

# **LSub**

*LS2000 & LS1500*

*LSTD*

*Parameter Cards 1a99a, 1a75a, 2b55a, 2b75a*

*Service Manual*

# I. LS CABINETS REFERENCE GUIDE

## I.1. LS1500 parts list

GROUP	PART DESIGNATION	PART NAME
Transducers	LF Loudspeaker (x2)	LS.HPB15
	Recone kit	LS.HPB15K
Required Controller	Complete Unit	LSTDcontroller
	Parameter cards	1a75a or 1a99a
	Spare parts	see separate parts list
Miscellaneous	Front foam	
	Flying rail (optional)(x 3)	
	Rings for Flying rail	

## I.2. LS 2000 parts list

GROUP	PART DESIGNATION	PART NAME
Transducers	LF Loudspeaker	LS.HPB20 or LS.HPB20B [a]
	Recone kit	LS.HPB20K
Required Controller	Complete Unit	LSTDcontroller
	Parameter cards	2b55a or 2b75a
	Spare parts	see separate parts list
Miscellaneous	Front foam	
	Flying rail (optional)(x 3)	
	Rings for Flying rail	

[a] HPBLS20 has been used on cabinets with serial numbers 1 to 327. HPBLS20B has been used since

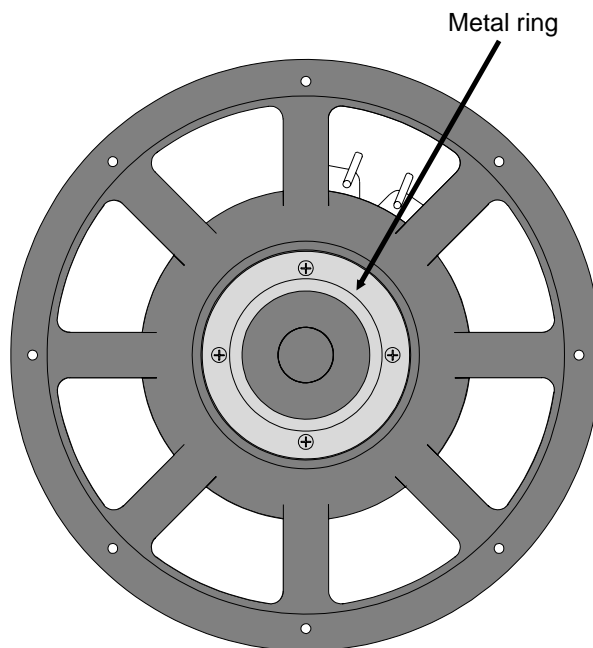
## II. SERVICE INSTRUCTIONS

### ***II.1. Read Before Starting Reconing an LS2000 loudspeaker***

This note only concern HPBLS20 Loudspeaker (up to serial number 327)

After having removed the old cone-coil assembly, please have a look on the part of the chassis around the magnetic gap. If there is a metal ring (with silver aspect), you will have to proceed as follows :

1. Unfasten the 4 screws assembling the metal ring and the basket (use a Pozidriv #3 type screwdriver).
2. Remove the metal ring.
3. Reassemble the basket to the magnetic part, using the provided 4 screws (BTR type) and the special Loctite type glue to avoid potential loosening. Tighten the screws as strongly as possible. **DO NOT USE THE PREVIOUS SCREWS WHICH ARE TOO LONG AND COULD DAMAGE THE CHASSIS.**



### ***II.2. Mounting the loudspeaker into the cabinet.***

Speakers have to be mounted in a push-pull architecture. Speaker 1 is mounted in a conventional way and speaker 2 is mounted upside down. Use the special dia 6 SUPERIX screws, with a n°4 allen, or a n°30 torx screwdriver.

If your speakers are HPB LS20B type (since serial number 328), there must be a block on the cabinet in order to be able to mount the speaker 1 (HPBLS20B are deeper than HPBLS20). All cabinets since sn xxx are provided with such a block. To mount type B speaker on an old cabinet please contact the factory.

Each speaker has to be normally connected (red and orange wires on red terminals) but a polarity inversion on the speaker 2 is required. This inversion is being made at the factory, directly on the LS connection plate. Check that when excited through the SPEAKON with a DC battery, both loudspeakers are moving towards you.

Apply 8 volts RMS to the cabinet and sweep from 20Hz to 50Hz. Listen for obvious noises.

Signal	Speakon Connector	Wire
Speaker 1	Pin 1-	Black
Speaker 1	Pin 1+	Red
Speaker 2	Pin 2-	Orange
Speaker 2	Pin 2+	Grey

### III. LSTDcontroller REFERENCE GUIDE

#### III.1. LSTDcontroller, Parts List

LSTD 1.0					
REF.	DESCRIPTION	SPECS	TOL.	RATING	
Left/Com	Rigth				
C1	Axial Electrolytic	2200 F	20%	25V	
C101	Ceramic	680pF	5%		
C102	Ceramic	680pF	5%		
C103	Ceramic	33pF	5%		
C104	Ceramic	33pF	5%		
C105	Radial Electrolytic	100 F	5%		
C106	Radial Electrolytic	100 F	5%		
C2	CPM 63V	100nF	5%		
C21	Radial Electrolytic	470 F	20%	25V	
C22	Radial Electrolytic	10 F	20%	25V	
C23	Radial Electrolytic	100 F	20%	25V	
C3	Radial Electrolytic	100 F	20%	25V	
C301	Radial Electrolytic	1 F	5%		
C4	CPM 63V	100nF	5%		
C403	CPM 63V	220nF	5%		
C404	CPM 63V	220nF	5%		
C405	CPM 63V	220nF	5%		
C406	CPM 63V	220nF	5%		
C407	CPM 63V	220nF	5%		
C408	CPM 63V	220nF	5%		
C409	CPM 63V	220nF	5%		
C410	CPM 63V	220nF	5%		
C411	CPM 63V	220nF	5%		
C412	CPM 63V	220nF	5%		
C413	CPM 63V	220nF	5%		
C414	CPM 63V	220nF	5%		
C5	Axial Electrolytic	2200 F	20%	25V	
C501	tantale G	2,2 F	20%	16V	
C502	CPM 63V	1nF	5%		
C503	Radial Electrolytic	10 F	20%	25V	
C504	CPM 63V	100nF	5%		
C505	Radial Electrolytic	10 F	20%	25V	

LSTD 1.0					
REF.	DESCRIPTION	SPECS	TOL.	RATING	
Left/Com	Rigth				
C506	Ceramic	100pF	5%		
C6	CPM 63V	100nF	5%		
C601	tantale G	2,2 F	20%		16V
C602	CPM 63V	1nF	5%		
C603	Radial Electrolytic	10 F	20%		25V
C604	CPM 63V	100nF	5%		
C605	Radial Electrolytic	10 F	20%		25V
C606	Ceramic	100pF	5%		
C607	CPM 63V	220nF	5%		
C608	CPM 63V	220nF	5%		
C7	Radial Electrolytic	100 F	20%		25V
C701	Radial Electrolytic	470 F	20%		25V
C702	Radial Electrolytic	470 F	20%		25V
C8	CPM 63V	100nF	5%		
C801	Ceramic	100pF	5%		
C802	CPM 63V	3,3nF	10%		
C803	CPM 63V	100nF	10%		
C811	Ceramic	47pF	5%		
C812	CPM 63V	1nF	10%		
C813	CPM 63V	100nF	10%		
C821	tantale G	2,2 F	20%		16V
C822	CPM 63V	100nF	5%		
C823	CPM 63V	68nF	5%		
C842	CPM 63V	3,3nF	10%		
C843	CPM 63V	100nF	10%		
C851	tantale G	1 F	20%		16V
C852	CPM 63V	330nF	5%		
C853	CPM 63V	220nF	5%		
C861	CPM 63V	100nF	5%		
C871	CPM 63V	330nF	5%		
C872	CPM 63V	100nF	5%		
C9	CPM 63V	330nF	5%		
C921	CPM 63V	100nF	5%		
C931	CPM 63V	1nF	10%		
C932	CPM 63V	100nF	10%		
DA901	CA3039				
D1	Bridge WO4G				1.5A/400V
D21	1N4001				
D22	1N4001				
D23	1N4001				
D24	1N4001				
D25	BZX85C 5v1				
D26	1N4001				
D301	1N4148				
D302	1N4148				
D303	1N4148				
D304	NC				
D305	1N4148				
D306	NC				

LSTD 1.0					
REF.		DESCRIPTION	SPECS	TOL.	RATING
Left/Com	Rigth				
D501		BZX55C 2v7			
D502		BZX55C 2v7			
D601		BZX55C 2v7			
D602		BZX55C 2v7			
D603		1N4148			
D801		1N6263			
D802		1N4148			
D811		1N4148			
D812		1N4148			
D813		1N4148			
D814		1N4148			
D821		1N6263			
D822		NC			
D823		NC			
D824		NC			
D831		1N4148			
D841		1N4148			
D842		1N4148			
D843		1N4148			
D901		1N4148			
D902		1N4148			
D903		1N4148			
D904		1N4148			
D911		BZX55C 2v7			
D912		BZX55C 2v7			
D921		1N4148			
D931		1N6263			
D932		1N4148			
D933		1N6263			
D934		1N4148			
F1		0.25A			250V
IC101	IC201	NE5532			
IC121		TL072			
IC301		74LS393			
IC302		TL072			
IC401		TL074			
IC402		TL074			
IC403		TL074			
IC501		DBX 2150			
IC561		TL074			
IC601		DBX 2150			
IC701		NE5532			
IC801		TL072			
IC802		TL064			
IC891		LM339			
IC892		TL072			
IC901		TL064			
IC902		TL074			
J1	J2	XLR 3 FDH			
J3	J4	XLR 3 MDH			

LSTD 1.0					
REF.		DESCRIPTION	SPECS	TOL.	RATING
Left/Com	Rigth				
J5		XLR 3 MDH			
J6		XLR 3 MDH			
J7		XLR 4 MP			
J71		XLR 5 MP			
J8		MOLEX 10-45-1081			
J9		MOLEX 10-45-1081			
LED21		TLSR 5200			
LED22		TLSG 5200			
LED301		TLSR 3200			
LED302		TLSR 3200			
LED801		TLSG 3200			
LED802		TLSY 3200			
LED803		TLSR 3200			
LED901		TLSR 3200			
LED902		TLSR 3200			
P301		P11 QZF	10KA	20%	
P401		P11 QZF Duo Cr13	10KA	20%	
P801		P11 QZF Duo Cr13	10KA	20%	
P802		P11 QZF Duo Cr13	10KA	20%	
REG1		7815			
REG2		7915			
REG3		7805			
REG5		7812			
REG801		79L05			
RV101	RV201	T63YB	1KA	10%	
RV501		T7YB	47KA	20%	
RV601		T7YB	47KA	20%	
RY 1		NF4 12V			
RY 2		NF2 12V			
R101	R201	Metal	681	1%	1/4 W
R102	R202	Metal	681	1%	1/4 W
R103	R203	Metal	12,1k	1%	1/4 W
R104	R204	Metal	12,1k	1%	1/4 W
R105	R205	Metal	18,2k	1%	1/4 W
R106	R206	Metal	17,8k	1%	1/4 W
R108	R208	Metal	3,92k	1%	1/4 W
R109	R209	Metal	4,64k	1%	1/4 W
R110	R210	Metal	2,74k	1%	1/4 W
R111	R211	Metal	3,65k	1%	1/4 W
R112	R212	Metal	121	1%	1/4 W
R113	R213	Metal	100k	1%	1/4 W
R114	R214	Metal	0	1%	1/4 W
R115	R215	Metal	0	1%	1/4 W
R116	R216	Metal	10k	1%	1/4 W
R118	R218	Metal	4,64k	1%	1/4 W
R119	R219	Metal	4,64k	1%	1/4 W
R120	R220	Metal	3,32k	1%	1/4 W
R121	R221	Metal	3,32k	1%	1/4 W

LSTD 1.0					
REF.		DESCRIPTION	SPECS	TOL.	RATING
Left/Com	Rigth				
R122	R222	Metal	121	1%	1/4 W
R123	R223	Metal	100k	1%	1/4 W
R21		Metal	1k	1%	1/4 W
R22		Metal	82,5k	1%	1/4 W
R23		Metal	1k	1%	1/4 W
R24		Metal	1k	1%	1/4 W
R25		Metal	1k	1%	1/4 W
R26		Metal	10k	1%	1/4 W
R27		Metal	1k	10%	1/2 W
R28		Metal	1k	10%	1/2 W
R301		Metal	3,32k	1%	1/4 W
R302		Metal	681	1%	1/4 W
R303		Metal	681	1%	1/4 W
R304		Metal	6,81k	1%	1/4 W
R305		Metal	33,2k	1%	1/4 W
R306		Metal	332k	1%	1/4 W
R307		Metal	33,2k	1%	1/4 W
R308		Metal	1k	1%	1/4 W
R309		Metal	464	1%	1/4 W
R31		Metal	0		1/4 W
R310		Metal	1k	1%	1/4 W
R311		Metal	2k	1%	1/4 W
R312		Metal	2k	1%	1/4 W
R313		Metal	2k	1%	1/4 W
R314		Metal	2k	1%	1/4 W
R315		Metal	332k	1%	1/4 W
R404		Metal	22	1%	1/4 W
R405		Metal	6,19k	1%	1/4 W
R406		Metal	6,19k	1%	1/4 W
R407		Metal	6,04k	1%	1/4 W
R408		Metal	1,5k	1%	1/4 W
R409		Metal	1,5k	1%	1/4 W
R410		Metal	6,04k	1%	1/4 W
R411		Metal	6,19k	1%	1/4 W
R412		Metal	10k	1%	1/4 W
R413		Metal	6,19k	1%	1/4 W
R414		Metal	6,04k	1%	1/4 W
R415		Metal	1,5k	1%	1/4 W
R416		Metal	1,5k	1%	1/4 W
R417		Metal	6,04k	1%	1/4 W
R418		Metal	6,19k	1%	1/4 W
R419		Metal	10k	1%	1/4 W
R420		Metal	6,19k	1%	1/4 W
R421		Metal	6,04k	1%	1/4 W
R422		Metal	1,5k	1%	1/4 W



LSTD 1.0					
REF.	DESCRIPTION	SPECS	TOL.	RATING	
Left/Com	Rigth				
R423	Metal	1,5k	1%	1/4 W	
R424	Metal	6,04k	1%	1/4 W	
R425	Metal	6,19k	1%	1/4 W	
R426	Metal	10k	1%	1/4 W	
R427	Metal	6,19k	1%	1/4 W	
R428	Metal	6,04k	1%	1/4 W	
R429	Metal	1,5k	1%	1/4 W	
R430	Metal	1,5k	1%	1/4 W	
R431	Metal	6,04k	1%	1/4 W	
R432	Metal	6,19k	1%	1/4 W	
R433	Metal	10k	1%	1/4 W	
R434	Metal	6,19k	1%	1/4 W	
R435	Metal	6,04k	1%	1/4 W	
R436	Metal	1,5k	1%	1/4 W	
R437	Metal	1,5k	1%	1/4 W	
R438	Metal	6,04k	1%	1/4 W	
R439	Metal	6,19k	1%	1/4 W	
R440	Metal	10k	1%	1/4 W	
R441	Metal	6,19k	1%	1/4 W	
R442	Metal	6,04k	1%	1/4 W	
R443	Metal	1,5k	1%	1/4 W	
R444	Metal	1,5k	1%	1/4 W	
R445	Metal	6,04k	1%	1/4 W	
R501	Metal	20k	1%	1/4 W	
R502	Metal	18,2k	1%	1/4 W	
R503	Metal	10k	1%	1/4 W	
R504	Metal	3,01k	1%	1/4 W	
R505	Metal	51	1%	1/4 W	
R506	Metal	100k	1%	1/4 W	
R507	Metal	20k	1%	1/4 W	
R508	Metal	20k	1%	1/4 W	
R509	Metal	10k	1%	1/4 W	
R510	Metal	10k	1%	1/4 W	
R511	Metal	10k	1%	1/4 W	
R512	Metal	10k	1%	1/4 W	
R601	Metal	20k	1%	1/4 W	
R602	Metal	18,2k	1%	1/4 W	
R603	Metal	10k	1%	1/4 W	
R604	Metal	3,01k	1%	1/4 W	
R605	Metal	51	1%	1/4 W	
R606	Metal	100k	1%	1/4 W	
R607	Metal	20k	1%	1/4 W	
R608	Metal	56,2k	1%	1/4 W	
R609	Metal	121k	1%	1/4 W	
R701	Metal	4,64k	1%	1/4 W	

LSTD 1.0					
REF.	DESCRIPTION	SPECS	TOL.	RATING	
Left/Com	Rigth				
R702	Metal	5,11k	1%	1/4 W	
R703	Metal	10k	1%	1/4 W	
R704	Metal	11k	1%	1/4 W	
R705	Metal	121	1%	1/4 W	
R706	Metal	100k	1%	1/4 W	
R707	Metal	0	1%	1/4 W	
R708	Metal	0	1%	1/4 W	
R709	Metal	10k	1%	1/4 W	
R711	Metal	5,11k	1%	1/4 W	
R712	Metal	4,64k	1%	1/4 W	
R713	Metal	10k	1%	1/4 W	
R714	Metal	11k	1%	1/4 W	
R715	Metal	121	1%	1/4 W	
R716	Metal	100k	1%	1/4 W	
R801	Metal	100k	1%	1/4 W	
R802	Metal	49,9k	1%	1/4 W	
R803	Metal	100k	1%	1/4 W	
R804	Metal	10k	1%	1/4 W	
R805	Metal	10k	1%	1/4 W	
R807	Metal	NC	1%	1/4 W	
R808	Metal	4,64k	1%	1/4 W	
R811	Metal	100k	1%	1/4 W	
R812	Metal	49,9k	1%	1/4 W	
R813	Metal	49,9k	1%	1/4 W	
R814	Metal	100k	1%	1/4 W	
R815	Metal	100k	1%	1/4 W	
R816	Metal	100	1%	1/4 W	
R817	Metal	NC	1%	1/4 W	
R818	Metal	4,64k	1%	1/4 W	
R821	Metal	1k	1%	1/4 W	
R822	Metal	5,11k	1%	1/4 W	
R823	Metal	221k	1%	1/4 W	
R824	Metal	33,2k	1%	1/4 W	
R825	Metal	100	1%	1/4 W	
R831	Metal	100k	1%	1/4 W	
R832	Metal	100k	1%	1/4 W	
R833	Metal	100	1%	1/4 W	
R834	Metal	22,1k	1%	1/4 W	
R835	Metal	1k	1%	1/4 W	
R841	Metal	1k	1%	1/4 W	
R842	Metal	100k	1%	1/4 W	
R843	Metal	100k	1%	1/4 W	
R844	Metal	100k	1%	1/4 W	
R845	Metal	100	1%	1/4 W	
R846	Metal	NC	1%	1/4 W	

LSTD 1.0					
REF.	DESCRIPTION	SPECS	TOL.	RATING	
Left/Com	Rigth				
R847	Metal	2,21k	1%	1/4 W	
R851	Metal	1M	1%	1/4 W	
R852	Metal	15k	1%	1/4 W	
R853	Metal	100k	1%	1/4 W	
R854	Metal	20k	1%	1/4 W	
R855	Metal	100	1%	1/4 W	
R861	Metal	22,1k	1%	1/4 W	
R862	Metal	22,1k	1%	1/4 W	
R871	Metal	27,4k	1%	1/4 W	
R872	Metal	56,2k	1%	1/4 W	
R873	Metal	15k	1%	1/4 W	
R881	Metal	100k	1%	1/4 W	
R882	Metal	49,9k	1%	1/4 W	
R883	Metal	2,74k	1%	1/4 W	
R884	Metal	100k	1%	1/4 W	
R885	Metal	49,9k	1%	1/4 W	
R886	Metal	2,74k	1%	1/4 W	
R901	Metal	10k	1%	1/4 W	
R902	Metal	10k	1%	1/4 W	
R903	Metal	20k	1%	1/4 W	
R904	Metal	10k	1%	1/4 W	
R905	Metal	3,65k	1%	1/4 W	
R906	Metal	1k	1%	1/4 W	
R907	Metal	2k	1%	1/4 W	
R908	Metal	10k	1%	1/4 W	
R909	Metal	10k	1%	1/4 W	
R910	Metal	3,32k	1%	1/4 W	
R911	Metal	3,32k	1%	1/4 W	
R912	Metal	100k	1%	1/4 W	
R913	Metal	100k	1%	1/4 W	
R914	Metal	100k	1%	1/4 W	
R915	Metal	332k	1%	1/4 W	
R916	Metal	2,74k	1%	1/4 W	
R921	Metal	10k	1%	1/4 W	
R922	Metal	100k	1%	1/4 W	
R923	Metal	10k	1%	1/4 W	
R924	Metal	4,64k	1%	1/4 W	
R925	Metal	NC	1%	1/4 W	
R926	Metal	3,32k	1%	1/4 W	
R927	Metal	27,4k	1%	1/4 W	
R928	Metal	10k	1%	1/4 W	
R929	Metal	100	1%	1/4 W	
R931	Metal	2,21k	1%	1/4 W	
R932	Metal	1k	10%	1/2 W	
R933	Metal	NC	1%	1/4 W	



LSTD 1.0					
REF.	DESCRIPTION		SPECS	TOL.	RATING
Left/Com	Rigth				
R934		Metal	4,64k	1%	1/4 W
R935		Metal	681	1%	1/4 W
SW1		SHADOW F2U			
SW2		MFP 220			
SW3		SHADOW F2U			
SW301		SHADOW F4U			
SW302		SHADOW F4U			
SW401		MIL P301C6P			
SW901		SHADOW F2U			
TP1	TP2	Point test			
TP5		Point test			
TP6		Point test			
TR21		BC548			
TR22		BD135			
TR23		BC548			
TR301		BC548			
TR302		2N4393			
TR801		BC557-B			
TR901		2N4393			
T1		2x15V			30VA
T101	T201	ST139C			
T701		ST139C			

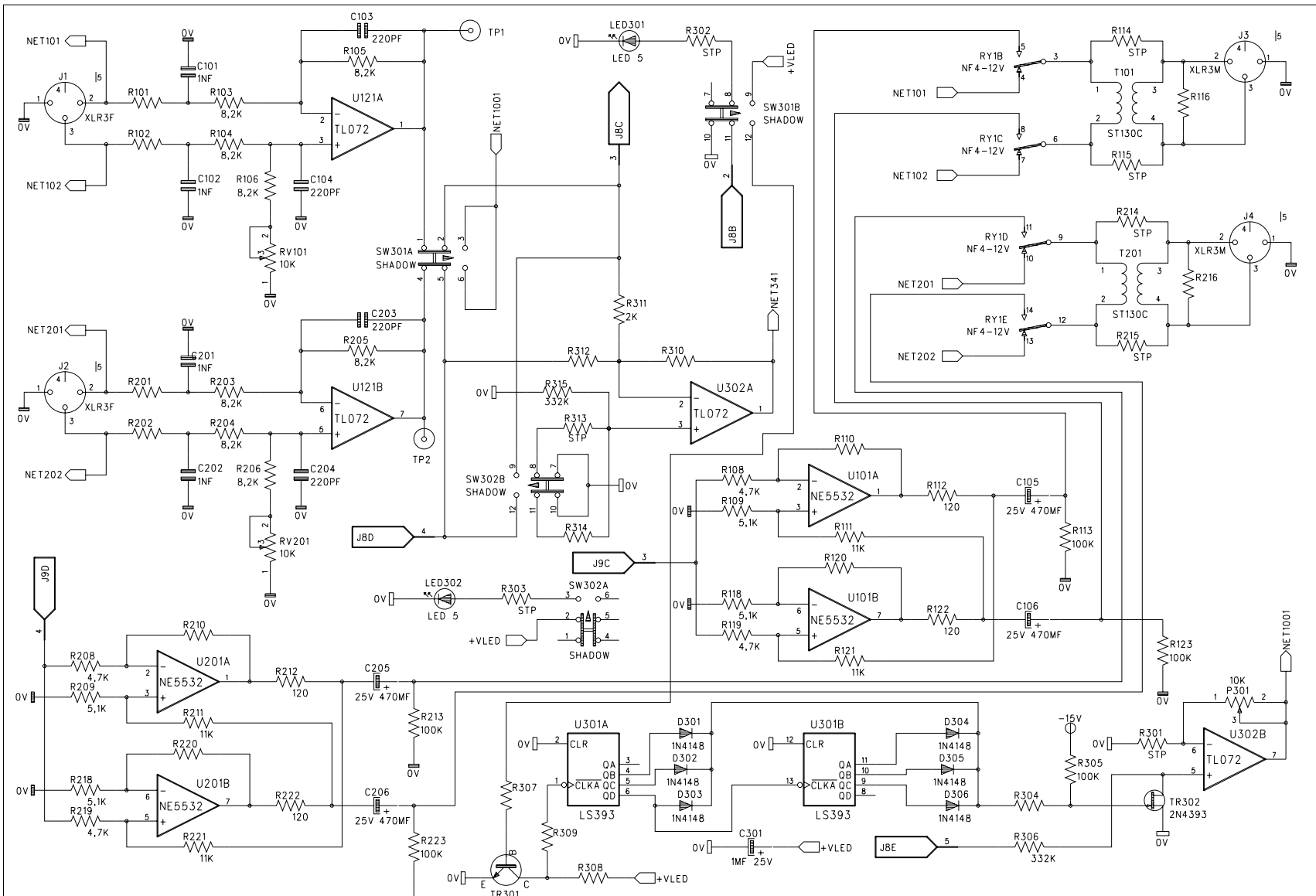
### III.2. Parameter cards, Parts List

LSTD parameter cards								
REF.	DESCRIPTION		SPECS				TOL	RATING
Left	Right		1a99a	1a75a	2b55a	2b75a		
CD101		Ceramic	100nF	100nF	100nF	100nF	20%	
CD102		Ceramic	100nF	100nF	100nF	100nF	20%	
CD103		Ceramic	100nF	100nF	100nF	100nF	20%	
CD104		Ceramic	100nF	100nF	100nF	100nF	20%	
CD105		Ceramic	100nF	100nF	100nF	100nF	20%	
CD106		Ceramic	100nF	100nF	100nF	100nF	20%	
CD107		Ceramic	100nF	100nF	100nF	100nF	20%	
CD108		Ceramic	100nF	100nF	100nF	100nF	20%	
CD109		Ceramic	100nF	100nF	100nF	100nF	20%	
CD110		Ceramic	100nF	100nF	100nF	100nF	20%	
CD111		Ceramic	100nF	100nF	100nF	100nF	20%	
CD112		Ceramic	100nF	100nF	100nF	100nF	20%	
CD113		Ceramic	100nF	100nF	100nF	100nF	20%	
CD114		Ceramic	100nF	100nF	100nF	100nF	20%	
C1001		Radial Electrolytic	1 F	1 F	1 F	1 F	20%	25V
C1002		Radial Electrolytic	100 F	100 F	100 F	100 F	20%	25V
C1003		Radial Electrolytic	1 F	1 F	1 F	1 F	20%	25V
C1004		Radial Electrolytic	100 F	100 F	100 F	100 F	20%	25V
C1101	C1201	MKT	220nF	220nF	220nF	220nF	5%	
C1102	C1202	MKT	220nF	220nF	220nF	220nF	5%	

LSTD parameter cards								
REF.	DESCRIPTION		SPECS				TOL	RATING
	Left	Right	1a99a	1a75a	2b55a	2b75a		
C1103	C1203	MKT	220nF	220nF	220nF	220nF	5%	
C1104	C1204	MKT	220nF	220nF	220nF	220nF	5%	
C1105	C1205	MKT	NC	NC	470nF	NC	5%	
C1106	C1206	MKT	NC	NC	470nF	NC	5%	
C1107	C1207	MKT	NC	NC	NC	NC		
C1108	C1208	MKT	NC	NC	NC	NC		
C1301		MKT	220nF	220nF	220nF	220nF	5%	
C1302		MKT	220nF	220nF	220nF	220nF	5%	
C1303		MKT	220nF	220nF	220nF	220nF	5%	
C1401		MKT	NC	NC	470nF	NC		
C1402		MKT	NC	NC	470nF	NC		
C1403		MKT	220nF	330nF	68nF	330nF	5%	
C1404		MKT	330nF	330nF	470nF	330nF	5%	
C1405		MKT	330nF	330nF	100nF	330nF	5%	
C1406		MKT	33nF	33nF	220nF	33nF	5%	
C1407		MKT	NC	NC	NC	NC		
C1408		MKT	NC	NC	NC	NC		
C1409		MKT	220nF	220nF	220nF	220nF	5%	
C1410		MKT	NC	NC	NC	NC		
C1411		MKT	NC	NC	NC	NC		
C1412		MKT	NC	NC	NC	NC		
C1421		MKT	470nF	470nF	470nF	470nF	5%	
C1422		MKT	470nF	470nF	470nF	470nF	5%	
C1423		MKT	470nF	470nF	470nF	470nF	5%	
C1424		MKT	33nF	33nF	33nF	33nF	5%	
C1501		MKT	150nF	150nF	150nF	150nF	5%	
C1502		MKT	47nF	47nF	47nF	47nF	5%	
C1503		MKT	100nF	100nF	100nF	100nF	5%	
C1504		MKT	100nF	100nF	100nF	100nF	5%	
C1505		MKT	330nF	330nF	330nF	330nF	5%	
C1801		MKT	NC	NC	68nF	68nF	5%	
C1802		MKT	150nF	150nF	220nF	220nF	5%	
C1803		MKT	150nF	150nF	220nF	220nF	5%	
C1804		MKT	47nF	47nF	68nF	68nF	5%	
C1805		MKT	47nF	47nF	100nF	100nF	5%	
C1806		MKT	22nF	22nF	22nF	22nF	5%	
C1807		MKT	15nF	15nF	15nF	15nF	5%	
C1811		MKT	330nF	330nF	330nF	330nF	5%	
C1812		Radial Electrolytic	10 F	10 F	10 F	10 F	20%	25V
C1821		MKT	33nF	33nF	NC	NC	5%	
C1822		MKT	100nF	100nF	NC	NC	5%	
C1831		Tantale Go tte	2,2 F	2,2 F	2,2 F	2,2 F	20%	16V
C1841		Tantale Go tte	47 F	47 F	47 F	47 F	20%	16V
D1101	D1201	1N4148						
D1102	D1202	1N4148						
D1401		1N4148						
D1402		1N4148						
D1421		1N4148						
D1831		1N4148						
D1832		1N4148						

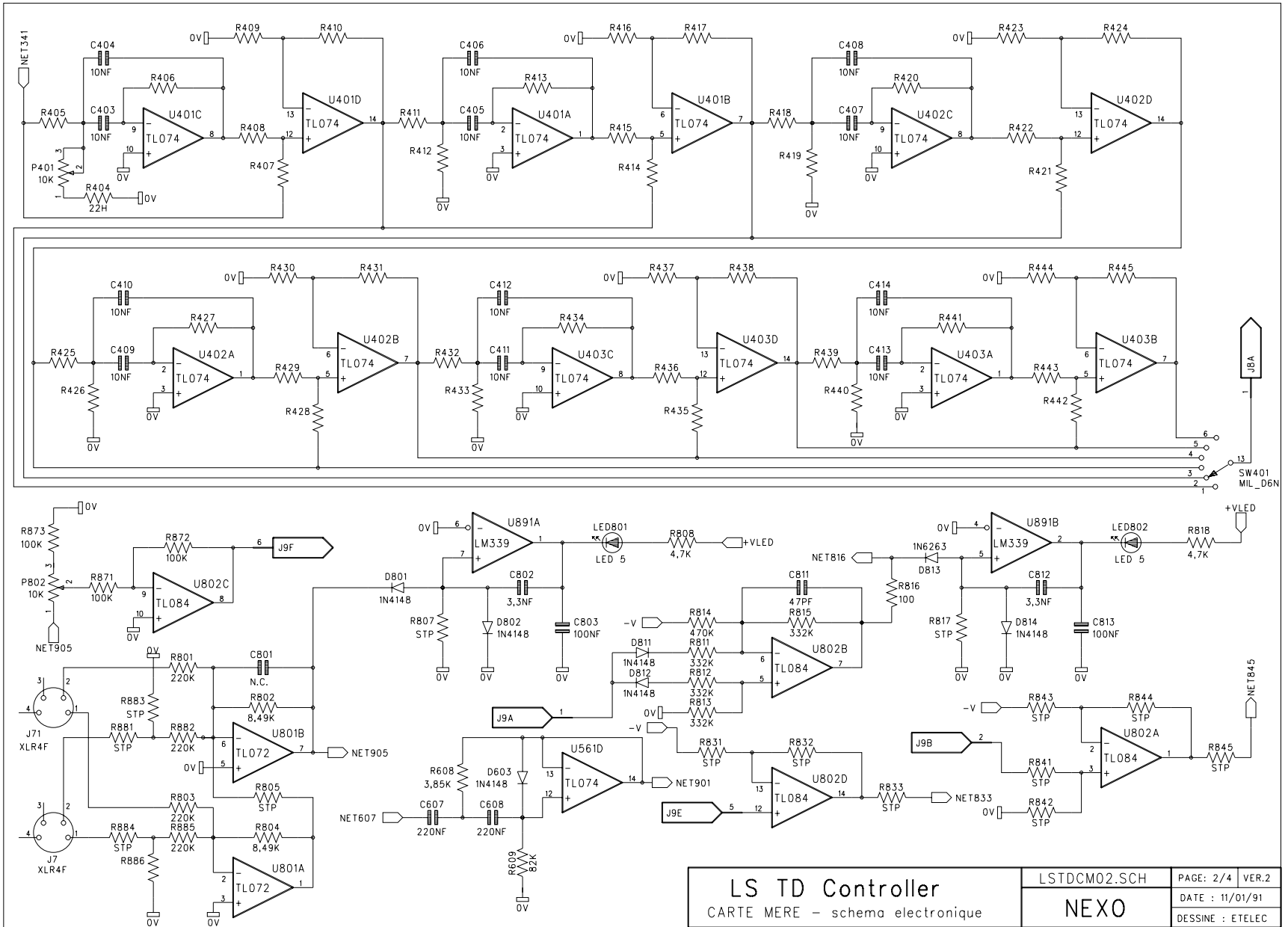
LSTD parameter cards								
REF.	DESCRIPTION		SPECS				TOL	RATING
	Left	Right	1a99a	1a75a	2b55a	2b75a		
D1841		1N4148						
IC1121		TL074						
IC1122		TL074	NC	NC		NC		
IC1341		TL074						
IC1401		TL074						
IC1451		TL074						
IC1801		TL064						
IC1802		TL064						
J18		MOLEX 3003						
J19		MOLEX 3003						
RV1301		Trimmer monoto r	47k	47k	47k	47k	20%	
RV1811		Trimmer monoto r	10k	10k	10k	10k	20%	
RV1831		Trimmer monoto r	10k	10k	10k	10k	20%	
RV1832		Trimmer monoto r	47k	47k	47k	47k	20%	
R1001		Metal	1	1	1	1	5%	
R1002		Metal	1	1	1	1	5%	
R1101	R1201	Metal	3,92k	10k	12,1k	10k	1%	
R1102	R1202	Metal	5,62k	11k	15k	11k	1%	
R1103	R1203	Metal	1,5k	3,92k	5,11k	3,92k	1%	
R1104	R1204	Metal	27,4k	22,1k	33,2k	22,1k	1%	
R1105	R1205	Metal	NC	NC	NC	NC		
R1106	R1206	Metal	NC	NC	22,1k	NC		
R1107	R1207	Metal	NC	NC	NC	NC		
R1108	R1208	Metal	NC	NC	NC	NC		
R1111	R1211	Metal	NC	NC	NC	NC		
R1112	R1212	Metal	0	0	NC	0		
R1113	R1213	Metal	NC	NC	0	NC		
R1114	R1214	Metal	NC	NC	NC	NC		
R1301		Metal	1k	1k	1k	1k	1%	
R1302		Metal	33,2k	33,2k	33,2k	33,2k	1%	
R1303		Metal	33,2k	33,2k	33,2k	33,2k	1%	
R1304		Metal	1M	1M	1M	1M	1%	
R1305		Metal	562k	332k	221k	332k	1%	
R1401		Metal	10k	10k	12,1k	10k	1%	
R1402		Metal	0	0	12,1k	0		
R1403		Metal	10k	10k	12,1k	10k	1%	
R1404		Metal	13k	17,8k	8,25k	17,8k	1%	
R1405		Metal	13k	17,8k	8,25k	17,8k	1%	
R1406		Metal	13k	17,8k	8,25k	17,8k	1%	
R1407		Metal	3,32k	3,32k	3,32k	3,32k	1%	
R1408		Metal	5,62k	5,62k	4,64k	4,64k	1%	
R1409		Metal	NC	NC	NC	NC		
R1410		Metal	NC	NC	NC	NC		
R1411		Metal	NC	NC	NC	NC		
R1412		Metal	NC	NC	NC	NC		
R1413		Metal	0	0	0	0		
R1414		Metal	NC	NC	NC	NC		

LSTD parameter cards								
REF.	DESCRIPTION		SPECS				TOL	RATING
	Left	Right	1a99a	1a75a	2b55a	2b75a		
R1421		Metal	3,92k	3,92k	4,64k	4,64k	1%	
R1422		Metal	22,1k	22,1k	27,4k	27,4k	1%	
R1423		Metal	3,32k	3,32k	3,32k	3,32k	1%	
R1424		Metal	1,5k	1,5k	2,87k	2,87k	1%	
R1425		Metal	1M	1M	562k	562k	1%	
R1426		Metal	NC	NC	NC	NC		
R1427		Metal	0	0	0	0		
R1428		Metal	2,74k	2,74k	3,32k	3,32k	1%	
R1501		Metal	33,2k	33,2k	27,4k	33,2k	1%	
R1502		Metal	6,19k	6,19k	2,21k	6,19k	1%	
R1503		Metal	274k	274k	1M	274k	1%	
R1504		Metal	1k	1k	5,11k	5,11k	1%	
R1505		Metal	2,2M	2,2M	562k	562k	1%	
R1506		Metal	NC	NC	NC	NC		
R1507		Metal	4,64k	4,64k	4,64k	4,64k	1%	
R1508		Metal	NC	NC	NC	NC		
R1509		Metal	0	0	0	0	1%	
R1510		Metal	8,25k	8,25k	15k	15k	1%	
R1801		Metal	22,1k	22,1k	18,2k	18,2k	1%	
R1802		Metal	1,5M	1,5M	825k	825k	1%	
R1803		Metal	681	681	681	681	1%	
R1804		Metal	1,5M	1,5M	562k	562k	1%	
R1805		Metal	825	825	1k	1k	1%	
R1806		Metal	825k	825k	2,2M	2,2M	1%	
R1807		Metal	2k	2k	2k	2k	1%	
R1811		Metal	1,21k	1,21k	1,21k	1,21k	1%	
R1812		Metal	100k	100k	100k	100k	1%	
R1813		Metal	10k	10k	10k	10k	1%	
R1821		Metal	10k	10k	10k	10k	1%	
R1822		Metal	10k	10k	10k	10k	1%	
R1823		Metal	6,81k	6,81k	6,81k	6,81k	1%	
R1824		Metal	6,19k	6,19k	12,1k	12,1k	1%	
R1831		Metal	2,21k	2,21k	2,21k	2,21k	1%	
R1841		Metal	332k	332k	562k	562k	1%	
R1842		Metal	274k	274k	332k	332k	1%	
R1843		Metal	100k	100k	100k	100k	1%	
R1844		Metal	10k	10k	10k	10k	1%	
TP11		point test						
TP12		point test						
TP13		point test						
TP14		point test						
TR1801		BC557-B						



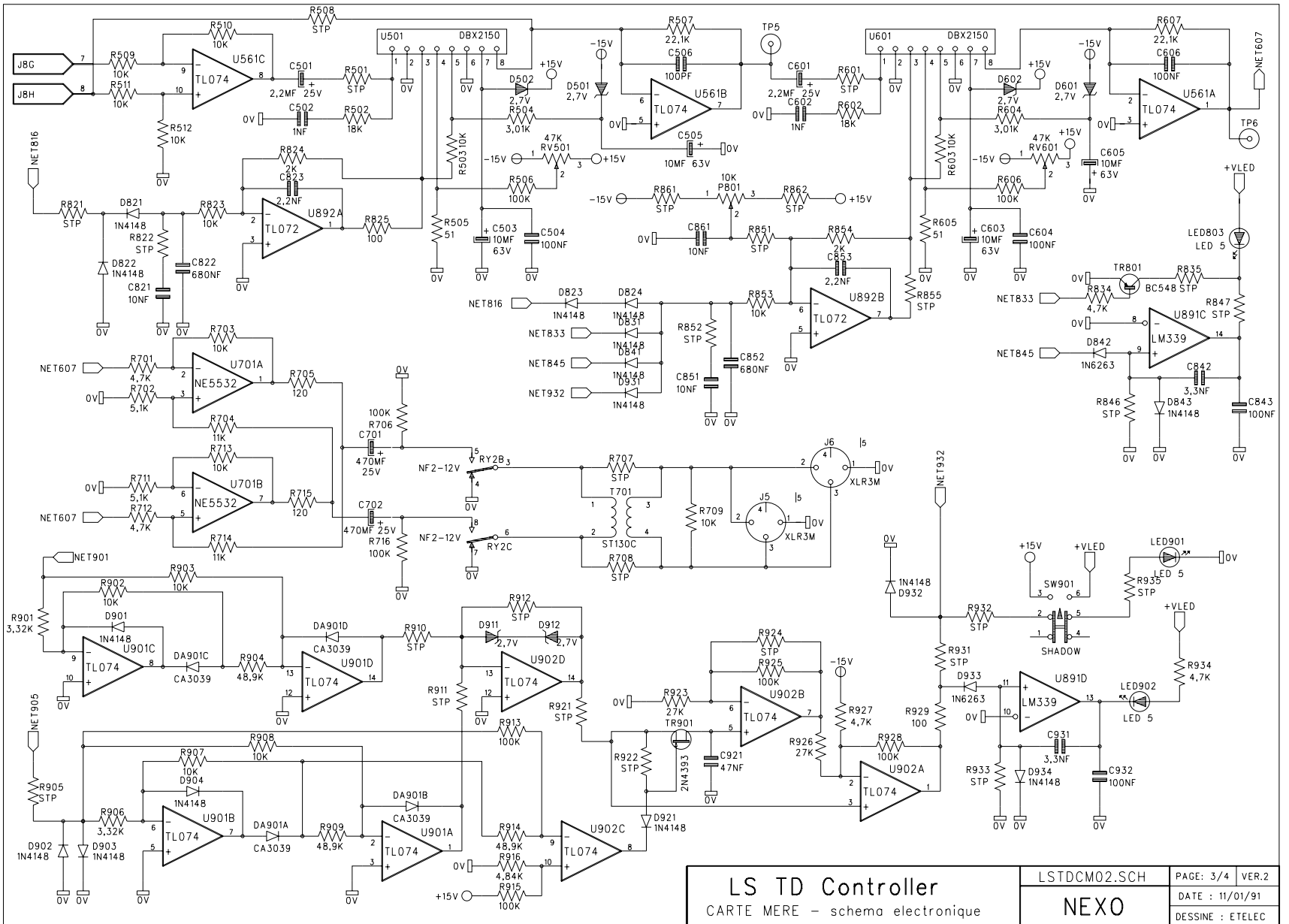
<b>LS TD Controller</b> CARTE MERE - schema electronique	LSTDCM02.SCH	PAGE: 1/4	VER.2
	<b>NEXO</b>	DATE : 11/01/91	DESSINE : ETELEC



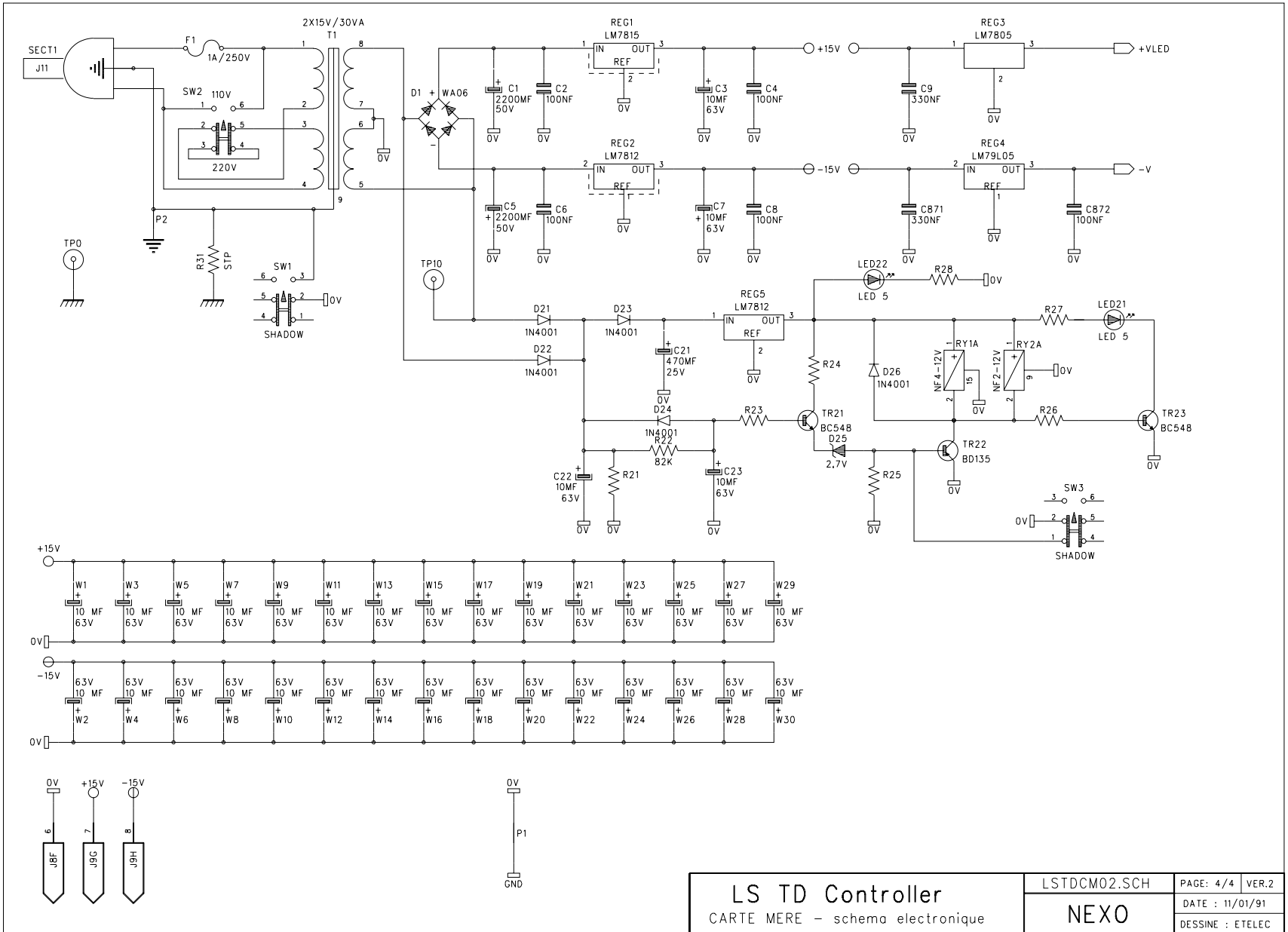


LS TD Controller  
 CARTE MERE - schema electronique

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NEXO		DATE : 11/01/91
		DESSINE : ETELEC

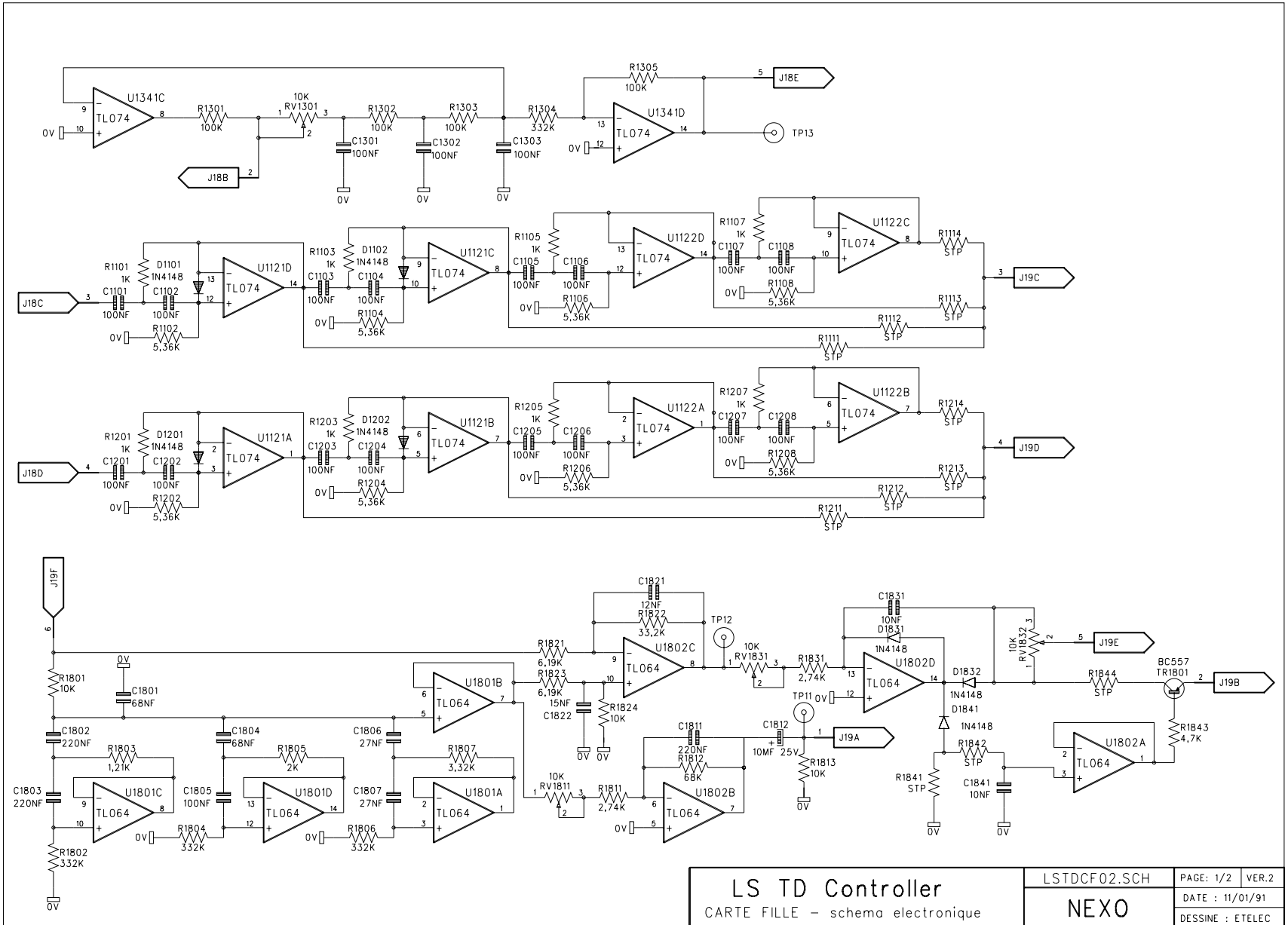


<b>LS TD Controller</b> CARTE MERE - schema electronique	LSTDCM02.SCH	PAGE: 3/4	VER.2
	NEXO		DATE : 11/01/91



LS TD Controller  
 CARTE MERE - schema electronique

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NEXO	DATE : 11/01/91	
	DESSINE : ETELEC	



<b>LS TD Controller</b> CARTE FILLE - schema electronique	LSTDCF02.SCH	PAGE: 1/2	VER.2
	NEXO	DATE : 11/01/91	DESSINE : ETELEC

