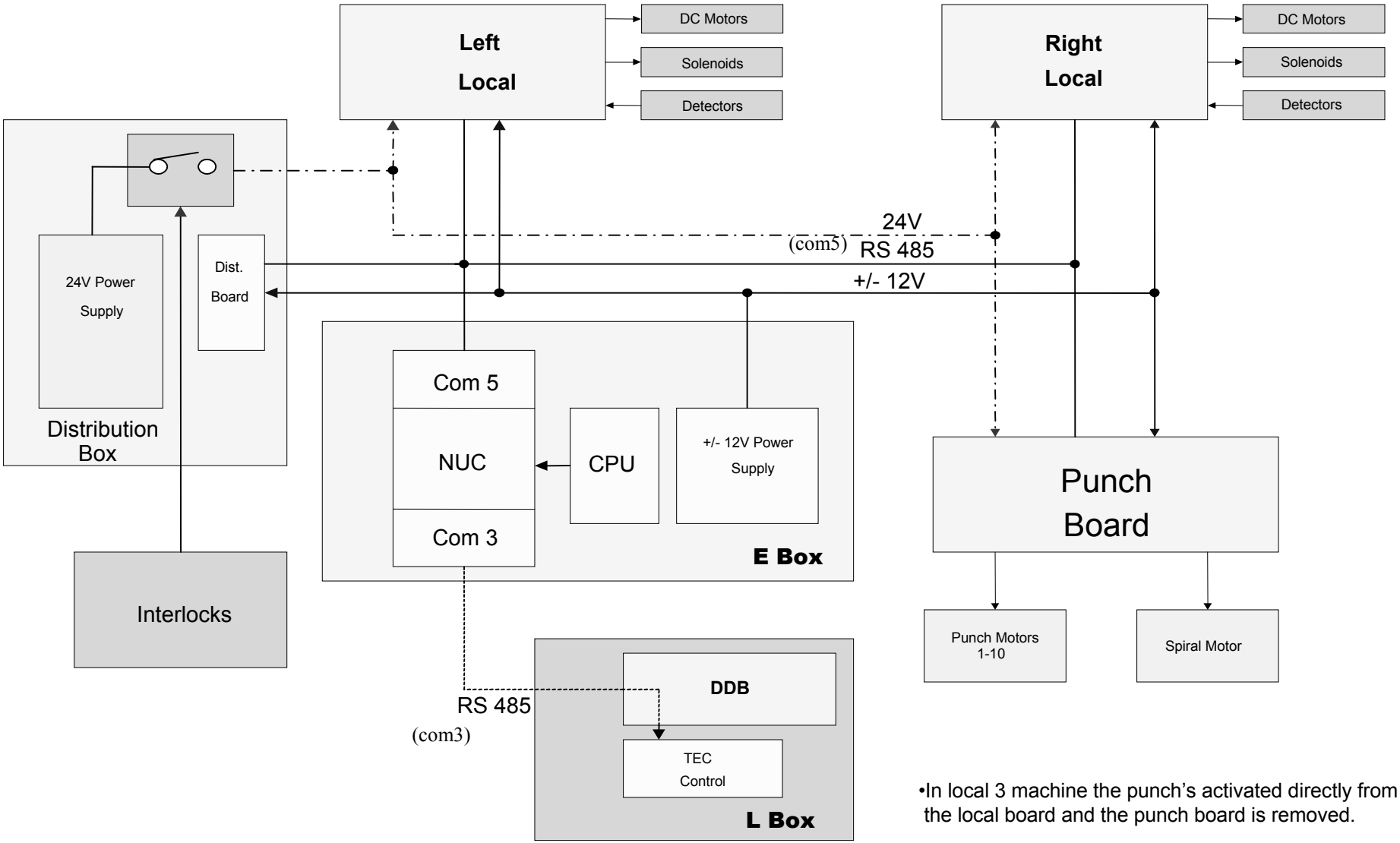
Communication



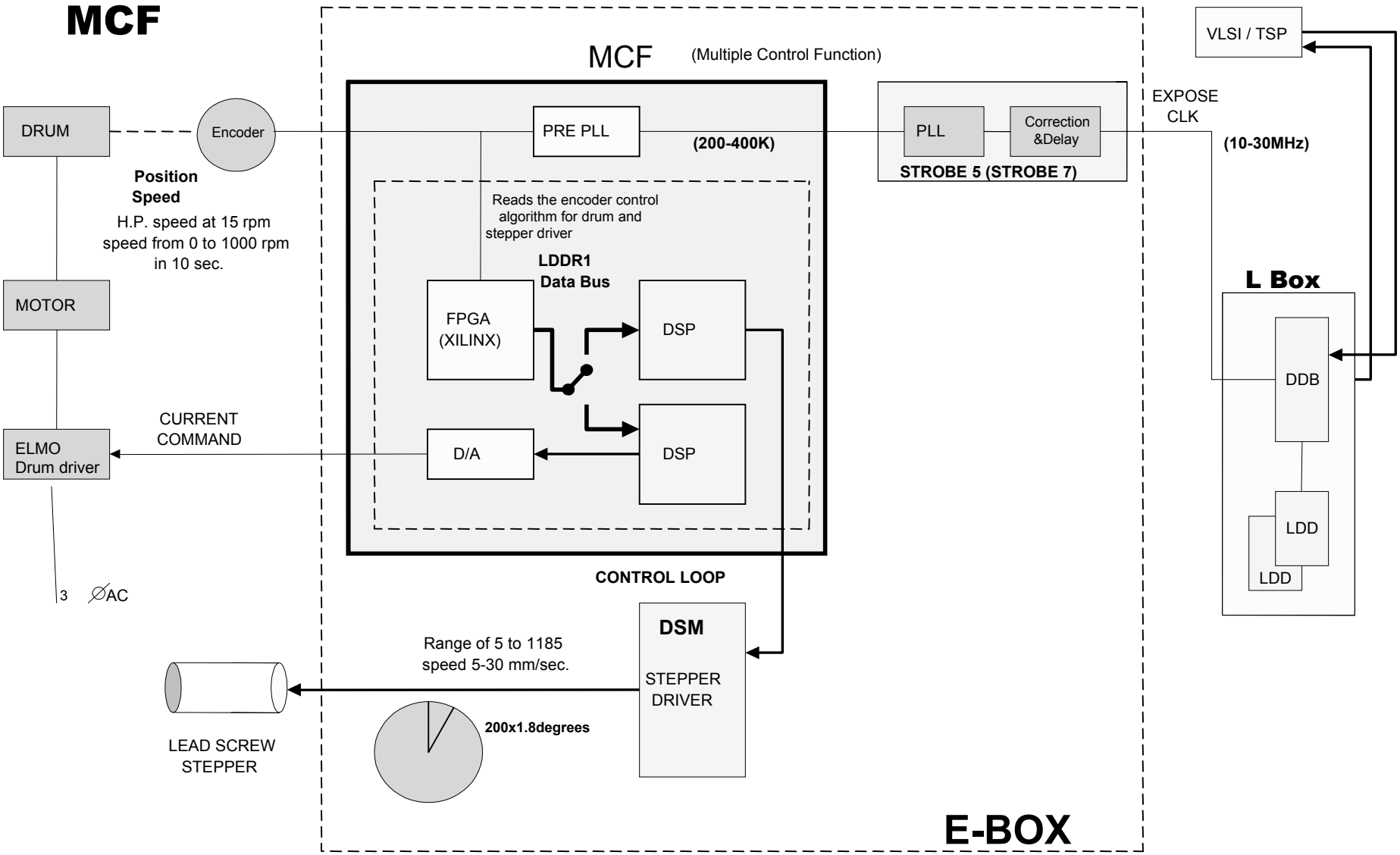
* Punch board only in local 2 machine

** VLSI only in old machine

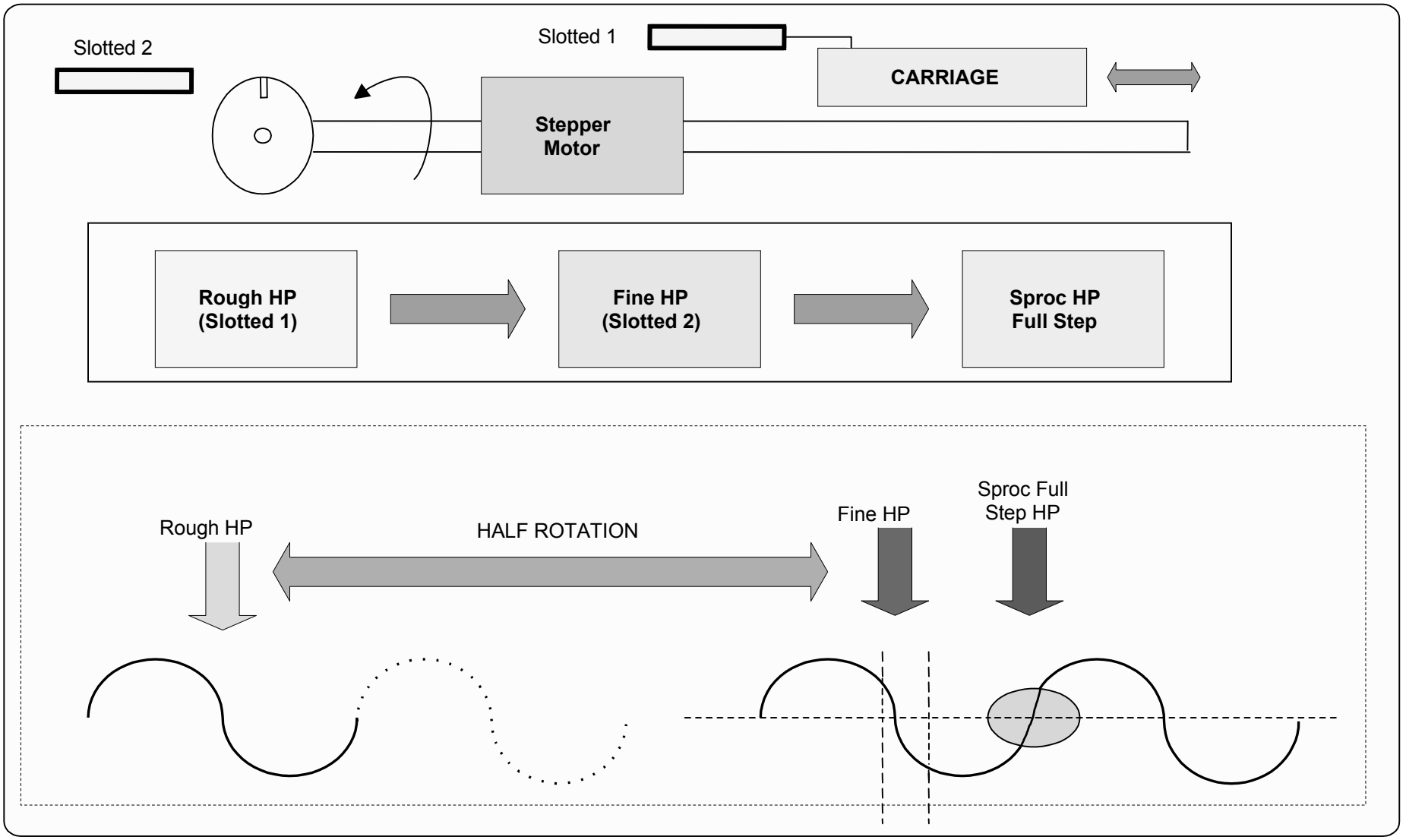
Local / Punch Power & Communication



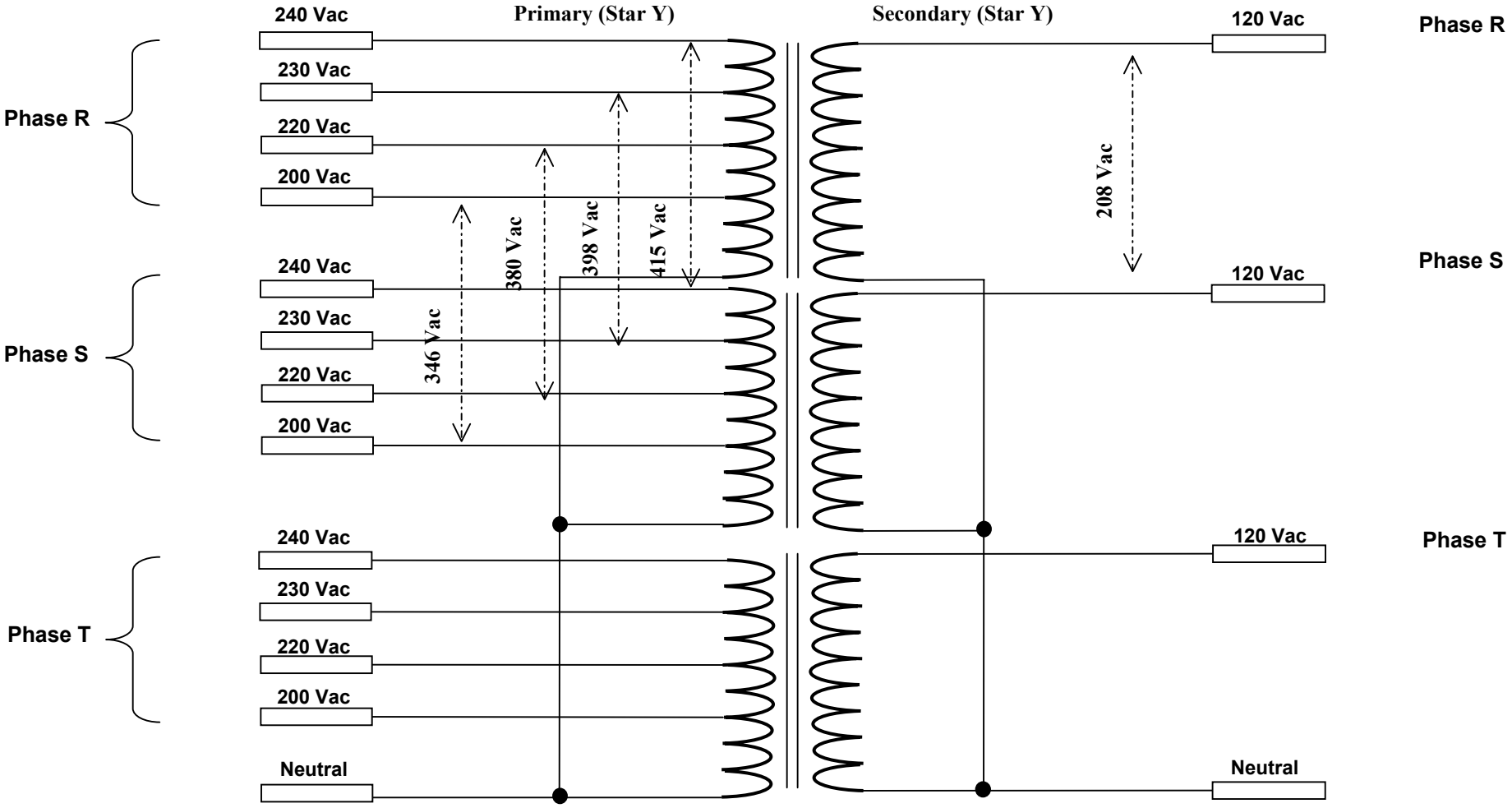
•In local 3 machine the punch's activated directly from the local board and the punch board is removed.


MCF
MCF
(Multiple Control Function)
VLSI / TSP
DRUM
Encoder
PRE PLL
(200-400K)
PLL
Correction
&Delay
EXPOSE
CLK
(10-30MHz)
STROBE 5 (STROBE 7)
Position
Speed
H.P. speed at 15 rpm
speed from 0 to 1000 rpm
in 10 sec.
Reads the encoder control
algorithm for drum and
stepper driver
LDDR1
Data Bus
MOTOR
FPGA
(XILINX)
DSP
L Box
DDB
CURRENT
COMMAND
ELMO
Drum driver
D/A
DSP
LDD
LDD
3 ∅AC
CONTROL LOOP
DSM
Range of 5 to 1185
speed 5-30 mm/sec.
STEPPER
DRIVER
200x1.8degrees
LEAD SCREW
STEPPER
E-BOX

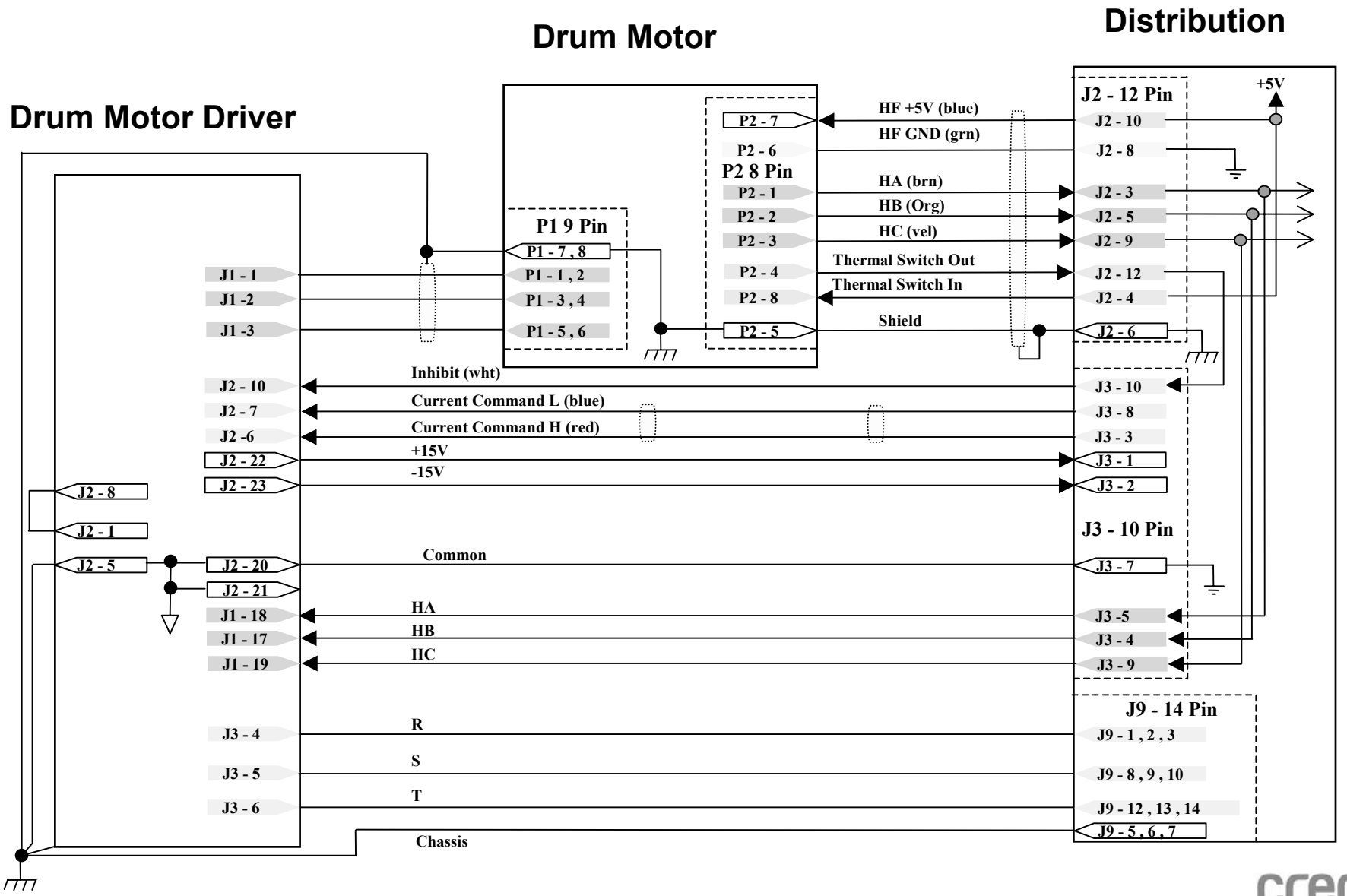
Home Position



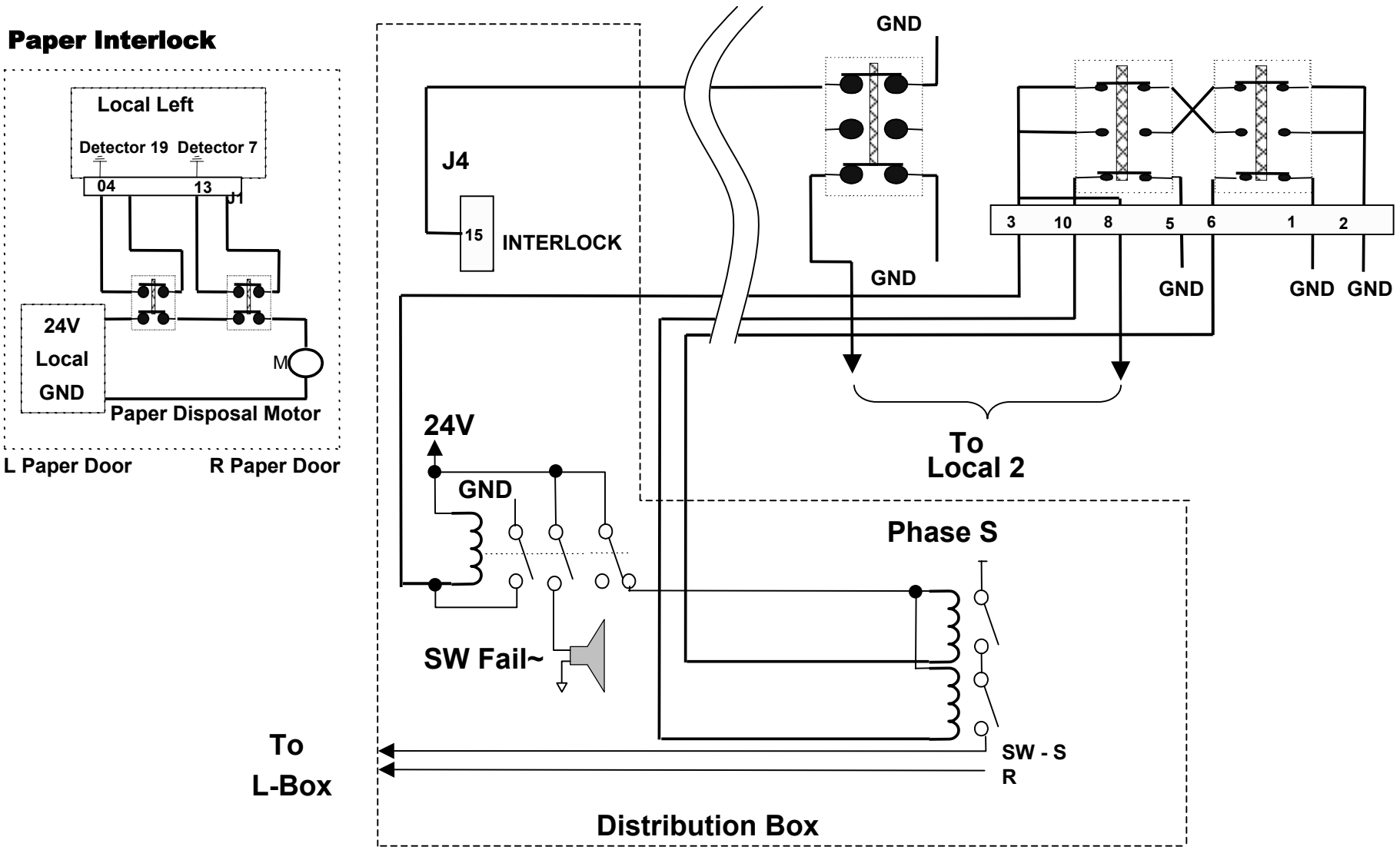
Main Transformer



Drum Motor Driver



Interlocks


Paper Interlock
Local Left
Detector 19 Detector 7
04
13
J1
24V
Local
GND
M
Paper Disposal Motor
L Paper Door
R Paper Door
J4
15
INTERLOCK
GND
GND
3 10 8 5 6 1 2
GND
GND GND
To
Local 2
24V
GND
Phase S
SW Fail~
To
L-Box
SW - S
R
Distribution Box

Drum Driver (LED Diagnostics)

Five LED's are installed on the upper board of the amplifier with the following designation: Ic,Sh,In,Pr,Vs. Under normal operation only Vs should illuminate (option 9).

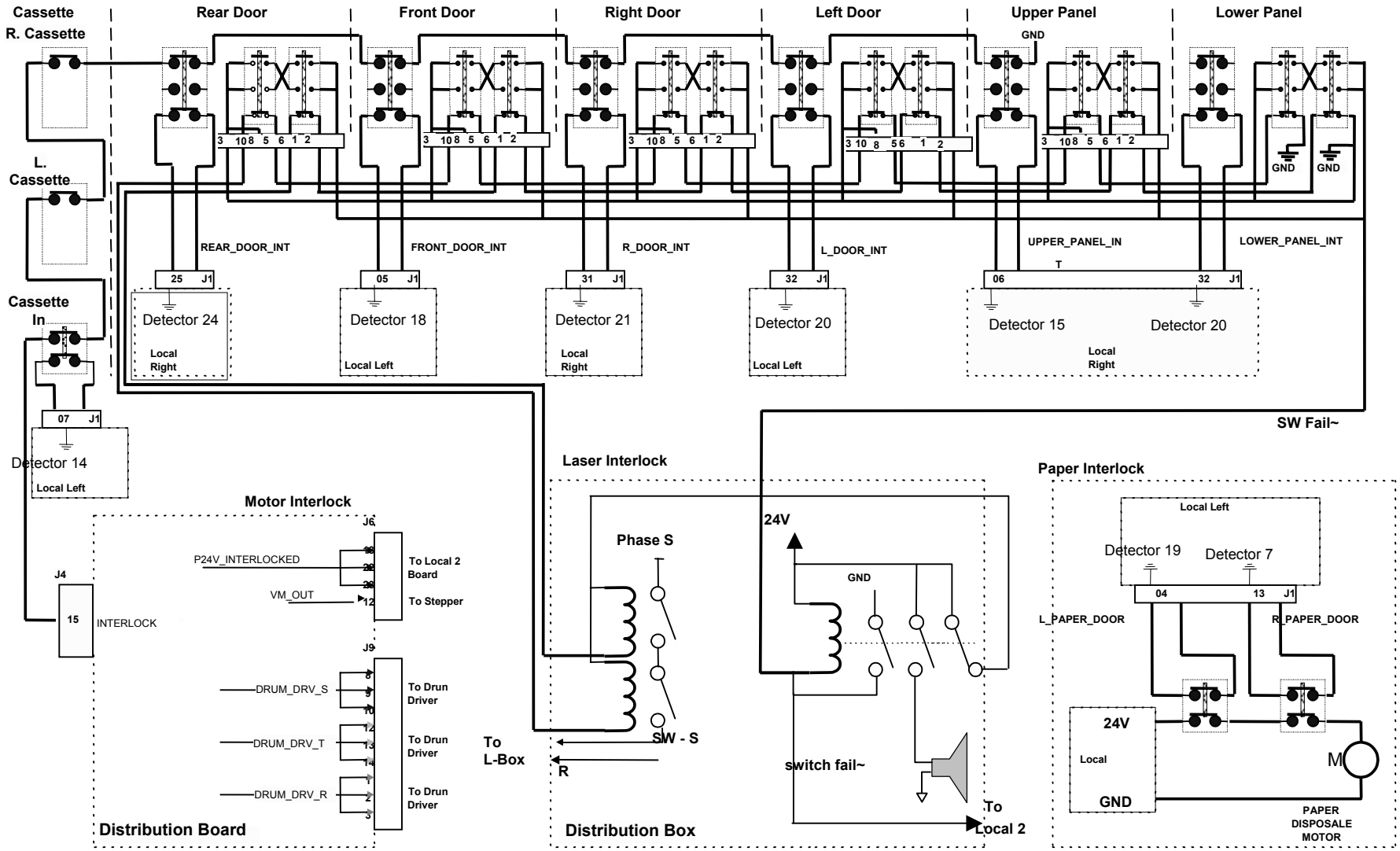
The following table represents all the combination possibilities of the LED's

Name	LED	1	2	3	4	5	6	7	8	9
IC (Red)	L 5				X	X			X	
She (Red)	L 4			X			X		X	
In (Red)	L 3	X	X	X		X	X	X	X	
Pr (Red)	L 2		X				X		X	
Vs (Yellow)	L 1	X	X	X	X	X	X		x	X

1. External inhibits
2. Under / over voltage protection
3. Short protection
4. Continuous current limit
5. Insufficient load inductance or loss of tach encoder feedback
6. Excess temperature.
7. Internal power supply is loaded
8. Loss of commutation feed back
9. Normal operation

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Lotem Interlocks



Motor Interlocks

(Grey wire)

Distr. J4-7 gnd → add.L2-4 → Safety Switch → Front Door 4 → 9 →

Left door → left cassette → right cassette → Cassette

→ add.L2-13 → upper panel → Rear door → add.R2-13

→ RIGHT DOOR → add.R2-4 → Distr. J4-15

+addition of Loading area safety switch

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Laser Interlock

(Brown & white brown wires)

Distr.(18pin) –1→(blk) LOWER PANEL–1→6
→ (brn) REAR DOOR-1→6 → UPPER PANEL-1→6 → add.L2-1
→ LEFT DOOR-1→6 → FRONT DOOR-1→6 → add.L2-10
→ add.R2-1 → RIGHT DOOR-1→6 → add.R2-10 → Distr.(18pin) – 10

Distr.(18pin) –7→(blk) LOWER PANEL–5→10
→ (w/brn) REAR DOOR-5→10 → UPPER PANEL-5→10
→ add.L2-9→LEFT DOOR-5→10 → FRONT DOOR-5→10
→ add.L2-18 → add.R2-9 → RIGHT DOOR-5→10 → add.R2-18
→ Distr.(18pin) – 16

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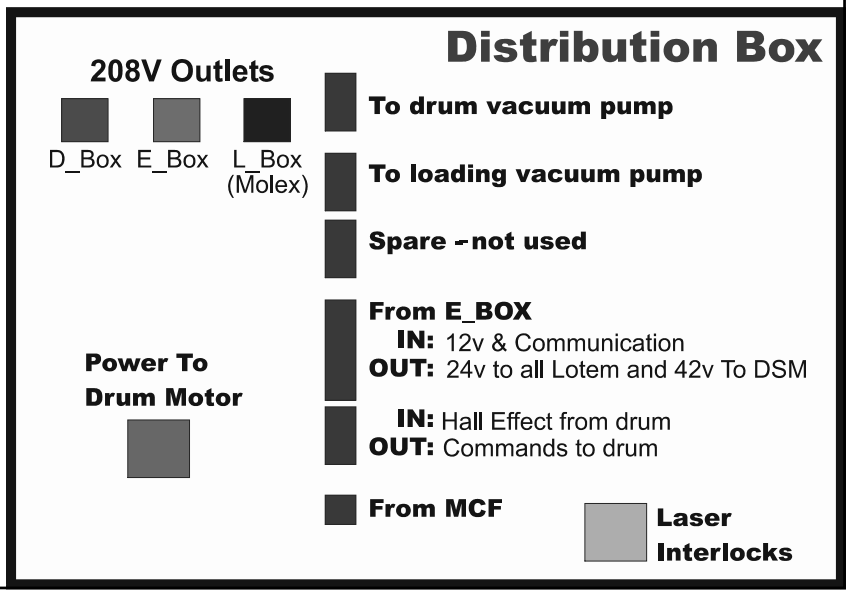
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Electronics 3

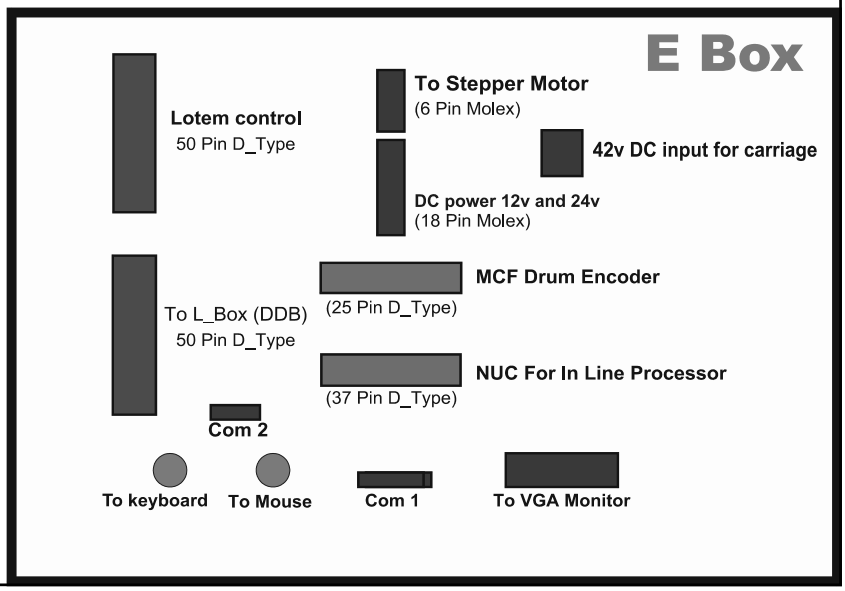
Plugs, Connectors, Fuses

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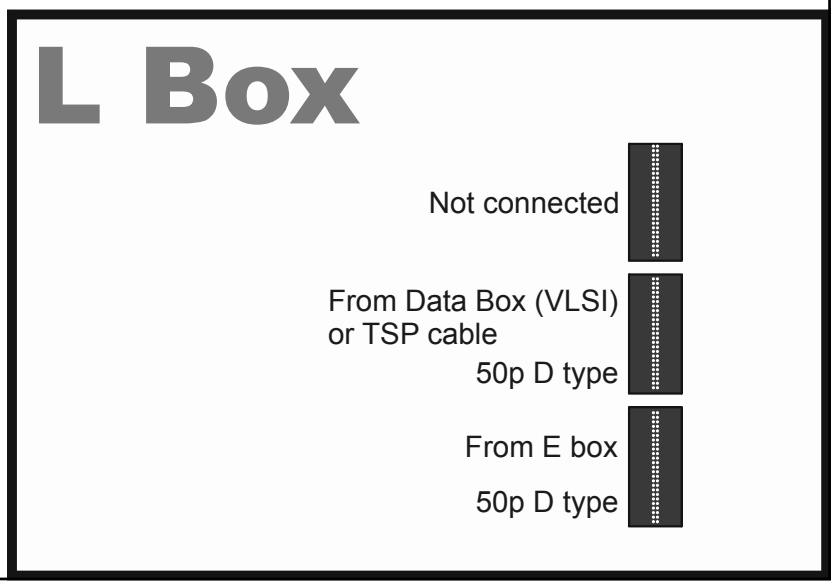
Plug Configurations



Plug Configurations



Plug Configurations

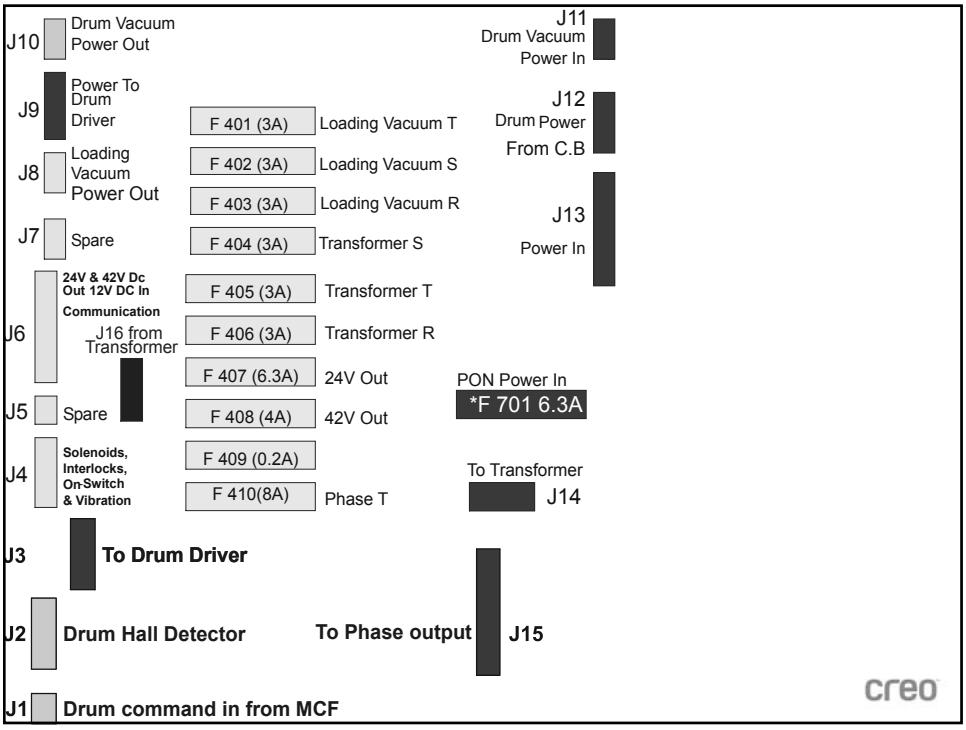


Plug Configurations

VLSI - Data Box

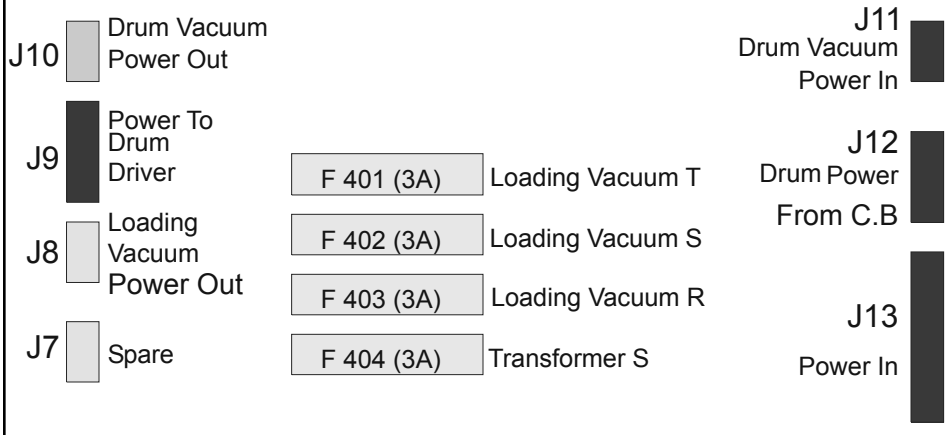
To L Box DDB
50 pin D type

To Brisque
Fiber cabels



Plug Configurations

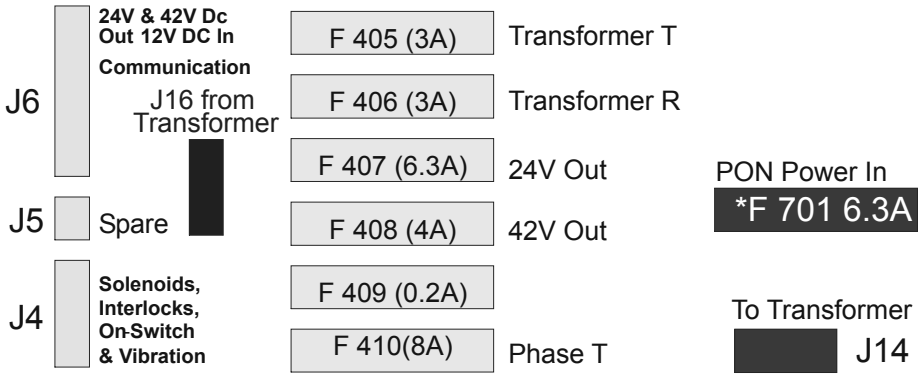
Distribution Box Top



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Plug Configurations

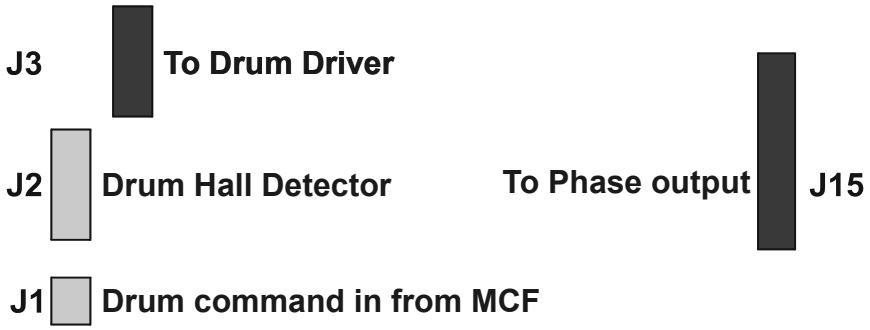
Distribution Box Middle



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Plug Configurations

Distribution Box Bottom



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Distribution Board

Fuses

1	F401 (3A)	Phase T for Loading vacuum pump
2	F402 (3A)	Phase S for Loading vacuum pump
3	F403 (3A)	Phase R for Loading vacuum pump
4	F404 (3A)	Phase S Input transformer for 24V
5	F405 (3A)	Phase R Input transformer for 24V
6	F406 (3A)	Phase T Input transformer for 24V
7	F407 (6.3A)	24V DC after transformer
8	F408 (4A)	42V DC after transformer
9	F409 (200MA)	After small transformer (DC) on the distribution board
10	F410	Not in used
11	F701 (6.3A)*	Before small transformer (AC) on the distribution board

*** F 701 new distribution board = 200mA**

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Distribution Board connectors

Power Distribution board connectors

RA = Right angle Molex to box panel

(Others = 90° Molex inside box)

J1 - Drum command from e-box (molex 4p).
(RA)

3	4
SH	ST2
COMMAND IN	COMMAND RET
1	2

J2 – Drum Hall Detector ECT (MOLEX 12P)
(RA)

7	8	9	10	11	12
	GND	HC	VCC		TEMP SENSE
		HA	VCC	HB	SH
1	2	3	4	5	6

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Distribution Board connectors

J3 - To Drum Driver (Molex 10P).

6	7	8	9	10
SH	GND	COMMAND OUT RET	HC	Inhibit
+15V	-15V	COMMAND OUT	HB	HA
1	2	3	4	5

J4 - Interlock and Solenoids (Molex 16p).
(RA)

9	10	11	12	13	14	15	16
FRONT DOOR	REAR DOOR	CASSET VALVE	ON_OFF	ON_OFF RET.	VIBRO Detector	INTLOCK	FLYOFF
FRONT RET.	REAR RET.	CASSET RET.		ST1	VIBRO RET.	INTLOCK RET.	
1	2	3	4	5	6	7	8

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Distribution Board connectors

J5 – **Spare Solenoid** (Molex 2 Pin) **.**
(RA)

2	SOL4 POWER
1	24V RET

J6 - **Power & Command** (Molex 24 pin).
(RA)

13	14	15	16	17	18	19	20	21	22	23	24
24V SWITCH	**24V RET**	**P12V**	**GND**	**RXD**	**RXD~**	**SH**	**SPARE**	**24V RET**	**24V SWITCH**	**24V SWITCH**	**42V RET**
24V	**24V RET**	**P12V**	**GND**	**TXD**	**TXD~**	**RESET~**	**LOW SPEED**	**24V RET**	**24V**	**24V**	**42V**
1	2	3	4	5	6	7	8	9	10	11	12

J7 - **Spare Phase** (Molex 6 pin).
(RA)

4	5	6
T		**SH**
	N	
1	2	3

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J8 - **Loading vaccum pump power out** (Molex 8p).
(RA)

5	6	7	8
R		**T**	
	S		**SH**
1	2	3	4

J9 – **Power to Drum Driver** (Molex 14p) **.**

8	9	10	11	12	13	14
S	**S**	**S**		**T**	**T**	**T**
R	**R**	**R**		**SH**	**SH**	**SH**
1	2	3	4	5	6	7

J10 – **Drum vaccum pump power out** (Molex 8p).
(RA)

5	6	7	8
	S		**SH**
R		**T**	
1	2	3	4

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J11 – Drum Vacuum Pump Power in (Molex 8p) .

5	6	7	8
	S		SH
R		T	
1	2	3	4

J12 - Drum Vacuum Power in (to Board) (Molex 14p) .

8	9	10	11	12	13	14
S	S	S		T	T	T
R	R	R		SH	SH	SH
1	2	3	4	5	6	7

J13 - Power in (Molex 24p) .

13	14	15	16	17	18	19	20	21	22	23	24
S	S	S	S		T	T	T	T		SH	SH
R	R	R	R		N	N	N	N		SH	SH
1	2	3	4	5	6	7	8	9	10	11	12

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J14 - To Trafo (Molex 10p) .

6	7	8	9	10
	SH		S	
N		T		R
1	2	3	4	5

J15 - E-box and L-box and Spare Outlet (Molex 20p) .

11	12	13	14	15	16	17	18	19	20
SH	SH	SH	SH		T	T		R	R
N	N	N	N	N	N		S	S	
1	2	3	4	5	6	7	8	9	10

J16 - From Trafo (Molex 16p) .

7	8	9	10	11	12
24V	24V	24V RET	24V RET	42V RET	42V
24V	24V	24V RET	24V RET	42V RET	42V
1	2	3	4	5	6

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