Engineering Specification
Signals

SDG 002

CIRCUIT DESIGN STANDARDS OBSOLETE SIGNALLING CIRCUITS

Version 1.9

Issued 1 February 2011

Engineering Specification

Owner:	Chief Engineer, Signals & Control Systems		
Approved by:	Warwick Allison Chief Engineer Signals & Control Systems	Authorised by:	Paul Szacsvay Principal Engineer Signalling Technical

Document control

Version	Date	Summary of change
1.1	26 August 2008	Published in RailCorp format
1.2	1 December 2008	Added T020 – WB&S FS2500 Track Circuit
1.3	18 August 2009	X039 from CURRENT transferred to X049 OBSOLETE (two sheets)
1.4	1 December 2009	N007 (V5) SR cct – 1 NLR -> 1 (N)R
1.5	14 December 2009	N005 101 NLR -> 101 WJR N011 101 WJR -> 102 WJR
1.6	8 February 2010	A111 – transferred from Current W117 & W118 – WBS Mk III – without brake circuit – transferred from Current; V003 - New drawing with circuit from Current V002 for circuit controller without RSA studs
1.7	6 April 2010	N010 – 3APPR->3ATPPR; 101NLR->101 NOLR; 101NLR->1USR; 101RUR->101RUR
1.8	27 April 2010	N008 – amendment to note #1 – 101N
1.9	1 February 2011	SSI circuits A50-A59 added Dwg X051 renumbered to X055; X052 tranferred “From Current”

List of Effective Pages	Publication No.:	**SDG 002**
	Circuit Book Name:	**CSTD**
	Version:	**1.9**
	Date:	**1 February 2011**

CURRENT STANDARDS

Page	Circuit Description	Date	Old Page No.	Issue
A200	COVER PAGE	-		
CSTDINDX	STANDARDS INDEX SHEET - SAMPLE	01-02-11	cstdindc	1.5
A001	TRAIN ORDER LOOPS – TYPICAL CIRCUITS	28/06/07		2
A002 – Sh 1	STAFF INSTRUMENT (ATTENDED)	28/06/07		2
A002 – Sh 2	STAFF INSTRUMENT (ATTENDED)	28/06/07		2
A002 – Sh 3	STAFF INSTRUMENT (ATTENDED)	28/06/07		2
A003 – Sh 1	STAFF INSTRUMENT (ATTENDED) (WITH ISOLATING RELAY)	28/06/07		2
A003 – Sh 2	STAFF INSTRUMENT (ATTENDED) (WITH ISOLATING RELAY)	28/06/07		2
A004	STAFF INSTRUMENT (UNATTENDED)	28/06/07		2
A005	AUTOMATIC SWITCH BOX TYPE A	28/06/07		2
A006	AUTOMATIC SWITCH BOX TYPE B	28/06/07		2
A007	STAFF INSTRUMENT (AUTOMATIC & INTERMEDIATE INST)	28/06/07		2
A008	STAFF INSTRUMENT (AUTO & INTER INST & ISOL R)	28/06/07		2
A009	INTERMEDIATE STAFF INSTRUMENT (AUTOMATIC WORKING)	29/06/07		2
A010	STAFF INSTRUMENT (REMOTELY CONTROLLED)	28/06/07		2
A011	STAFF INSTRUMENT (WORKED REMOTELY)	28/06/07		2
A012	AUTOMATIC SIGNALLING (METROPOLITAN)	28/06/07		5
A013	AUTOMATIC SIGNALLING (COUNTRY)	28/06/07		4
A014	AUTOMATIC SIGNALLING (CITY)	28/06/07		3
A015 Sh 1	PULSATING YELLOW (COUNTRY)	28/06/07		4
A015 Sh 2	PULSATING YELLOW (COUNTRY)	28/06/07		4
A016	PULSATING BAND OF LIGHTS (COUNTRY)	28/06/07		5
A017	SIGNAL HEAD TRANSFORMER WIRING	28-06-07		2
A018	SIGNAL OPERATING – SHUNT SIGNAL	28-06-07		2
A019	SIGNAL OPERATING – SIX LIGHT SIGNAL	28-06-07		3
A020	OUTER METROLPOLITAN WITH TRAINSTOPS	28-06-07		2
A021	PULSATING BAND OF LIGHTS (COUNTRY)	28-06-07		5
A022	OUTER METROPOLITAN WITH TRAINSTOPS	28-06-07		3
A023	SIGNAL LIGHT OPERATING – TURNOUT REPEATER SIGNAL	29-06-07		7
A024	SIGNAL LIGHT OPERATING – TURNOUT REPEATER SIGNAL	29-06-07		7
A025	SIGNAL LIGHT OPERATING – TURNOUT REPEATER SIGNAL	29-06-07		5
A026	SIGNAL LIGHT OPERATING – TURNOUT REPEATER SIGNAL	29-06-07		5
A50	SSI SIGNAL OPERATING – 5 LIGHT SIGNAL WITH TRAIN STOP - SSI	01-09-01		4
A51	SSI SIGNAL OPERATING – 6 LIGHT SIGNAL WITH TRAIN STOP	31-01-11		5
A52 Sh 1	SSI SIGNAL OPERATING – SHUNT SIGNAL WITH RI	01-09-01		2
A52 Sh 2	SSI SIGNAL OPERATING – SHUNT SIGNAL WITH RI	01-09-01		2
A53	SSI MISCELLANEOUS	01-09-01		4
A54	LONG DIST. TERMINAL MODULE WIRING - SSI	22-02-94		2
A55 Sh 1	DATA LINK MODULE WIRING - SSI	01-09-01		2

Page	Circuit Description	Date	Old Page No.	Issue
A55 Sh 2	DATA LINK MODULE WIRING - SSI	01-09-01		2
A55 Sh 3	DATA LINK MODULE WIRING - SSI	01-09-01		2
A55 Sh 4	DATA LINK MODULE WIRING - SSI	01-09-01		2
A56	SIGNAL MODULE WIRING - SSI	01-05-96		2
A57	SSI SIGNAL OPERATING – 6 LIGHT SIGNAL	01-09-01		4
A58	SSI SIGNAL MODULE WIRING – SHUNT SIGNAL	01-09-01		4
A59 Sh 1	SSI SIGNAL OPERATING – FLASHING LOWER YELLOW	01-09-01		1
A59 Sh 2	SSI SIGNAL OPERATING – FLASHING LOWER YELLOW	01-09-01		1
A111	SIGNAL LIGHTING – SIX LIGHT SIGNAL	08-02-10	From Current	1
B001	BI—DIRECTIONAL SIGNALLING	21-06-07		2
B002	BI—DIRECTIONAL SIGNALLING	21-06-07		2
B003	BI—DIRECTIONAL SIGNALLING	21-06-07		2
C001	SINGLE LINE TRACK CONTROL (CTC)	21-06-07		2
C002	SINGLE LINE VITAL BLOCKING	21-06-07		2
C003	SINGLE LINE VITAL BLOCKING	21-06-07		2
C004	SINGLE LINE VITAL BLOCKING	21-06-07		2
C005	SINGLE LINE VITAL BLOCKING	22-06-07		2
C006	SINGLE LINE VITAL BLOCKING	22-06-07		2
D001	TYPICAL ARRANGEMENT OF SIGNAL PHONES	22-06-07		2
I001	AUTOMATIC CROSSING LOOPS	22-06-07		2
I002	AUTOMATIC CROSSING LOOPS	22-06-07		2
I003	AUTOMATIC CROSSING LOOPS	22-06-07		2
I004	AUTOMATIC CROSSING LOOPS	22-06-07		2
I005	AUTOMATIC CROSSING LOOPS	22-06-07		2
I006	AUTOMATIC CROSSING LOOPS	22-06-07		2
M001	MECHANICAL SIGNAL BOX	25-06-07		2
M002	MECHANICAL SIGNAL BOX	26-06-07		3
M003	MECHANICAL SIGNAL BOX	26-06-07		2
N001 Sh 1	ROUTE SETTING – NX	09-05-07		2
N001 Sh 2	ROUTE SETTING – NX	09-05-07		2
N002	ROUTE SETTING – NX	09-05-07		4
N003	ROUTE SETTING – NX	27-06-07		4
N004	ROUTE SETTING – NX	27-06-07		4
N005	ROUTE SETTING – NX	14-12-09		5
N006	ROUTE SETTING – NX	27-06-07		4
N007	ROUTE SETTING – NX	01-12-09		5
N008	ROUTE SETTING – NX	27-04-10		4
N009	ROUTE SETTING – NX	27-06-07		3
N010	ROUTE SETTING – NX	06-04-10		4
N011	ROUTE SETTING – NX	14-12-09		4
N012	ROUTE SETTING – NX – RELEASING SWITCH	27-06-07		3
N013	ROUTE SETTING – NX – RELEASING SWITCH	27-06-07		3
N014	ROUTE SETTING – NX – INTERFACE FROM TELEMETRY	27-06-07		3
N015	ROUTE SETTING – NX – INTERFACE FROM TELEMETRY	27-06-07		3
N016	ROUTE SETTING – NX – INTERFACE FROM TELEMETRY	27-06-07		3
N017	DOUBLE LEVER STICK CIRCUIT	27-06-07		3
N018	EMERGENCY SHUNT FACILITY	27-06-07		3
N051	ROUTE SETTING NX – DIAGRAM INDICATIONS	27-06-07		3
N052	ROUTE SETTING NX – DIAGRAM INDICATIONS	27-06-07		3
N053	LAMP NUMBERING	27-06-07		3

Page	Circuit Description	Date	Old Page No.	Issue
N054	LAMP NUMBERING	27-06-07		3
N055	CONTROL CONSOLE LAYOUT	27-06-07		3
P001	ROUTE SETTING OCS (CTC)	11-05-07		4
P002	ROUTE SETTING OCS (CTC)	14-05-07		4
P003	ROUTE SETTING OCS (CTC)	14-05-07		4
R001	TYPICAL ARRANGEMENT FOR TDM	16-05-07		4
R002	LOCAL/REMOTE & CLOSING ARRANGEMETNS ON LOCAL PANELS	16-05-07		5
T020	WB&S FS2500 TRACK CIRCUIUTS	20-10-08		8
T033	JEUMONT SCHNEIDER – DOUBLE RAIL NON-ELEC	08-06-07		6
T034	JEUMONT SCHNEIDER – DOUBLE RAIL ELECTRIFIED	09-06-07		6
T037	HARMON TD4 – TRACK CIRCUIT	09-06-07		4
T038	“WESTRAK” TRACK FEED UNIT	09-06-07		4
U001	EMERGENCY CHANGEOVER CONTACTOR	12-06-07		5
U002	POWER SUPPLY – EMERGENCY CHANGE-OVER CONTACTORS	12-06-07		5
U003	POWER SUPPLY INDICATIONS	28-06-07		2
U006	POWER SUPPLY – EMERGENCY CHANGE-OVER CONTACTORS	13-06-07		4
U108	GGI ARRANGEMENT	28-06-07		3
V003	TRAINSTOP DETECTION WITH SEALEDCIRCUIT CONTROLLER	12-01-10	Derived from Current V002	1.0
W001	CLAMP LOCK OPERATING – DOUBLE	28-06-07		2
W002	CLAMP LOCK OPERATING – SINGLE	28-06-07		2
W003	CLAMP LOCK DETECTION – DOUBLE	28-06-07		2
W004	CLAMP LOCK DETECTION – SINGLE	28-06-07		2
W005	CLAMP LOCK DETECTION – COMBINED SINGLE	28-06-07		2
W006	POINTS WESTINGHOUSE M3A MKII – DOUBLE LEFT HAND	14-06-07		3
W007	POINTS WESTINGHOUSE M3A MKII – DOUBLE RIGHT HAND	14-06-07		3
W009	POINTS WESTINGHOUSE M3A MKII – COMBINED SINGLE	14-06-07		3
W012	POINTS LOCAL DETECTORS W/HOUSE – COMBINED SINGLE	28-06-07		2
W013	POINTS GEC HW4400 – DOUBLE LEFT HAND	28-06-07		3
W014	POINTS GEC HW4400 – DOUBLE RIGHT HAND	28-06-07		2
W015	POINTS GEC HW4400 – SINGLE	28-06-07		2
W016	POINT LOCAL DETECTOR GEC HW 4400 - DOUBLE	28-06-07		2
W017	POINT LOCAL DETECTOR GEC HW 4400 - SINGLE	28-06-07		2
W018	POINTS GEC HW1121 50V DC – SINGLE LEFT HAND	28-06-07		2
W019	POINTS GEC HW1121 50V DC – SINGLE RIGHT HAND	28-06-07		3
W020	POINTS GEC LZW – DOUBLE RIGHT HAND	28-06-07		2
W021	POINT LOCAL DETECTOR GEC HW LZW – DOUBLE	28-06-07		2
W022	POINT LOCAL GEC HW LZW – SINGLE	28-06-07		2
W023	POINTS LOCAL GEC LZW – SINGLE LEFT HAND	29-06-07		2
W024	POINTS GEC LZW – SINGLE RIGHT HAND	28-06-07		2
W025	POINTS NIPPON KA1211B TYPE – DOUBLE RIGHT HAND	28-06-07		3
W026	POINTS NIPPON KA1211B TYPE – DOUBLE LEFT HAND	28-06-07		4
W027	POINTS NIPPON KA1211B TYPE – DOUBLE RIGHT HAND - DETECTION	28-06-07		2

Page	Circuit Description	Date	Old Page No.	Issue
W028	POINTS NIPPON KA1211B TYPE – DOUBLE LEFT HAND - DETECTION	28-06-07		2
W029	EP MACHINES ('E' VALVE)	28-06-07		4
W030	EP MACHINES ('E' VALVE)	28-06-07		4
W031	EP MACHINES ('E' VALVE)	28-06-07		4
W032	E.P. POINTS OPERATING (101)	28-06-07		2
W033	E.P. POINTS DETECTION (101)	28-06-07		3
W034	EP POINTS FACING TRAILING PLUNGER LOCK CCT (101)	29-06-07		2
W035	EP POINTS DOUBLE FACING PLUNGER LOCK CCT (102)	28-06-07		2
W036	POINT CONTACTORS	28-06-07		2
W037	NIPPON POINTS MACHINE TYPE KA-1211C	28-06-07		2
W038	NIPPON POINTS MACHINE TYPE KA-1211C	28-06-07		2
W039	NIPPON POINTS MACHINE TYPE KA-1211C - DETECTION	28-06-07		2
W040	SSI POINTS DETECTION – GEC HW4400	28-06-07		3
W041	SSI MOTOR DRIVE – GEC HW 4400 – LHSNC	28-06-07		2
W042	SSI POINTS DETECTION – GEC HW 4400	28-06-07		4
W043	SSI MOTOR DRIVE – GEC HW4400 – RHSNC	28-06-07		2
W044	EP MACHINES ('S' VALVE)	28-06-07		4
W045	EP MACHINES ('S' VALVE)	28-06-07		5
W046	EP MACHINES ('S' VALVE)	28-06-07		4
W047	101 POINTS EMERGENCY OPERATION ('S' VALVE)	28-06-07		4
W048	EP MACHINES SSI CONTROLLED	28-06-07		2
W049	EP MACHINES SSI CONTROLLED	28-06-07		3
W050	EP CLAW LOCK SINGLE LEFT HAND – NKR/RKR	28-06-07		3
W051	EP CLAW LOCK SINGLE RIGHT HAND – NKR/RKR	28-06-07		3
W052	EP CLAW LOCK DOUBLE LEFT	28-06-07		3
W053	EP CLAW LOCK DOUBLE RIGHT HAND	28-06-07		2
W054 Sh 1	POINT MOTORS	28-06-07		2
W054 Sh 2	POINT MOTORS	28-06-07		2
W096	POINTS DETECTION(DOUBLE HAND) EP 'A' VALVE	15-06-07		2
W117	WBS 84M MKIII POINTS – DOUBLE RIGHT HAND	19-05-08	From Current	7
W118	WBS 84M MKIII POINTS – DOUBLE LEFT HAND	26-05-08	From Current	7
X001	LEVEL CROSSING – SINGLE LINE AUTOMATIC	04-07-07		3
X002	LEVEL CROSSING – SINGLE LINE AUTOMATIC (OTS)	04-07-07		5
X03	LEVEL CROSSING – SINGLE LINE AUTOMATIC (OTS)	01-09-01		6
X04	LEVEL CROSSING – DOUBLE LINE AUTOMATIC	18-03-04		2
X05	LEVEL CROSSING – DOUBLE LINE AUTOMATIC	30-12-99		3
X06	LEVEL CROSSING – HARMON MECHANISM C1A	23-10-91		1
X07	LEVEL CROSSING – HARMON MECHANISM C1B	23-10-91		1
X08	LEVEL CROSSINGBATTERY CHARGER STORE 74-ABW 1990	01-09-01		3
X09	LXMON – SINGLE LINE AUTOMATIC	01-09-01		5
X10	LXMON – SINGLE LINE AUTOMATIC (OTS)	16-06-94		2
X11	LXMON – SINGLE LINE AUTOMATIC (ETS)	01-09-03		1
X12 Pt 1	LXMON – WITH CONTROLLED SIGNALS	29-06-07		2
X12 Pt 2	LXMON – WITH CONTROLLED SIGNALS	01-09-03		1
X13	PEDESTRIAN CROSSING ON DOUBLE LINE	23-11-93		2
X14	WESTINGHOUSE B 12V BOOM MECHANISM 'POWER DOWN' TYPE BOOM	01-08-97		3
X15	WESTINGHOUSE EB 12V 'POWER DOWN'' TYPE BOOMS ONLY	18-03-94		2
X16	WESTINHOUSE EB 12V MECHANISM 'POWER DOWN' TYPE BOOMS ONLY	18-03-94		2
X17	L-XING – WITH AUXILIARY SET OF FLASHING LIGHTS	18-03-94		1

Page	Circuit Description	Date	Old Page No.	Issue
X18	WESTERN CULLEN GATE MECHANISM MODEL 3593B	21-06-94		1
X19	SINGLE LINE WITH GATE PROTECTION	30-12-99		2
X20	GATE CONTROL CIRCUIT WITH QTD4 RELAYS	01-09-03		5
X21	PEDESTRIAN CROSSING ON DOUBLE LINE	01-09-03		3
X22	SIGNAL CONTROLS OVER LEVEL CROSSING	16-06-94		2
X23	PEDESTRIAN CROSSING ON DOUBLE LINE	14-03-03		3
X24	PEDESTRIAN CROSSING	29/05/03		-
X26	PRIVATE CROSSING PROTECTION	01-09-01		1
X27	PRIVATE CROSSING PROTECTION	01-09-01		1
X28	PRIVATE CROSSING PROTECTION	01-09-01		1
X29	SINGLE LINE WITH GATE PROTECTION	23-08-95		1
X30	SINGLE LINE WITH GATE PROTECTION	23-08-95		1
X31	LEVEL CROSSING DOUBLE LINE AUTOMATIC WBS FLASHER	30-12-99		3
X32	LEVEL CROSSING DOUBLE LINE WBS FLASHER	30-12-99		3
X33	LEVEL CROSSING SINGLE LINE AUTOMATIC WBS FLASHER	01-08-97		2
X34	LEVEL CROSSING SINGLE LINE WBS FLASHER	01-08-97		2
X35	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	30-12-99		3
X36	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	30-12-99		3
X37	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	01-08-97		2
X38	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	01-08-97		2
X39	LXMON CIRCUIT CONNECTIONS (WBS FLASHER)	01-09-03		3
X039-Sh 1	WESTERN CULLEN GATE MECHANISM MODEL 3593B	19-06-07		2
X039-Sh 2	WESTERN CULLEN GATE MECHANISM MODEL 3590B	19-06-07		2
X40	LXMON CIRCUIT CONNECTIONS (WBS FLASHER)	01-05-96		1
X41	PRIVATE CROSSING PROTECTION	01-09-01		1
X42	PRIVATE CROSSING PROTECTION	01-09-01		1
X43	LXMON DOUBLE LINE AUTOMATIC	01-08-97		2
X44	WESTERN CULLEN GATE MECH MODEL 3593 & 3593NJ	01-09-01		4
X050	PEDESTRAIN CROSSING CONTROLS	29-06-07		2
X052	PEDESTRIAN GATE – THE MET STYLE M2	11-1-11	From Current	2
X057	PEDESTRAIN CROSSING LIGHTS	29-06-07	#051	2

RailCorp

CIRCUIT BOOK No. CSTD

SIGNALLING CIRCUIT DESIGN GUIDELINES (OBSOLETE)

THESE CIRCUIT STANDARDS ARE NOT TO BE USED FOR NEW WORKS.
HOWEVER, WHERE THERE ARE ALTERATIONS TO EXISTING INSTALLATIONS,
THESE DOCUMENTS MAY ASSIST IN ESTABLISHING CIRCUIT PRINCIPLES
THAT APPLY FOR THAT INSTALLATION.
WHERE THERE IS ANY DOUBT AS TO THE STANDARD TO BE USED
CONSULT THE CHIEF ENGINEER SIGNALS FOR ADVICE.

BOOK 1 OF 1

ISSUE No. 2007_01

ISSUED TO:

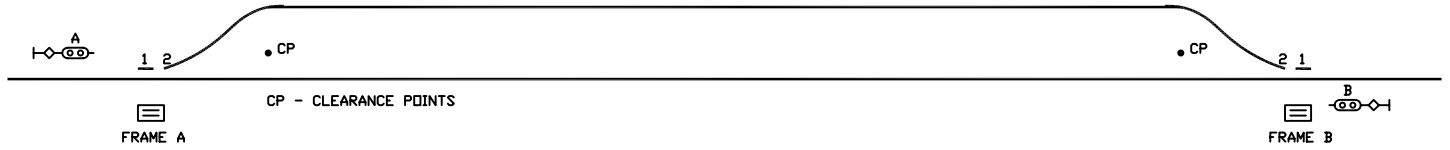
REGION	2007_01
DISTRICT	STANDARDS
DRAWING FILE No	CSTDA200
ALTERATION No	0

CHIEF ENGINEER SIGNALS

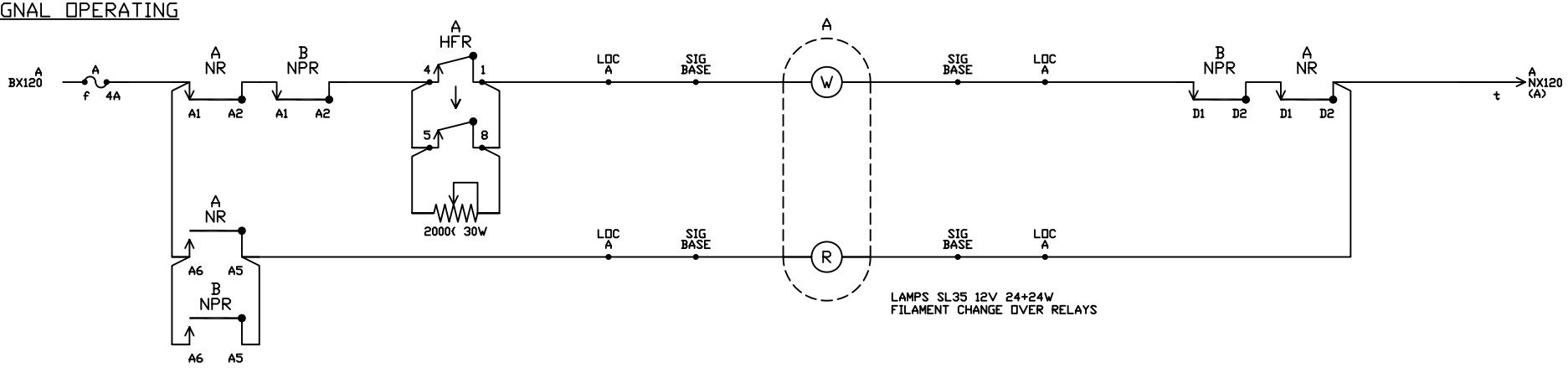
				1/2/11	14:25			CSTDINDX	STANDARDS INDEX SHEET		SHT: INDX	CB: STD

JOB NUMBER	14/2/05	14/2/05	01/12/08	1/12/08			

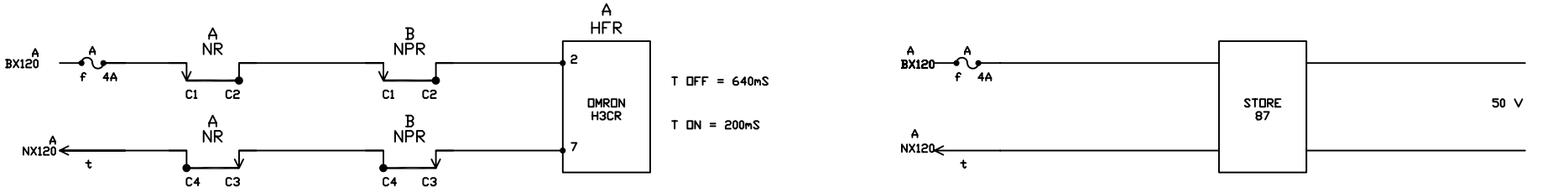
			ISSUE 02	28/6/07	7:03			CSTDA001	TRAIN ORDER LOOPS - TYPICAL CIRCUITS			SHT: A001	CB: STD



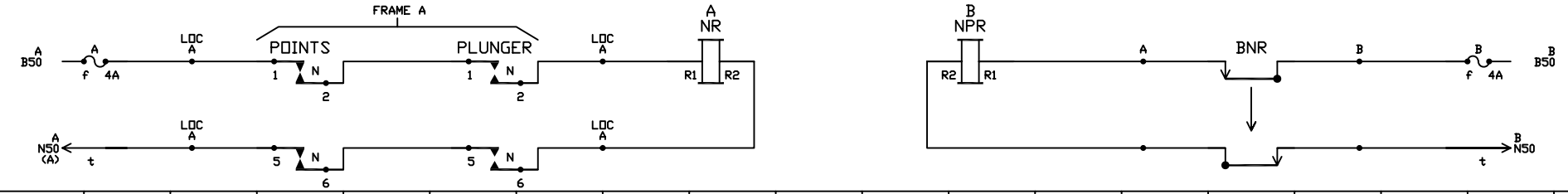
A SIGNAL OPERATING



HFR

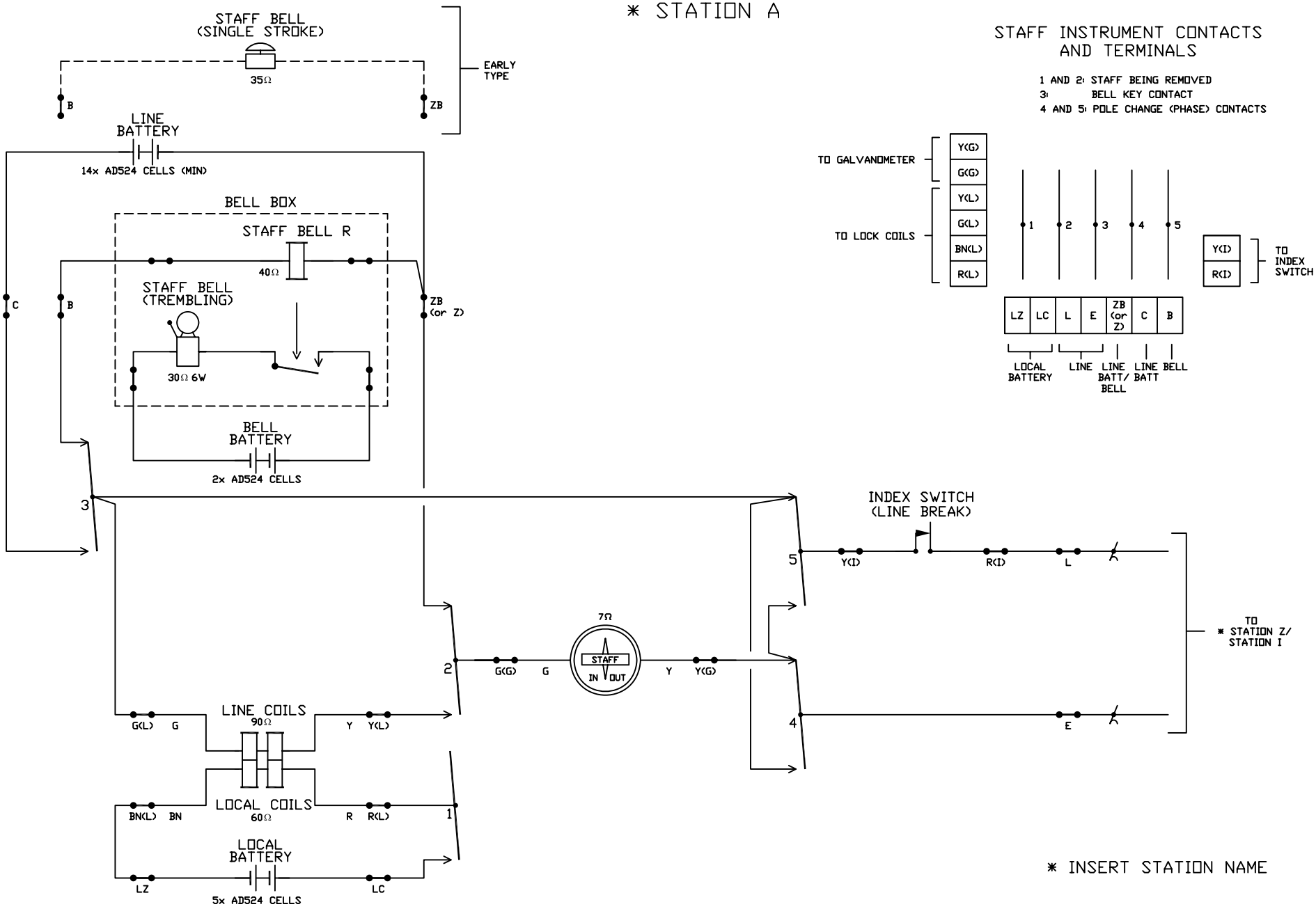


NR



JOB NUMBER	23-08-95																	

* STATION A



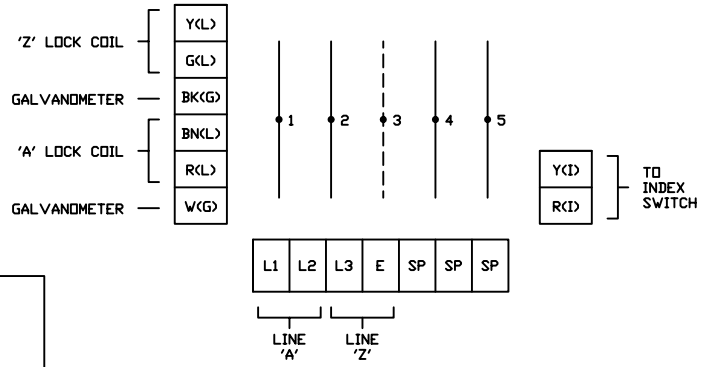
* INSERT STATION NAME

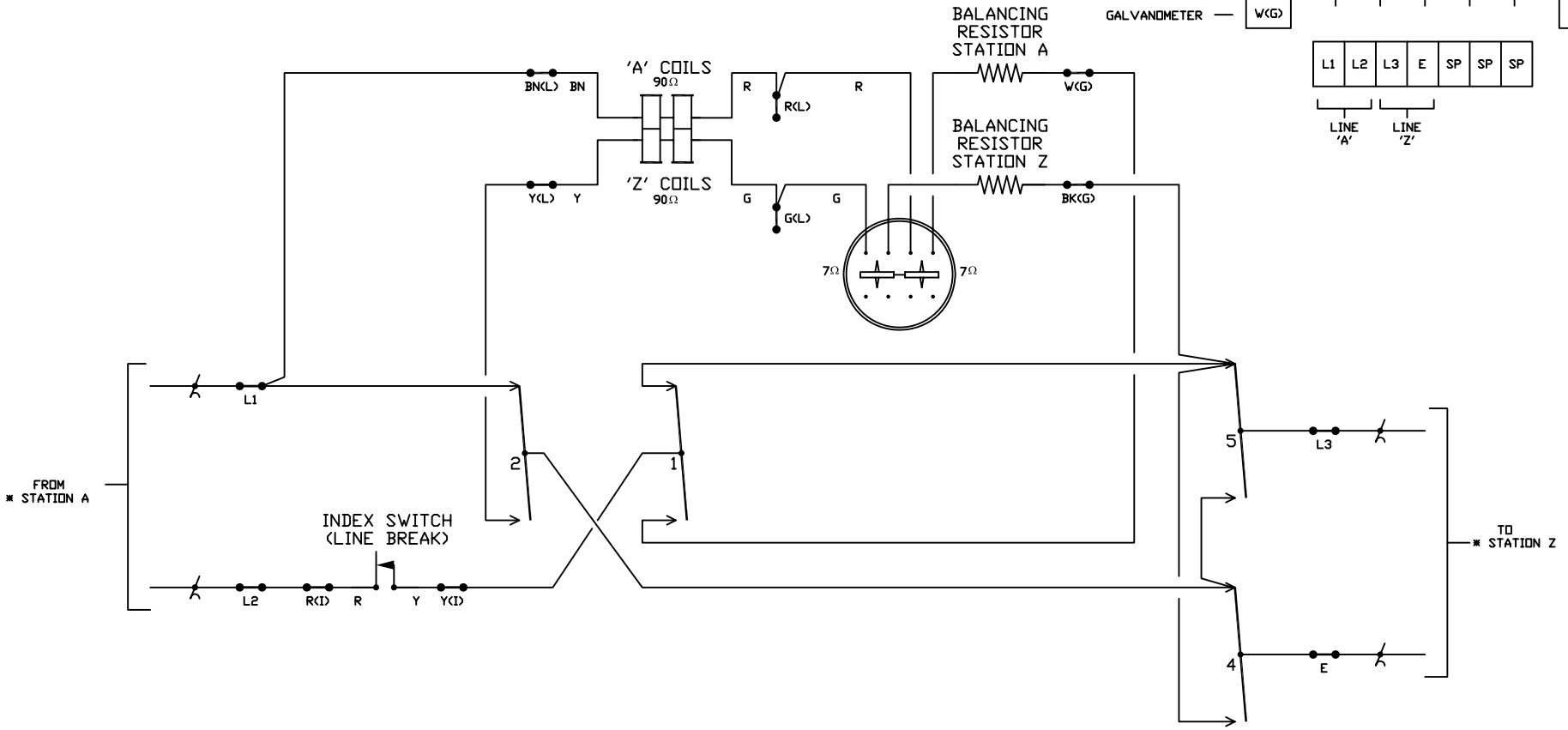
* STATION I (INTERMEDIATE)

NOTE:
BALANCING RESISTORS USED TO COMPENSATE LOWER LINE RESISTANCE WHERE THE INTERMEDIATE STAFF INSTRUMENT DIVIDES THE STAFF SECTION INTO UNEQUAL LENGTHS.

STAFF INSTRUMENT CONTACTS AND TERMINALS

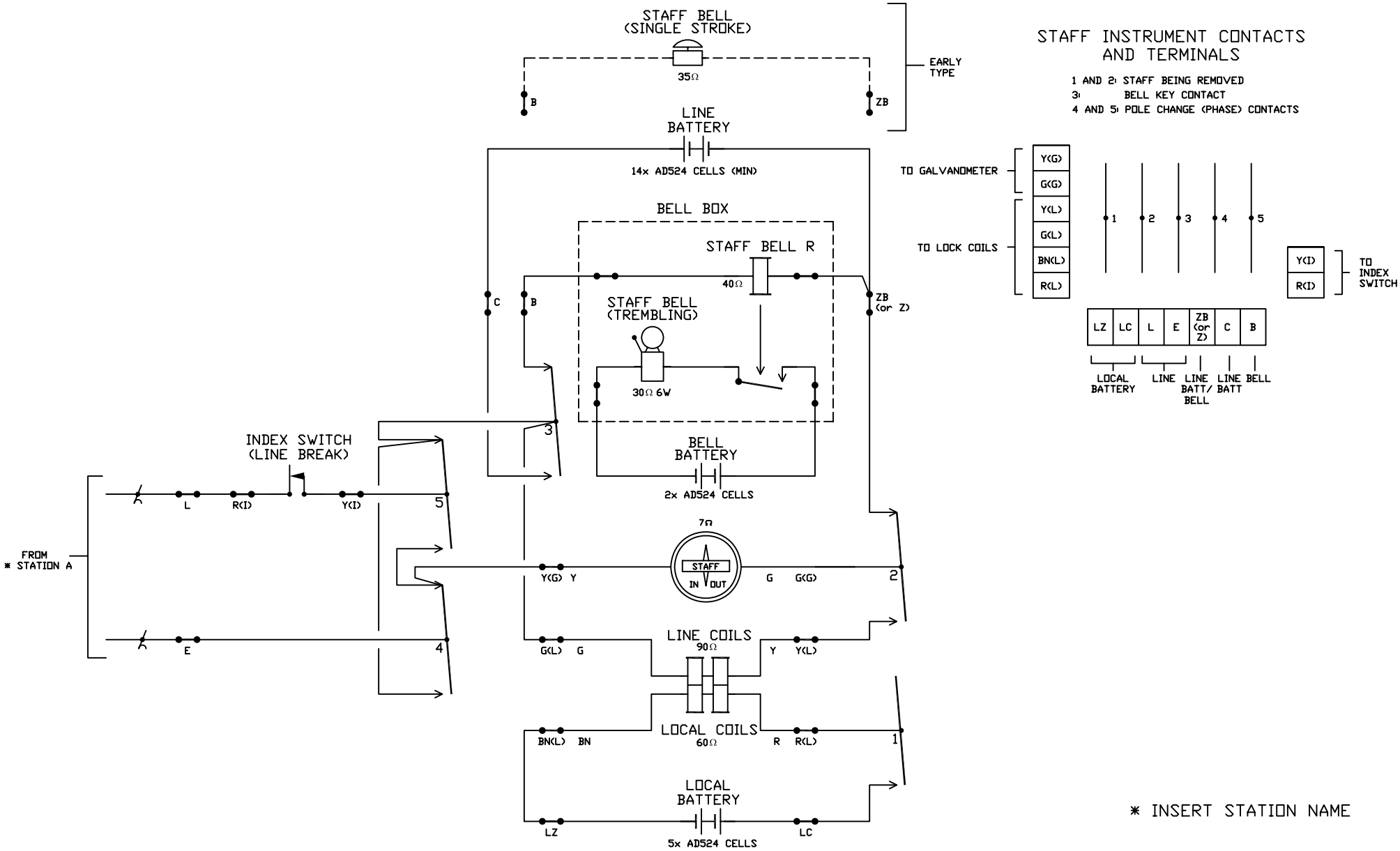
1 AND 2: STAFF BEING REMOVED
3: NOT FITTED
4 AND 5: POLE CHANGE (PHASE) CONTACTS





* INSERT STATION NAME

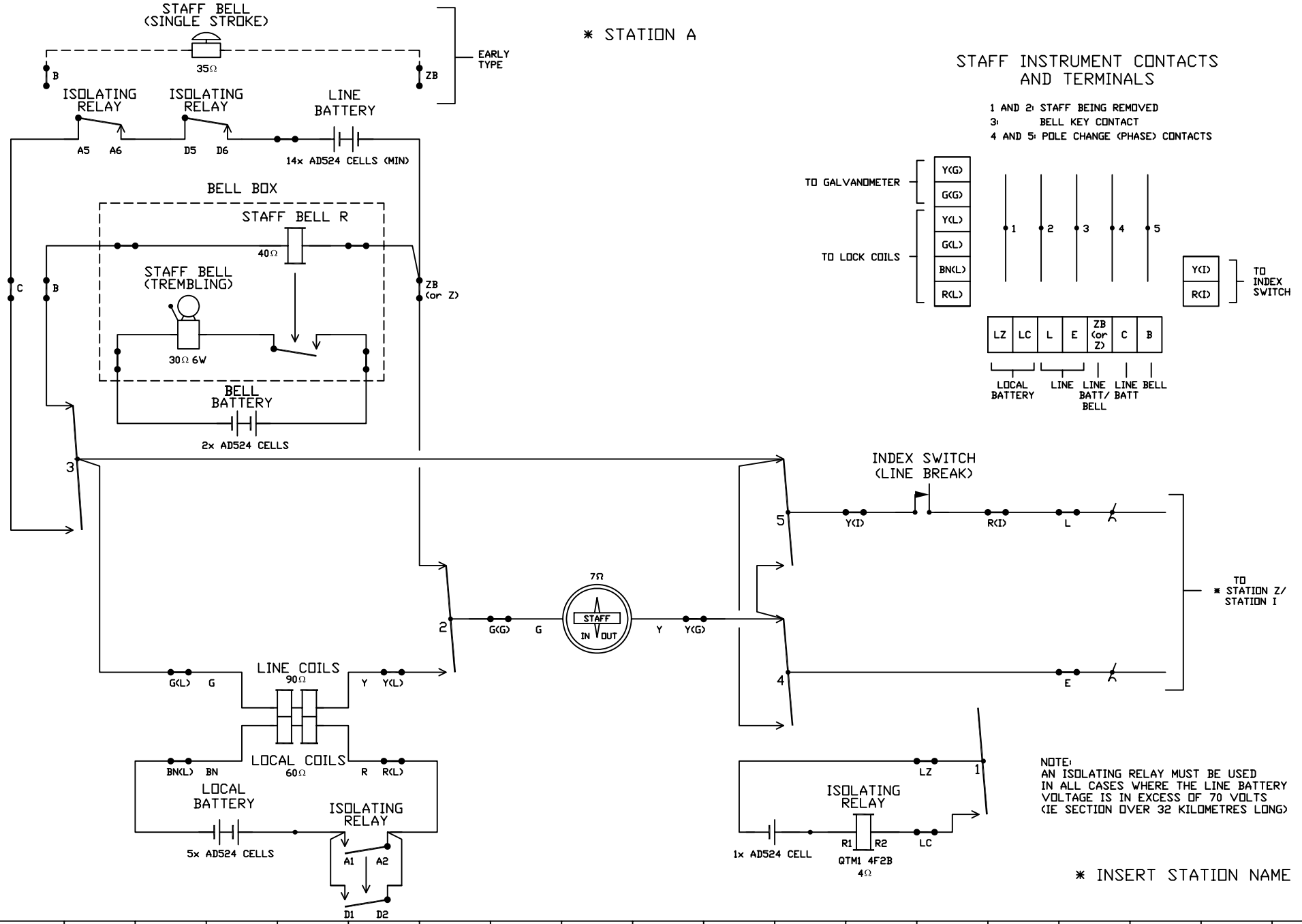
* STATION Z

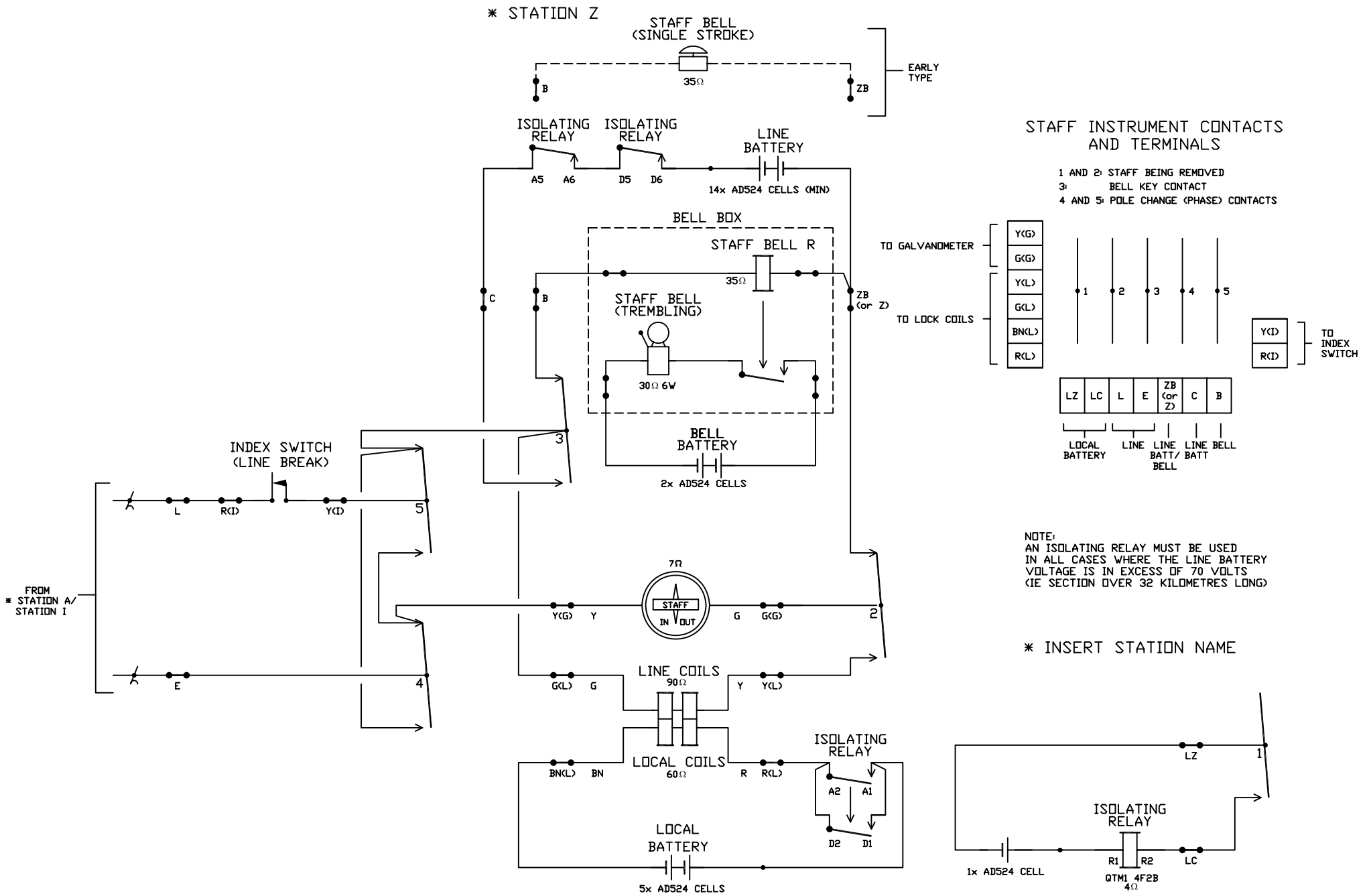


STAFF INSTRUMENT CONTACTS AND TERMINALS

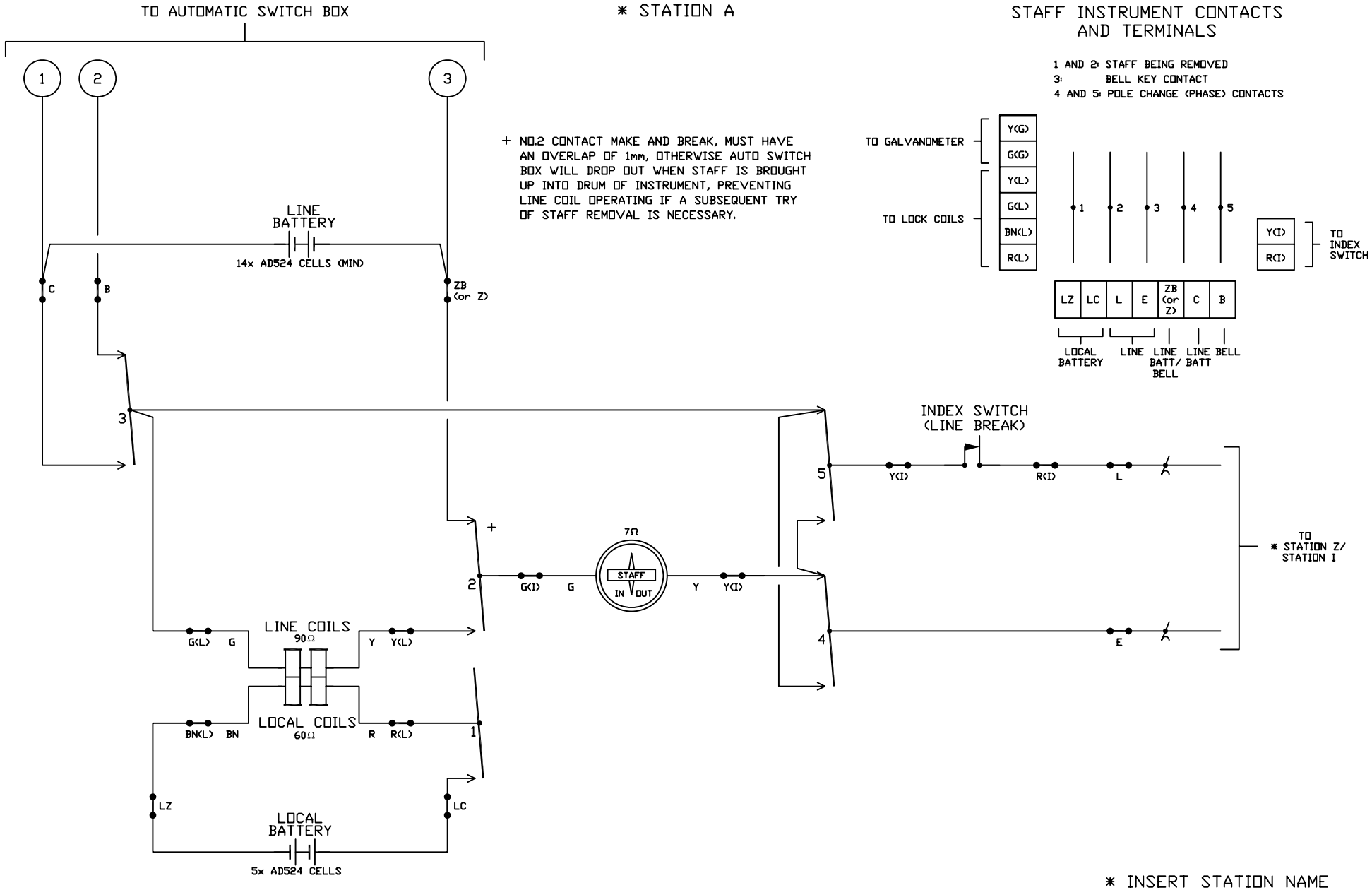
1 AND 2: STAFF BEING REMOVED
3: BELL KEY CONTACT
4 AND 5: POLE CHANGE (PHASE) CONTACTS

* INSERT STATION NAME

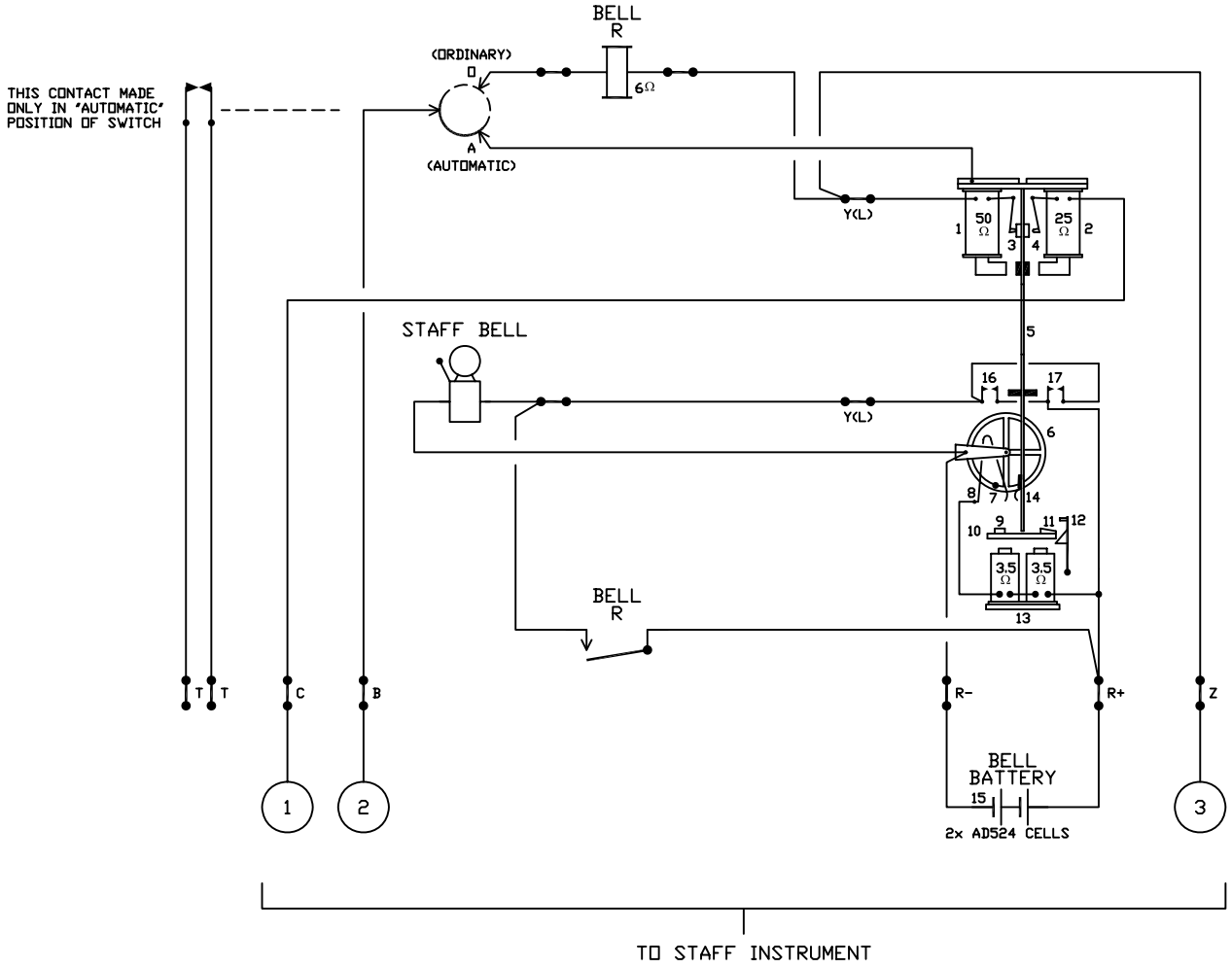

STAFF BELL (SINGLE STROKE)
35Ω
EARLY TYPE
B
ZB
ISOLATING RELAY
ISOLATING RELAY
LINE BATTERY
A5 A6 D5 D6
14x AD524 CELLS (MIN)
BELL BOX
STAFF BELL R
40Ω
STAFF BELL (TREMBLING)
30Ω 6W
C
B
ZB (or Z)
BELL BATTERY
2x AD524 CELLS
* STATION A
STAFF INSTRUMENT CONTACTS AND TERMINALS
1 AND 2: STAFF BEING REMOVED
3: BELL KEY CONTACT
4 AND 5: POLE CHANGE (PHASE) CONTACTS
TO GALVANOMETER
TO LOCK COILS
Y(G)
G(G)
Y(L)
G(L)
BN(L)
R(L)
1 2 3 4 5
Y(I)
R(I)
TO INDEX SWITCH
LZ LC L E ZB (or Z) C B
LOCAL BATTERY
LINE
LINE BATT/ BELL
LINE BATT
BELL
INDEX SWITCH (LINE BREAK)
5
Y(I)
R(I)
L
7Ω
STAFF
IN OUT
2
G(G)
G
Y
Y(G)
TO * STATION Z/ STATION I
4
E
3
LINE COILS
90Ω
G(L) G
Y Y(L)
LOCAL COILS
60Ω
BN(L) BN
R R(L)
LOCAL BATTERY
5x AD524 CELLS
ISOLATING RELAY
A1 A2
D1 D2
LZ
1
ISOLATING RELAY
1x AD524 CELL
R1 R2
LC
QTM1 4F2B
4Ω
NOTE:
AN ISOLATING RELAY MUST BE USED IN ALL CASES WHERE THE LINE BATTERY VOLTAGE IS IN EXCESS OF 70 VOLTS (IE SECTION OVER 32 KILOMETRES LONG)
* INSERT STATION NAME


* STATION Z
STAFF BELL (SINGLE STROKE)
35Ω
B
ZB
EARLY TYPE
ISOLATING RELAY
ISOLATING RELAY
LINE BATTERY
A5
A6
D5
D6
14x AD524 CELLS (MIN)
BELL BOX
STAFF BELL R
35Ω
C
B
ZB (or Z)
STAFF BELL (TREMBLING)
30Ω 6W
BELL BATTERY
2x AD524 CELLS
INDEX SWITCH (LINE BREAK)
L
R(I)
Y(I)
5
3
FROM * STATION A/ STATION I
7Ω
STAFF
IN
OUT
Y(G)
Y
G
G(G)
2
E
4
G(L)
G
LINE COILS
90Ω
Y
Y(L)
BN(L)
BN
LOCAL COILS
60Ω
R
R(L)
ISOLATING RELAY
A2
A1
D2
D1
LOCAL BATTERY
5x AD524 CELLS
STAFF INSTRUMENT CONTACTS AND TERMINALS
1 AND 2: STAFF BEING REMOVED
3: BELL KEY CONTACT
4 AND 5: POLE CHANGE (PHASE) CONTACTS
TO GALVANOMETER
Y(G)
G(G)
TO LOCK COILS
Y(L)
G(L)
BN(L)
R(L)
1
2
3
4
5
Y(I)
R(I)
TO INDEX SWITCH
LZ
LC
L
E
ZB (or Z)
C
B
LOCAL BATTERY
LINE
LINE BATT/ BELL
LINE BATT
LINE BELL
NOTE:
AN ISOLATING RELAY MUST BE USED IN ALL CASES WHERE THE LINE BATTERY VOLTAGE IS IN EXCESS OF 70 VOLTS (IE SECTION OVER 32 KILOMETRES LONG)
* INSERT STATION NAME
LZ
1
ISOLATING RELAY
1x AD524 CELL
R1
R2
LC
QTM1 4F2B
4Ω

			ISSUE 02	28/6/07	7:10			CSTDA004	STAFF INSTRUMENT (UNATTENDED)			SHT: A004	CB: STD



JOB NUMBER	01-09-01																		



OPERATION OF SWITCH BOX

1. OTHER END HOLDS DOWN BELL KEY FOR 5 SECONDS

   SENDS CURRENT TO LINE, OPERATING AUTO SWITCH BOX AT THIS END. COIL (1) IS ENERGISED (THROUGH 5 & 3) AND MOVES PENDULUM (5) TO THE LEFT, AGAINST STOP (9). THIS STARTS WHEEL (6) OSCILLATING, DUE TO IMPACT OF (14) WITH PIN (7).

   WHEN WHEEL (6) COMES TO REST, COIL (13) IS ENERGISED [CONTACT (14) COMPLETING THE CIRCUIT BETWEEN PIN (7) AND CONTACT (8)] AND ARMATURE (10) IS LATCHED DOWN BY (12), LEAVING PENDULUM (5) FREE TO MOVE TO THE RIGHT WHEN RELEASED. BELL CIRCUIT IS COMPLETED THROUGH CONTACT (16).

2. OTHER END RELEASES BELL KEY.

   AUTO SWITCH BOX AT THIS END SENDS CURRENT TO LINE, RINGING BELL AT OTHER END.

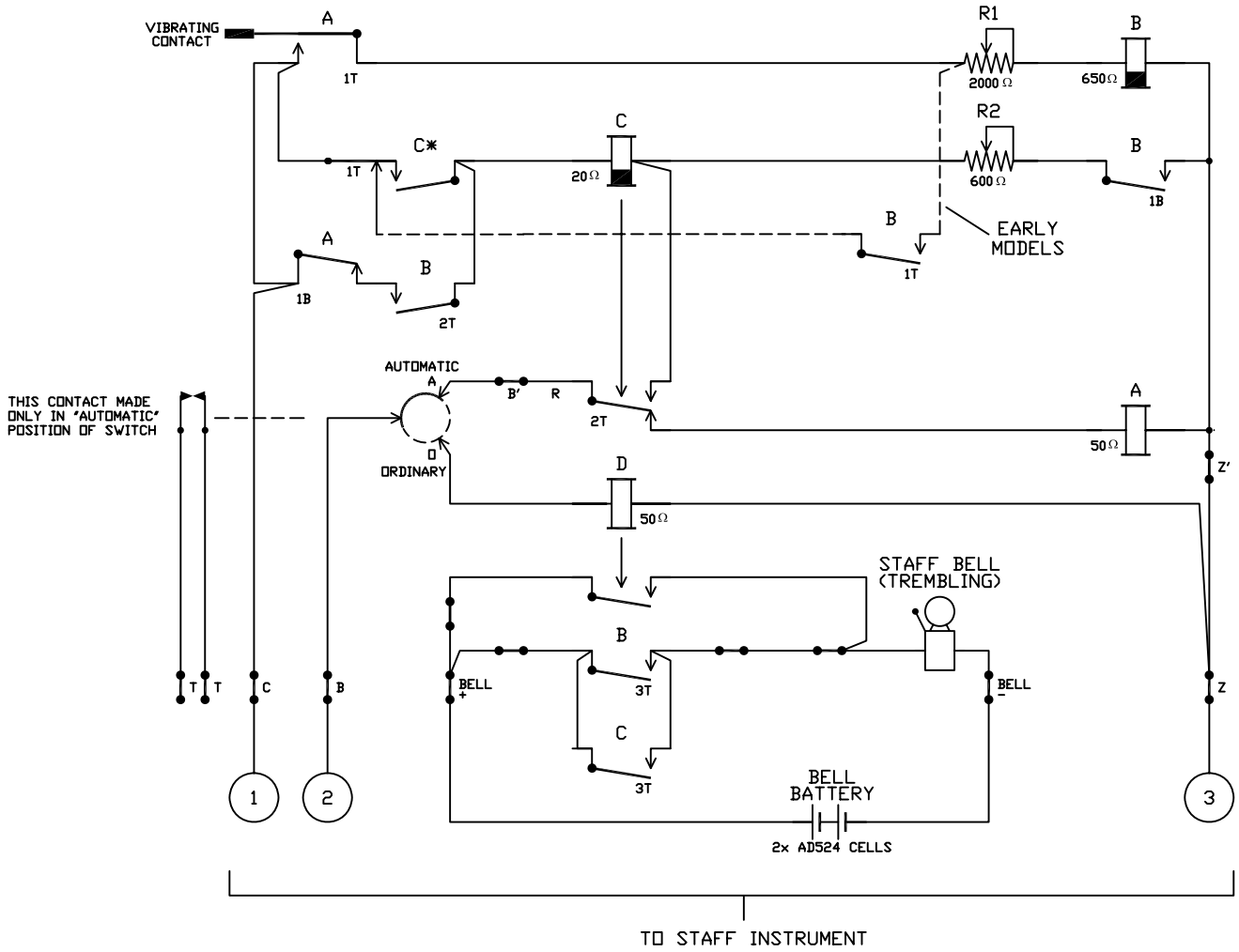
   COIL (1) IS DE-ENERGISED AND PENDULUM (5) SWINGS TO THE RIGHT WHERE IT IS HELD BY COIL (2), WHICH IS ENERGISED IN SERIES WITH THE INSTRUMENT AT OTHER END THROUGH PENDULUM (5) AND CONTACT (4). (SENDS CURRENT TO LINE.)

   THE BELL CIRCUIT IS AGAIN COMPLETED, THROUGH CONTACT (17). MOVEMENT OF THE PENDULUM TO THE RIGHT RELEASES LATCH (12) ON ARMATURE (10).

3. OTHER END WITHDRAWS STAFF

NOTE:

- CONTACTS 16 AND 17 NOT MADE UNTIL PENDULUM AT FULL LEFT OR RIGHT.
- CONTACTS T, T MADE ONLY AT AUTOMATIC POSITION FOR TELEPHONE TO STATION MASTERS RESIDENCE.



OPERATION

1. OTHER END HOLDS DOWN BELL KEY FOR 5 SECONDS

   INCOMING CURENT, VIA TEMINAL B, OPERATES RELAY A THROUGH BREAK CONTACT 2T ON RELAY C.

   WHEN 'VIBRATING' CONTACT 1T ON RELAY A COMES TO REST RELAY B OPERATES AND LOCKS UP THROUGH 'MAKE BEFORE BREAK' CONTACT 1T ON RELAY C.

2. OTHER END RELEASES BELL KEY

   WHEN INCOMING CURRENT CEASES, RELAY A RELEASES AND OPERATES RELAY C THROUGH CONTACTS 1B ON RELAY A AND 1B, 2T ON RELAY B.

   RELAY C LOCKS UP THROUGH LINE CIRCUIT, VIA TERMINAL B AND 'MAKE' CONTACTS 1T, 2T ON RELAY C, BREAKING HOLDING CIRCUIT OF RELAY B THROUGH 'BREAK' CONTACT 1T ON RELAY C.

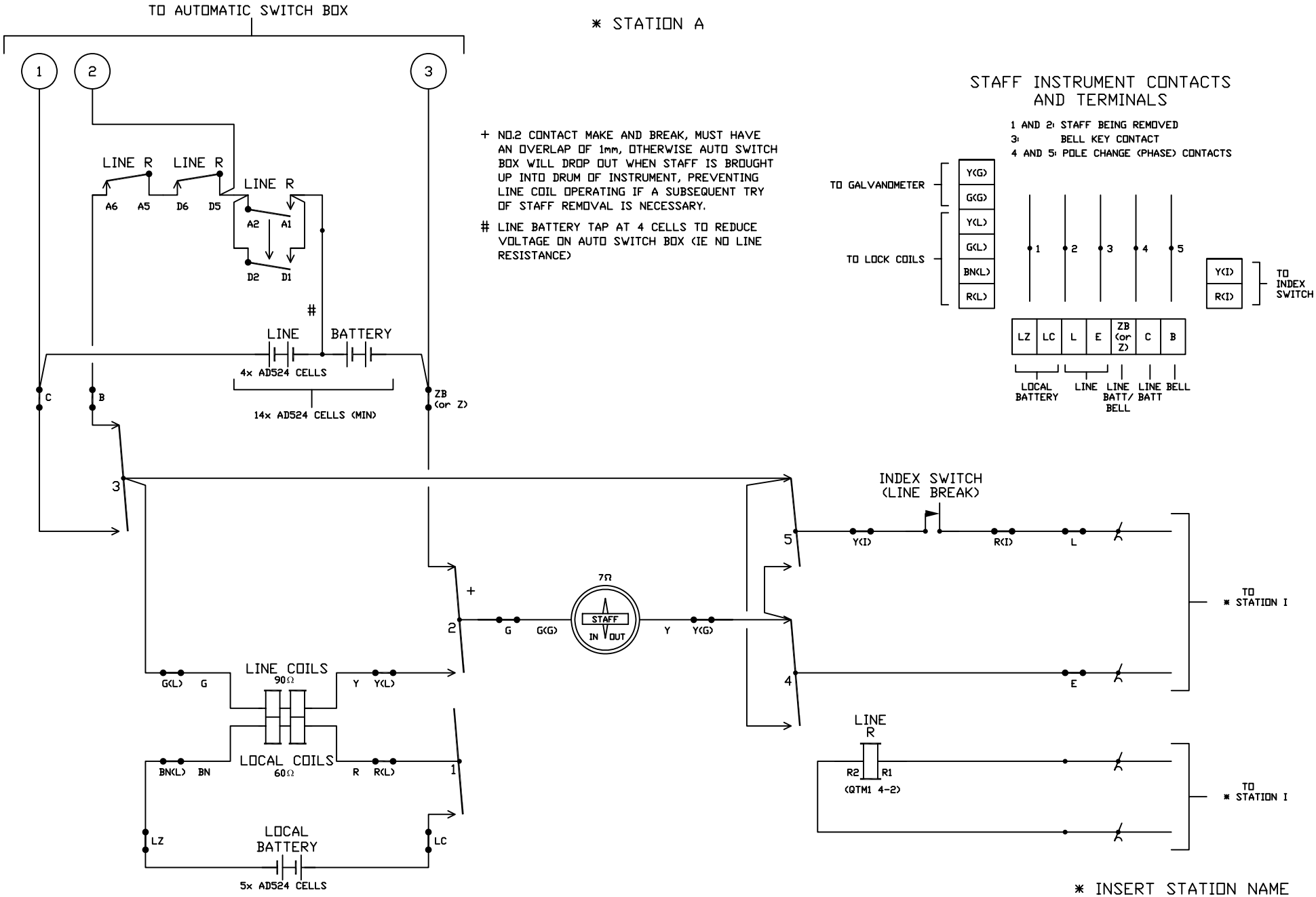
   CONTACTS 3T ON RELAYS B AND C CLOSE BELL CIRCUIT.

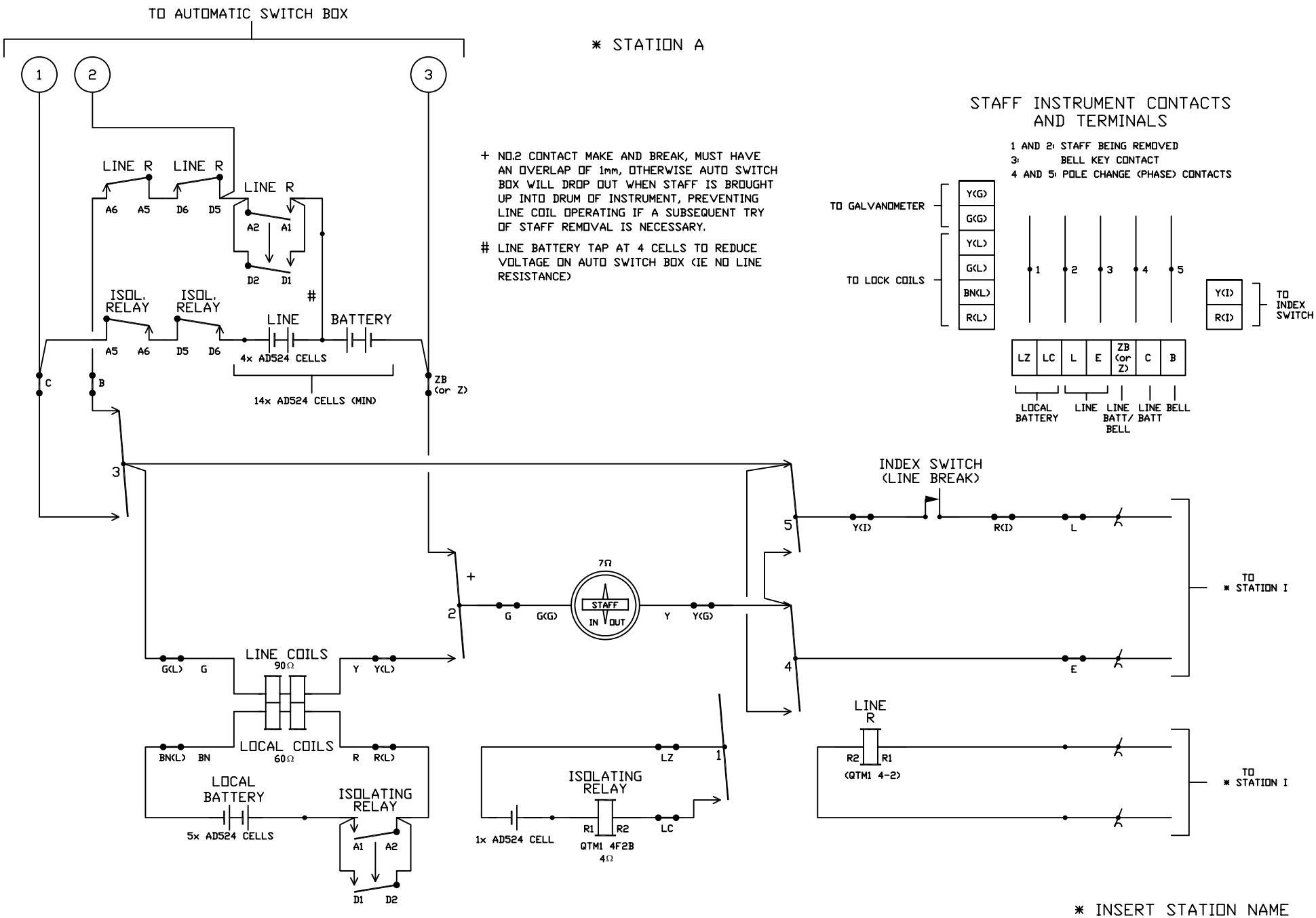
3. OTHER END WITHDRAWS STAFF

NOTE:

- R1 AND R2 ADJUSTED TO SUIT VOLTAGE OF STAFF BATTERY AT STATION WHERE SWITCHBOX IS INSTALLED.
- CONTACTS T, T MADE ONLY AT AUTOMATIC POSITION FOR TELEPHONE TO STATION MASTERS RESIDENCE.

* MAKE BEFORE BREAK CONTACT


TO AUTOMATIC SWITCH BOX
* STATION A
1
2
3
LINE R
LINE R
LINE R
A6
A5
D6
D5
A2
A1
D2
D1
#
LINE
BATTERY
4x AD524 CELLS
14x AD524 CELLS (MIN)
C
B
ZB (or Z)
3
+
2
G
G(G)
7Ω
STAFF
IN
OUT
Y
Y(G)
INDEX SWITCH (LINE BREAK)
5
Y(I)
R(I)
L
TO * STATION I
4
E
TO * STATION I
LINE COILS
90Ω
G(L)
G
Y
Y(L)
LOCAL COILS
60Ω
BN(L)
BN
R
R(L)
1
LZ
LC
LOCAL BATTERY
5x AD524 CELLS
LINE R
R2
R1
(QTM1 4-2)
+ NO.2 CONTACT MAKE AND BREAK, MUST HAVE AN OVERLAP OF 1mm, OTHERWISE AUTO SWITCH BOX WILL DROP OUT WHEN STAFF IS BROUGHT UP INTO DRUM OF INSTRUMENT, PREVENTING LINE COIL OPERATING IF A SUBSEQUENT TRY OF STAFF REMOVAL IS NECESSARY.
# LINE BATTERY TAP AT 4 CELLS TO REDUCE VOLTAGE ON AUTO SWITCH BOX (IE NO LINE RESISTANCE)
STAFF INSTRUMENT CONTACTS AND TERMINALS
1 AND 2: STAFF BEING REMOVED
3: BELL KEY CONTACT
4 AND 5: POLE CHANGE (PHASE) CONTACTS
TO GALVANOMETER
Y(G)
G(G)
TO LOCK COILS
Y(L)
G(L)
BN(L)
R(L)
1
2
3
4
5
Y(I)
R(I)
TO INDEX SWITCH
LZ
LC
L
E
ZB (or Z)
C
B
LOCAL BATTERY
LINE
LINE BATT/ BELL
LINE BATT
BELL
* INSERT STATION NAME


TO AUTOMATIC SWITCH BOX
* STATION A
1
2
3
LINE R
LINE R
LINE R
A6
A5
D6
D5
A2
A1
D2
D1
ISOL. RELAY
ISOL. RELAY
#
LINE
BATTERY
A5
A6
D5
D6
4x AD524 CELLS
14x AD524 CELLS (MIN)
C
B
ZB (or Z)
+ NO.2 CONTACT MAKE AND BREAK, MUST HAVE AN OVERLAP OF 1mm, OTHERWISE AUTO SWITCH BOX WILL DROP OUT WHEN STAFF IS BROUGHT UP INTO DRUM OF INSTRUMENT, PREVENTING LINE COIL OPERATING IF A SUBSEQUENT TRY OF STAFF REMOVAL IS NECESSARY.
# LINE BATTERY TAP AT 4 CELLS TO REDUCE VOLTAGE ON AUTO SWITCH BOX (IE NO LINE RESISTANCE)
STAFF INSTRUMENT CONTACTS AND TERMINALS
1 AND 2: STAFF BEING REMOVED
3: BELL KEY CONTACT
4 AND 5: POLE CHANGE (PHASE) CONTACTS
TO GALVANOMETER
Y(G)
G(G)
TO LOCK COILS
Y(L)
G(L)
BN(L)
R(L)
1
2
3
4
5
Y(I)
R(I)
TO INDEX SWITCH
LZ
LC
L
E
ZB (or Z)
C
B
LOCAL BATTERY
LINE
LINE BATT/ BELL
LINE BATT
BELL
INDEX SWITCH (LINE BREAK)
5
Y(I)
R(I)
L
TO * STATION I
7Ω
+
2
G
G(G)
STAFF
IN
OUT
Y
Y(G)
4
E
LINE COILS
90Ω
G(L)
G
Y
Y(L)
LOCAL COILS
60Ω
BN(L)
BN
R
R(L)
LOCAL BATTERY
5x AD524 CELLS
ISOLATING RELAY
A1
A2
D1
D2
LZ
1
ISOLATING RELAY
1x AD524 CELL
R1
R2
LC
QTM1 4F2B
4Ω
LINE R
R2
R1
(QTM1 4-2)
TO * STATION I
* INSERT STATION NAME

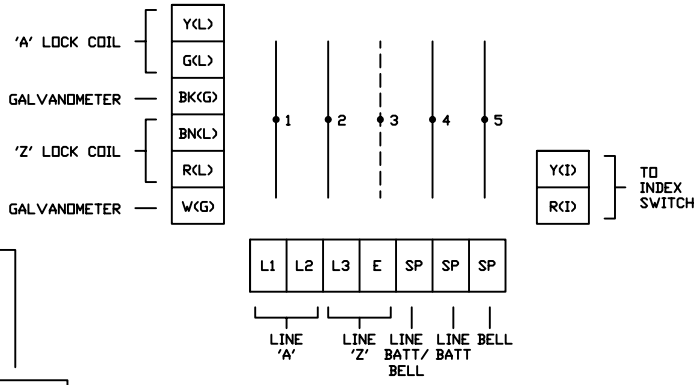
* STATION I (INTERMEDIATE)

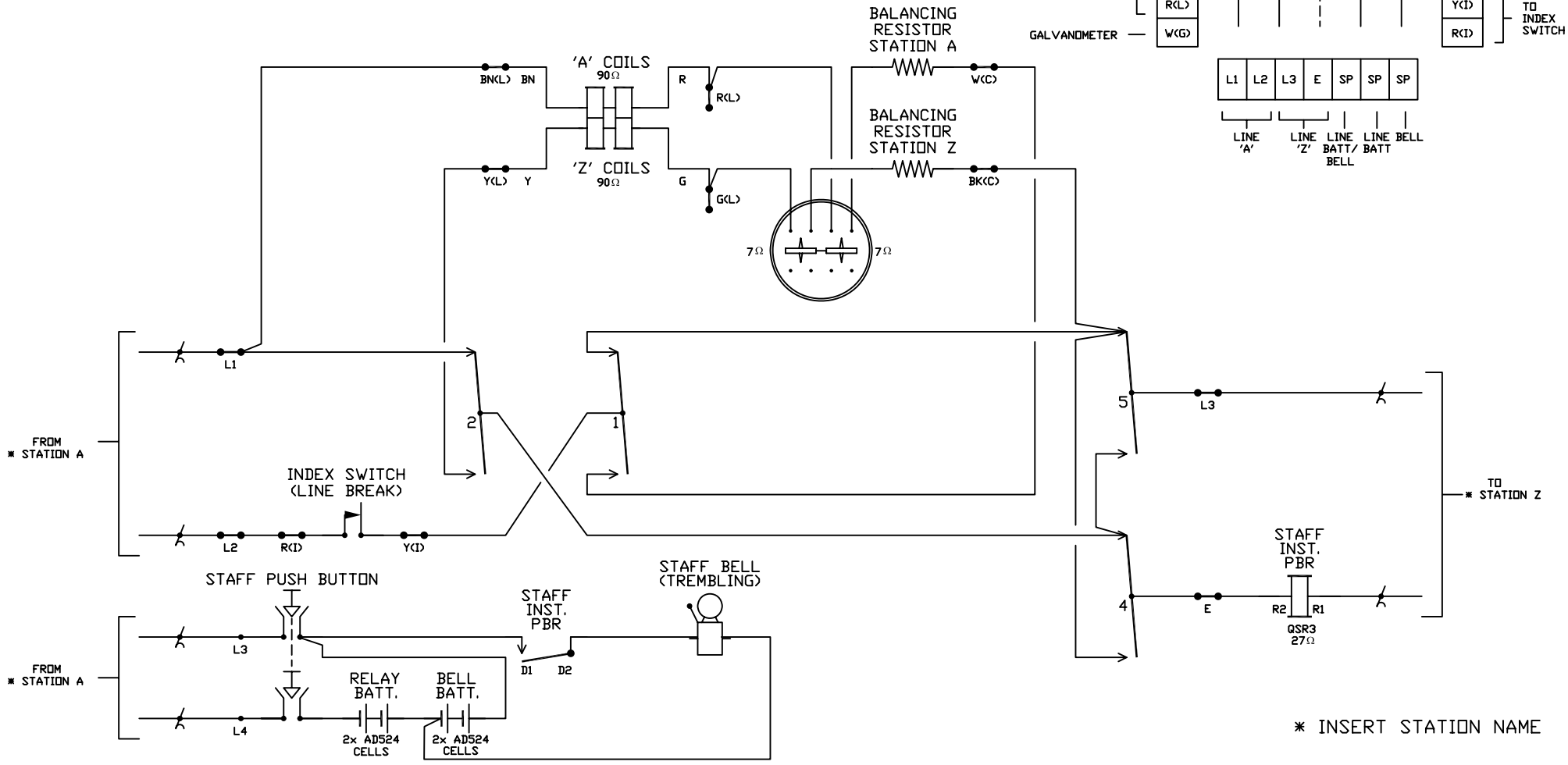
NOTES:

- BALANCING RESISTORS USED TO COMPENSATE LOWER LINE RESISTANCE WHERE THE INTERMEDIATE STAFF INSTRUMENT DIVIDES THE STAFF SECTION INTO UNEQUAL LENGTHS.
- STAFF PUSH BUTTON CONTROLS CONNECTED TO NEAREST STAFF INSTRUMENT I.E. A OR Z.
- OPERATOR MUST HOLD IN PUSH BUTTON UNTIL BELL RINGS (STATION A AUTO SWITCH BOX SENDING CURRENT TO LINE ETC)

STAFF INSTRUMENT CONTACTS AND TERMINALS

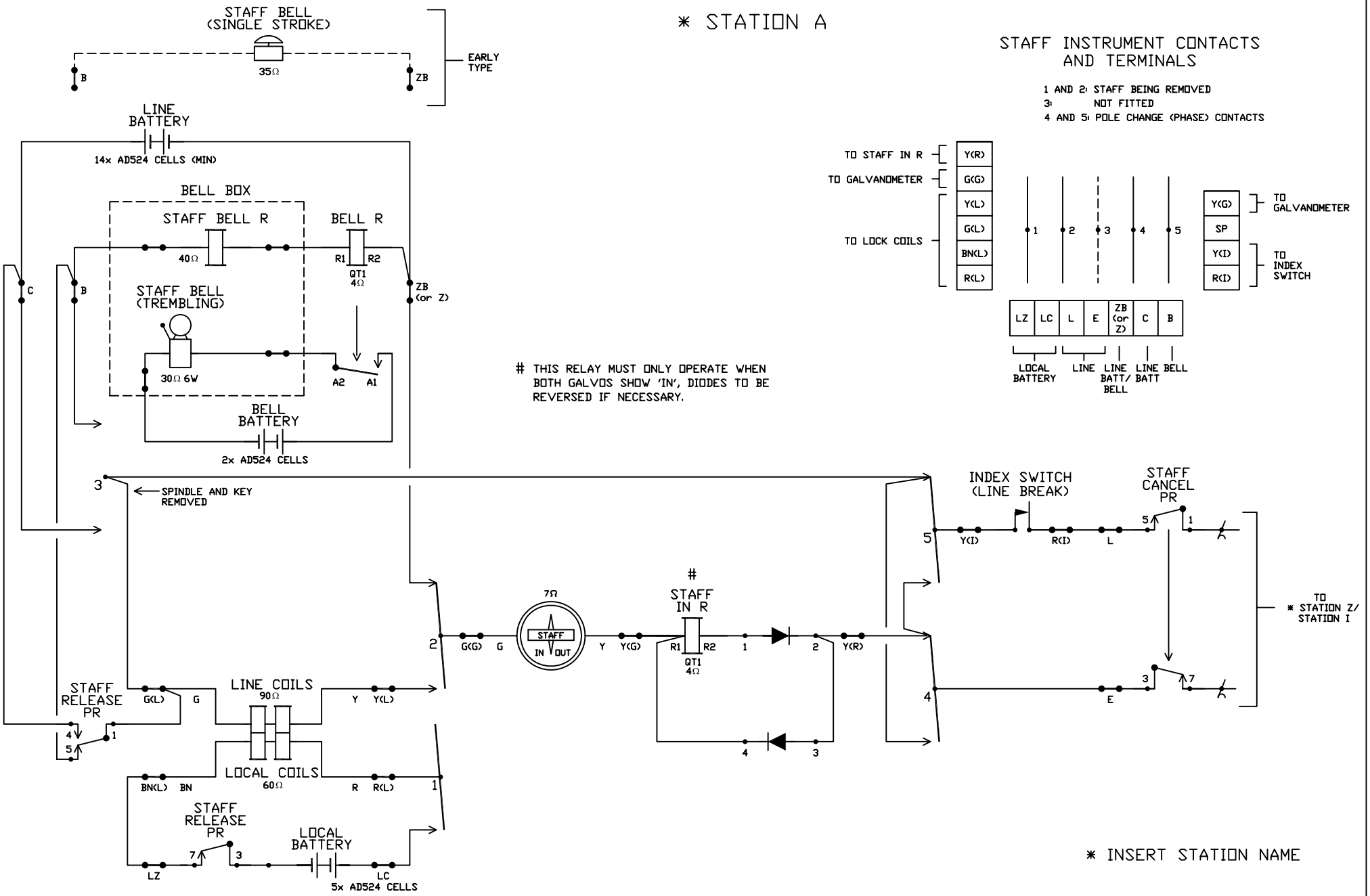
1 AND 2: STAFF BEING REMOVED
3: NOT FITTED
4 AND 5: POLE CHANGE (PHASE) CONTACTS





* INSERT STATION NAME

* STATION A

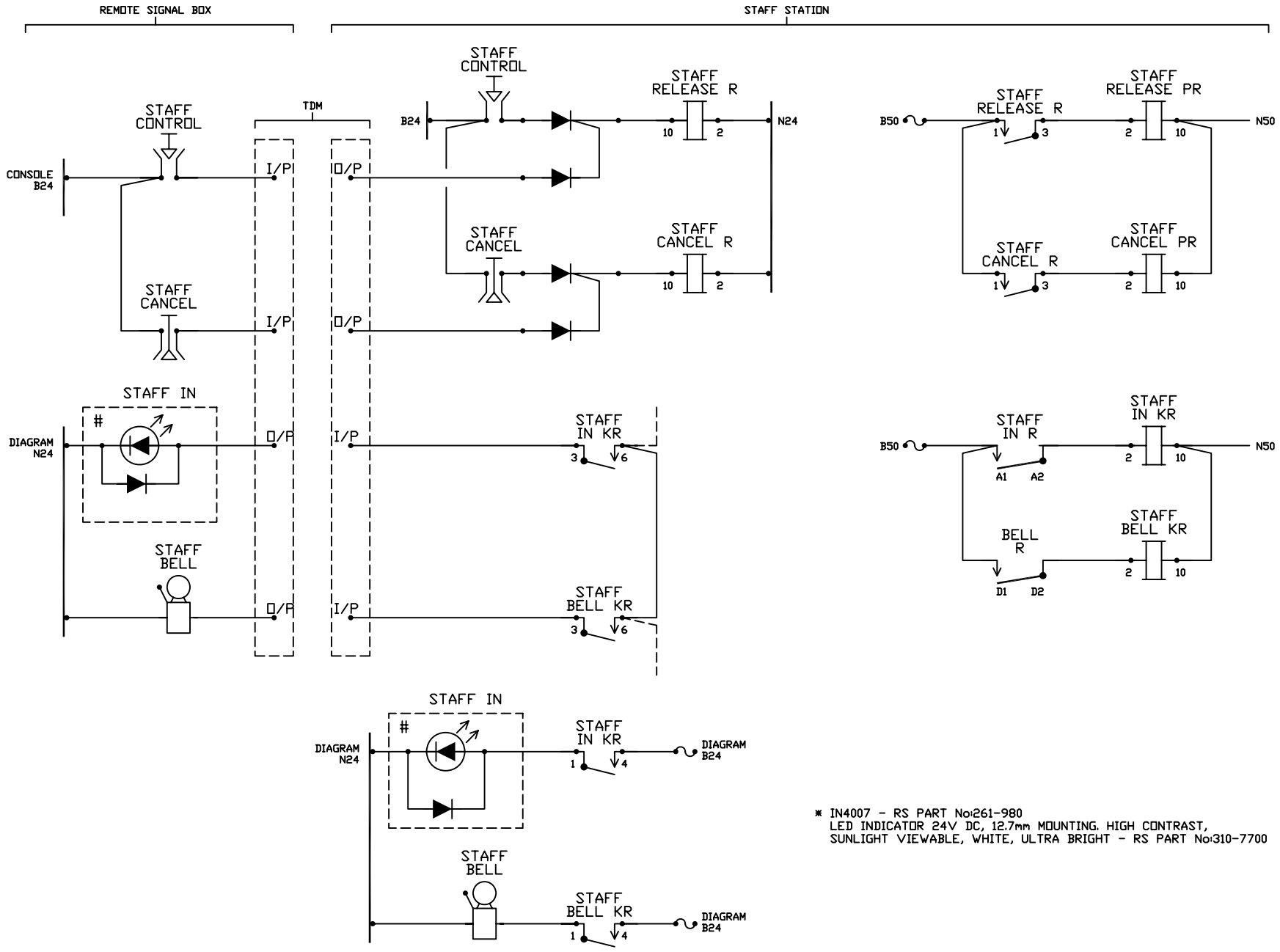


STAFF INSTRUMENT CONTACTS AND TERMINALS

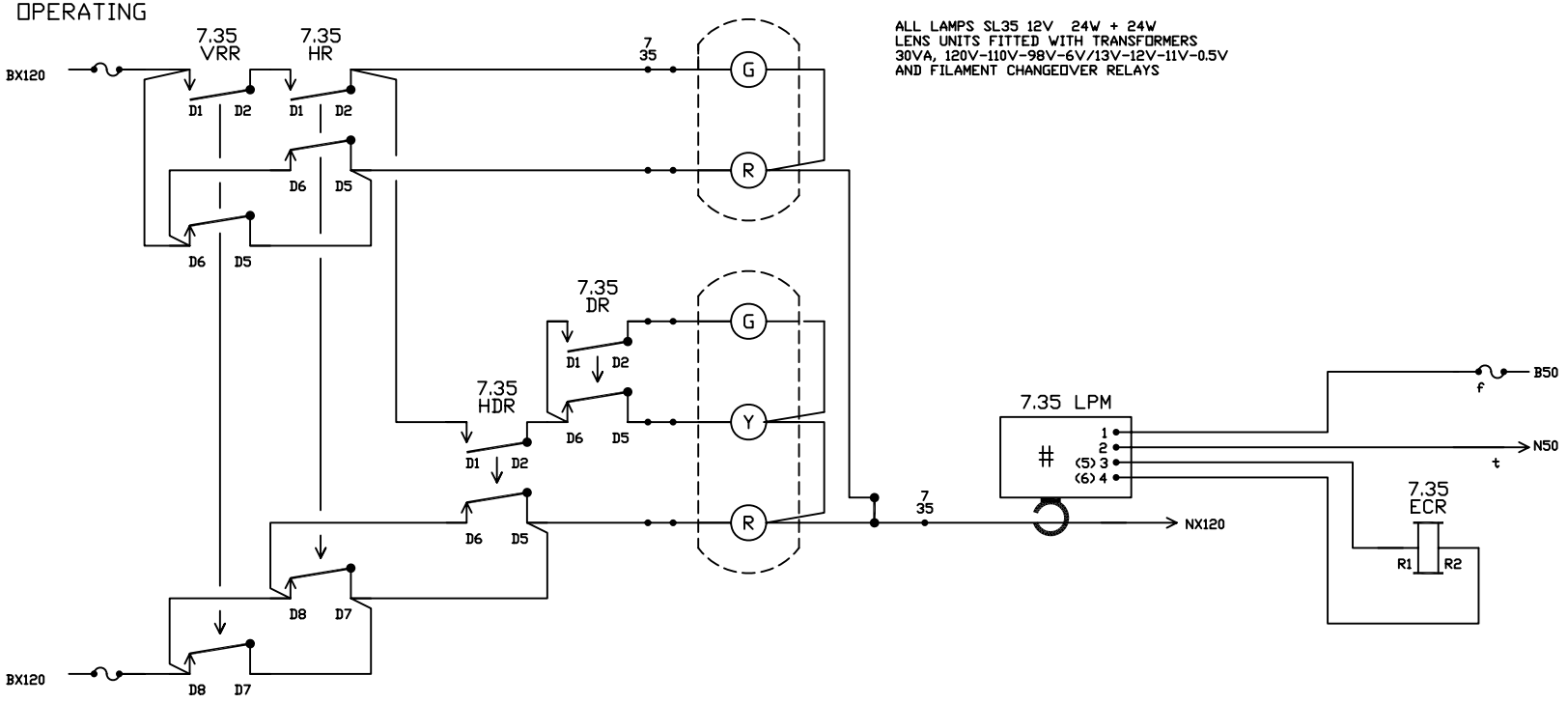
1 AND 2: STAFF BEING REMOVED
3: NOT FITTED
4 AND 5: POLE CHANGE (PHASE) CONTACTS

THIS RELAY MUST ONLY OPERATE WHEN BOTH GALVOS SHOW 'IN', DIODES TO BE REVERSED IF NECESSARY.

* INSERT STATION NAME


REMOTE SIGNAL BOX
STAFF STATION
TDM
STAFF CONTROL
CONSOLE B24
I/P
O/P
B24
N24
10
2
STAFF RELEASE R
STAFF CANCEL
STAFF CANCEL R
B50
N50
1
3
STAFF RELEASE PR
STAFF CANCEL PR
STAFF IN
DIAGRAM N24
#
STAFF IN KR
STAFF BELL
STAFF BELL KR
3
6
STAFF IN R
A1
A2
BELL R
D1
D2
DIAGRAM B24
1
4
* IN4007 - RS PART No:261-980
LED INDICATOR 24V DC, 12.7mm MOUNTING. HIGH CONTRAST,
SUNLIGHT VIEWABLE, WHITE, ULTRA BRIGHT - RS PART No:310-7700

SIGNAL OPERATING



ALL LAMPS SL35 12V 24W + 24W
LENS UNITS FITTED WITH TRANSFORMERS
30VA, 120V-110V-98V-6V/13V-12V-11V-0.5V
AND FILAMENT CHANGEOVER RELAYS

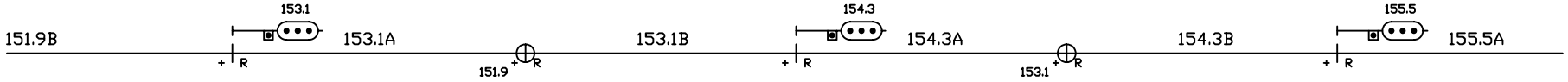
\# LPM VERSION 1.0 REQUIRES A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 3&4

LPM VERSION 1.1 DOES NOT REQUIRE A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 5&6

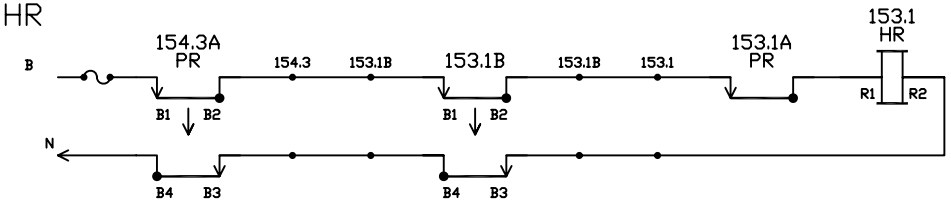
LPM NOT REQUIRED WITH LED SIGNALS

ISSUE-02	ISSUE-03	ISSUE-04
18-02-94	23-08-95	01-09-01
JOB NUMBER		

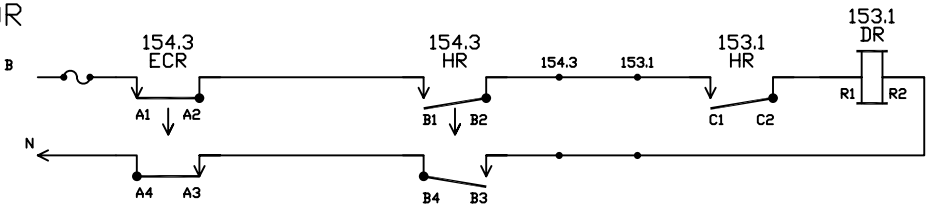
			ISSUE-04	28/6/07	7:28			CSTDA013	AUTOMATIC SIGNALLING (COUNTRY)			SHT: A013	CB: STD



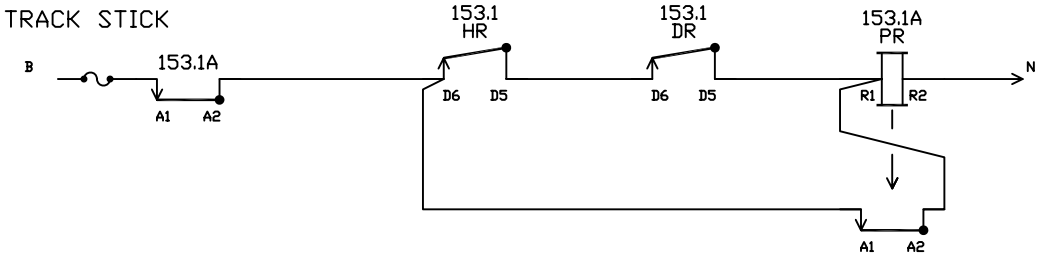
HR



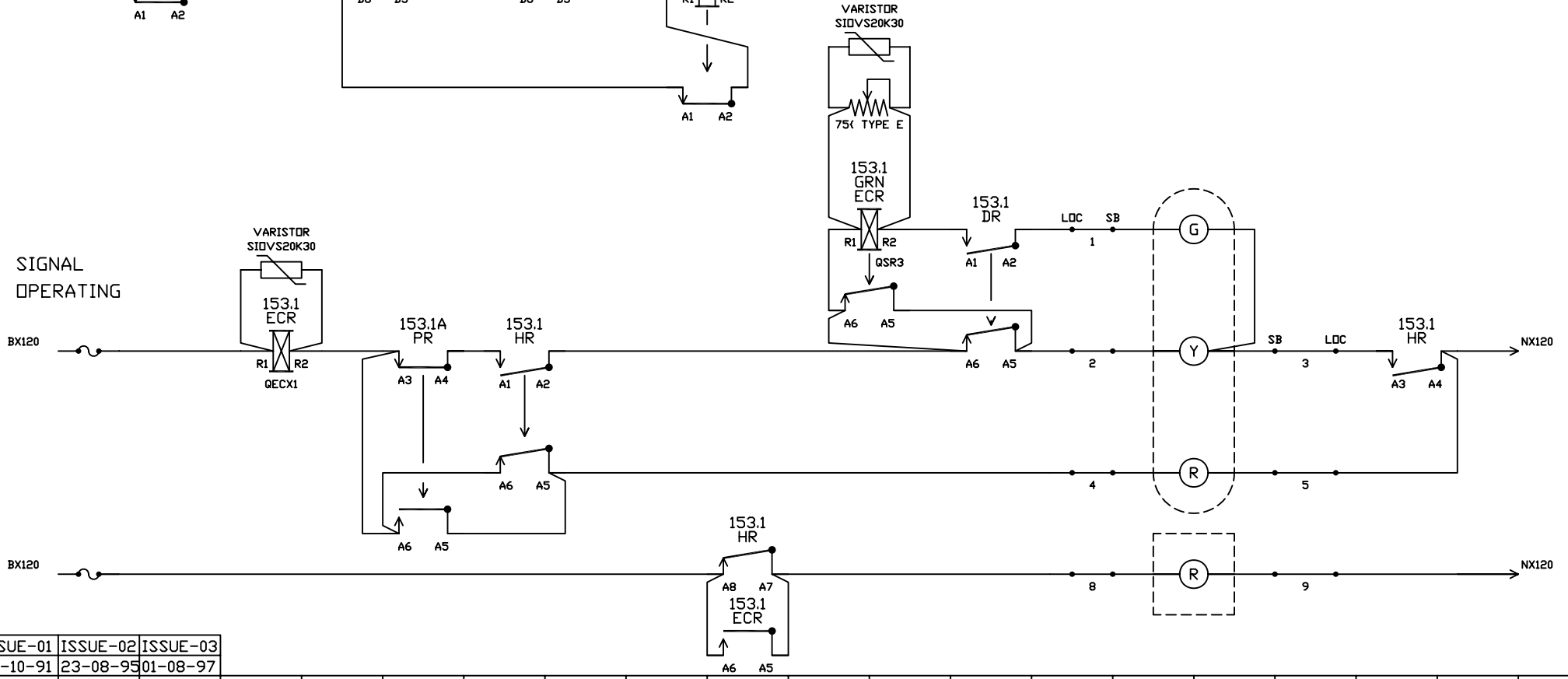
DR



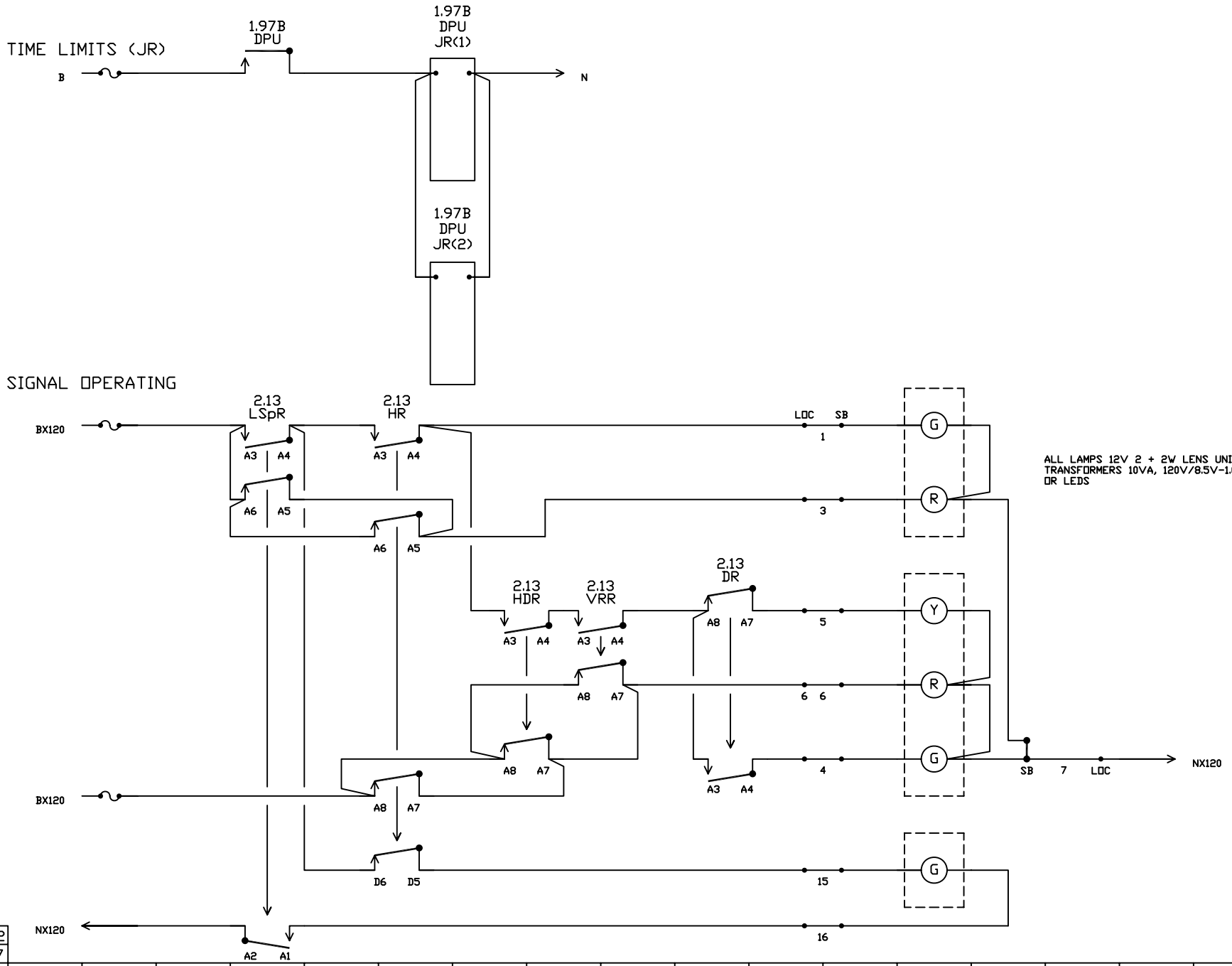
TRACK STICK



SIGNAL OPERATING

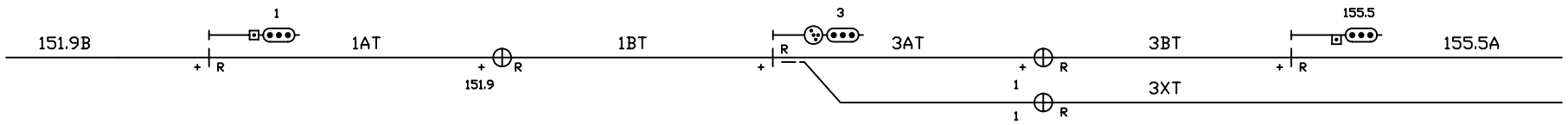


ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	23-08-95	01-08-97
JOB NUMBER		

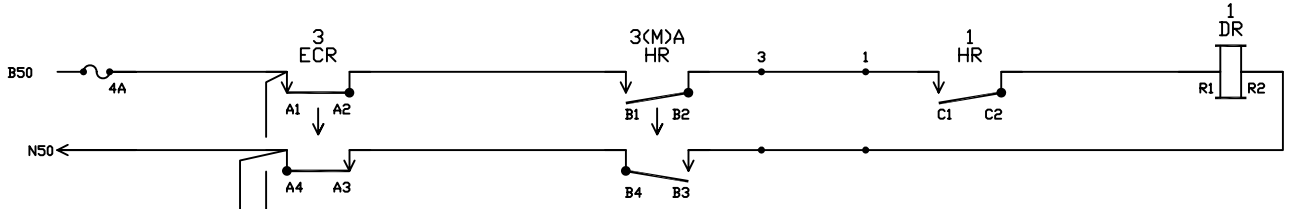


ISSUE-01	ISSUE-02
23-10-91	01-08-97
JOB NUMBER	

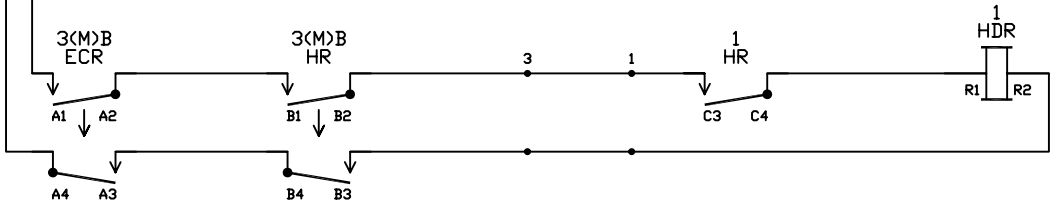
			ISSUE-04	28/6/07	7:32			CSTDA015	PULSATING YELLOW (COUNTRY)	PART 1/2	SHT: A015	CB: STD



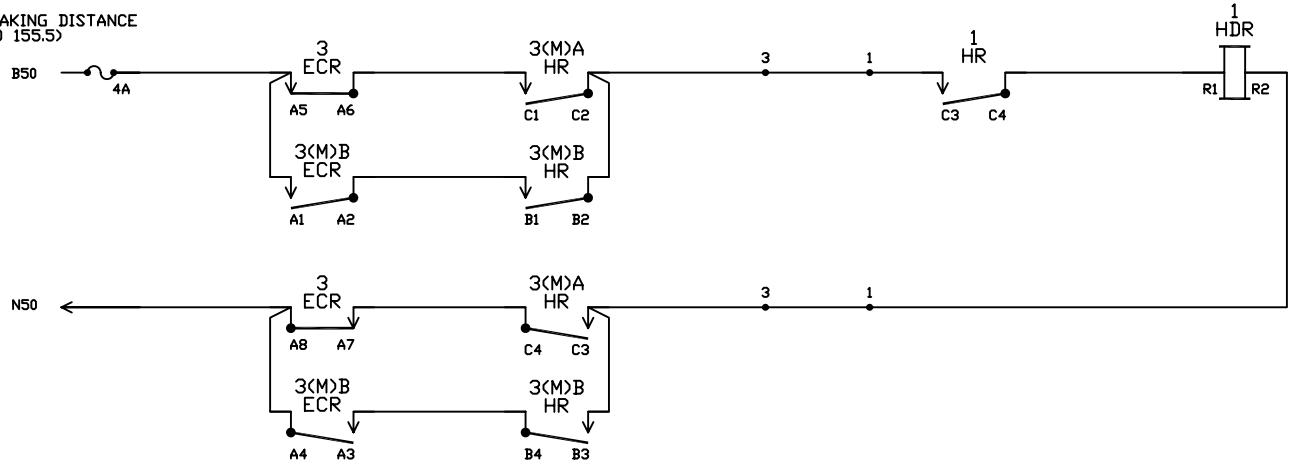
CLEAR (1 DR)



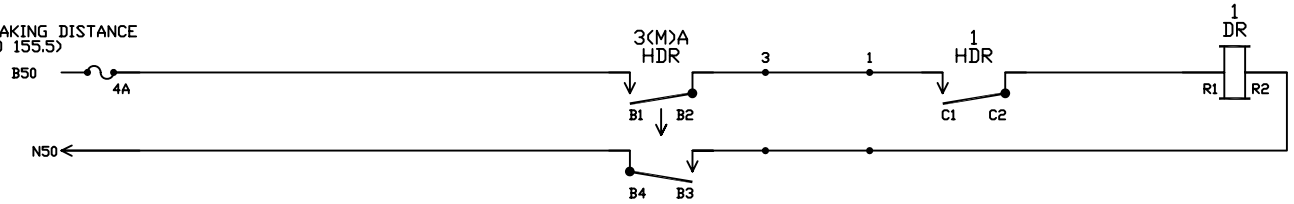
MEDIUM (1 HDR)



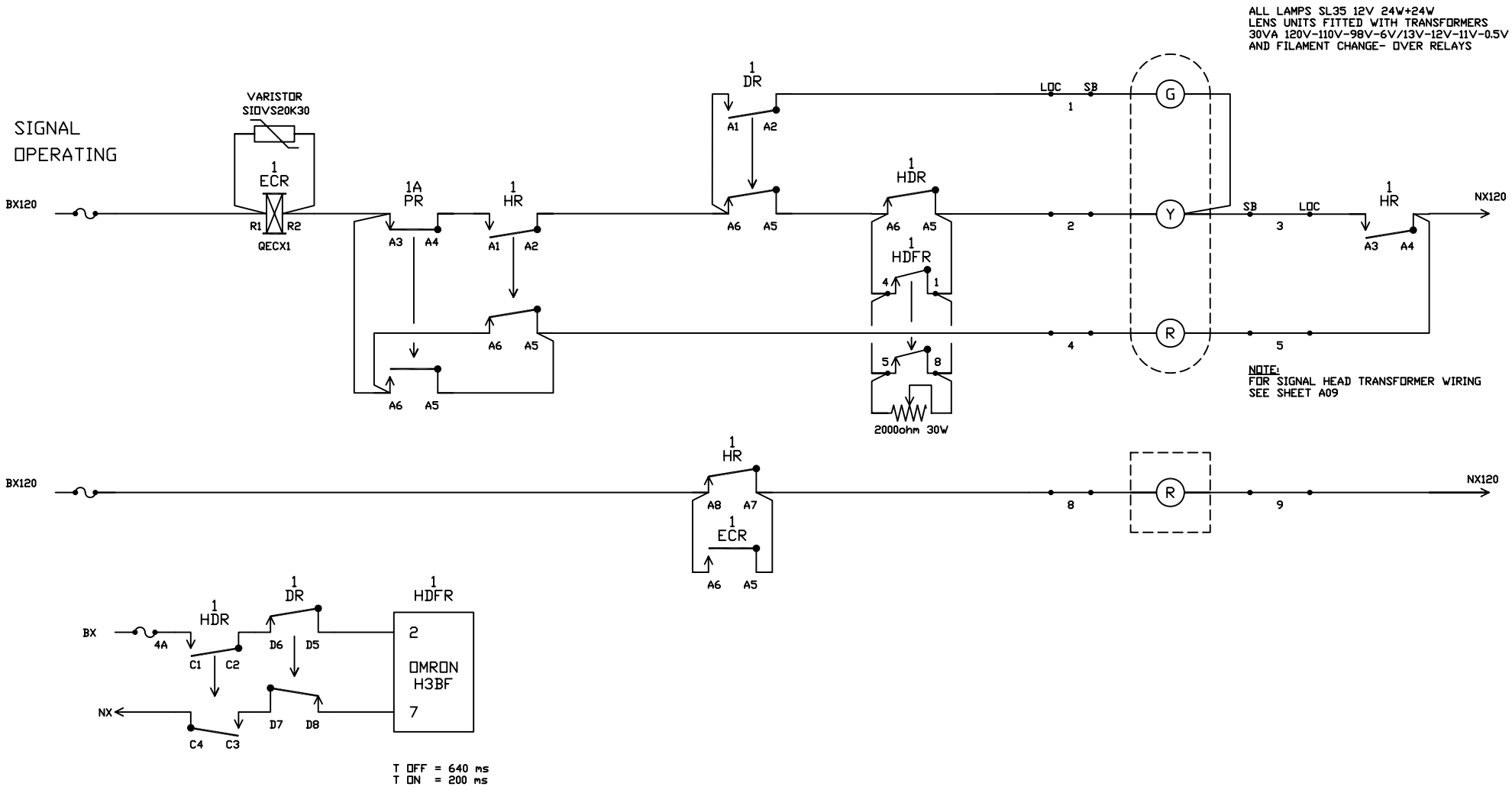
MEDIUM (1 HDR)
(LESS THAN SERVICE BRAKING DISTANCE BETWEEN SIGNALS 3 AND 155.5)



CLEAR (1 DR)
(LESS THAN SERVICE BRAKING DISTANCE BETWEEN SIGNALS 3 AND 155.5)

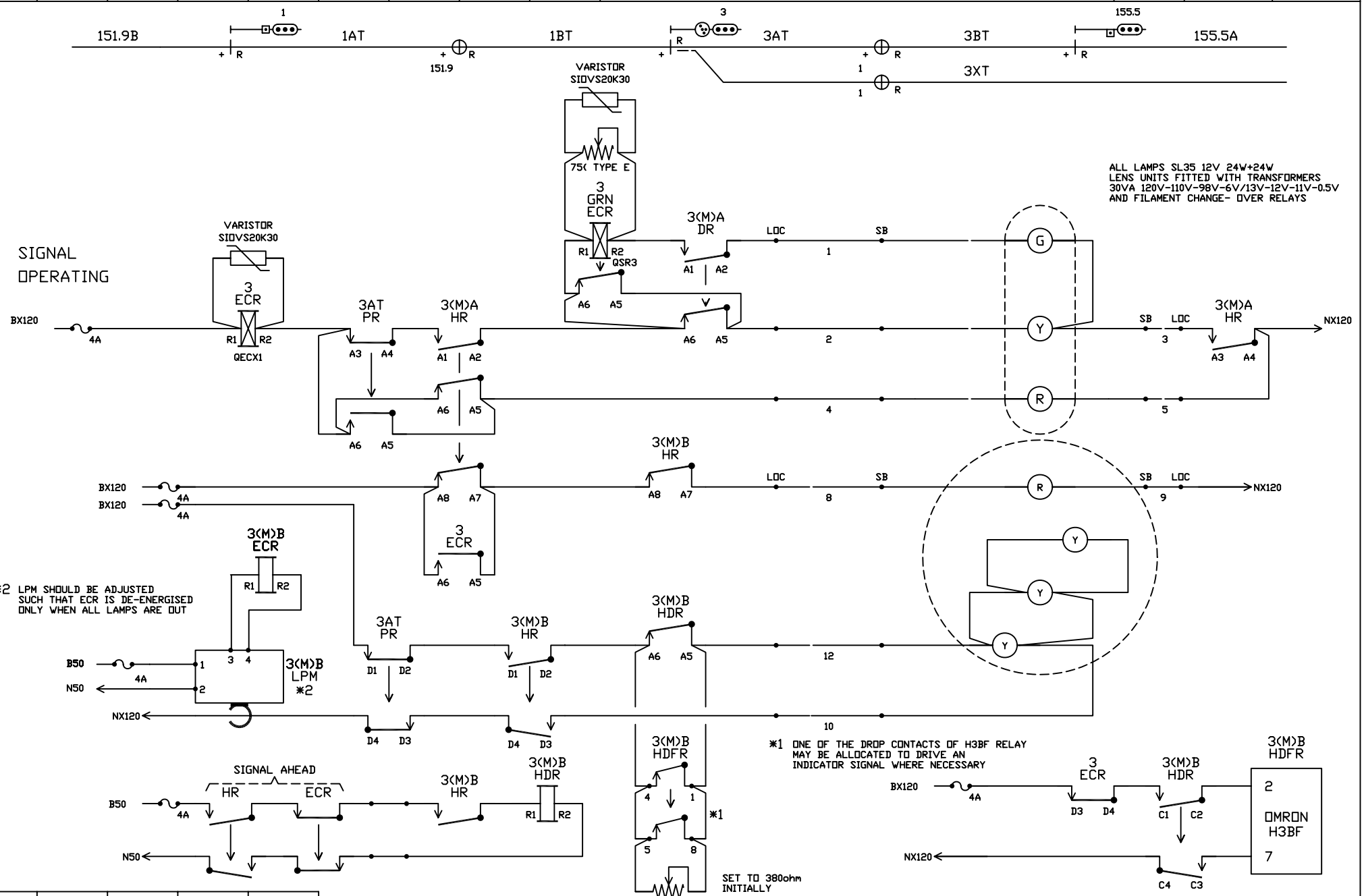


ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	01-08-97	01-12-98
JOB NUMBER		



ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	01-08-97	01-12-98
JOB NUMBER		

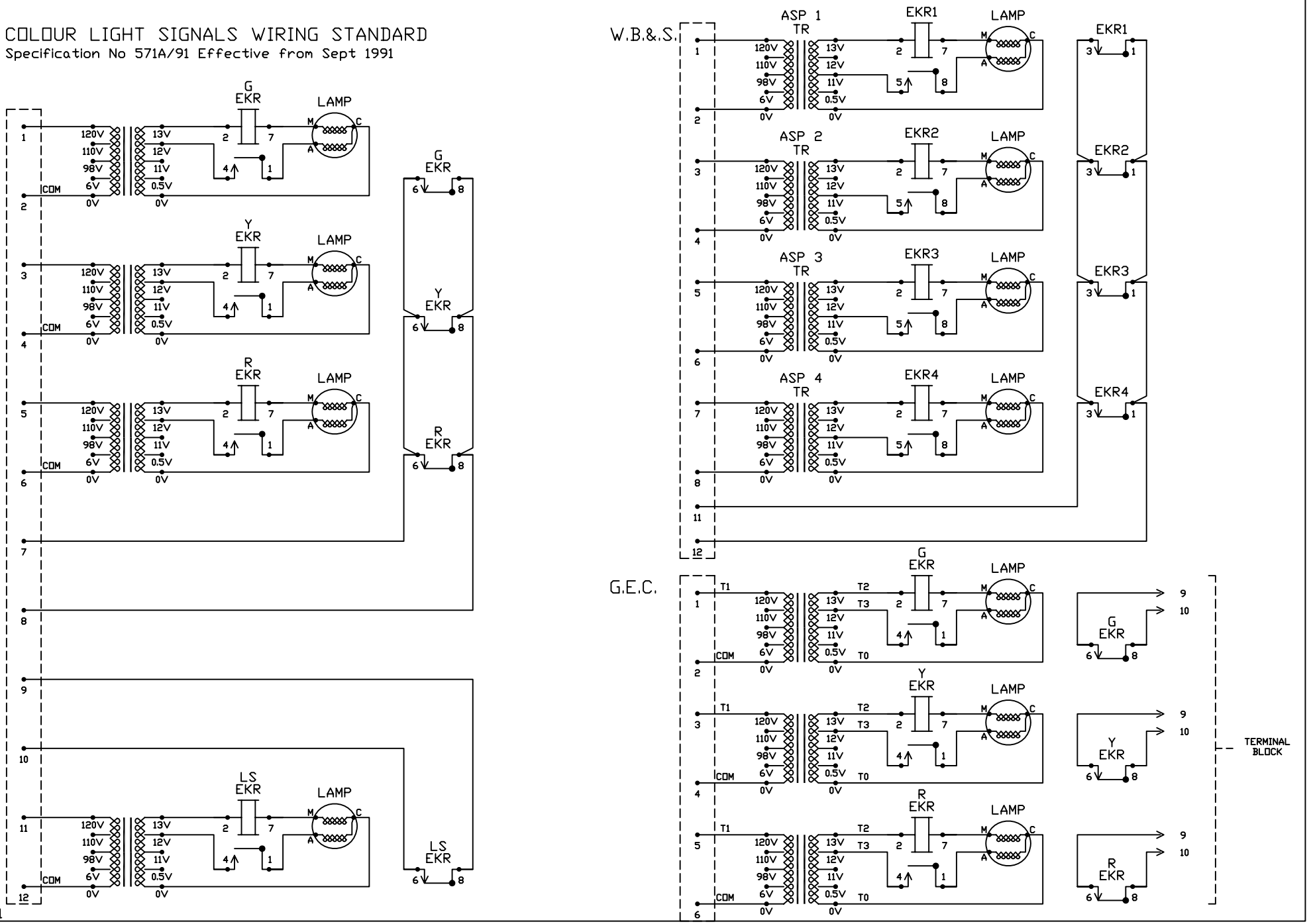
			ISSUE-05	28/6/07	7:35			CSTDA016	PULSATING BAND OF LIGHTS (COUNTRY)			SHT: A016	CB: STD



ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04	
23-10-91	27-11-92	23-08-95	01-08-97	
JOB NUMBER				

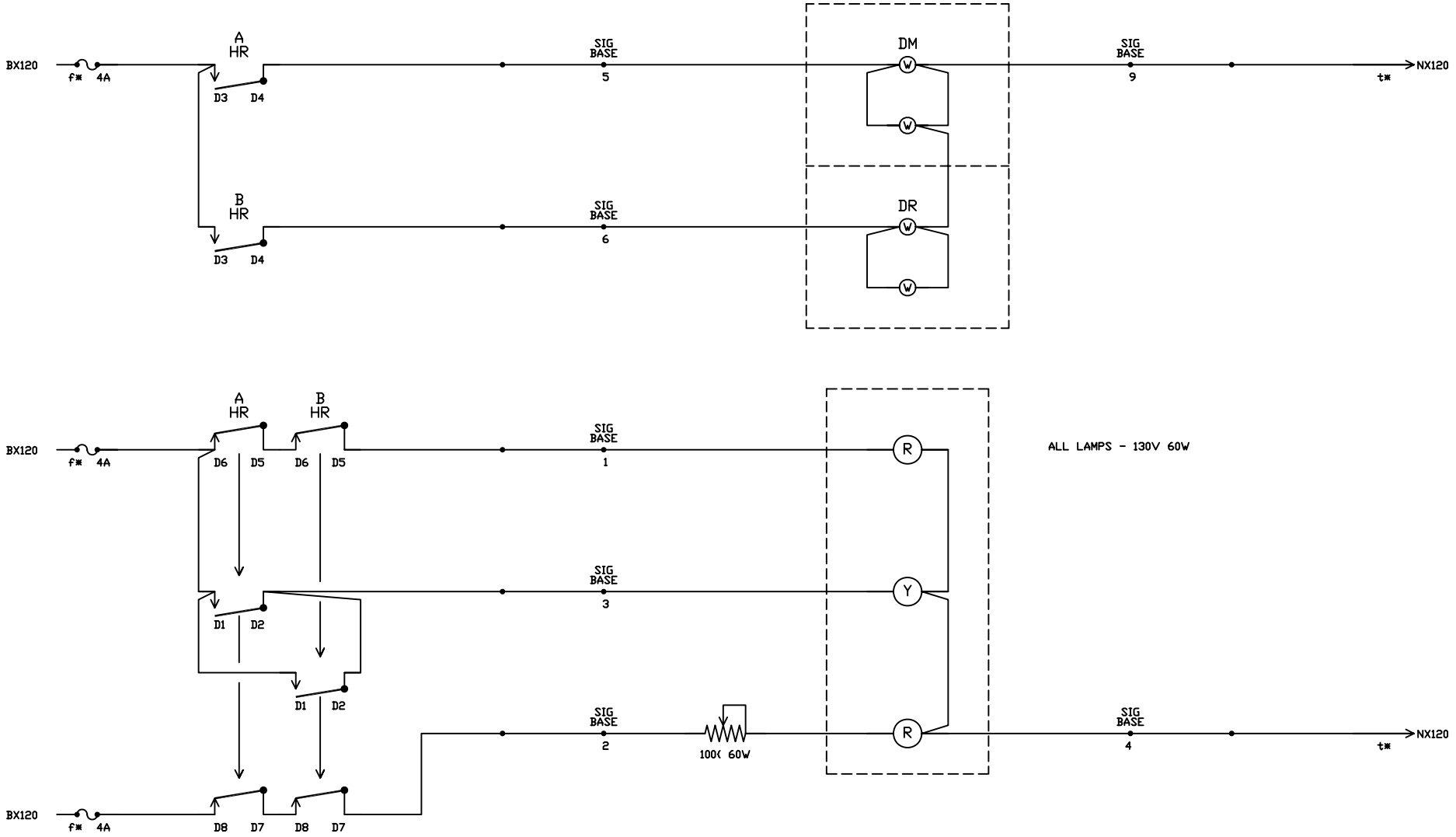
COLOUR LIGHT SIGNALS WIRING STANDARD

Specification No 571A/91 Effective from Sept 1991



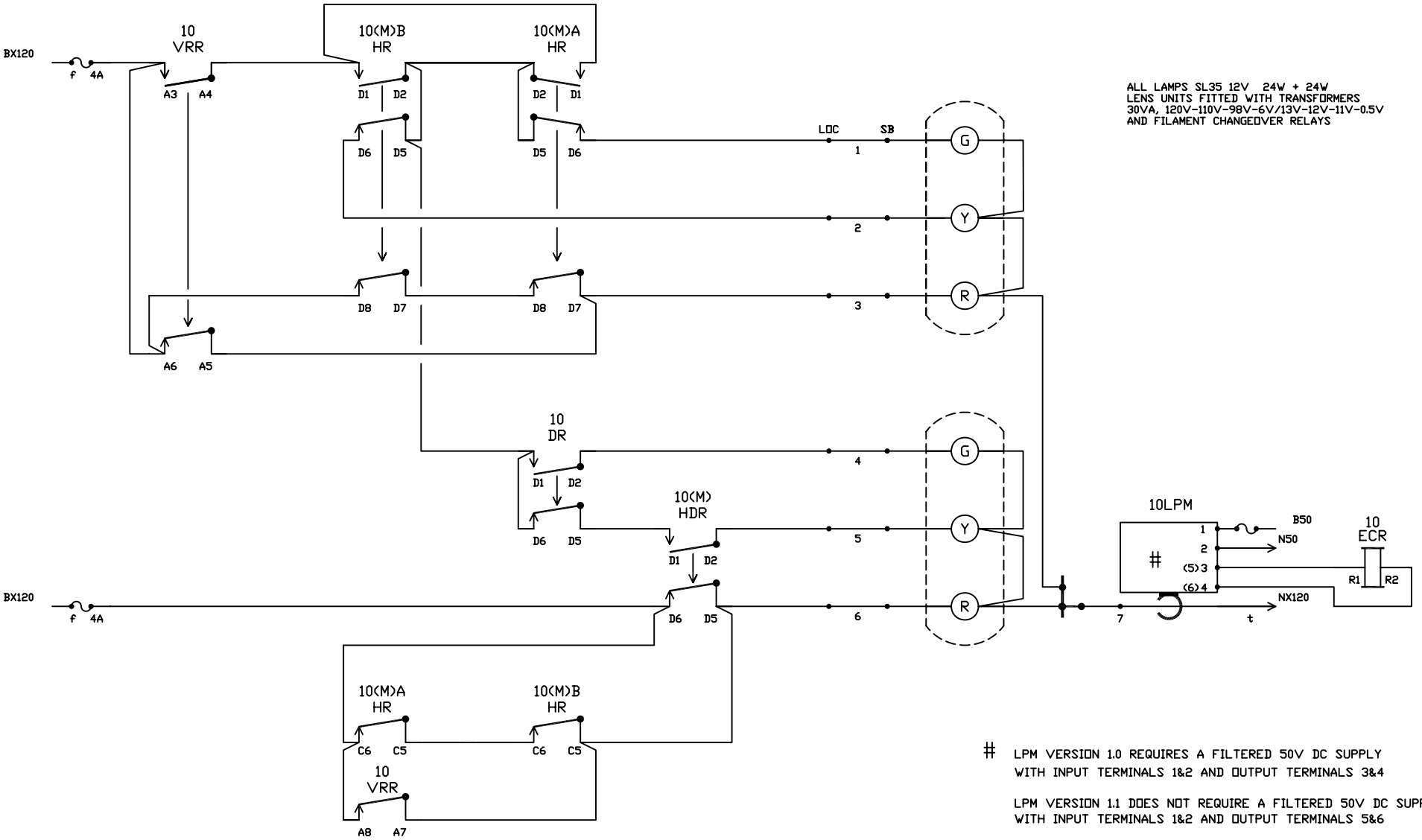
23-10-91

SIGNAL OPERATING



ISSUE-01
18-03-94
JOB NUMBER

			ISSUE-03	28/6/07	7:40			CSTDA019	SIGNAL OPERATING - SIX LIGHT SIGNAL			SHT: A019	CB: STD



ALL LAMPS SL35 12V 24W + 24W
LENS UNITS FITTED WITH TRANSFORMERS
30VA, 120V-110V-98V-6V/13V-12V-11V-0.5V
AND FILAMENT CHANGEOVER RELAYS

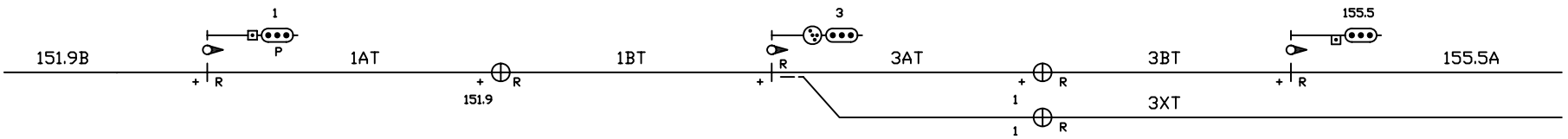
LPM VERSION 1.0 REQUIRES A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 3&4

LPM VERSION 1.1 DOES NOT REQUIRE A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 5&6

LPM NOT REQUIRED WITH LED SIGNALS

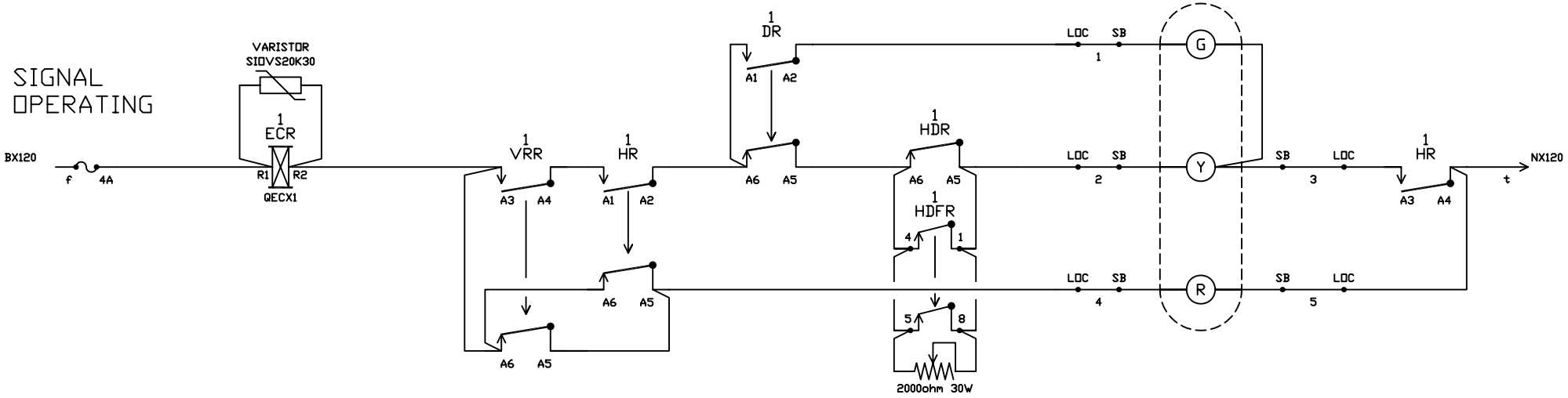
ISSUE-01	ISSUE-02
01-08-97	01-09-01

JOB NUMBER

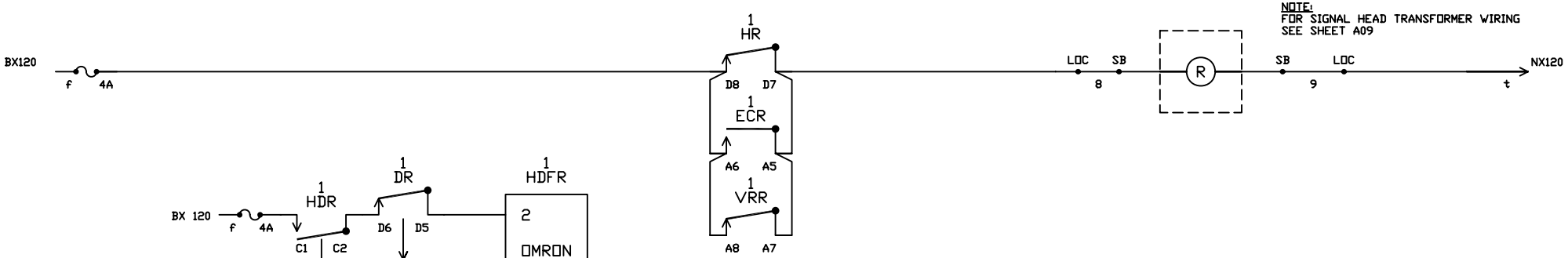


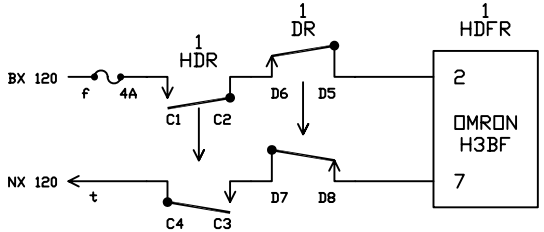
ALL LAMPS SL35 12V 24W+24W
LENS UNITS FITTED WITH TRANSFORMERS
30VA 120V-110V-98V-6V/13V-12V-11V-0.5V
AND FILAMENT CHANGE- OVER RELAYS

SIGNAL OPERATING



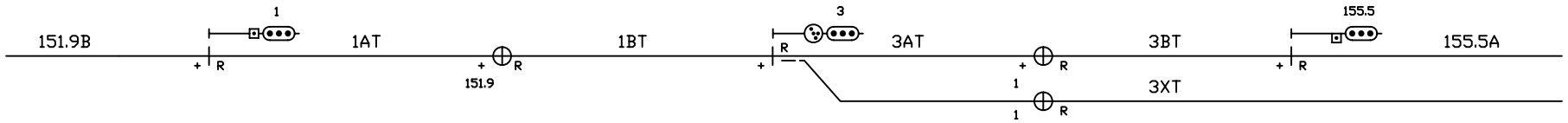
NOTE:
FOR SIGNAL HEAD TRANSFORMER WIRING
SEE SHEET A09



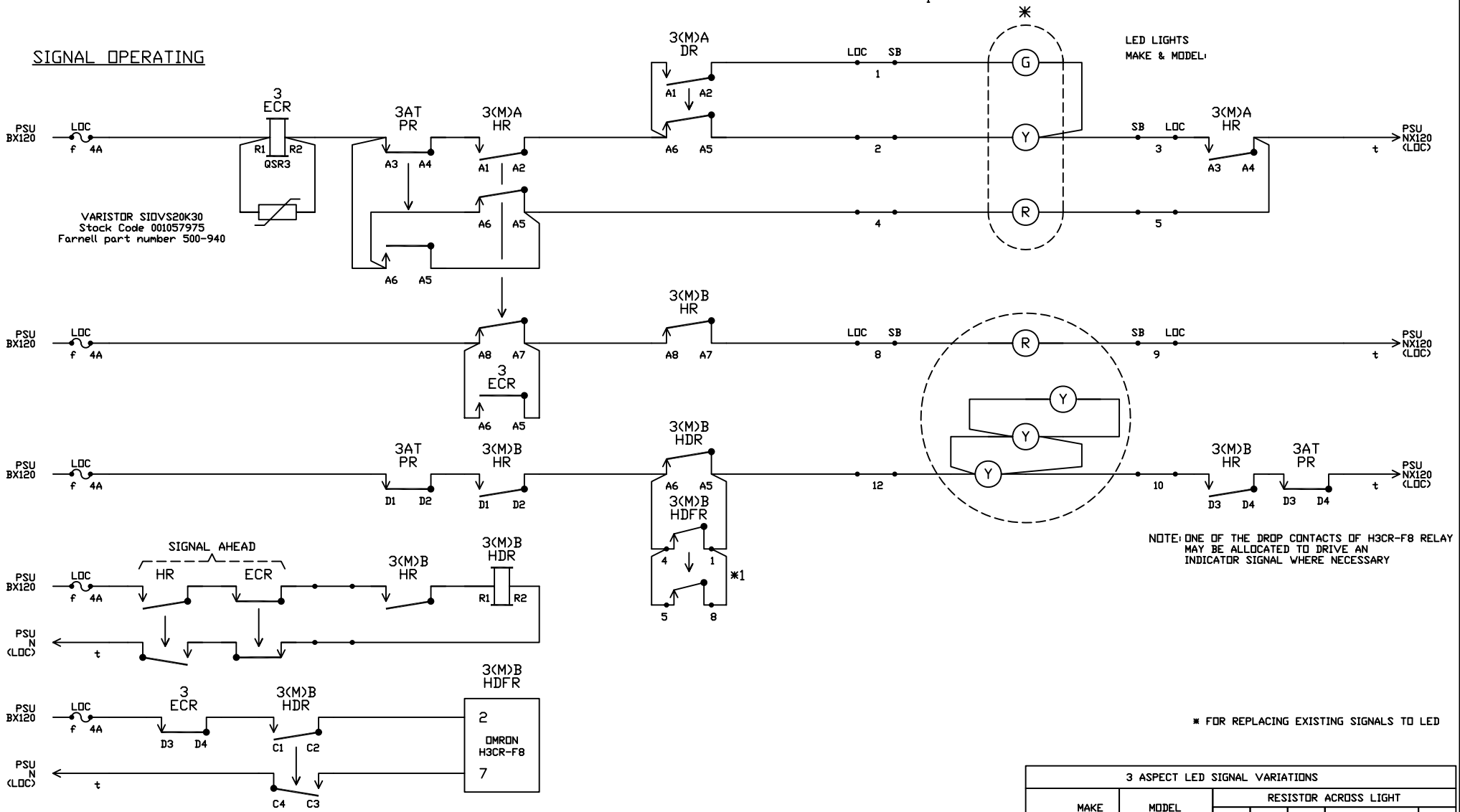


T OFF = 640 ms
T ON = 200 ms

			ISSUE-05	28/6/07	8:23			CSTDA021	PULSATING BAND OF LIGHTS (COUNTRY)			SHT: A021	CB: STD



SIGNAL OPERATING



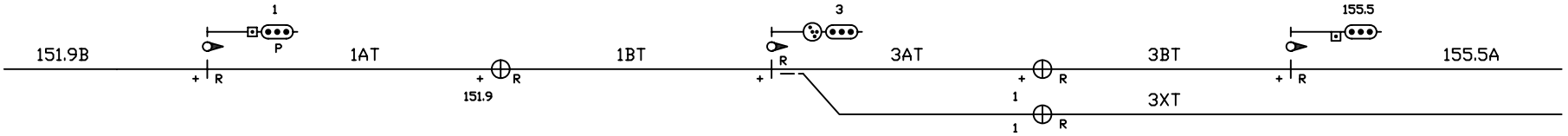
NOTE: ONE OF THE DROP CONTACTS OF H3CR-F8 RELAY MAY BE ALLOCATED TO DRIVE AN INDICATOR SIGNAL WHERE NECESSARY

* FOR REPLACING EXISTING SIGNALS TO LED

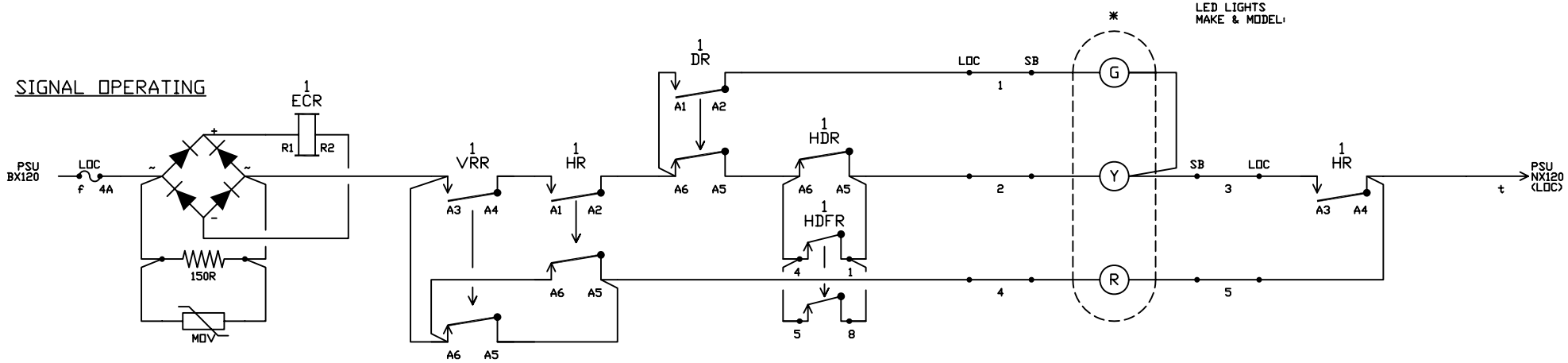
3 ASPECT LED SIGNAL VARIATIONS							
MAKE	MODEL	RESISTOR ACROSS LIGHT				
		R	Y	G	Marker R	ECR
WESTINGHOUSE				3.3K Ω		
ALDRIDGE						150 Ω
ALSTOM						

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05
23-10-91	27-11-92	23-08-95	01-08-97	01-09-03
JOB NUMBER				

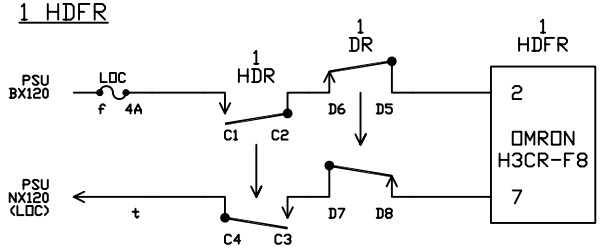
			ISSUE-03	28/6/07	8:24			CSTDA022	OUTER METROPOLITAN WITH TRAINSTOPS			SHT:A022	CB: STD



SIGNAL OPERATING



1 HDFR



T OFF = 640 ms
T ON = 200 ms

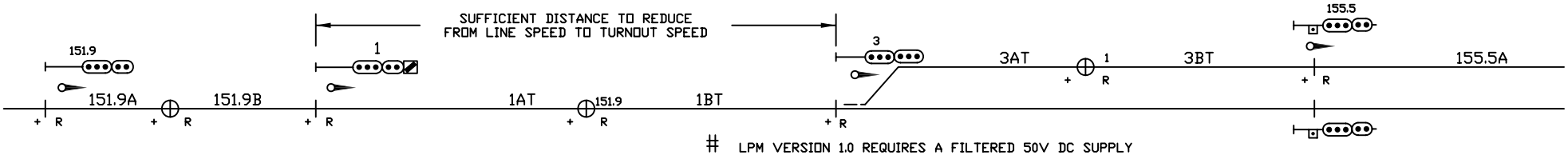
* FOR REPLACING EXISTING SIGNALS TO LED

3 ASPECT LED SIGNAL VARIATIONS

MAKE	MODEL	RESISTOR ACROSS LIGHT				
		R	Y	G	Marker R	ECR
WESTINGHOUSE				3.3K		
ALDRIDGE						150R
ALSTOM						

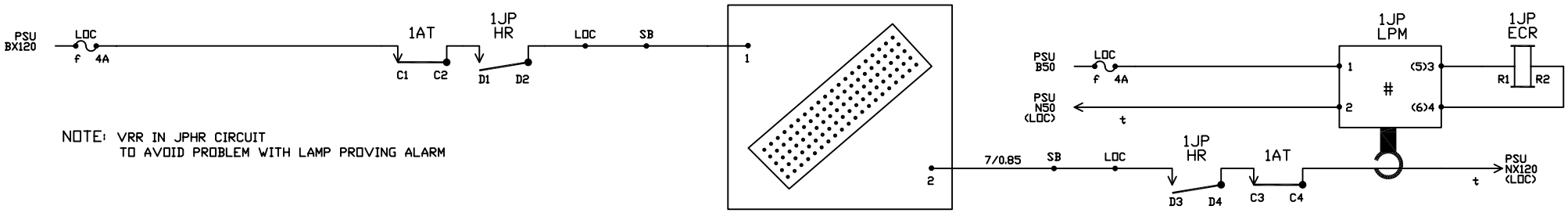
ISSUE-01	ISSUE-02
01-08-97	01-09-03
JOB NUMBER	

			ISSUE-07	29/6/07	10:38			CSTDA023	SIGNAL LIGHT OPERATING - TURNOUT REPEATER SIGNAL			SHT:A023	CB: STD

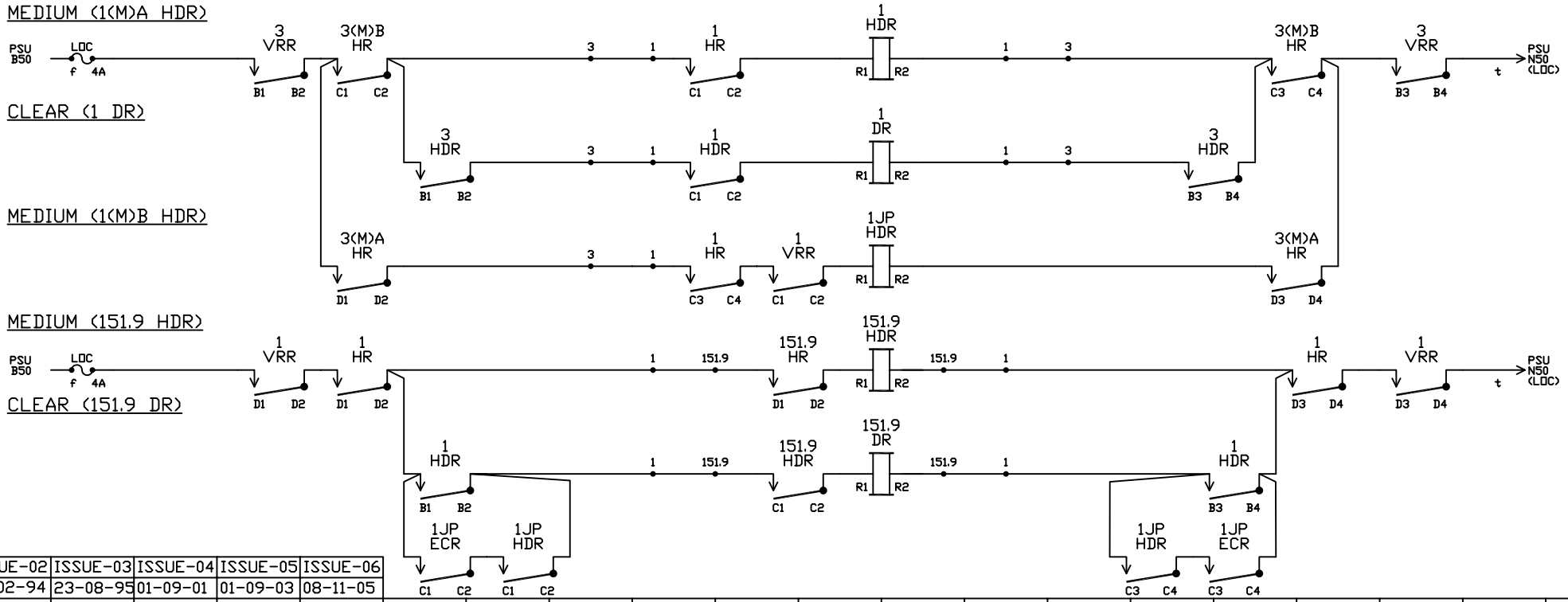


\# LPM VERSION 1.0 REQUIRES A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 3&4

LPM VERSION 1.1 DOES NOT REQUIRE A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 5&6

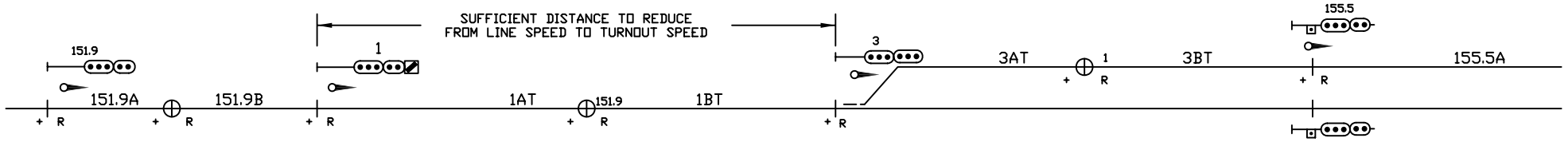


NOTE: VRR IN JPHR CIRCUIT
TO AVOID PROBLEM WITH LAMP PROVING ALARM

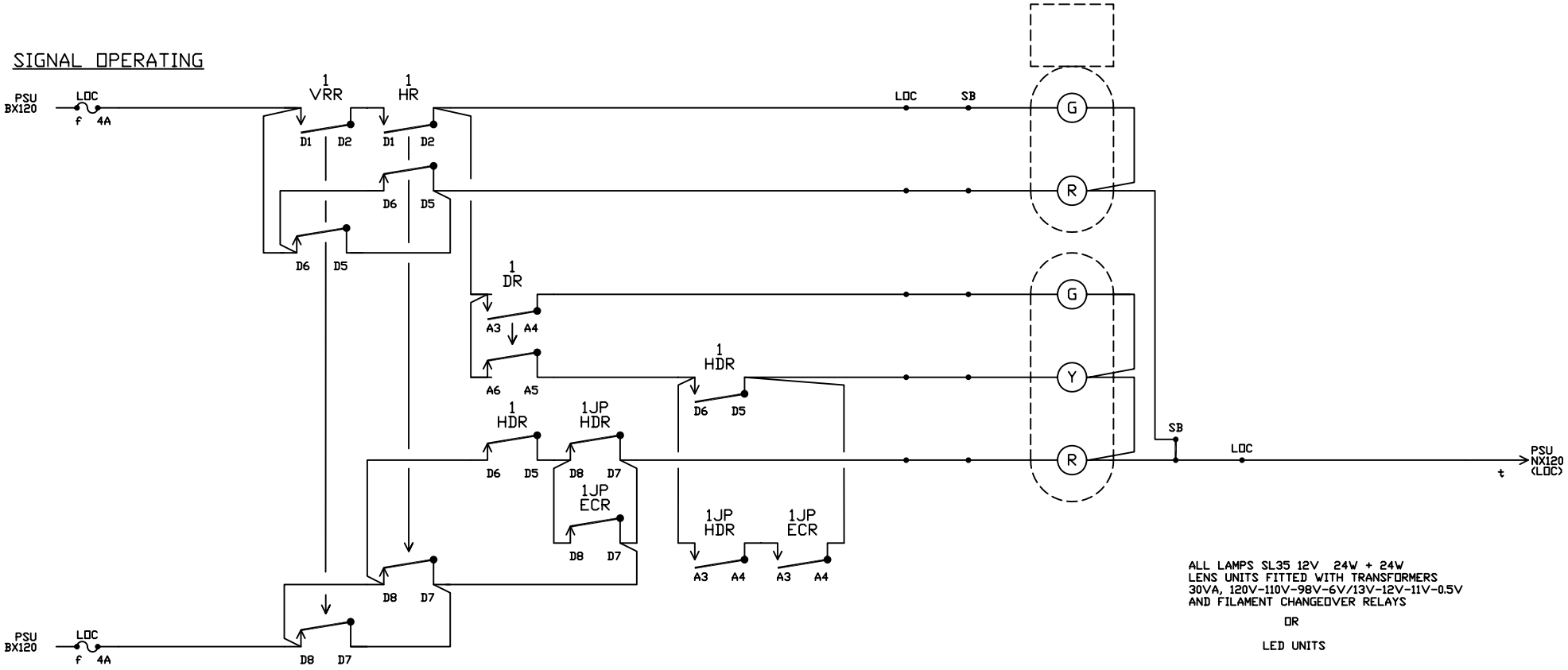


ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05	ISSUE-06
18-02-94	23-08-95	01-09-01	01-09-03	08-11-05
JOB NUMBER				

			ISSUE-07	29/6/07	10:35			CSTDA024	SIGNAL LIGHT OPERATING - TURNOUT REPEATER SIGNAL			SHT:A024	CB: STD



SIGNAL OPERATING



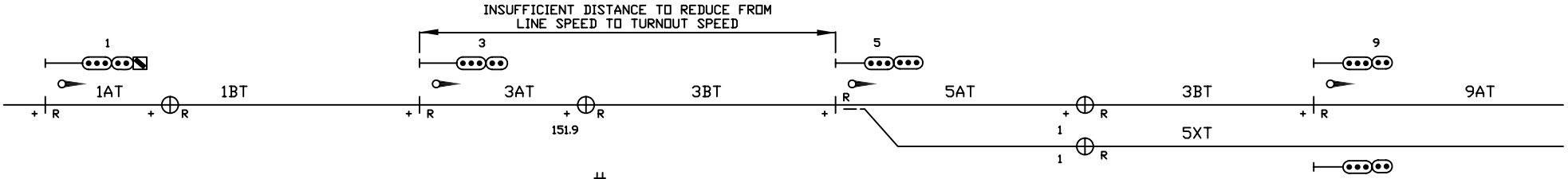
ALL LAMPS SL35 12V 24W + 24W
LENS UNITS FITTED WITH TRANSFORMERS
30VA, 120V-110V-98V-6V/13V-12V-11V-0.5V
AND FILAMENT CHANGEOVER RELAYS

OR

LED UNITS

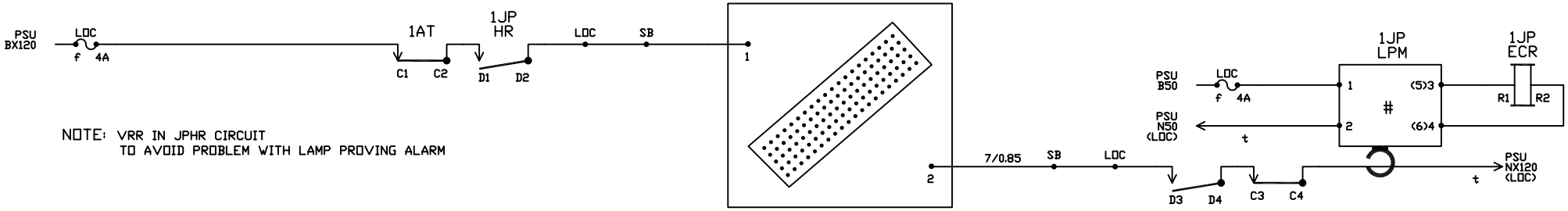
IF 1 SIGNAL OPERATING TO OLD STANDARD WITH 1 BACK CONTACT OF VRR FOR BOTH TOP & LOWER RED LIGHTS, CONVERT TO LATEST STANDARD WITH SEPARATE VRR BACK CONTACTS FOR TOP & LOWER RED LIGHTS

ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05	ISSUE-06
18-02-94	23-08-95	01-09-01	01-09-03	08-11-05
JOB NUMBER				

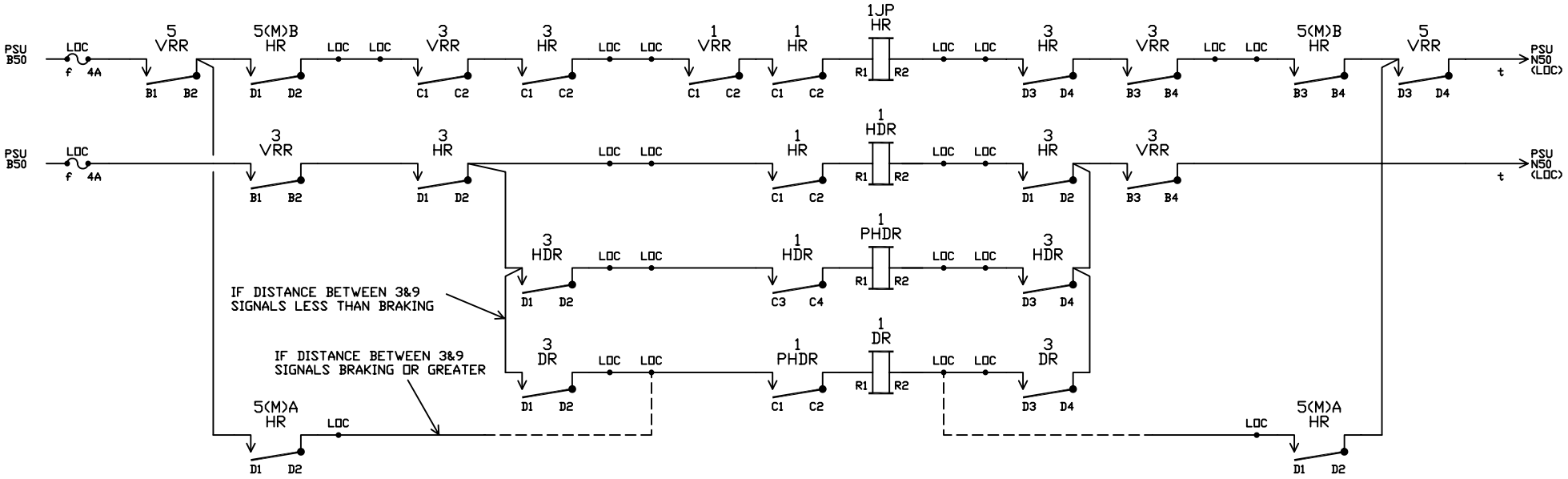


\# LPM VERSION 1.0 REQUIRES A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 3&4

LPM VERSION 1.1 DOES NOT REQUIRE A FILTERED 50V DC SUPPLY
WITH INPUT TERMINALS 1&2 AND OUTPUT TERMINALS 5&6

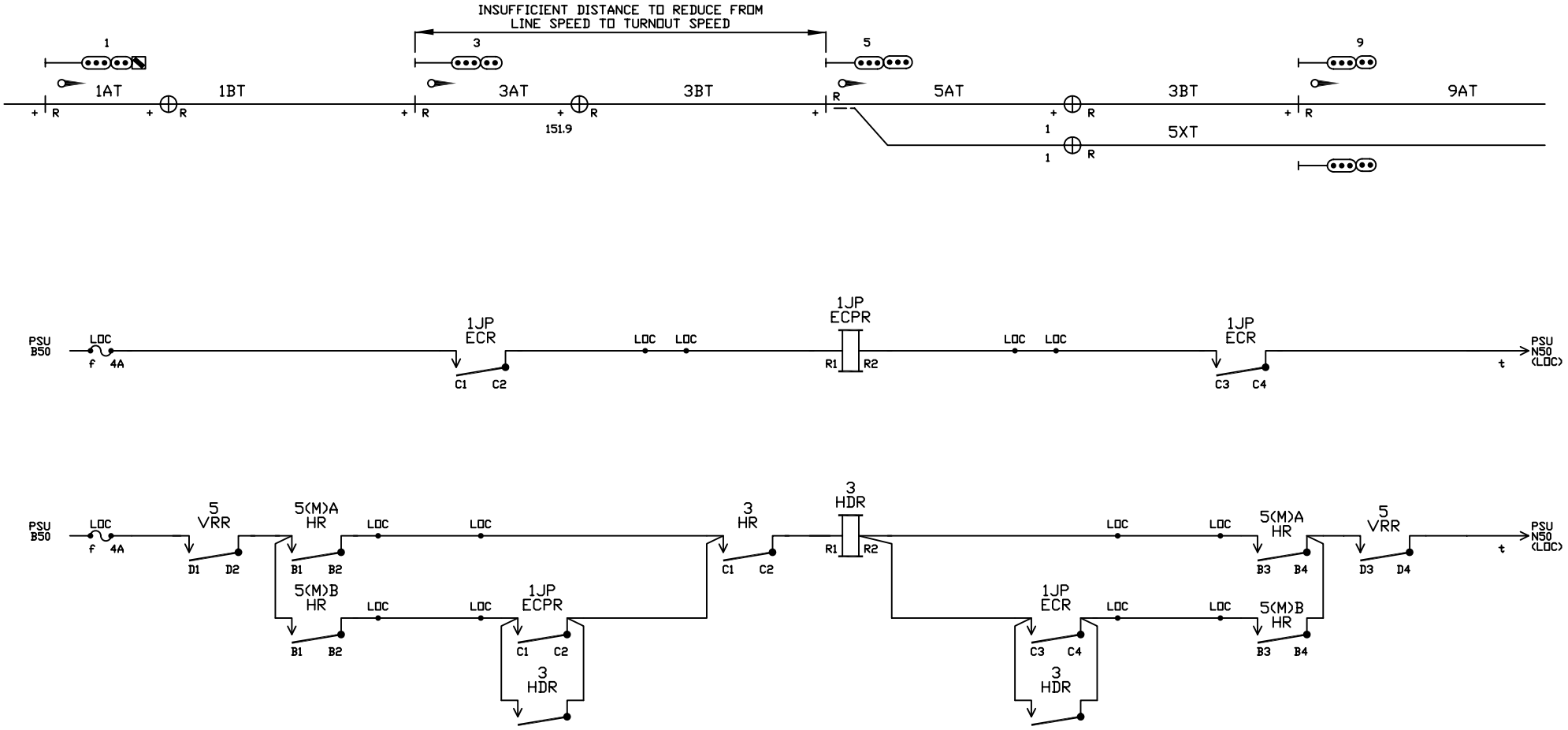


NOTE: VRR IN JPHR CIRCUIT
TO AVOID PROBLEM WITH LAMP PROVING ALARM



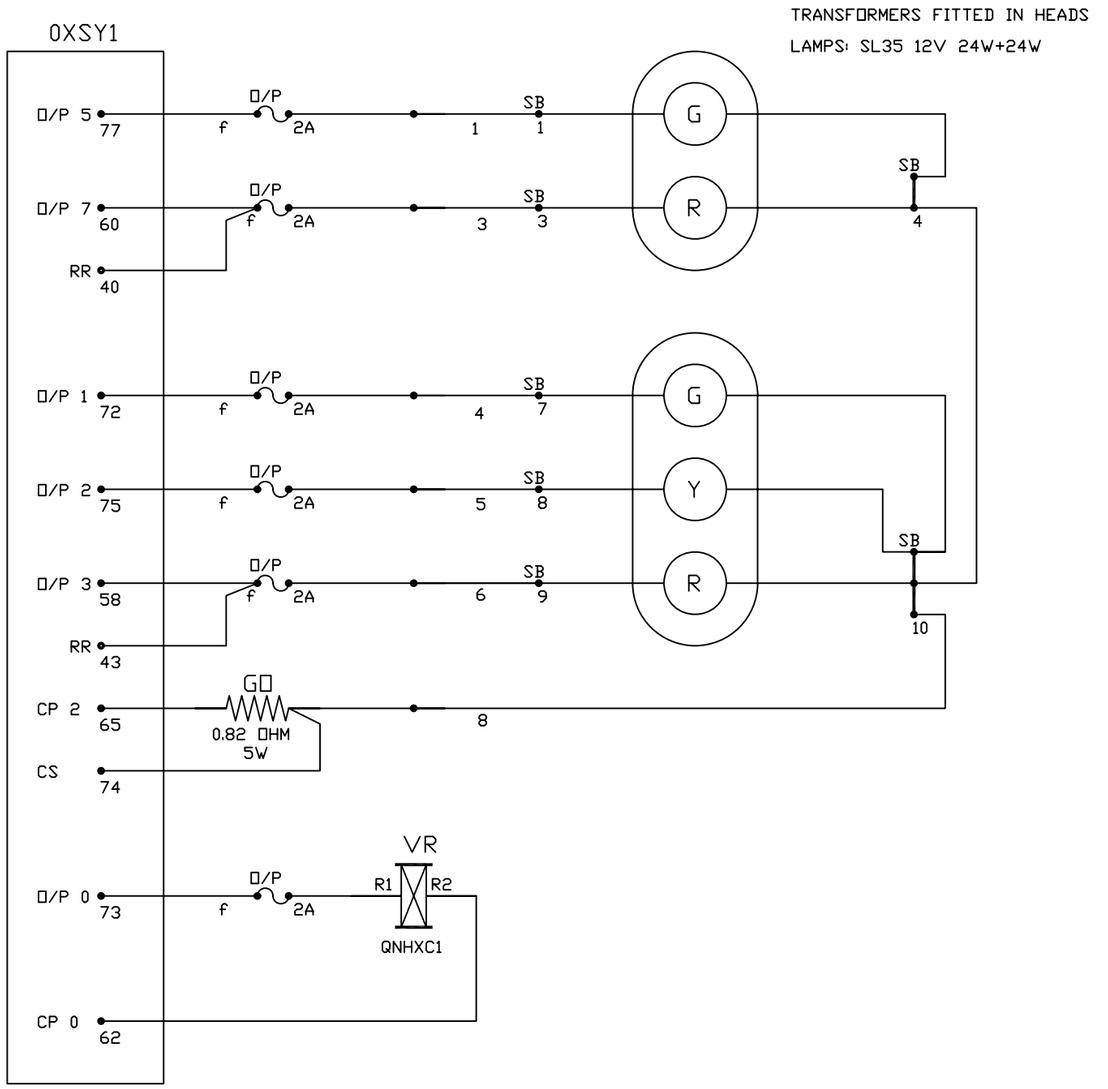
ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
01-08-97	01-06-98	01-06-98	01-09-03
JOB NUMBER			

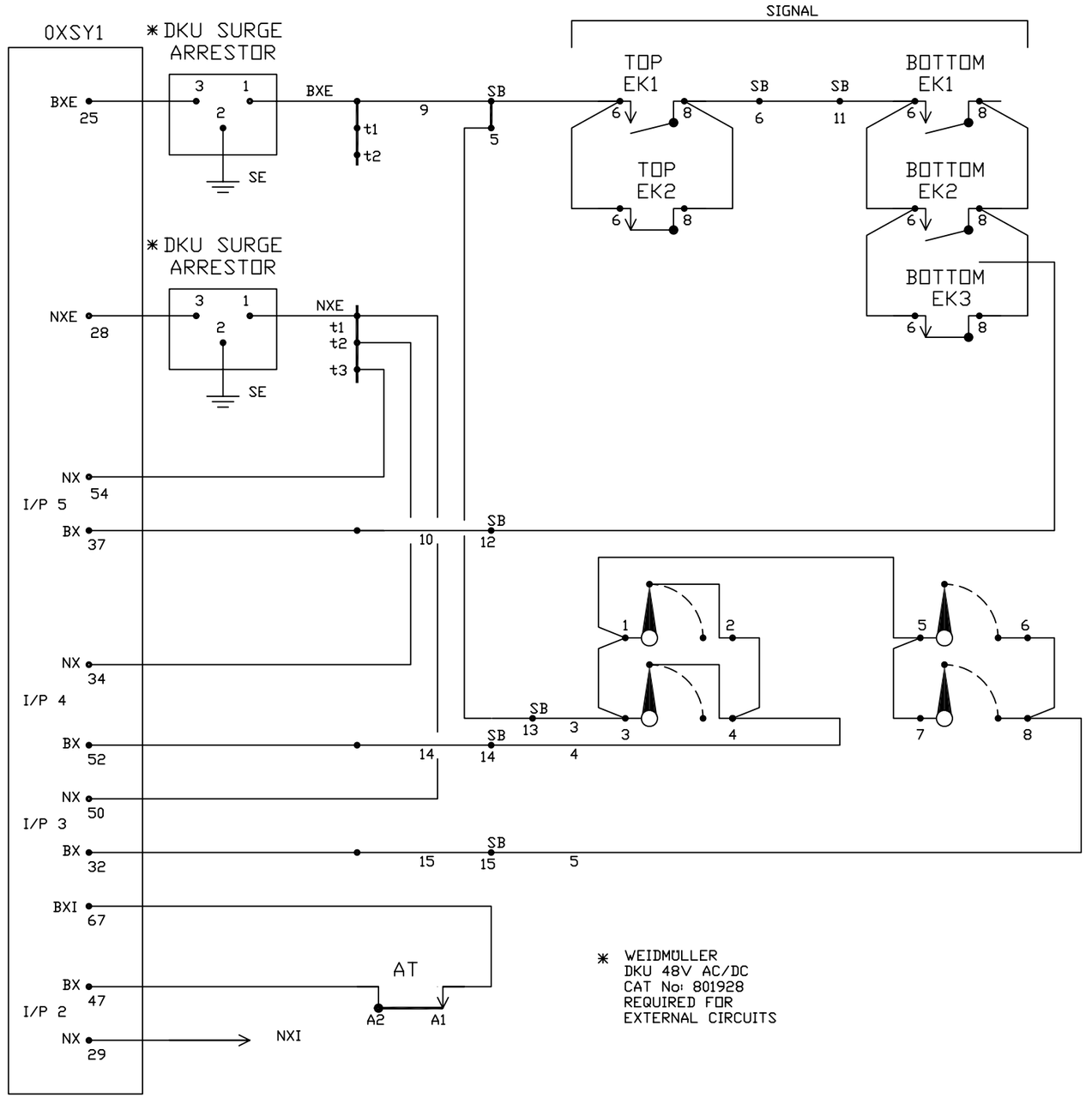
			ISSUE-05	29/6/07	10:32		Rev 01	CSTDA026	SIGNAL LIGHT OPERATING - TURNOUT REPEATER SIGNAL			SHT:A026	CB: STD

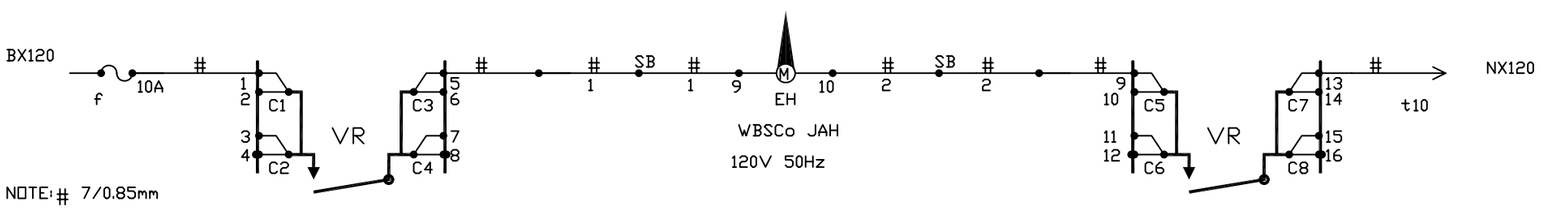


ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
01-08-97	01-06-98	01-06-98	01-09-03
JOB NUMBER			

01-09-01	ISSUE-04						Rev 01	CSTD2A50	SSI SIGNAL OPERATING-5 LIGHT SIGNAL WITH TRAIN STOP		SHT: A50	CB: STD

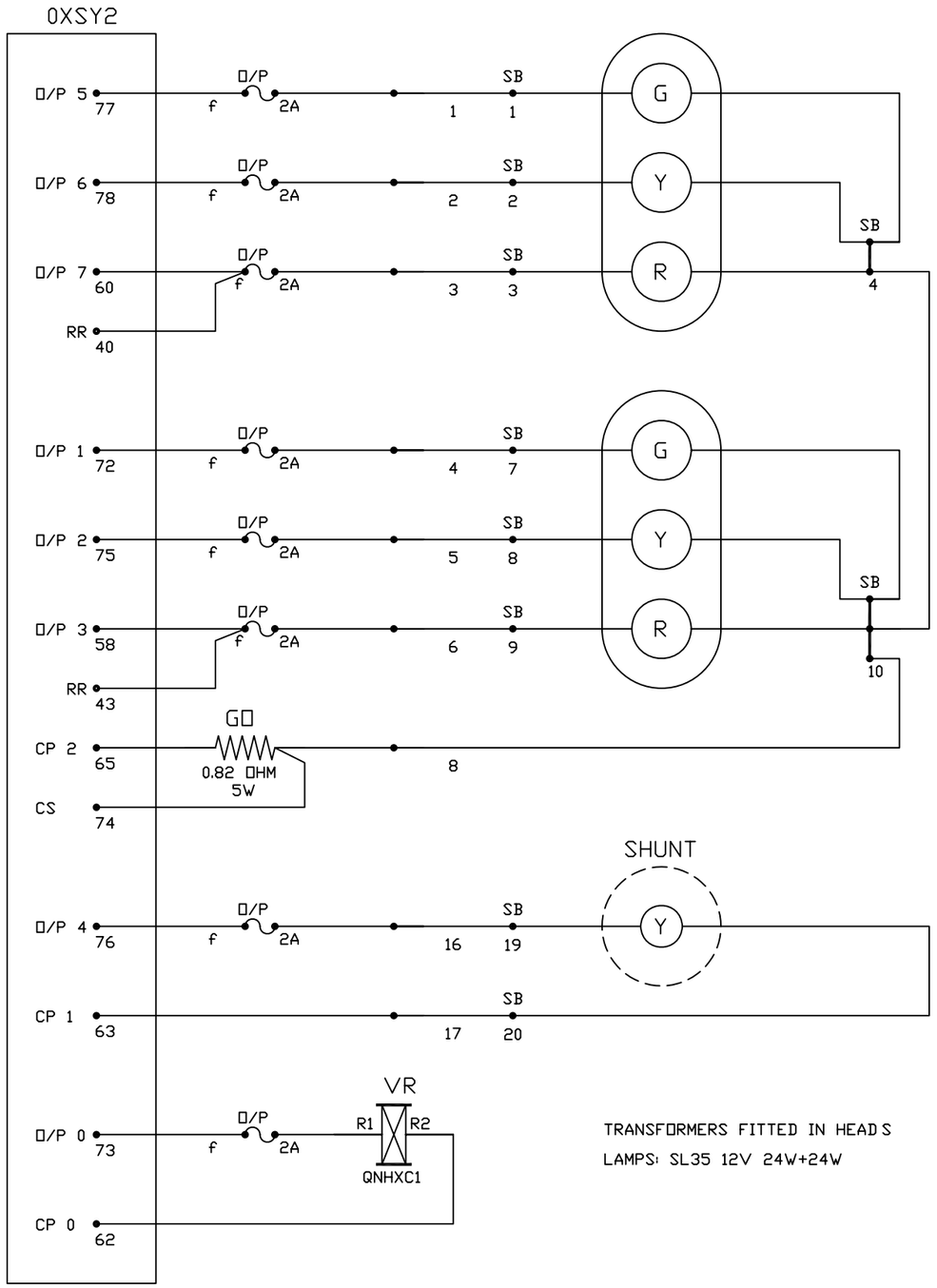




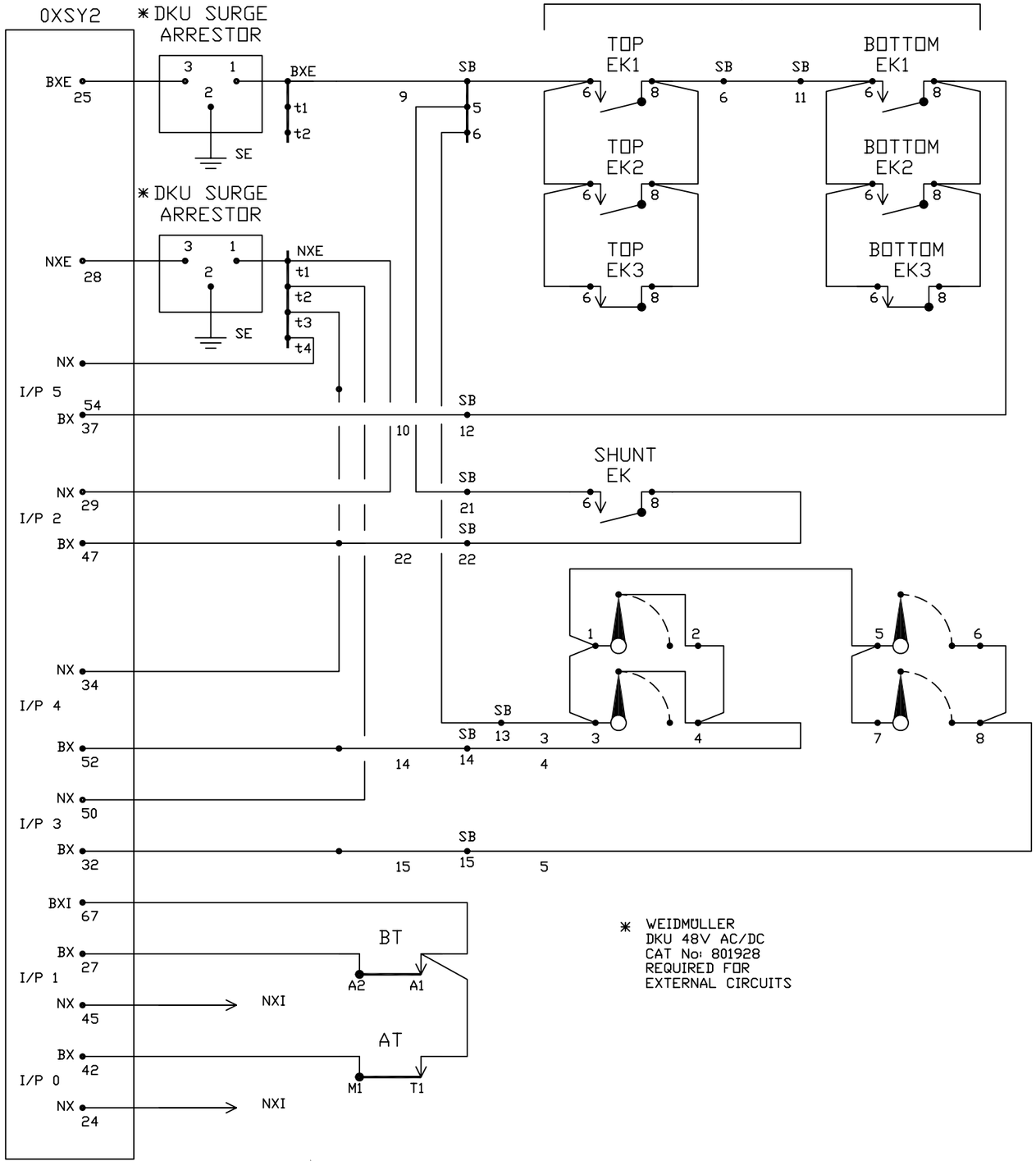


ISSUE-01	ISSUE-02	ISSUE-03		
22-2-94	23-08-95	01-08-97		

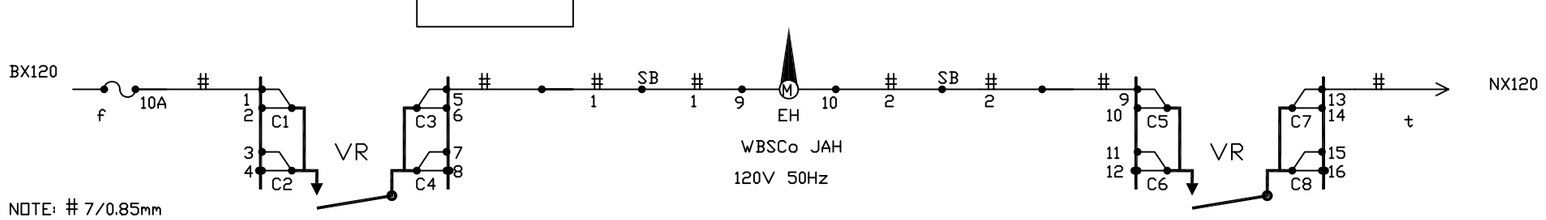
			ISSUE-05	31/1/11	10:44		Rev 01	CSTD2A51	SSI SIGNAL OPERATING-6 LIGHT SIGNAL WITH TRAIN STOP		SHT: A51	CB: STD



TRANSFORMERS FITTED IN HEADS
LAMPS: SL35 12V 24W+24W

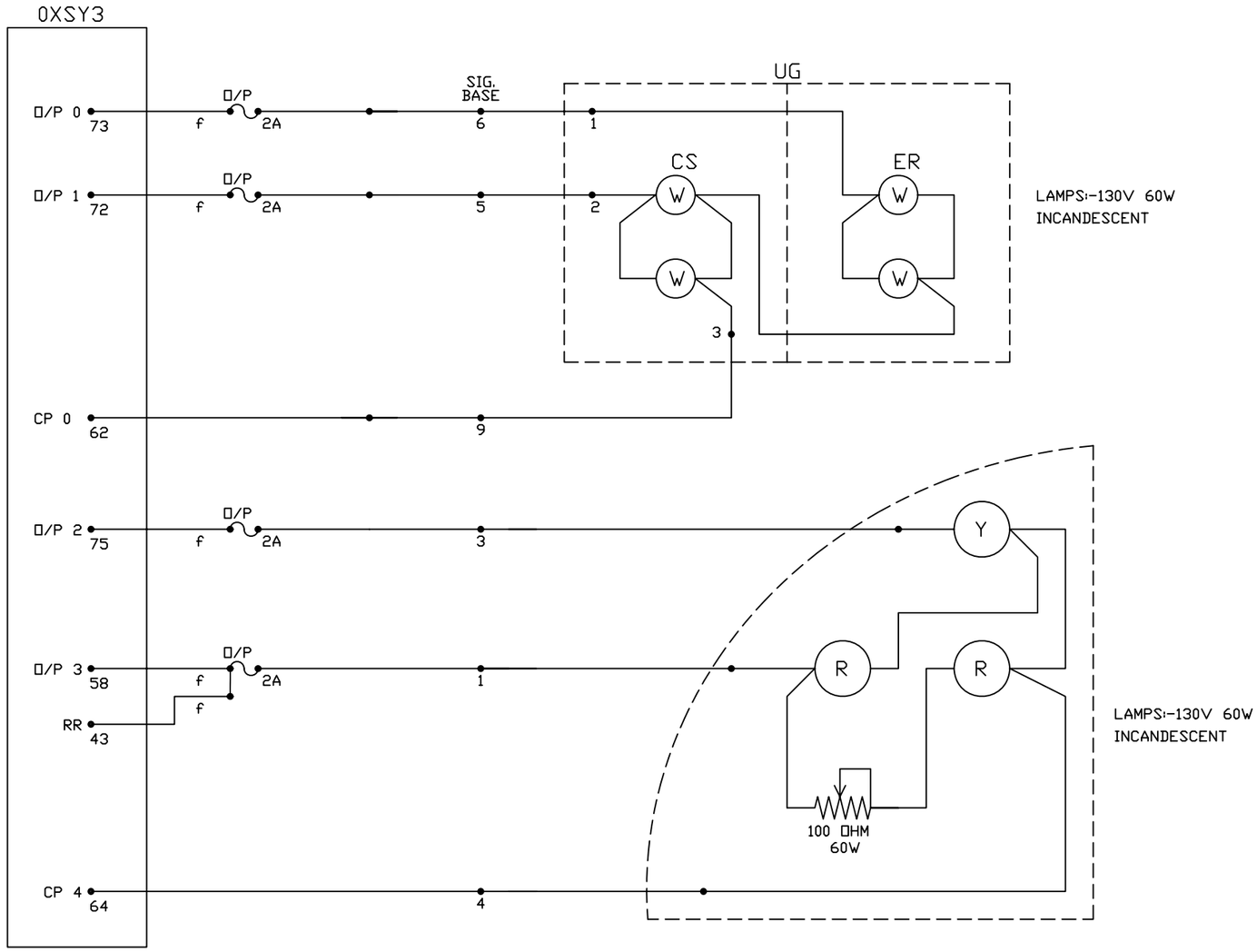


* WEIDMULLER
DKU 48V AC/DC
CAT No: 801928
REQUIRED FOR
EXTERNAL CIRCUITS

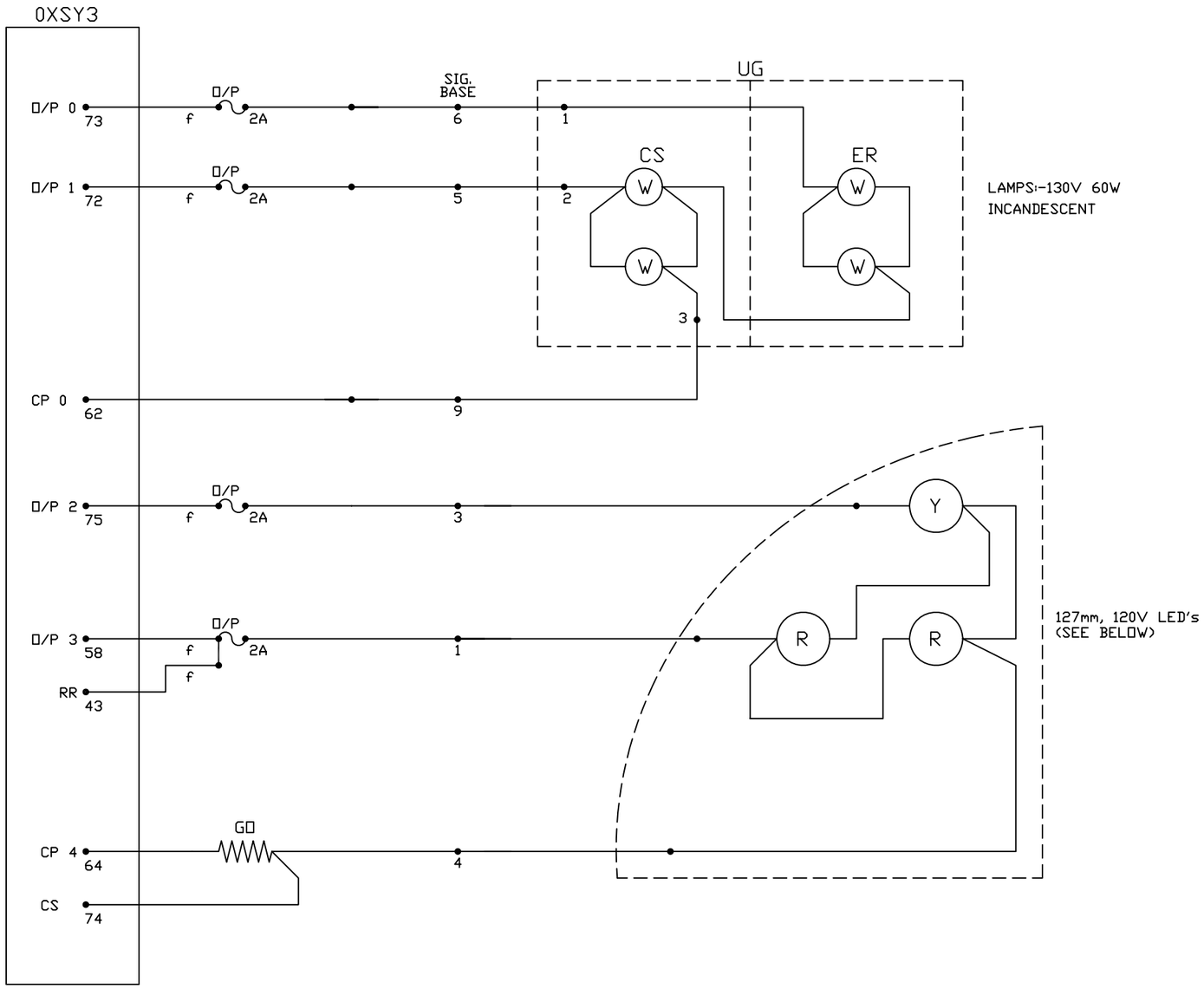


NOTE: # 7/0.85mm

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
22-02-94	23-08-95	01-08-97	01-09-01



ISSUE-01	
22-02-94	



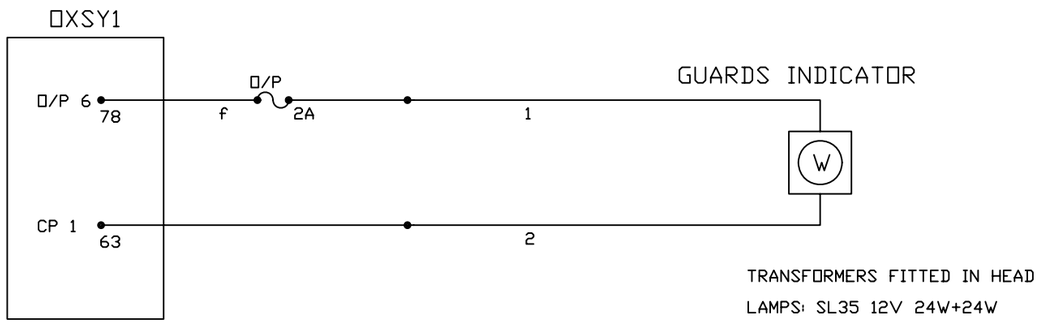
NOTES: - RETURN CURRENT PATH 4 SHOWN CONNECTED
- FAILURE OF SINGLE RED ASPECT NOT DETECTABLE

LED LAMP	1	2	3	4
ALSTOM R999-XAC127mm	10Ω 5W			10Ω 5W
WESTINGHOUSE TR3-XCFB501A	6.8Ω 5W			6.8Ω 5W
ALDRIDGE RL400-125mm	6.8Ω 5W			6.8Ω 5W

10Ω RESISTOR - RS part 159-376
FARNELL part 342-993
6.8Ω RESISTOR - RS part 159-360
FARNELL part 342-970

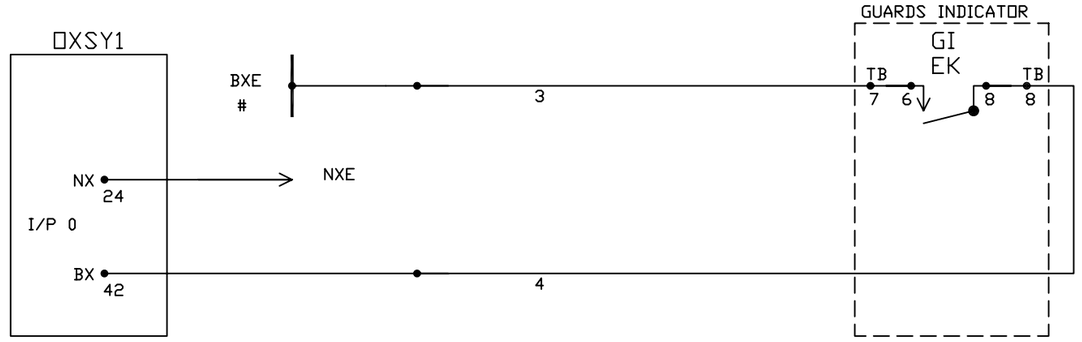
ISSUE-01	
22-02-94	

GUARDS INDICATOR OPERATING



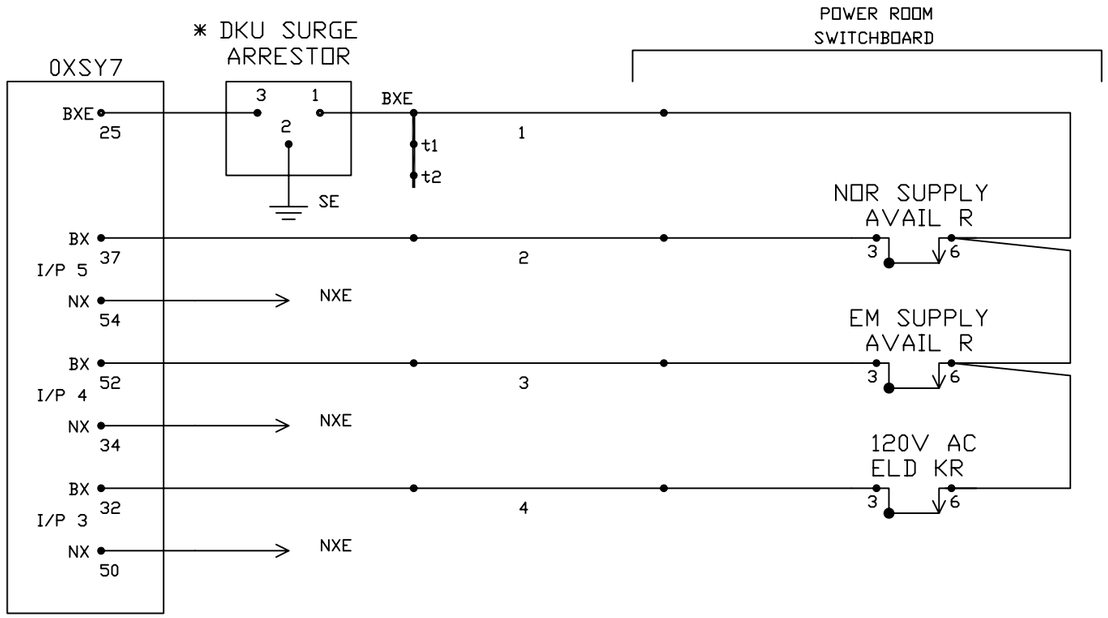
TRANSFORMERS FITTED IN HEAD
LAMPS: SL35 12V 24W+24W

GUARDS INDICATOR LAMP PROVING



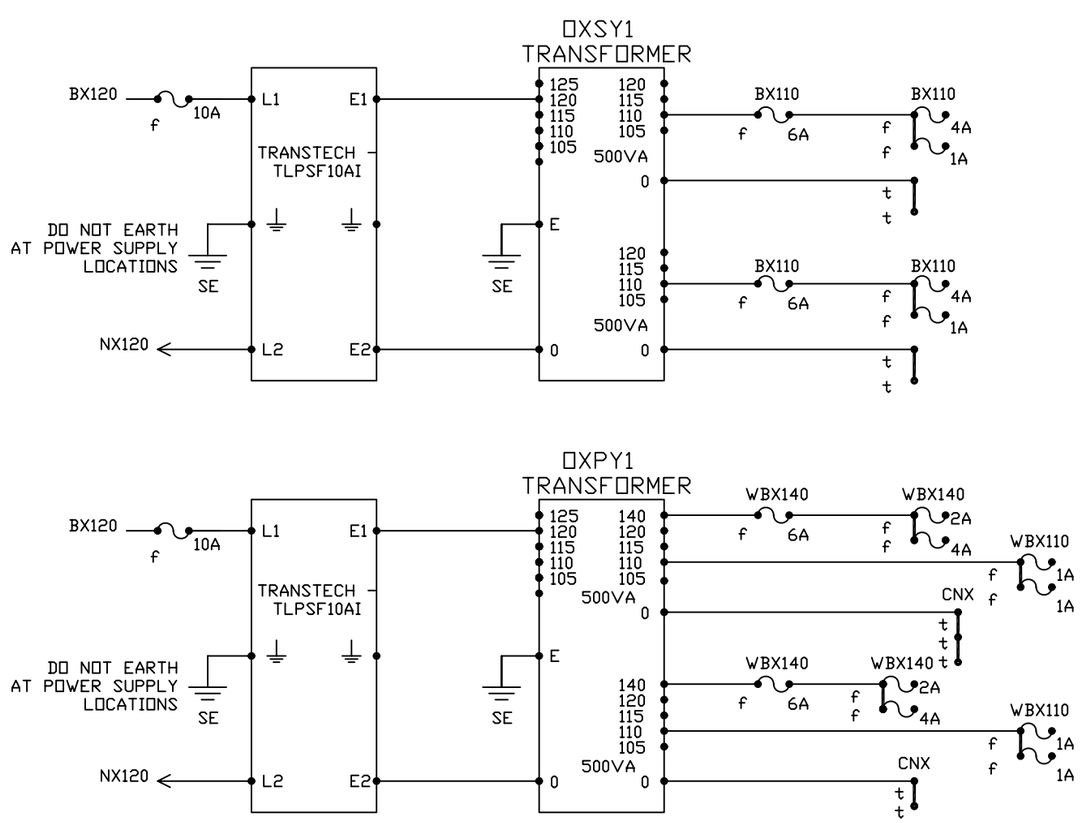
BXE AND NXE CAN BE CONNECTED TO A BUSBAR EXTERNAL TO THE UNIT

ALARM INPUTS TO TFM



* WEIDMULLER
DKU 48V AC/DC
CAT No: 801928
REQUIRED FOR
EXTERNAL CIRCUITS

ISOLATION TRANSFORMER



ISSUE-01	ISSUE-02	ISSUE-03
22-02-94	01-08-97	01-06-98

LONG DISTANCE TERMINAL MODULE A

30pr FROM COMMS ROOM(PCM)

DATA(+) PCM 1 TO LDT A	white	24
DATA(-) PCM 1 TO LDT A	blue	30
DATA(+) LDT A TO PCM 1	white	34
DATA(-) LDT A TO PCM 1	orange	31
RX CLOCK (+) PCM 1 TO LDT A	white	39
RX CLOCK (-) PCM 1 TO LDT A	green	36
TX CLOCK (+) PCM 1 TO LDT A	white	35
TX CLOCK (-) PCM 1 TO LDT A	brown	38

'1': 11 Red, 14 White, 29 Red, 28 White

'2': 12, 13, 25, 26

'3': 10, 8, 23, 22

'4': 3, 7, 18, 20

'5': 4, 5, 17, 21

'6': 2, 1, 16, 15

'A': 1(5V) 42, 0(0V) 41, 0(LSB) 40, 1 43, 2 44, 3 45, 4 46, 5 47, 6 48, 7 49, 8 50, 9 51, 10(MSB) 52, IL/TK SIDE 53

'B': 1(5V) 63, 0(0V) 62, 0(LSB) 64, 1 65, 2 66, 3 67, 4 70, 5 71, 6 72, 7 73, 8 74, 9 75, 10(MSB) 76, IL/TK SIDE 60

32 ECHO 33 80

82 DC 55

58 CHASSIS EARTH — SE

79 POWER SUPPLY FILTER EARTH — SE

BX110(3) — 1A f — 80

NX110(3) — t — 82

DATA LINK MODULE A

'A': S RX DATA, T RX RTN, B TX DATA, A TX RTN

DATA LINK MODULE B

'A': S RX DATA, T RX RTN, B TX DATA, A TX RTN

LONG DISTANCE TERMINAL MODULE B

'1': 11 Red, 14 White, 29 Red, 28 White

'2': 12, 13, 25, 26

'3': 10, 8, 23, 22

'4': 3, 7, 18, 20

'5': 4, 5, 17, 21

'6': 2, 1, 16, 15

'A': 1(5V) 42, 0(0V) 41, 0(LSB) 40, 1 43, 2 44, 3 45, 4 46, 5 47, 6 48, 7 49, 8 50, 9 51, 10(MSB) 52, IL/TK SIDE 53

'B': 1(5V) 63, 0(0V) 62, 0(LSB) 64, 1 65, 2 66, 3 67, 4 70, 5 71, 6 72, 7 73, 8 74, 9 75, 10(MSB) 76, IL/TK SIDE 60

32 ECHO 33 80

82 DC 55

58 CHASSIS EARTH — SE

79 POWER SUPPLY FILTER EARTH — SE

BX110(4) — f 1A — 80

NX110(4) — t — 82

24	Red	DATA(+) PCM 1 TO LDT B
30	blue	DATA(-) PCM 1 TO LDT B
34	Red	DATA(+) LDT B TO PCM 1
31	orange	DATA(-) LDT B TO PCM 1
39	Red	RX CLOCK (+) PCM 1 TO LDT B
36	green	RX CLOCK (-) PCM 1 TO LDT B
35	Red	TX CLOCK (+) PCM 1 TO LDT B
38	brown	TX CLOCK (-) PCM 1 TO LDT B

30pr FROM COMMS ROOM(PCM)

LONG DISTANCE TERMINAL MODULE A ANALYSIS (WIRE SIDE)

● DENOTES CRIMPED PIN

⊗ DENOTES WIRE WRAP PIN

GUIDESOCKET GUIDEPIN JACKSCREW GUIDESOCKET

3 2 1
7 5 4
11 10 8
14 13 12
17 16 15
21 20 18
24 23 22
27 26 25
30 29 28
33 32 31
36 35 34
39 38 37
42 41 40
45 44 43
48 47 46
51 50 49
54 53 52
57 56 55
60 59 58
64 63 62
67 66 65
72 71 70
75 74 73
78 77 76
82 80 79

GUIDEPIN JACKSOCKET GUIDESOCKET GUIDESOCKET

LONG DISTANCE TERMINAL MODULE B ANALYSIS (WIRE SIDE)

● DENOTES CRIMPED PIN

⊗ DENOTES WIRE WRAP PIN

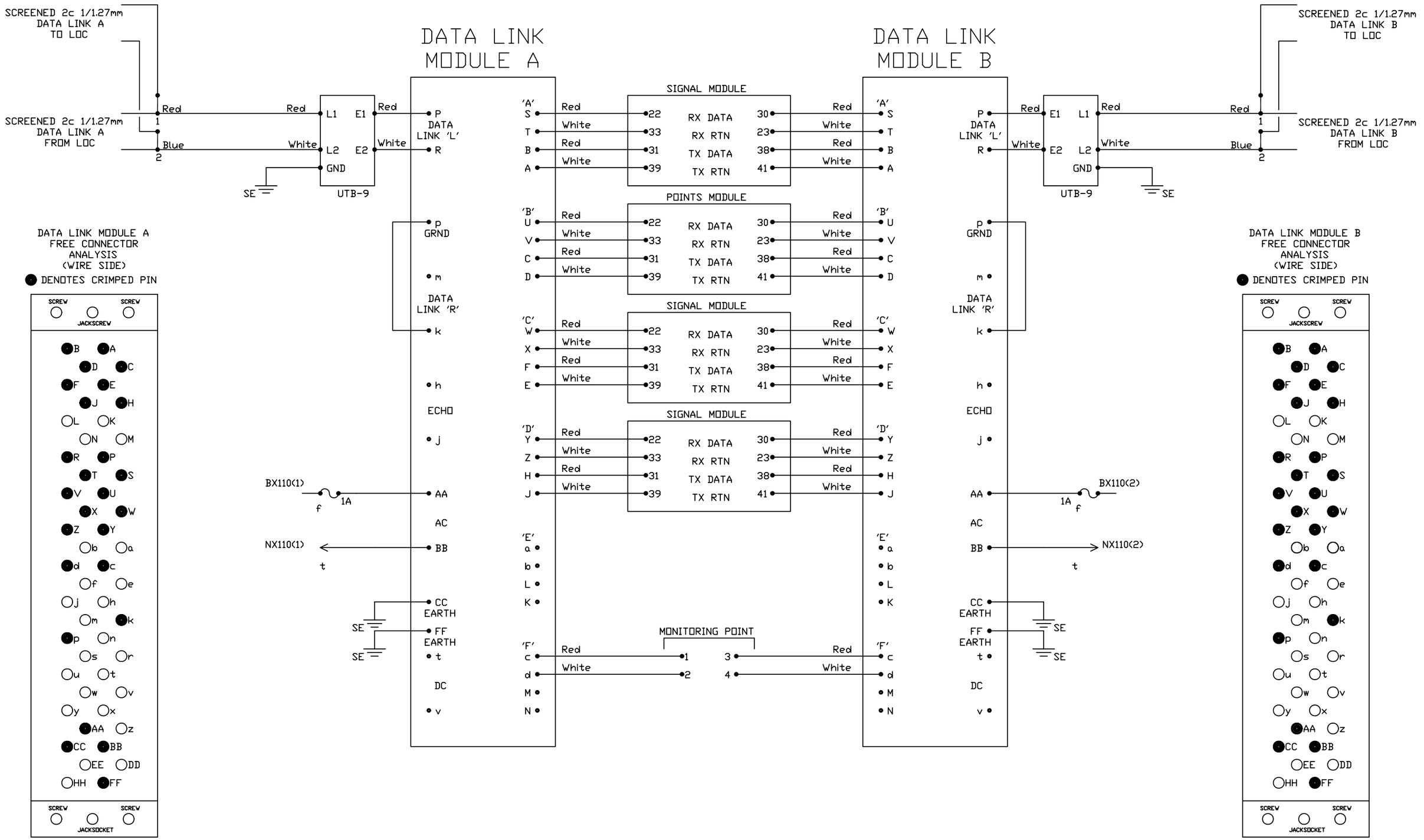
GUIDESOCKET GUIDEPIN JACKSCREW GUIDESOCKET

3 2 1
7 5 4
11 10 8
14 13 12
17 16 15
21 20 18
24 23 22
27 26 25
30 29 28
33 32 31
36 35 34
39 38 37
42 41 40
45 44 43
48 47 46
51 50 49
54 53 52
57 56 55
60 59 58
64 63 62
67 66 65
72 71 70
75 74 73
78 77 76
82 80 79

GUIDEPIN JACKSOCKET GUIDESOCKET GUIDESOCKET

NOTE: 5V STRAPS 1/0.50mm RED
0V STRAPS 1/0.50mm BLACK
RED/WHITE 24/0.20 mm TWISTED
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

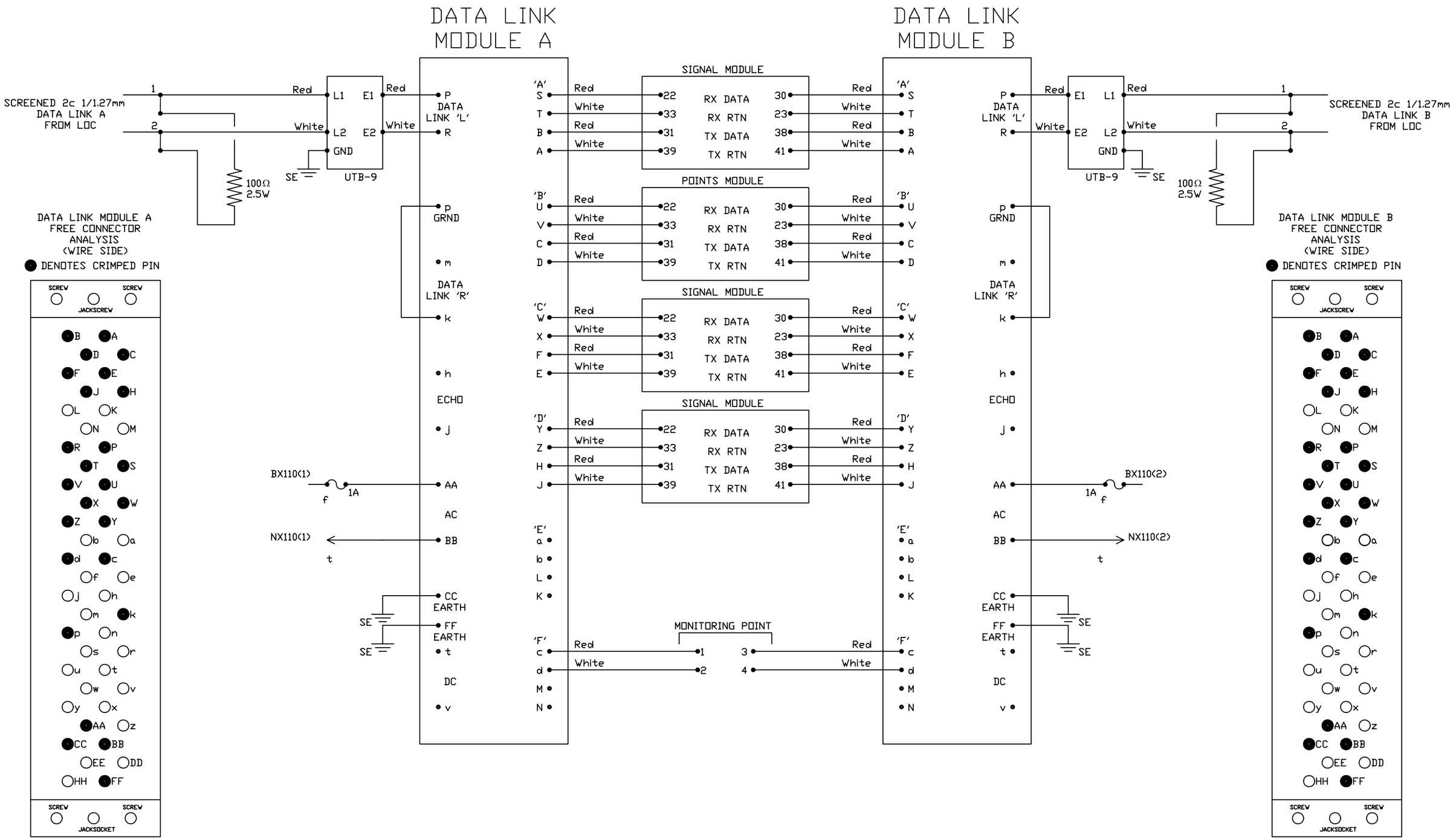
NON POWER SUPPLY LOCATION



NOTE: RED/WHITE 24/0.20 mm TWISTED
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE-01	
22-02-94	

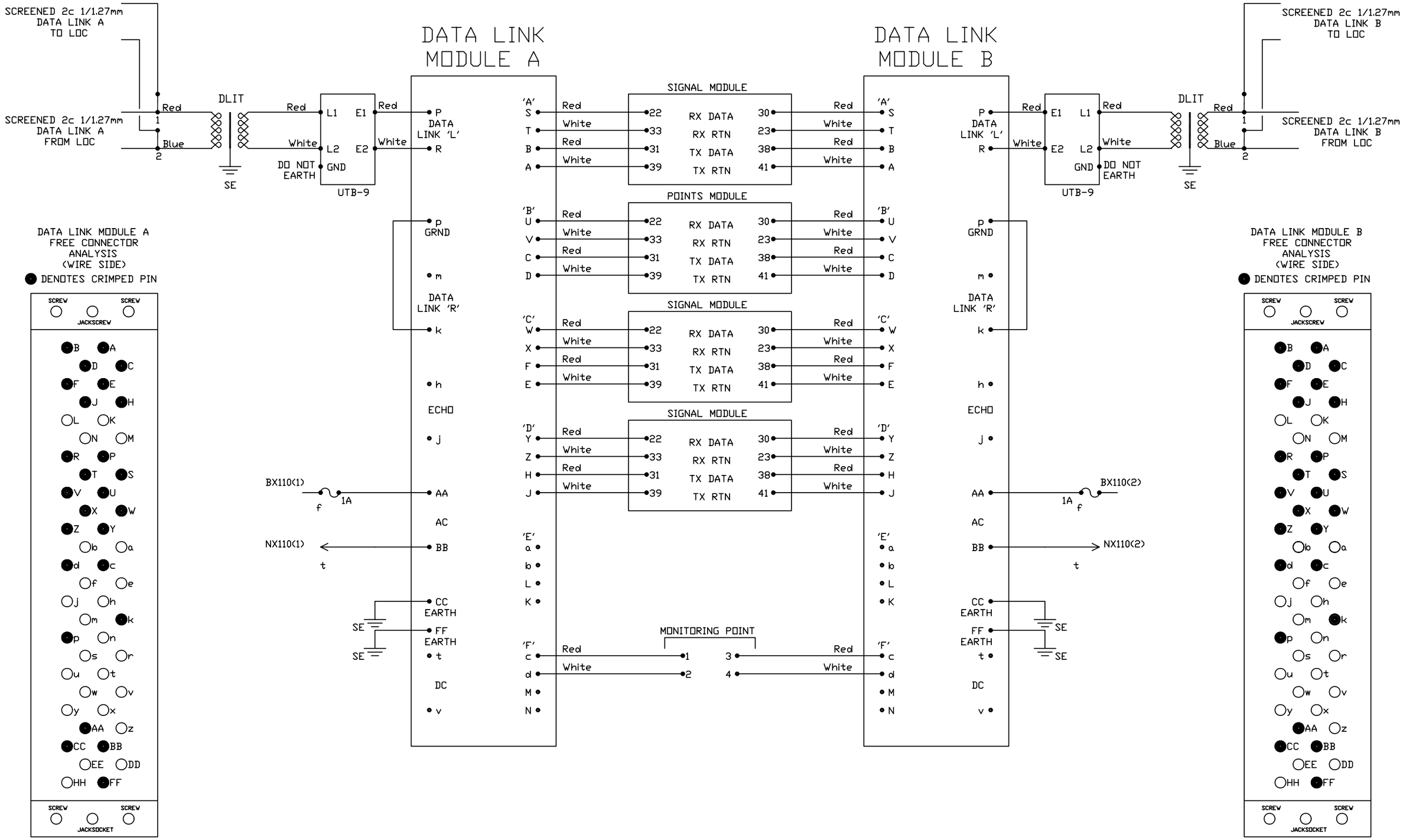
NON POWER SUPPLY LOCATION - END OF DATA LINK



NOTE: RED/WHITE 24/0.20 mm TWISTED
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE-01	
22-02-94	

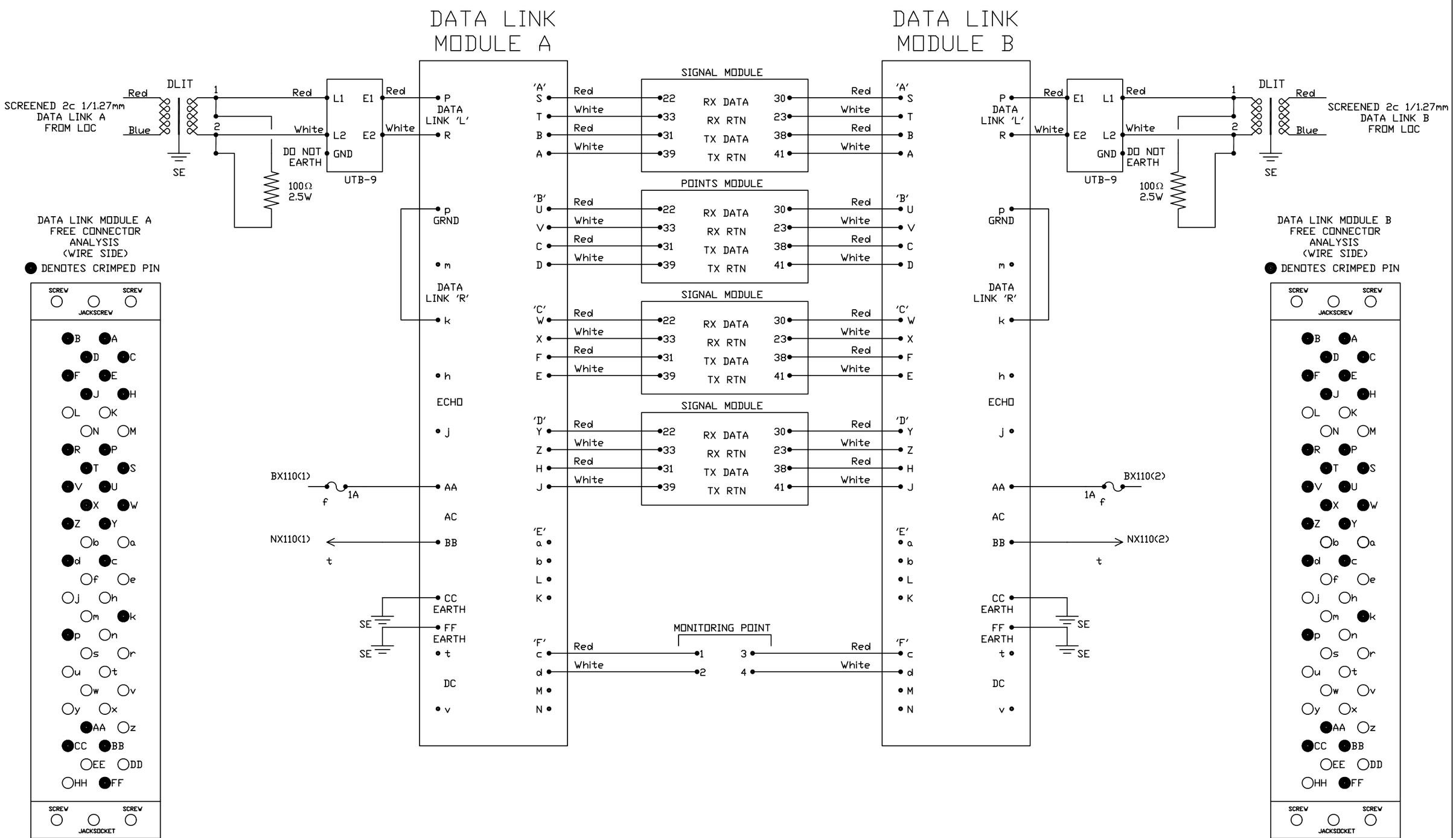
120VAC POWER SUPPLY LOCATION



NOTE: RED/WHITE 24/0.20 mm TWISTED
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE-01	ISSUE-02
22-02-94	01-09-01

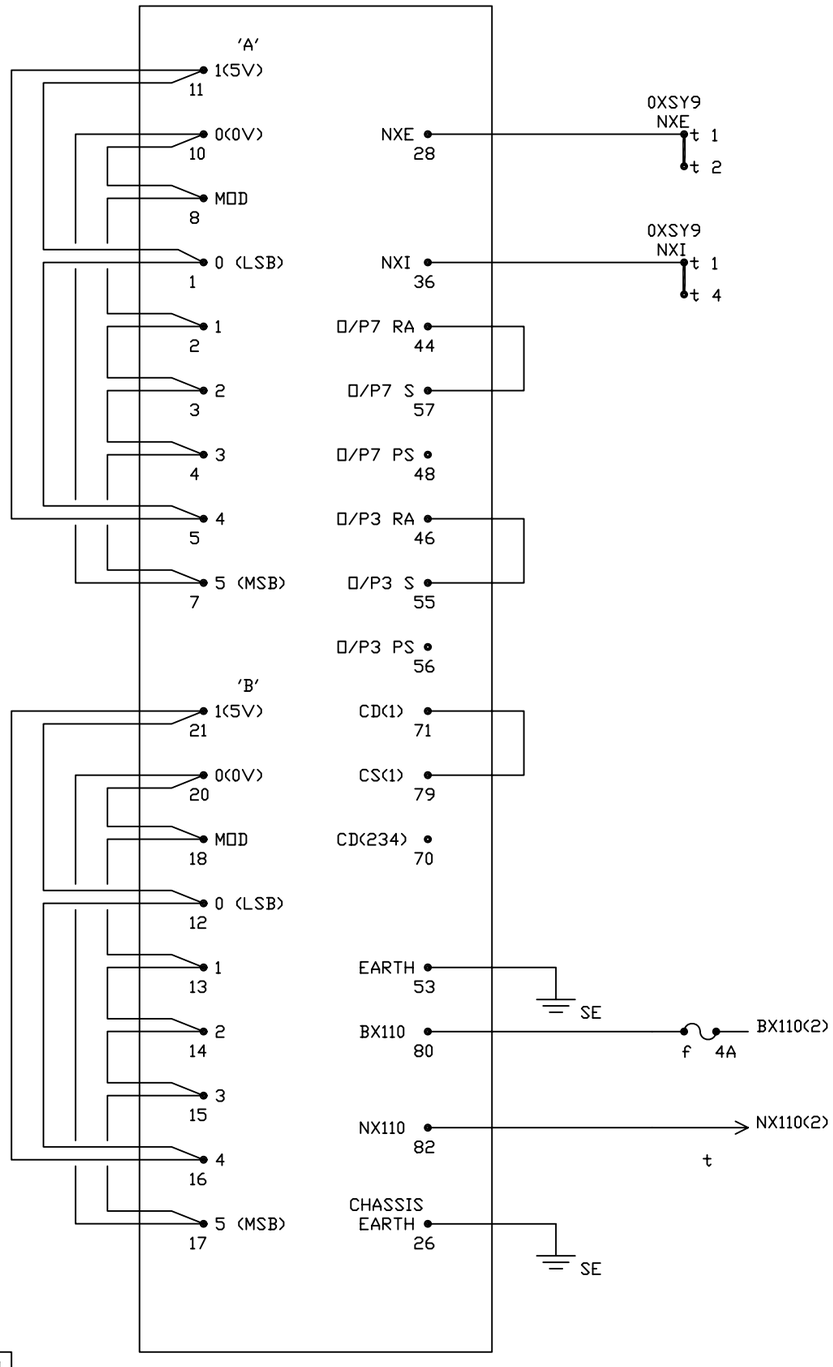
120VAC POWER SUPPLY LOCATION- END OF DATA LINK



NOTE: RED/WHITE 24/0.20 mm TWISTED
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE-01	ISSUE-02
22-02-94	01-09-01

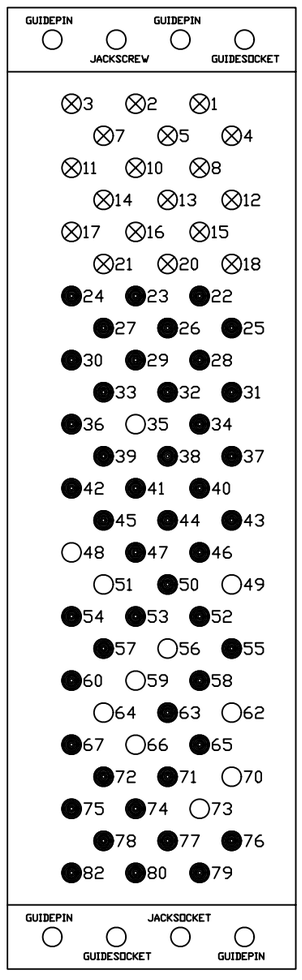
SIGNAL MODULE 0XSY9



0XSY9
FREE CONNECTOR
ANALYSIS
(WIRE SIDE)

● DENOTES CRIMPED PIN

⊗ DENOTES WIREWRAP PIN, FITTED WITH ANTI-ROTATION COLLAR



SIGNAL MODULE 0XSY9

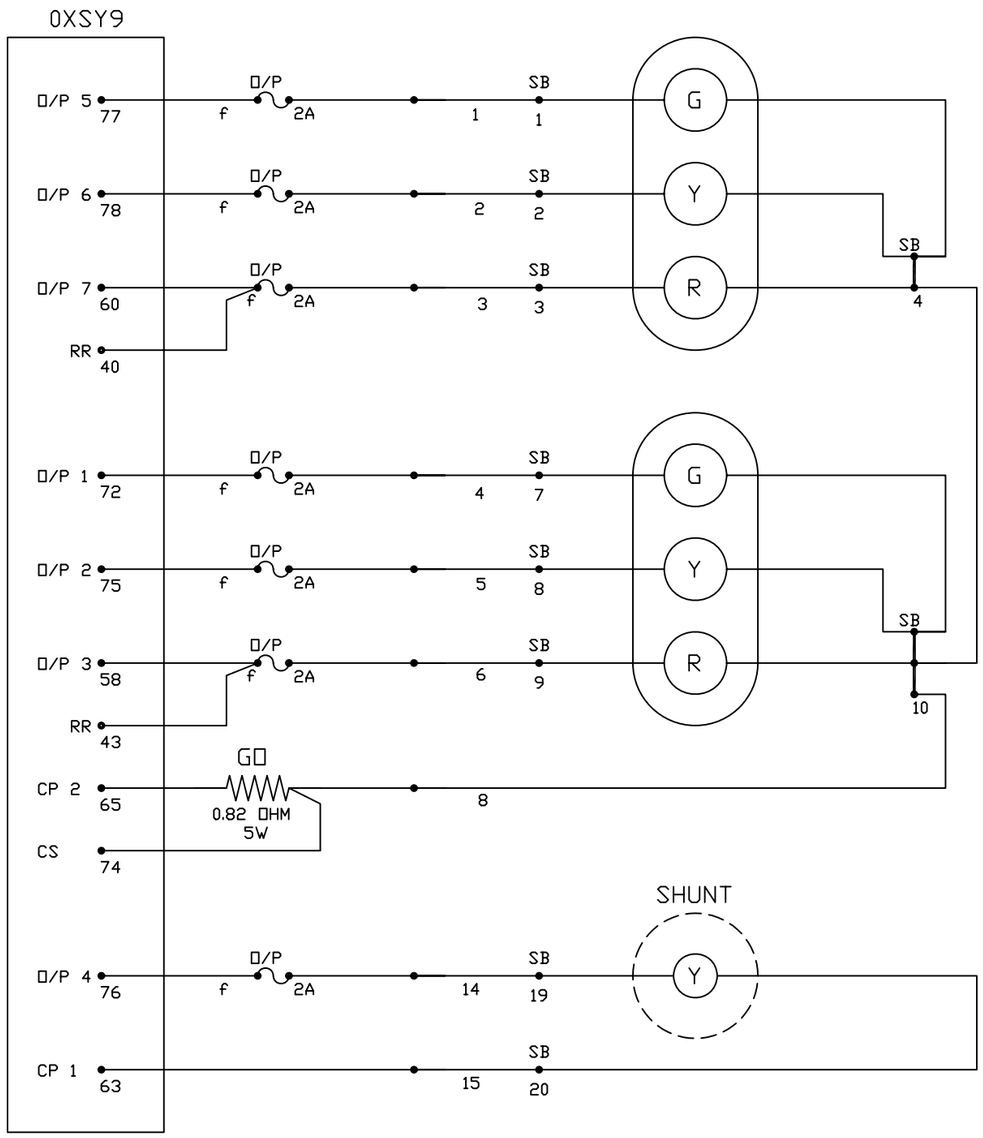
INTERLOCKING						I/L ID NO	0X		
ADDRESS BIT		4	3	2	1	0(LSB)	0V	5V	MODIFIER
DECIMAL/BINARY	32	16	8	4	2	1			
PROCESSOR A PIN NO	7	5	4	3	2	1	10	11	8
PROCESSOR B PIN NO	17	16	15	14	13	12	20	21	18
BINARY ADDRESS	0	1	0	0	0	1	0	1	0

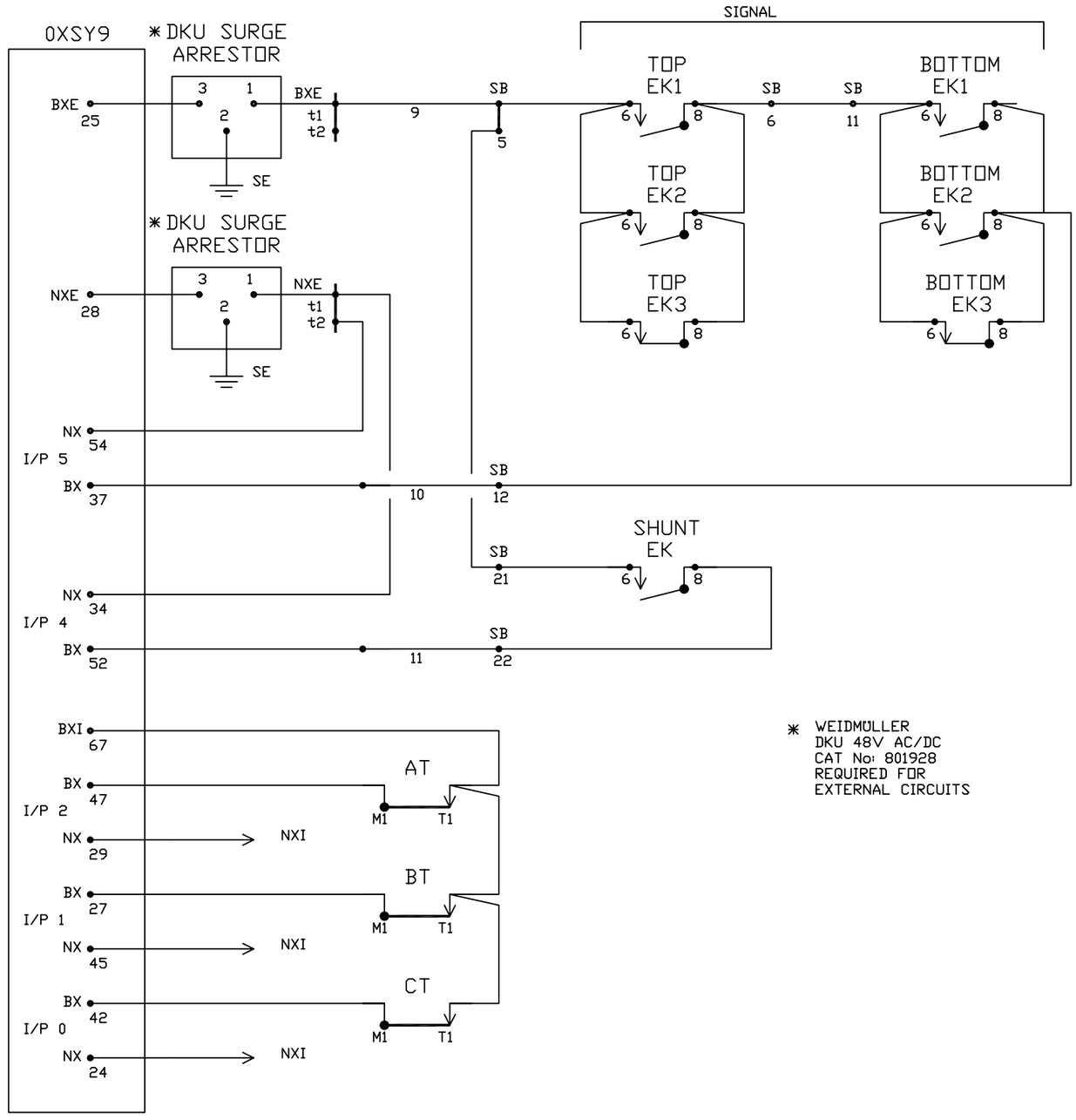
PIN			RR OR PS							
				INPUT	NONE	7	6			
				PIN	62	63	65	66	64	
				CURRENT PATHS	0	1	2	3	4	
				LAMP PROVING	NONE	35W	2x60W	125W	35W	
BX	RR	LABEL		FUNCTION						
60	40	OUTPUT 7	RR	RGE			X			
78		OUTPUT 6	PS	HGE			X			
77		OUTPUT 5	PS	DGE			X			
76		OUTPUT 4	PS	(SUB)GE		X				
58	43	OUTPUT 3	RR	RGE			X			
75		OUTPUT 2	PS	HGE			X			
72		OUTPUT 1	PS	DGE			X			
73		OUTPUT 0	PS							
		FIXED SOURCE								
		FIXED SOURCE								
		FIXED SOURCE								
		FIXED SOURCE								
		INPUT CONTACT SENSING SOURCE			BXI	NXI	BXE	NXE		
BX	NX				67	36	25	28		
37	54	INPUT 5		EK			X	X		
52	34	INPUT 4		(SUB)EK			X	X		
32	50	INPUT 3		BT TR	X	X				
47	29	INPUT 2		AT TR	X	X				
27	45	INPUT 1		BT TR	X	X				
42	24	INPUT 0		CT TR	X	X				

NOTE: 5V STRAPS 1/0.50mm RED
0V STRAPS 1/0.50mm BLACK
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE 01
22-02-94

01-09-01	ISSUE-04						Rev 01	CSTD2A57	SSI SIGNAL OPERATING-6 LIGHT SIGNAL		SHT: A57	CB: STD



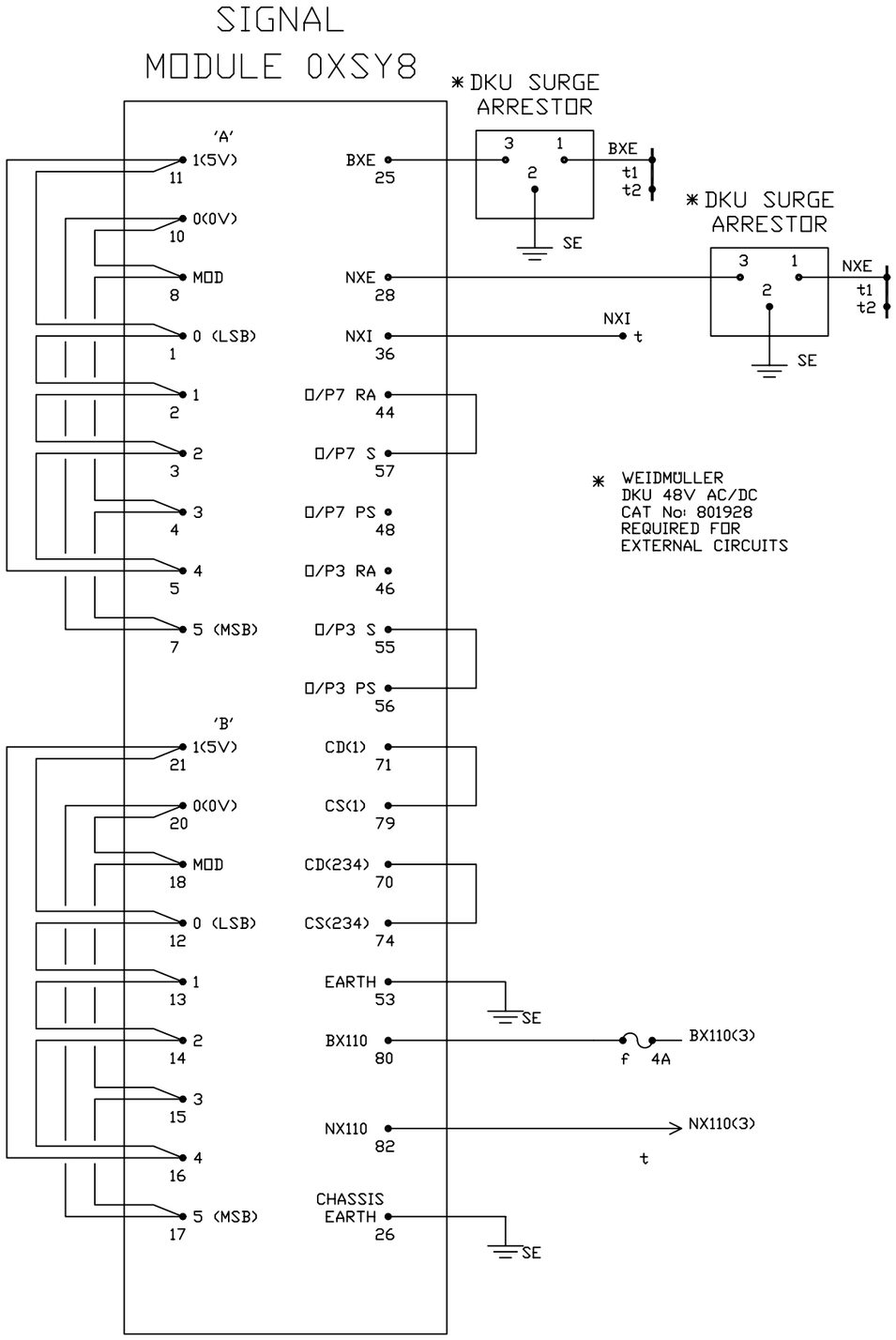


* WEIDMULLER
DKU 48V AC/DC
CAT No: 801928
REQUIRED FOR
EXTERNAL CIRCUITS

TRANSFORMERS FITTED IN HEADS

LAMPS: SL35 12V 24W+24W

ISSUE-01	ISSUE-02	ISSUE-03		
22-02-94	23-08-95	01-08-97		

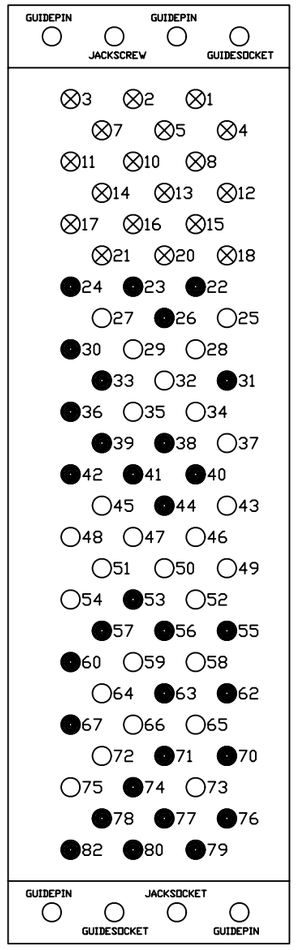


* WEIDMULLER
DKU 48V AC/DC
CAT No: 801928
REQUIRED FOR
EXTERNAL CIRCUITS

FREE CONNECTOR
ANALYSIS
(WIRE SIDE)

● DENOTES CRIMPED PIN

⊗ DENOTES WIREWRAP PIN, FITTED WITH ANTI-ROTATION COLLAR



SIGNAL MODULE 0XSY8

INTERLOCKING					I/L ID NO	0X				
ADDRESS BIT		4	3	2	1	0(LSB)	0V	5V	MODIFIER	
DECIMAL/BINARY	32	16	8	4	2	1				
PROCESSOR A PIN NO	7	5	4	3	2	1	10	11	8	
PROCESSOR B PIN NO	17	16	15	14	13	12	20	21	18	
BINARY ADDRESS	0	1	0	1	1	1	0	1	0	

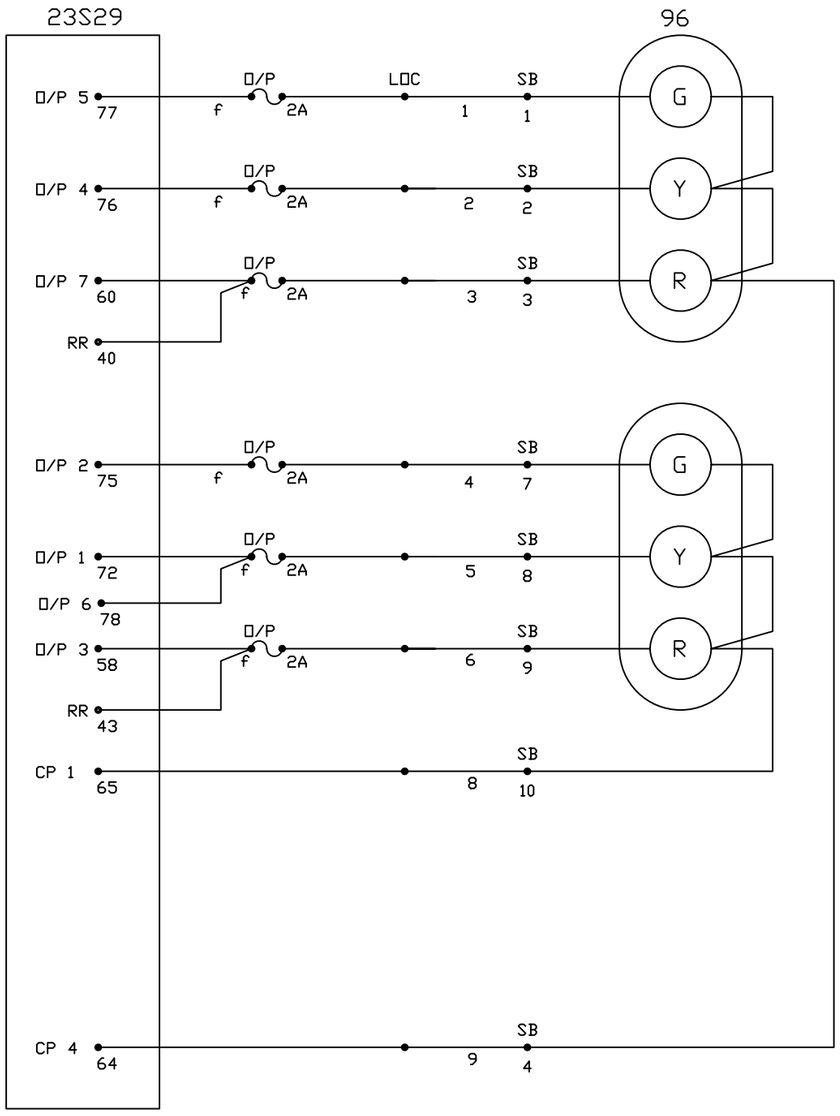
	RR OR PS	INPUT	NONE	7	6		
		PIN	62	63	65	66	64
		CURRENT PATHS	0	1	2	3	4
PIN		LAMP PROVING	NONE	35W	2x60W	125W	35W

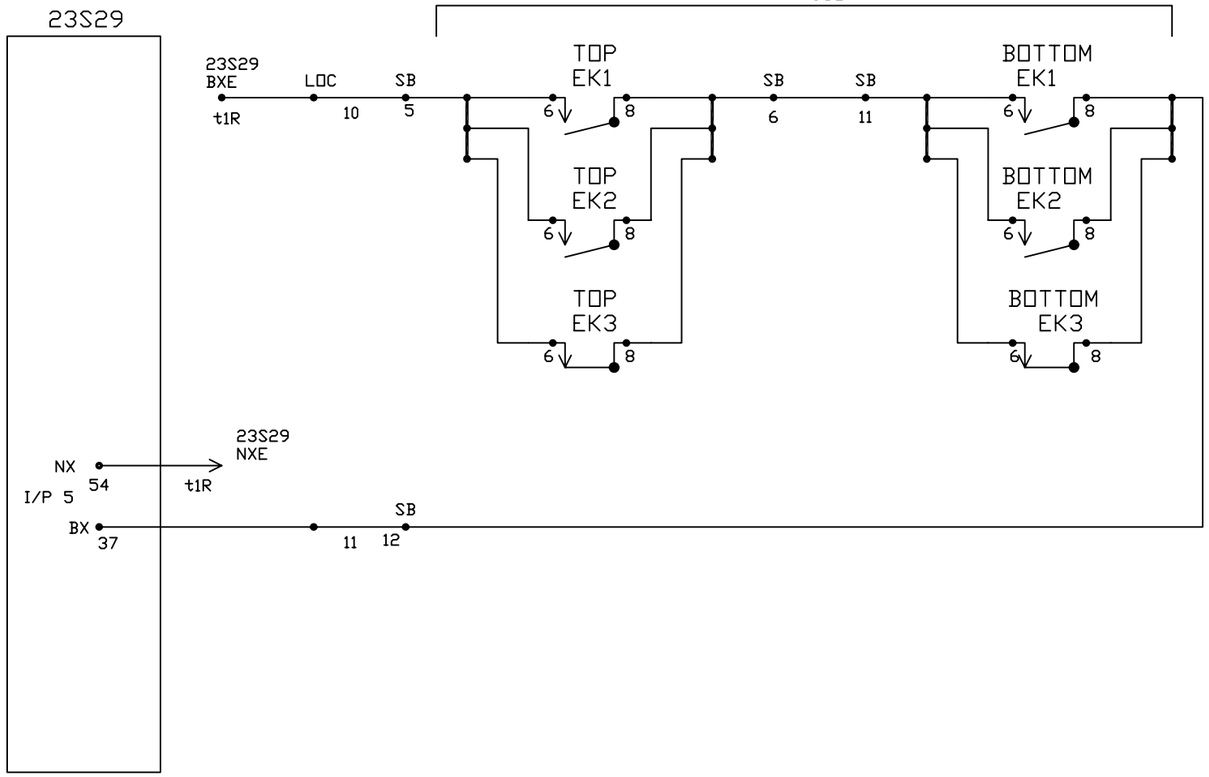
BX	RR	LABEL		FUNCTION					
60	40	OUTPUT 7	RR	RGE		X			
78		OUTPUT 6	PS	HGE		X			
77		OUTPUT 5	PS	(CS) UGE	X				
76		OUTPUT 4	PS	(UB) UGE	X				
58		OUTPUT 3	PS						
75		OUTPUT 2	PS						
72		OUTPUT 1	PS						
73		OUTPUT 0	PS						
		FIXED SOURCE							
		FIXED SOURCE							
		FIXED SOURCE							
		FIXED SOURCE							
		INPUT CONTACT SENSING SOURCE			BXI	NXI	BXE	NXE	
BX	NX				67	36	25	28	
37	54	INPUT 5							
52	34	INPUT 4							
32	50	INPUT 3							
47	29	INPUT 2							
27	45	INPUT 1							
42	24	INPUT 0		BT TR	X	X			

NOTE: 5V STRAPS 1/0.50mm RED
0V STRAPS 1/0.50mm BLACK
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

ISSUE 01	ISSUE 02	ISSUE 03
22-02-94	01-05-96	01-08-97

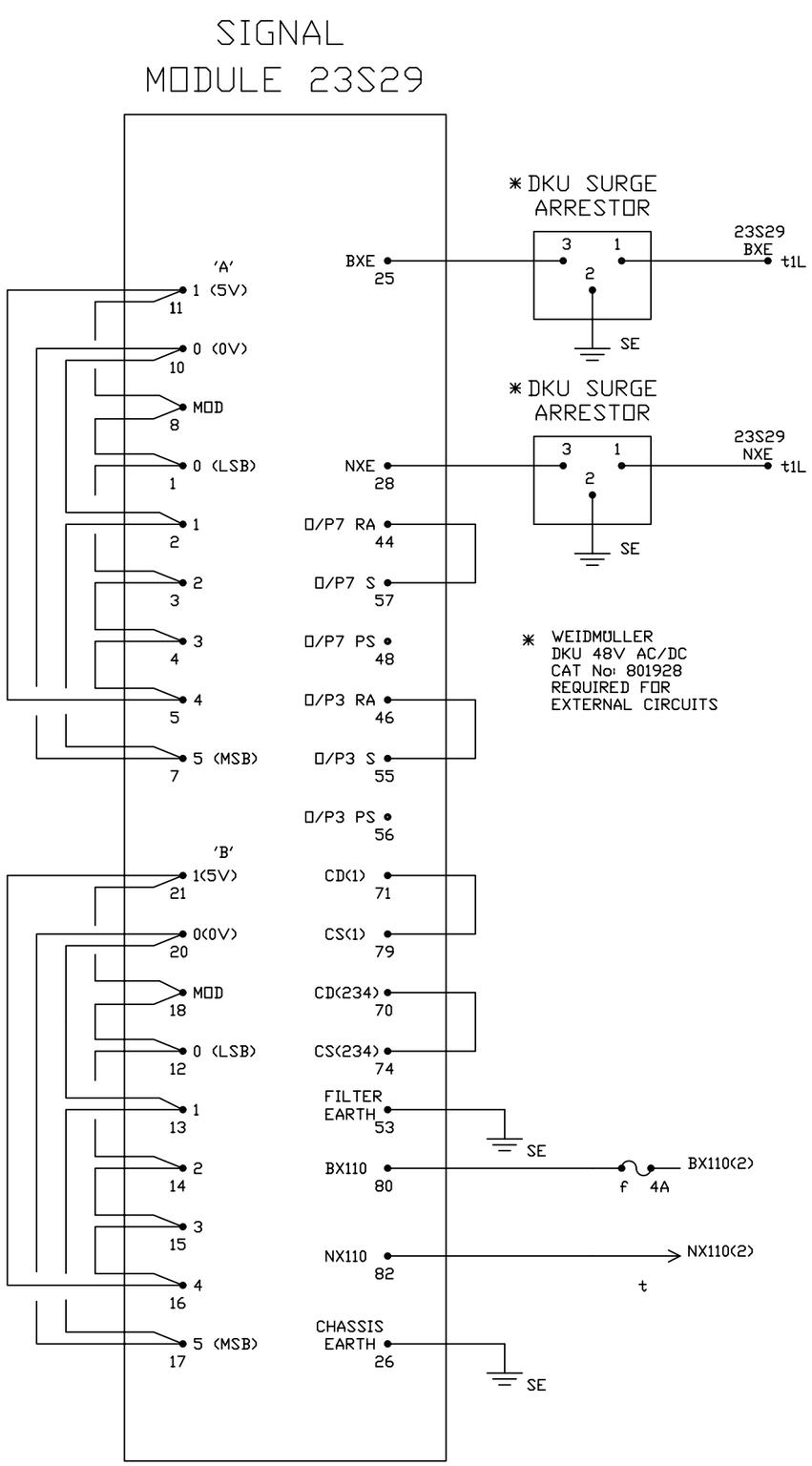
01-09-01	ISSUE-01						Rev 01	CSTDA59	SSI SIGNAL OPERATING - FLASHING LOWER YELLOW	PART 1/2	SHT: A59	CB: STD





TRANSFORMERS FITTED IN HEADS

LAMPS: SL35 12V 24W+24W

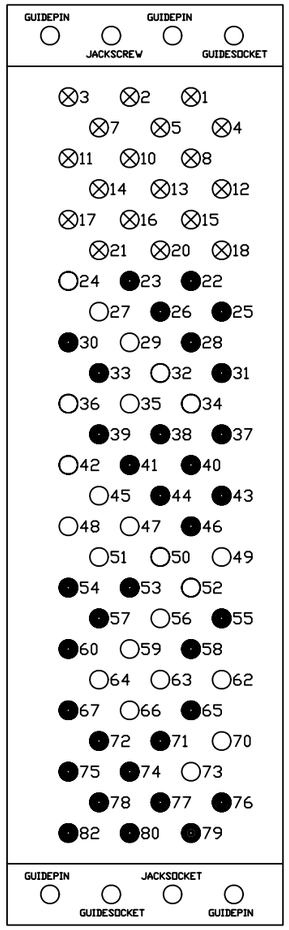


* WEIDMULLER
DKU 48V AC/DC
CAT No: 801928
REQUIRED FOR
EXTERNAL CIRCUITS

23S29
FREE CONNECTOR
ANALYSIS
(WIRE SIDE)

● DENOTES CRIMPED PIN

⊗ DENOTES WIREWRAP PIN, FITTED WITH ANTI-ROTATION COLLAR



SIGNAL MODULE 23S29

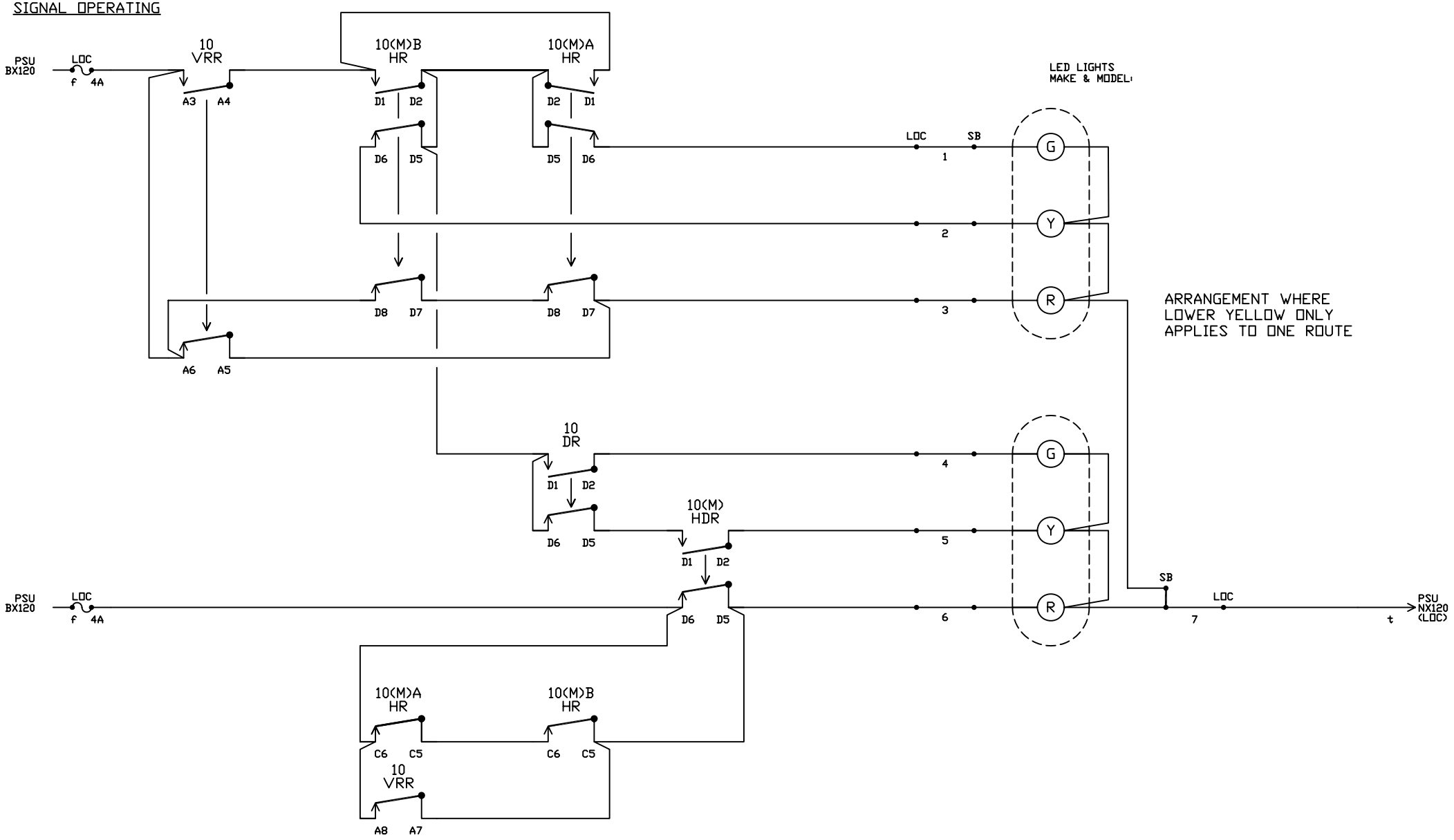
INTERLOCKING	BLK2					I/L ID NO	23		10111	
ADDRESS BIT	5(MSB)	4	3	2	1	0(LSB)	0V	5V	MODIFIER	
DECIMAL/BINARY	32	16	8	4	2	1				
PROCESSOR A PIN NO	7	5	4	3	2	1	10	11	8	
PROCESSOR B PIN NO	17	16	15	14	13	12	20	21	18	
BINARY ADDRESS	0	1	1	1	0	1	0	1	1	

		RR OR PS						
			INPUT	NONE	7	6		
			PIN	62	63	65	66	64
			CURRENT PATHS	0	1	2	3	4
PIN			LAMP PROVING	NONE	35W	2x60W	125W	35W
BX	RR	LABEL	FUNCTION					
60	40	OUTPUT 7	RR S96T RGE					⊗
78		OUTPUT 6	FL S96B HGE		⊗			
77		OUTPUT 5	FL S96T DGE					⊗
76		OUTPUT 4	PS S96B HGE					⊗
58	43	OUTPUT 3	RR S96B RGE		⊗			
75		OUTPUT 2	PS S96B DGE		⊗			
72		OUTPUT 1	FL S96B HGE		⊗			
73		OUTPUT 0	FL ##					
		FIXED SOURCE						
		FIXED SOURCE						
		FIXED SOURCE						
		FIXED SOURCE						
		INPUT CONTACT SENSING SOURCE		BXI	NXI	BXE	NXE	
BX	NX					25	28	
37	54	INPUT 5	S96 EK			⊗	⊗	
52	34	INPUT 4						
32	50	INPUT 3						
47	29	INPUT 2						
27	45	INPUT 1						
42	24	INPUT 0						

THIS MODULE HAS FLASHING ASPPECT OUTPUT "0" NOT TO BE USED FOR ANY OTHER PURPOSE

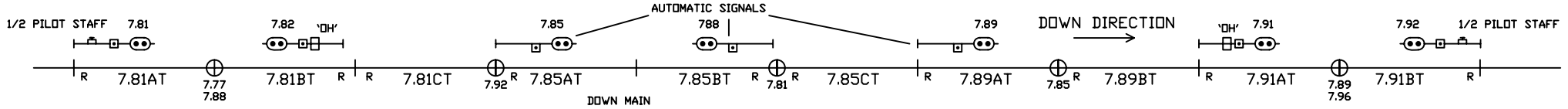
NOTE: 5V STRAPS 1/0.50mm RED
0V STRAPS 1/0.50mm BLACK
POWER WIRING 32/0.20mm BLUE
EARTH WIRING 32/0.20mm GREEN/YELLOW
UNLESS SPECIFIED ALL WIRING 7/0.40mm BLACK

SIGNAL OPERATING

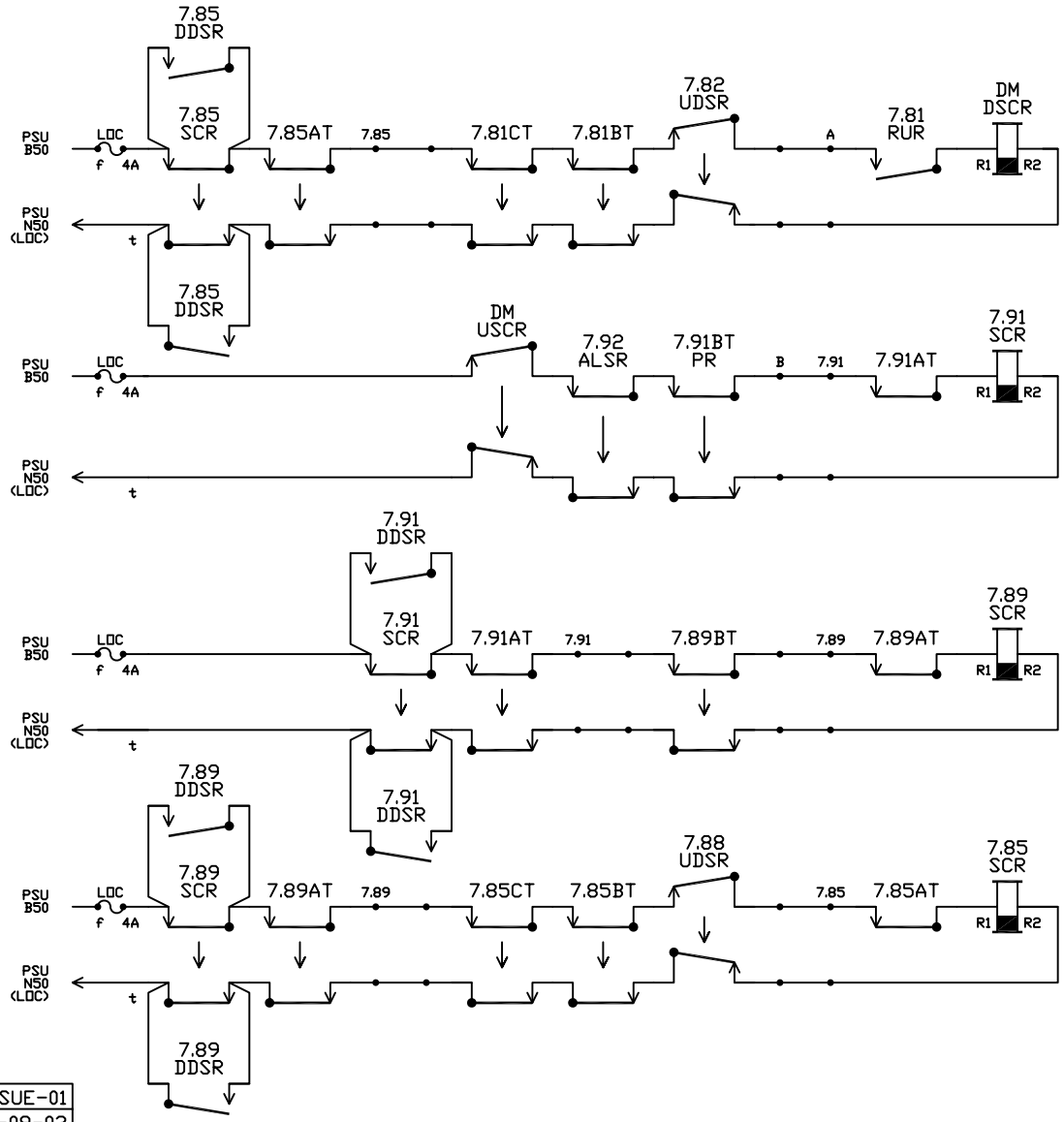


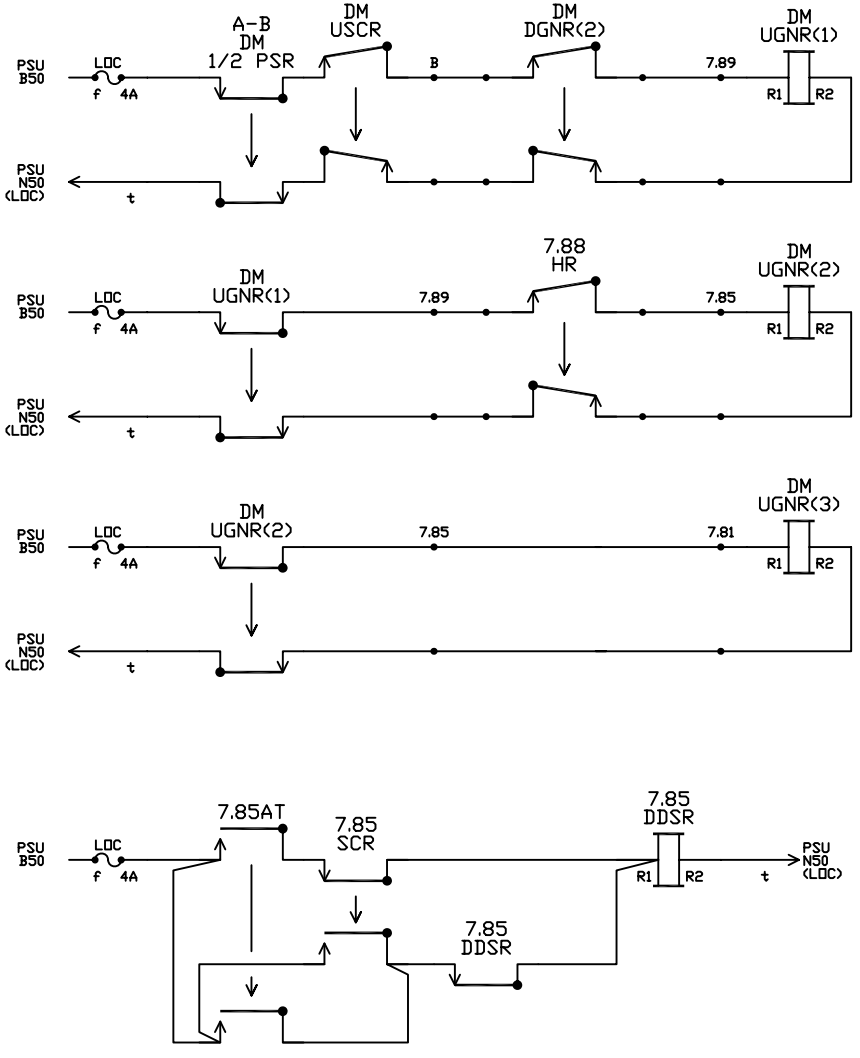
FROM CURRENT		
V5, 28-06-07		
JOB NUMBER		

			ISSUE-02	21/6/07	10:24			CSTDB001	BI-DIRECTIONAL SIGNALLING			SHT: B001	CB: STD



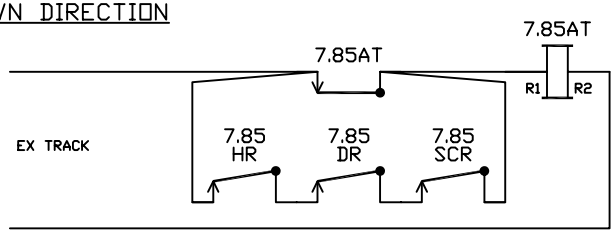
DOWN DIRECTION

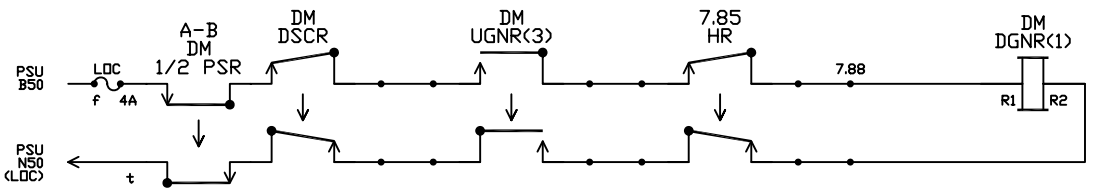


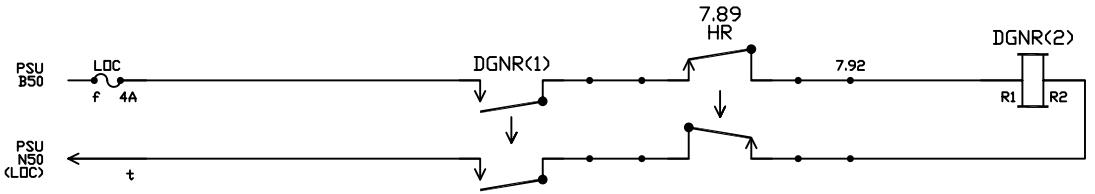


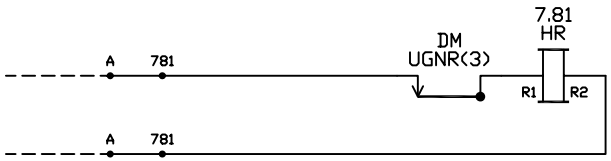
ISSUE-01
01-09-03
JOB NUMBER

DOWN DIRECTION

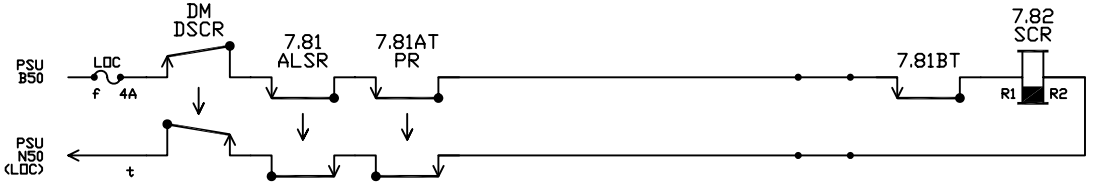


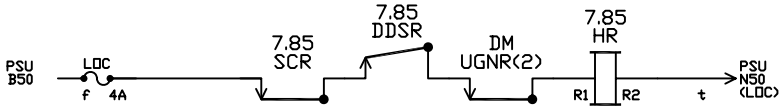


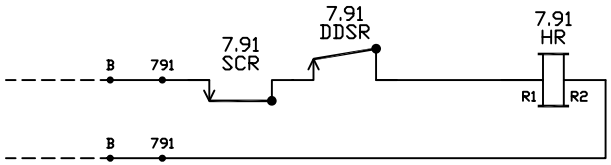


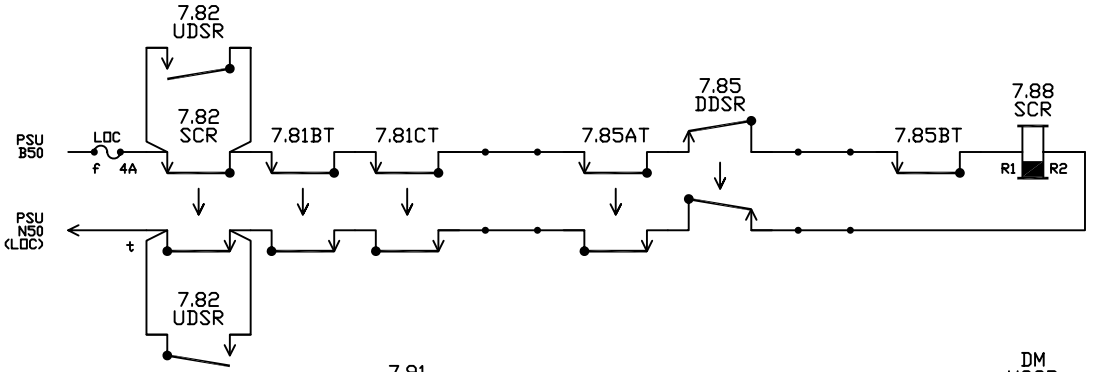


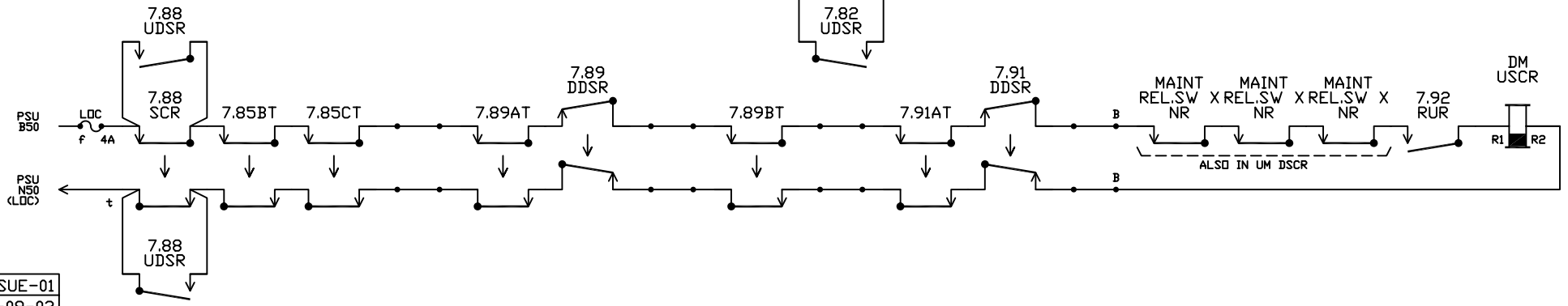
UP DIRECTION





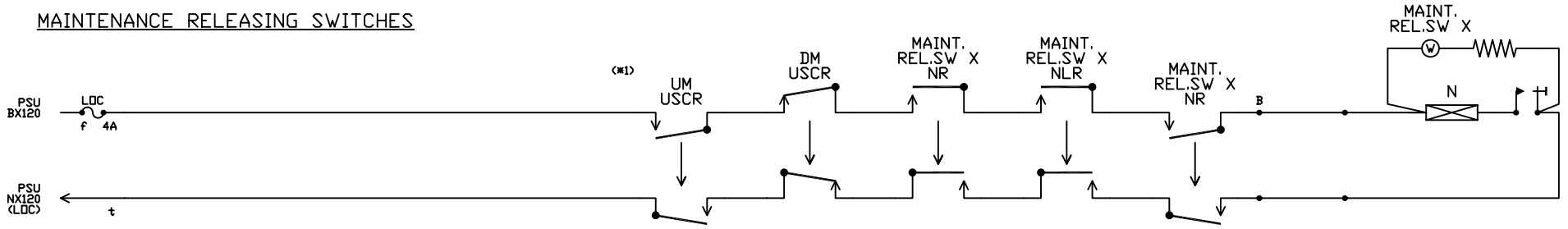




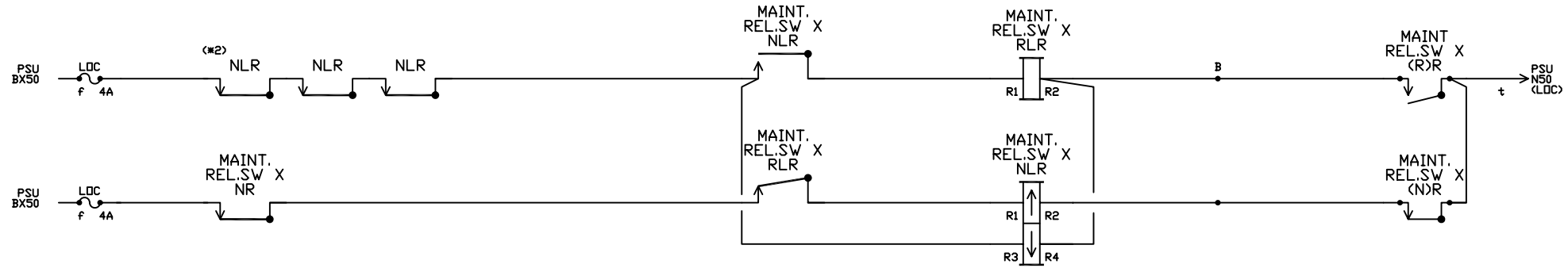


ISSUE-01
01-09-03
JOB NUMBER

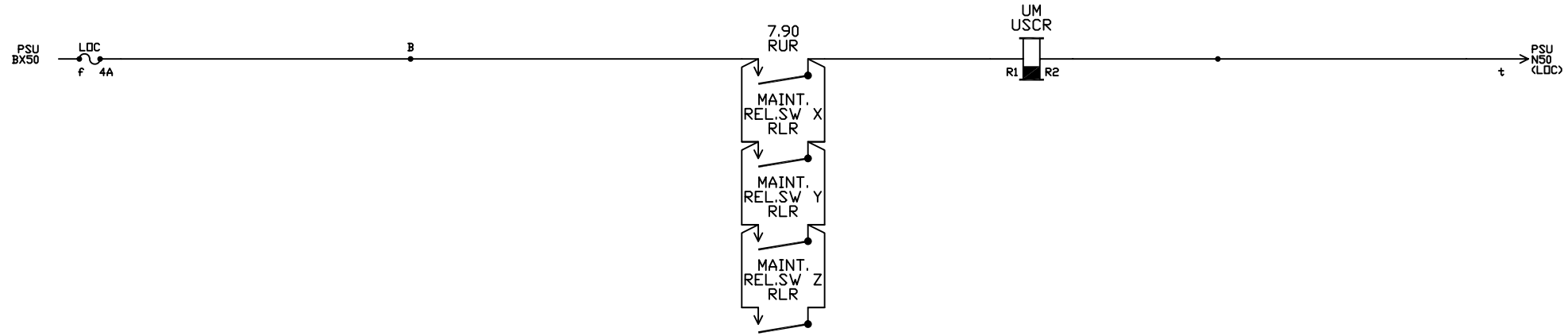
MAINTENANCE RELEASING SWITCHES



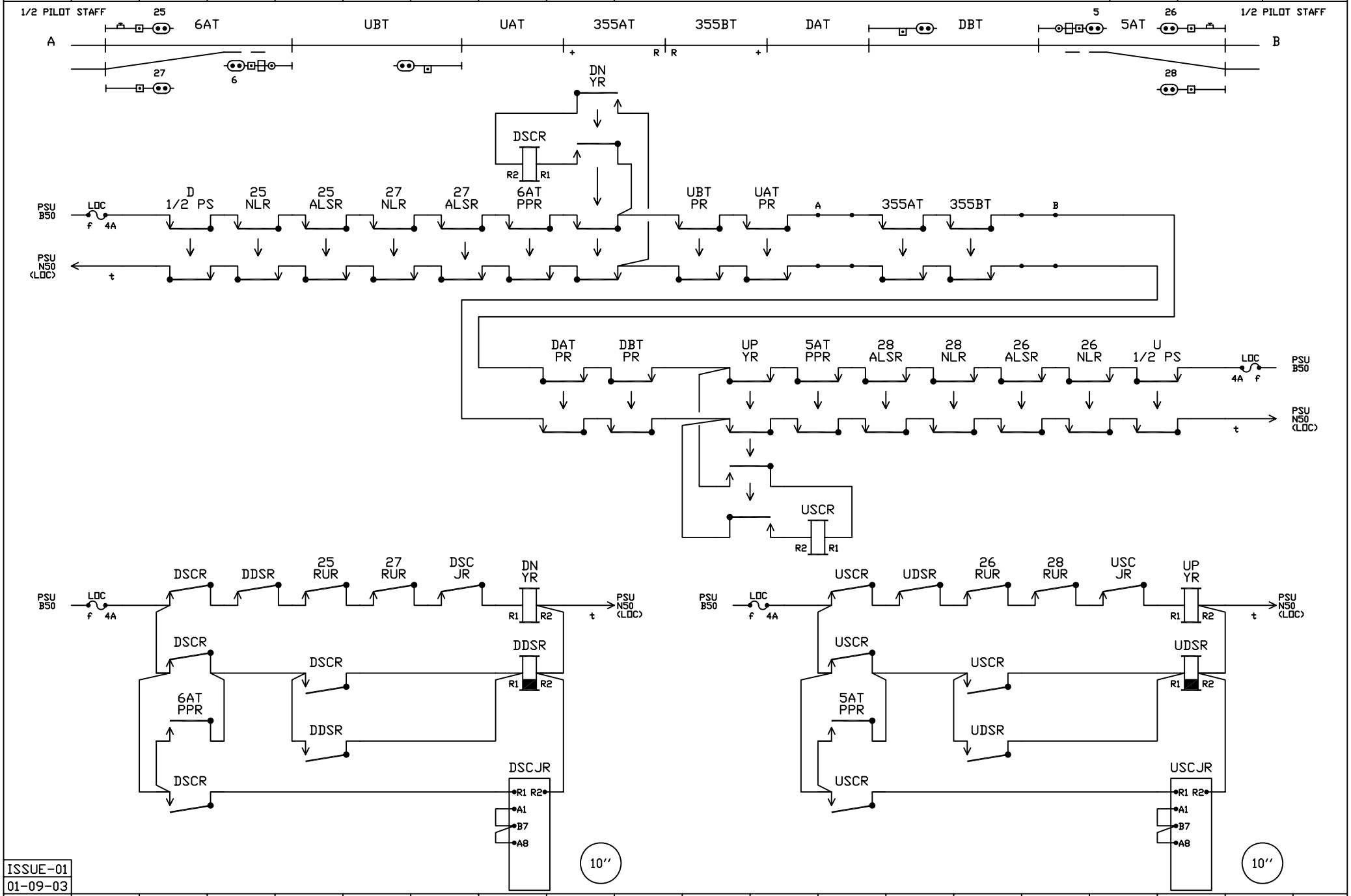
(*1) PROVES THAT NO TRAIN CAN BE APPROACHING IN DOWN DIRECTION ON UP MAIN



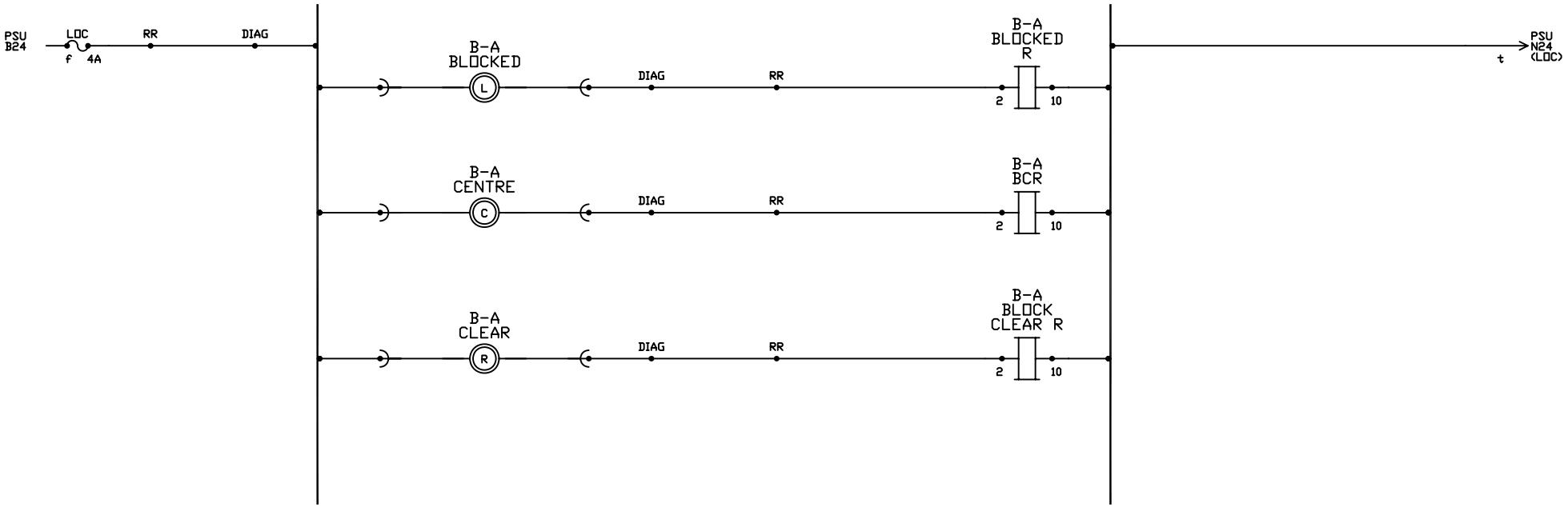
(*2) ROUTES FOR WRONG DIRECTION RUNNING IN SECTION



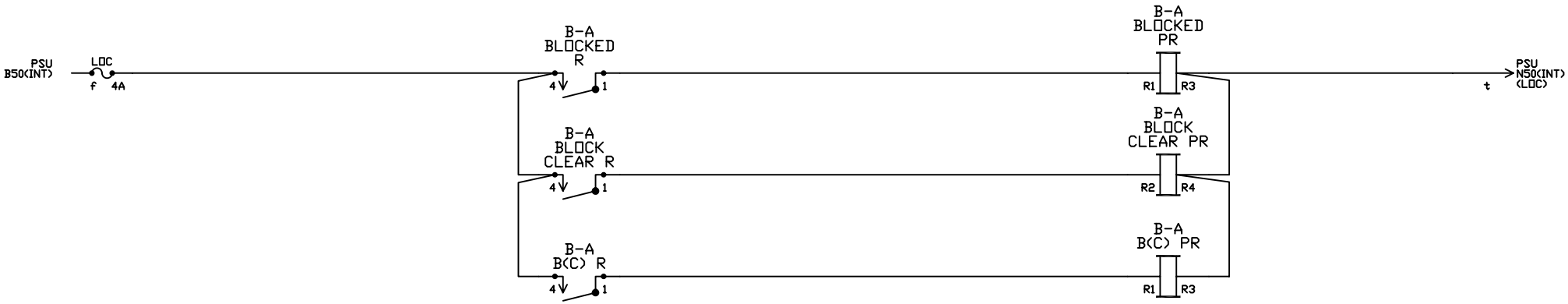
			ISSUE-02	21/6/07	14:43			CSTDC001	SINGLE LINE TRACK CONTROL (CTC)			SHT: C001	CB: STD



ISSUE-01
01-09-03
JOB NUMBER

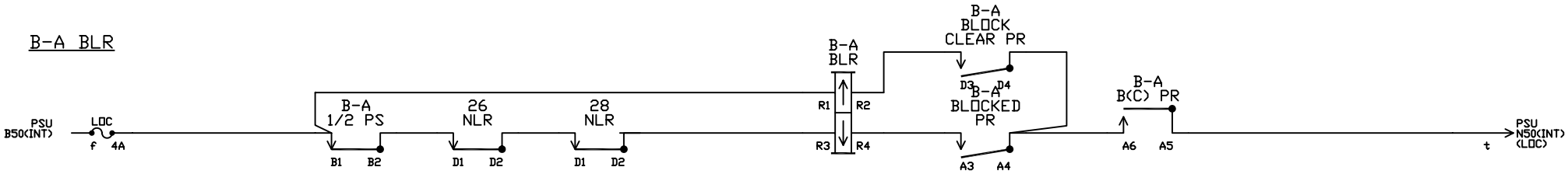

PSU
B24
LOC
f 4A
RR
DIAG
B-A
BLOCKED
L
DIAG
RR
B-A
BLOCKED
R
2
10
PSU
N24
(LOC)
t
B-A
CENTRE
C
DIAG
RR
B-A
BCR
2
10
B-A
CLEAR
R
DIAG
RR
B-A
BLOCK
CLEAR R
2
10

			ISSUE-02	21/6/07	14:59			CSTDC003	SINGLE LINE VITAL BLOCKING			SHT:C003	CB: STD



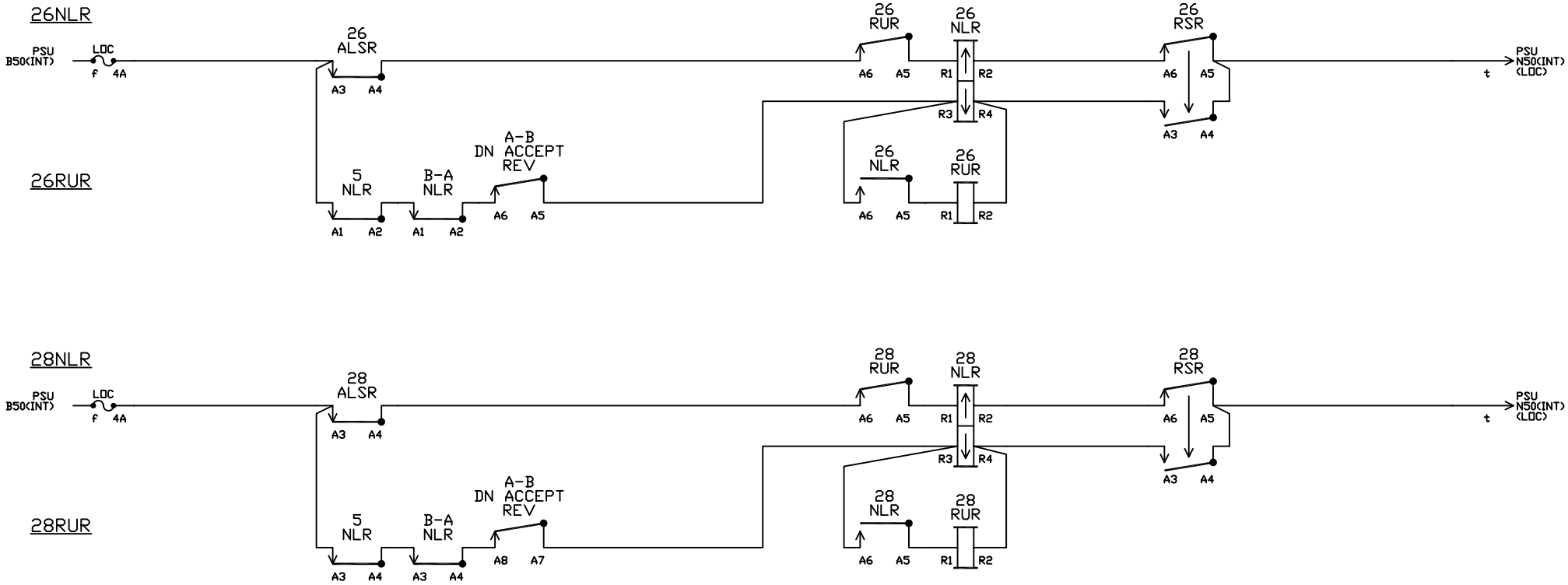
ISSUE-01
01-09-03
JOB NUMBER

			ISSUE-02	21/6/07	15:06			CSTDC004	SINGLE LINE VITAL BLOCKING			SHT:C004	CB: STD

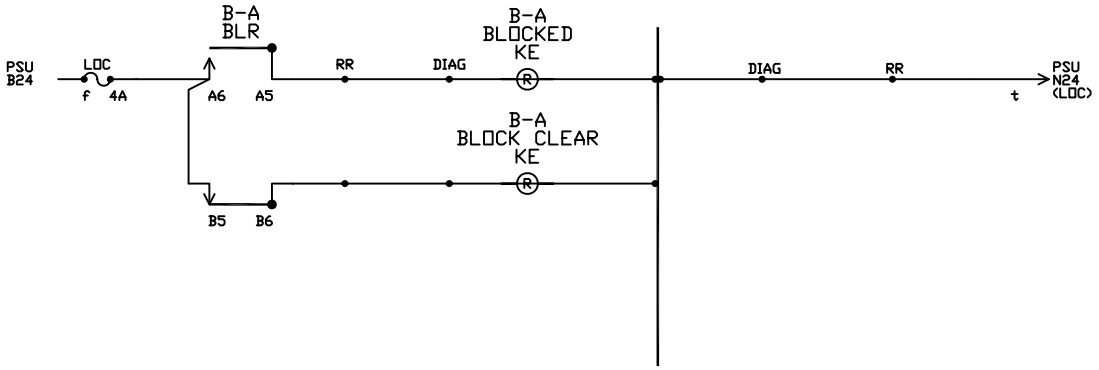


ISSUE-01
01-09-03
JOB NUMBER

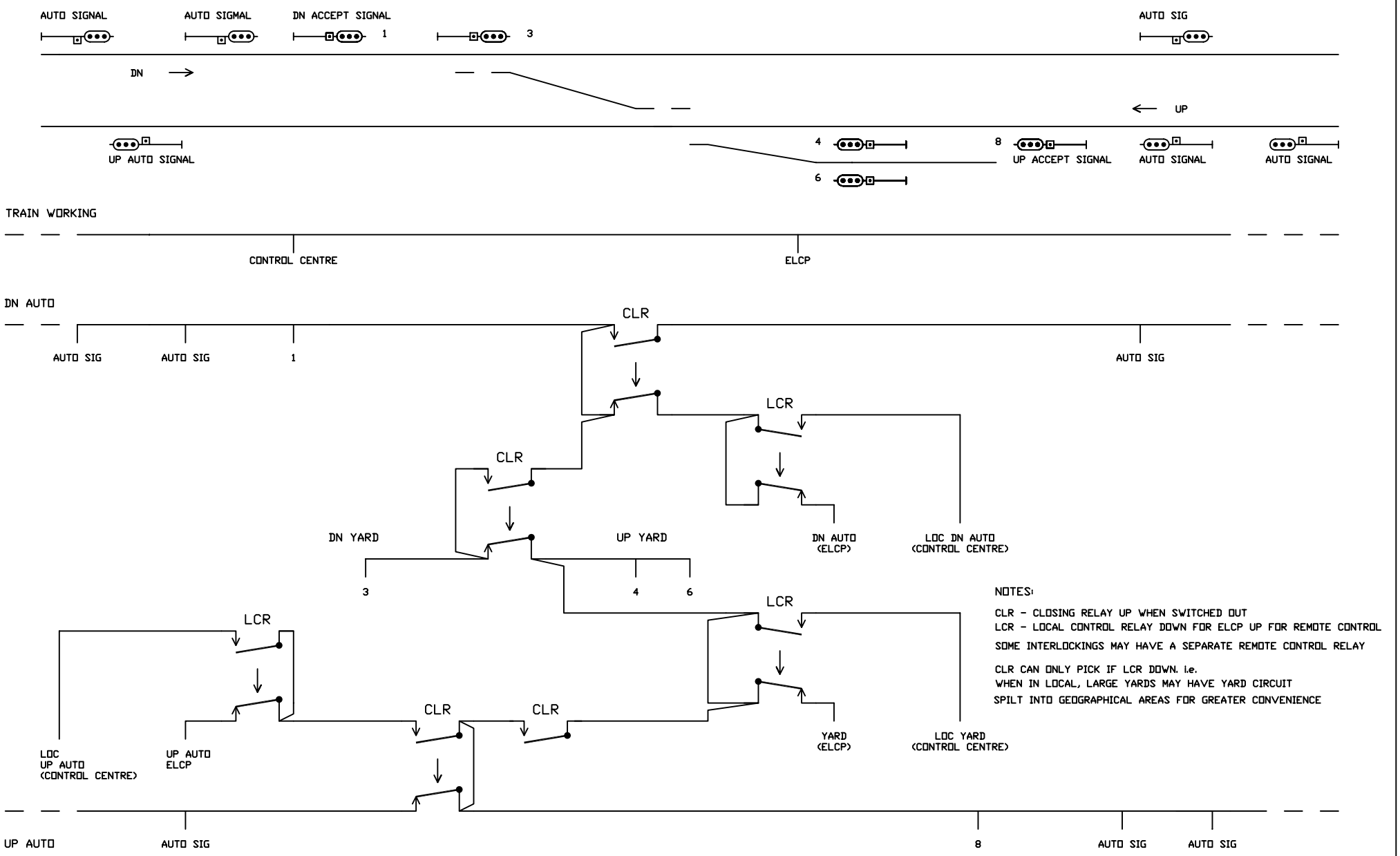
			ISSUE-02	22/6/07	7:19			CSTDC005	SINGLE LINE VITAL BLOCKING			SHT:C005	CB: STD



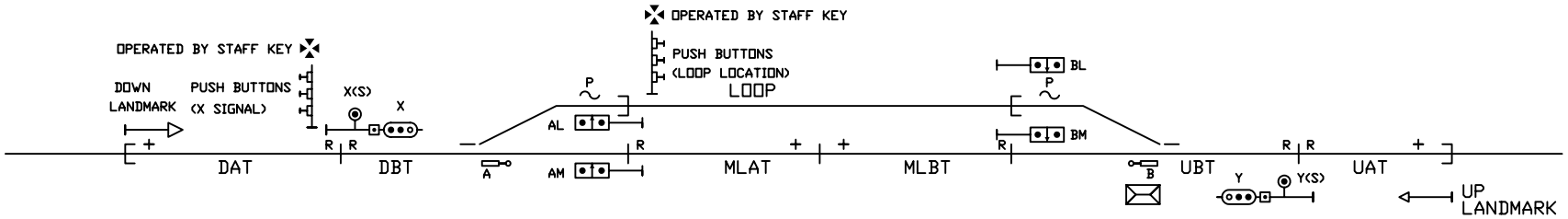
ISSUE-01
01-09-03
JOB NUMBER

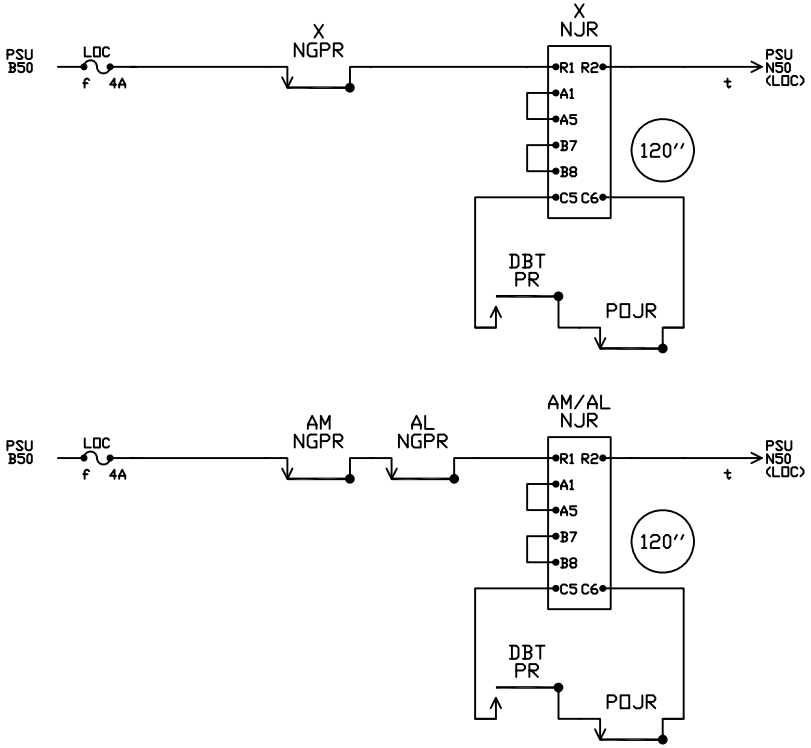

B-A
BLR
B-A
BLOCKED
KE
PSU
B24
LOC
f 4A
A6
A5
RR
DIAG
DIAG
RR
PSU
N24
(LOC)
t
B-A
BLOCK CLEAR
KE
B5
B6

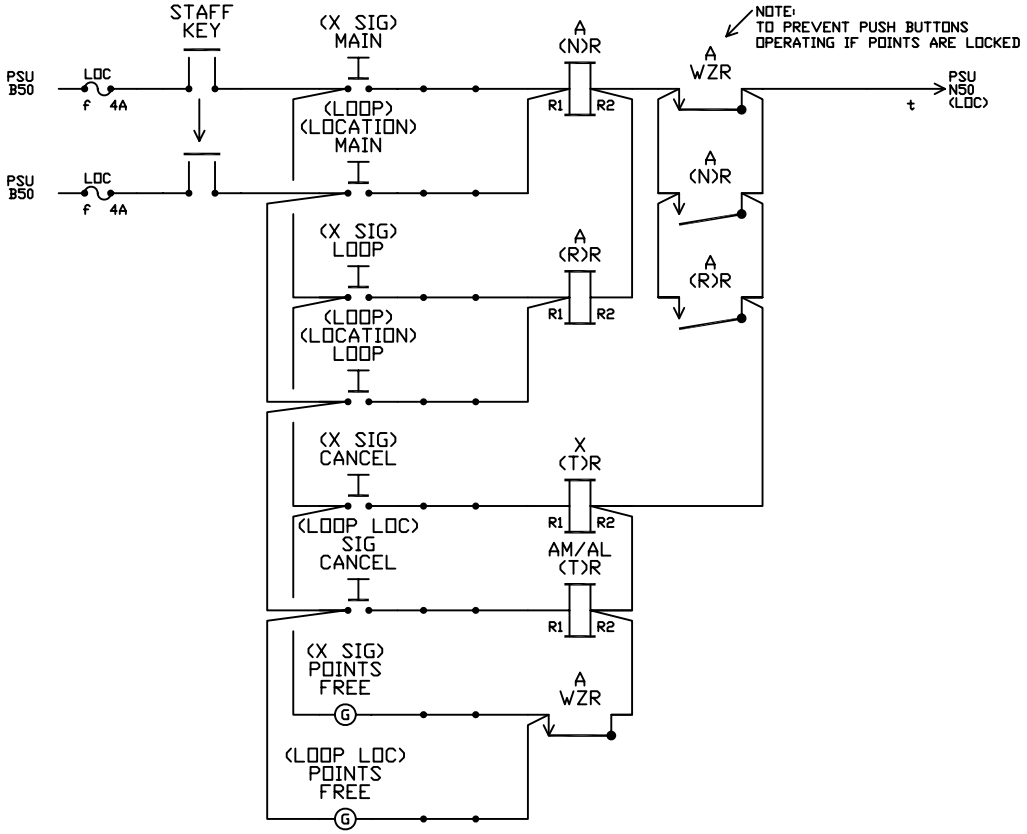
			ISSUE-02	22/6/07	7:29			CSTDD001	TYPICAL ARRANGEMENT OF SIGNAL PHONES			SHT: D001	CB: STD



ISSUE-01
01-09-03
JOB NUMBER

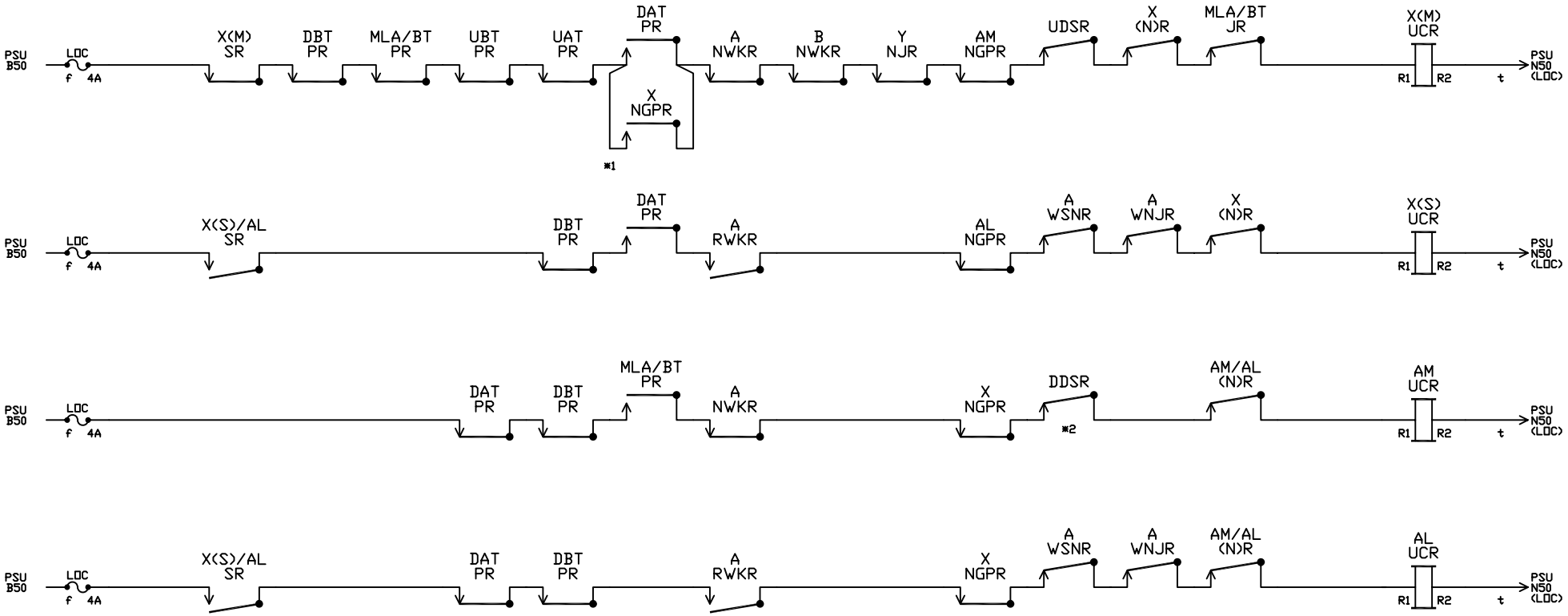






ISSUE-01
23-10-91
JOB NUMBER

ROUTE CONTROL RELAYS

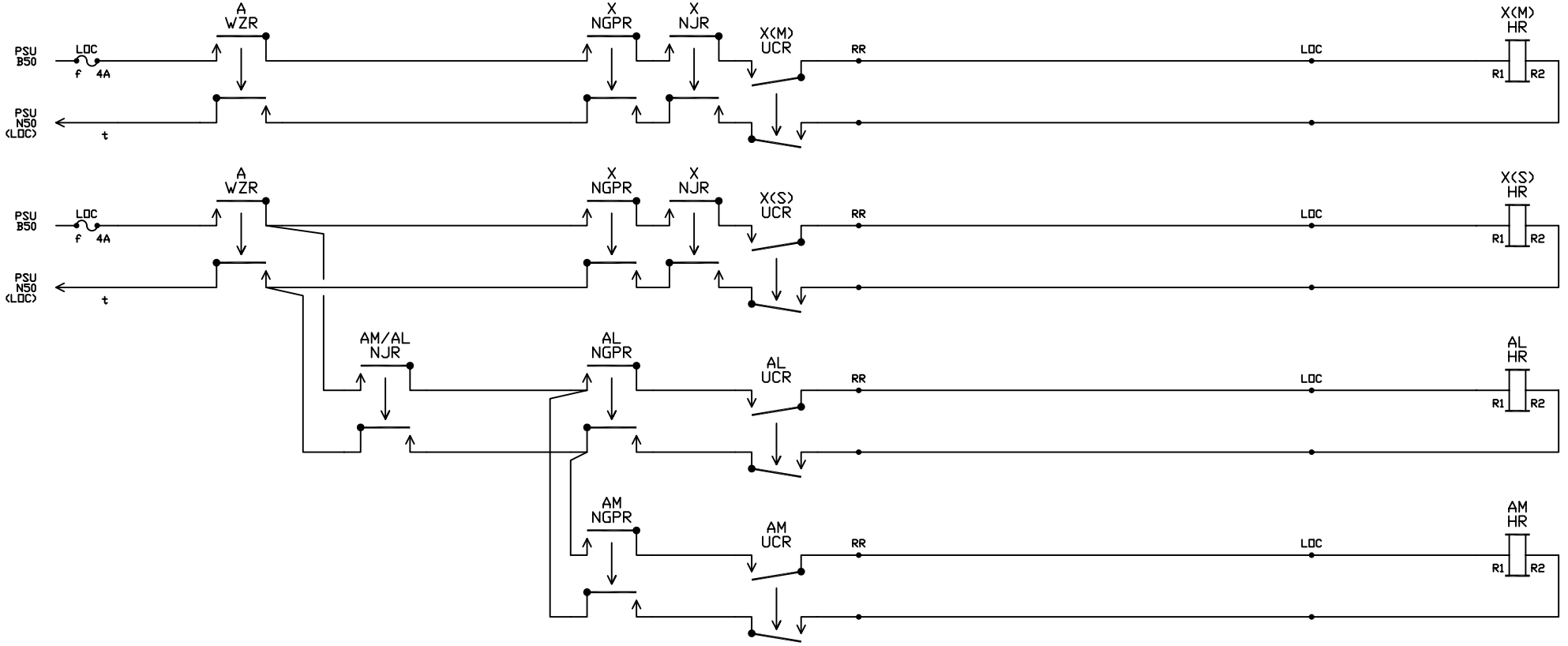


NOTE:

*1 THIS CIRCUITRY PREVENTS, X SIGNAL CLEARING FOR THE SECOND TRAIN, BEFORE CLEARING THE SIGNAL FOR THE FIRST TRAIN IF THE FIRST TRAIN CANCELS THE MAIN ROUTE Y, IN ORDER TO GET INTO THE LOOP.

*2 TO PREVENT POINT INDICATOR IN THE UP DIRECTION CLEARING WHEN TRAIN IS TRAVELLING IN THE DOWN DIRECTION. REFER TO NOTE *3 ON SHEET L05.

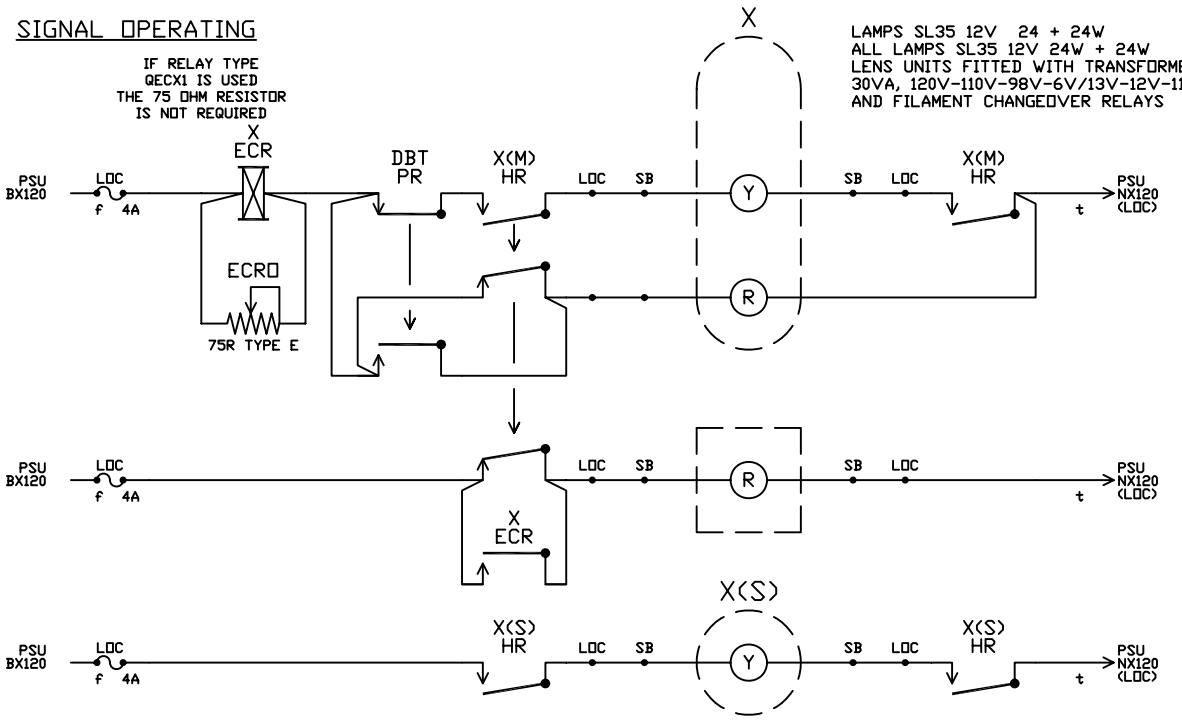
SIGNAL CONTROL RELAYS

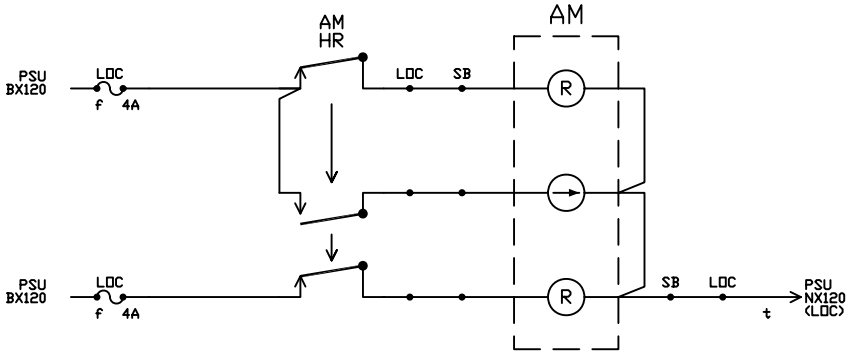


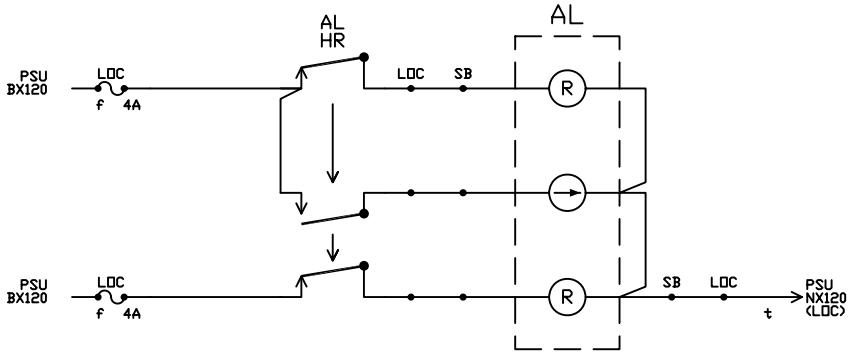
SIGNAL OPERATING

IF RELAY TYPE
QECX1 IS USED
THE 75 OHM RESISTOR
IS NOT REQUIRED

LAMPS SL35 12V 24 + 24W
ALL LAMPS SL35 12V 24W + 24W
LENS UNITS FITTED WITH TRANSFORMERS
30VA, 120V-110V-98V-6V/13V-12V-11V-0.5V
AND FILAMENT CHANGEOVER RELAYS

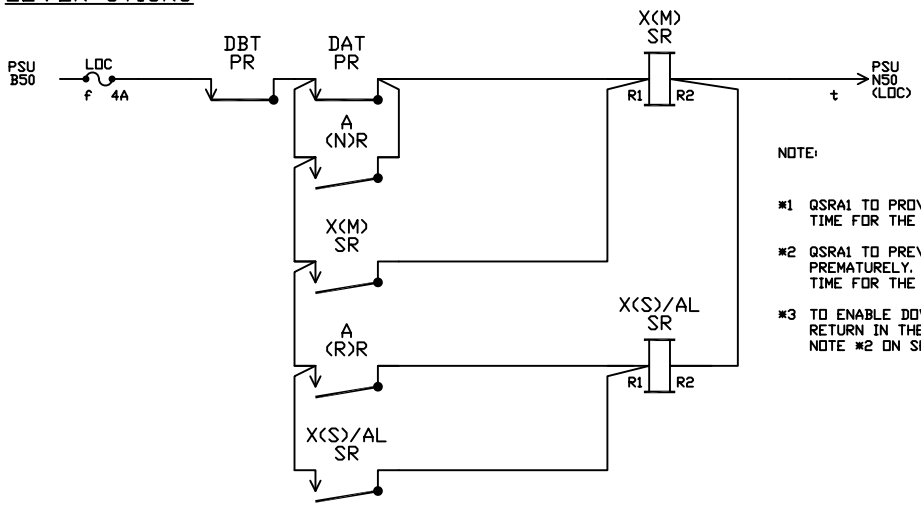






LENS UNIT FITTED WITH
120V-130V 60W LAMPS

LEVER STICKS



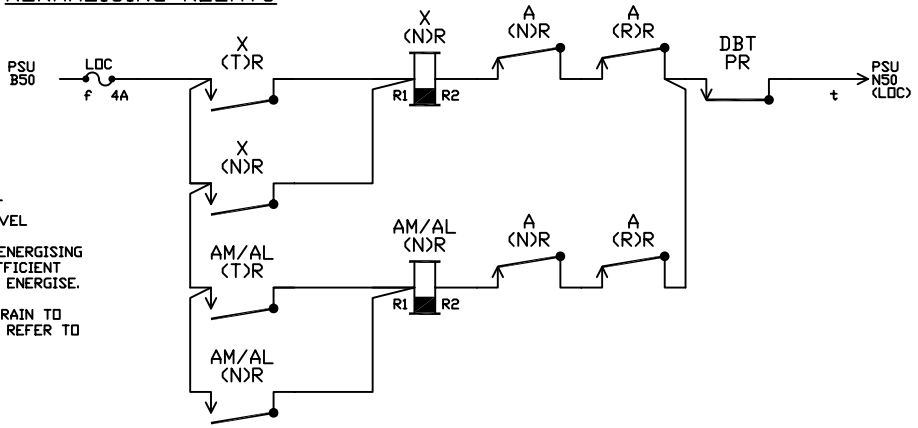
NOTE:

*1 QSRA1 TO PROVIDE SUFFICIENT TIME FOR THE POINTS TO TRAVEL

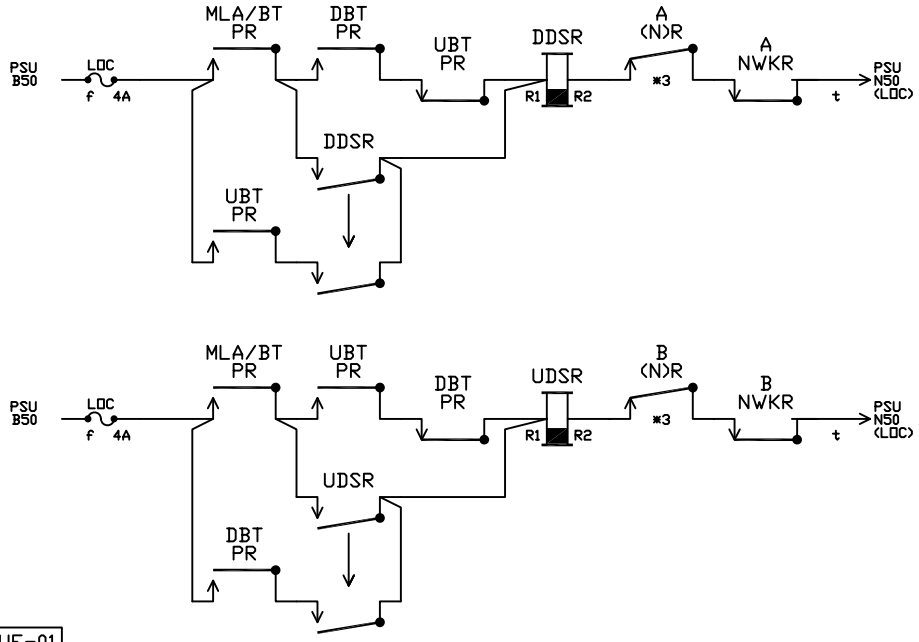
*2 QSRA1 TO PREVENT WNJR DE-ENERGISING PREMATURELY. IE TO GIVE SUFFICIENT TIME FOR THE POINTS NLR TO ENERGISE.

*3 TO ENABLE DOWN DIRECTION TRAIN TO RETURN IN THE UP DIRECTION. REFER TO NOTE *2 ON SHEET L002.

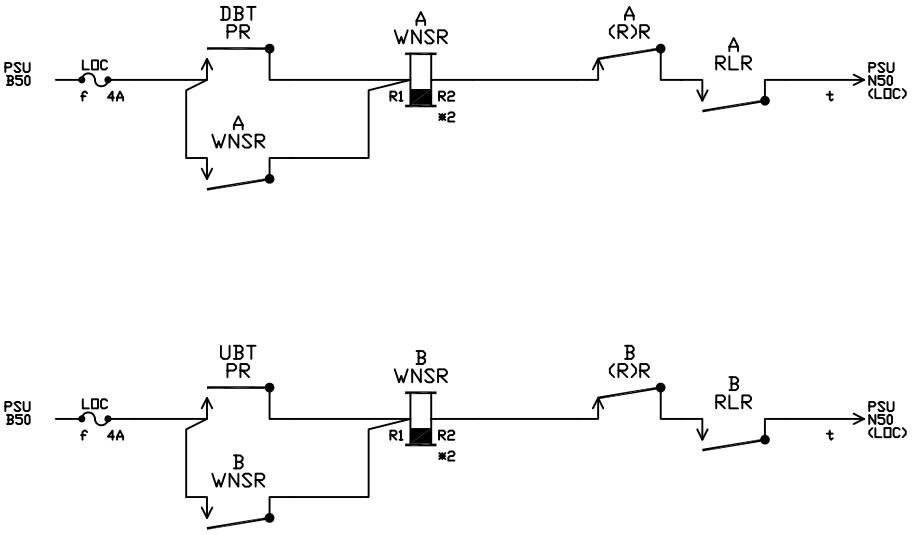
NORMALISING RELAYS



DIRECTION STICKS

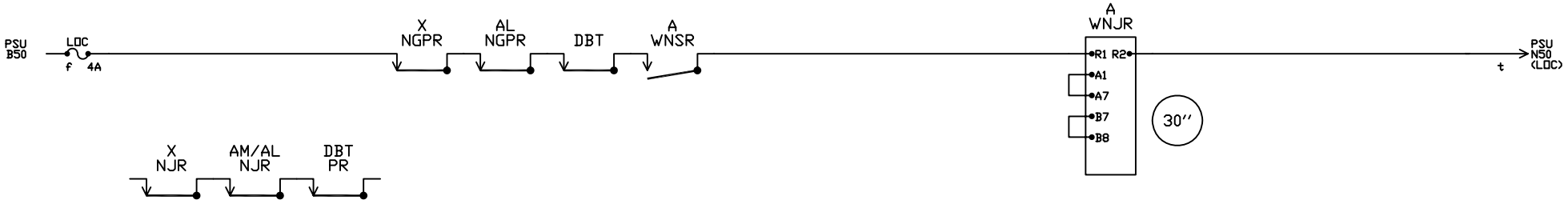


POINTS NORMAL STICK RELAYS

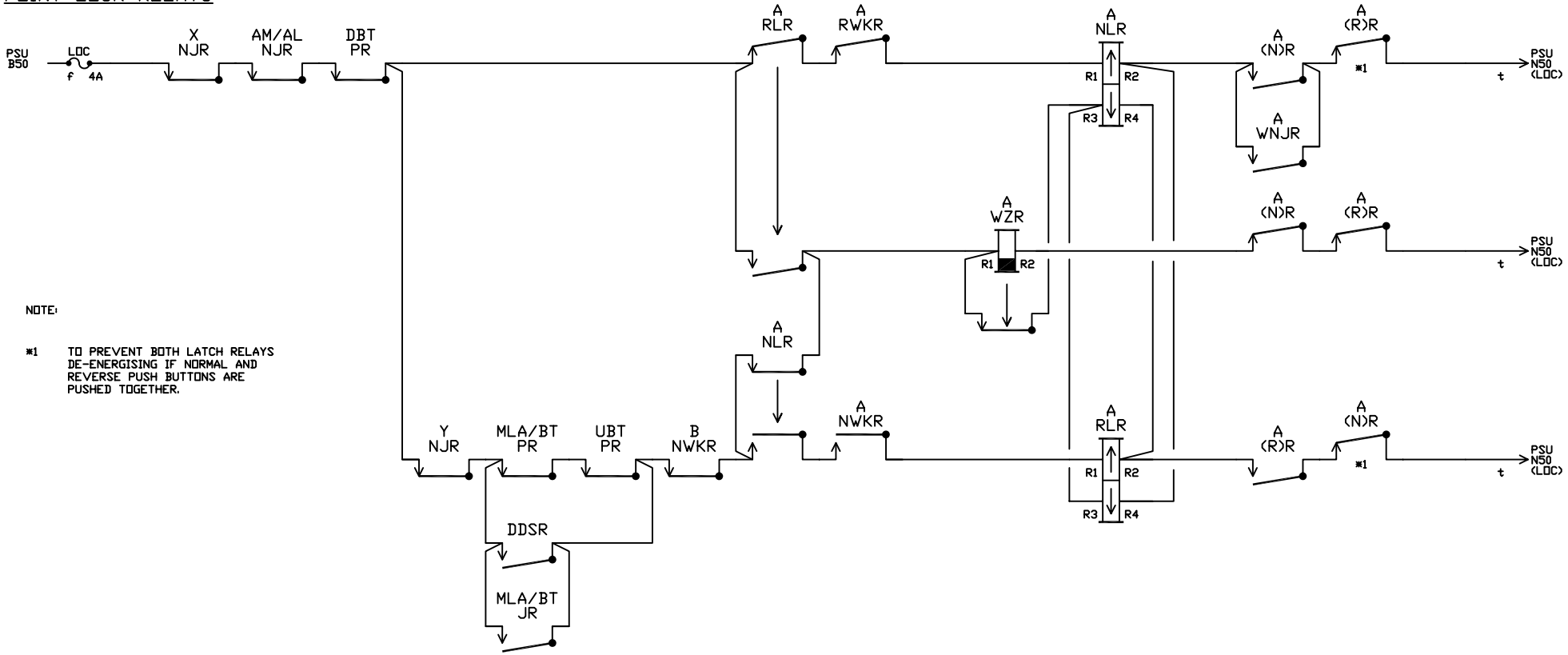


ISSUE-01
23-10-91
JOB NUMBER

POINTS NORMAL TIMERS



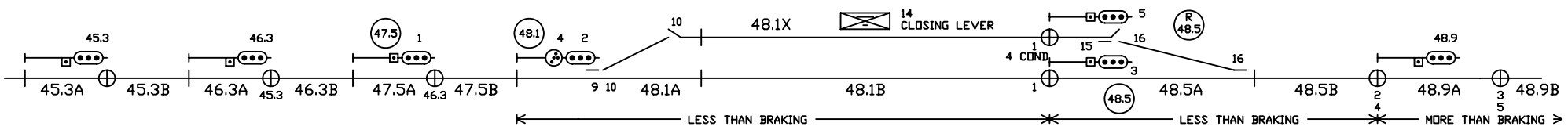
POINT LOCK RELAYS



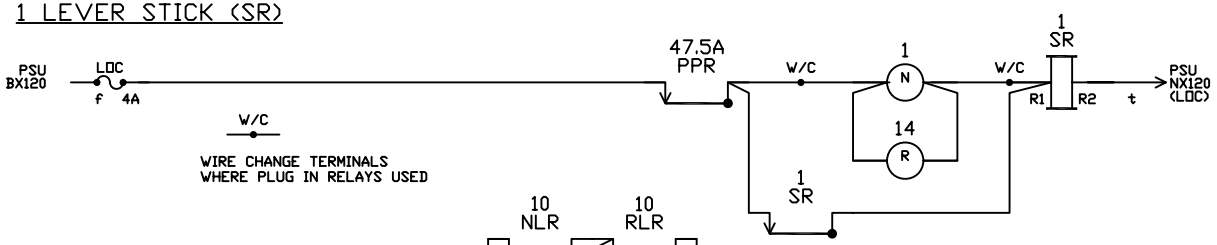
NOTE:

*1 TO PREVENT BOTH LATCH RELAYS DE-ENERGISING IF NORMAL AND REVERSE PUSH BUTTONS ARE PUSHED TOGETHER.

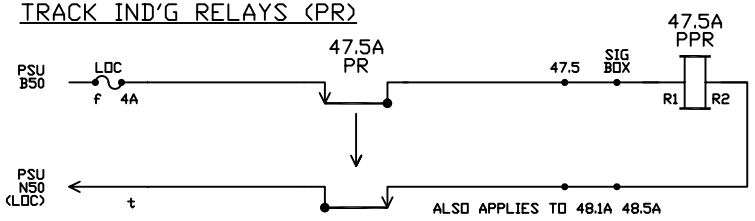
			ISSUE-02	25/6/07	13:49			CSTDM001	MECHANICAL SIGNAL BOX			SHT: M001	CB: STD



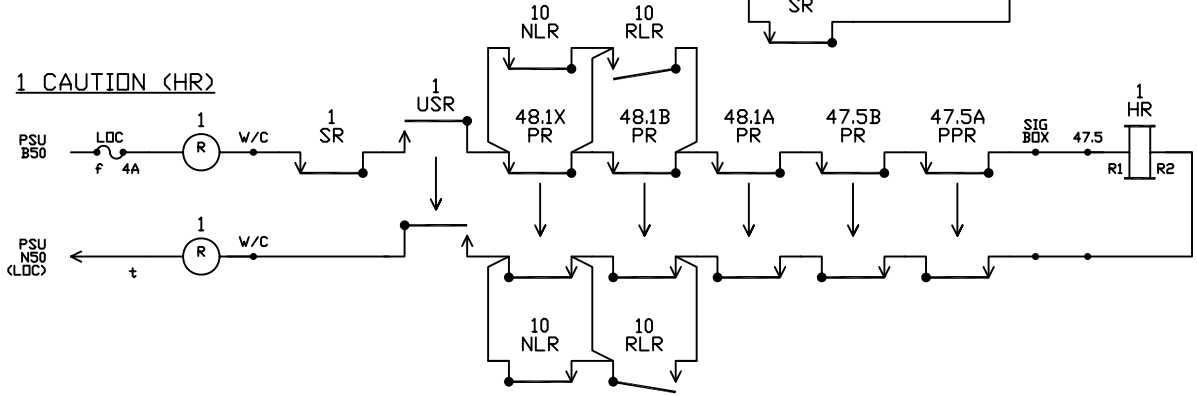
1 LEVER STICK (SR)



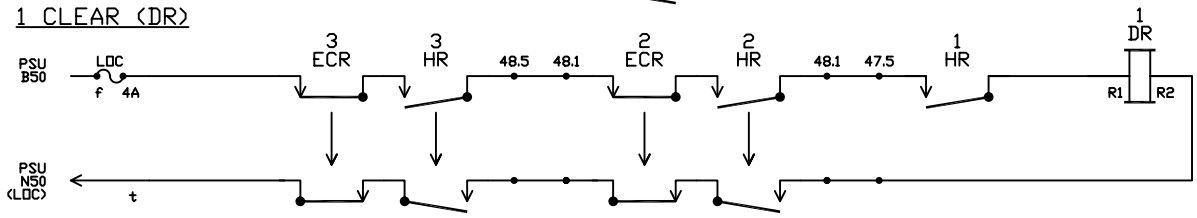
TRACK IND'G RELAYS (PR)



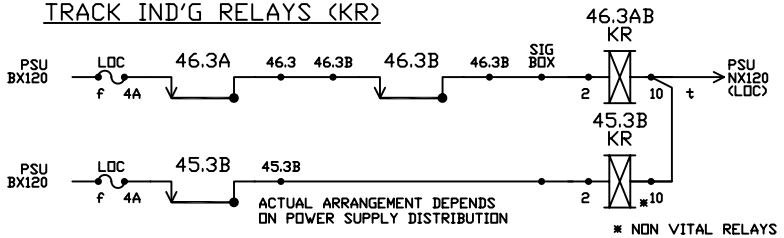
1 CAUTION (HR)



1 CLEAR (DR)

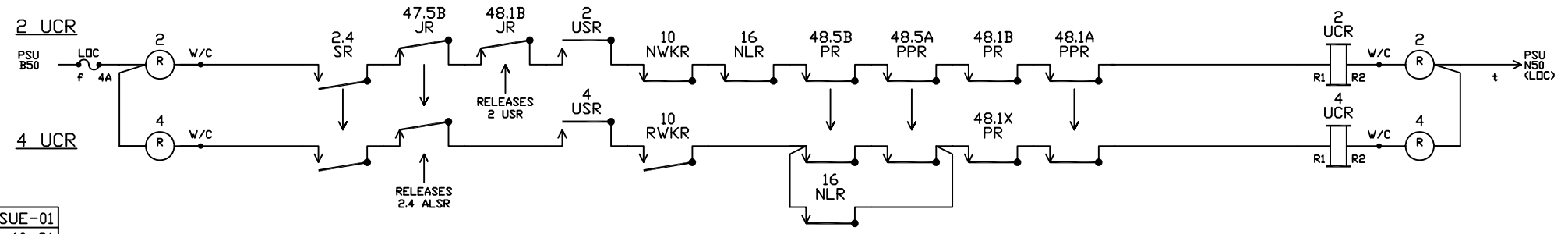


TRACK IND'G RELAYS (KR)



2 UCR

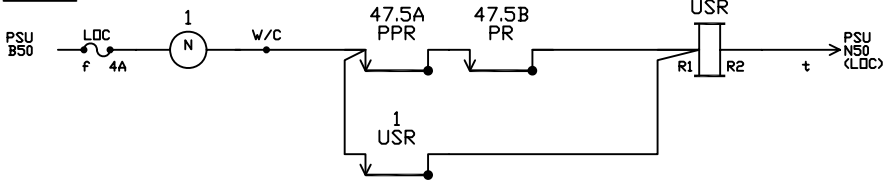
4 UCR



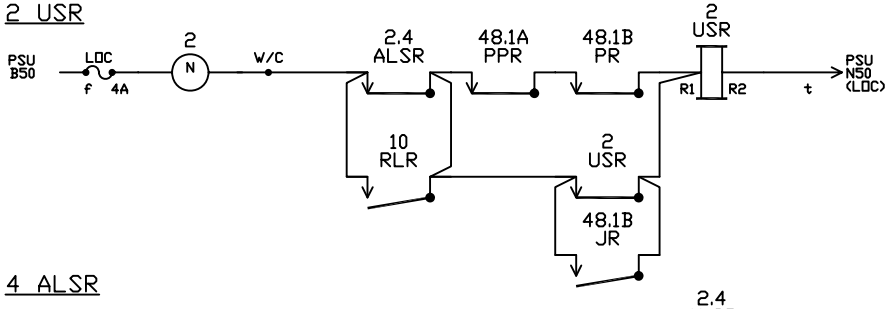
ISSUE-01
23-10-91
JOB NUMBER

			ISSUE-03	26/6/07	11:15			CSTDM002	MECHANICAL SIGNAL BOX			SHT: M002	CB: STD

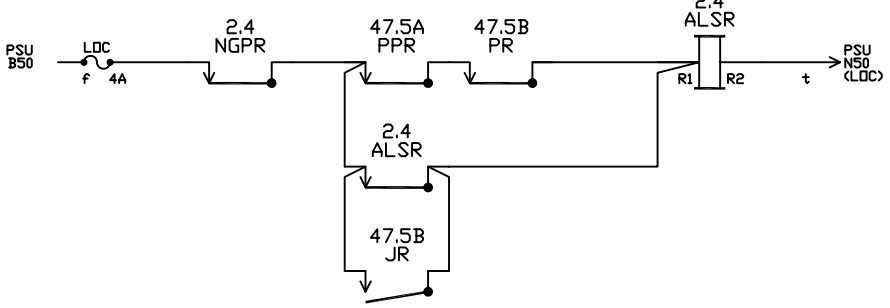
1 USR



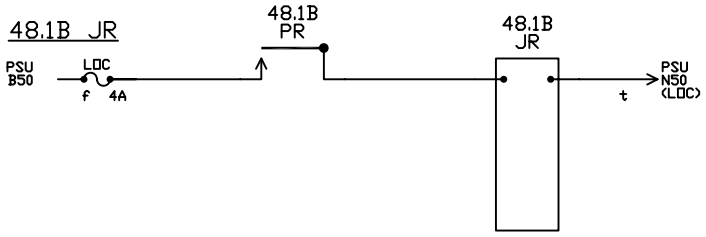
2 USR



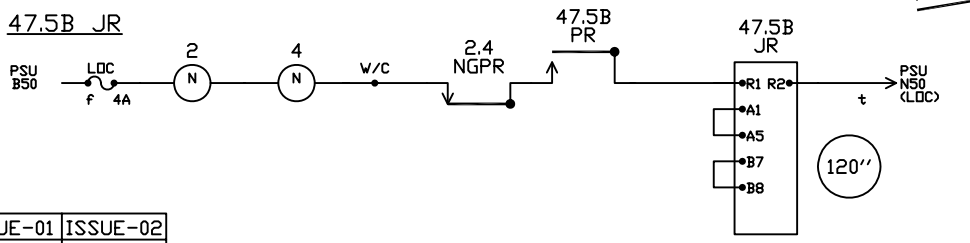
4 ALSR



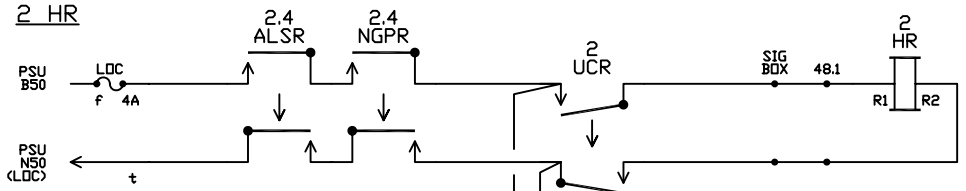
48.1B JR



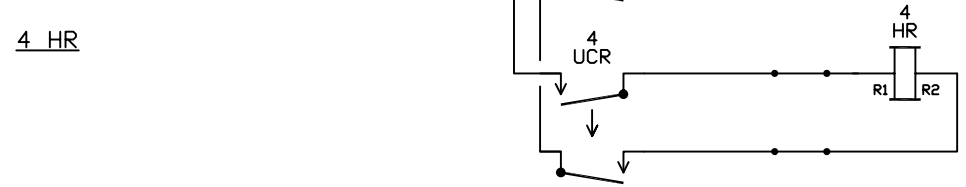
47.5B JR



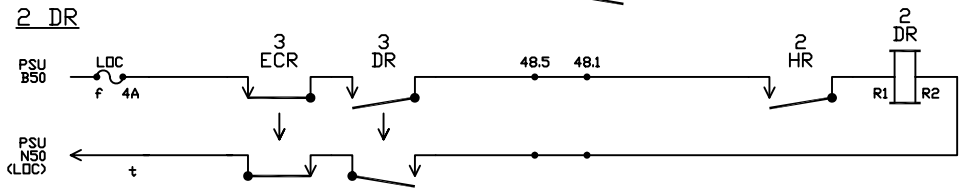
2 HR



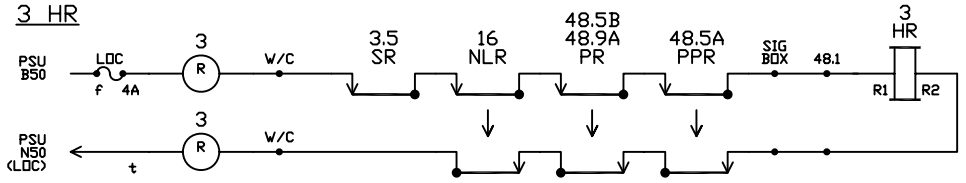
4 HR



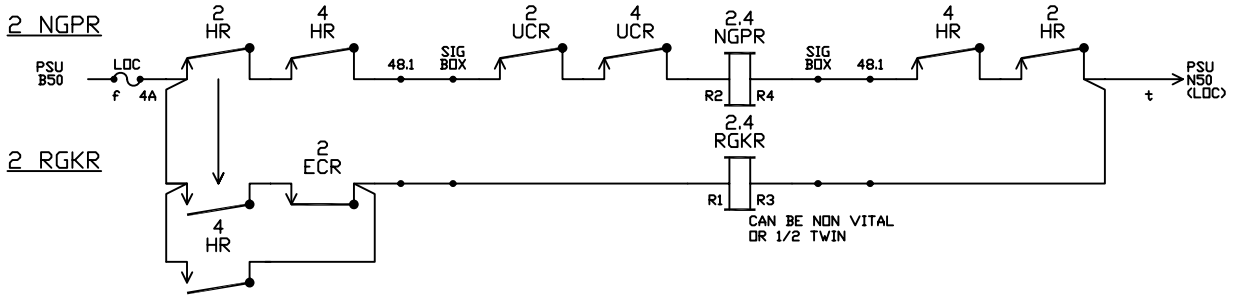
2 DR



3 HR

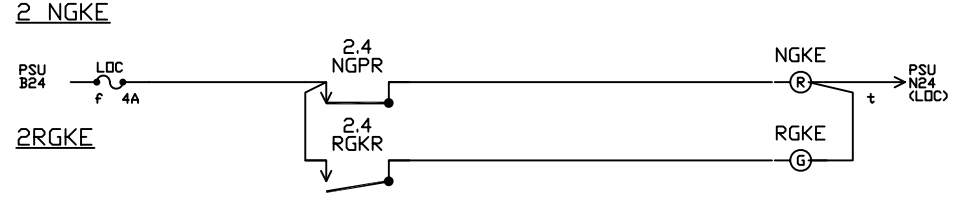


2 NGPR



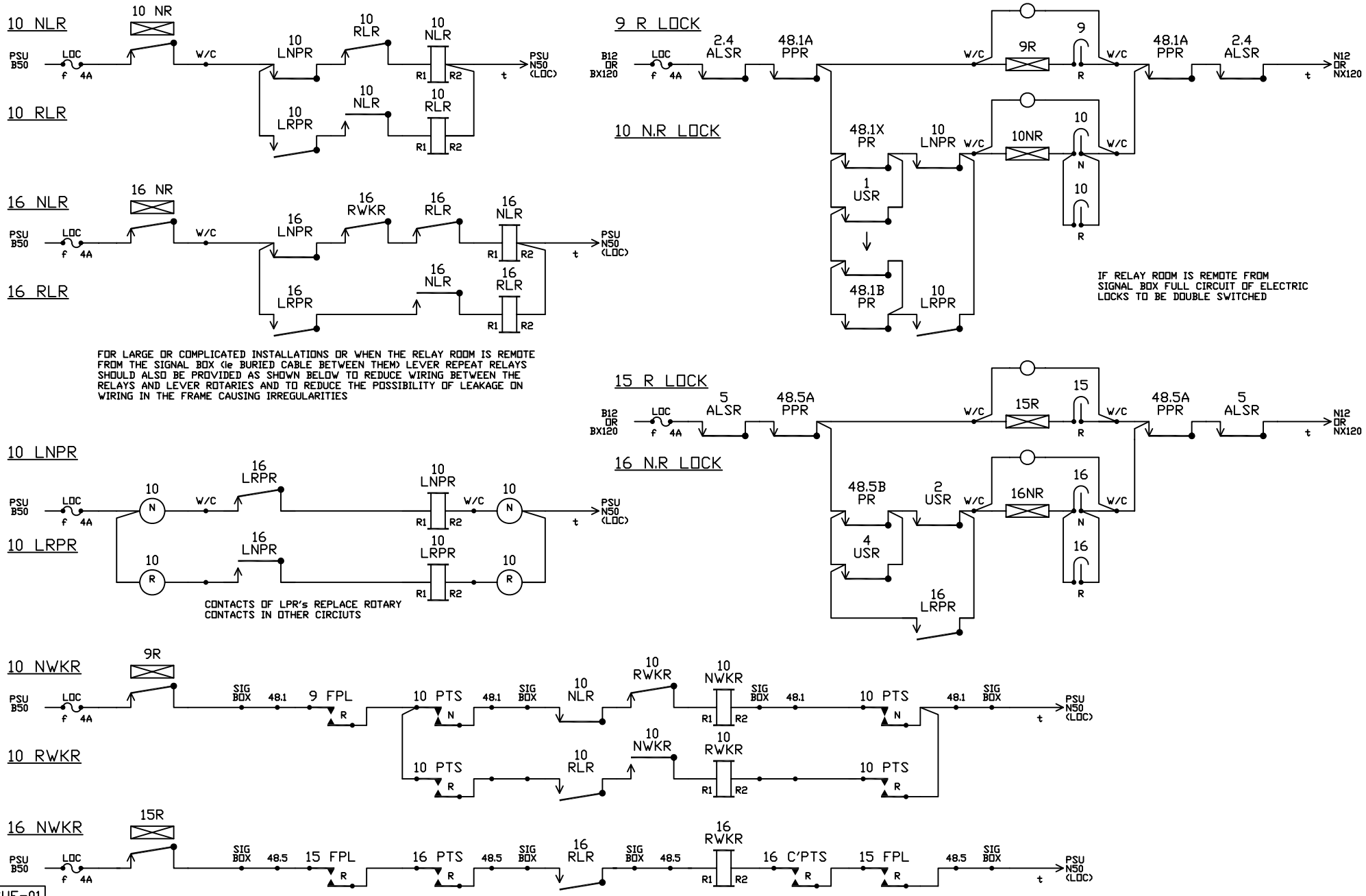
2 RGKR

2 NGKE

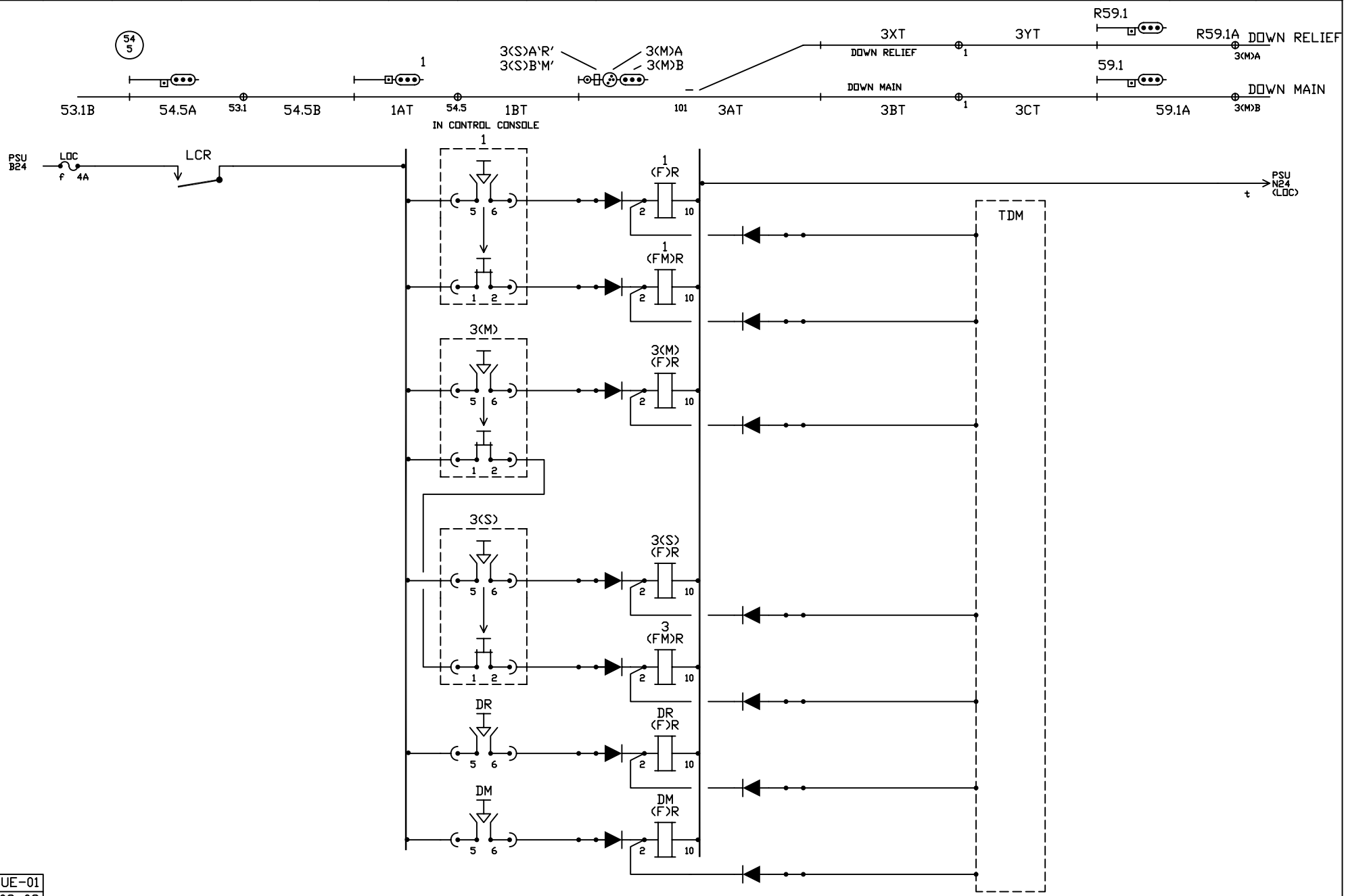


2RGKE

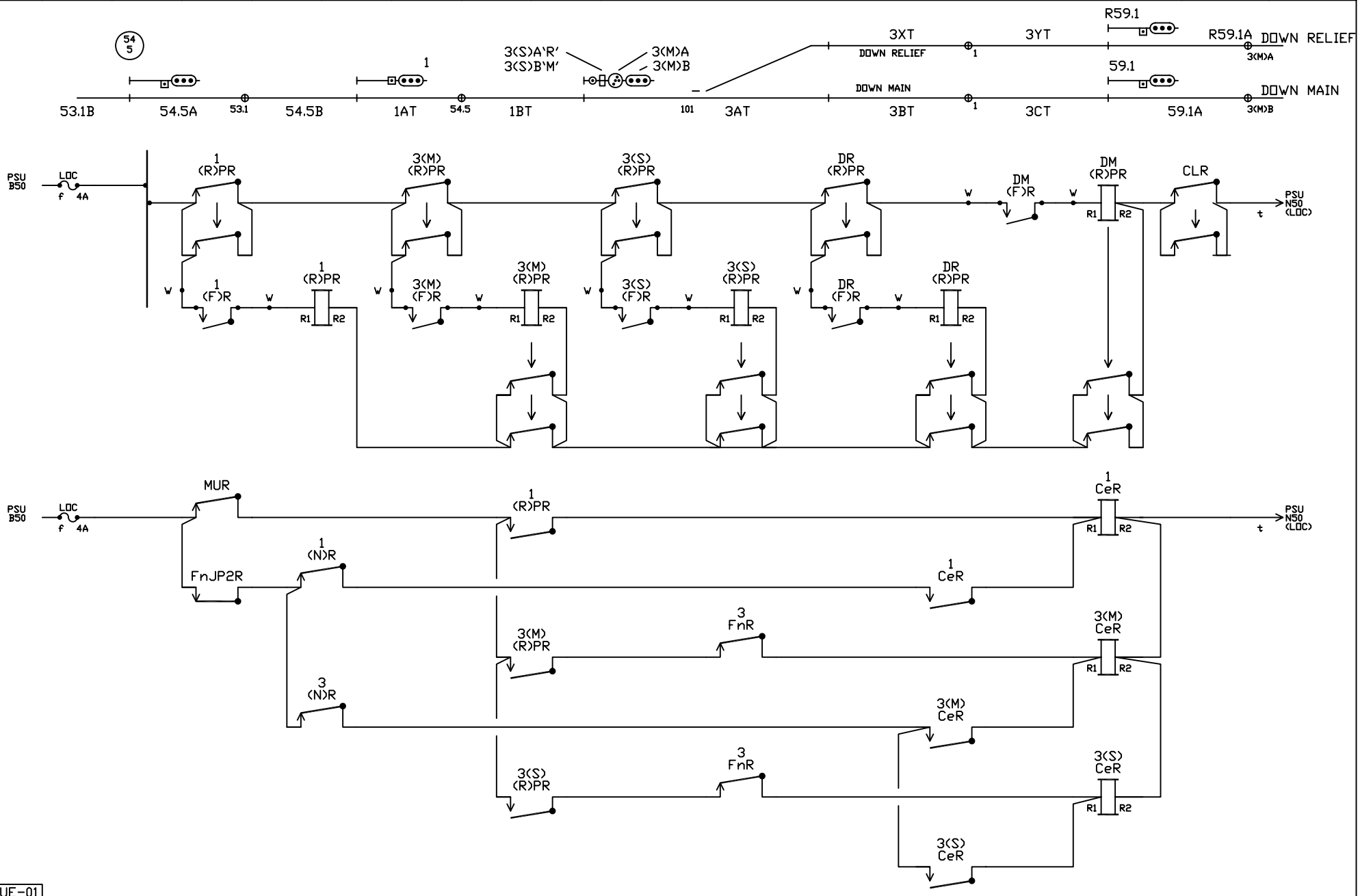
ISSUE-01	ISSUE-02
23-10-91	18-03-94
JOB NUMBER	



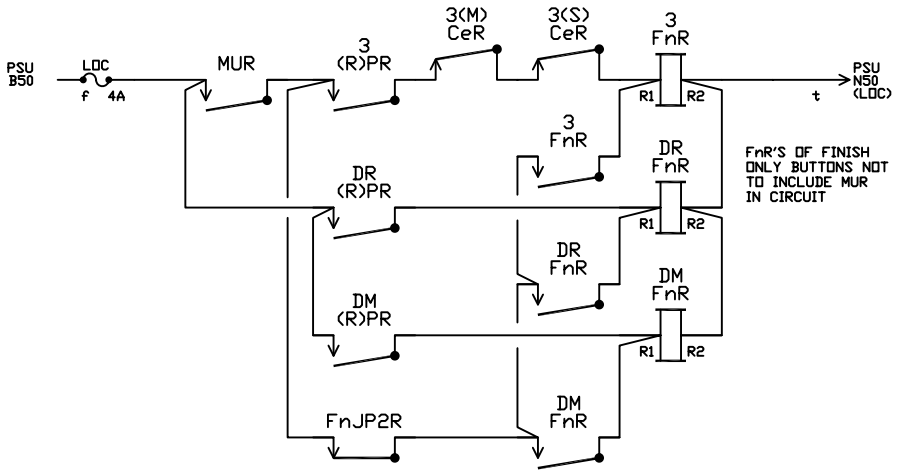
ISSUE-01	
23-10-91	
JOB NUMBER	

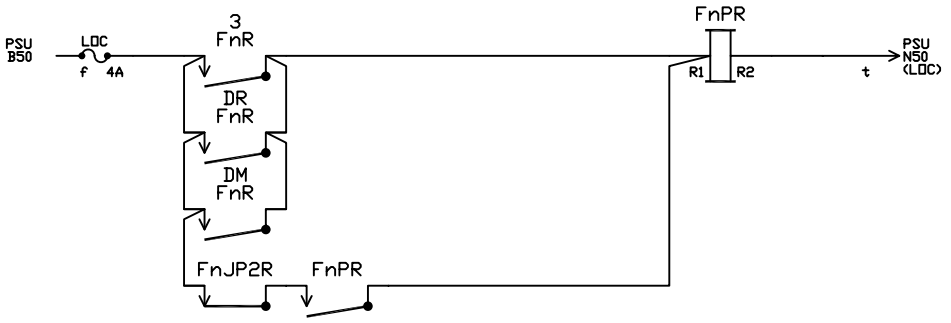


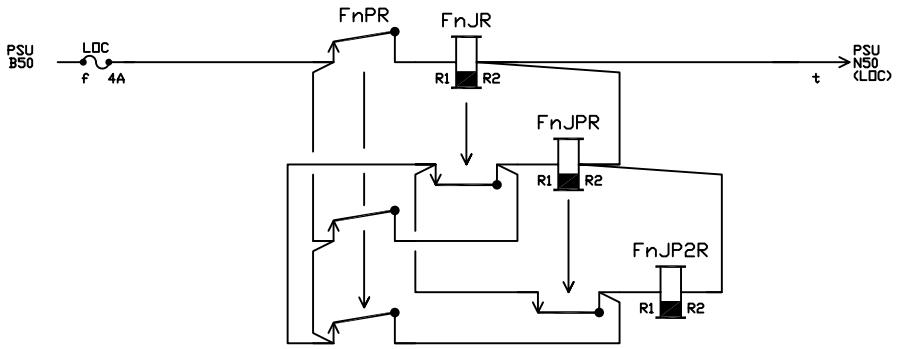
ISSUE-01
01-09-03
JOB NUMBER

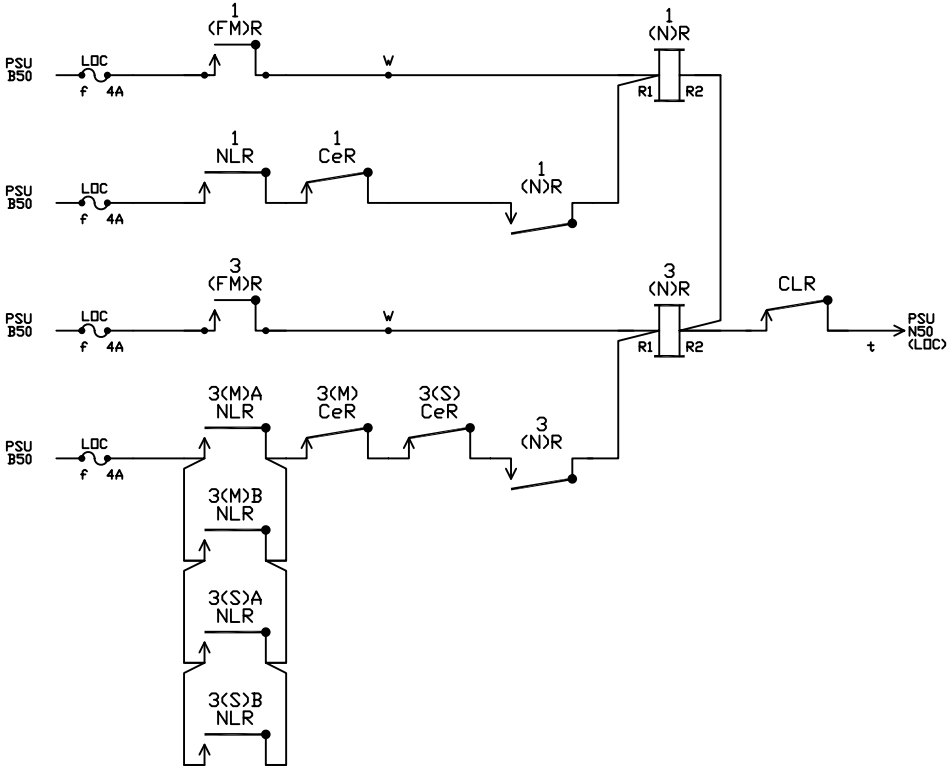


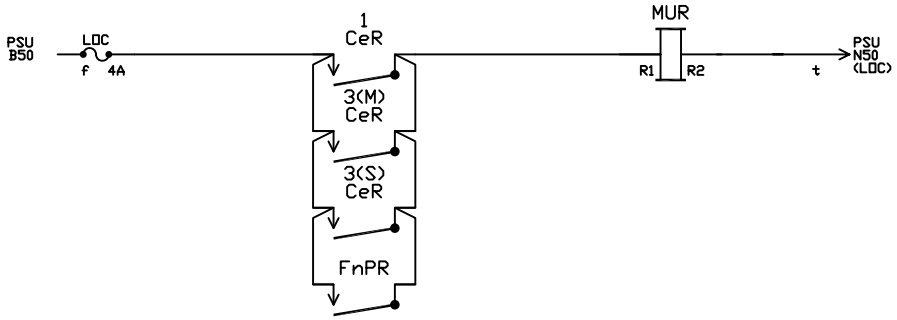
ISSUE-01
01-09-03
JOB NUMBER





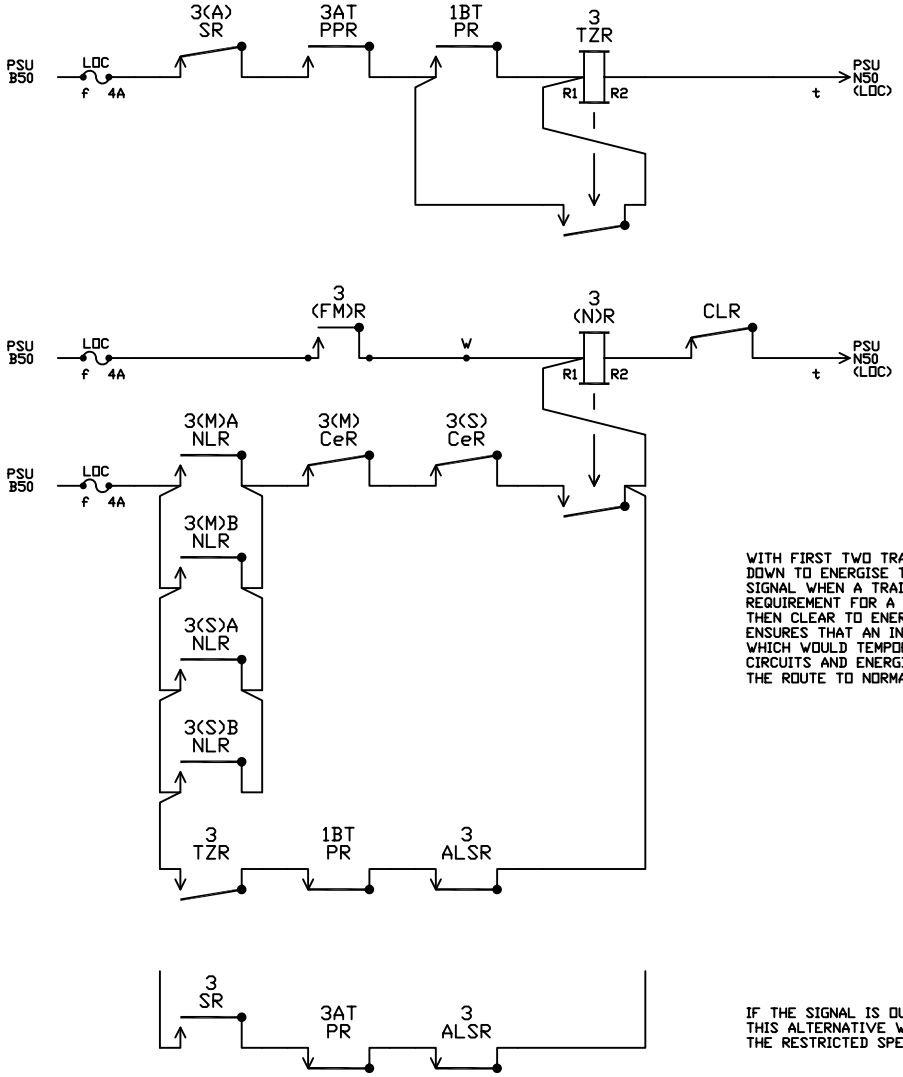


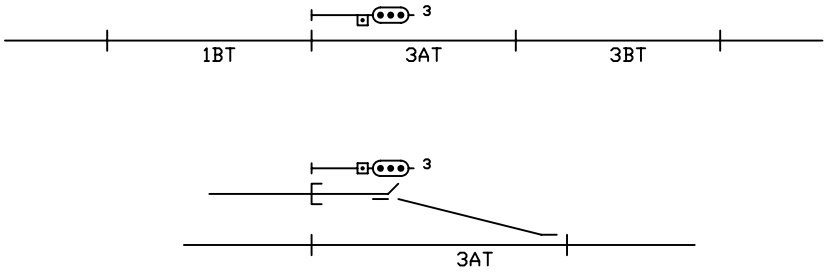




ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	21-02-06
JOB NUMBER		

AUTOMATIC NORMALISING



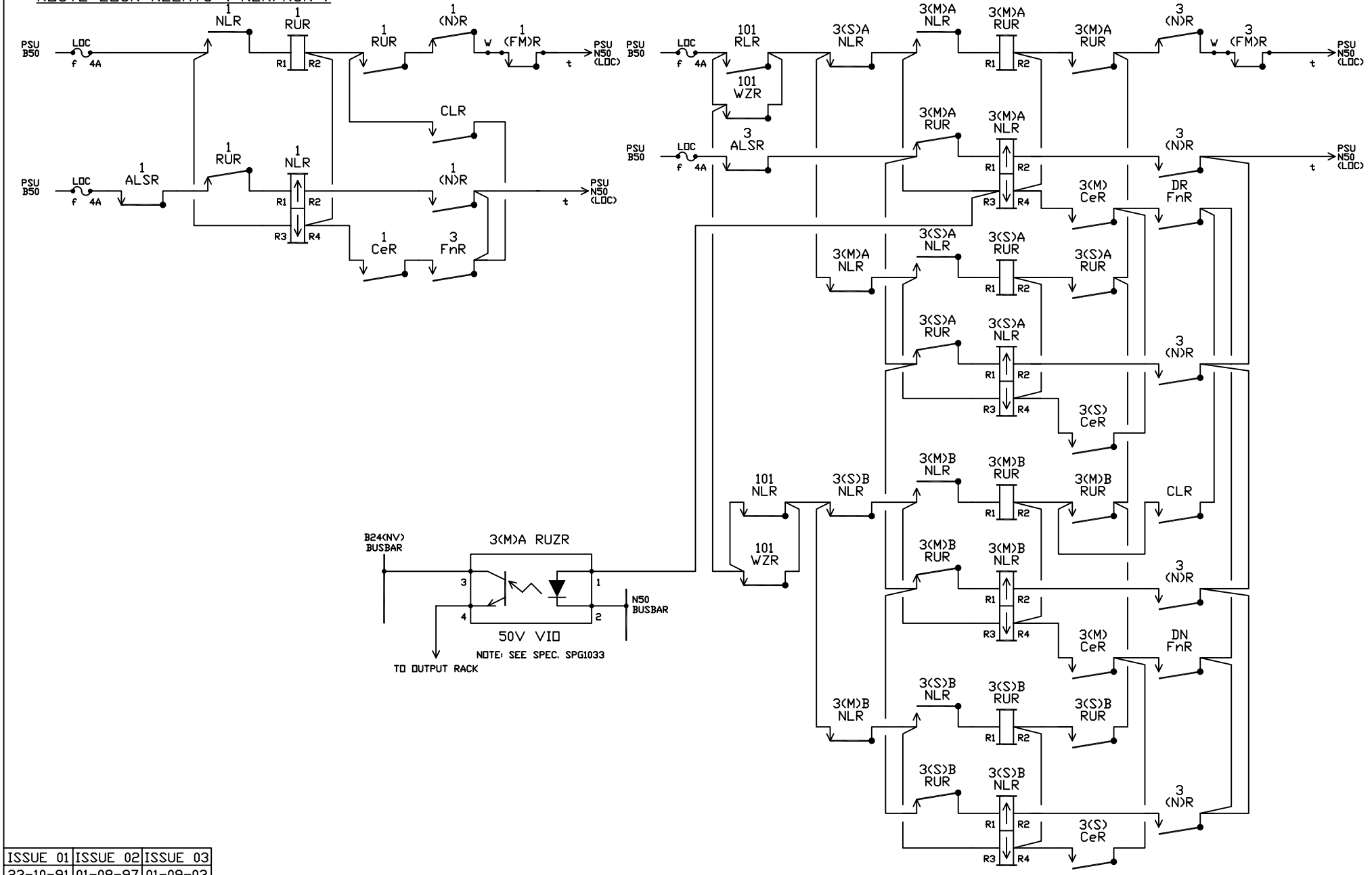


WITH FIRST TWO TRACKS PAST THE SIGNAL REQUIRED DOWN TO ENERGISE THE APPROACH STICK OF A RUNNING SIGNAL WHEN A TRAIN IS APPROACHING THE SIGNAL, THE REQUIREMENT FOR A THIRD (BERTH) TRACK DOWN AND THEN CLEAR TO ENERGISE THE (N)R (ie PULL THE BUTTON) ENSURES THAT AN INTERMITTENT INSULATED JOINT FAILURE WHICH WOULD TEMPORARILY DROP TWO ADJACENT TRACK CIRCUITS AND ENERGISE THE ALSR WILL NOT ALSO CAUSE THE ROUTE TO NORMALISE

IF THE SIGNAL IS OUT OF A SIDING WITH NO BERTH TRACK THIS ALTERNATIVE WILL BE ACCEPTABLE BECAUSE OF THE RESTRICTED SPEED OF THE MOVEMENT

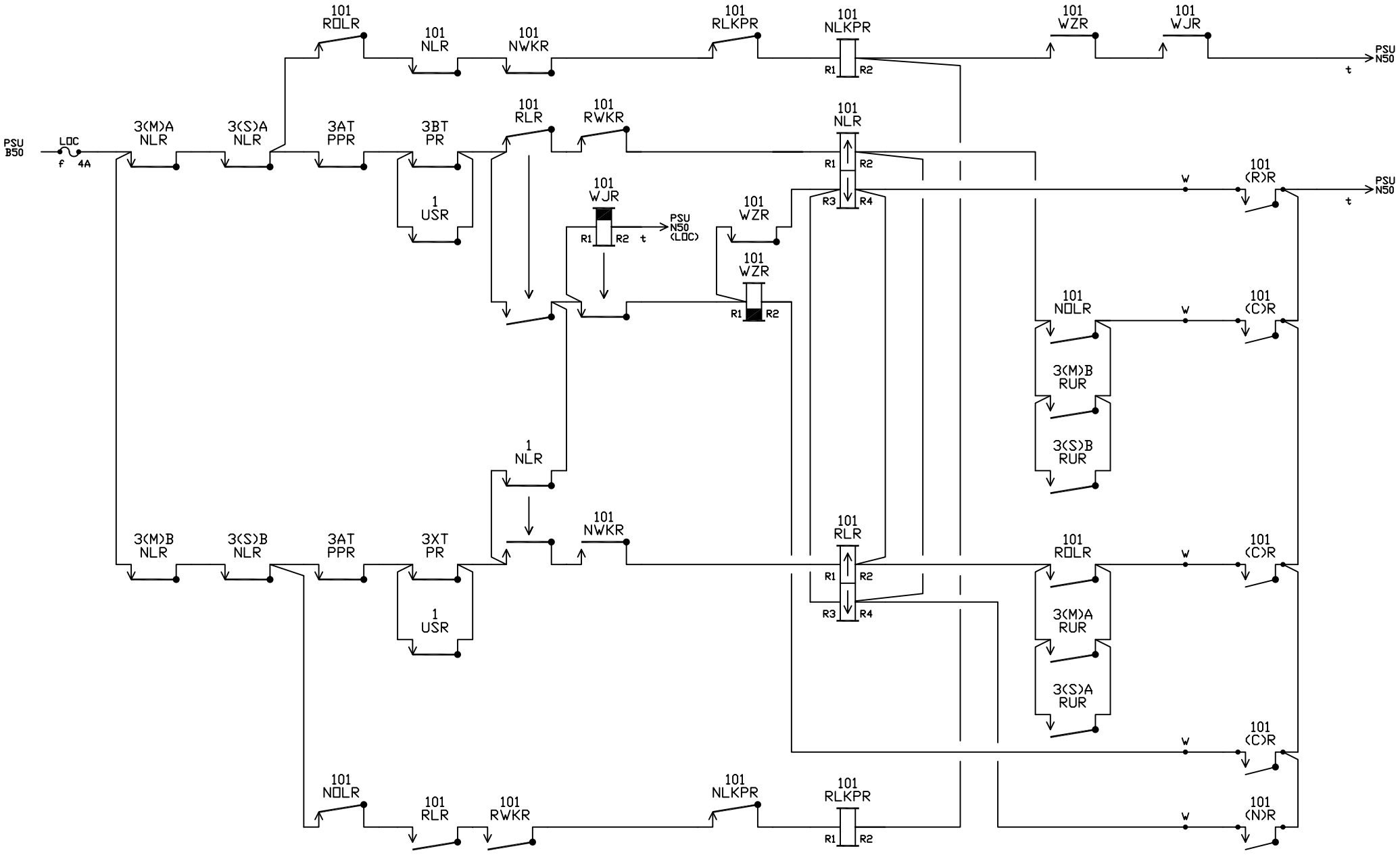
ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	21-02-06
JOB NUMBER		

ROUTE LOCK RELAYS (NLR/RUR)



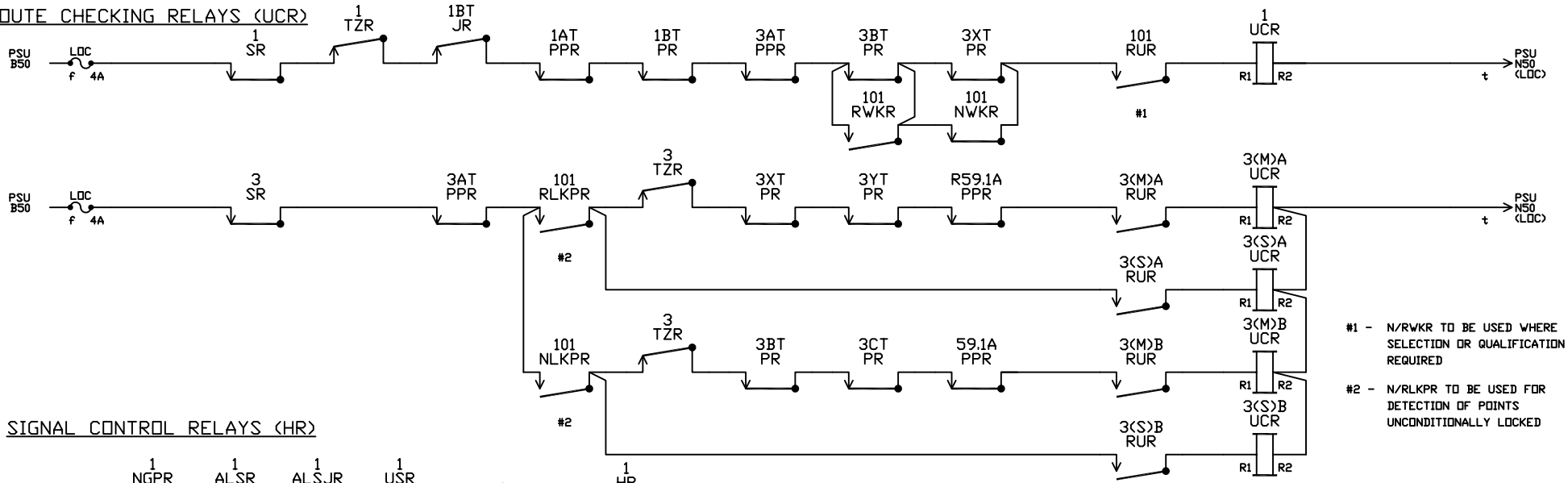
ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-08-97	01-09-03
JOB NUMBER		

POINT LOCK RELAYS (N/RLR Etc)



ISSUE 01	ISSUE 02	ISSUE 03	ISSUE 04
23-10-91	01-09-03	21-02-06	27/06/07
JOB NUMBER			

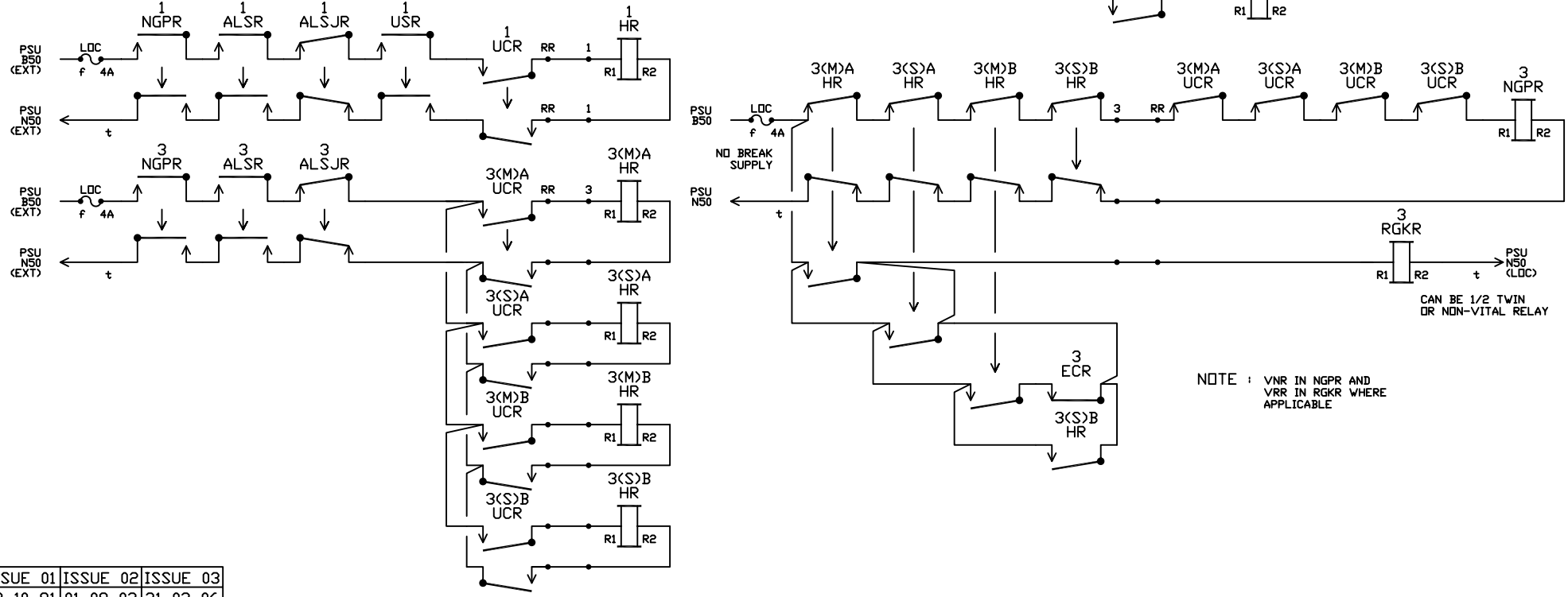
ROUTE CHECKING RELAYS (UCR)



#1 - N/RWKR TO BE USED WHERE SELECTION OR QUALIFICATION REQUIRED

#2 - N/RLKPR TO BE USED FOR DETECTION OF POINTS UNCONDITIONALLY LOCKED

SIGNAL CONTROL RELAYS (HR)

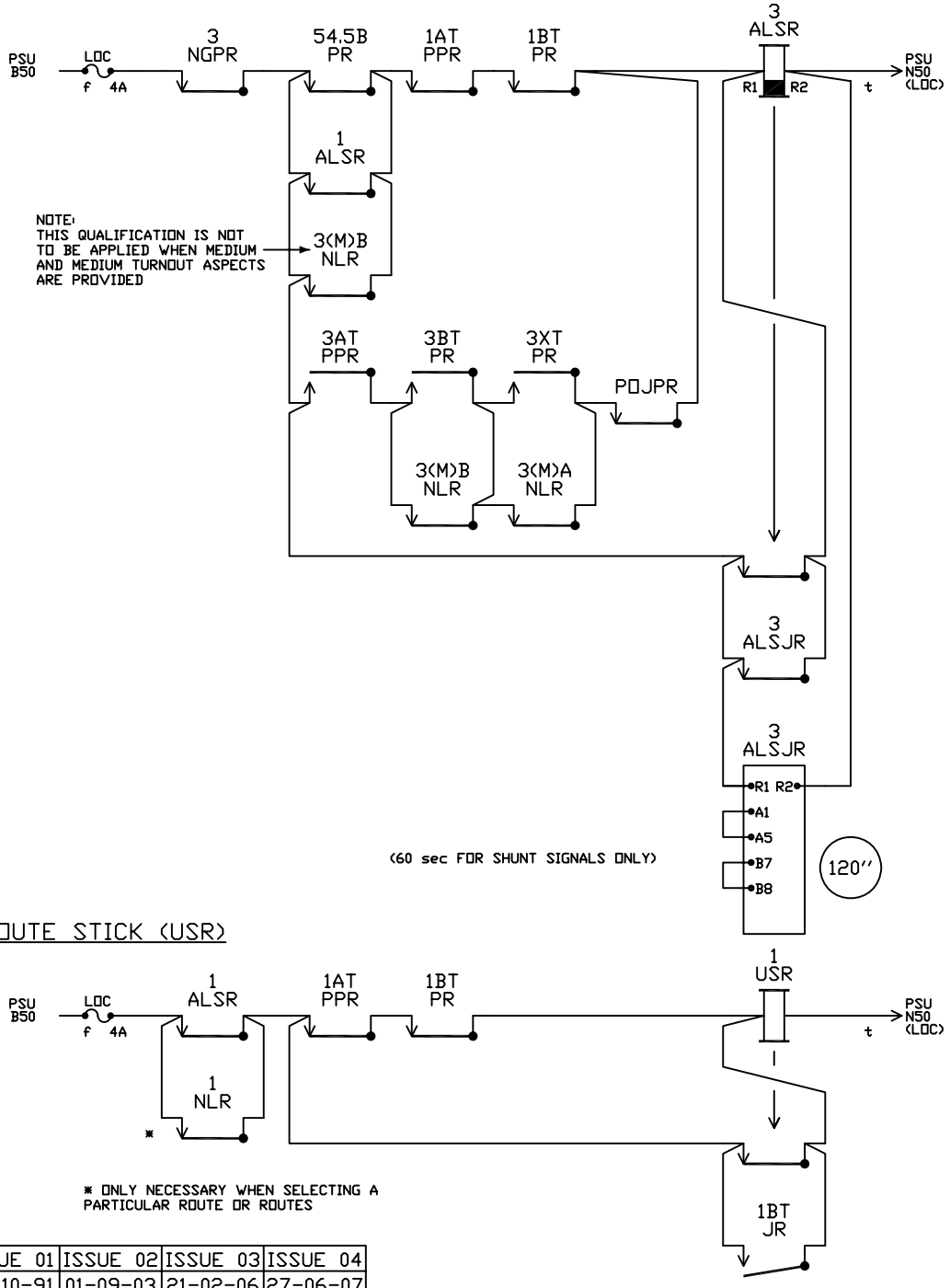


CAN BE 1/2 TWIN OR NON-VITAL RELAY

NOTE : VNR IN NGPR AND VRR IN RGKR WHERE APPLICABLE

ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	21-02-06
JOB NUMBER		

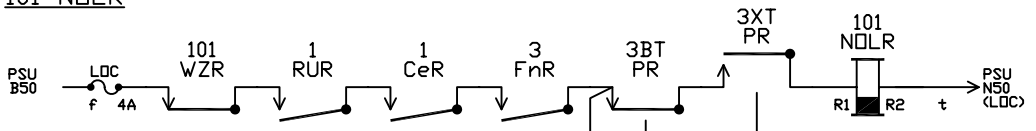
APPROACH STICK (ALSR)



ROUTE STICK (USR)

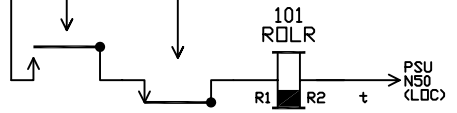
* ONLY NECESSARY WHEN SELECTING A PARTICULAR ROUTE OR ROUTES

101 NOLR

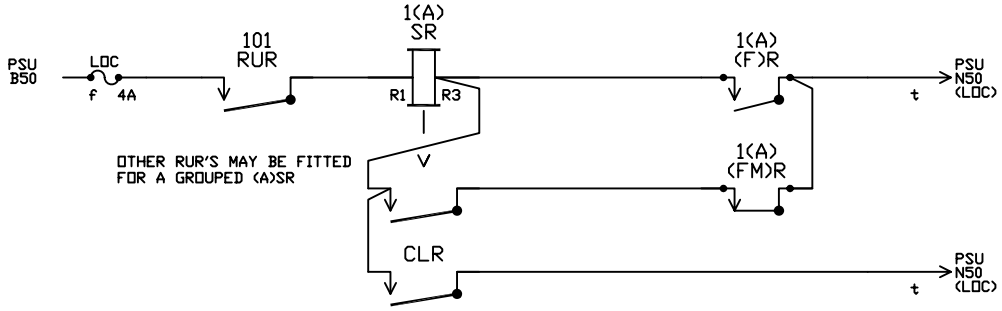


101 ROLR

NOTE : THE REQUIREMENT FOR NOIR & ROIR'S WILL BE SPECIFIED IN THE CONTROL TABLES

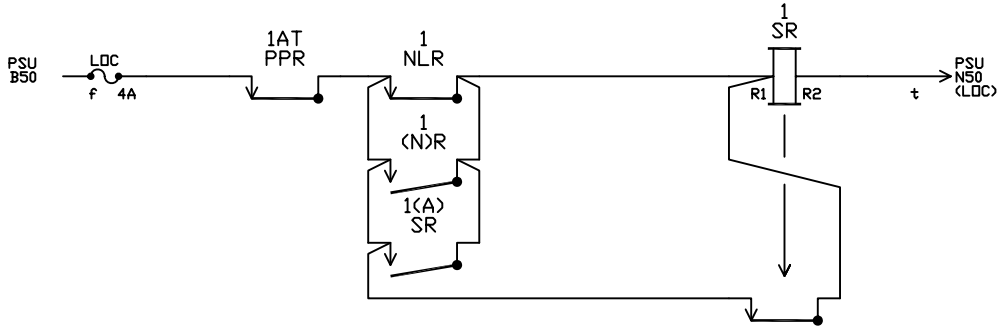


AUTO - RECLEARING

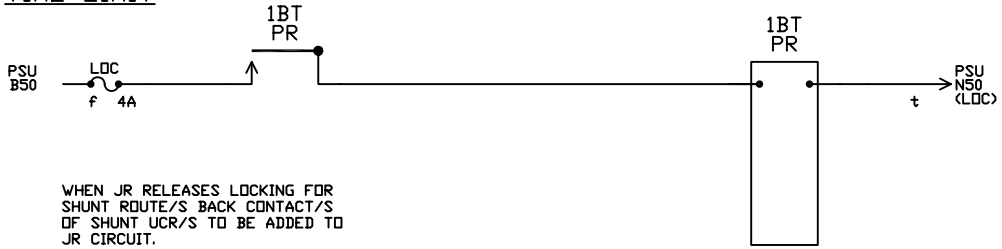


PROVIDED ONLY IF CLOSING FACILITIES FITTED

LEVER STICK (SR)

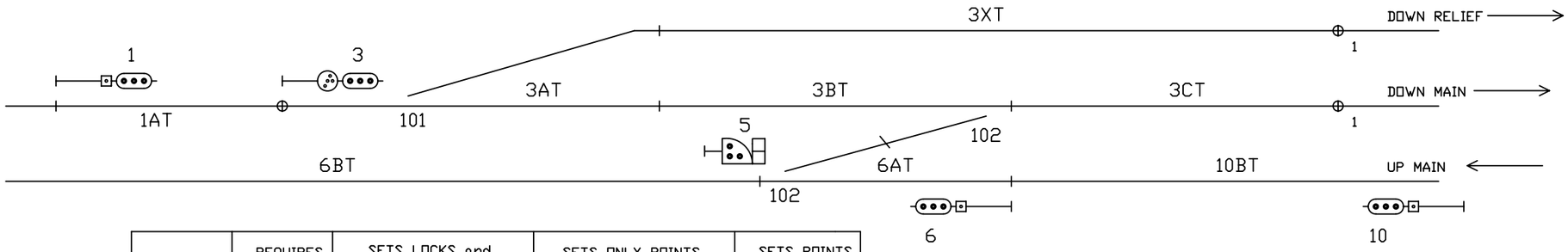


TIME LIMIT



WHEN JR RELEASES LOCKING FOR SHUNT ROUTE/S BACK CONTACT/S OF SHUNT UCR/S TO BE ADDED TO JR CIRCUIT.
JR IS THEN PROVED DOWN IN HR CIRCUIT

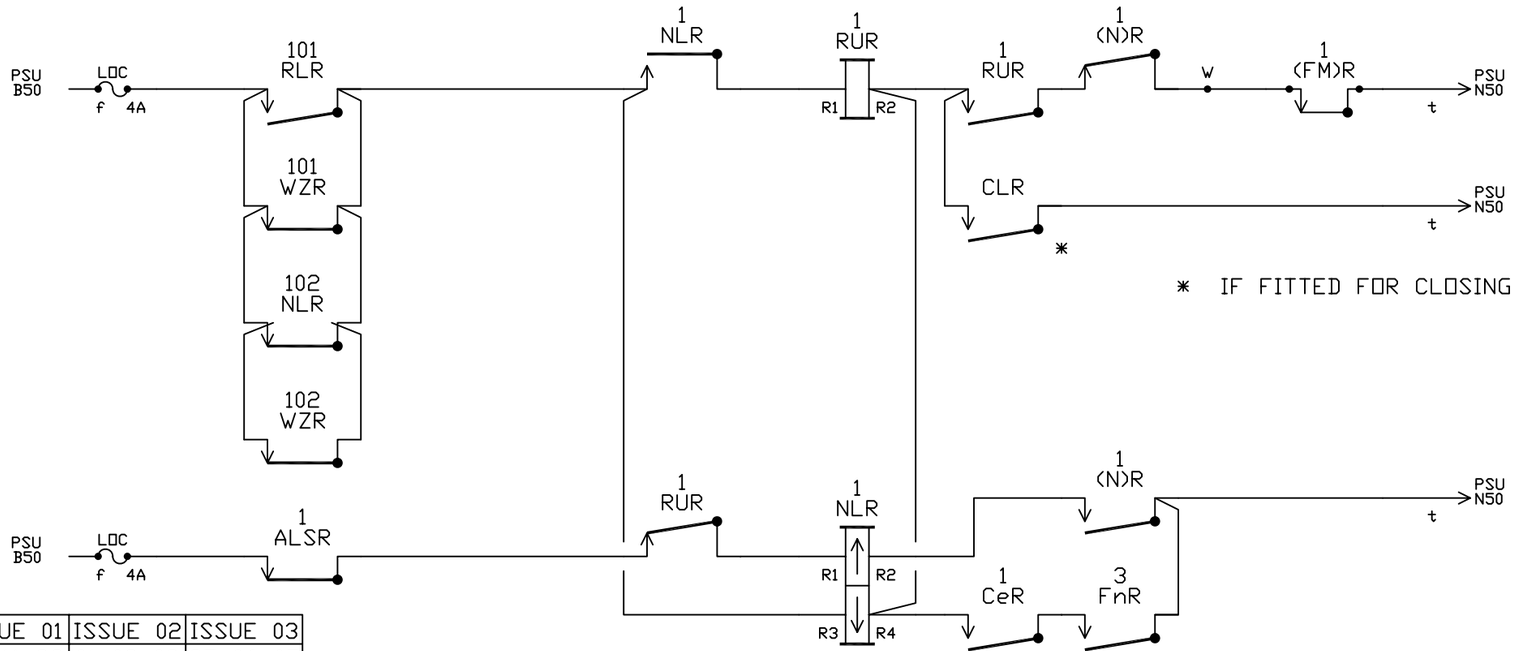
ISSUE 01	ISSUE 02	ISSUE 03	ISSUE 04
23-10-91	01-09-03	21-02-06	27-06-07
JOB NUMBER			



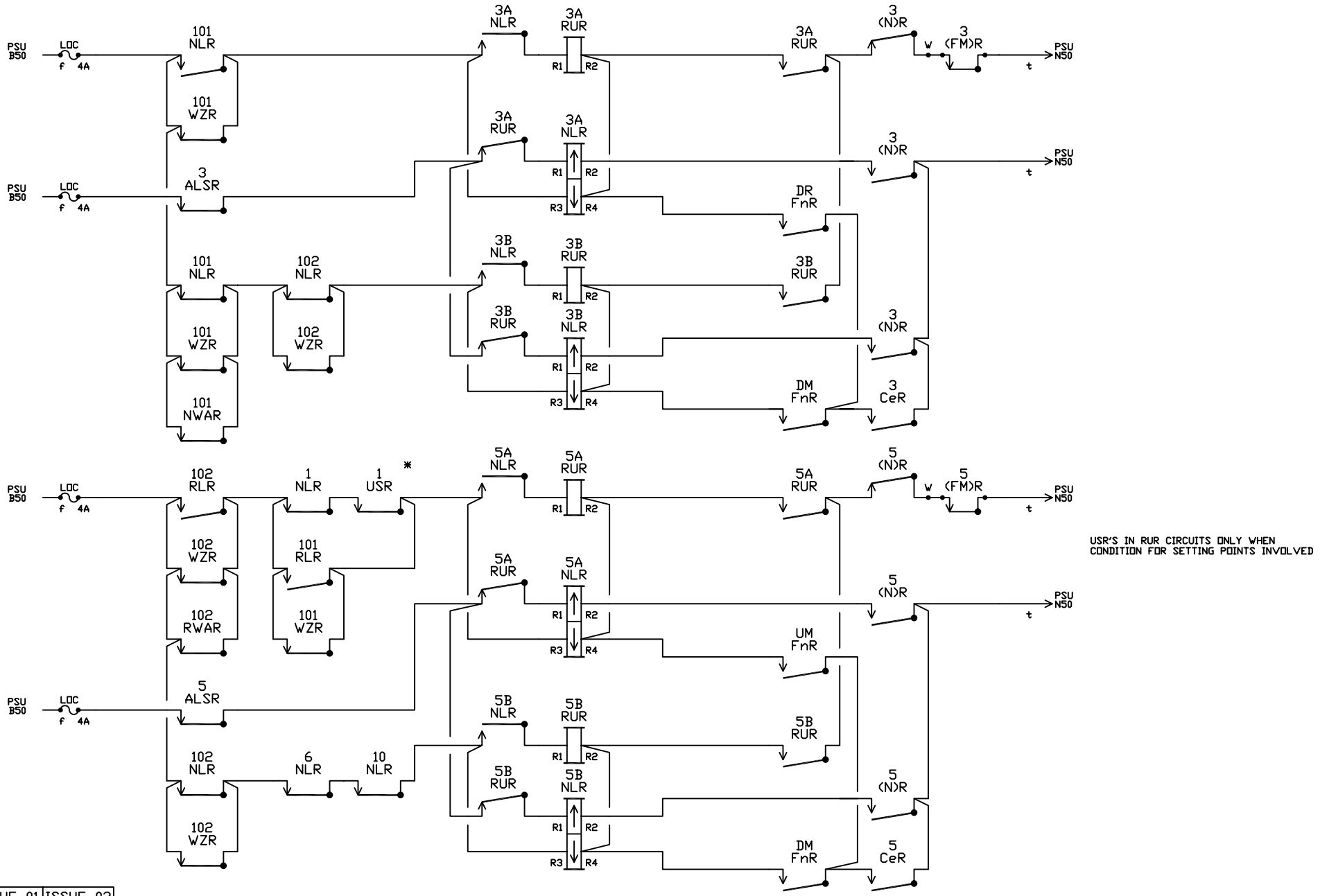
ROUTE	REQUIRES ROUTES NORMAL	SETS LOCKS and DETECTS POINTS.		SETS ONLY POINTS		SETS POINTS IN SEQUENCE
		NORMAL	REVERSE	NORMAL	REVERSE	
1		(102w101N) #1	(101w102R) #2			
3A			101			
3B		101,102				102N THEN 101N WHEN 1 REV OR ROUTE OCC.
5A			102		101 WHEN 1 REV OR ROUTE OCC.	101R THEN 102R WHEN 1 REV OR ROUTE OCC.
5B	6,10	102				
6	5B	102				
10	5B	102				

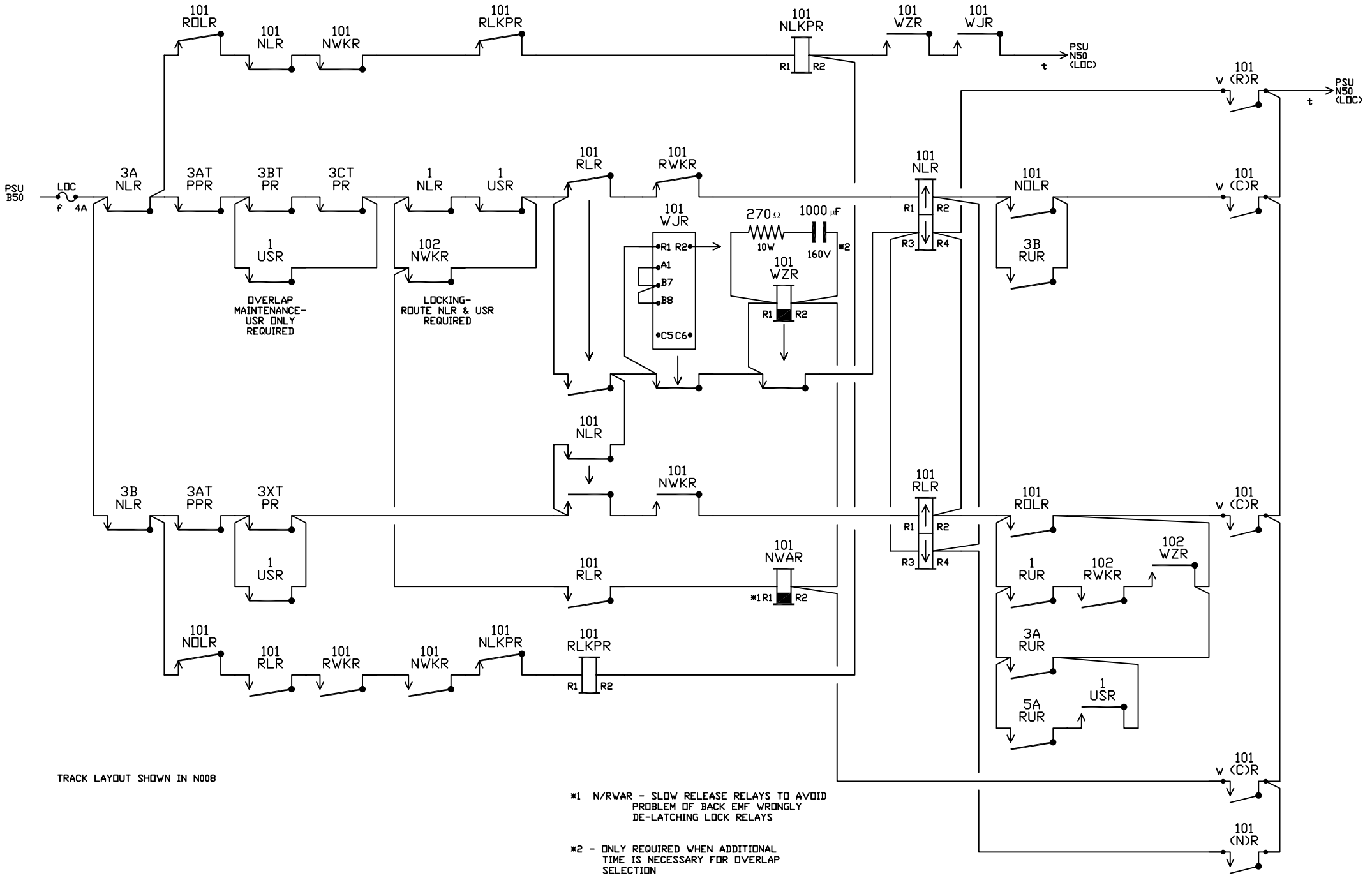
#1 1st PREFERRED O/L WHEN 101N

#2 2nd PREFERRED O/L WHEN 102 IS REV & LOCKED



* IF FITTED FOR CLOSING


PSU B50
LOC f 4A
101 NLR
101 WZR
3 ALSR
101 NWAR
102 NLR
102 WZR
102 RLR
1 NLR
1 USR
*
101 RLR
102 RWAR
5 ALSR
6 NLR
10 NLR
3A NLR
3A RUR
3B NLR
3B RUR
5A NLR
5A RUR
5B NLR
5B RUR
R1
R2
R3
R4
3 (N)R
3 (FM)R
5 (N)R
5 (FM)R
DR FnR
DM FnR
UM FnR
3 CeR
5 CeR
w
t
PSU N50
USR'S IN RUR CIRCUITS ONLY WHEN CONDITION FOR SETTING POINTS INVOLVED

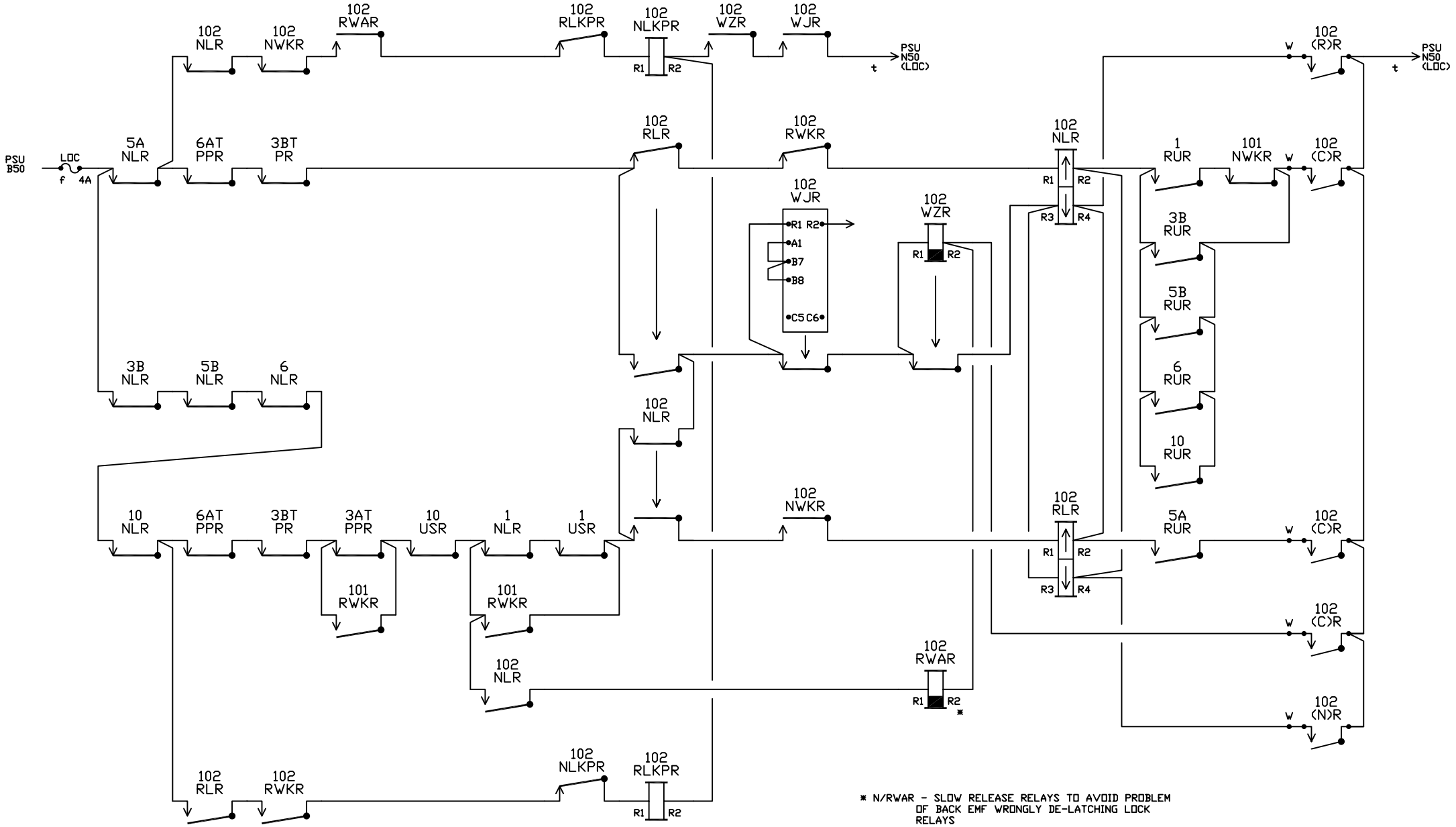


TRACK LAYOUT SHOWN IN N008

*1 N/RWAR - SLOW RELEASE RELAYS TO AVOID PROBLEM OF BACK EMF WRONGLY DE-LATCHING LOCK RELAYS

*2 - ONLY REQUIRED WHEN ADDITIONAL TIME IS NECESSARY FOR OVERLAP SELECTION

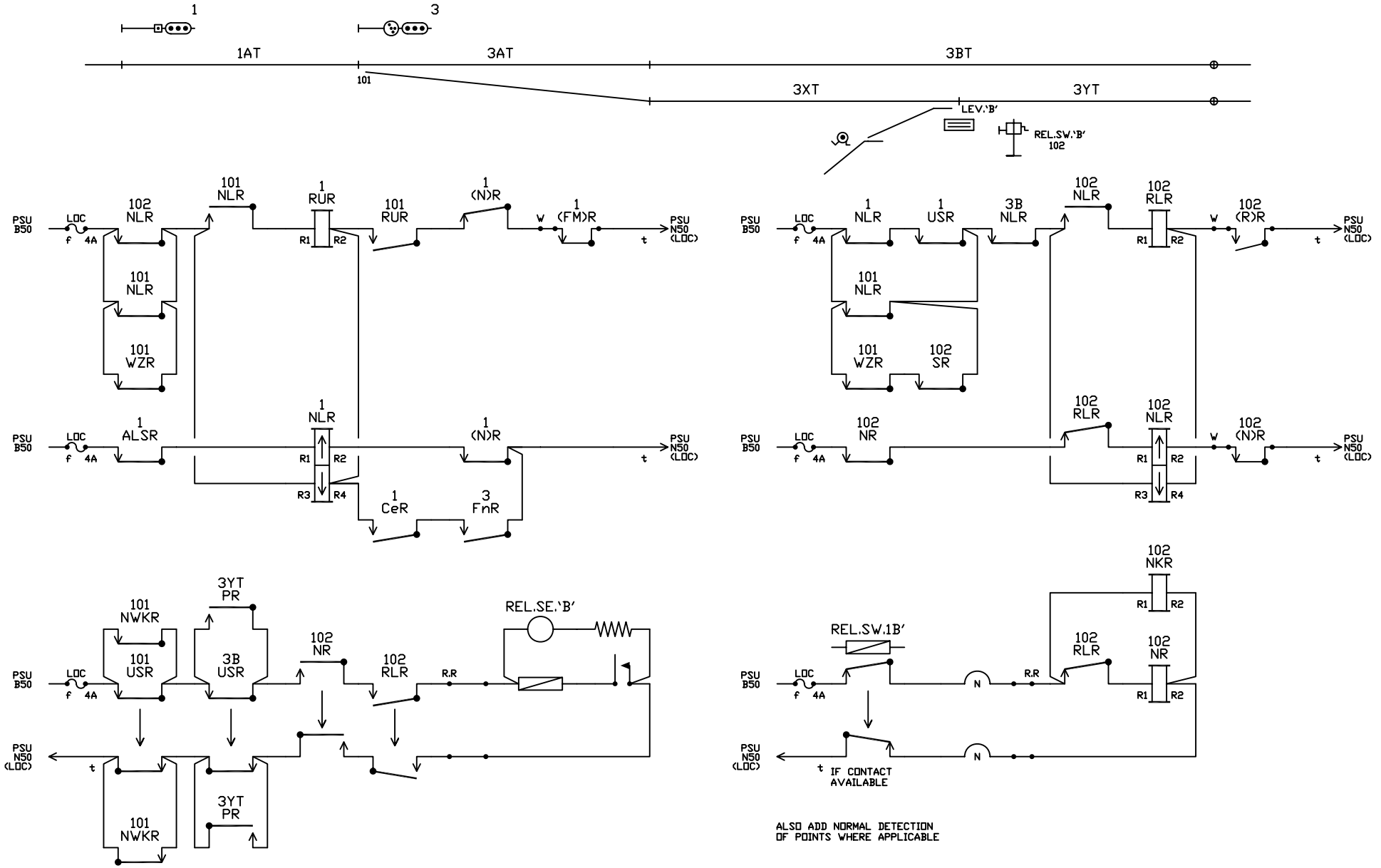
ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	27-06-07
JOB NUMBER		



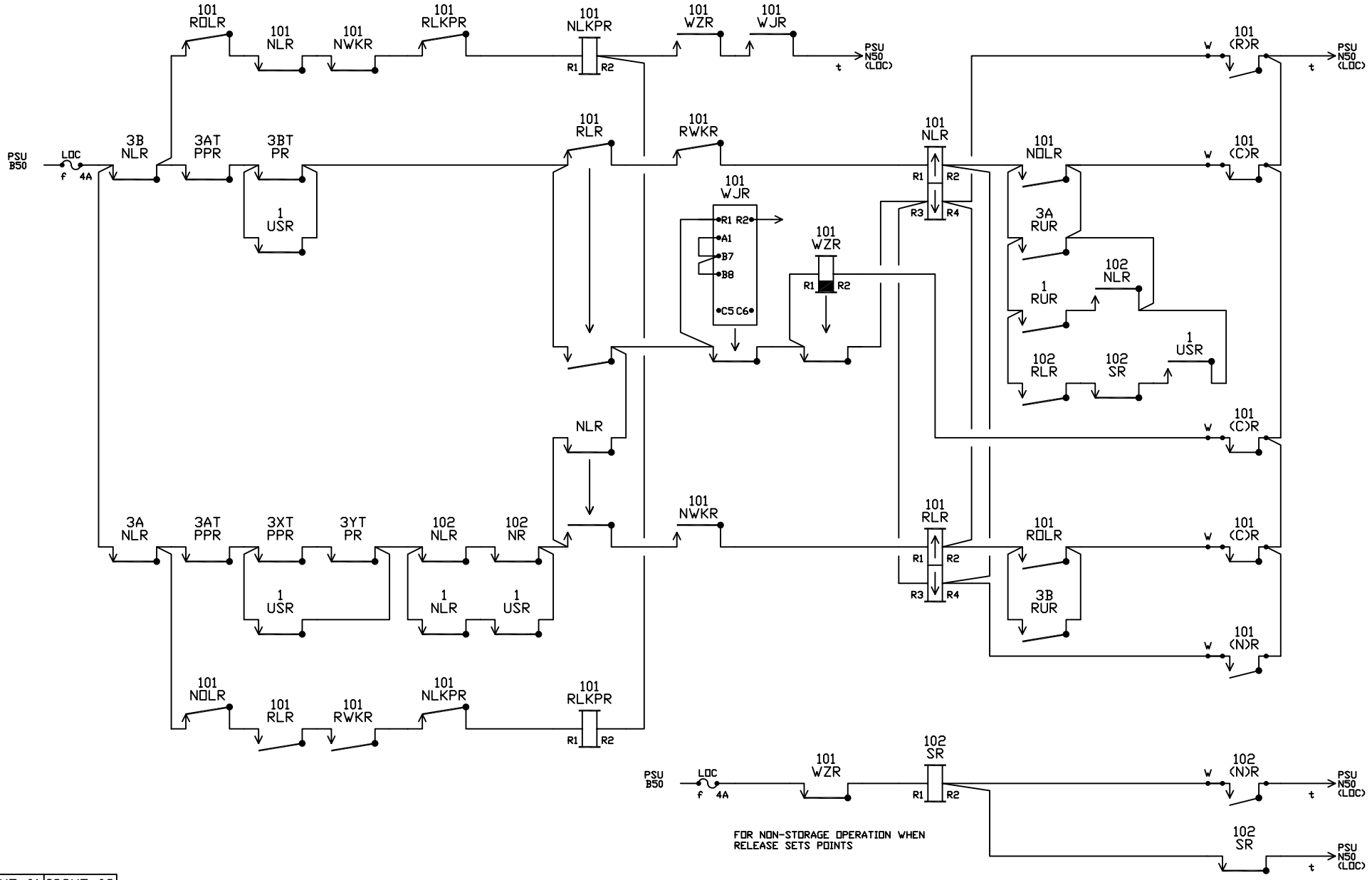
* N/RWAR - SLOW RELEASE RELAYS TO AVOID PROBLEM OF BACK EMF WRONGLY DE-LATCHING LOCK RELAYS

ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	27-06-07
JOB NUMBER		

	ISSUE-03			27/6/07	11:04			CSTDN012	ROUTE SETTING NX - RELEASING SWITCH			SHT: N012	CB: STD

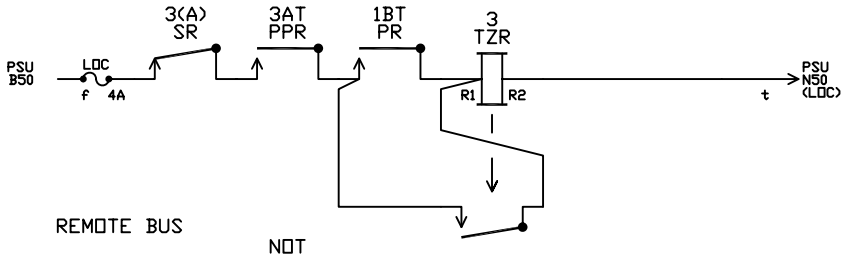


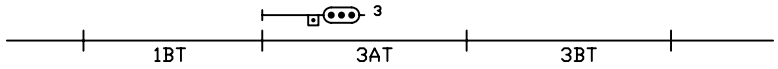
ISSUE 01	ISSUE 02
23-10-91	01-09-03
JOB NUMBER	



ISSUE 01	ISSUE 02
23-10-91	01-09-03
JOB NUMBER	

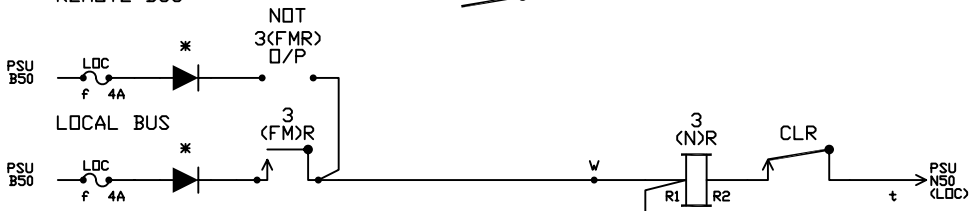
AUTOMATIC NORMALISING

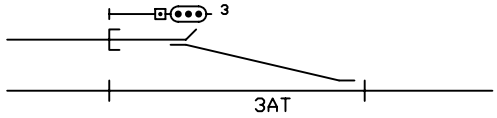


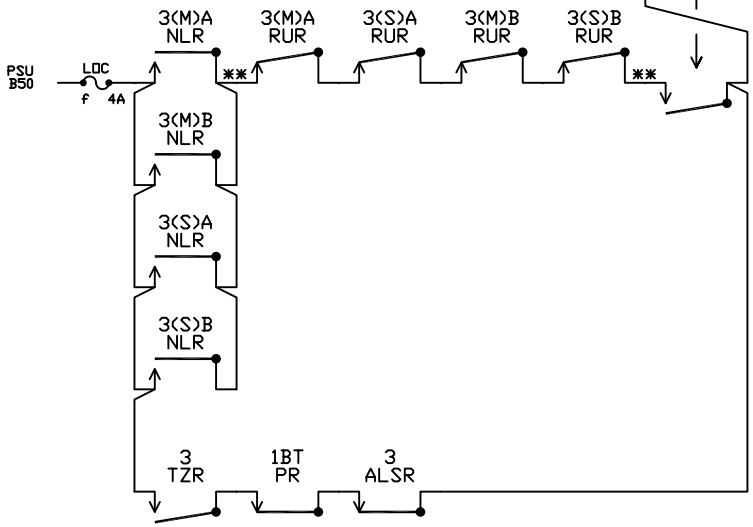


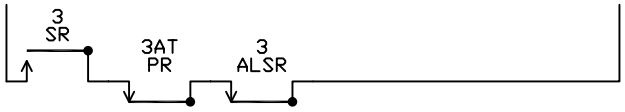
REMOTE BUS

LOCAL BUS









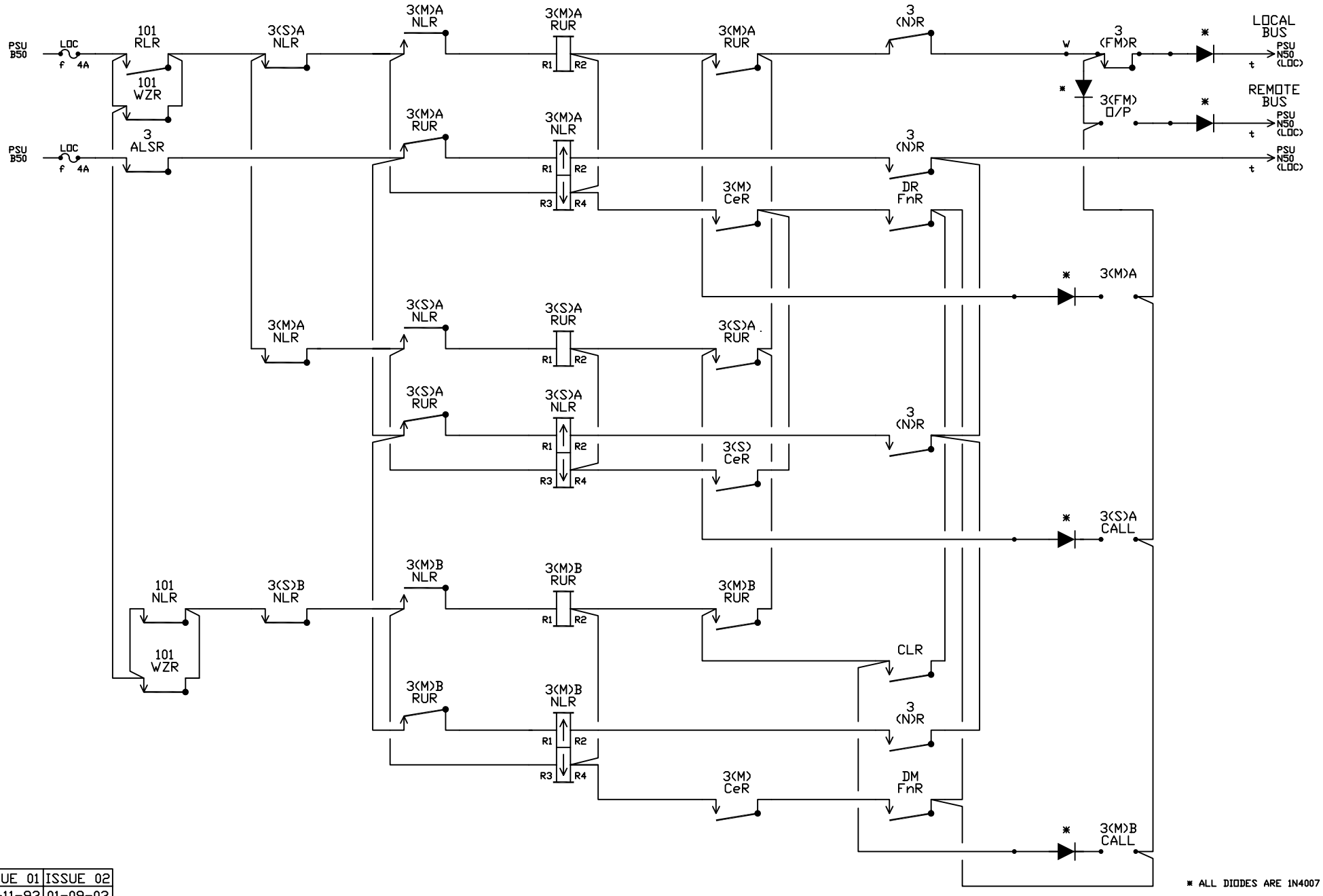
WITH FIRST TWO TRACKS PAST THE SIGNAL REQUIRED DOWN TO ENERGISE THE APPROACH STICK OF A RUNNING SIGNAL WHEN A TRAIN IS APPROACHING THE SIGNAL, THE REQUIREMENT FOR A THIRD (BERTH) TRACK DOWN AND THEN CLEAR TO ENERGISE THE (N)R ENSURES THAT AN INTERMITTENT INSULATED JOINT FAILURE WHICH WOULD TEMPORARILY DROP TWO ADJACENT TRACK CIRCUITS AND ENERGISE THE ALSR WILL NOT ALSO CAUSE THE ROUTE TO NORMALISE

* ALL DIODES ARE 1N4007

** FOR INTERLOCKING WITH PANEL PROCESSOR ROUTE SET INTERFACE

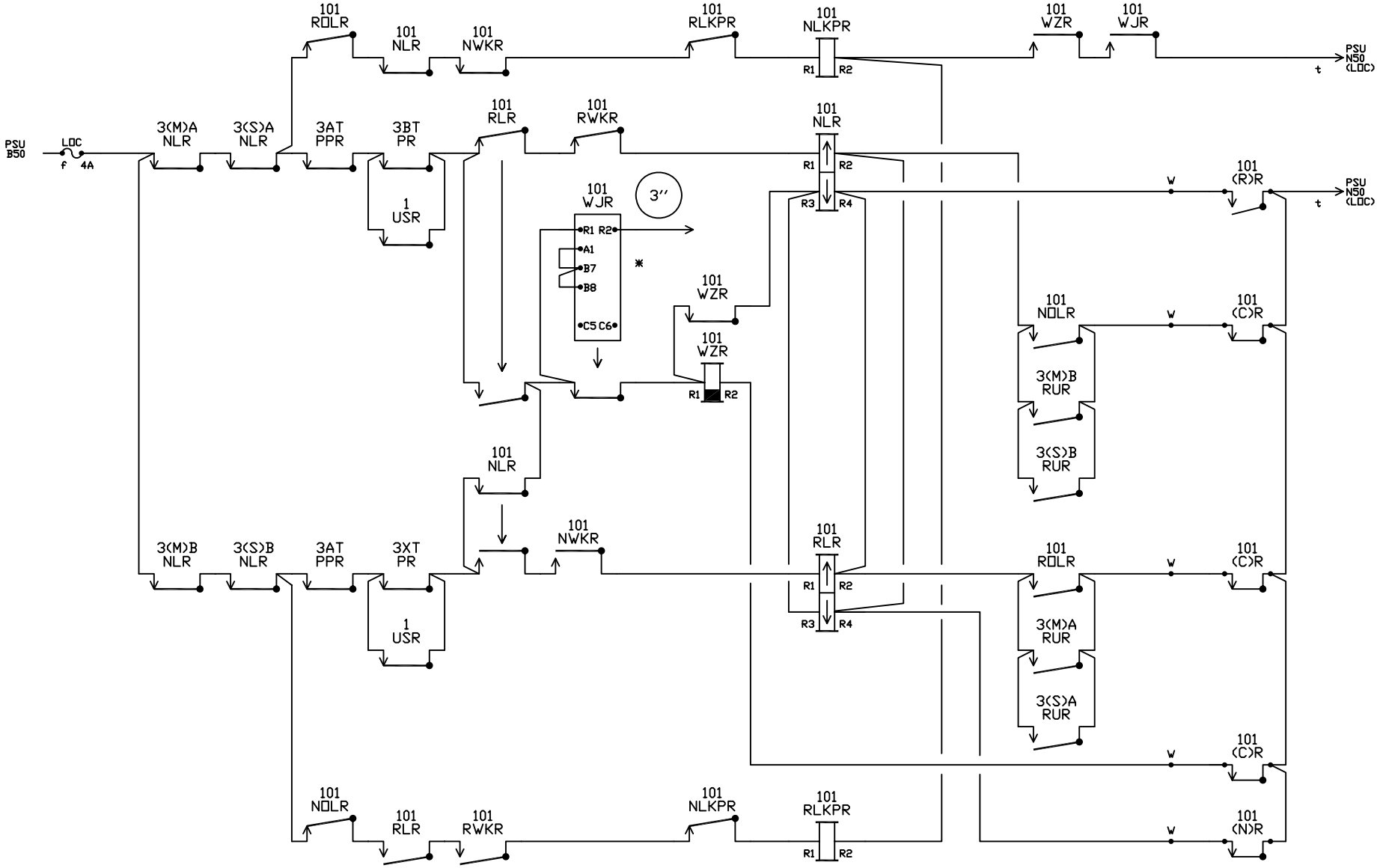
IF THE SIGNAL IS OUT OF A SIDING WITH NO BERTH TRACK THIS ALTERNATIVE WILL BE ACCEPTABLE BECAUSE OF THE RESTRICTED SPEED OF THE MOVEMENT

ISSUE 01	ISSUE 02
30-12-99	01-09-03
JOB NUMBER	



ISSUE 01	ISSUE 02
23-11-93	01-09-03
JOB NUMBER	

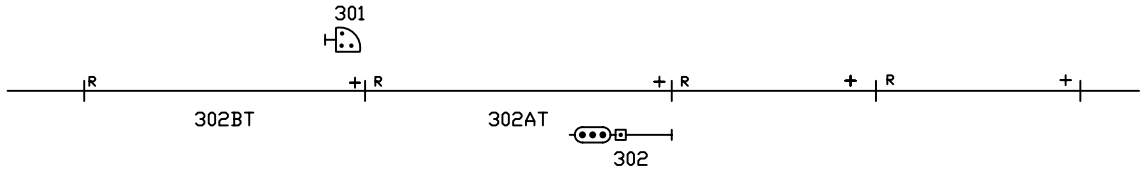
POINT LOCK RELAYS (N/RLR Etc)



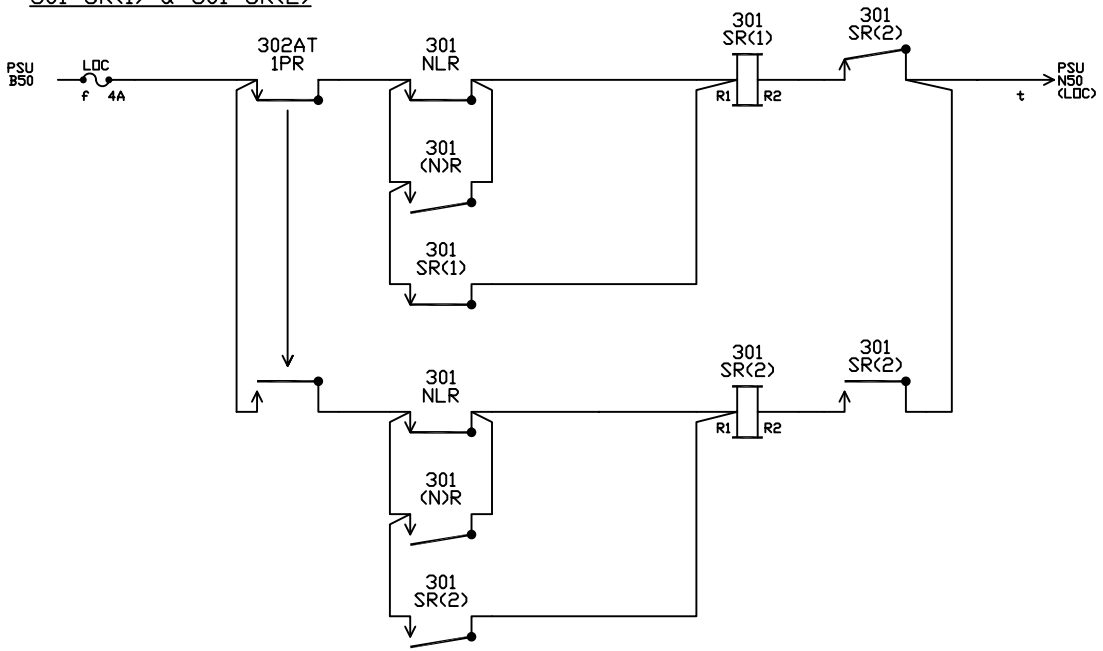
* A 3" WJR IS REQUIRED ONLY WHERE IMPULSE TRACK CIRCUITS ARE NOT PROVIDED OVER POINTS

ISSUE 01	ISSUE 02
23-10-91	01-09-03
JOB NUMBER	

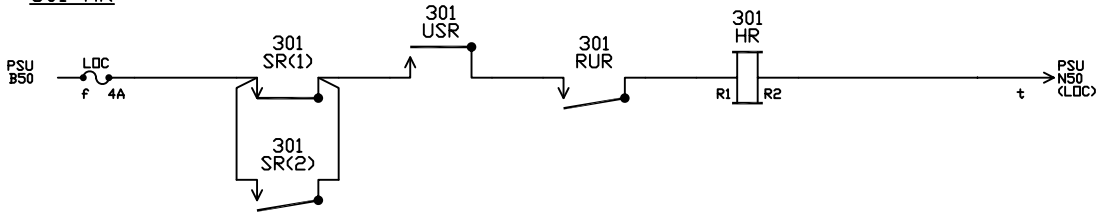
	ISSUE-03			27/6/07	11:18			CSTDN017	DOUBLE LEVER STICK CIRCUIT			SHT: N017	CB: STD



301 SR(1) & 301 SR(2)

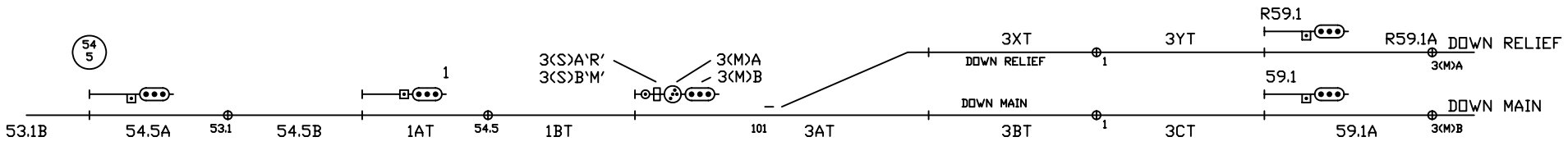


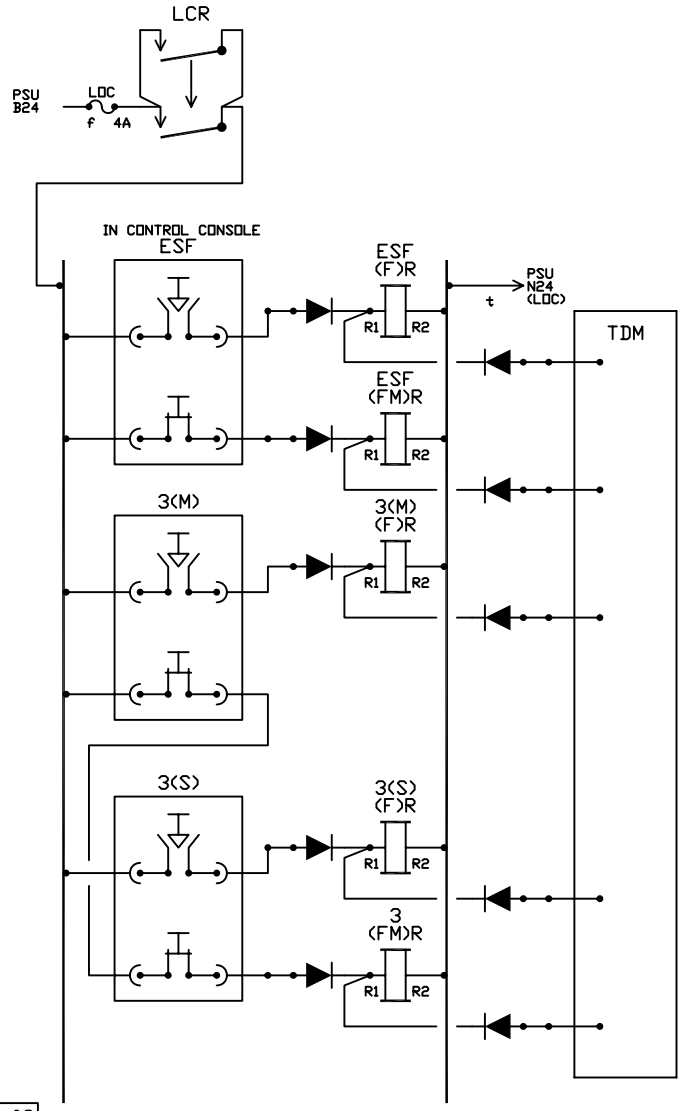
301 HR

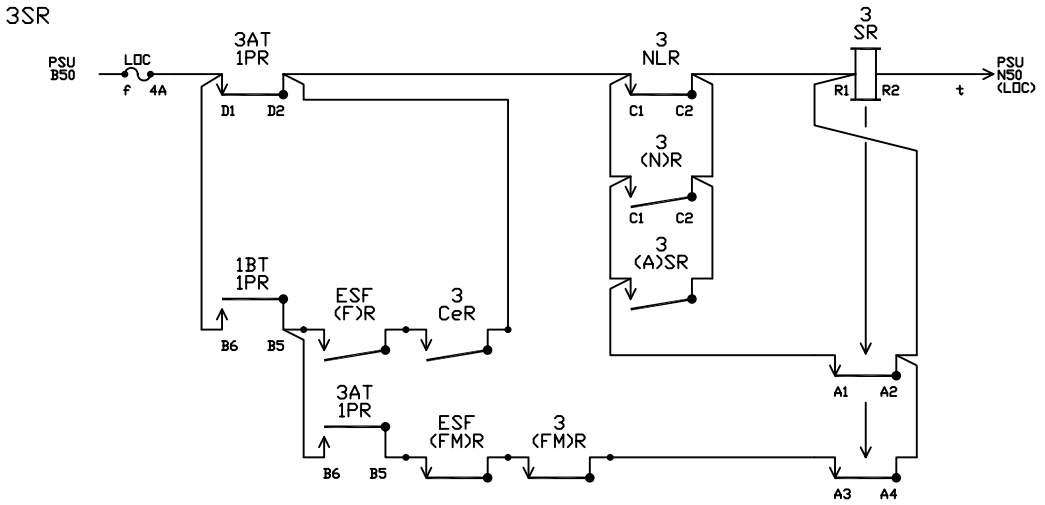


ISSUE 01	ISSUE 02
01-08-97	01-09-03
JOB NUMBER	

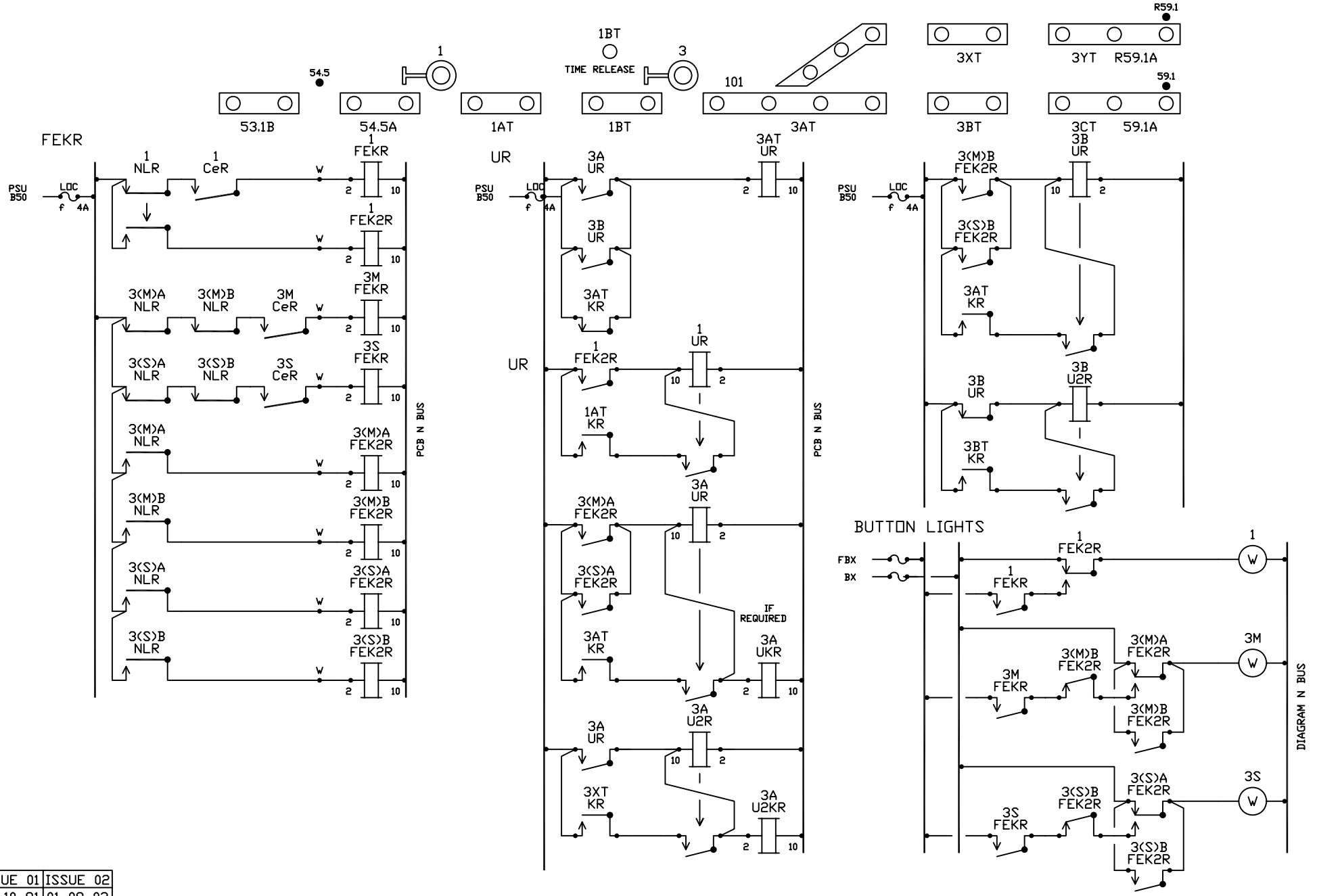
	ISSUE-03			27/6/07	11:18			CSTDN018	EMERGENCY SHUNT FACILITY			SHT: N018	CB: STD





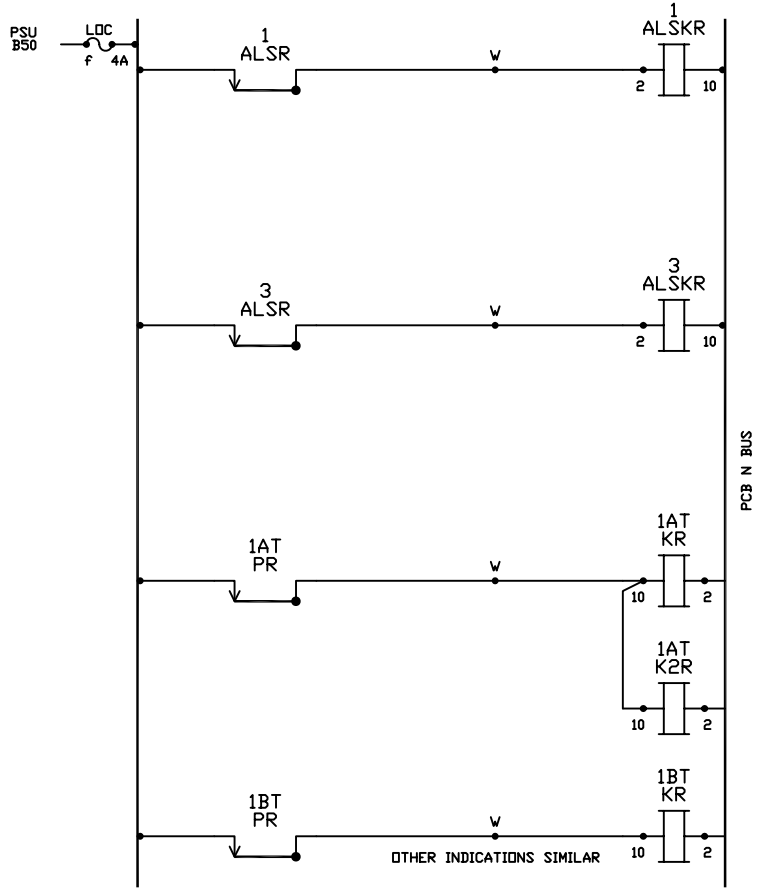


ISSUE 01	ISSUE 02
01-12-98	01-09-03
JOB NUMBER	

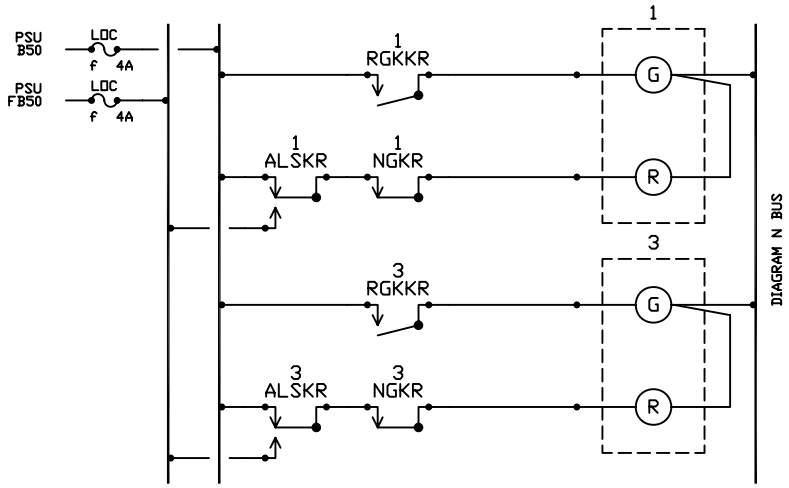


ISSUE 01	ISSUE 02
23-10-91	01-09-03
JOB NUMBER	

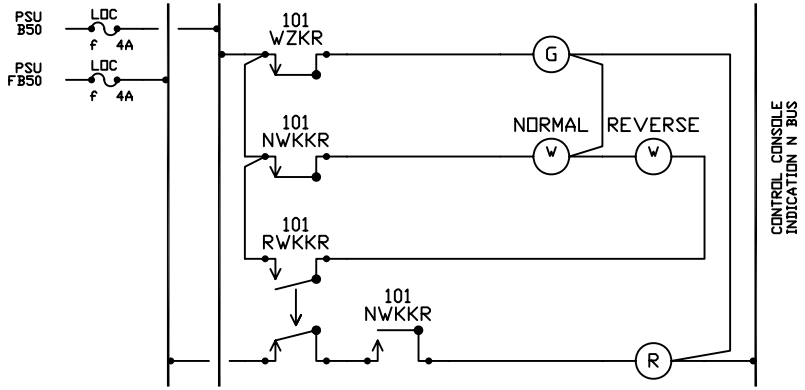
ALSKR



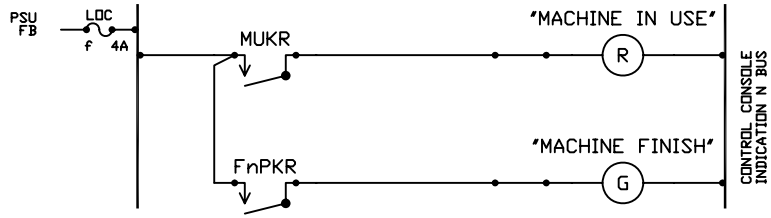
SIGNAL REPEATERS



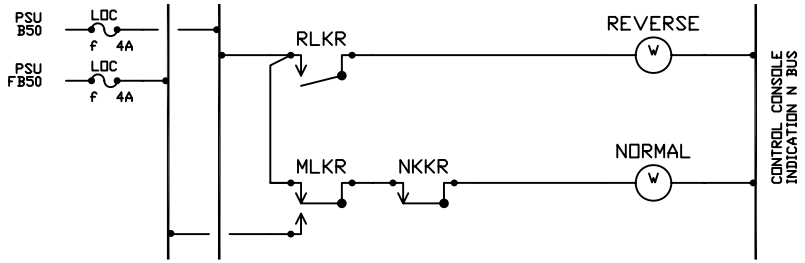
POINT LEVER LIGHTS



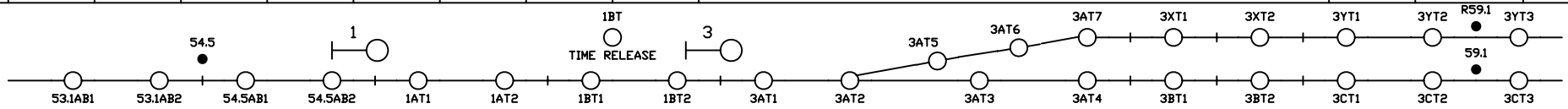
MACHINE LIGHTS

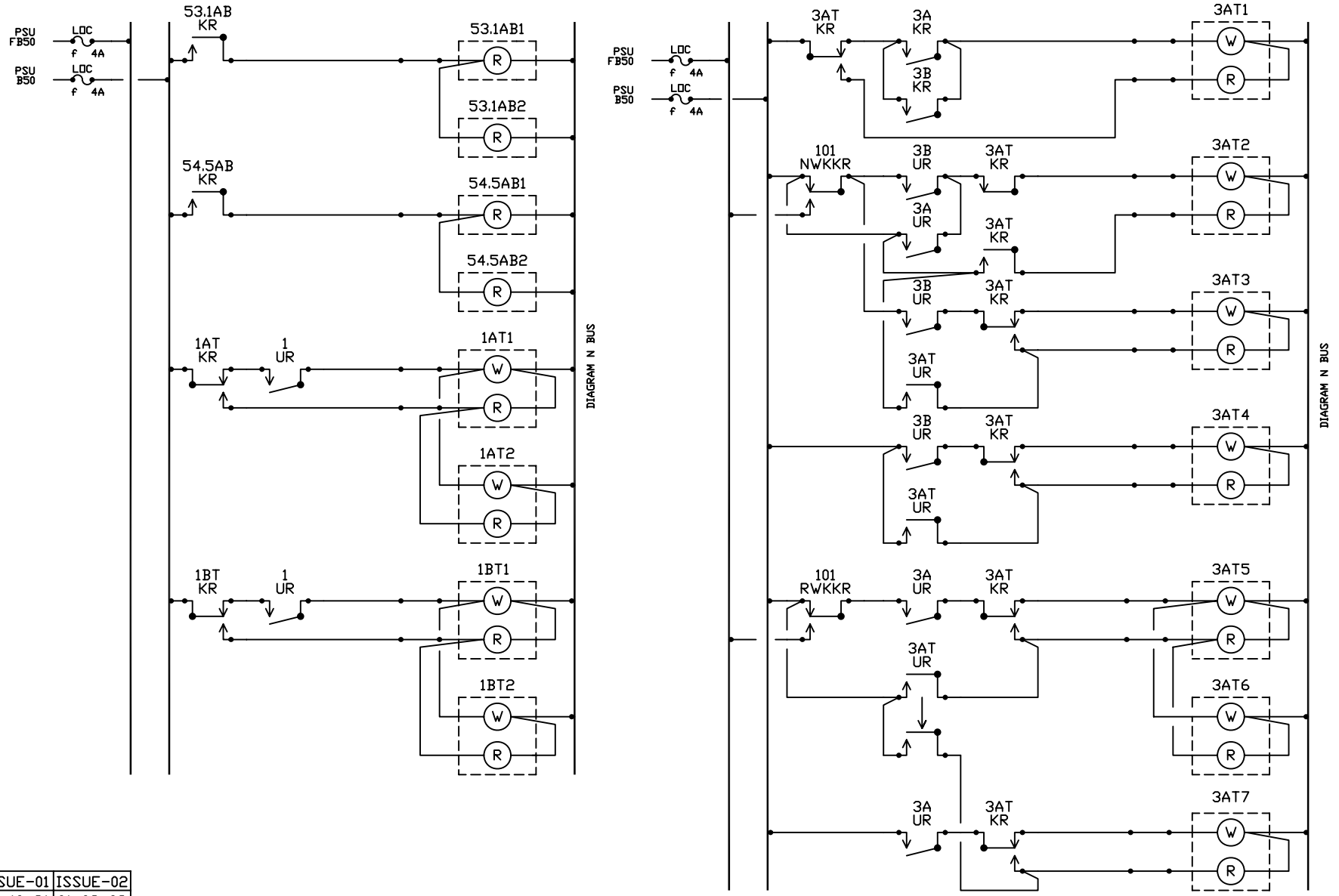


RELEASE LEVER LIGHTS

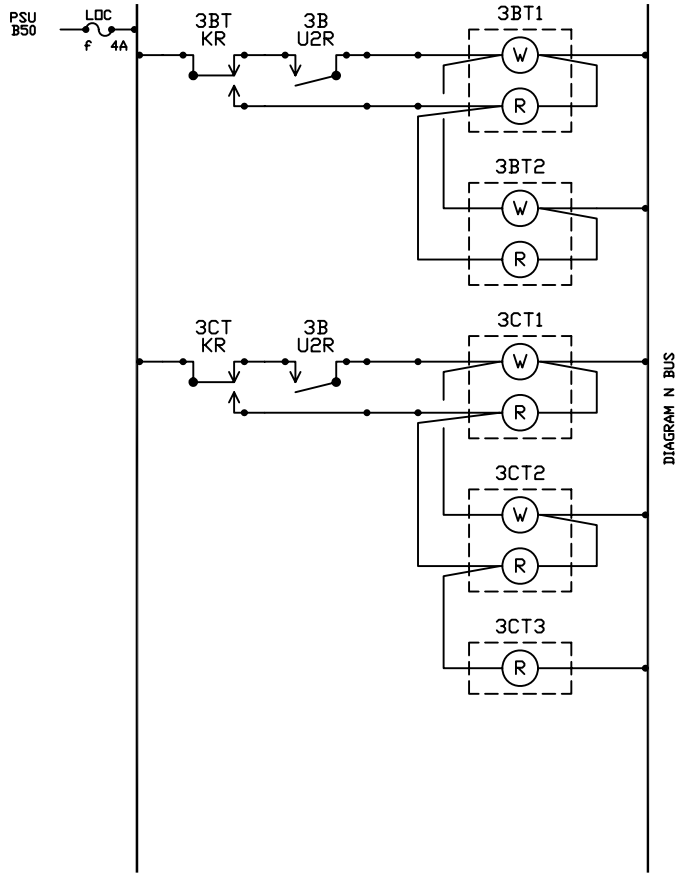


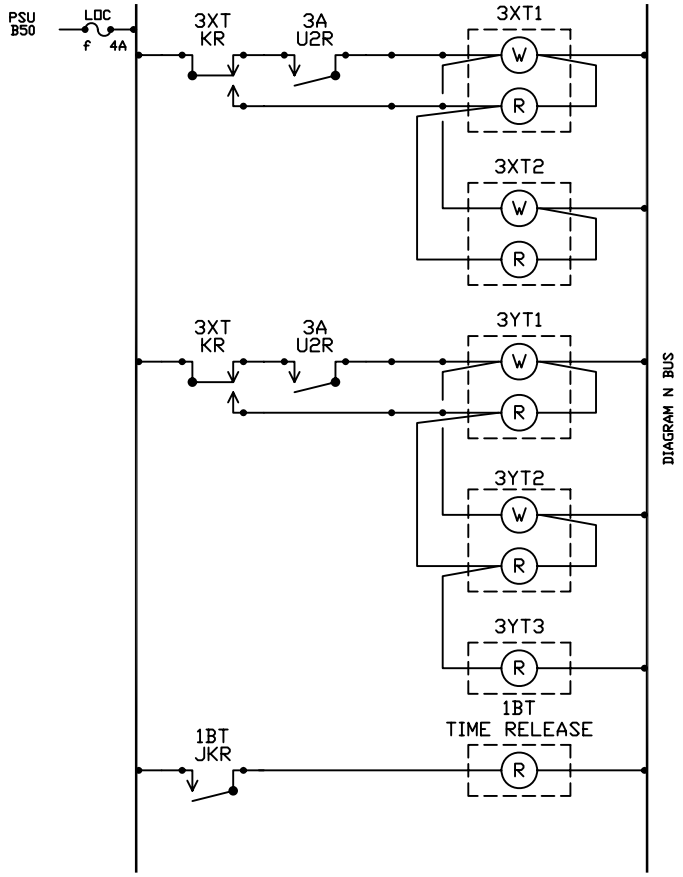
	ISSUE-03			27/6/07	11:21			CSTDN053	LAMP NUMBERING			SHT:N053	CB: STD



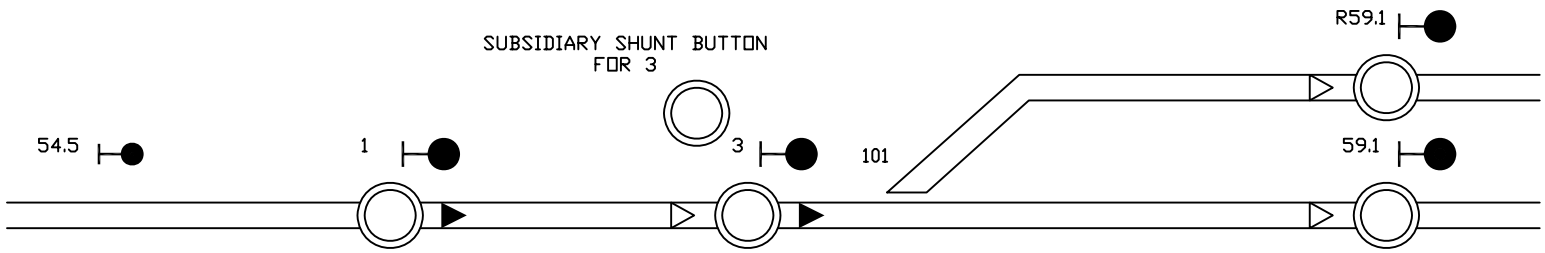


ISSUE-01	ISSUE-02
23-10-91	01-09-03
JOB NUMBER	


PSU
B50
LDC
f 4A
3BT
KR
3B
U2R
3BT1
W
R
3BT2
W
R
3CT
KR
3B
U2R
3CT1
W
R
3CT2
W
R
3CT3
R
DIAGRAM N BUS


PSU
B50
LDC
f 4A
3XT
KR
3A
U2R
3XT1
W
R
3XT2
W
R
3XT
KR
3A
U2R
3YT1
W
R
3YT2
W
R
3YT3
R
1BT
TIME RELEASE
R
1BT
JKR
DIAGRAM N BUS

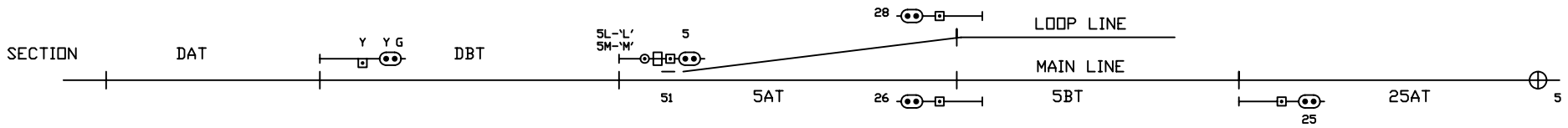
	ISSUE-03			27/6/07	11:22			CSTDN055	CONTROL CONSOLE LAYOUT		SHT:N055	CB: STD



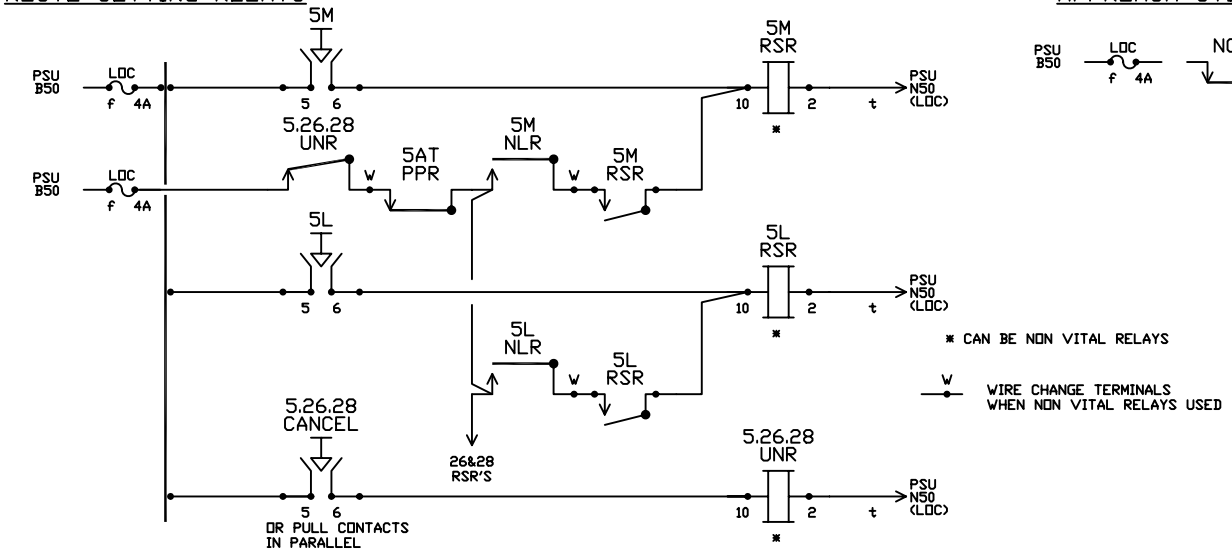
BLUE BUTTONS - MAIN UP SIGNALS
YELLOW BUTTONS - MAIN DOWN SIGNALS
RED BUTTONS - SHUNT/SUBSIDIARY SHUNT SIGNALS
WHITE BUTTONS - AUTO RECLEARING

ISSUE-01	ISSUE-02
23-10-91	01-09-03
JOB NUMBER	

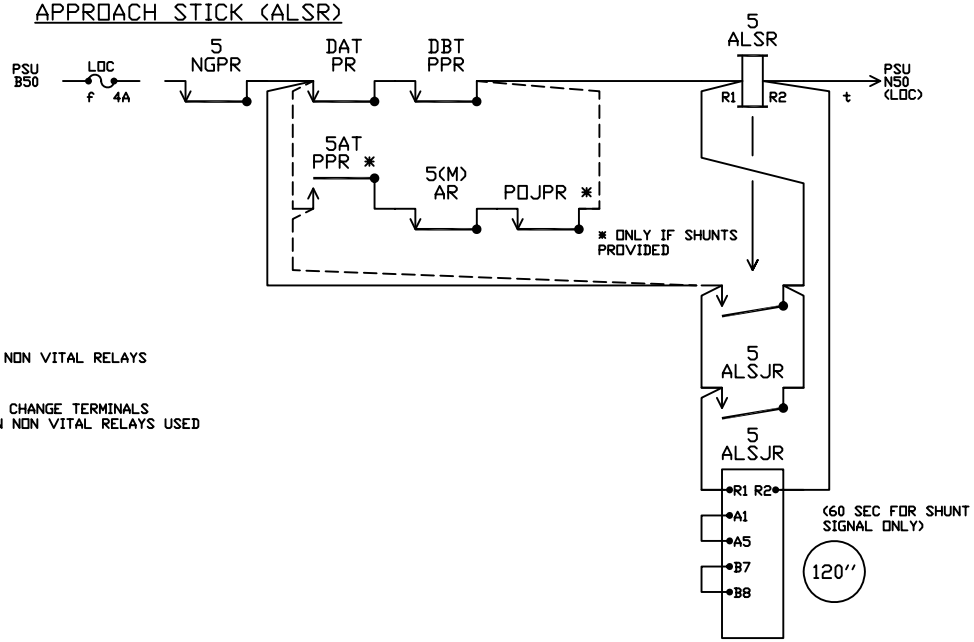
			ISSUE-04	11/5/07	11:55			CSTDP001	ROUTE SETTING DCS (CTC)				SHT: P001	CB: STD



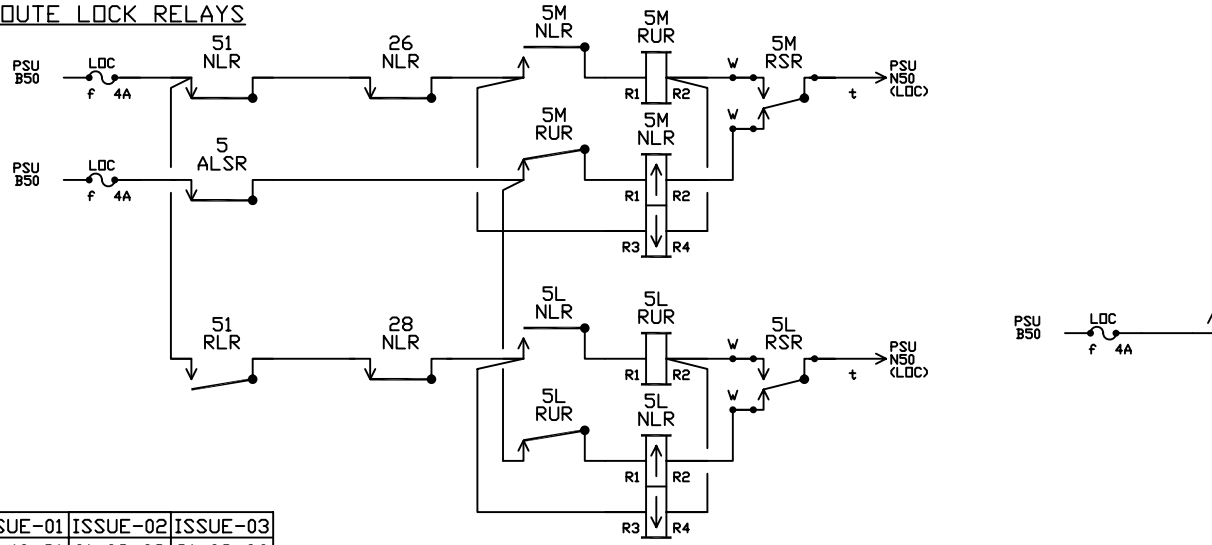
ROUTE SETTING RELAYS

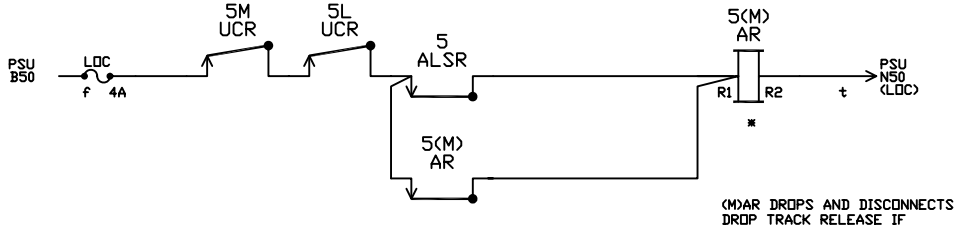


APPROACH STICK (ALSR)



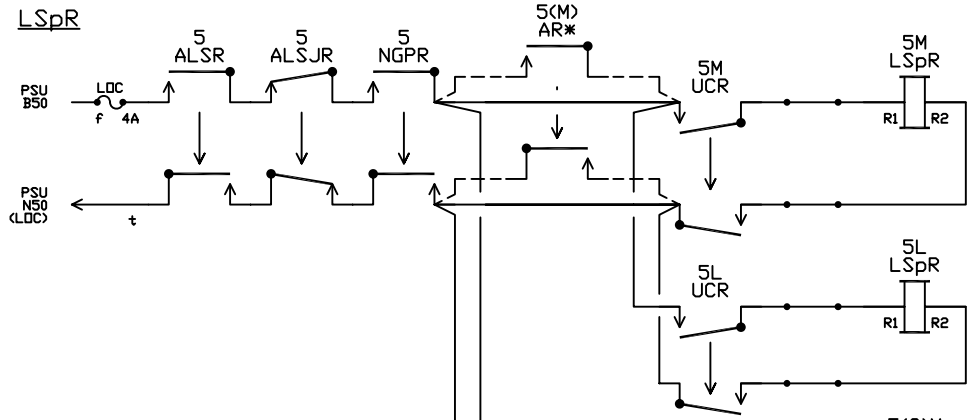
ROUTE LOCK RELAYS



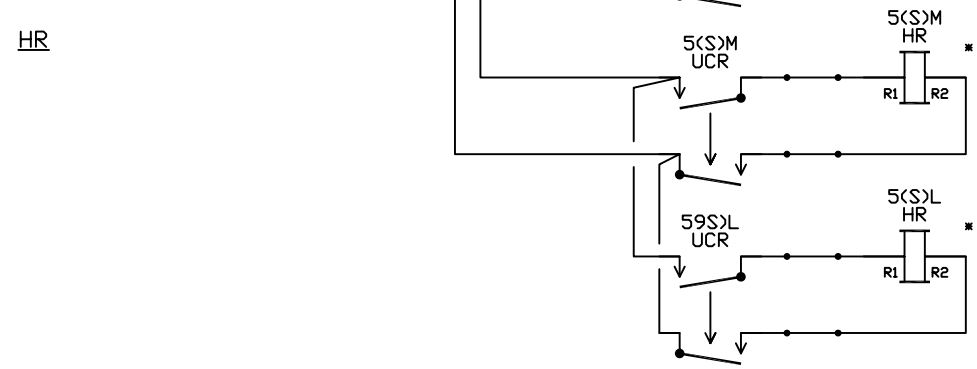


ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	01-09-03	21-02-06
JOB NUMBER		

LSpR

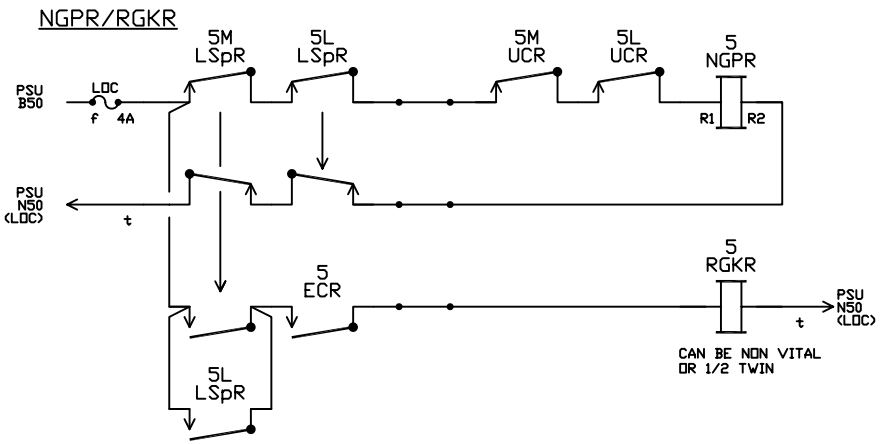


HR

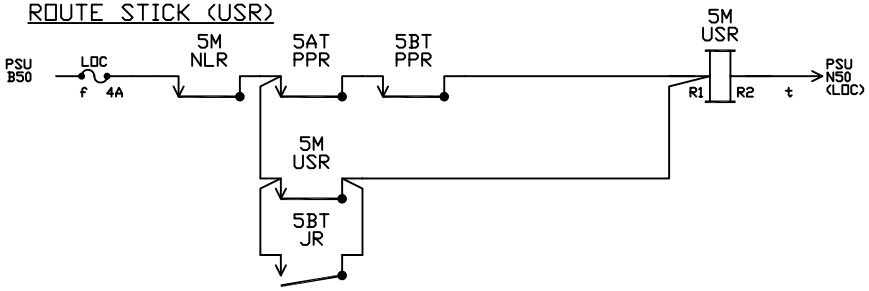


* ONLY IF SHUNTS PROVIDED

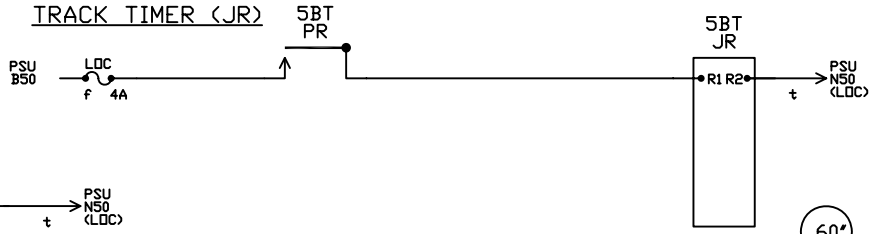
NGPR/RGKR



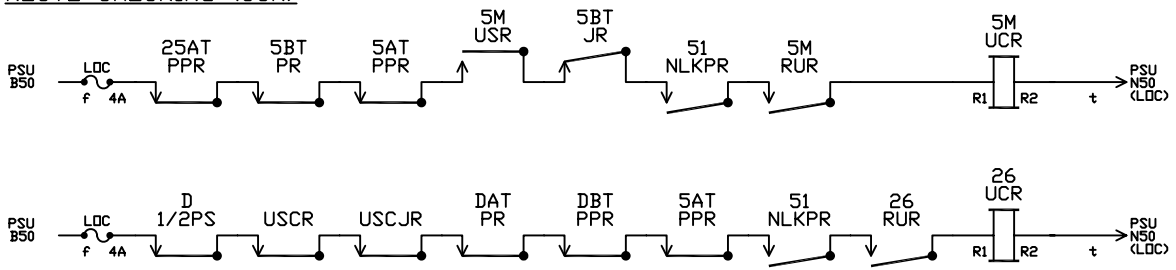
ROUTE STICK (USR)



TRACK TIMER (JR)

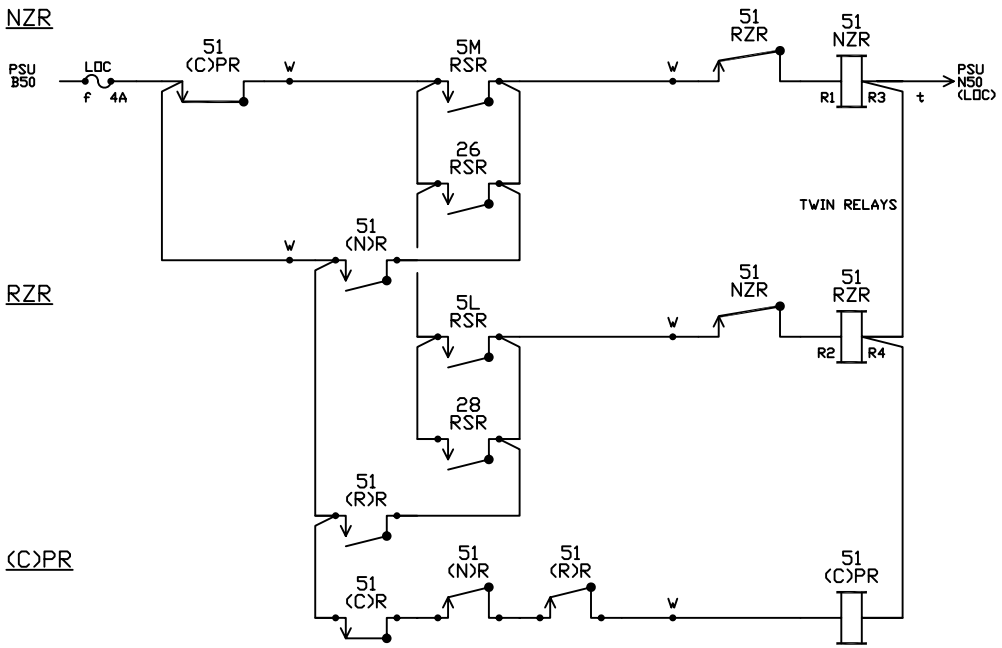


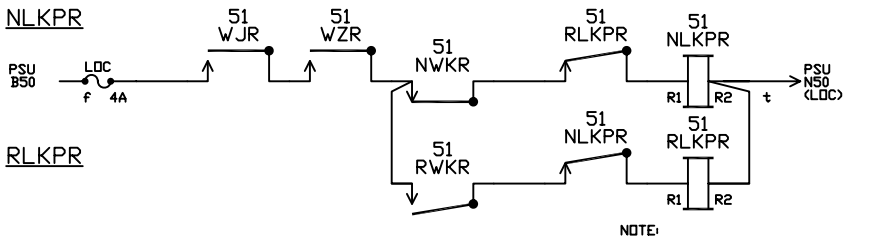
ROUTE CHECKING (UCR)



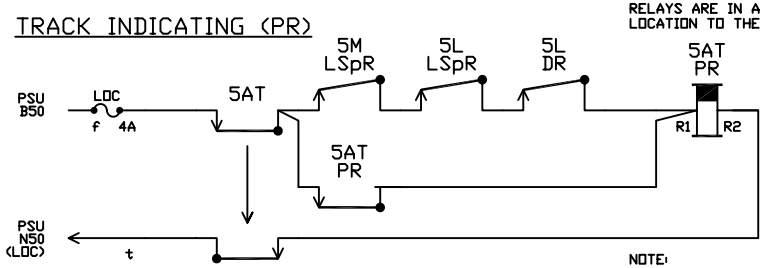
ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	23-08-95	21-02-06
JOB NUMBER		

POINT SETTING RELAYS

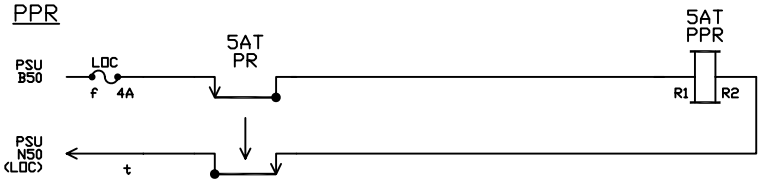




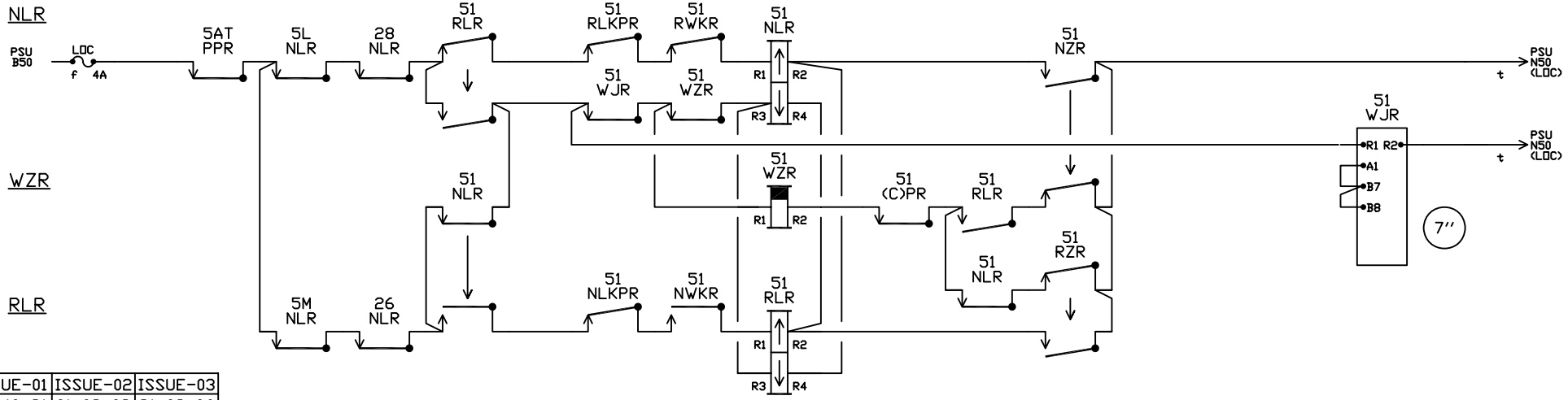
NOTE:
TRACK STICK ON PR WHEN CONTROL RELAYS ARE IN A DIFFERENT LOCATION TO THE TRACK RELAY



NOTE:
FIRST REPEAT OR INDICATING RELAY OF ALL TRACK CIRCUITS TO BE SLOW TO PICK (QSPAI)

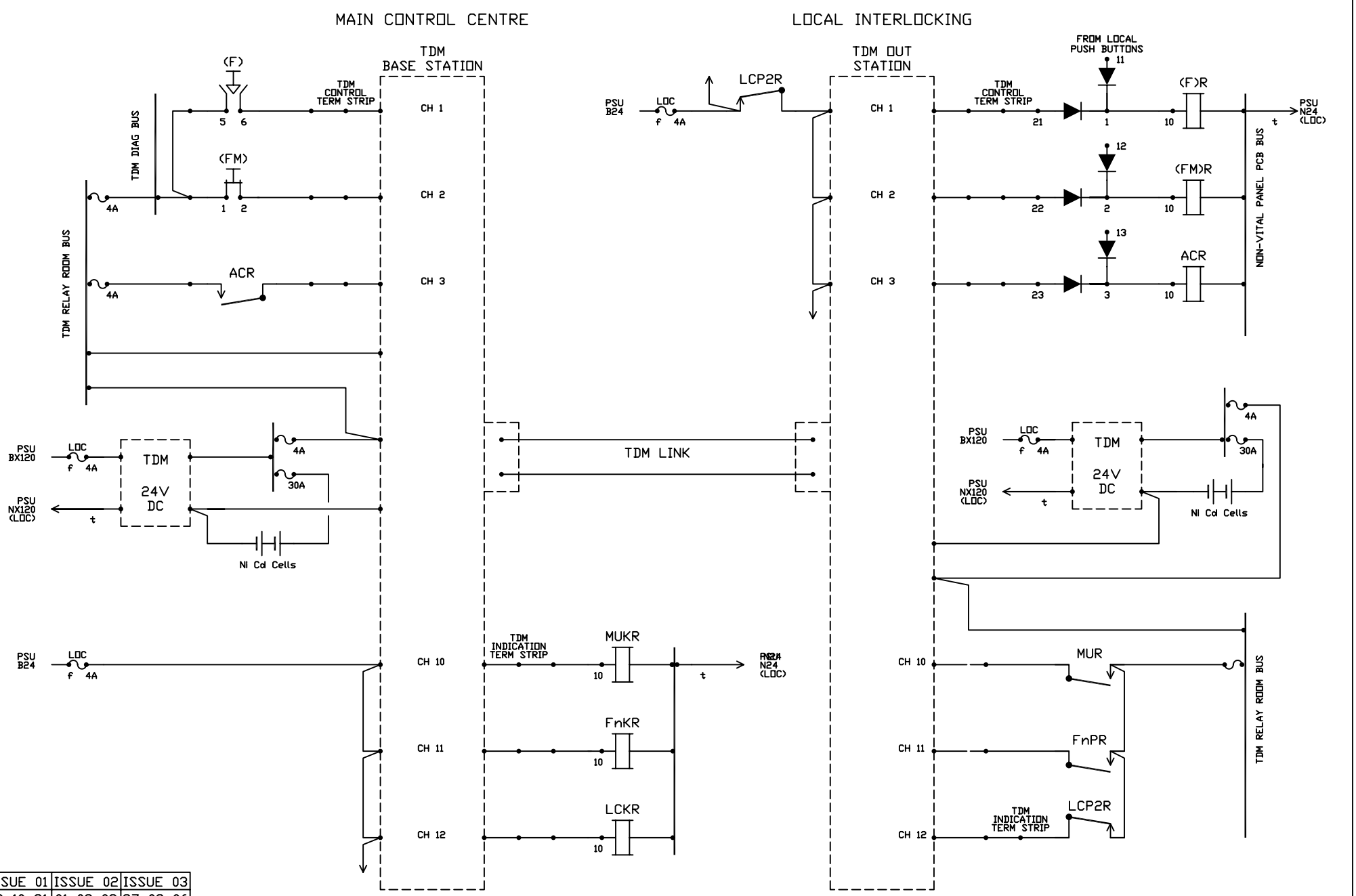


POINT LOCK RELAYS

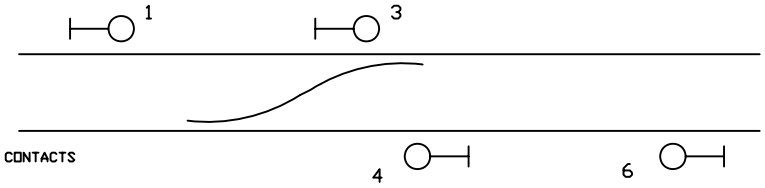


ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	01-09-03	21-02-06
JOB NUMBER		

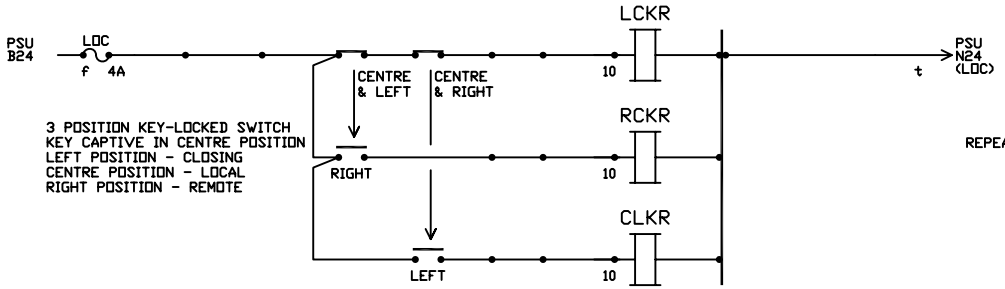
			ISSUE 04	16/5/07	8:47			CSTDR001	TYPICAL ARRANGEMENT FOR TDM		SHT: R001	CB: STD



ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	01-09-03	27-02-06
JOB NUMBER		

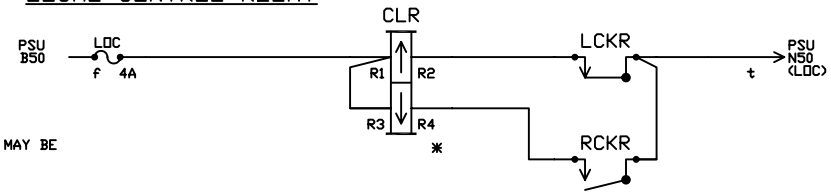


CLOSING/LOCAL/REMOTE SWITCH



3 POSITION KEY-LOCKED SWITCH
KEY CAPTIVE IN CENTRE POSITION
LEFT POSITION - CLOSING
CENTRE POSITION - LOCAL
RIGHT POSITION - REMOTE

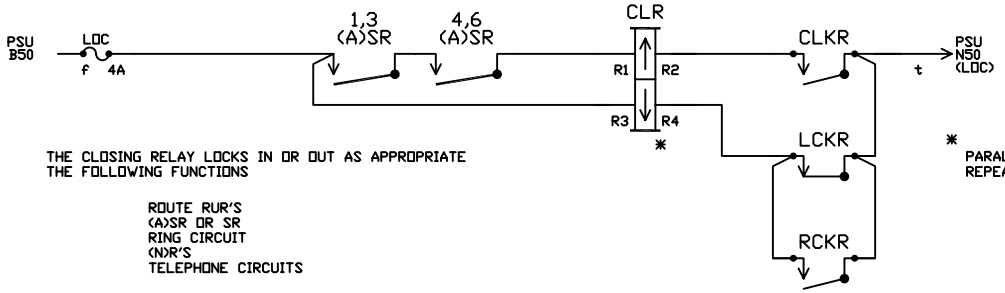
LOCAL CONTROL RELAY



REPEAT RELAYS MAY BE

THE LOCAL CONTROL RELAY SWITCHES
THE FOLLOWING FUNCTIONS
TDM/LOCAL PANEL PUSH BUTTONS & LEVERS

CLOSING LOCK RELAY

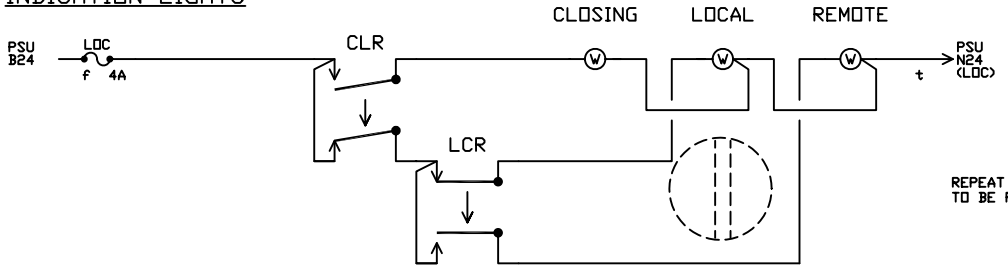


THE CLOSING RELAY LOCKS IN OR OUT AS APPROPRIATE
THE FOLLOWING FUNCTIONS

ROUTE RUR'S
(A)SR OR SR
RING CIRCUIT
(N)R'S
TELEPHONE CIRCUITS

* PARALLELED OFF PARENT RELAYS
REPEAT RELAY TO BE LATCH RELAYS

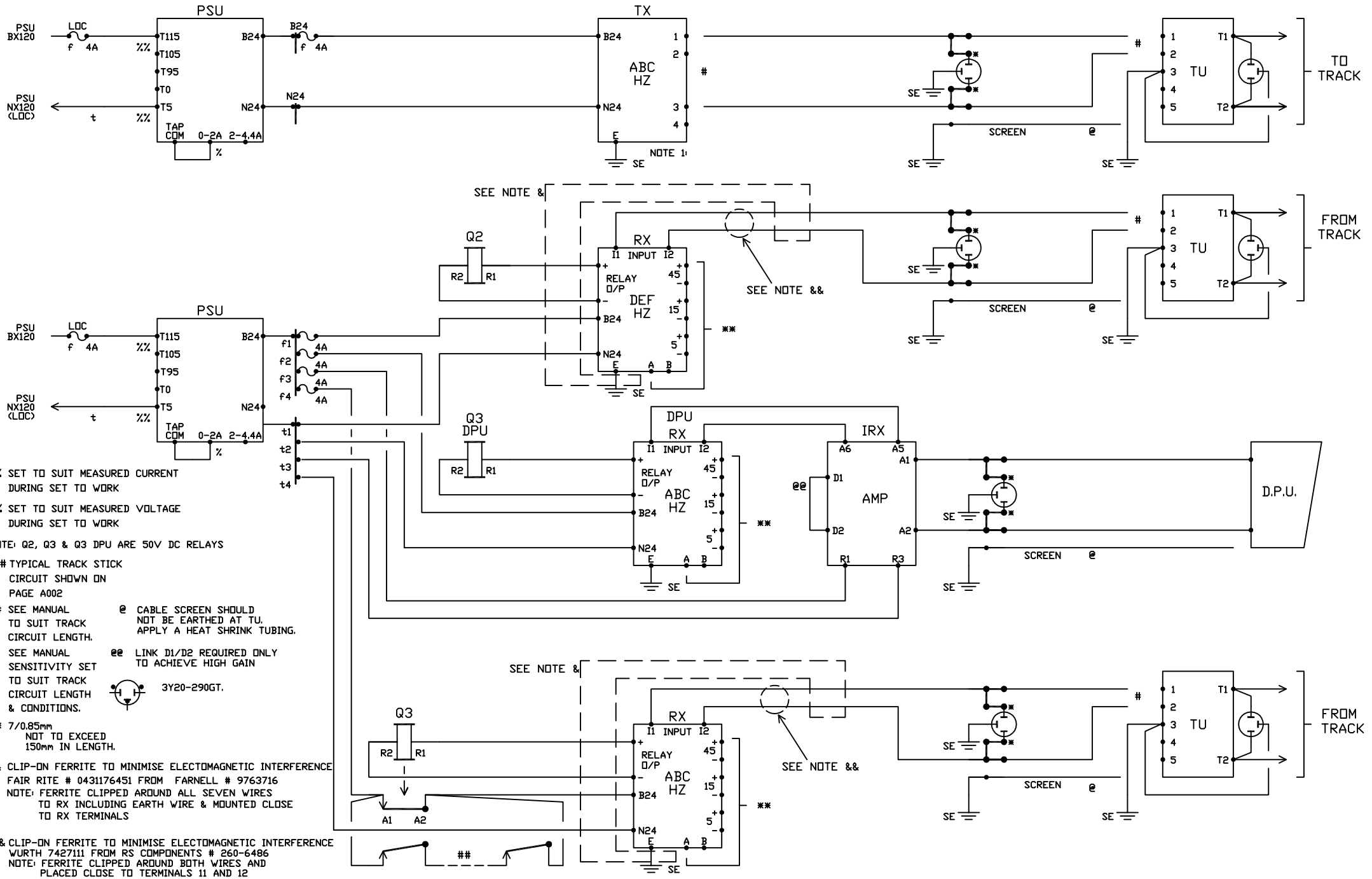
INDICATION LIGHTS



REPEAT CLOSING & LOCAL CONTROL RELAYS
TO BE PROVED IN INDICATION LIGHTS

ISSUE 01	ISSUE 02	ISSUE 03	ISSUE 04
23-10-91	27-11-92	01-09-03	27-02-06
JOB NUMBER			

			ISSUE-08	20/10/08	14:39		Rev 01	CSTDT020	WB&S FS2500 TRACK CIRCUITS			SHT: T020	CB: STD



% SET TO SUIT MEASURED CURRENT DURING SET TO WORK

%% SET TO SUIT MEASURED VOLTAGE DURING SET TO WORK

NOTE: Q2, Q3 & Q3 DPU ARE 50V DC RELAYS

TYPICAL TRACK STICK CIRCUIT SHOWN ON PAGE A002

SEE MANUAL TO SUIT TRACK CIRCUIT LENGTH.

** SEE MANUAL SENSITIVITY SET TO SUIT TRACK CIRCUIT LENGTH & CONDITIONS.

3Y20-290GT.

* 7/0.85mm NOT TO EXCEED 150mm IN LENGTH.

@ CABLE SCREEN SHOULD NOT BE EARTHED AT TU. APPLY A HEAT SHRINK TUBING.

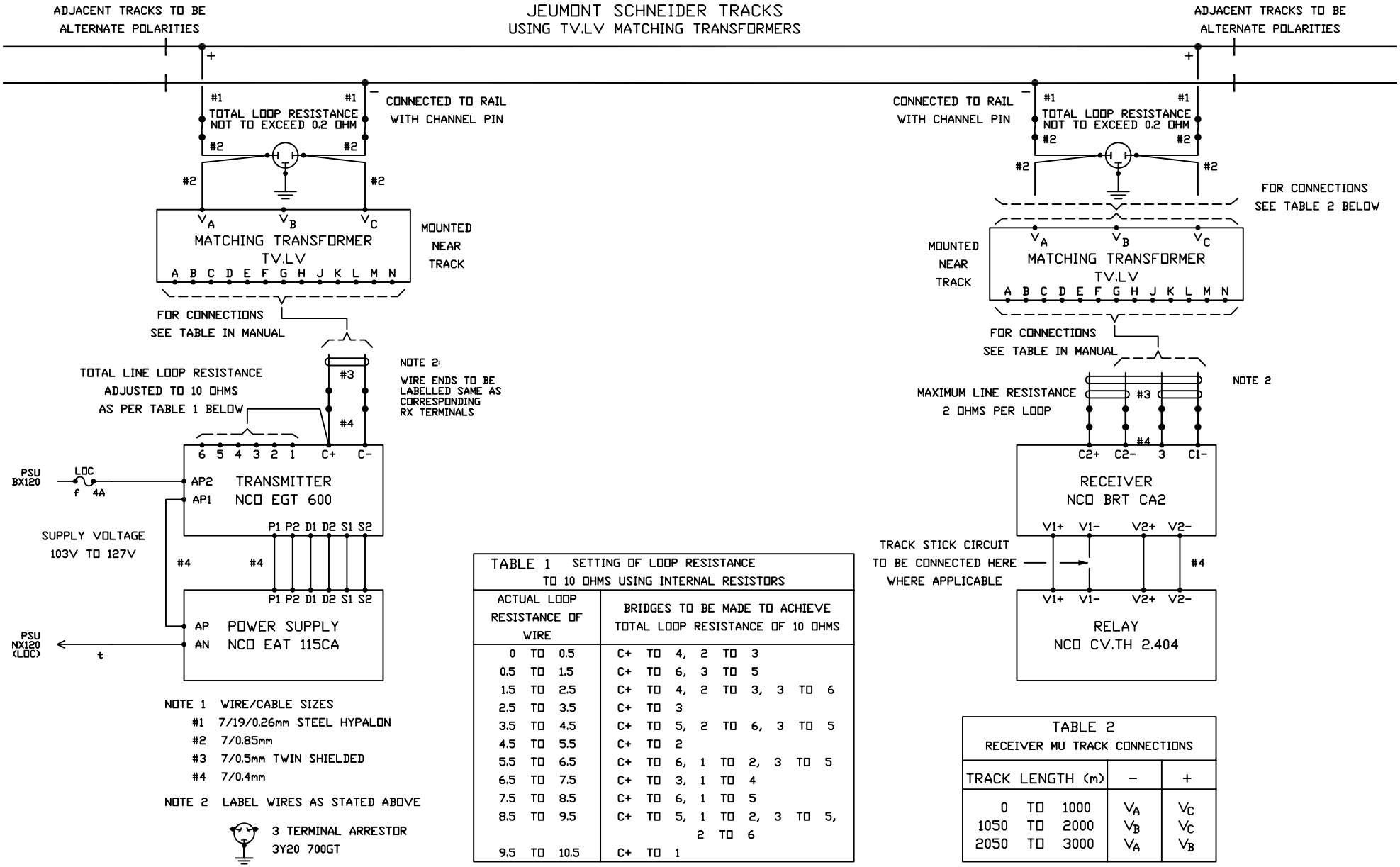
@@ LINK D1/D2 REQUIRED ONLY TO ACHIEVE HIGH GAIN

& CLIP-ON FERRITE TO MINIMISE ELECTOMAGNETIC INTERFERENCE
FAIR RITE # 0431176451 FROM FARNELL # 9763716
NOTE: FERRITE CLIPPED AROUND ALL SEVEN WIRES TO RX INCLUDING EARTH WIRE & MOUNTED CLOSE TO RX TERMINALS

&& CLIP-ON FERRITE TO MINIMISE ELECTOMAGNETIC INTERFERENCE
WURTH 7427111 FROM RS COMPONENTS # 260-6486
NOTE: FERRITE CLIPPED AROUND BOTH WIRES AND PLACED CLOSE TO TERMINALS 11 AND 12

ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05	ISSUE-06	ISSUE-07
19-01-91	23-08-95	01-09-01	31-05-05	04-10-05	25-05-07
JOB NUMBER					

SUMMARY OF CONNECTIONS FOR DOUBLE RAIL NON-ELECTRIFIED JEUMONT SCHNEIDER TRACKS USING TV.LV MATCHING TRANSFORMERS



NOTE 1 WIRE/CABLE SIZES

- #1 7/19/0.26mm STEEL HYPALON
- #2 7/0.85mm
- #3 7/0.5mm TWIN SHIELDED
- #4 7/0.4mm

NOTE 2 LABEL WIRES AS STATED ABOVE

3 TERMINAL ARRESTOR 3Y20 700GT

TABLE 1 SETTING OF LOOP RESISTANCE TO 10 OHMS USING INTERNAL RESISTORS

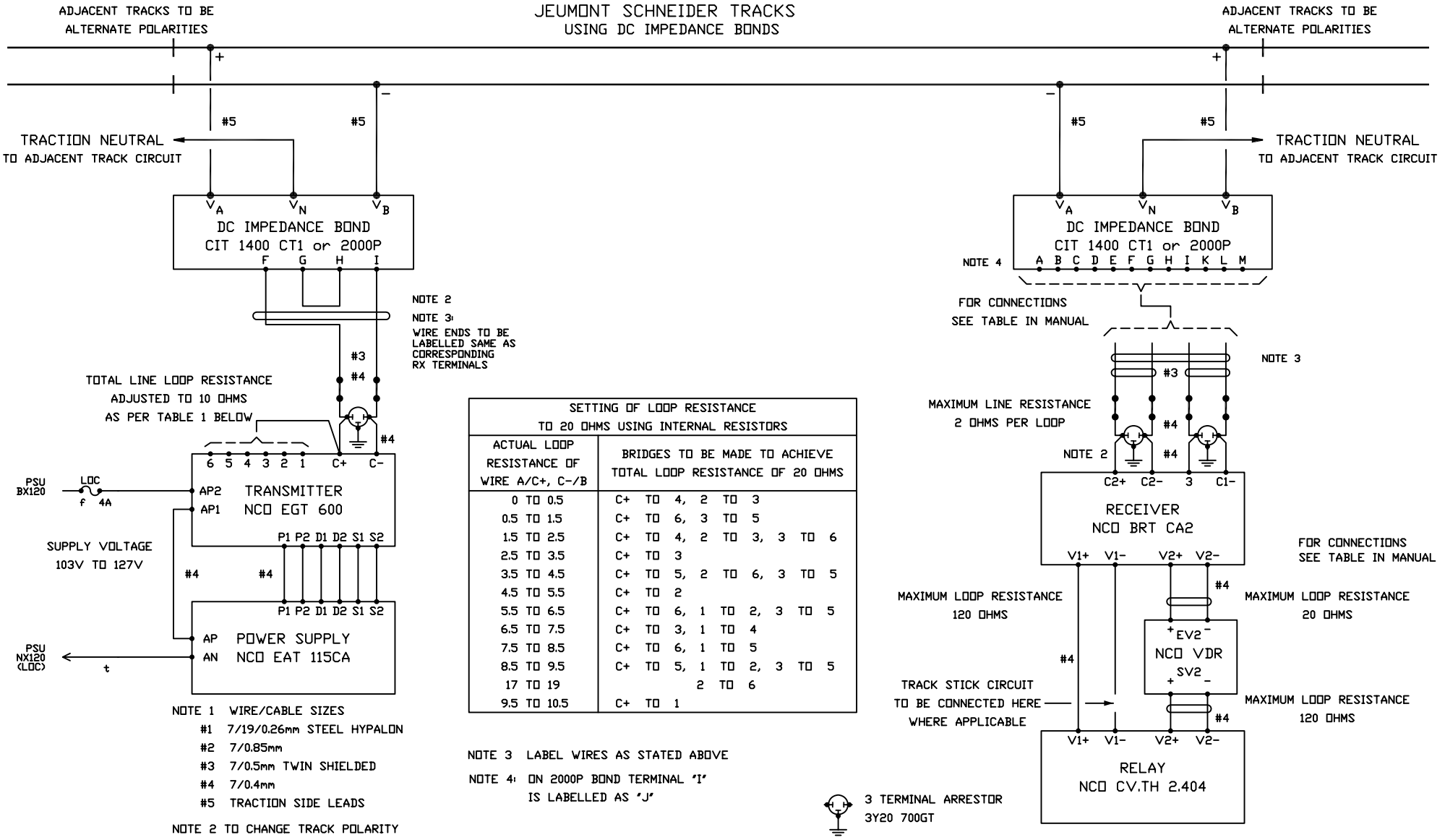
ACTUAL LOOP RESISTANCE OF WIRE	BRIDGES TO BE MADE TO ACHIEVE TOTAL LOOP RESISTANCE OF 10 OHMS
0 TO 0.5	C+ TO 4, 2 TO 3
0.5 TO 1.5	C+ TO 6, 3 TO 5
1.5 TO 2.5	C+ TO 4, 2 TO 3, 3 TO 6
2.5 TO 3.5	C+ TO 3
3.5 TO 4.5	C+ TO 5, 2 TO 6, 3 TO 5
4.5 TO 5.5	C+ TO 2
5.5 TO 6.5	C+ TO 6, 1 TO 2, 3 TO 5
6.5 TO 7.5	C+ TO 3, 1 TO 4
7.5 TO 8.5	C+ TO 6, 1 TO 5
8.5 TO 9.5	C+ TO 5, 1 TO 2, 3 TO 5, 2 TO 6
9.5 TO 10.5	C+ TO 1

TABLE 2 RECEIVER MU TRACK CONNECTIONS

TRACK LENGTH (m)	−	+
0 TO 1000	V_A	V_C
1050 TO 2000	V_B	V_C
2050 TO 3000	V_A	V_B

ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05
19-09-91	23-08-95	01-09-03	28-02-06
JOB NUMBER			

SUMMARY OF CONNECTIONS FOR DOUBLE RAIL ELECTRIFIED JEUMONT SCHNEIDER TRACKS USING DC IMPEDANCE BONDS



SETTING OF LOOP RESISTANCE TO 20 OHMS USING INTERNAL RESISTORS	
ACTUAL LOOP RESISTANCE OF WIRE A/C+, C-/B	BRIDGES TO BE MADE TO ACHIEVE TOTAL LOOP RESISTANCE OF 20 OHMS
0 TO 0.5	C+ TO 4, 2 TO 3
0.5 TO 1.5	C+ TO 6, 3 TO 5
1.5 TO 2.5	C+ TO 4, 2 TO 3, 3 TO 6
2.5 TO 3.5	C+ TO 3
3.5 TO 4.5	C+ TO 5, 2 TO 6, 3 TO 5
4.5 TO 5.5	C+ TO 2
5.5 TO 6.5	C+ TO 6, 1 TO 2, 3 TO 5
6.5 TO 7.5	C+ TO 3, 1 TO 4
7.5 TO 8.5	C+ TO 6, 1 TO 5
8.5 TO 9.5	C+ TO 5, 1 TO 2, 3 TO 5
17 TO 19	2 TO 6
9.5 TO 10.5	C+ TO 1

NOTE 1 WIRE/CABLE SIZES
- #1 7/19/0.26mm STEEL HYPALON
- #2 7/0.85mm
- #3 7/0.5mm TWIN SHIELDED
- #4 7/0.4mm
- #5 TRACTION SIDE LEADS

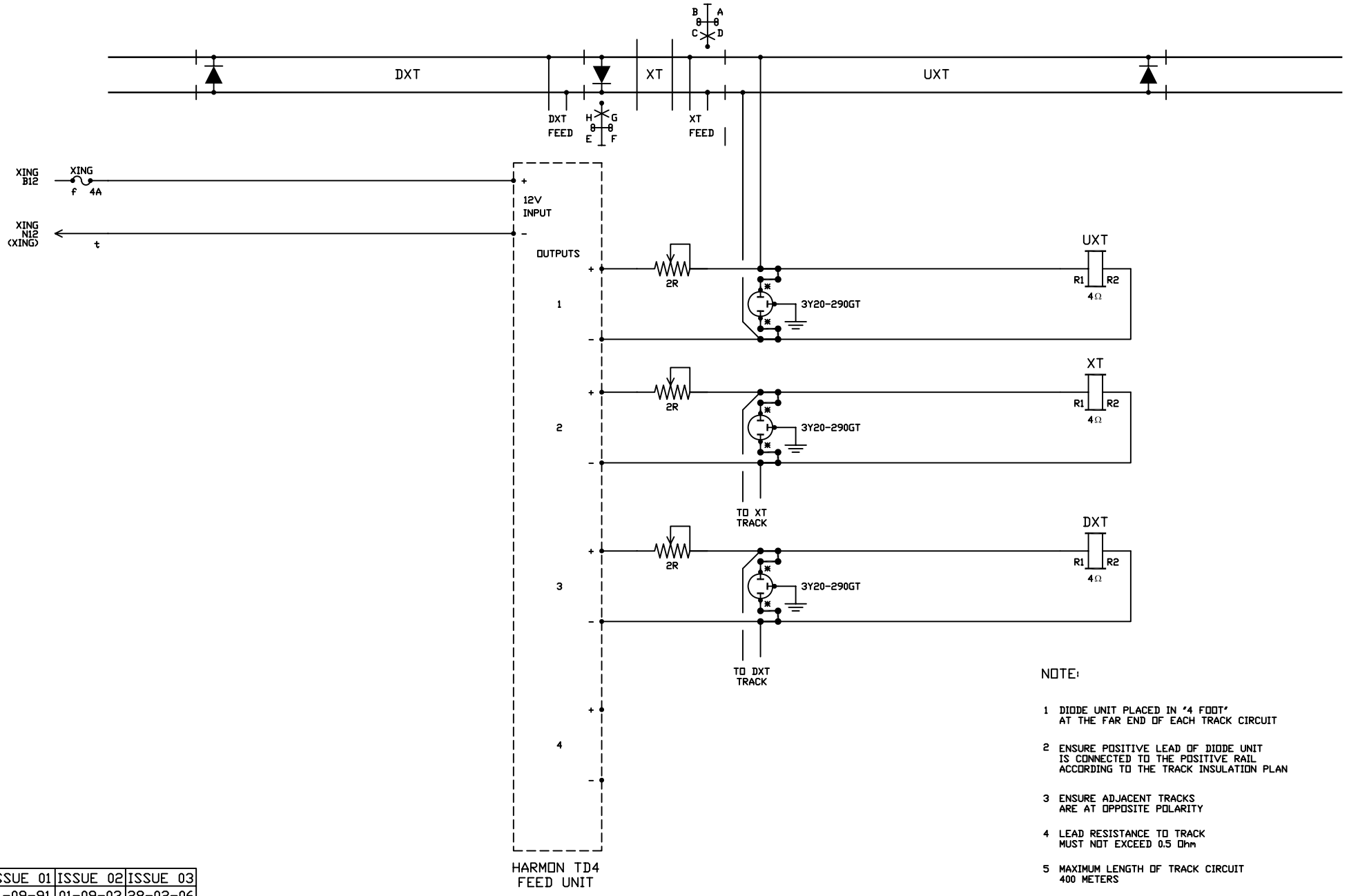
NOTE 2 TO CHANGE TRACK POLARITY SWAP CONNECTIONS TO C-/C+, C2+/C2-, 3/C-

NOTE 3 LABEL WIRES AS STATED ABOVE

NOTE 4: ON 2000P BOND TERMINAL 'I' IS LABELLED AS 'J'

ISSUE 02	ISSUE 03	ISSUE 04	ISSUE 05
19-09-91	23-08-95	01--9-03	28-02-06
JOB NUMBER			

			ISSUE 04	9/6/07	10:02			CSTDT037	HARMON TD4 - TRACK CIRCUIT			SHT:T037	CB: STD



NOTE:

1 DIODE UNIT PLACED IN '4 FOOT' AT THE FAR END OF EACH TRACK CIRCUIT

2 ENSURE POSITIVE LEAD OF DIODE UNIT IS CONNECTED TO THE POSITIVE RAIL ACCORDING TO THE TRACK INSULATION PLAN

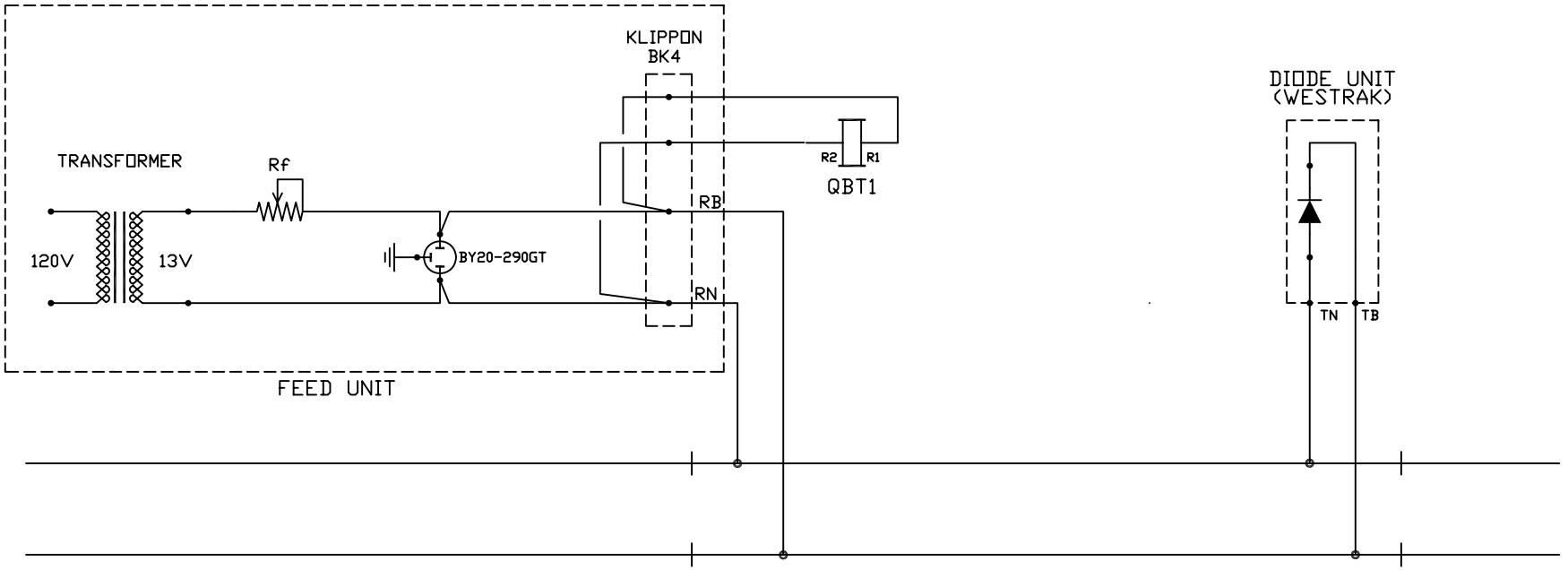
3 ENSURE ADJACENT TRACKS ARE AT OPPOSITE POLARITY

4 LEAD RESISTANCE TO TRACK MUST NOT EXCEED 0.5 Ohm

5 MAXIMUM LENGTH OF TRACK CIRCUIT 400 METERS

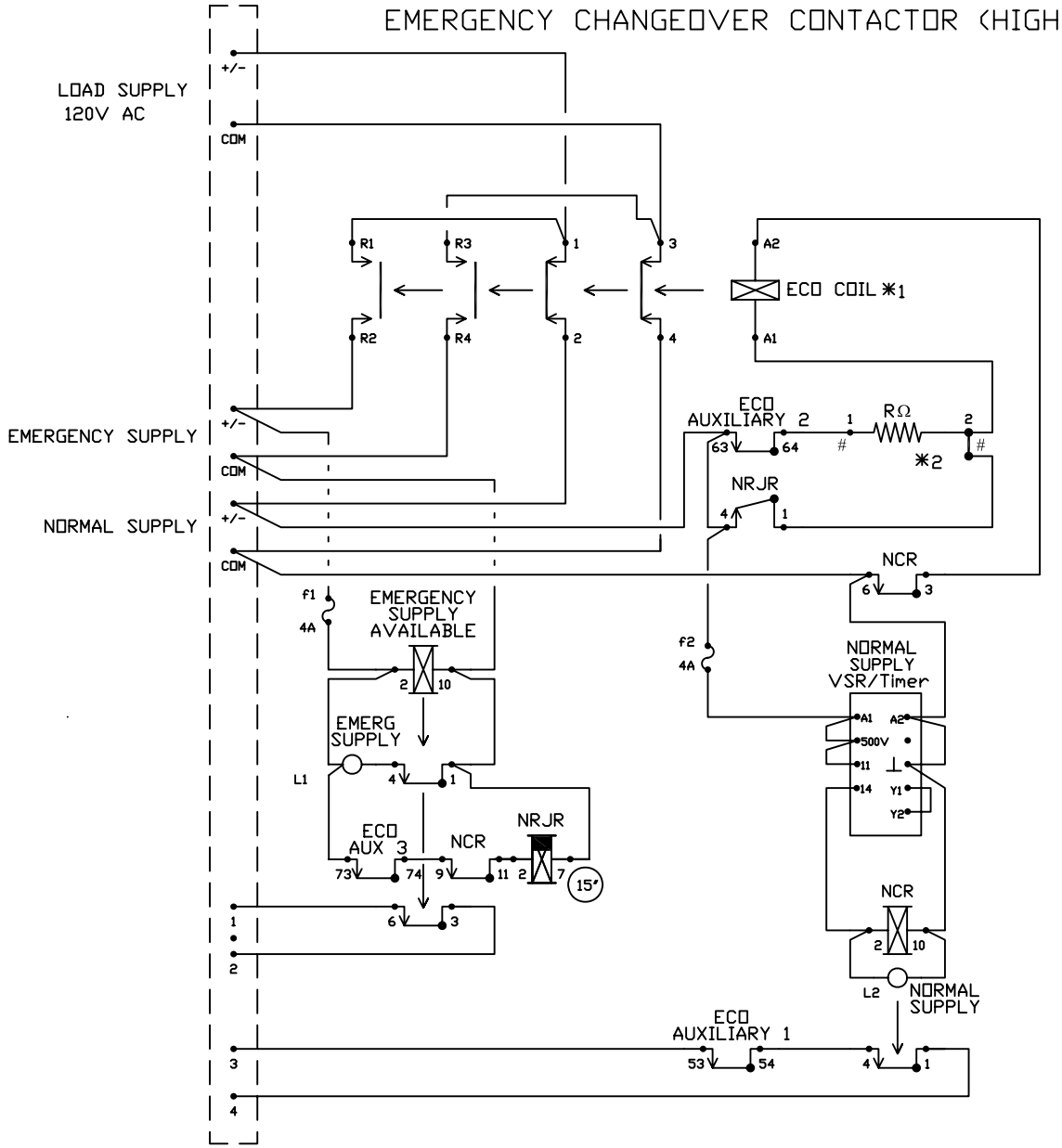
ISSUE 01	ISSUE 02	ISSUE 03
01-09-91	01-09-03	28-02-06
JOB NUMBER		

			ISSUE 04	9/6/07	10:35			CSTDT038	"WESTRAK" TRACK FEED UNIT			SHT:T038	CB: STD



ISSUE 01	ISSUE 02	ISSUE 03
01-06-98	01-09-03	28-02-06
JOB NUMBER		

EMERGENCY CHANGEOVER CONTACTOR (HIGH SPEED) 25-80A



THE HIGH SPEED ECO MUST COMPLY WITH RAILCORP SPECIFICATION SC09100201SP.

HIGH TEMPERATURE RATED WIRE
RESISTOR MOUNTED ON SUITABLE HEATSINK
NON SOLDERED MECHANICAL CONNECTIONS

*1 ECO CONTACTOR SELECTED TO REQUIRED CURRENT RATING

25A LC1-D25008F5 with LA1-DN40
65A LC1-D65008F5 with LA1-DN40
80A LC1-D80008f5 with LA1-DN40

*2 RESISTOR VALUE POWER RATING TO SUIT CONTACTOR COIL.
THE RESISTOR MUST MEET THE SPECIFICATION.
165R 100W HAS BEEN TESTED.

VOLTAGE SENSING RELAY (VSR) ADJUSTMENTS: (PILZ SI UM)

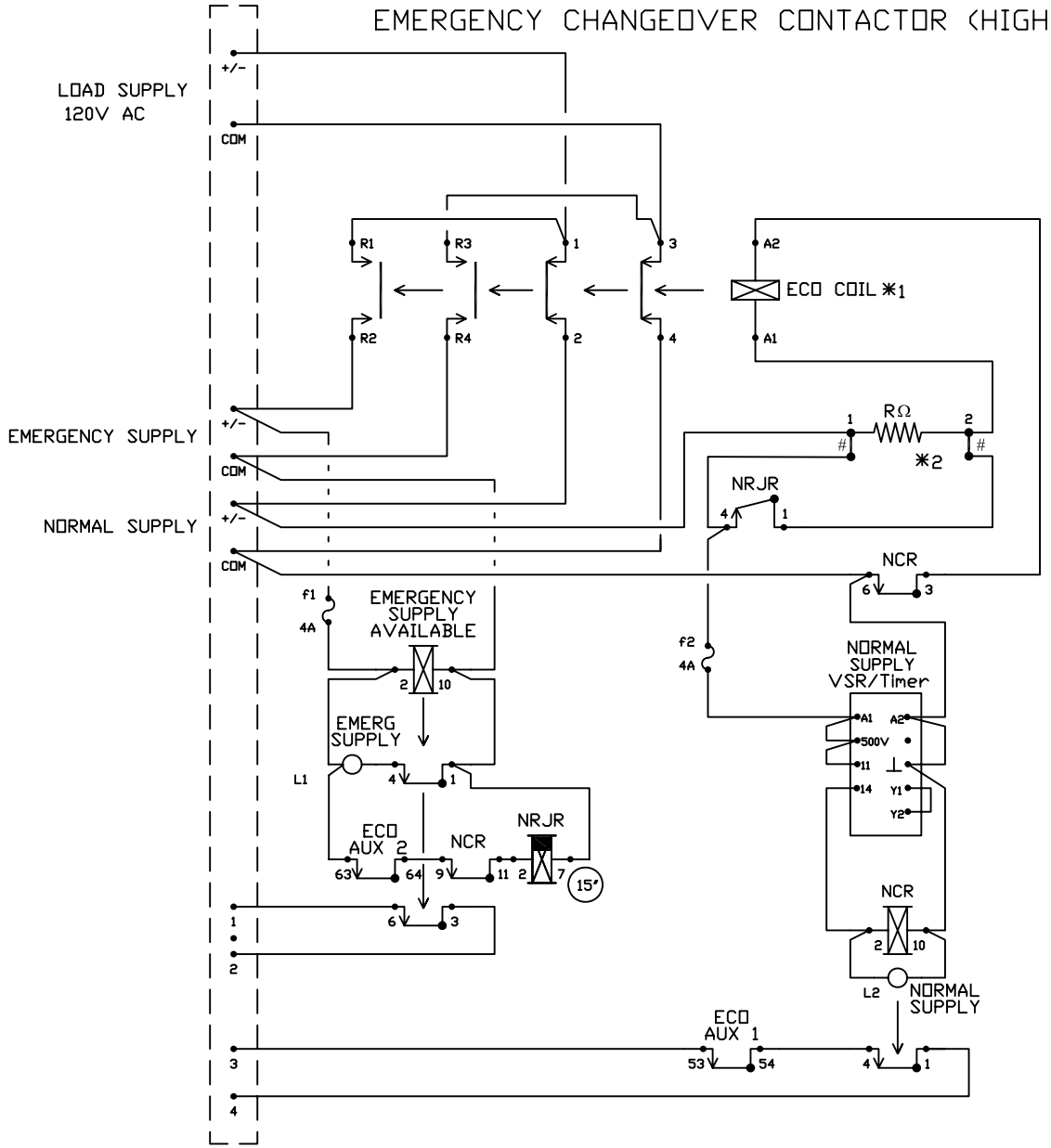
PICK UP VOLTS = 115V
RELEASE VOLTS = 100V
TIME DELAY = 7 Seconds
SWITCH SETTINGS: S1 - 0.5
S2 - 1

MATERIALS:

FUSES f1,f2	SAKS1, 4A (KLIPPON)
SUPPLY TERMINALS	ENTRELEC M35/16
IND'R TERMINALS	SAKC10 (KLIPPON)
RESISTOR TERMINALS	SAK6N (KLIPPON)
RELAYS	HH23 PW-T 110V
LED INDICATOR (L1,L2)	10-16mm GREEN (90-135V AC)
CONTACTOR	TELEMECANIQUE
TIMERS	
NORMAL SUPPLY VSR/TIMER	OMRON H3CR-A8 PILZ SI UM AC 110-127V AC/UM 500V AC/DC

ISSUE 01	ISSUE 02	ISSUE 03	ISSUE 04
23-10-91	30-12-99	01-09-03	06-03-06
JOB NUMBER			

EMERGENCY CHANGEOVER CONTACTOR (HIGH SPEED) 100-200A



THE HIGH SPEED ECO MUST COMPLY WITH RIC SPECIFICATION SC 09100200SP.

HIGH TEMPERATURE RATED WIRE
RESISTOR MOUNTED ON SUITABLE HEATSINK
NON SOLDERED MECHANICAL CONNECTIONS

*1 ECO CONTACTOR SELECTED TO REQUIRED CURRENT RATING

100A CV1 GB with 2 aux contacts
150A CV1 HB with 2 aux contacts
200A CV1 JB with 2 aux contacts

*2 RESISTOR VALUE POWER RATING TO SUIT CONTACTOR COIL.
THE RESISTOR MUST MEET THE SPECIFICATION.
30R 400W HAS BEEN TESTED.

VOLTAGE SENSING RELAY (VSR) ADJUSTMENTS: (PILZ SI UM)

PICK UP VOLTS = 115V

RELEASE VOLTS = 100V

TIME DELAY = 7 Seconds

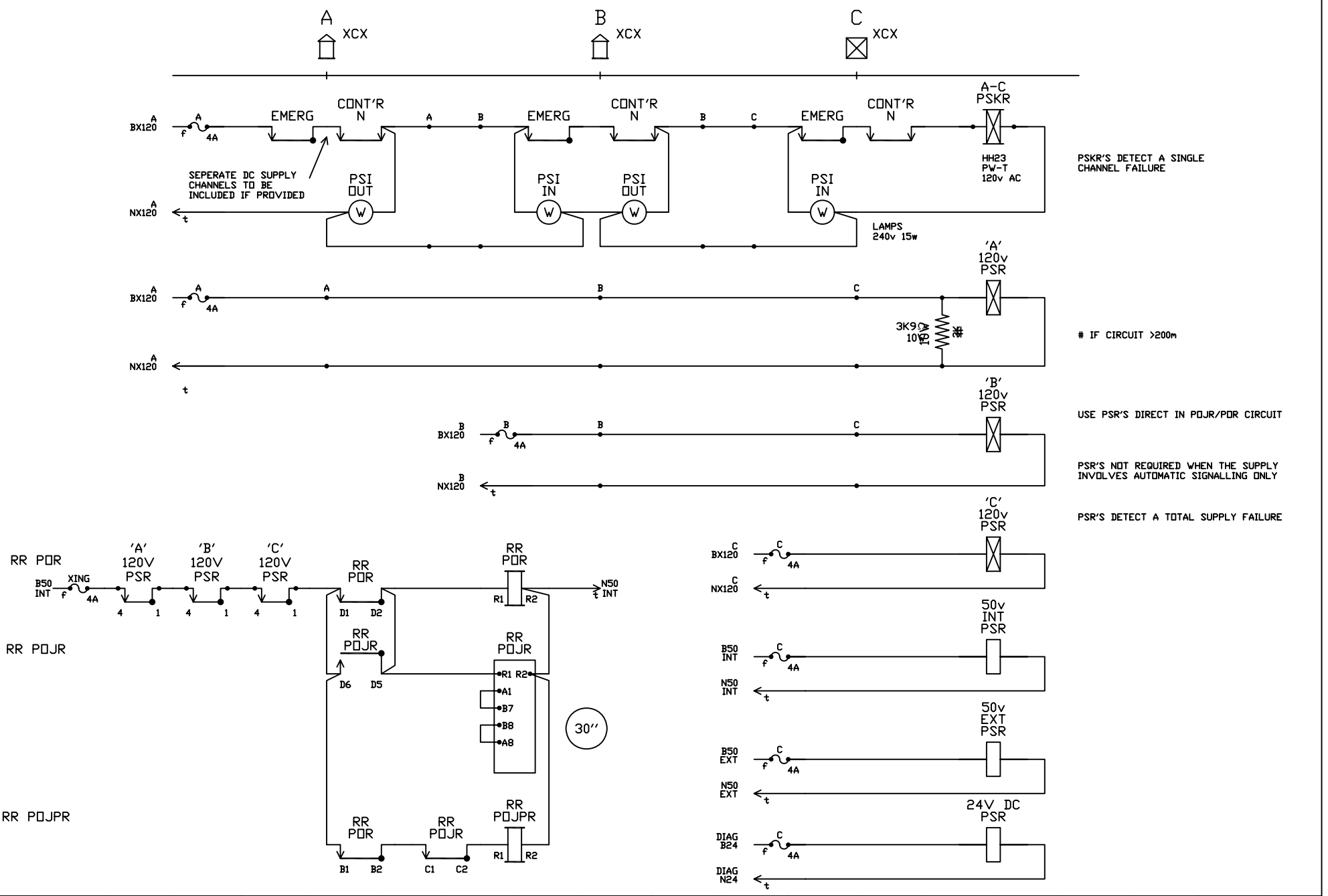
SWITCH SETTINGS: S1 - 0.5
S2 - 1

MATERIALS:

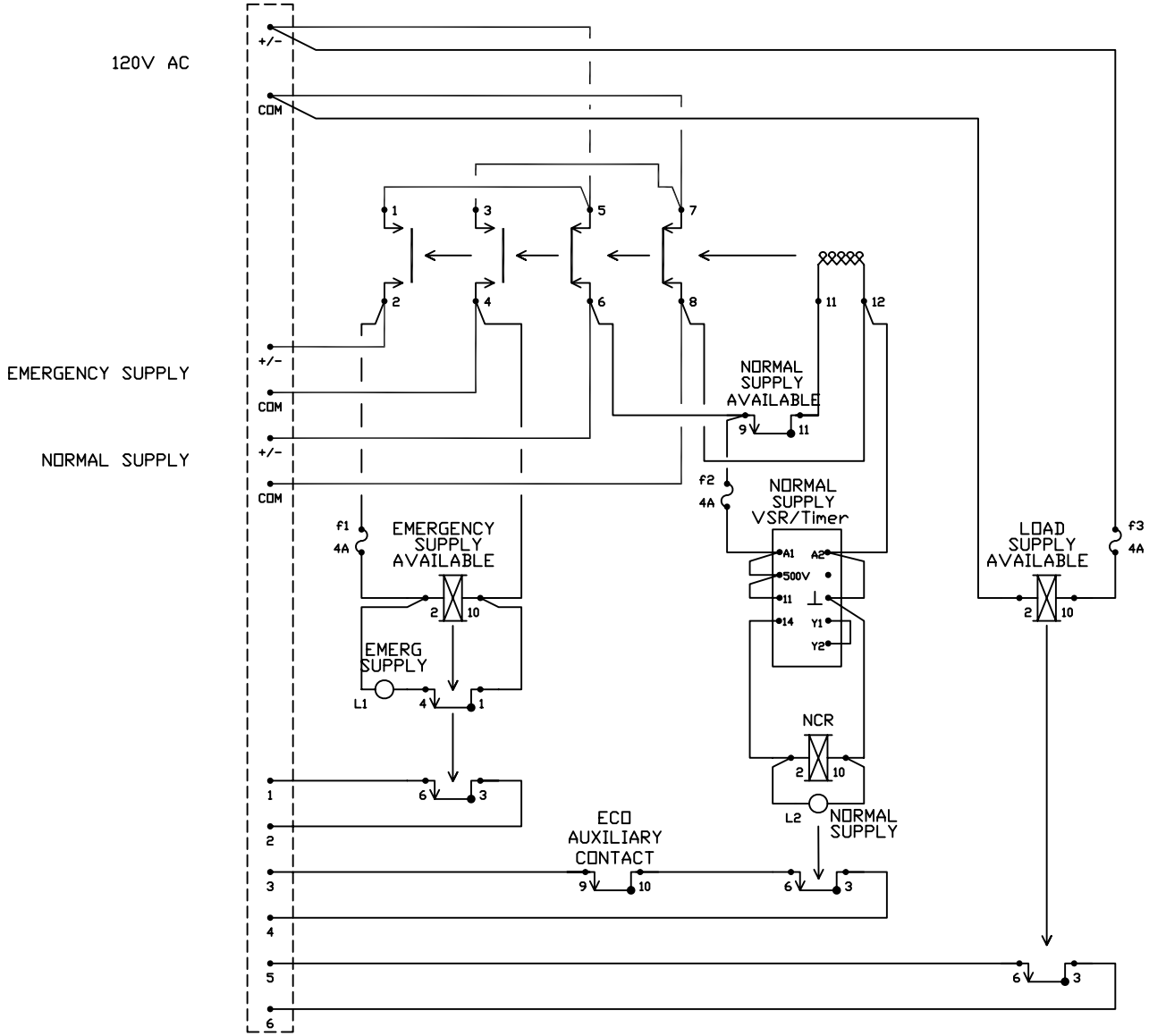
FUSES f1,f2	SAKS1, 4A (KLIPPON)
SUPPLY TERMINALS	ENTRELEC M35/16
IND'R TERMINALS	SAKC10 (KLIPPON)
RESISTOR TERMINALS	SAK6N (KLIPPON)
RELAYS	HH23 PW-T 110V
LED INDICATOR (L1,L2)	10-16mm GREEN (90-135V AC)
CONTACTOR	TELEMECANIQUE
TIMERS	
NORMAL SUPPLY VSR/TIMER	OMRON H3CR-A8 PILZ SI UM AC 110-127V AC/UM 500V AC/DC

NOTE: ECO COIL TO BE RATED AT 127V AC

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
23-10-91	30-12-99	01-09-03	05-10-05
JOB NUMBER			


A
XCX
B
XCX
C
XCX
BX120 A
NX120 A
EMERG
CONT'R N
PSI OUT
PSI IN
A-C PSKR
HH23 PW-T 120v AC
SEPERATE DC SUPPLY CHANNELS TO BE INCLUDED IF PROVIDED
LAMPS 240v 15w
PSKR'S DETECT A SINGLE CHANNEL FAILURE
'A' 120v PSR
3K9Ω 10W
IF CIRCUIT >200m
BX120 B
NX120 B
'B' 120v PSR
USE PSR'S DIRECT IN POJR/POR CIRCUIT
PSR'S NOT REQUIRED WHEN THE SUPPLY INVOLVES AUTOMATIC SIGNALLING ONLY
'C' 120v PSR
PSR'S DETECT A TOTAL SUPPLY FAILURE
RR POR
B50 INT
XING
4A
RR POJR
RR POJPR
D1 D2
R1 R2
N50 INT
D6 D5
A1
B7
B8
A8
30''
B1 B2
C1 C2
BX120 C
NX120 C
50v INT PSR
B50 INT
N50 INT
50v EXT PSR
B50 EXT
N50 EXT
24V DC PSR
DIAG B24
DIAG N24

EMERGENCY CHANGE-OVER CONTACTOR WITH VOLTAGE SENSING AND TIME DELAY TO NORMAL



\# %U SET TO 115VAC
HYST SET TO 100VAC
S_1 = 0.5
S_2 = 1
t_f = 7 SEC (MIN)

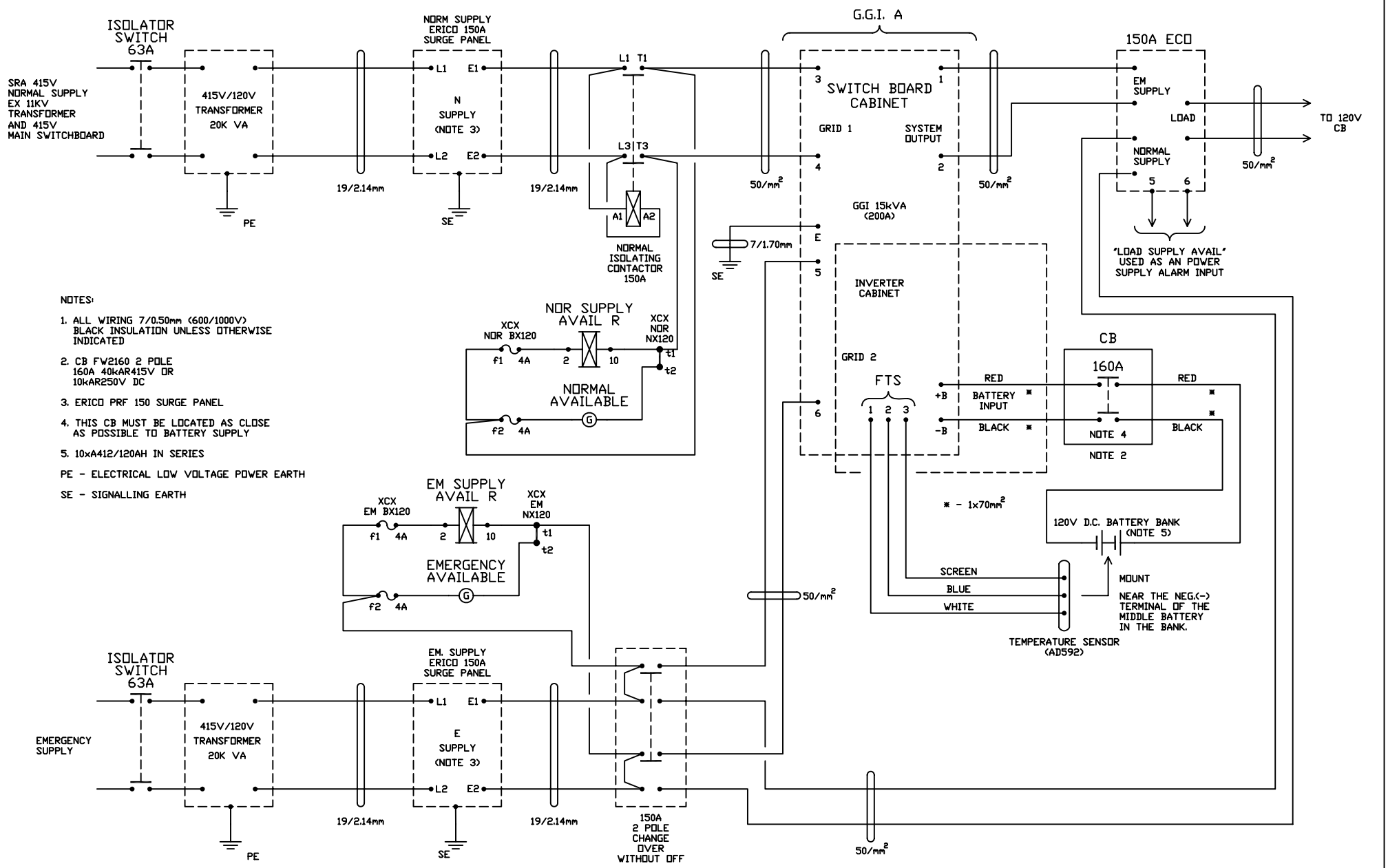
MATERIALS:

FUSES f1, f2, f3	SAKS1, 4A
TERMINALS	KLIPPON
SUPPLY	SAKG
IND'R	SAKC10
RELAYS	HH23 PW-T 110V
LED INDICATOR (L1,L2)	10-16mm GREEN (90-135V AC)
CONTACTORS	TELEMECHANIQUE
50A	LC1 D638
100A	CV1 GB
150A	CV1 HB
200A	CV1 JB

NORMAL SUPPLY VSR/TIMER	PILZ SI UM AC 110-127V AC/UM 500V AC/DC

ISSUE 01	ISSUE 02	ISSUE 03
01-09-01	01-09-03	06-03-06
JOB NUMBER		

			ISSUE 03	28/6/07	13:04			CSTDU108	GGI ARRANGEMENT				SHT: U108	CB: STD



NOTES:

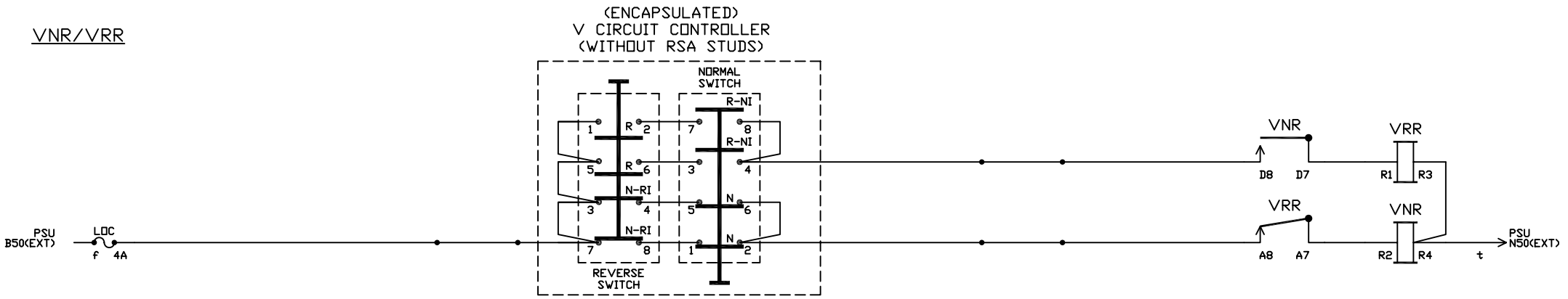
1. ALL WIRING 7/0.50mm (600/1000V) BLACK INSULATION UNLESS OTHERWISE INDICATED
2. CB FW2160 2 POLE 160A 40kAR415V OR 10kAR250V DC
3. ERICO PRF 150 SURGE PANEL
4. THIS CB MUST BE LOCATED AS CLOSE AS POSSIBLE TO BATTERY SUPPLY
5. 10xA412/120AH IN SERIES

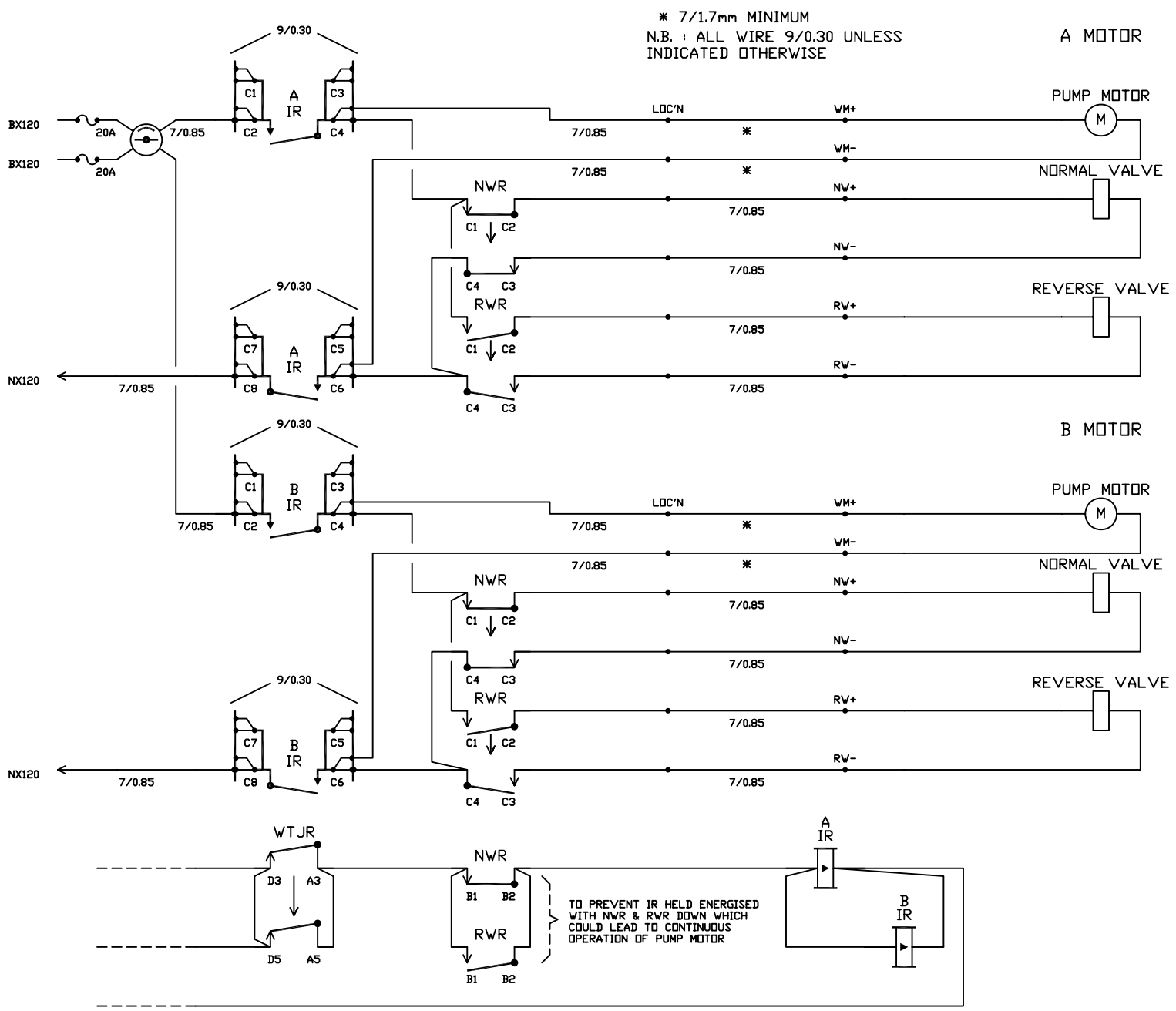
PE - ELECTRICAL LOW VOLTAGE POWER EARTH

SE - SIGNALLING EARTH

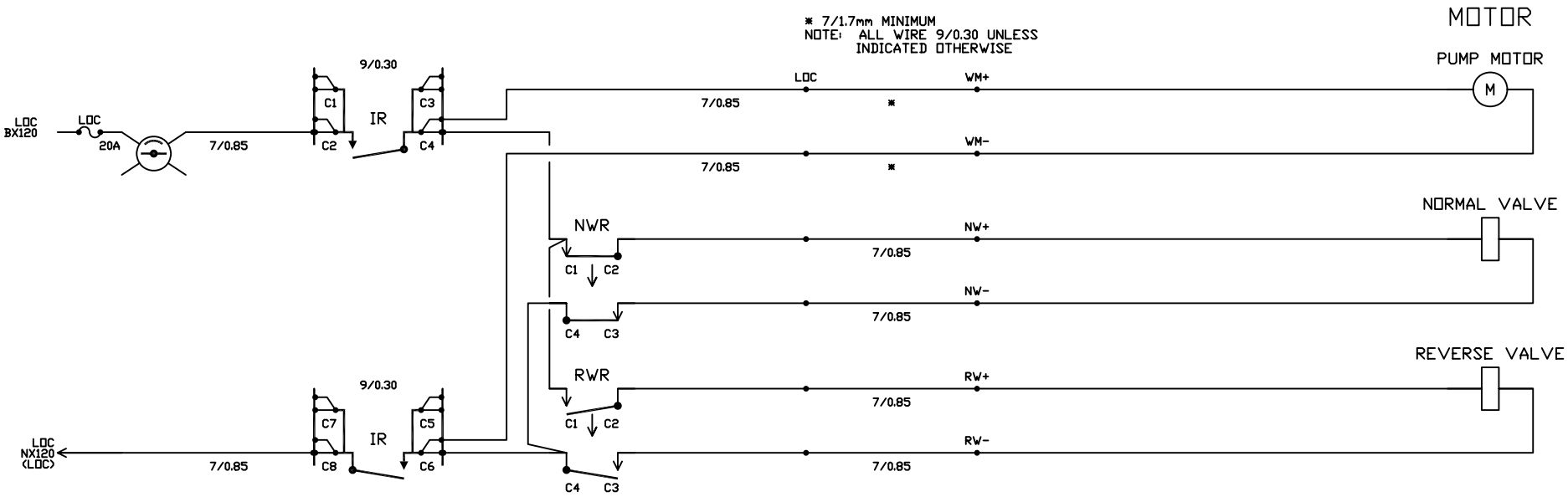
ISSUE 01	ISSUE 02
01-09-03	06-03-06
JOB NUMBER	

VNR/VRR


(ENCAPSULATED)
V CIRCUIT CONTROLLER
(WITHOUT RSA STUDS)
NORMAL SWITCH
REVERSE SWITCH
R-NI
R
N-RI
N
1
2
3
4
5
6
7
8
PSU B50(EXT)
LOC
f 4A
VNR
VRR
D8
D7
R1
R3
A8
A7
R2
R4
t
PSU N50(EXT)

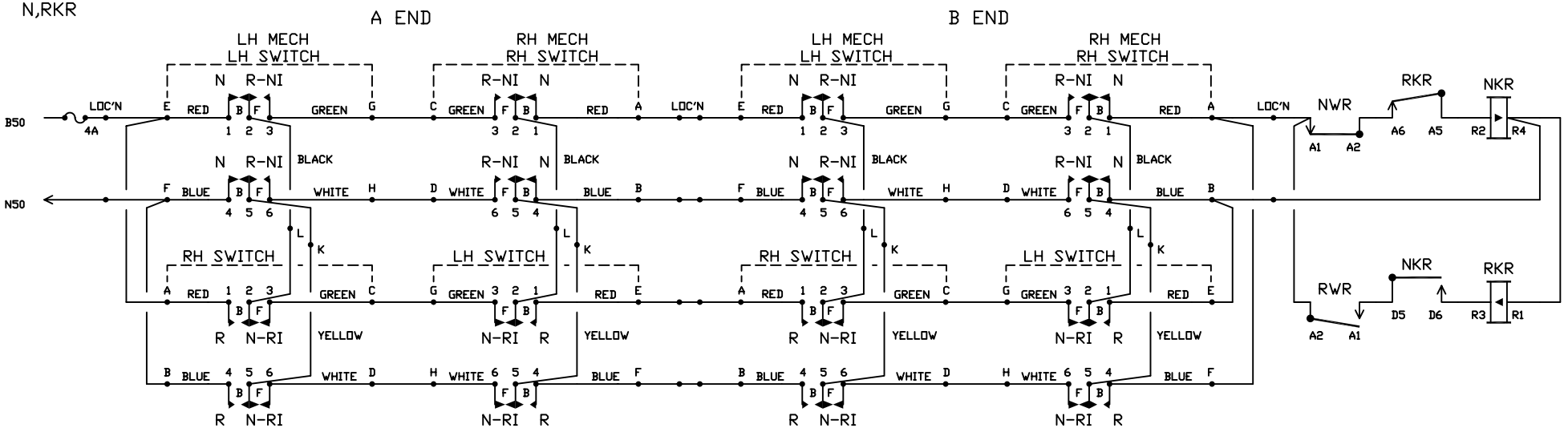

* 7/1.7mm MINIMUM
N.B. : ALL WIRE 9/0.30 UNLESS INDICATED OTHERWISE
A MOTOR
B MOTOR
PUMP MOTOR
NORMAL VALVE
REVERSE VALVE
BX120
BX120
NX120
20A
20A
7/0.85
9/0.30
A IR
B IR
C1
C2
C3
C4
C5
C6
C7
C8
LOC'N
WM+
WM-
NW+
NW-
RW+
RW-
NWR
RWR
M
WTJR
D3
A3
D5
A5
B1
B2
TO PREVENT IR HELD ENERGISED WITH NWR & RWR DOWN WHICH COULD LEAD TO CONTINUOUS OPERATION OF PUMP MOTOR

			ISSUE-02	28/6/07	8:59			CSTDW002	CLAMP LOCK OPERATING - SINGLE			SHT:W002	CB: STD



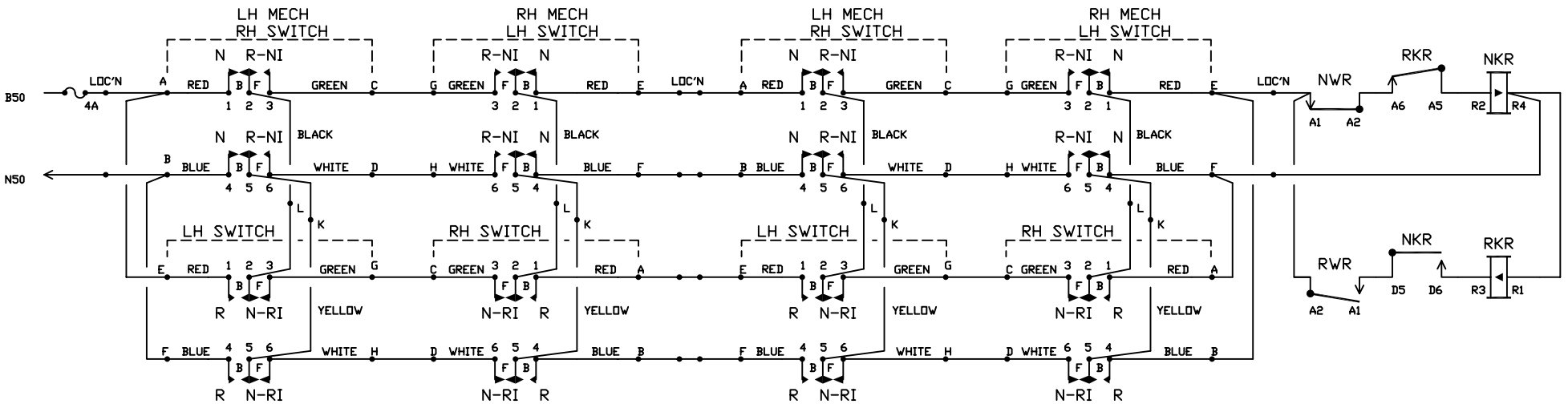
JOB NUMBER	23-10-91																	

DOUBLE LEFT HAND
N,RKR

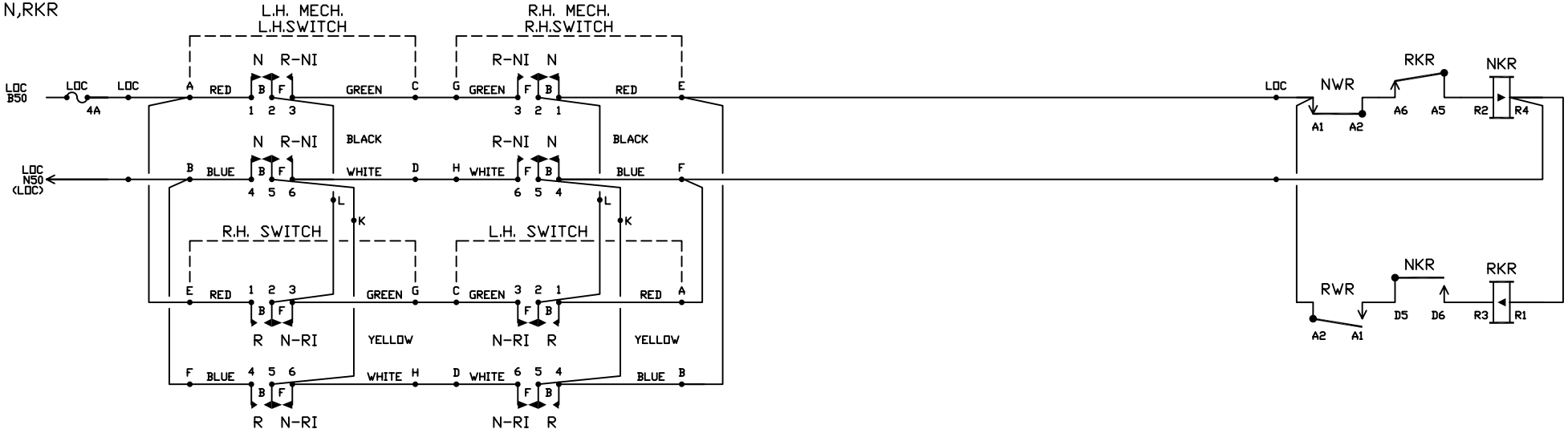


NOTE : CONTACTS 1-2 AND 4-5 OF LEFT HAND SWITCH IN EACH MECHANISM DETECT THE POINT SWITCH CLOSED AND LOCKED

DOUBLE RIGHT HAND
N,RKR

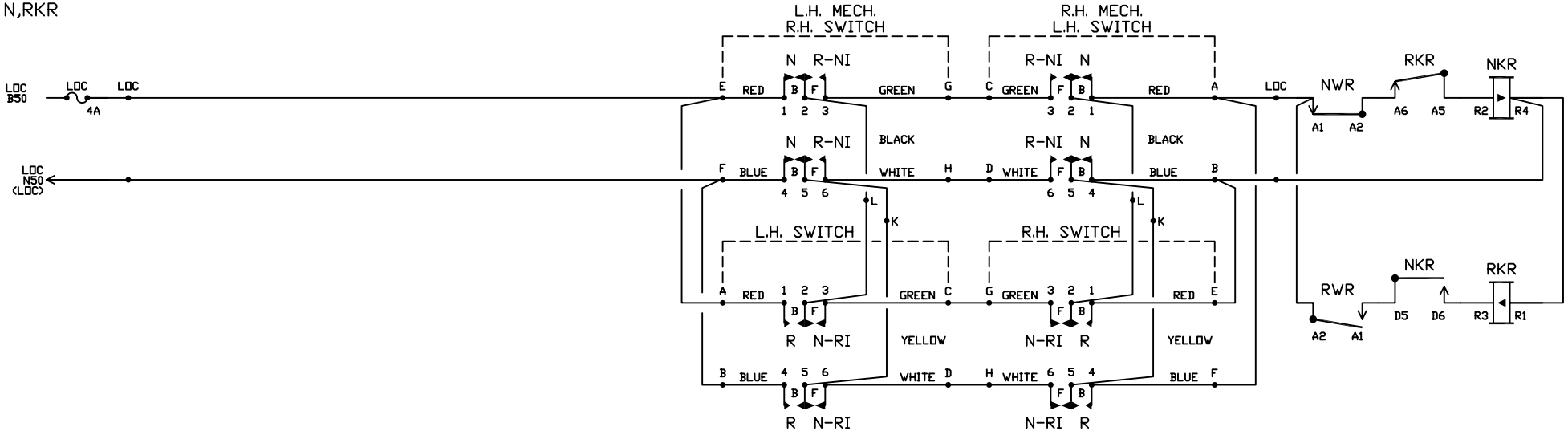


SINGLE LEFT HAND
N,RKR

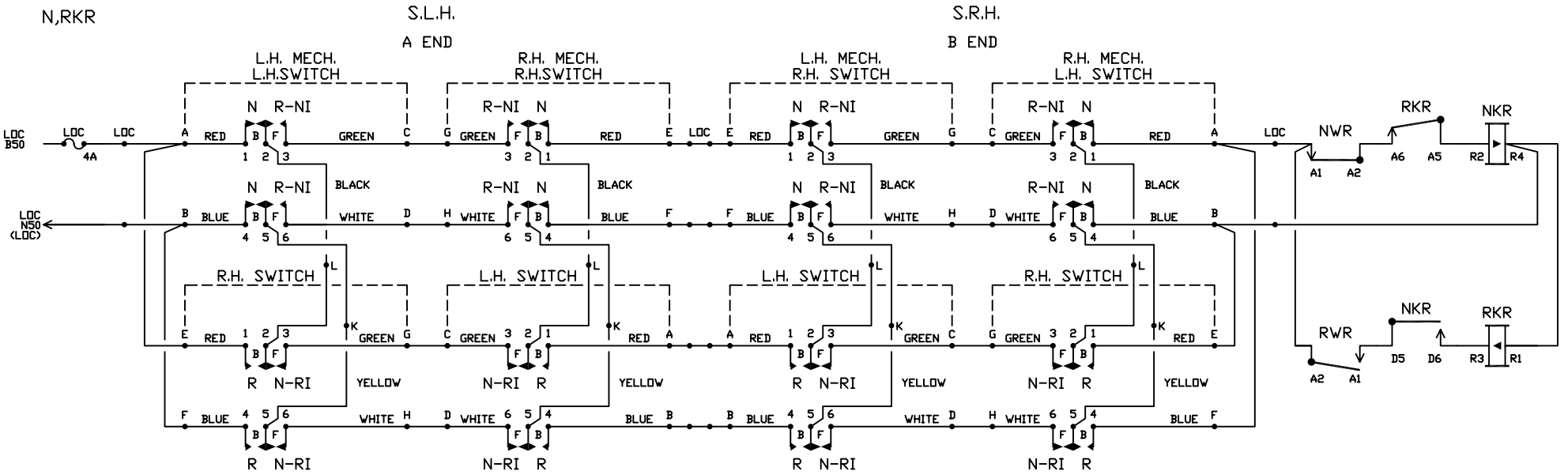


NOTE: CONTACTS 1-2 AND 4-5 OF LEFT HAND SWITCH IN EACH MECHANISM DETECT THE POINT SWITCH CLOSED AND LOCKED

SINGLE RIGHT HAND
N,RKR



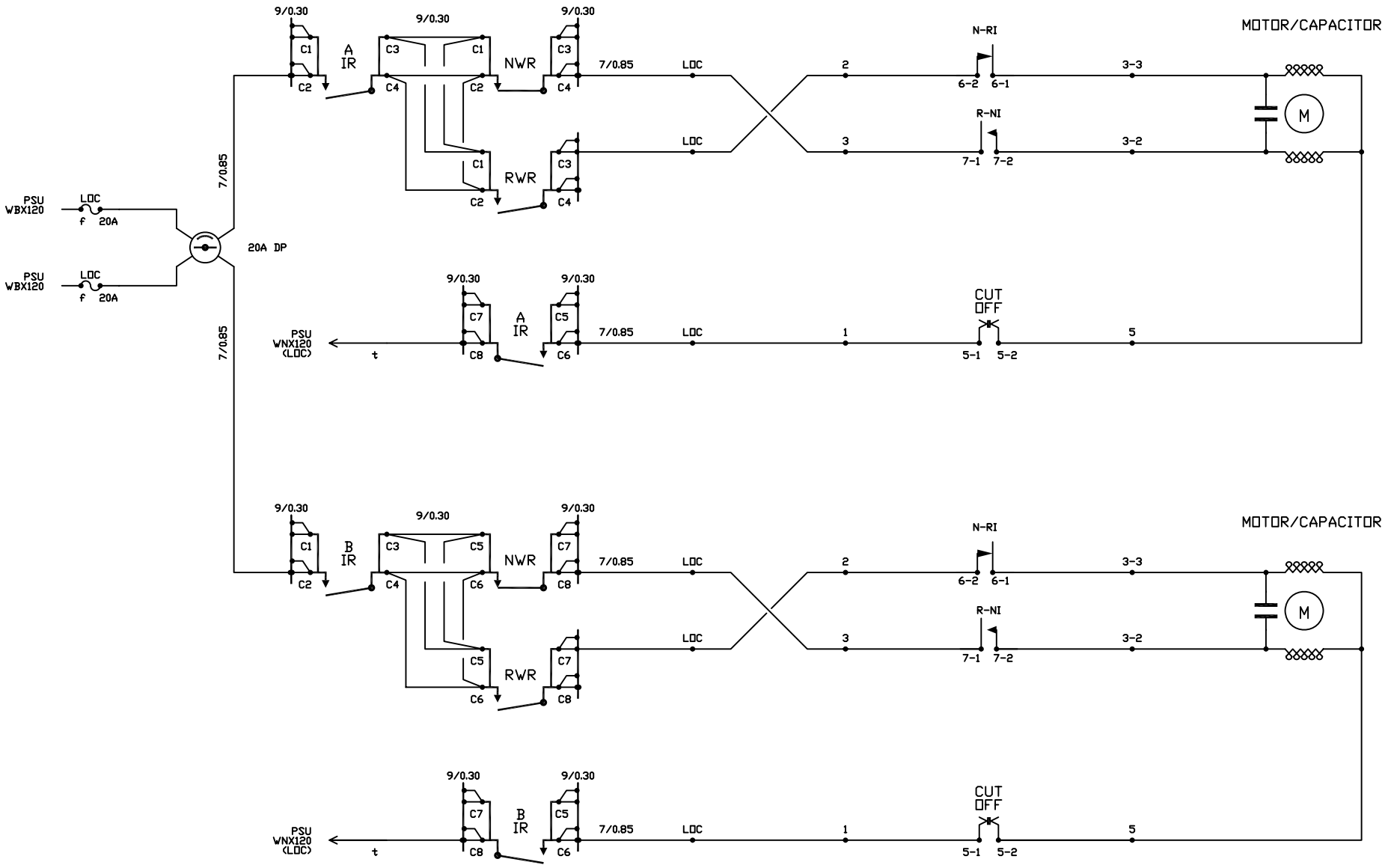
	ISSUE-02			28/6/07	9:01			CSTDW005	CLAMP LOCK DETECTION - COMBINED SINGLE			SHT:W005	CB: STD



NOTE: CONTACTS 1-2 AND 4-5 OF LEFT HAND SWITCH IN EACH MECHANISM DETECT THE POINT SWITCH CLOSED AND LOCKED

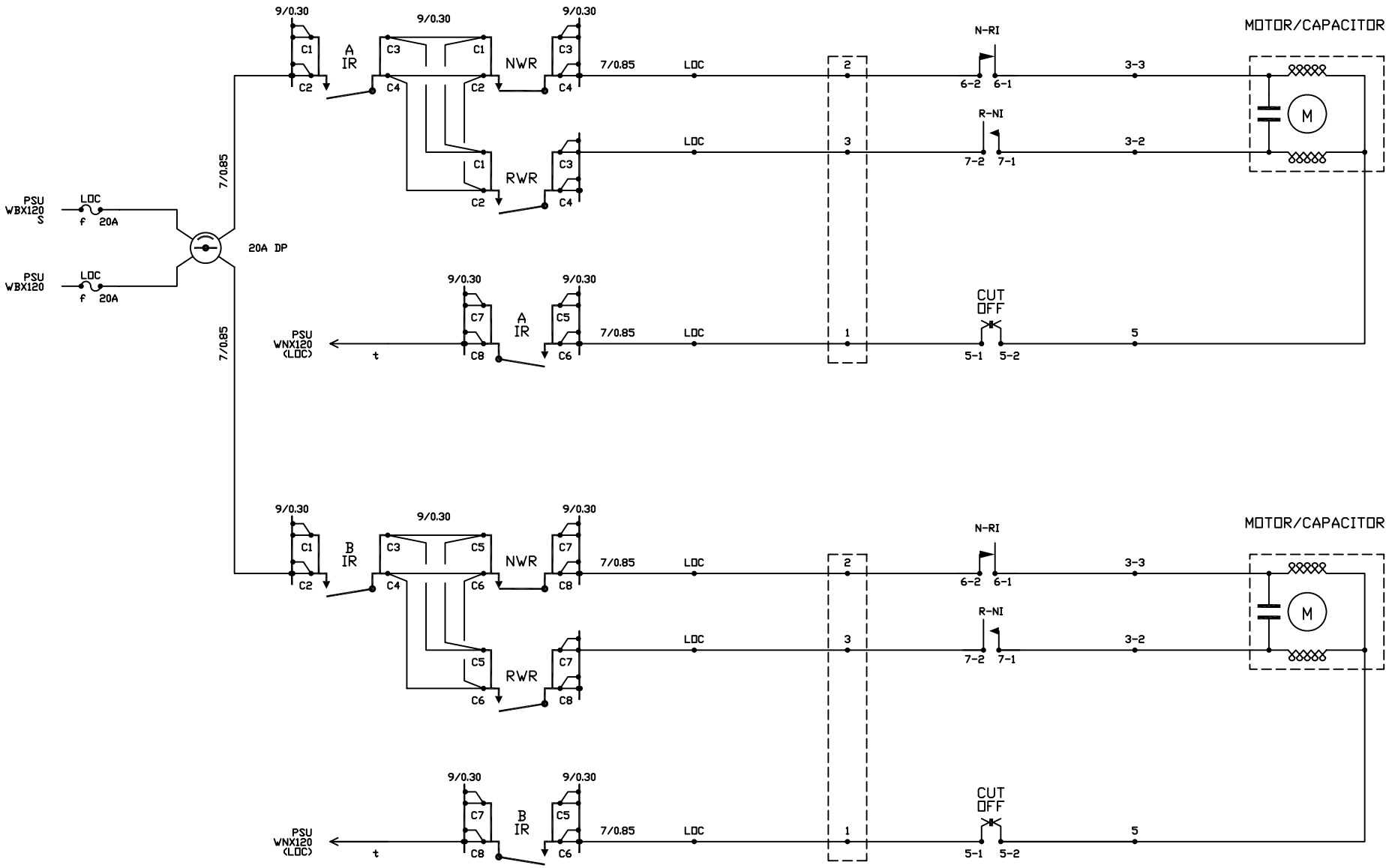
JOB NUMBER	23-10-91

			ISSUE-03	14/6/07	7:46			CSTDW006	POINTS WESTINGHOUSE M3A MK11 - DOUBLE LEFT HAND				SHT:W006	CB: STD



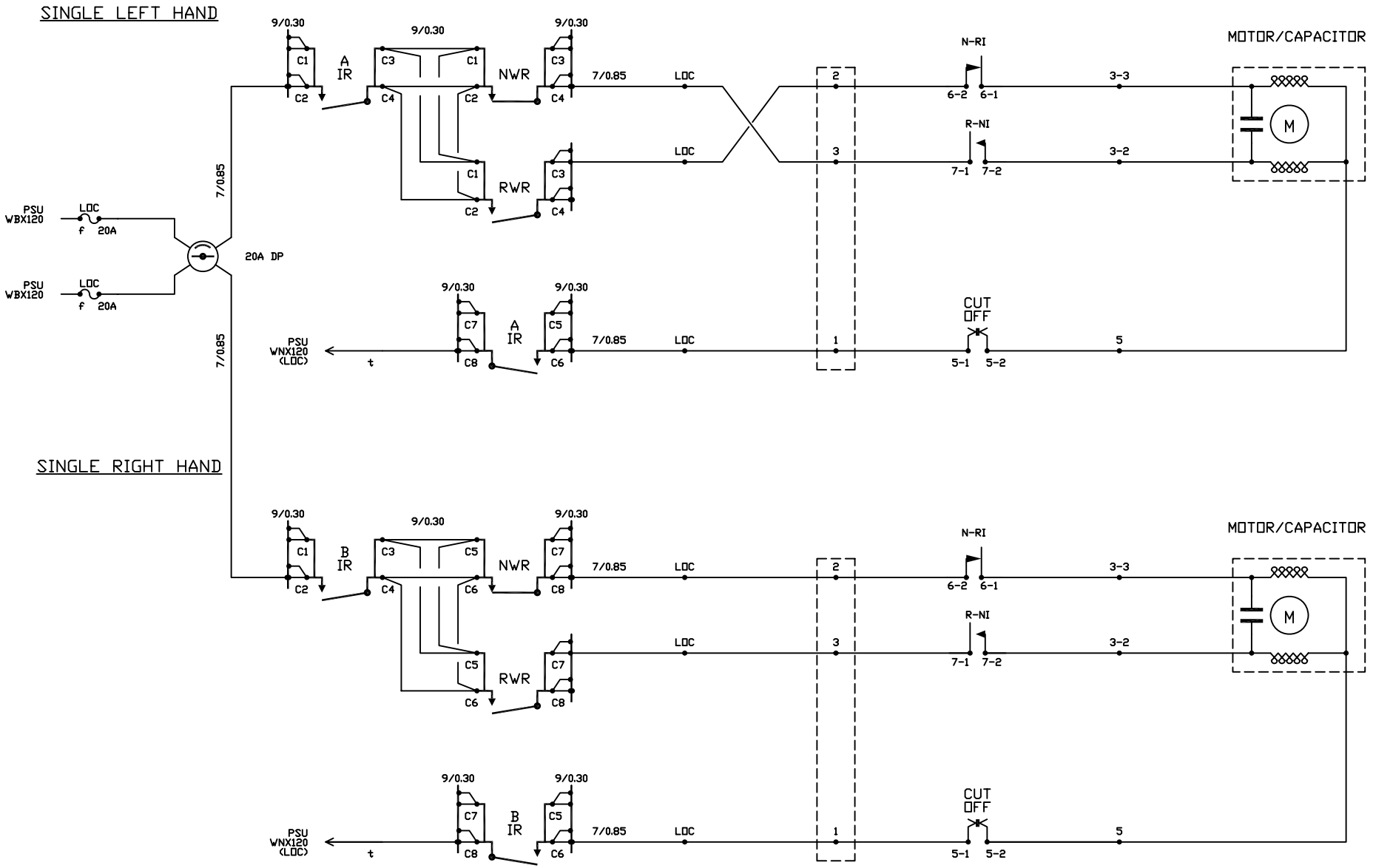
ISSUE 01	ISSUE 02	
23-10-91	18-03-94	
JOB NUMBER		

			ISSUE-03	14/6/07	8:34			CSTDW007	POINTS WESTINGHOUSE M3A MK11 - DOUBLE RIGHT HAND			SHT:W007	CB: STD



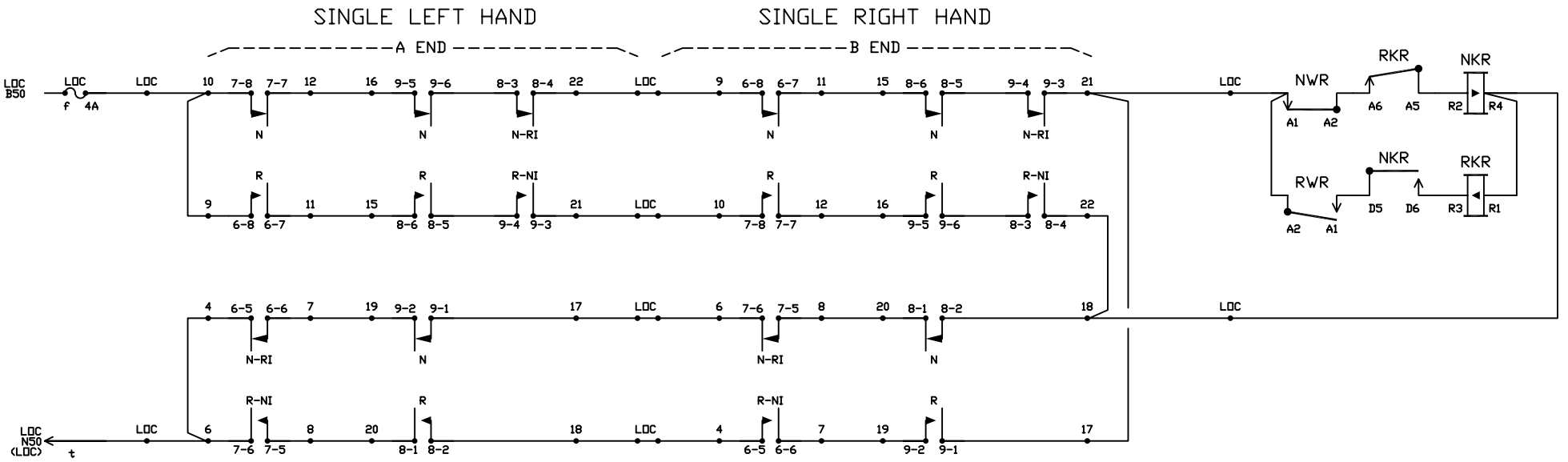
ISSUE 01	ISSUE 02	
23-10-91	18-03-94	
JOB NUMBER		

			ISSUE-03	14/6/07	7:41			CSTDW009	POINTS WESTINGHOUSE M3A MK11 - COMBINED SINGLE			SHT:W009	CB: STD



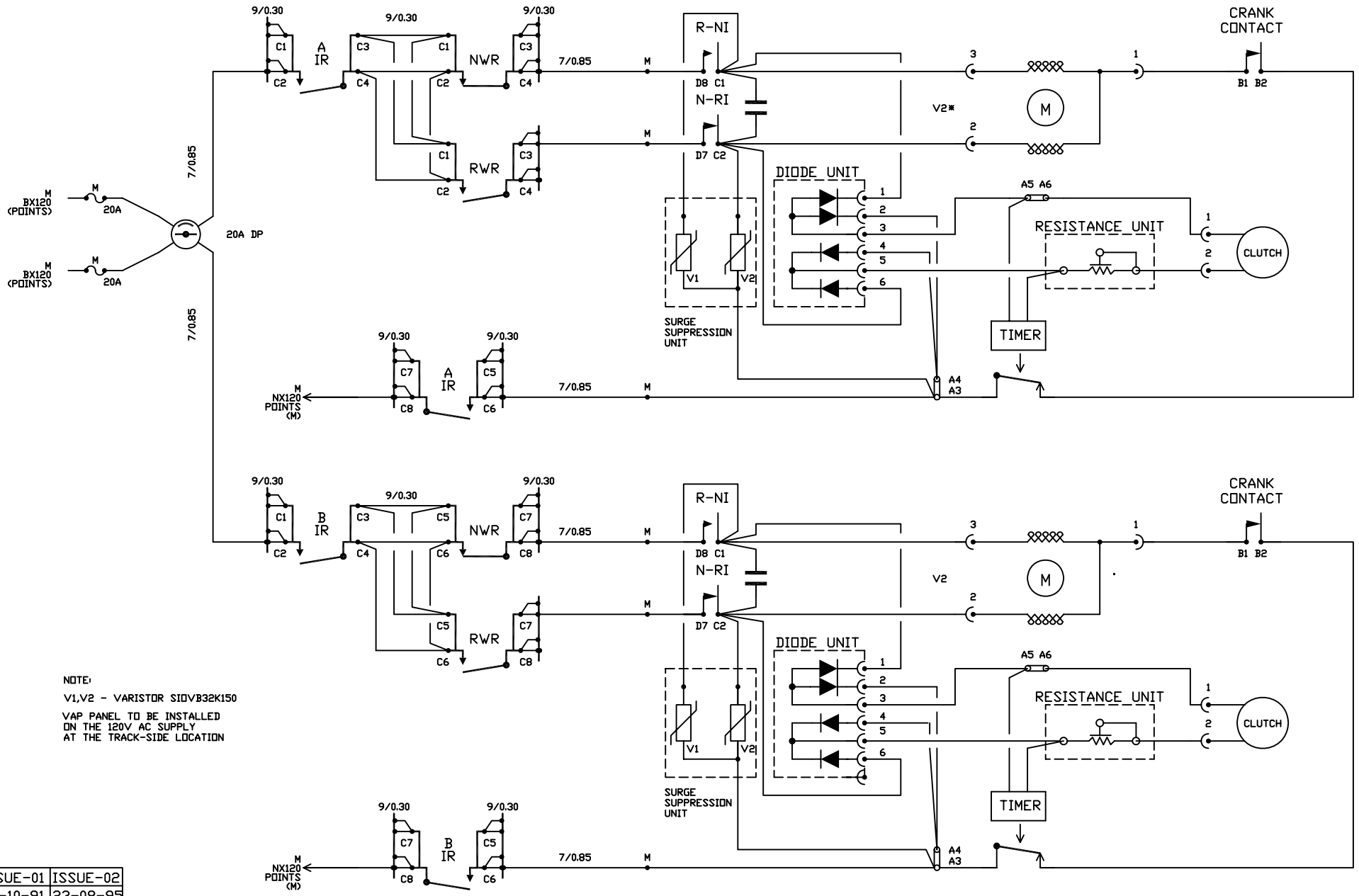
ISSUE 01	ISSUE 02	
23-10-91	18-03-94	
JOB NUMBER		

	ISSUE-02			28/6/07	9:02			CSTDW012	POINTS LOCAL DETECTORS W/HOUSE - COMBINED SINGLE			SHT: W012	CB: STD



JOB NUMBER	23-10-91

	ISSUE-03			28/6/07	9:04			CSTDW013	POINTS GEC HW4400 - DOUBLE LEFT HAND			SHT:W013	CB: STD



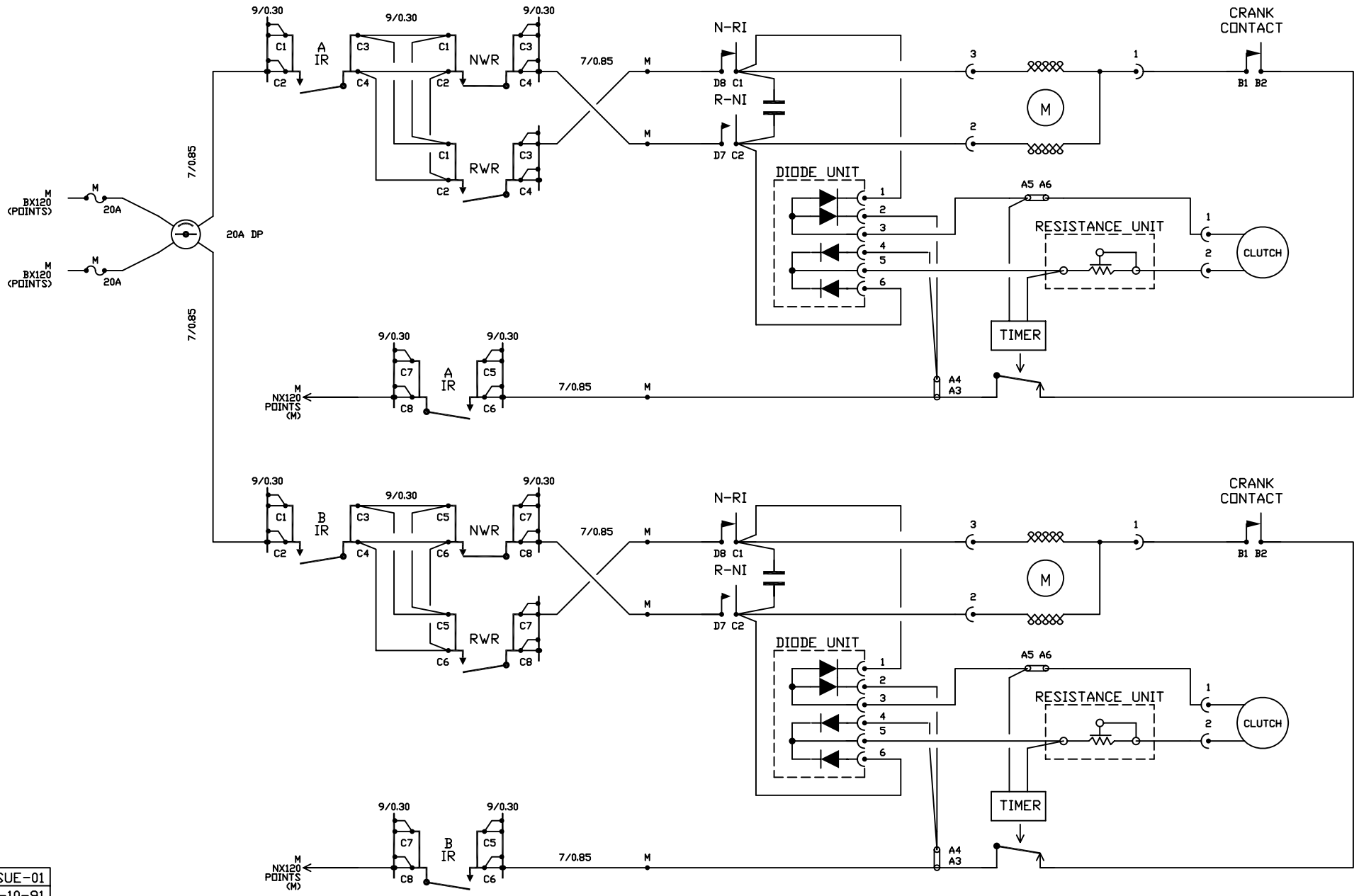
NOTE:

V1,V2 - VARISTOR SIOVB32K150

VAP PANEL TO BE INSTALLED ON THE 120V AC SUPPLY AT THE TRACK-SIDE LOCATION

ISSUE-01	ISSUE-02
23-10-91	23-08-95
JOB NUMBER	

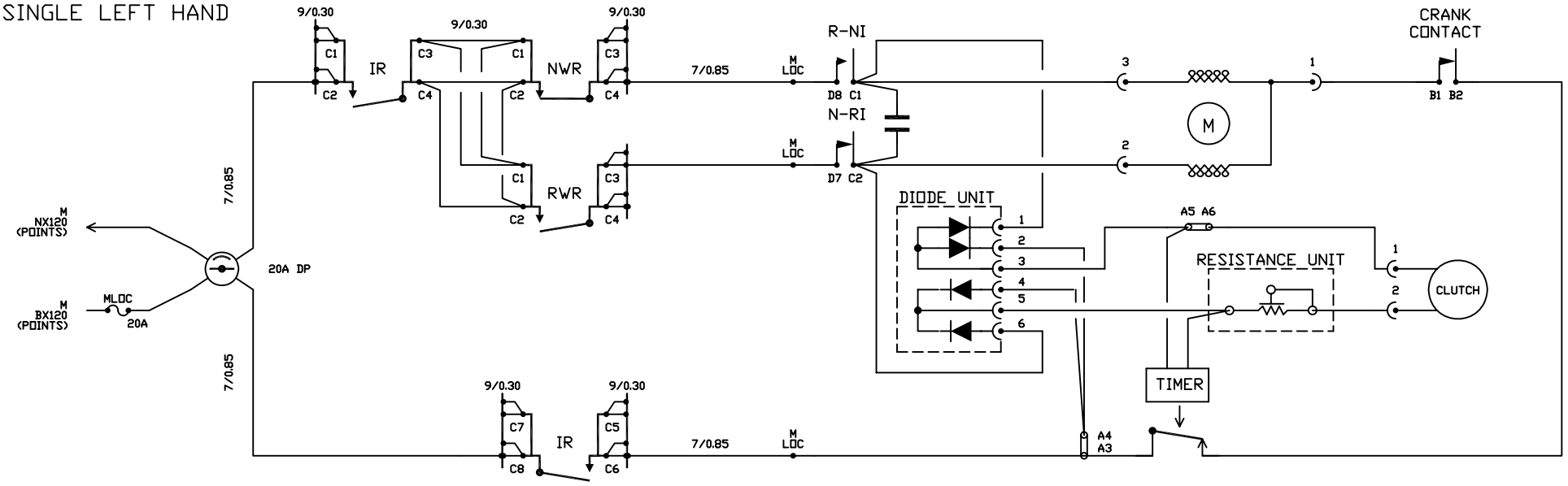
	ISSUE-02			28/6/07	9:05			CSTDW014	POINTS GEC HW4400 - DOUBLE RIGHT HAND			SHT:W014	CB: STD



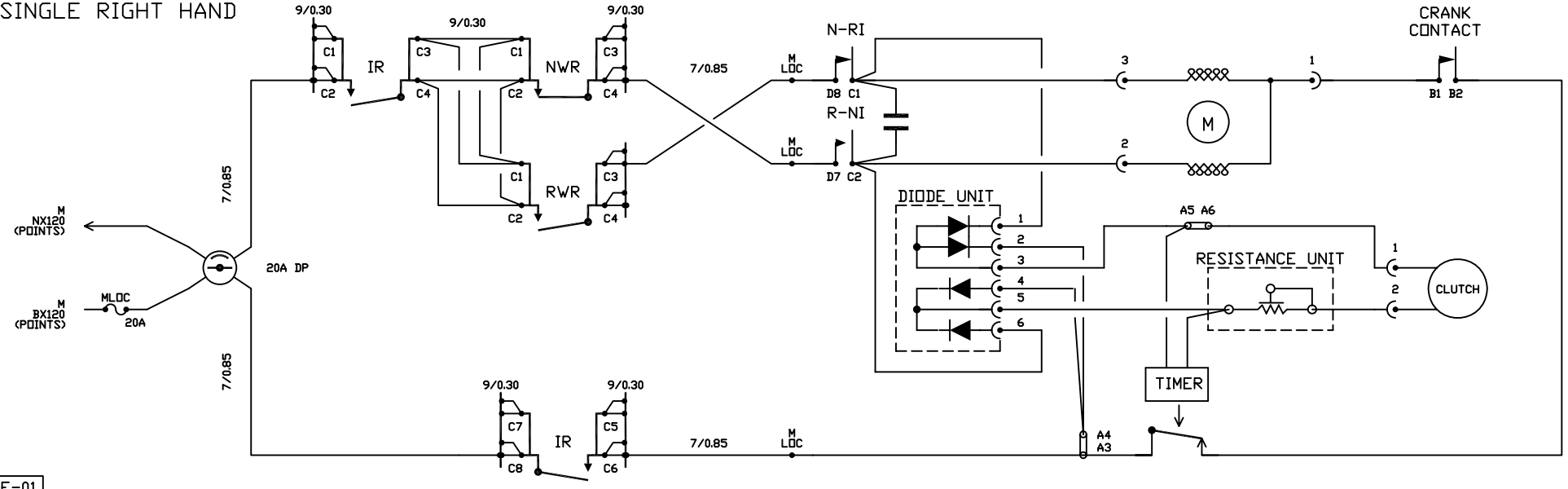
ISSUE-01
23-10-91
JOB NUMBER

	ISSUE-02			28/6/07	9:06			CSTDW015	POINTS GEC HW4400 - SINGLE				SHT:W015	CB: STD

SINGLE LEFT HAND



SINGLE RIGHT HAND

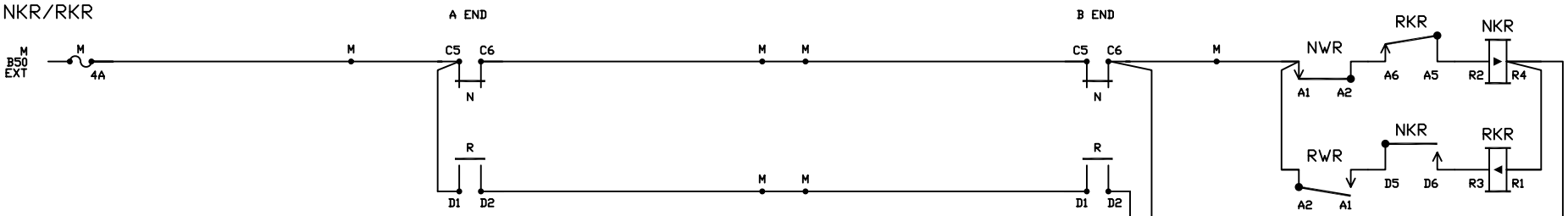


ISSUE-01
23-10-91
JOB NUMBER

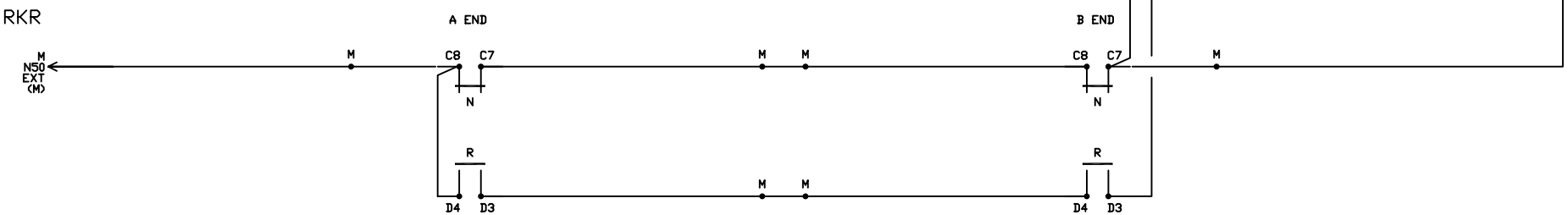
DOUBLE LEFT HAND
NKR/RKR

RKR

DOUBLE RIGHT HAND
NKR/RKR



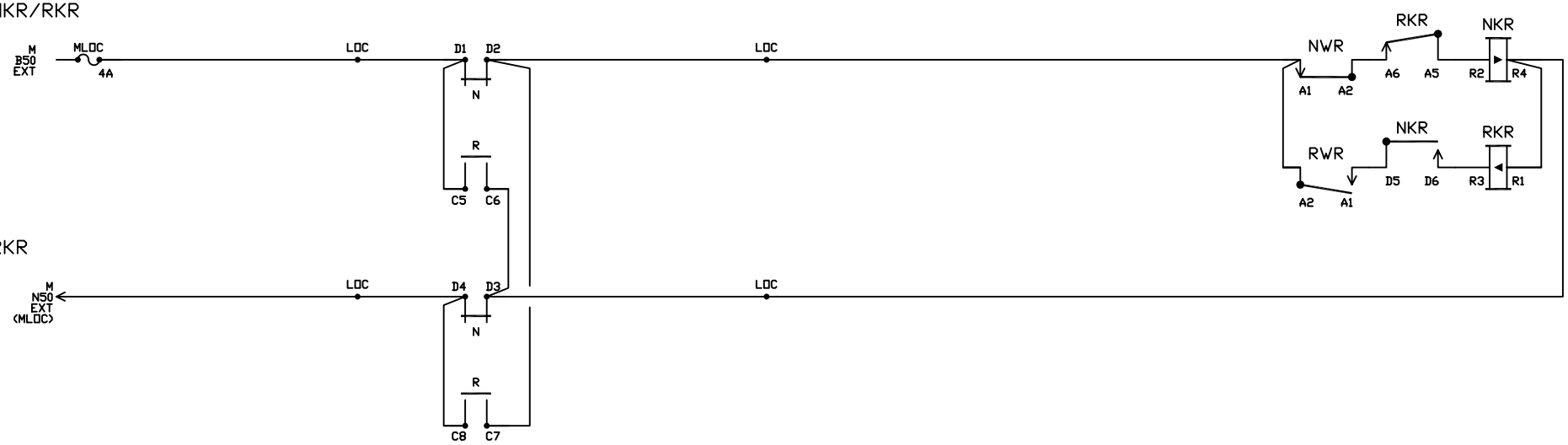
RKR



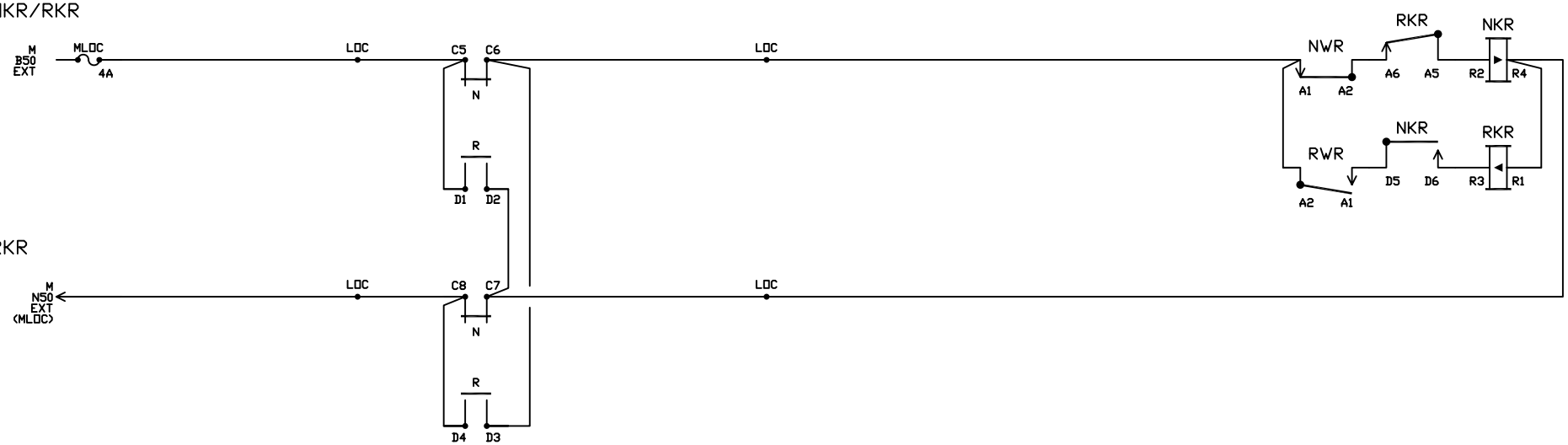
ISSUE-01
23-10-91
JOB NUMBER

	ISSUE-02			28/6/07	9:08			CSTDW017	POINTS LOCAL DETECTOR GEC HW 4400 - SINGLE			SHT:W017	CB: STD

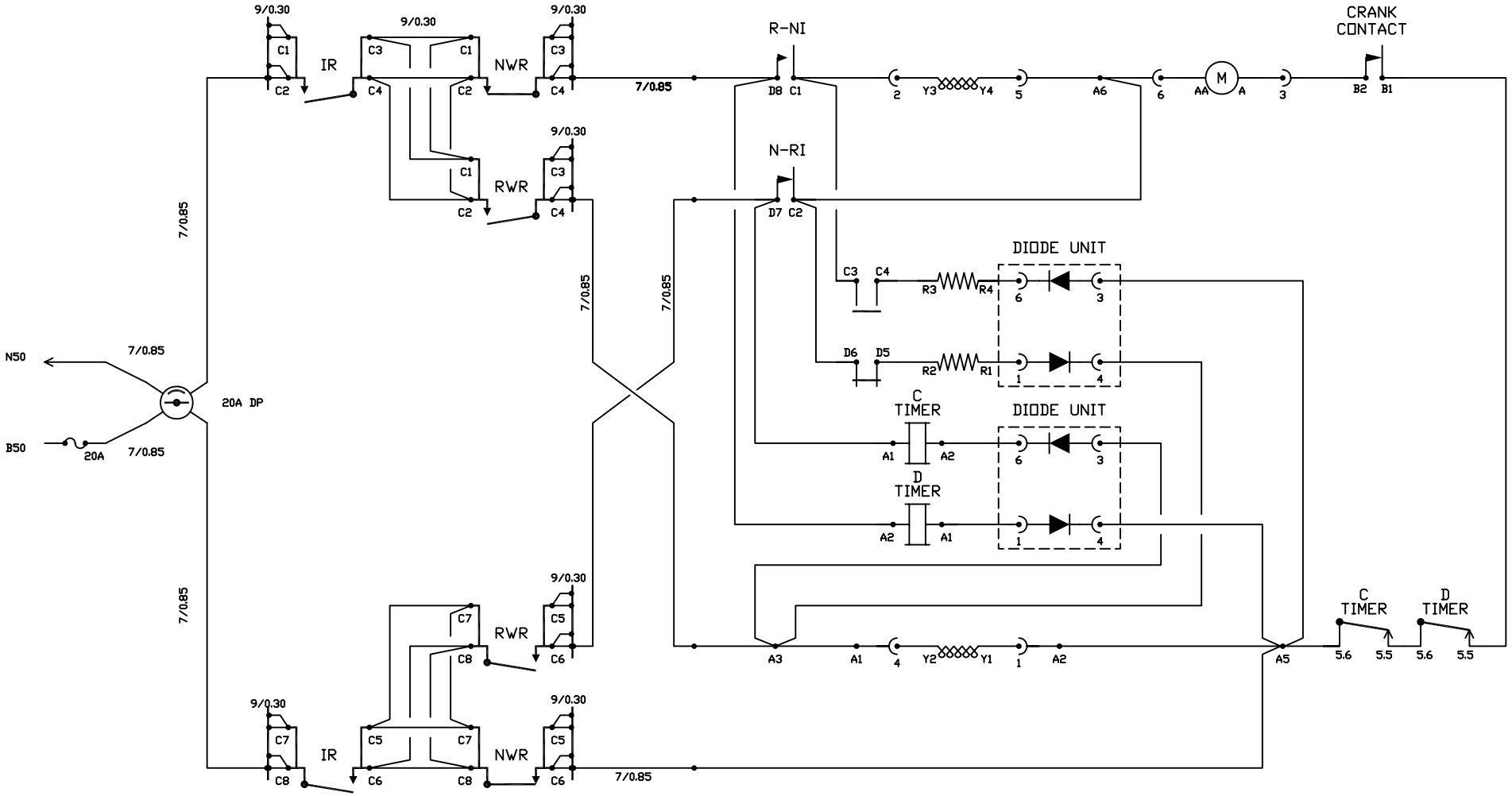
SINGLE LEFT HAND
NKR/RKR



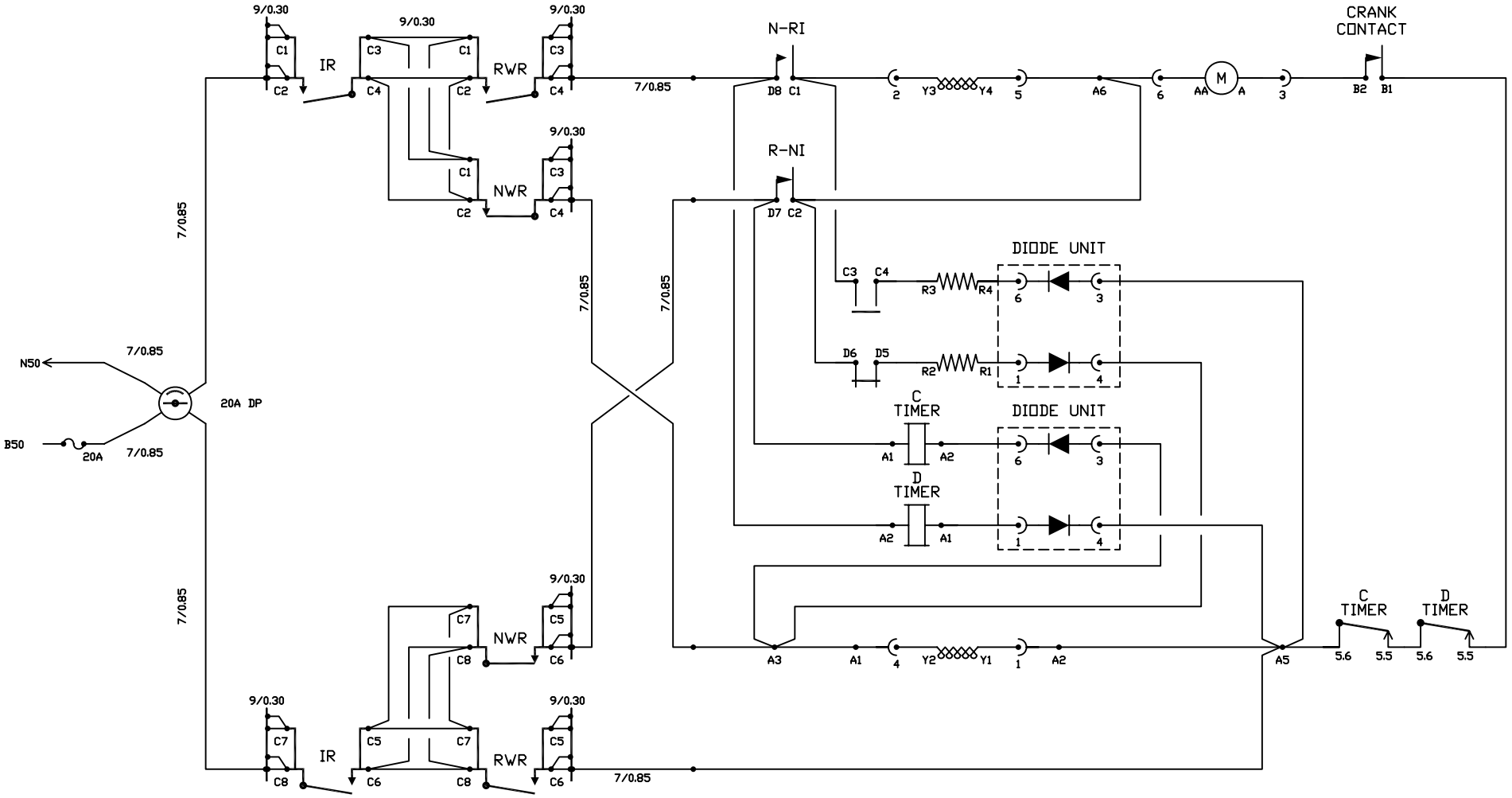
SINGLE RIGHT HAND
NKR/RKR



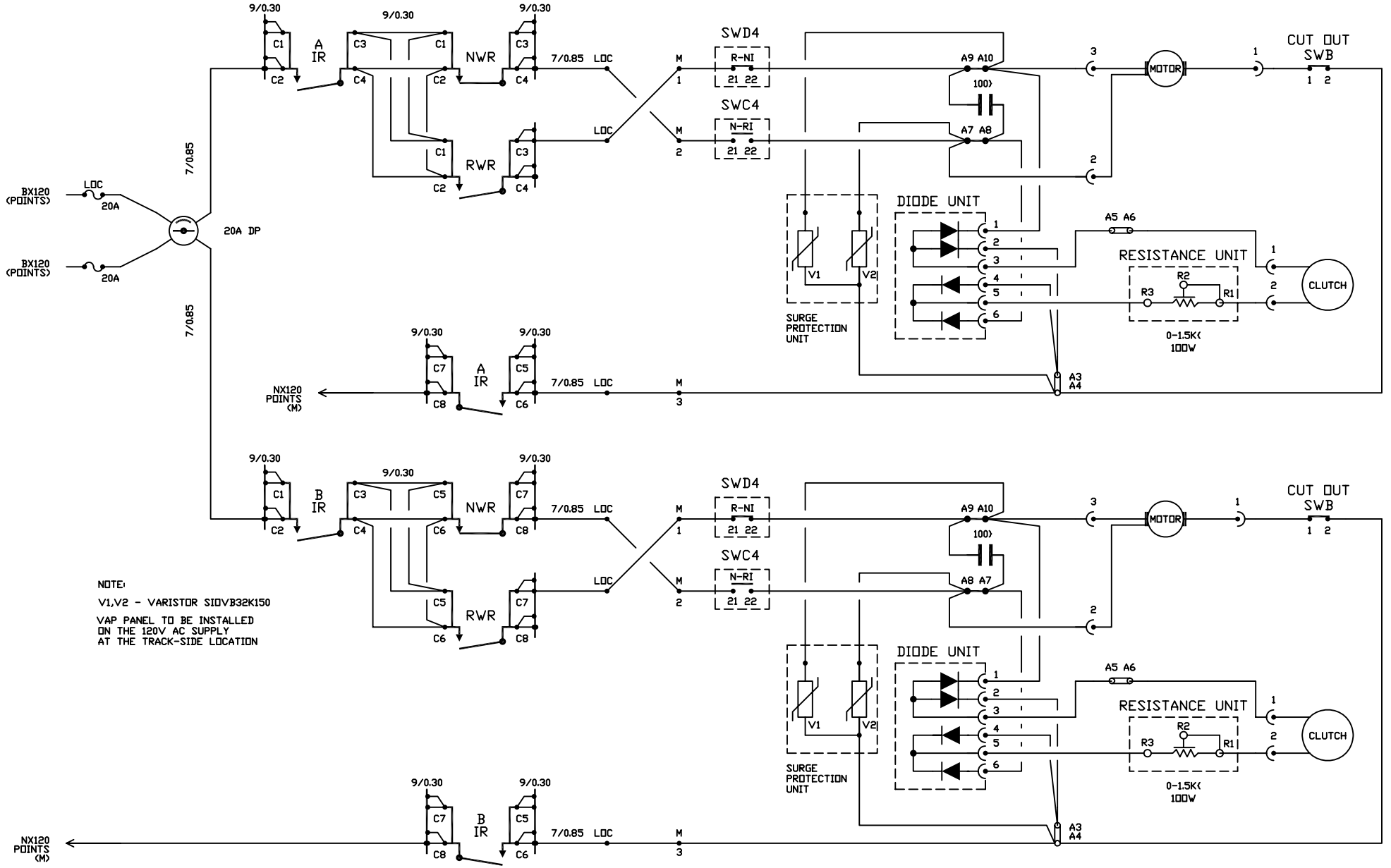
ISSUE-01
23-10-91
JOB NUMBER


9/0.30
IR
NWR
RWR
R-NI
N-RI
CRANK CONTACT
7/0.85
N50
B50
20A DP
20A
DIODE UNIT
C TIMER
D TIMER
M

	ISSUE-03			28/6/07	9:12			CSTDW019	POINTS GEC HW1121 50V DC - SINGLE RIGHT HAND					SHT:W019	CB: STD



ISSUE-01	ISSUE-02
23-10-91	27-11-92
JOB NUMBER	



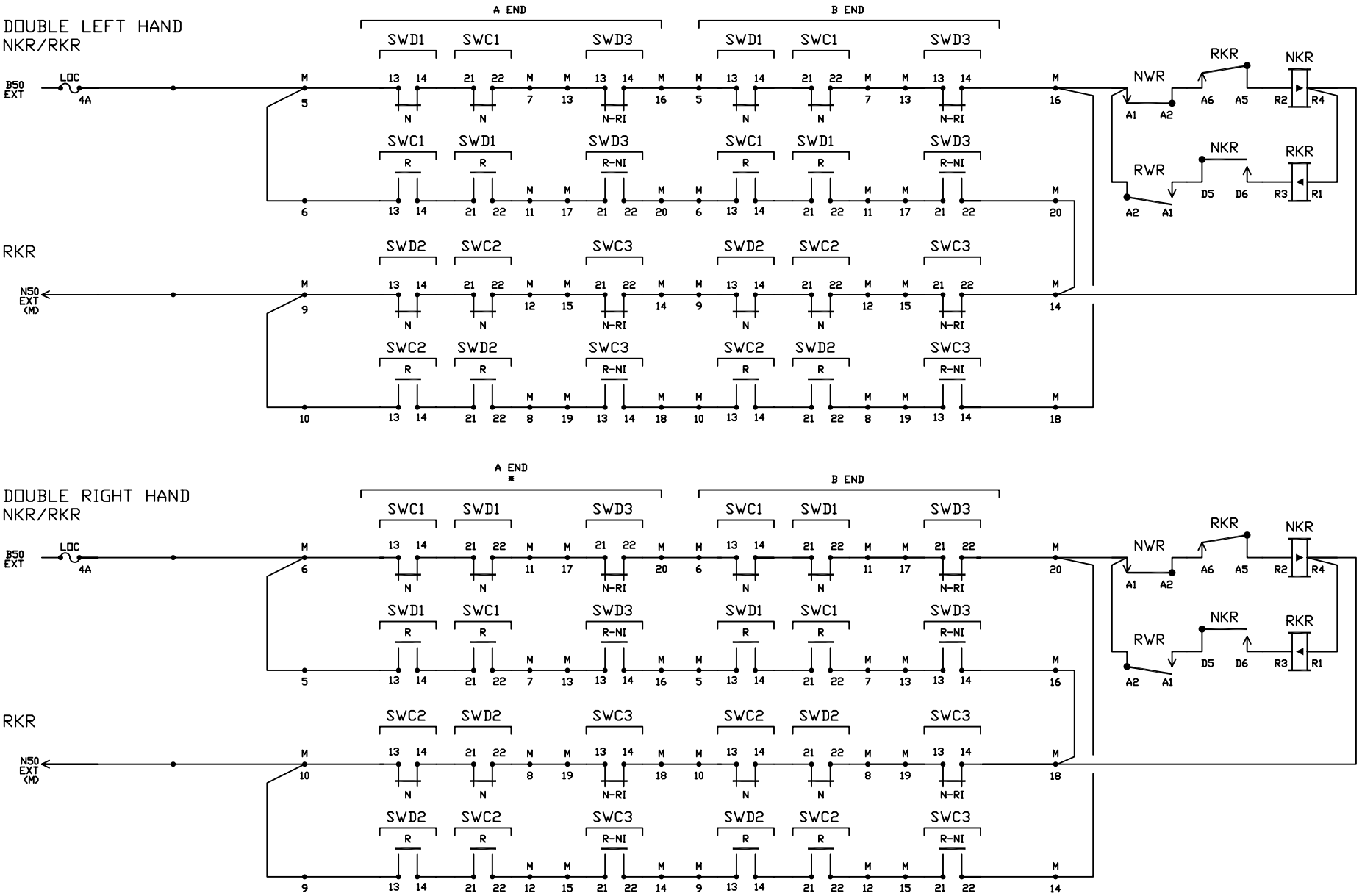
NOTE:

V1,V2 - VARISTOR SIOVB32K150

VAP PANEL TO BE INSTALLED
ON THE 120V AC SUPPLY
AT THE TRACK-SIDE LOCATION

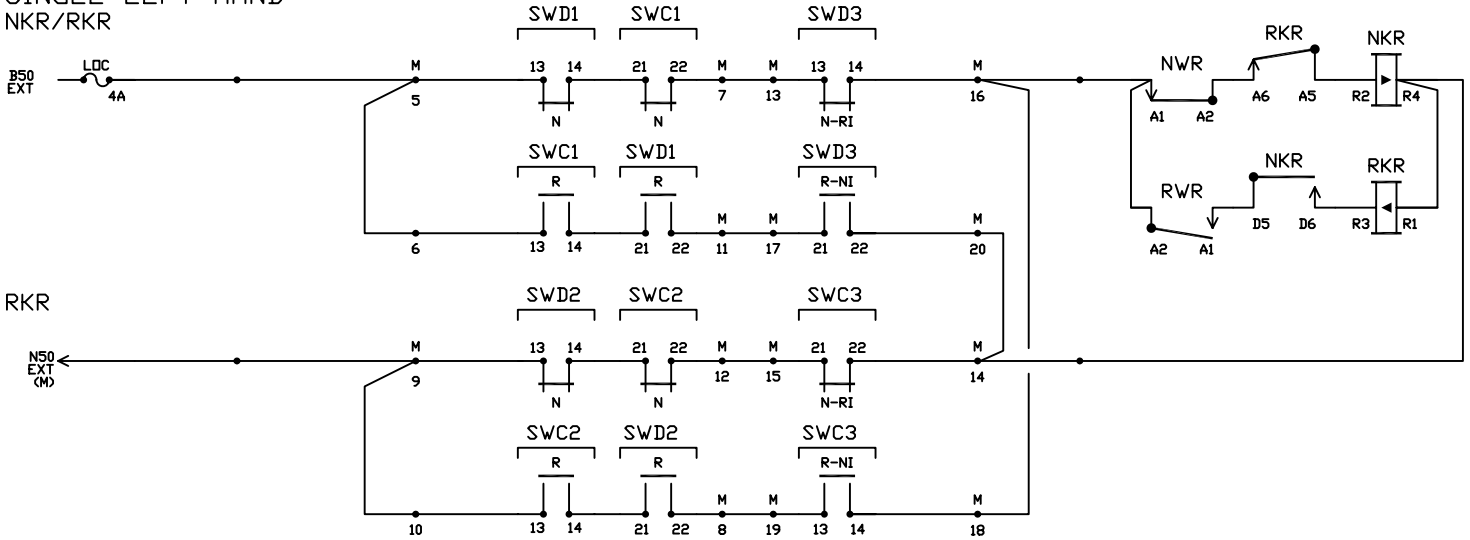
ISSUE-01
23-08-95
JOB NUMBER

	ISSUE 02			28/6/07	10:02			CSTDW021	POINT LOCAL DETECTOR GEC HW LZW - DOUBLE				SHT:W021	CB: STD

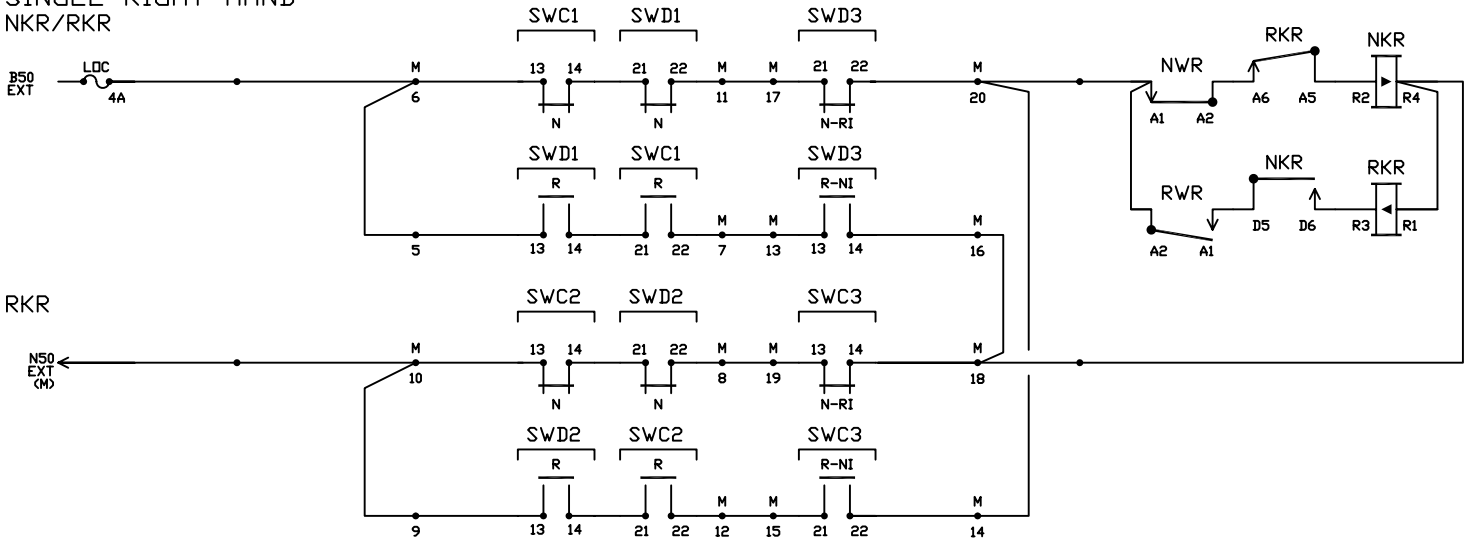


ISSUE-01
23-08-95
JOB NUMBER

SINGLE LEFT HAND
NKR/RKR

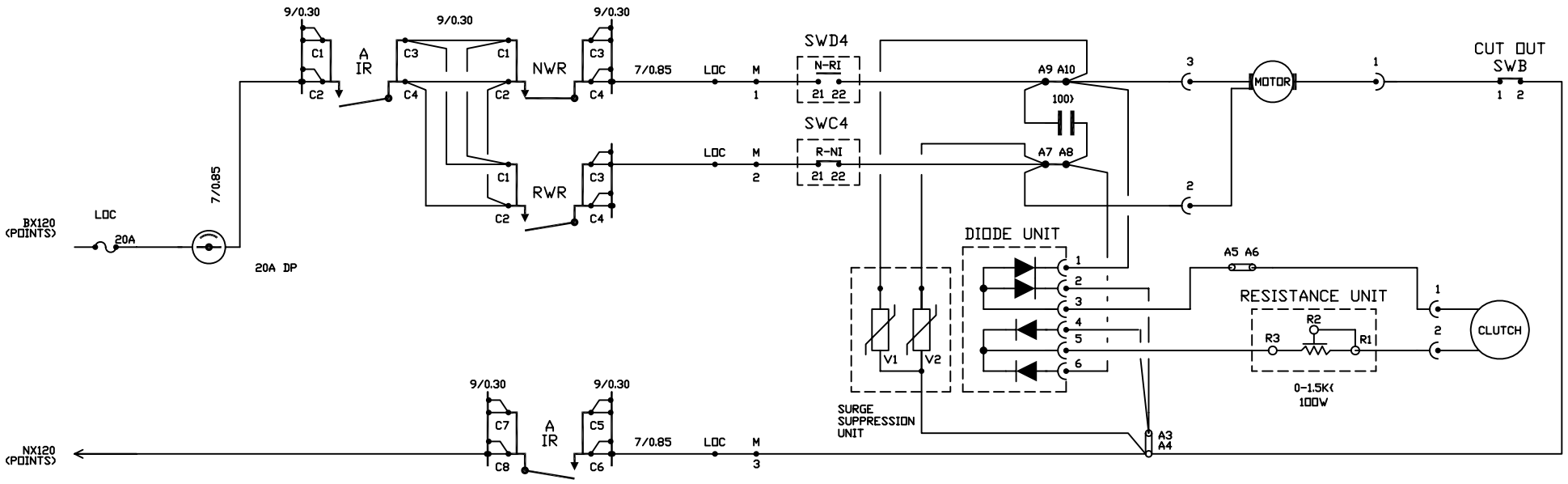


SINGLE RIGHT HAND
NKR/RKR



ISSUE-01
23-08-95
JOB NUMBER

	ISSUE 02			29/6/07	13:29			CSTDW023	POINTS GEC LZW - SINGLE LEFT HAND			SHT:W023	CB: STD



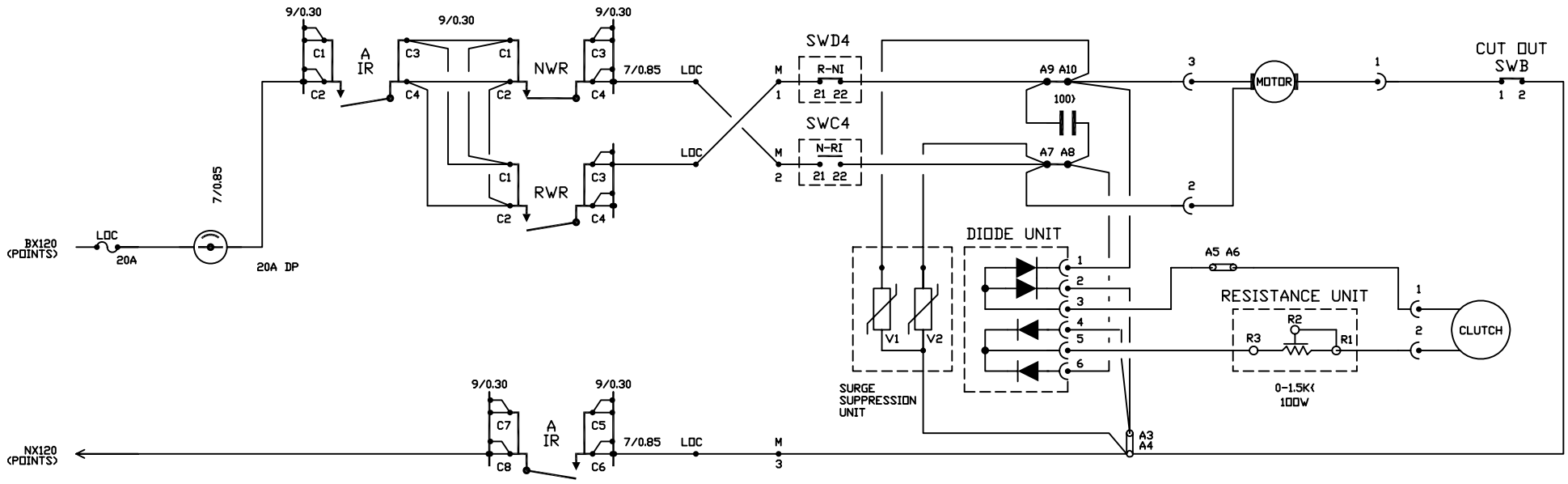
NOTE:

V1,V2 - VARISTOR SIOVB32K150

VAP PANEL TO BE INSTALLED
ON THE 120V AC SUPPLY
AT THE TRACK-SIDE LOCATION

ISSUE-01
23-08-95
JOB NUMBER

	ISSUE 02			28/6/07	10:05			CSTDW024	POINTS GEC LZW - SINGLE RIGHT HAND				SHT:W024	CB: STD



NOTE:

V1,V2 - VARISTOR SIOVB32K150

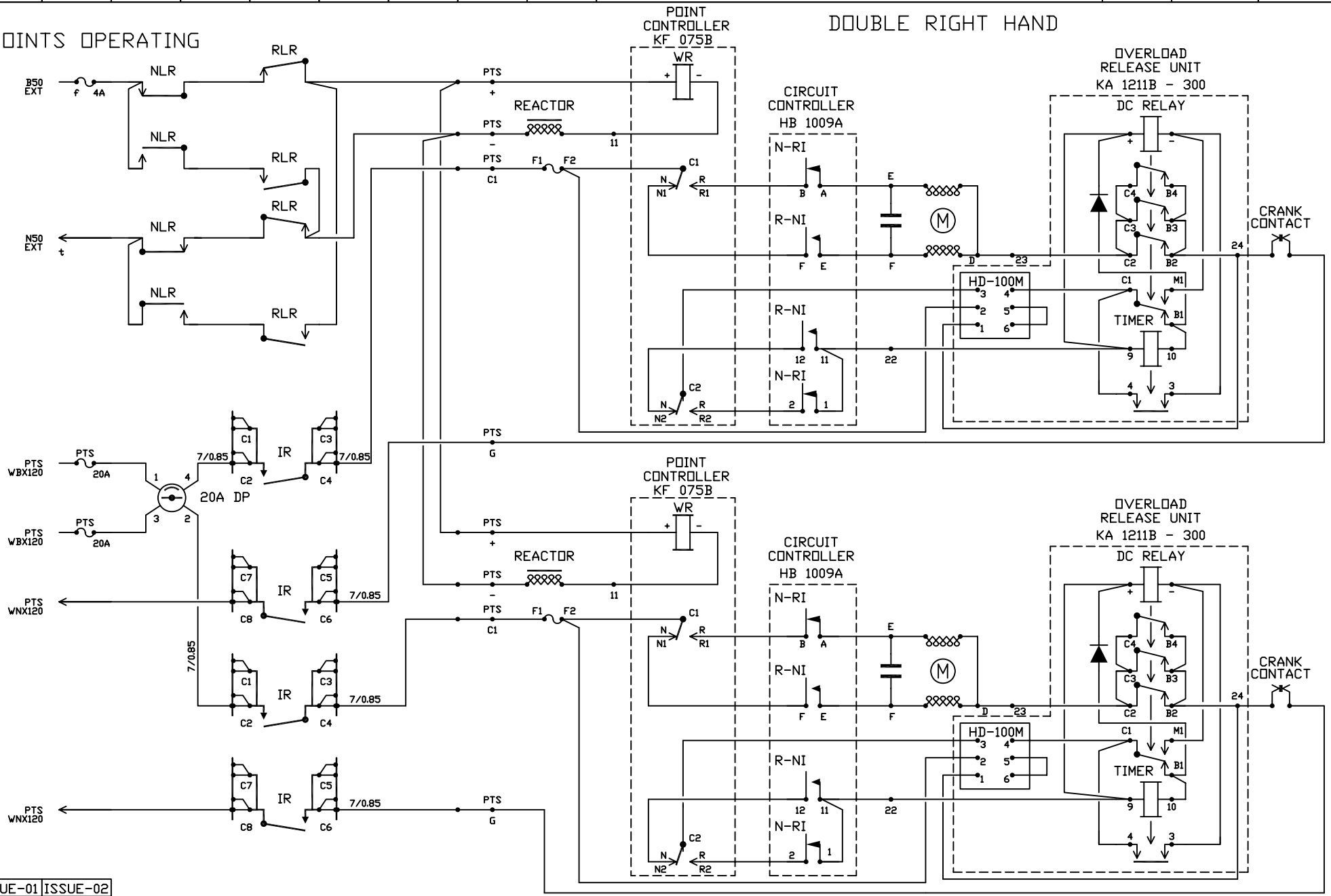
VAP PANEL TO BE INSTALLED
ON THE 120V AC SUPPLY
AT THE TRACK-SIDE LOCATION

ISSUE-01
23-08-95
JOB NUMBER

ISSUE-03	28/6/07	10:06	CSTDW025	POINTS NIPPON KA1211B TYPE - DOUBLE RIGHT HAND	SHT:W025	CB: STD

POINTS OPERATING

DOUBLE RIGHT HAND

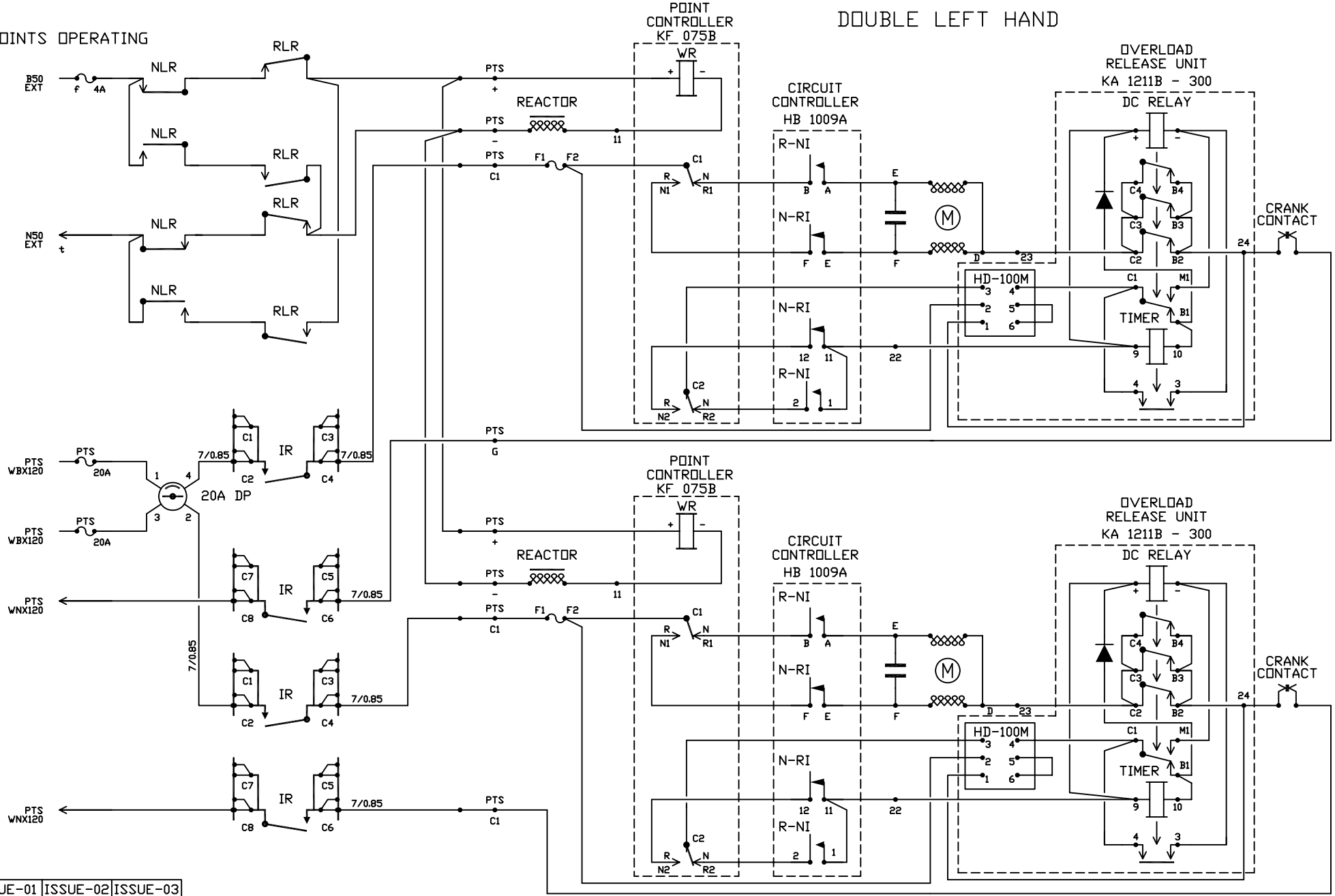


ISSUE-01	ISSUE-02
20-05-93	23-08-95
JOB NUMBER	

ISSUE-04	28/6/07	10:08	CSTDW026	POINTS NIPPON KA1211B TYPE - DOUBLE LEFT HAND	SHT:W026	CB: STD

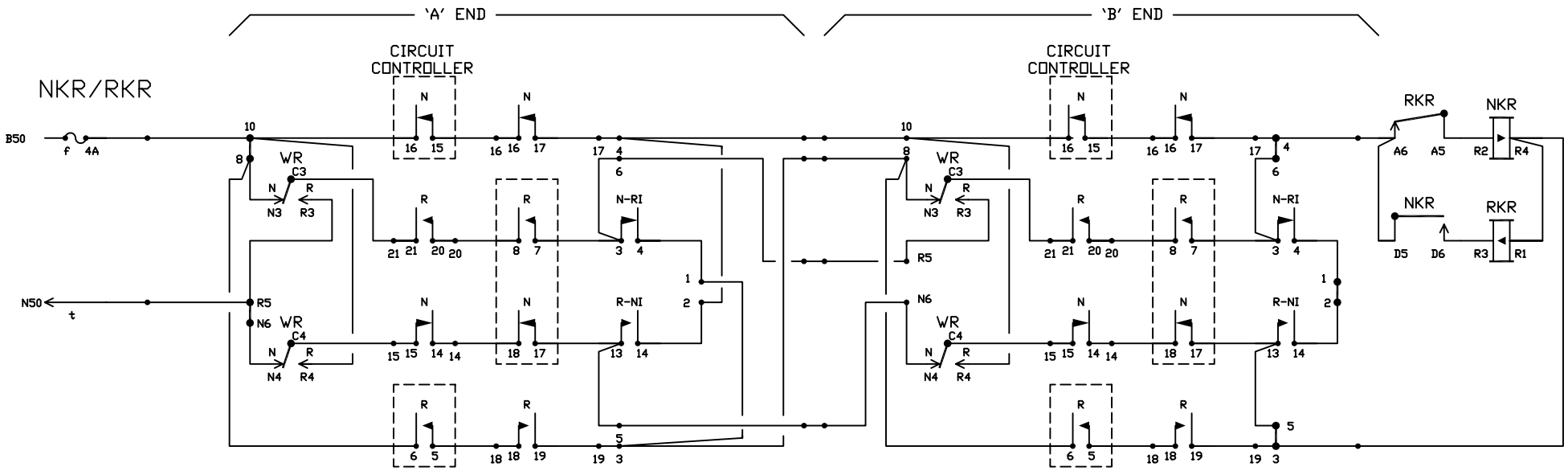
DOUBLE LEFT HAND

POINTS OPERATING

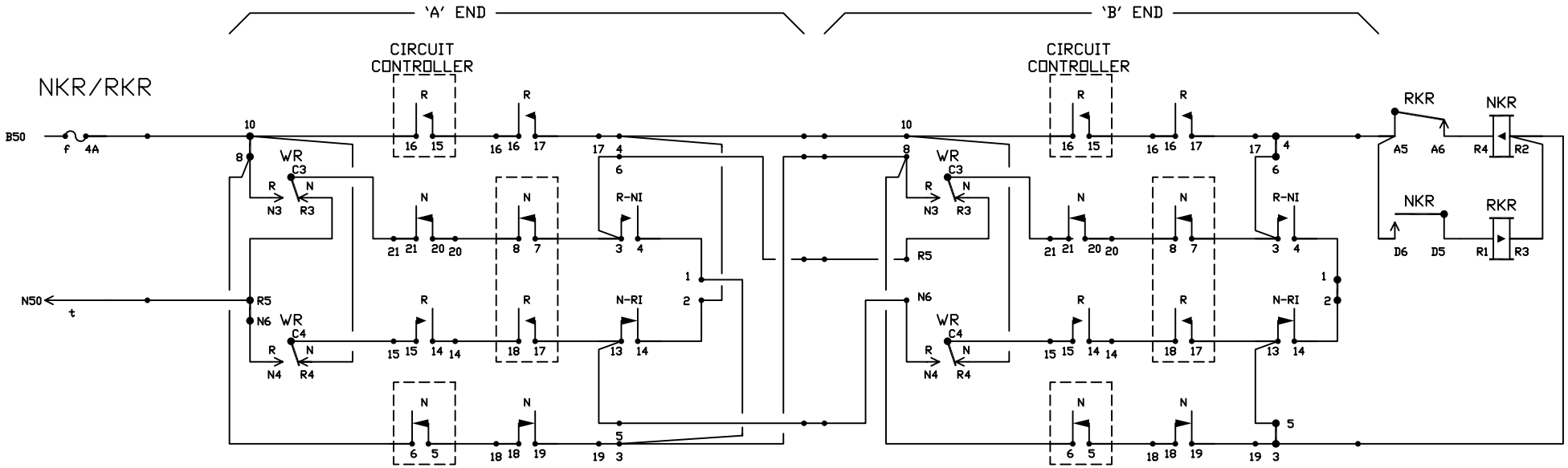


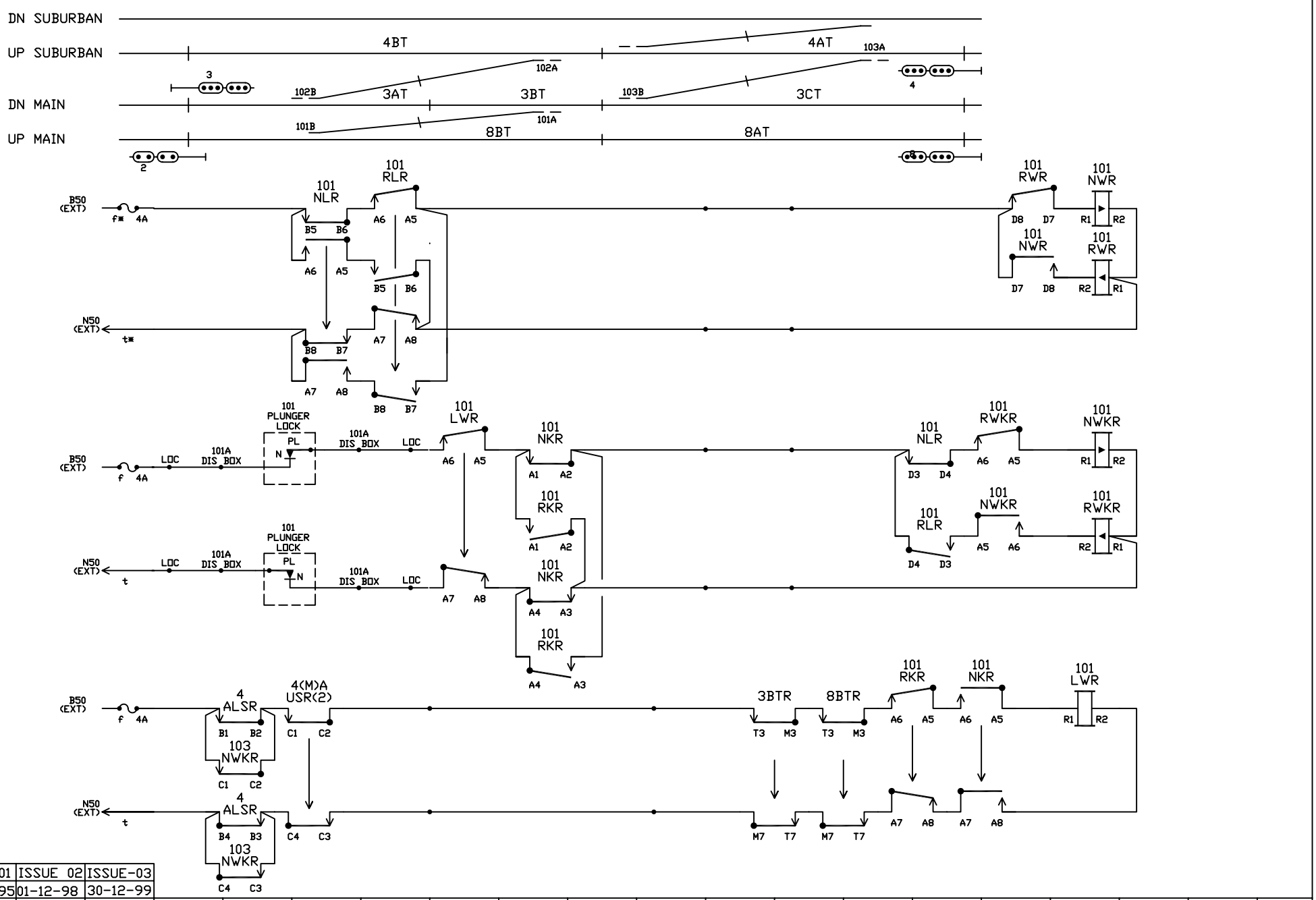
ISSUE-01	ISSUE-02	ISSUE-03
20-05-95	23-08-95	01-09-01
JOB NUMBER		

DOUBLE RIGHT HAND

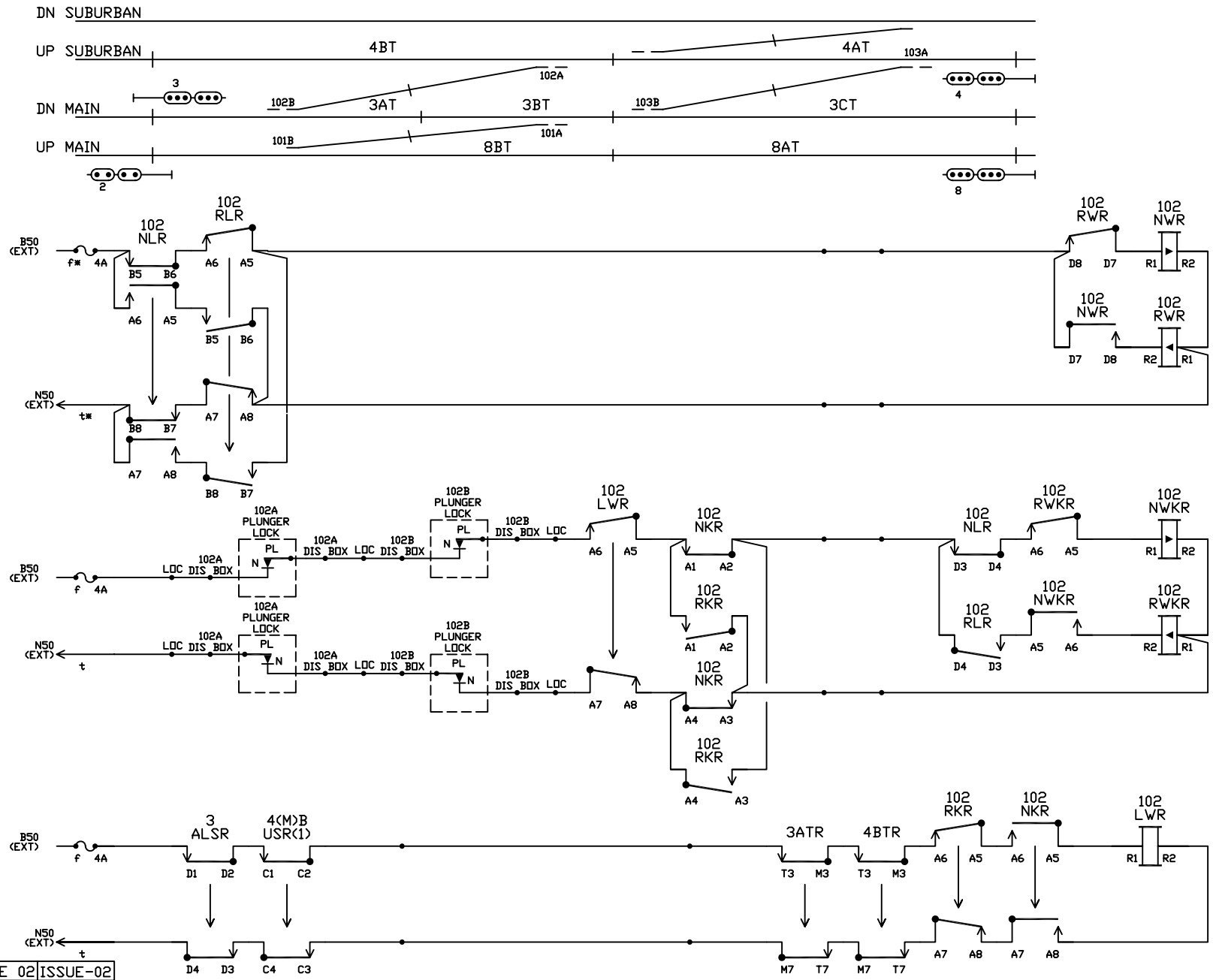


DOUBLE LEFT HAND

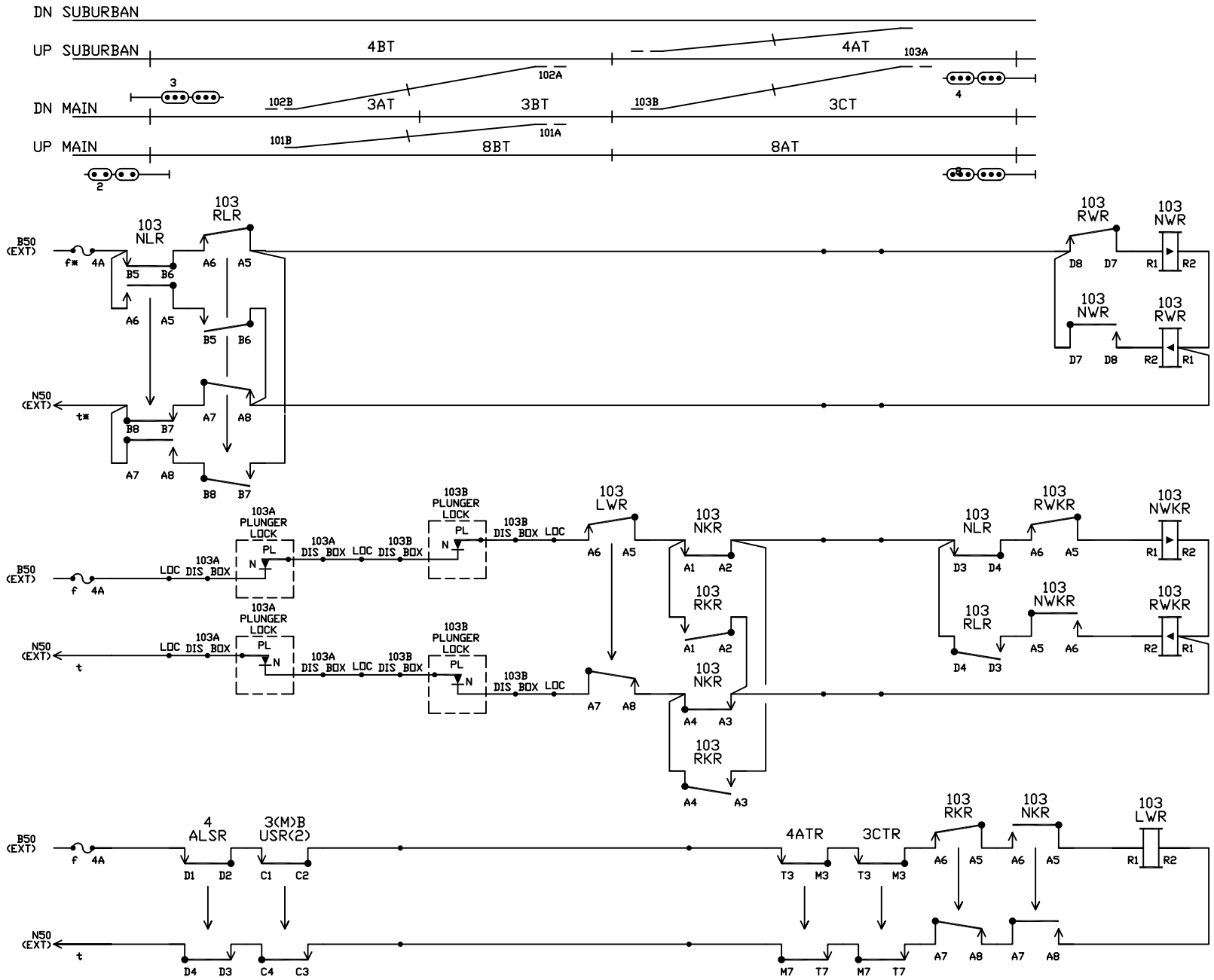




ISSUE 01	ISSUE 02	ISSUE-03
23-08-95	01-12-98	30-12-99
JOB NUMBER		

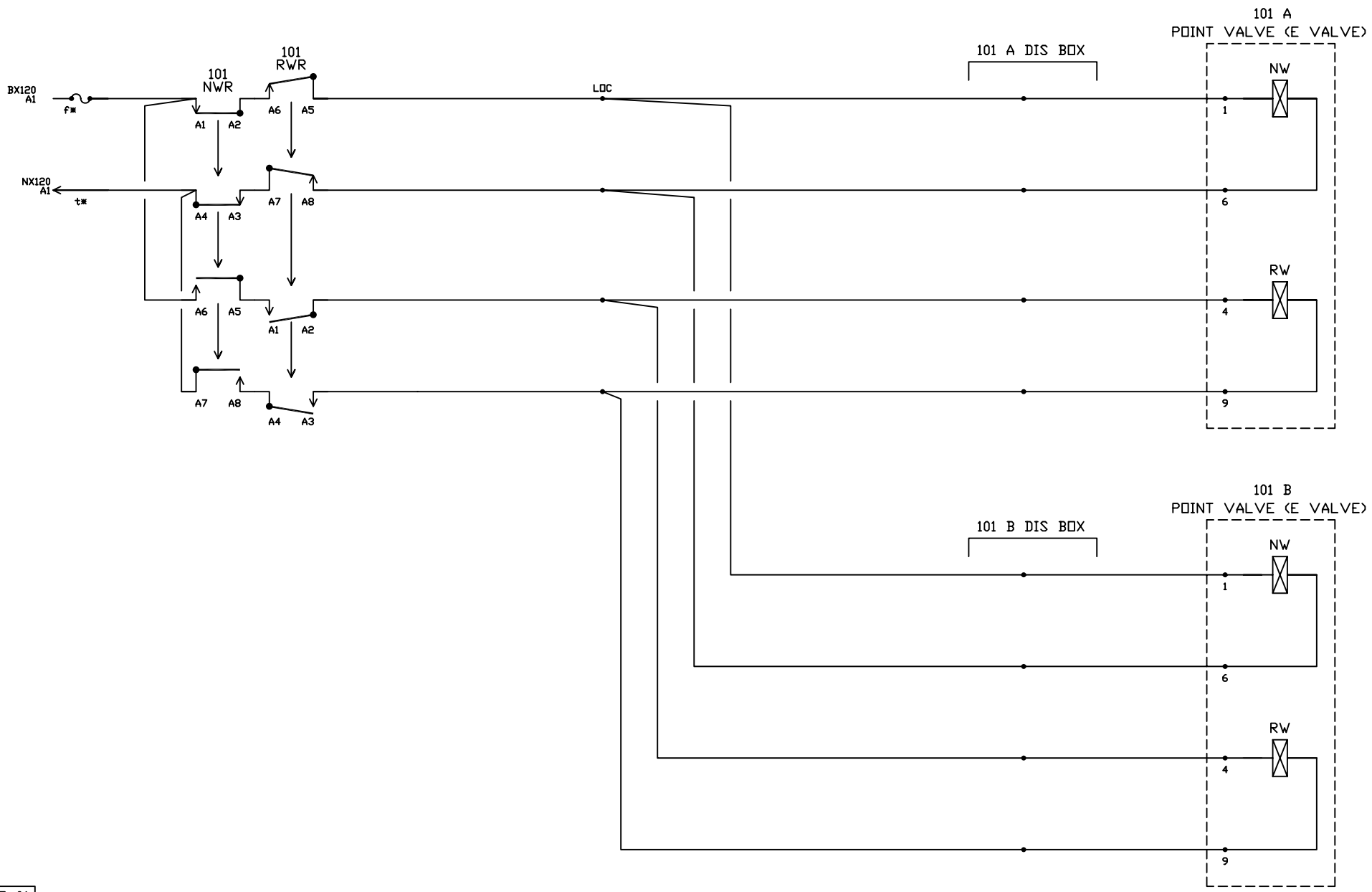


ISSUE 01	ISSUE 02	ISSUE-02
23-08-95	01-12-98	30-12-99
JOB NUMBER		



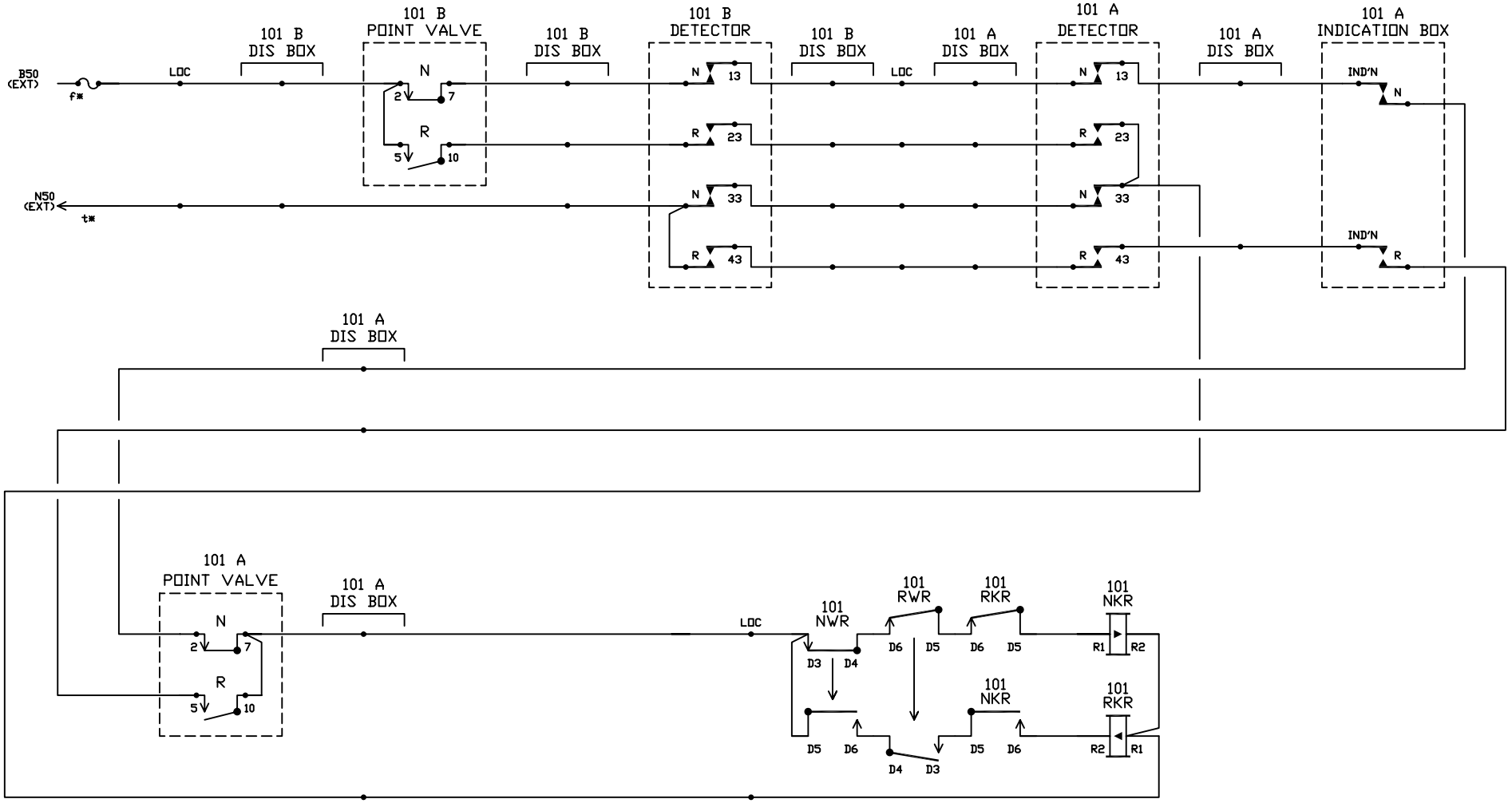
ISSUE-03
30-12-99
ISSUE 02
01-12-98
ISSUE 01
23-08-95
JOB NUMBER

	ISSUE 02			28/6/07	10:18			CSTDW032	E.P. POINTS OPERATING (101)			SHT:W032	CB: STD



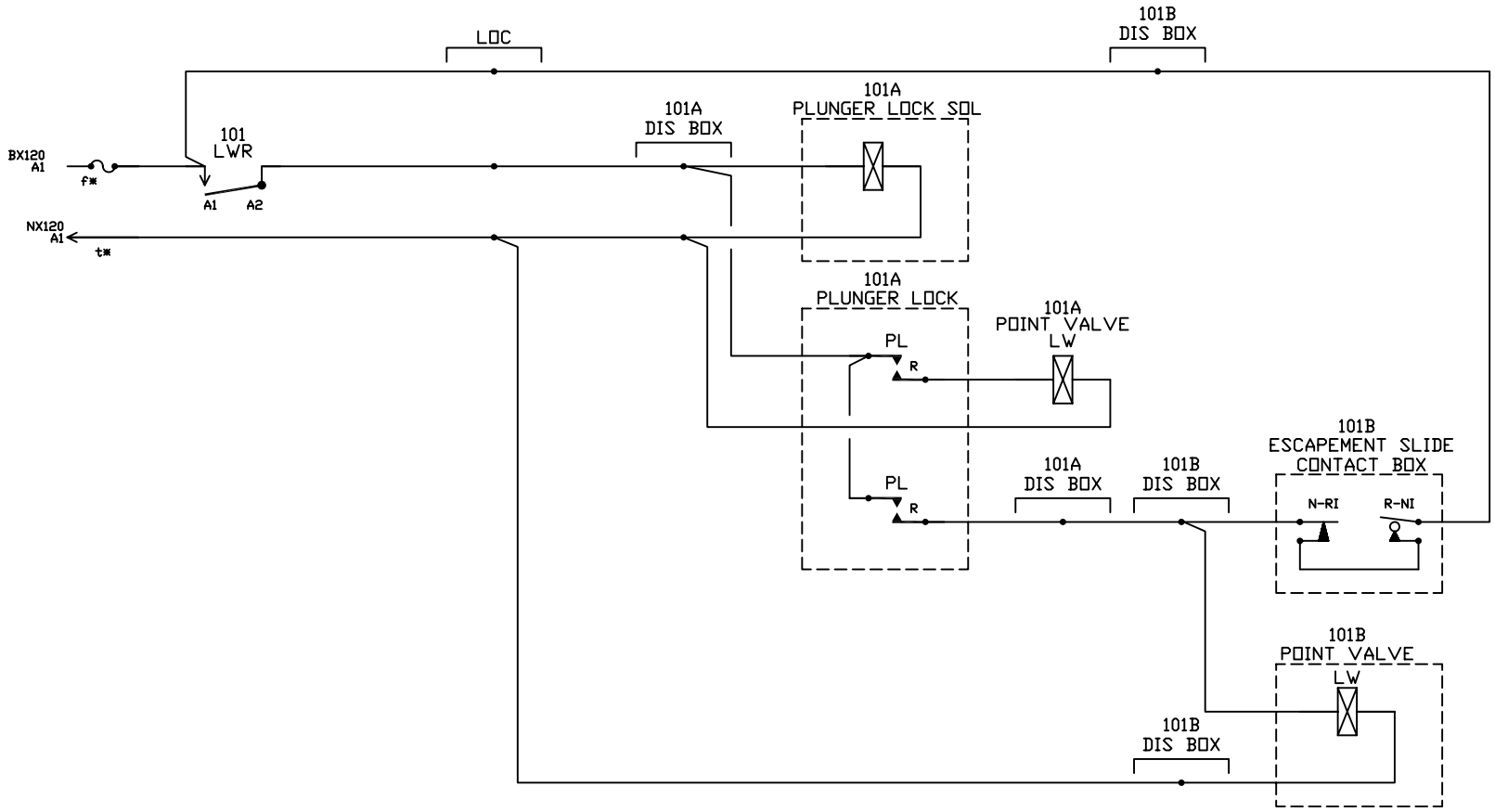
ISSUE-01
23-08-95
JOB NUMBER

	ISSUE 03			28/6/07	10:37			CSTDW033	E.P. POINTS DETECTION (101)			SHT:W033	CB: STD



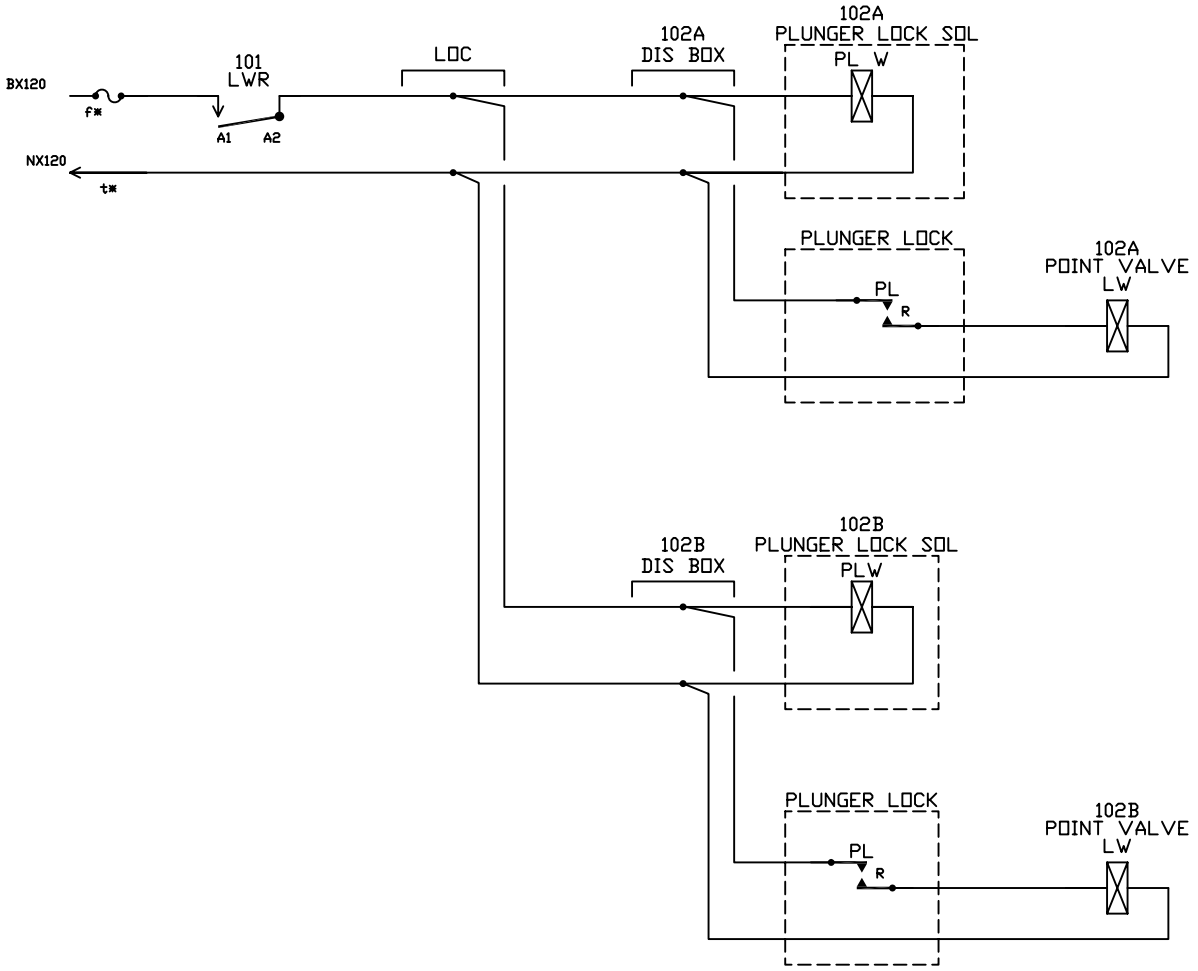
ISSUE 01	ISSUE-02
23-08-95	30-12-99
JOB NUMBER	

	ISSUE 02			29/6/07	13:29			CSTDW034	EP POINTS FACING TRAILING PLUNGER LOCK CCT (101)			SHT:W034	CB: STD

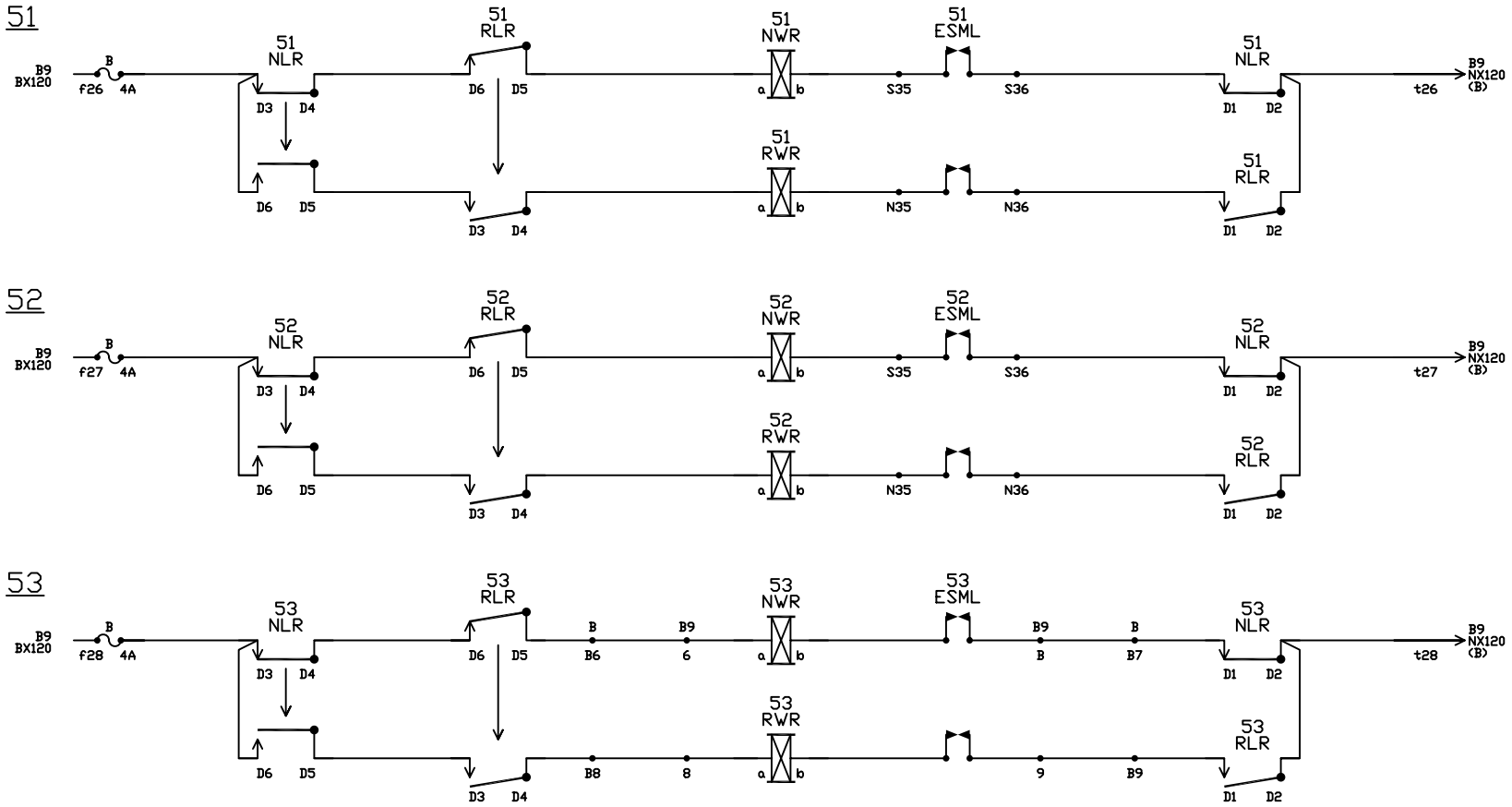


ISSUE-01
23-08-95
JOB NUMBER

	ISSUE 02			28/6/07	10:39			CSTDW035	EP POINTS DOUBLE FACING PLUNGER LOCK CCT (102)				SHT:W035	CB: STD



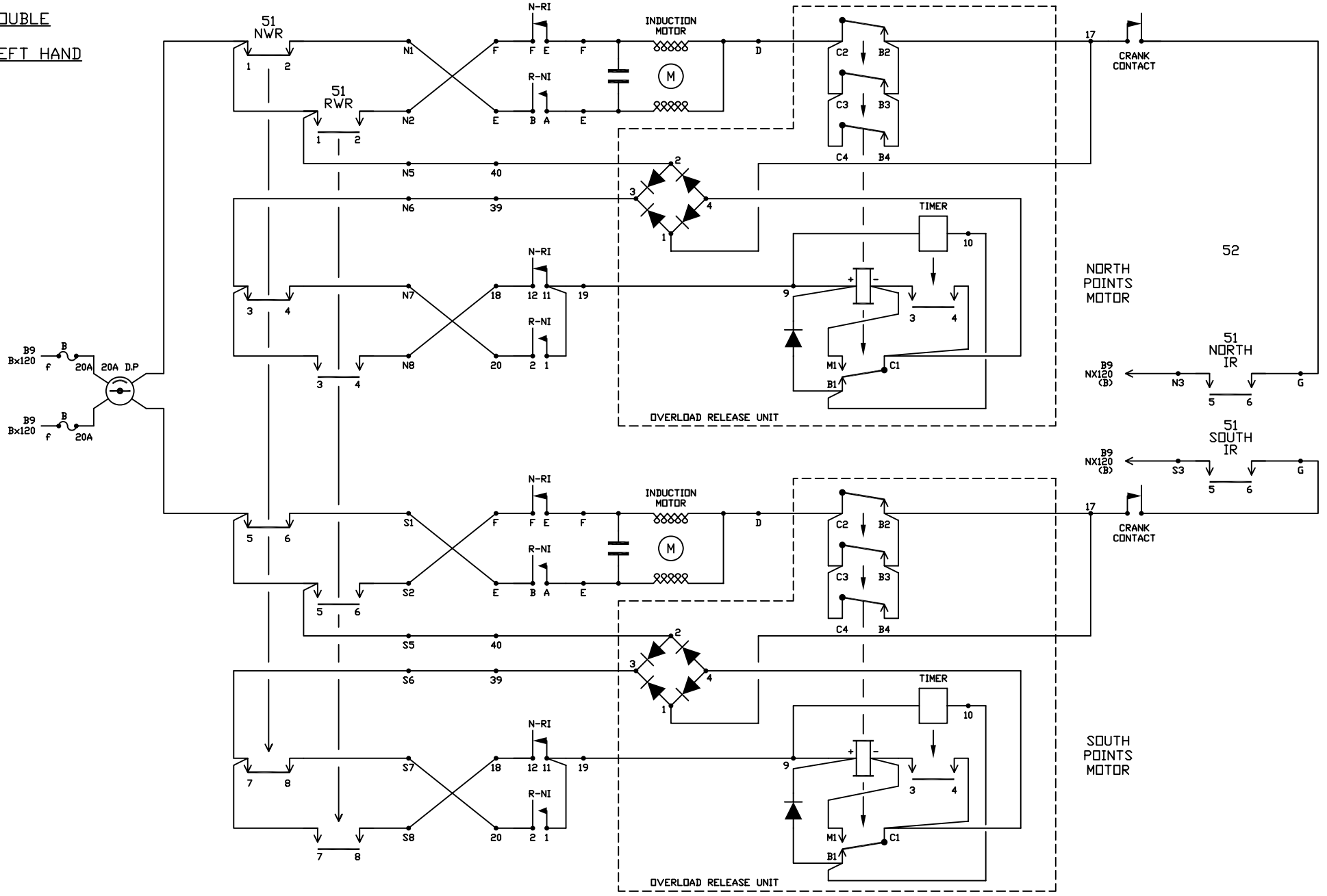
ISSUE-01
23-08-95
JOB NUMBER


51
B9
BX120
B
f26 4A
51
NLR
D3 D4
D6 D5
51
RLR
D6 D5
D3 D4
51
NWR
a b
51
ESML
S35 S36
51
NLR
D1 D2
B9
NX120
(B)
t26
51
RWR
a b
N35 N36
51
RLR
D1 D2
52
B9
BX120
B
f27 4A
52
NLR
D3 D4
D6 D5
52
RLR
D6 D5
D3 D4
52
NWR
a b
52
ESML
S35 S36
52
NLR
D1 D2
B9
NX120
(B)
t27
52
RWR
a b
N35 N36
52
RLR
D1 D2
53
B9
BX120
B
f28 4A
53
NLR
D3 D4
D6 D5
53
RLR
D6 D5
B
B6
B9
6
D3 D4
53
NWR
a b
53
ESML
B9
B
B
B7
53
NLR
D1 D2
B9
NX120
(B)
t28
53
RWR
a b
B8
8
9
B9
53
RLR
D1 D2

			ISSUE-02	28/6/07	10:42			CSTDW037	NIPPON POINTS MACHINE TYPE KA-1211C			SHT:W037	CB: STD

DOUBLE

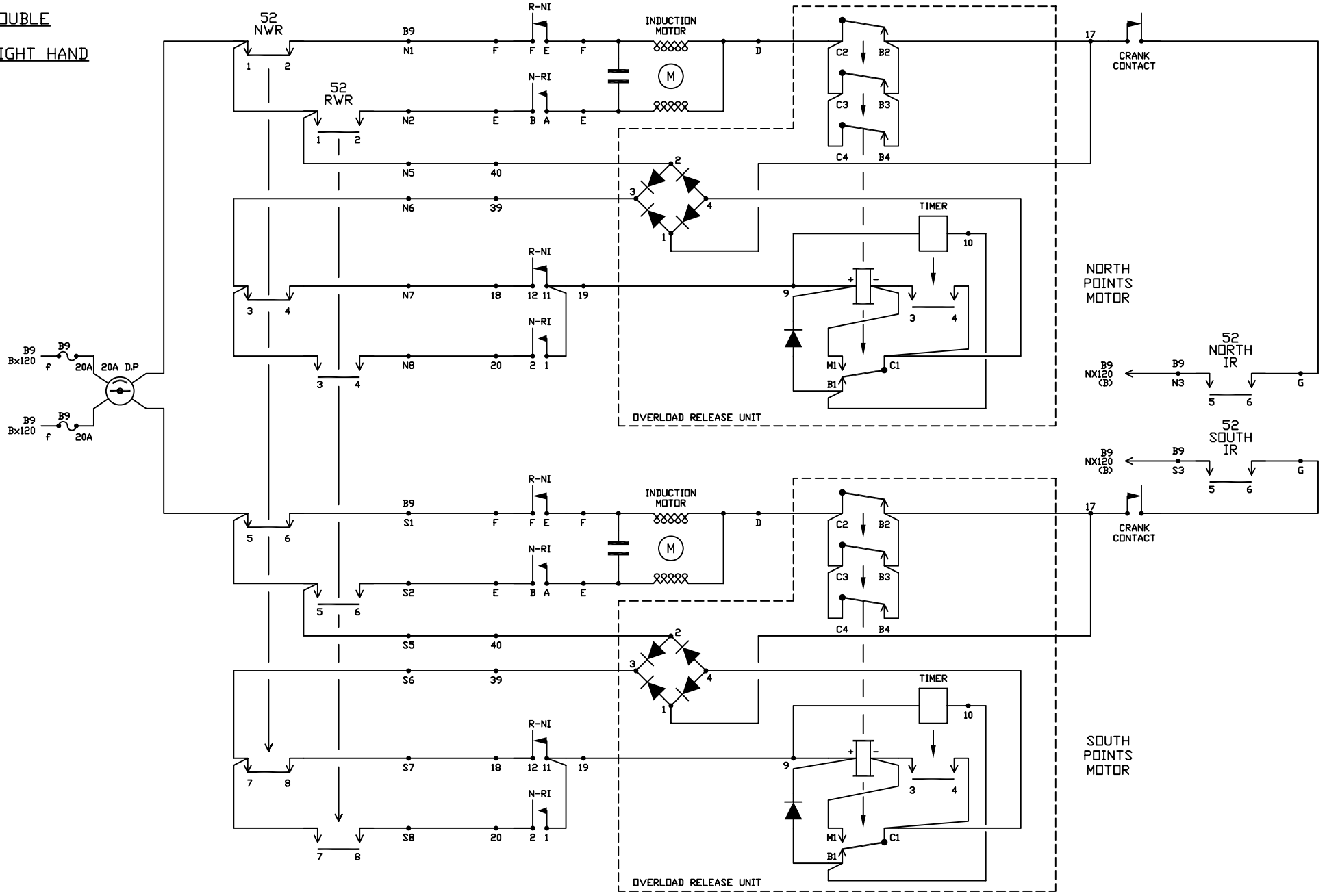
LEFT HAND



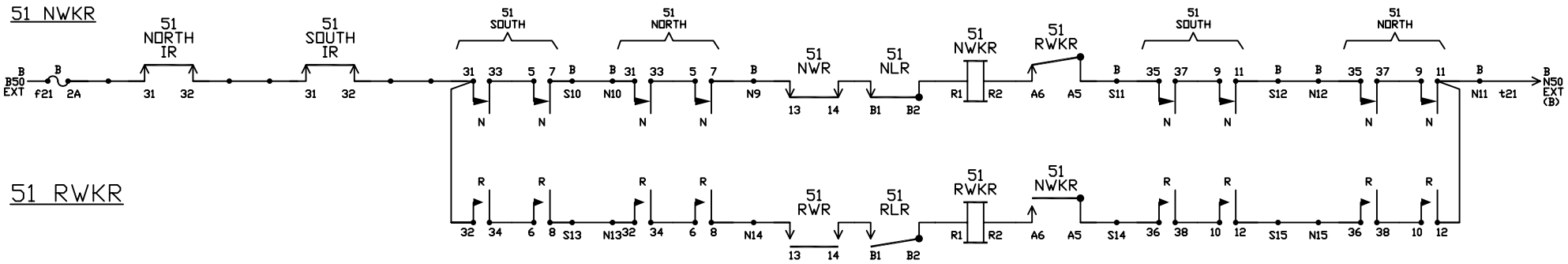
JOB NUMBER																			

DOUBLE

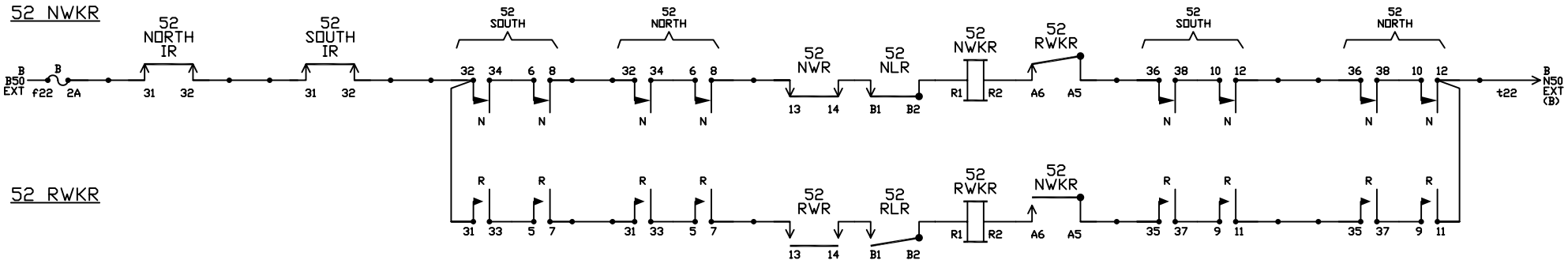
RIGHT HAND



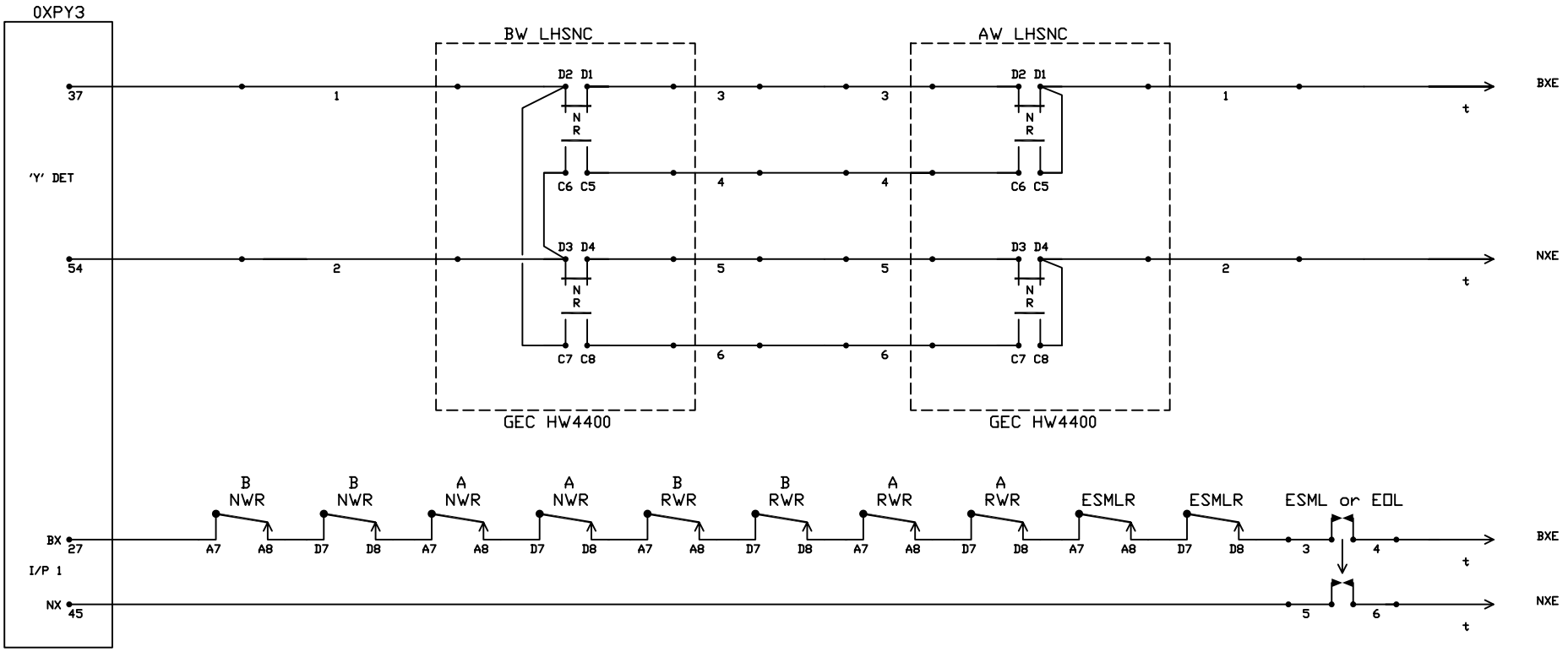
DOUBLE LEFT HAND



DOUBLE RIGHT HAND

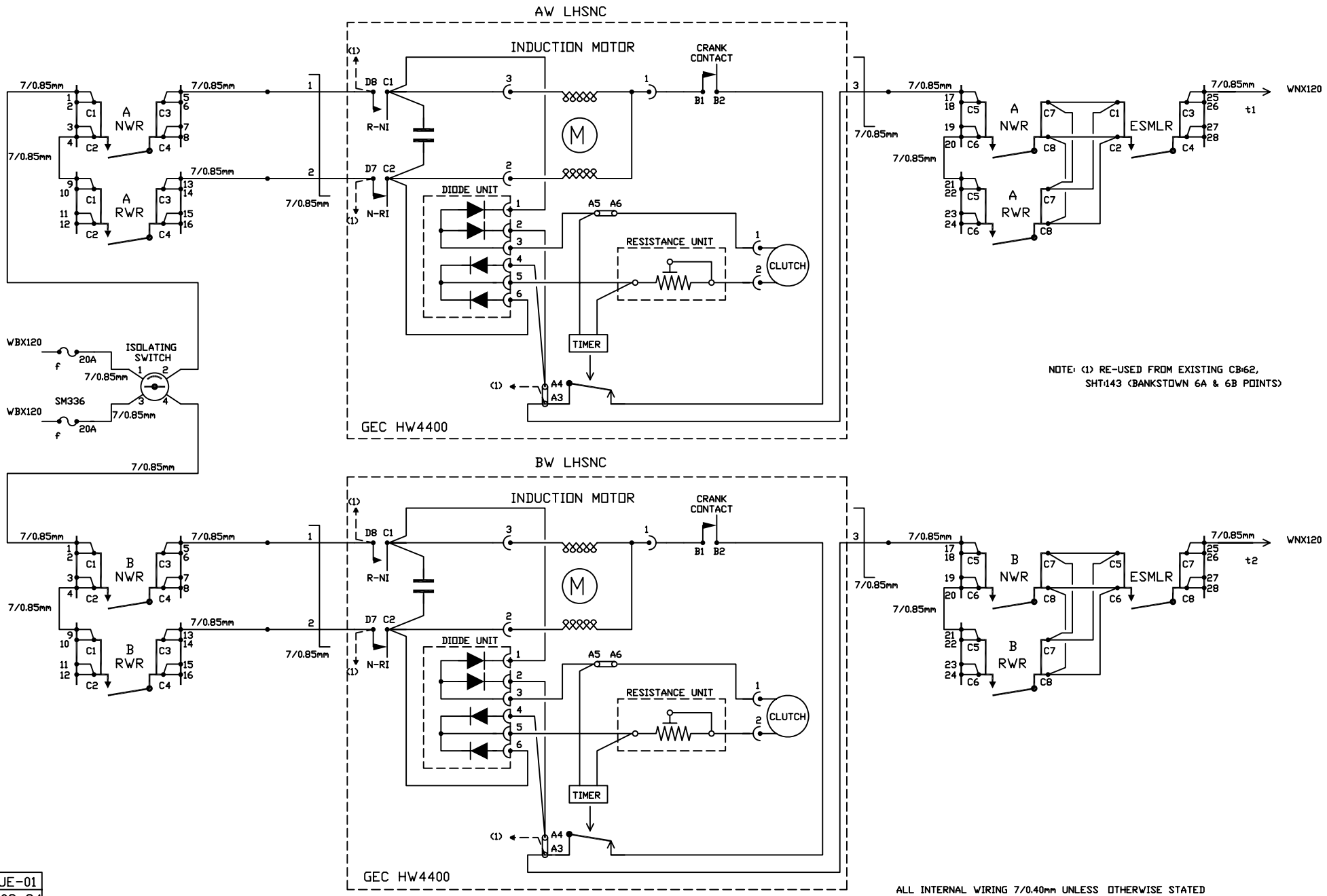


			ISSUE-03	28/6/07	10:47			CSTDW040	SSI POINTS DETECTION - GEC HW 4400			SHT:W040	CB: STD



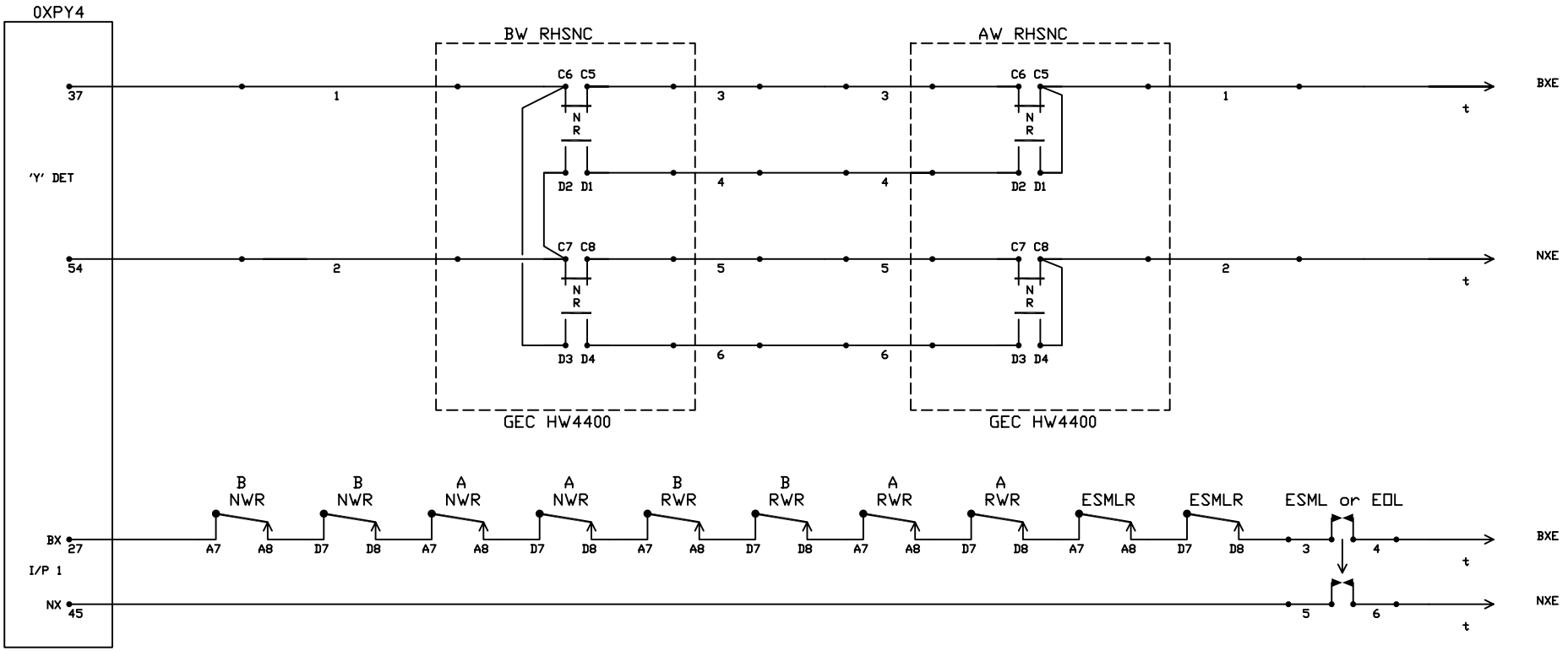
ISSUE-01	ISSUE-02
22-02-94	01-12-98
JOB NUMBER	

ISSUE-02		28/6/07	10:49		CSTDW041	SSI MOTOR DRIVE - GEC HW 4400 - LHSNC		SHT:W041	CB: STD

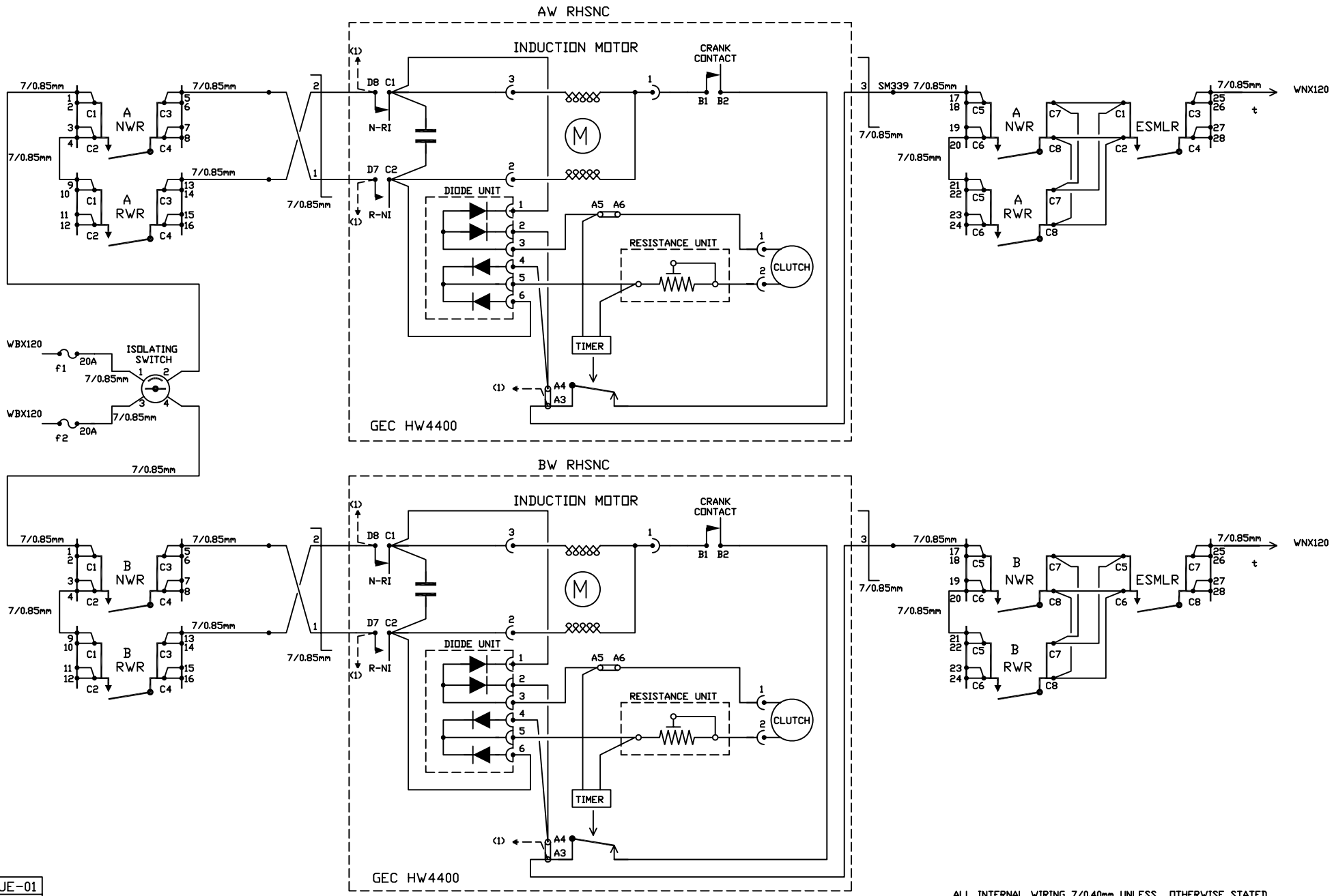


ISSUE-01
22-02-94
JOB NUMBER

	ISSUE-04			28/6/07	10:50			CSTDW042	SSI POINTS DETECTION - GEC HW 4400			SHT:W042	CB: STD

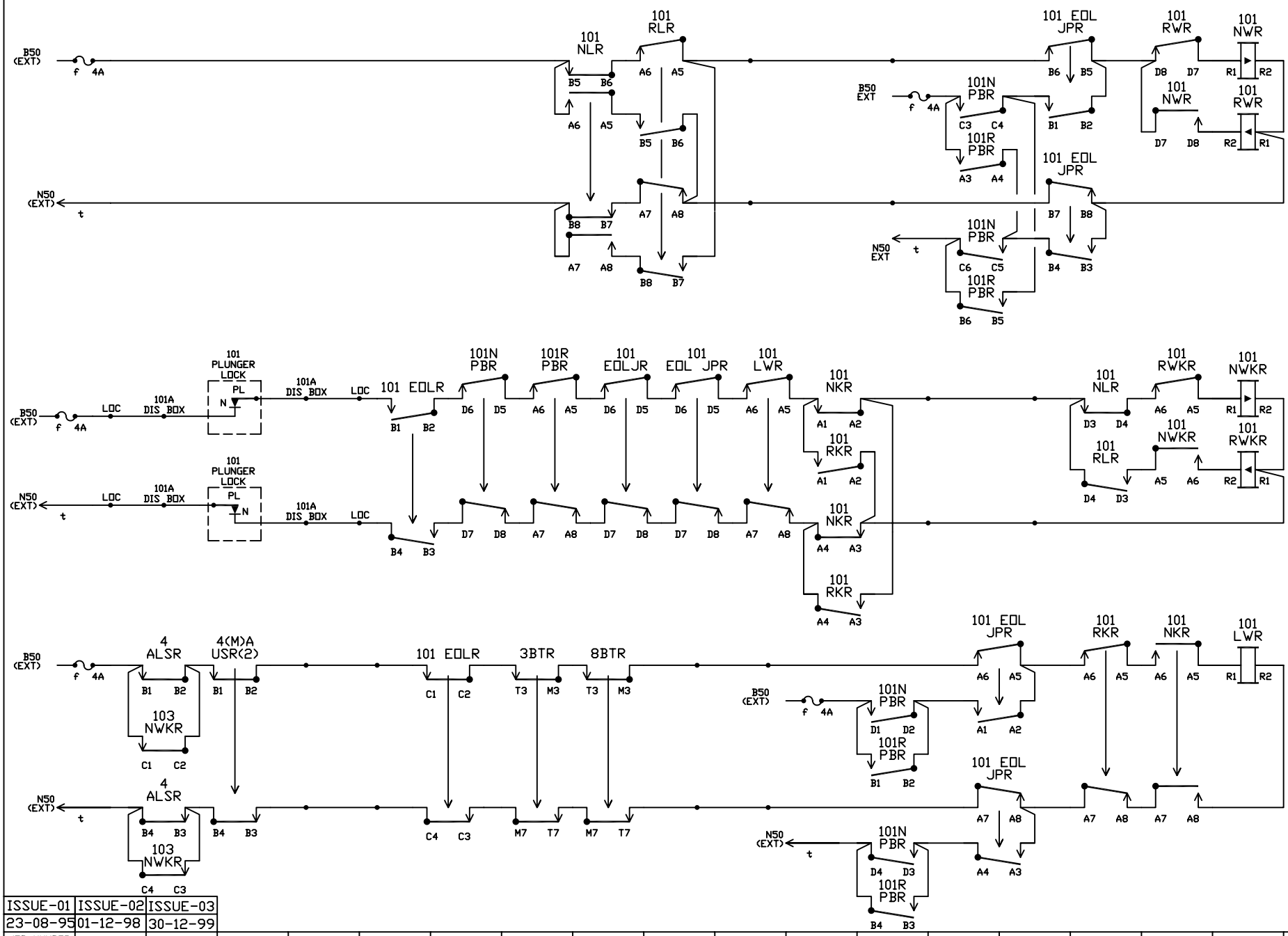


ISSUE-01	ISSUE-02	ISSUE-03
22-02-94	01-12-98	30-12-99
JOB NUMBER		



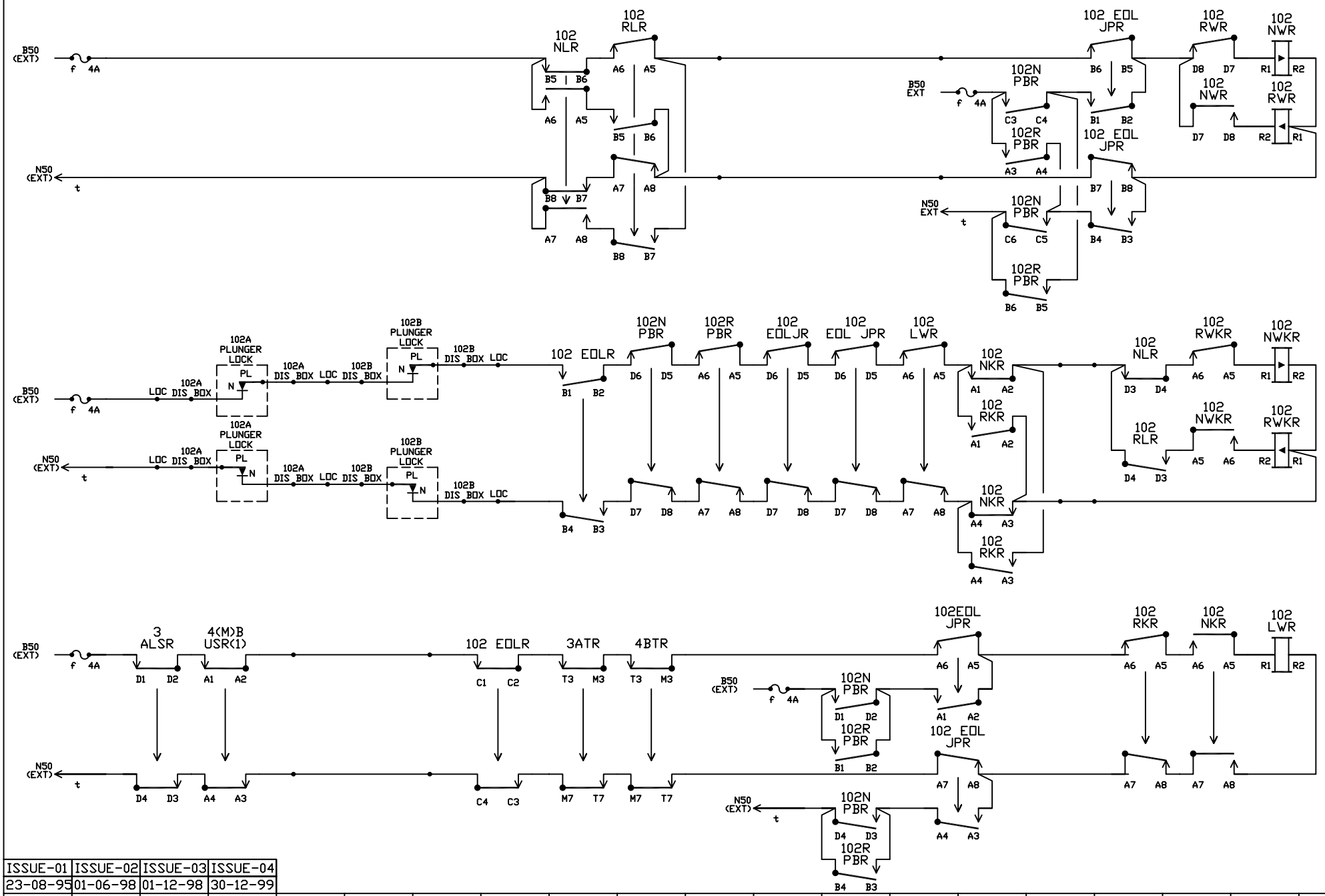
ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED

ISSUE-01
22-02-94
JOB NUMBER



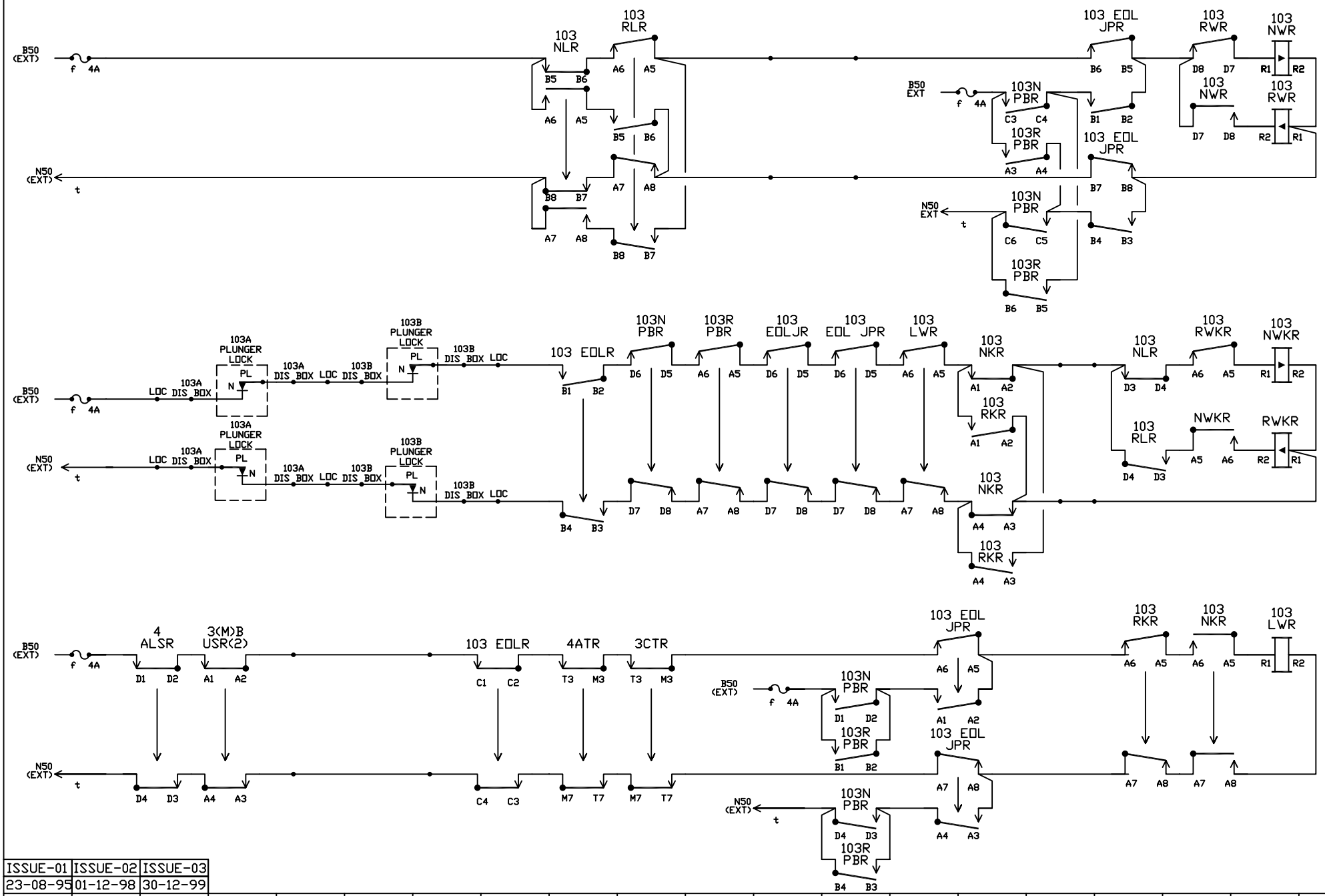
ISSUE-01	ISSUE-02	ISSUE-03
23-08-95	01-12-98	30-12-99
JOB NUMBER		

	ISSUE-05			28/6/07	11:21			CSTDW045	EP MACHINES ("S" VALVE)				SHT:W045	CB: STD



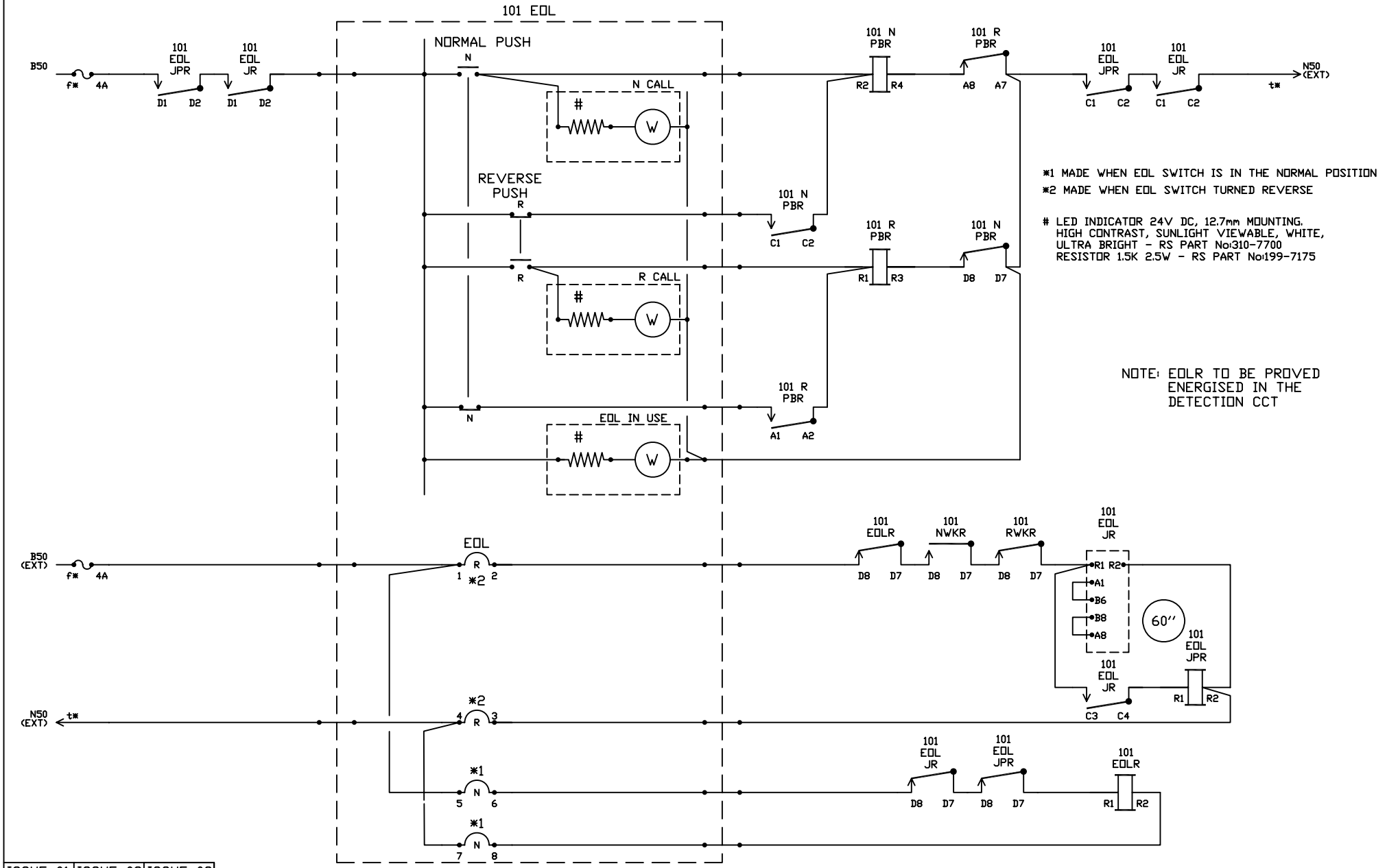
ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
23-08-95	01-06-98	01-12-98	30-12-99
JOB NUMBER			

	ISSUE-04			28/6/07	11:23			CSTDW046	EP MACHINES ("S" VALVE)				SHT:W046	CB: STD

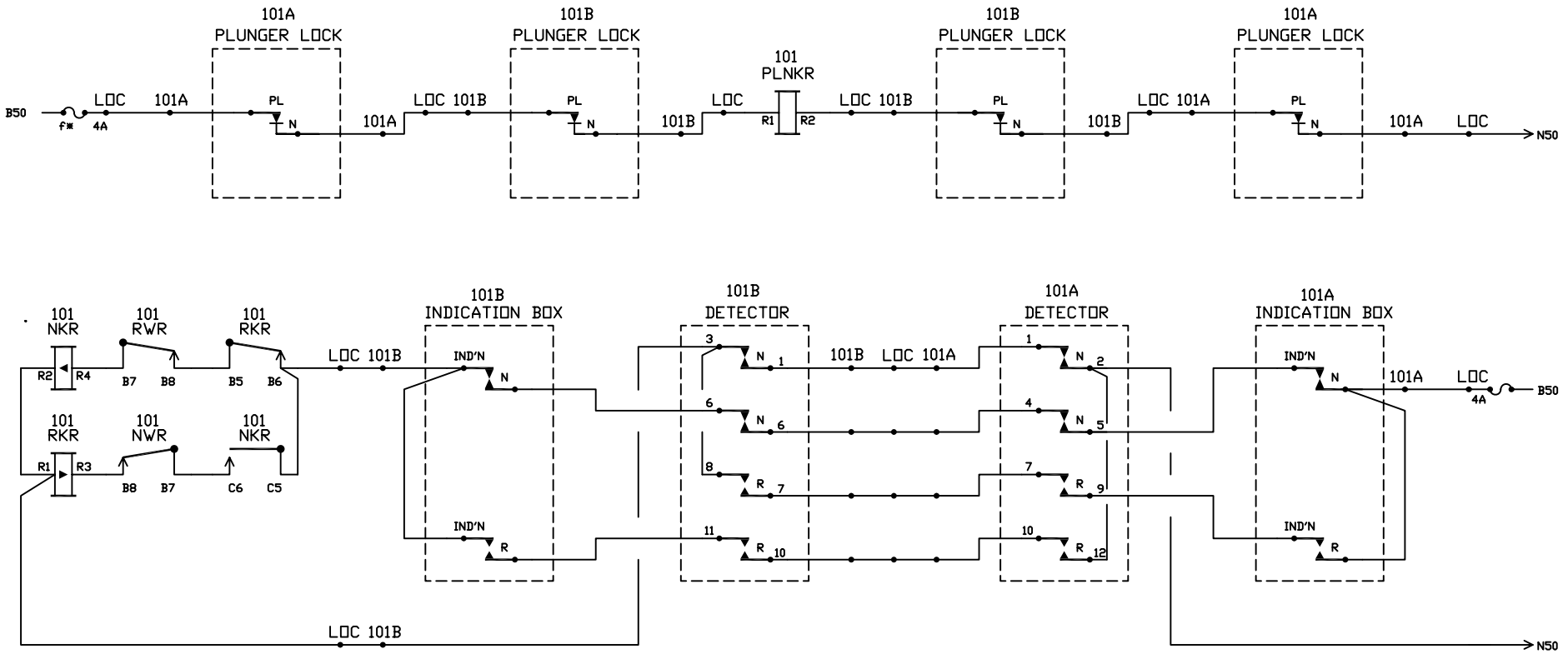


ISSUE-01	ISSUE-02	ISSUE-03
23-08-95	01-12-98	30-12-99
JOB NUMBER		

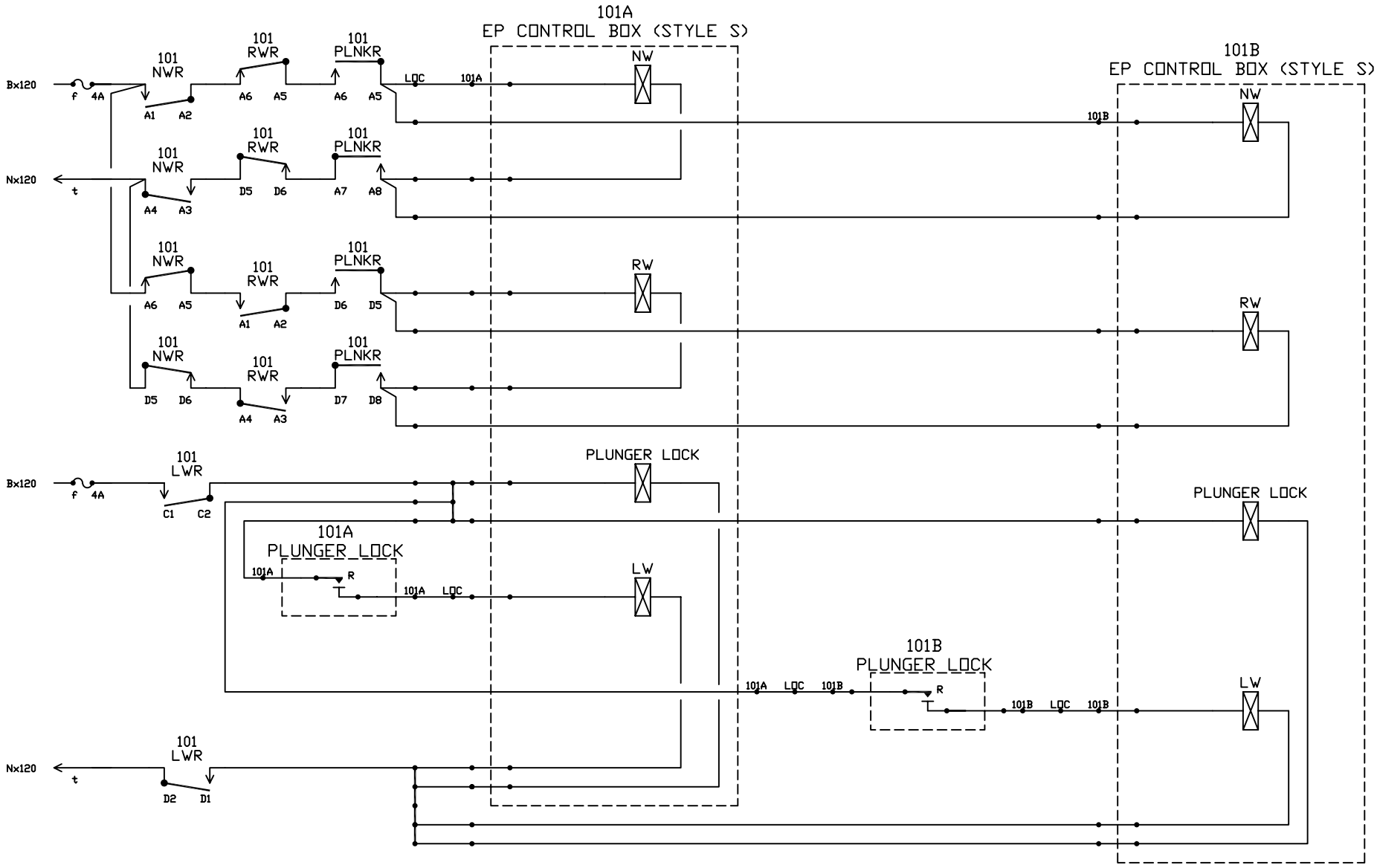
	ISSUE-04			28/6/07	11:25			CSTDW047	101 POINTS EMERGENCY OPERATION ("S" VALVE)			SHT:W047	CB: STD



ISSUE-01	ISSUE-02	ISSUE-03
23-08-95	01-12-98	01-09-01
JOB NUMBER		

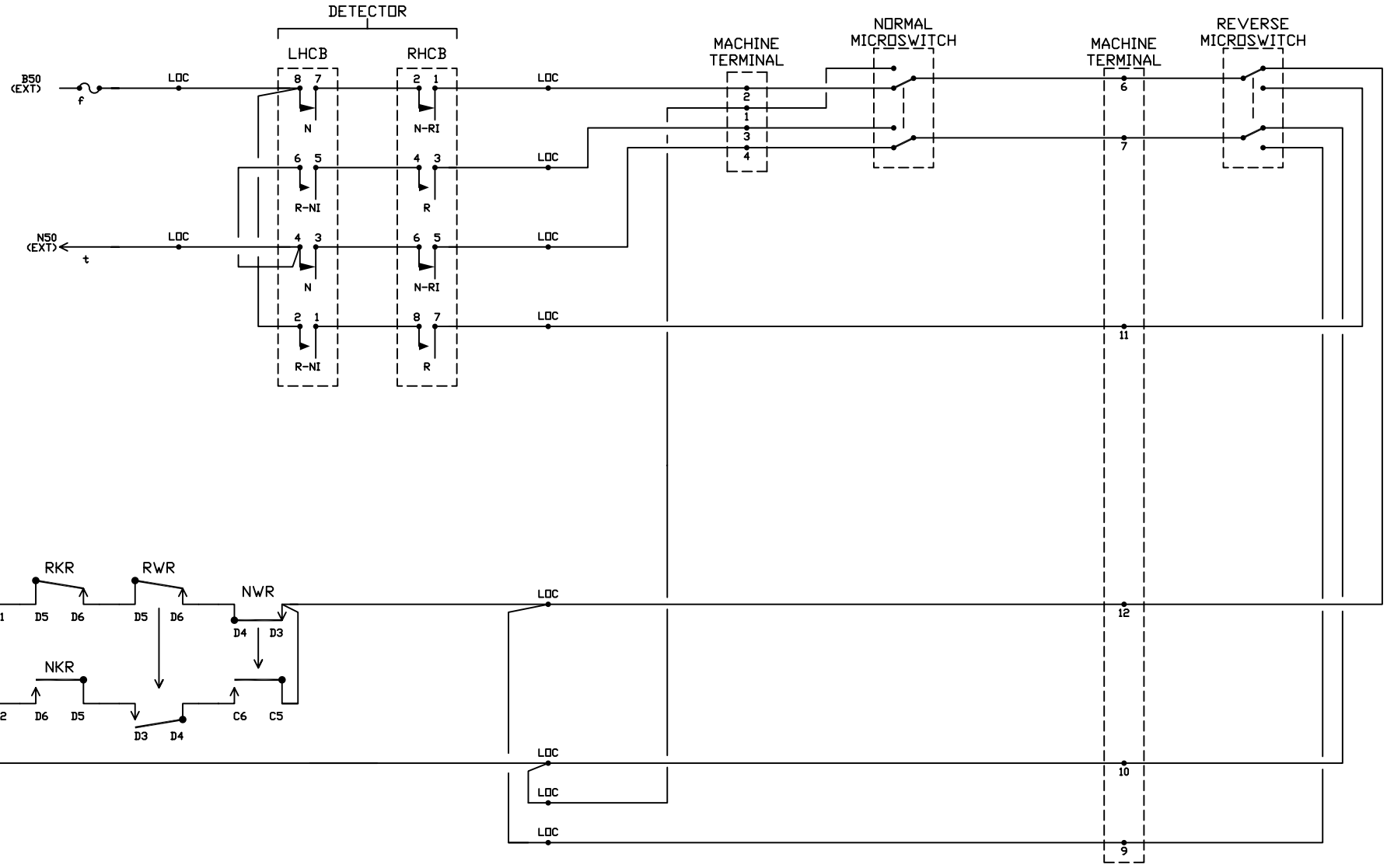

101A
PLUNGER LOCK
101B
PLUNGER LOCK
101
PLNKR
101B
PLUNGER LOCK
101A
PLUNGER LOCK
B50
f*
4A
LOC
101A
PL
N
LOC 101B
101B
R1
R2
LOC 101A
N50
101
NKR
101
RWR
101
RKR
101
RKR
101
NWR
101
NKR
R2
R4
B7
B8
B5
B6
R1
R3
B8
B7
C6
C5
101B
INDICATION BOX
IND'N
N
R
101B
DETECTOR
101A
DETECTOR
101A
INDICATION BOX
1
2
3
4
5
6
7
8
9
10
11
12

	ISSUE-03			28/6/07	11:28			CSTDW049	EP MACHINES SSI CONTROLED			SHT:W049	CB: STD



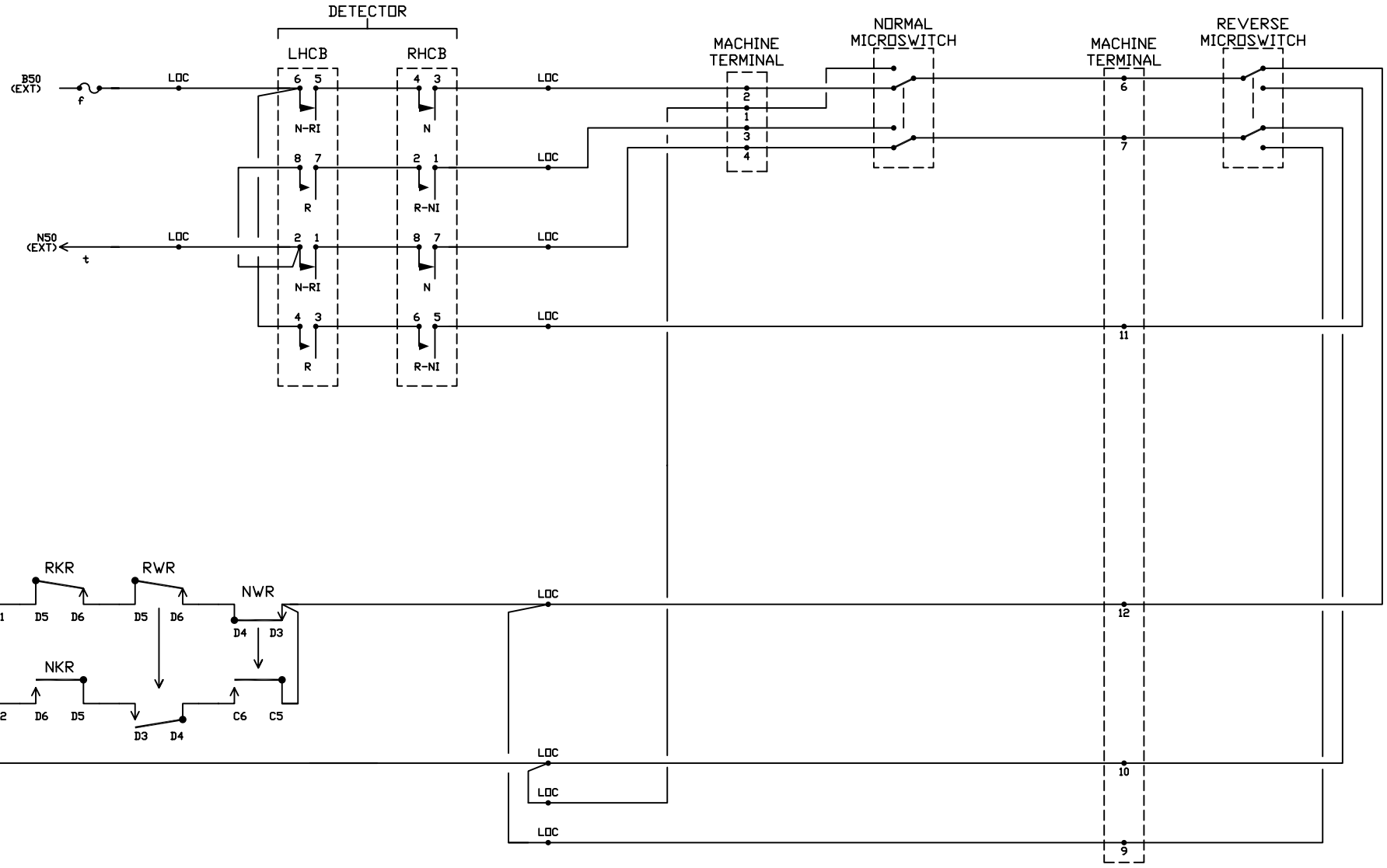
ISSUE-01	ISSUE-02
30-12-99	14-03-03
JOB NUMBER	

	ISSUE-03			28/6/07	11:29			CSTDW050	EP CLAW LOCK SINGLE LEFT HAND - NKR/RKR			SHT:W050	CB: STD



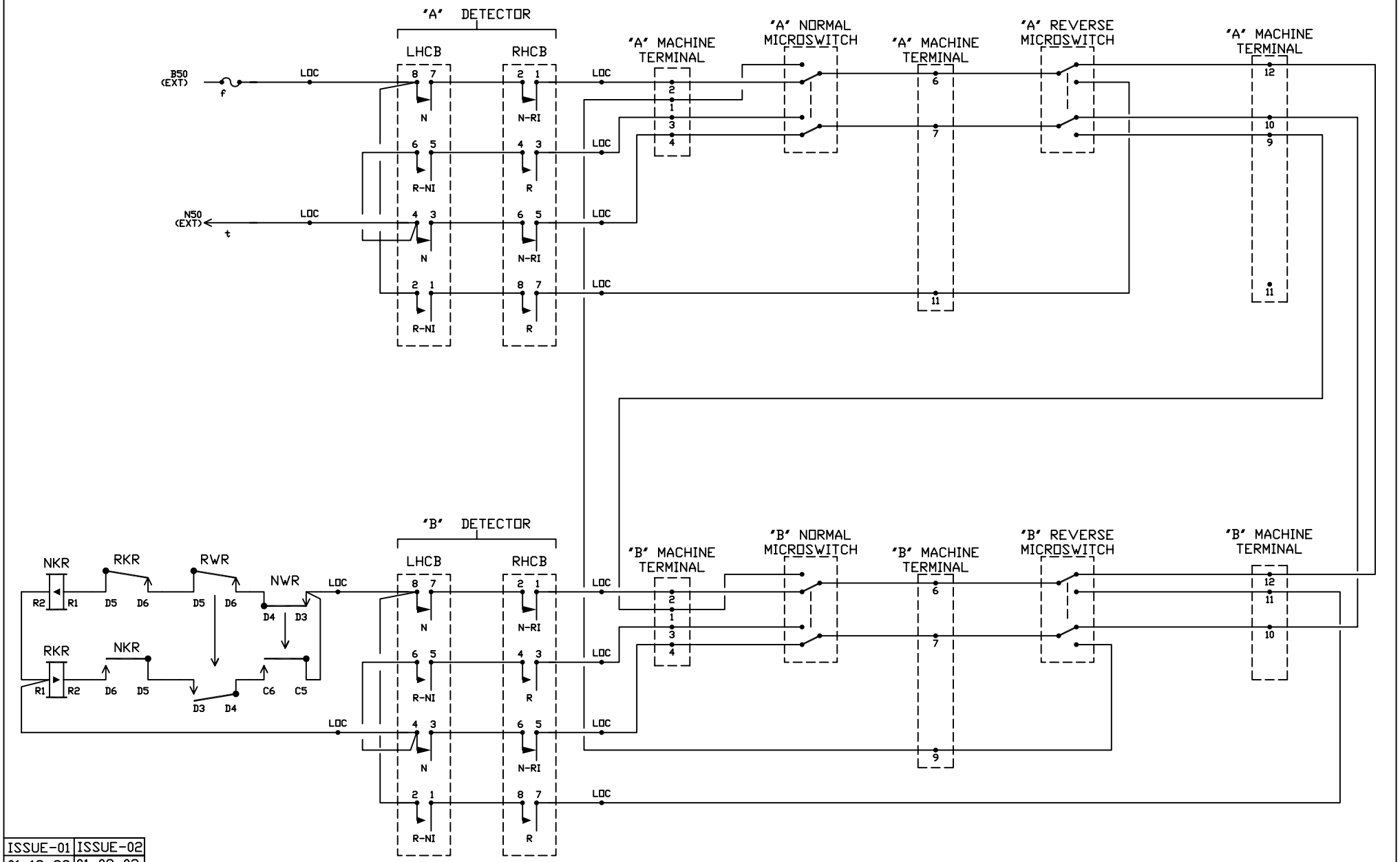
ISSUE-01	ISSUE-02
01-12-98	01-09-03
JOB NUMBER	

	ISSUE-03			28/6/07	11:32			CSTDW051	EP CLAW LOCK SINGLE RIGHT HAND - NKR/RKR			SHT:W051	CB: STD



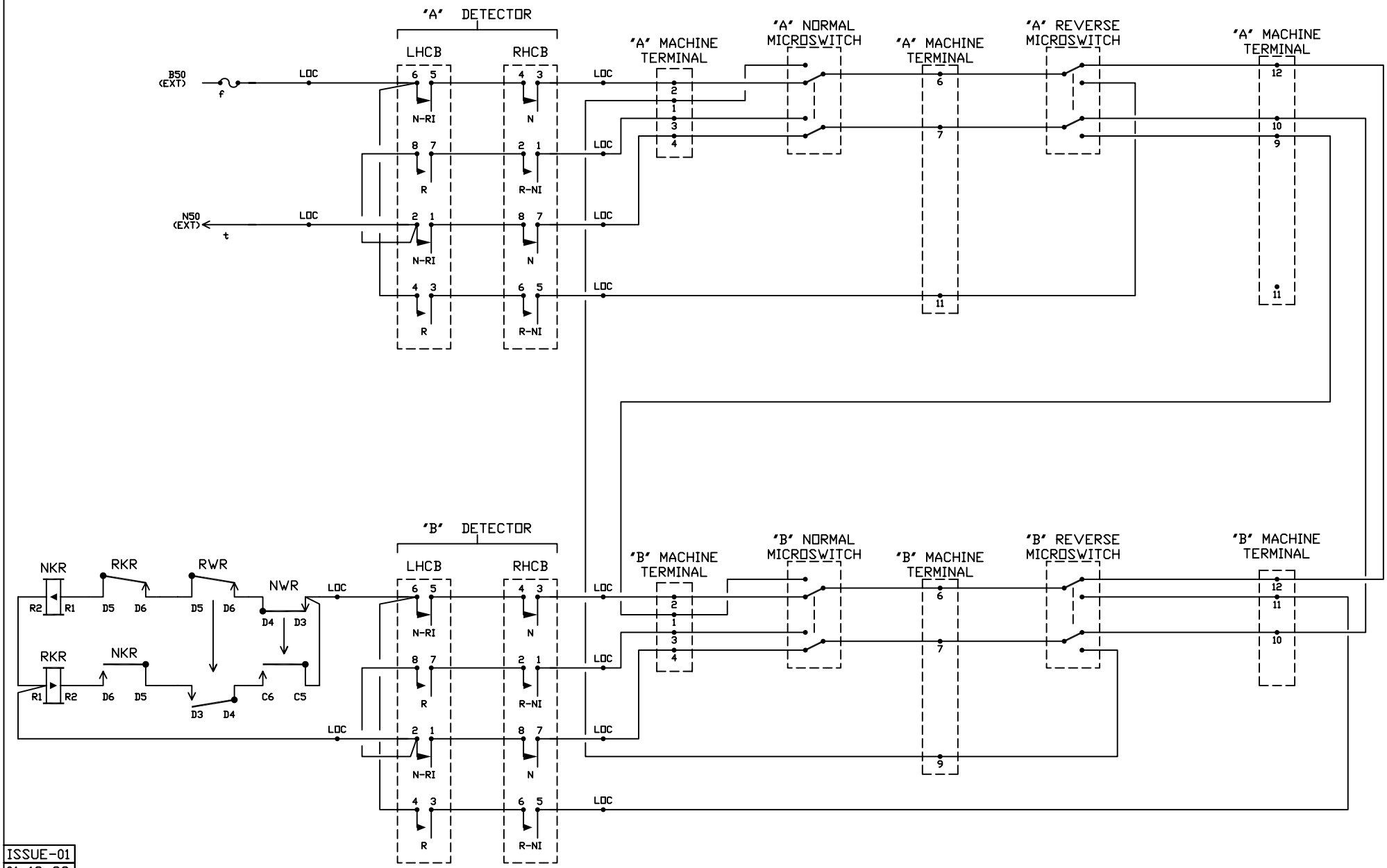
ISSUE-01	ISSUE-02
01-12-98	01-09-03
JOB NUMBER	

	ISSUE-03			28/6/07	11:33			CSTDW052	EP CLAW LOCK DOUBLE LEFT HAND			SHT:W052	CB: STD



ISSUE-01	ISSUE-02
01-12-98	01-09-03
JOB NUMBER	

ISSUE-02		28/6/07	11:35		CSTDW053	EP CLAW LOCK DOUBLE RIGHT HAND		SHT:W053	CB: STD

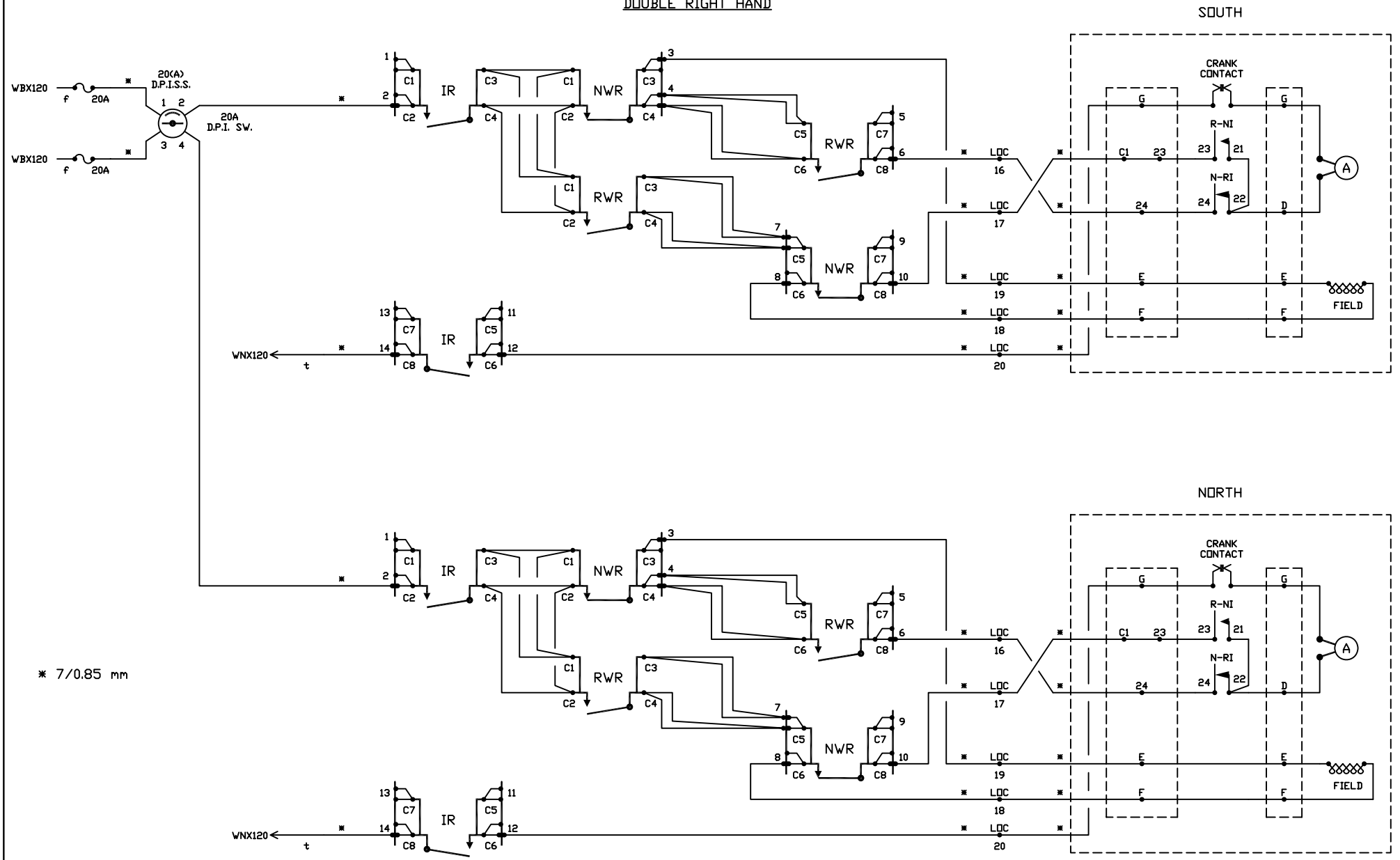


ISSUE-01
01-12-98
JOB NUMBER

POINTS OPERATING

NIPPON K1200A POINTS MOTOR

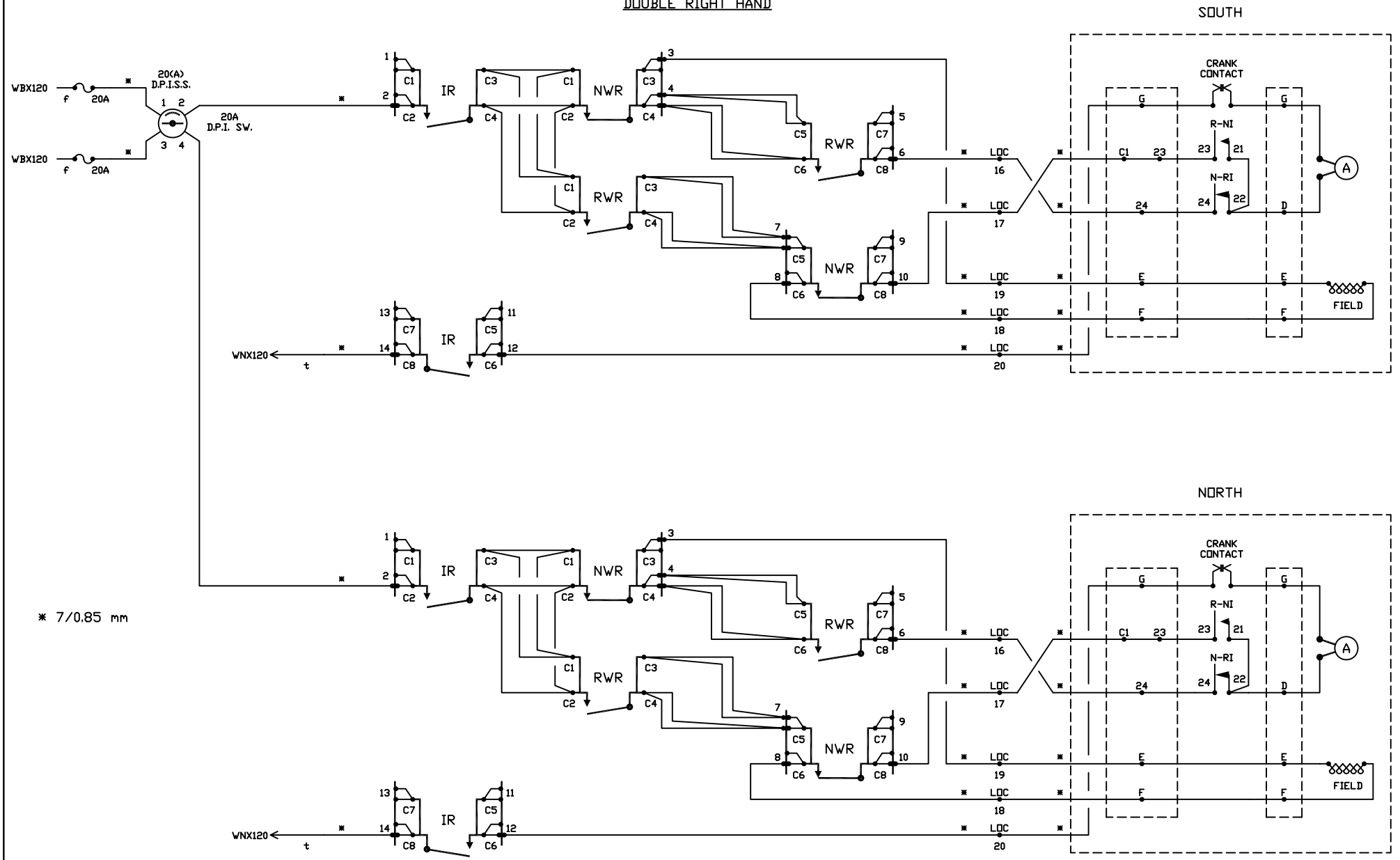
DOUBLE RIGHT HAND

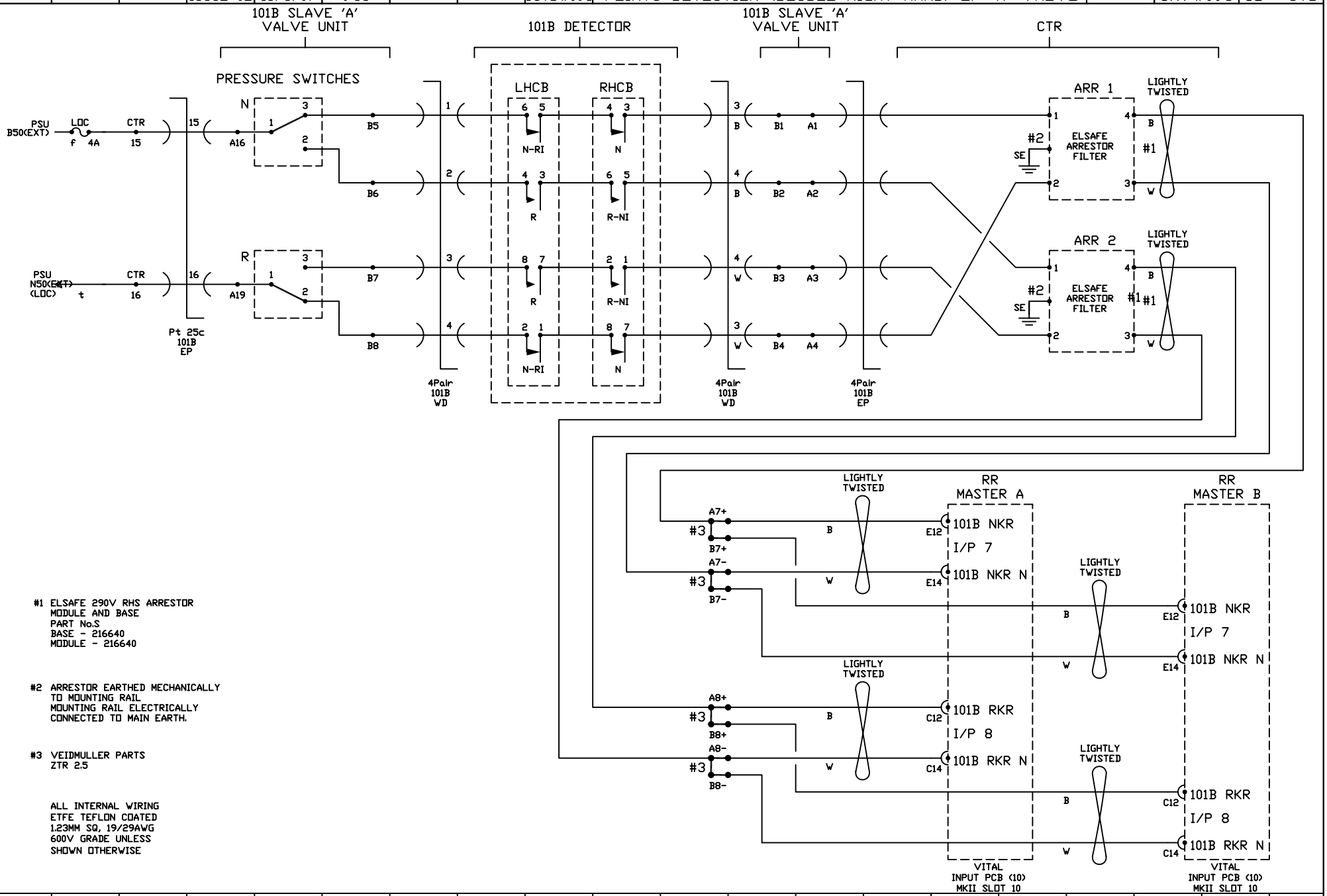


POINTS OPERATING

NIPPON K1200A POINTS MOTOR

DOUBLE RIGHT HAND





#1 ELSAFE 290V RHS ARRESTOR MODULE AND BASE PART No.S
BASE - 216640
MODULE - 216640

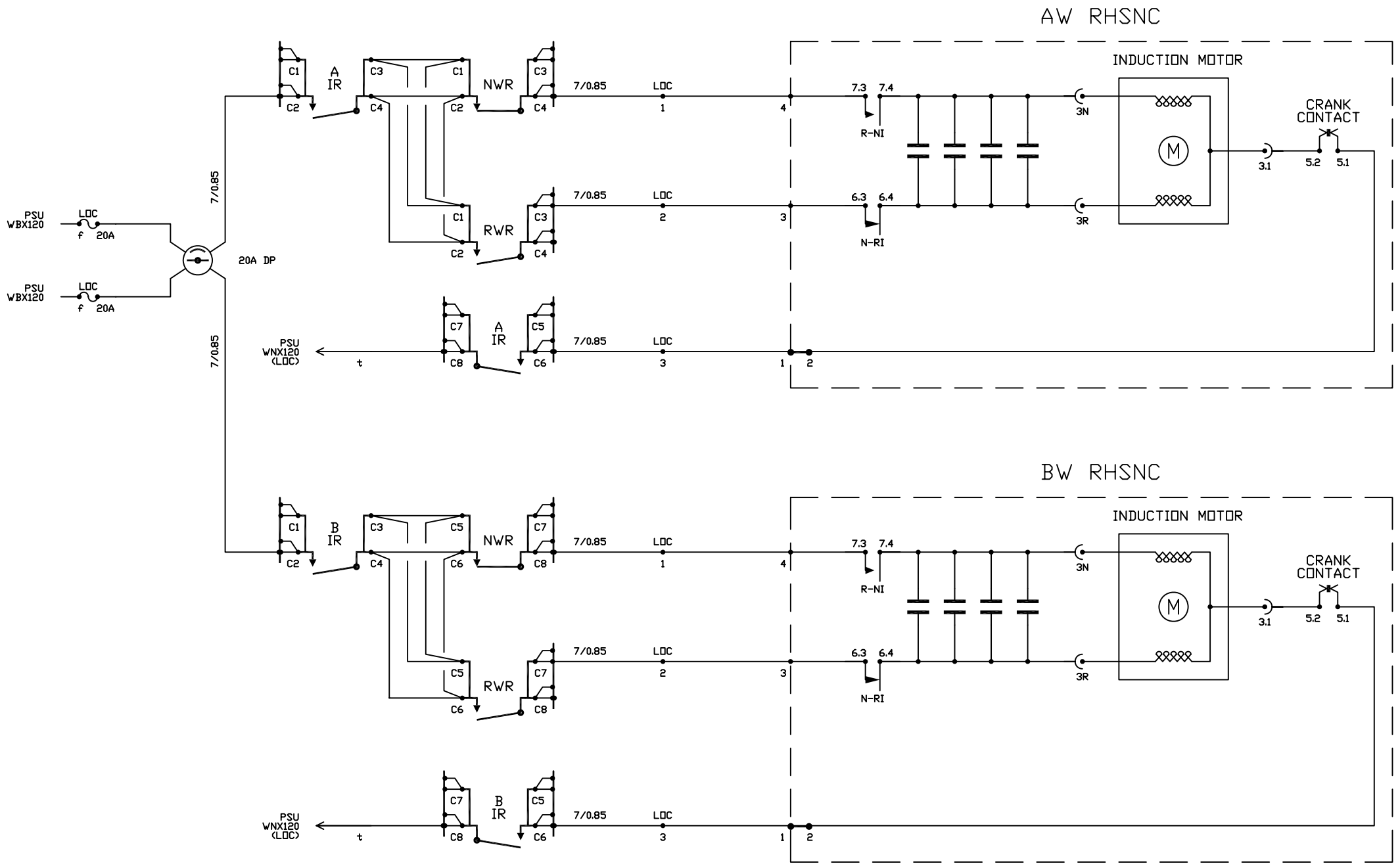
#2 ARRESTOR EARTHED MECHANICALLY TO MOUNTING RAIL
MOUNTING RAIL ELECTRICALLY CONNECTED TO MAIN EARTH.

#3 VEIDMULLER PARTS
ZTR 2.5

ALL INTERNAL WIRING
ETFE TEFLON COATED
1.23MM SQ, 19/29AWG
600V GRADE UNLESS SHOWN OTHERWISE

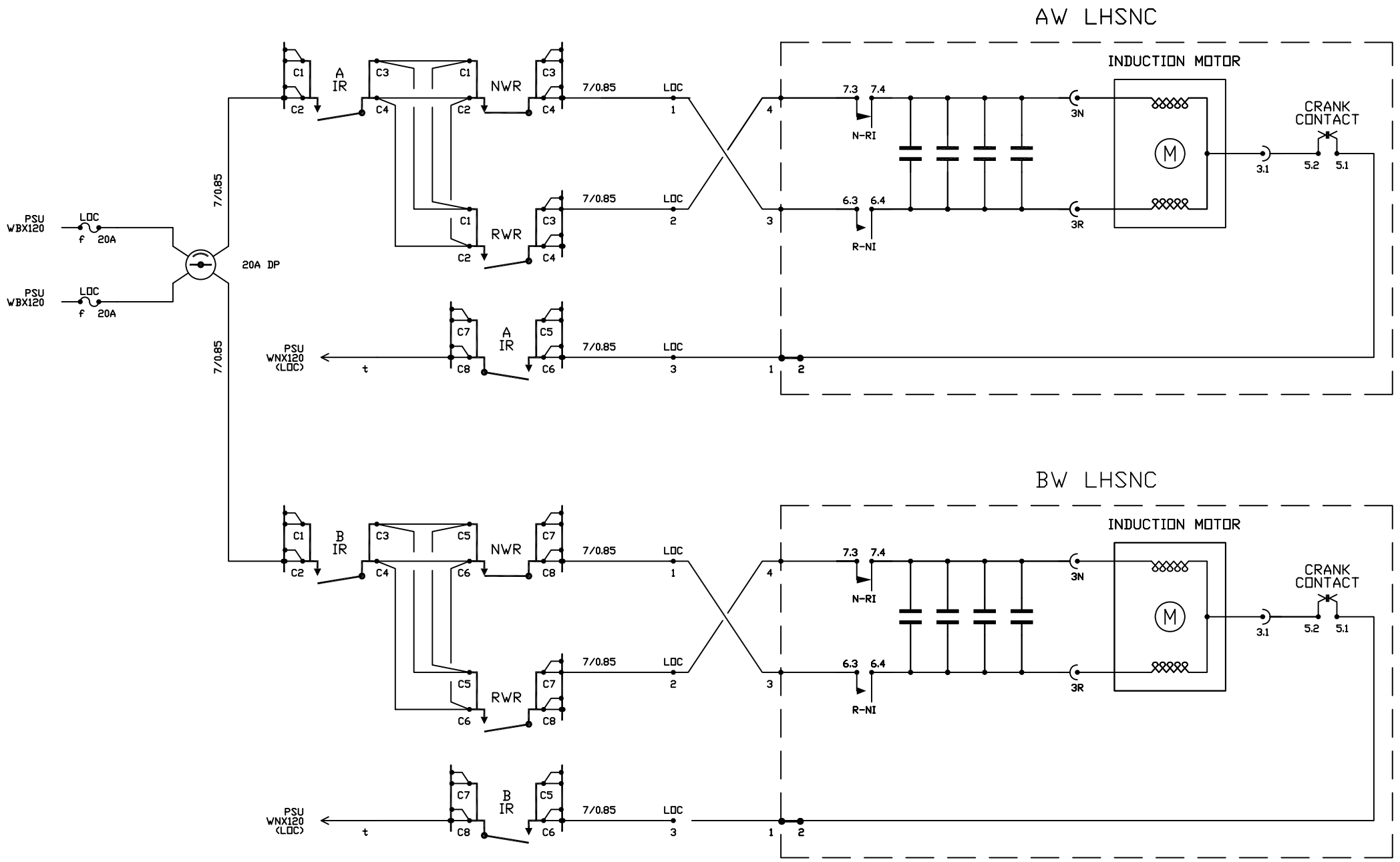
JOB NUMBER

			ISSUE 07	19/5/08	15:08			CSTDW117	WBS 84M POINTS - DOUBLE RIGHT HAND			SHT: W117	CB: STD



ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED.

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05	ISSUE-06
23-08-95	01-08-97	30-06-99	01-09-03	20-04-05	28-06-07
JOB NUMBER					



ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04	ISSUE-05	ISSUE-06
23-08-95	01-08-97	30-06-99	01-09-03	20-04-05	28-06-07
JOB NUMBER					

ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED.

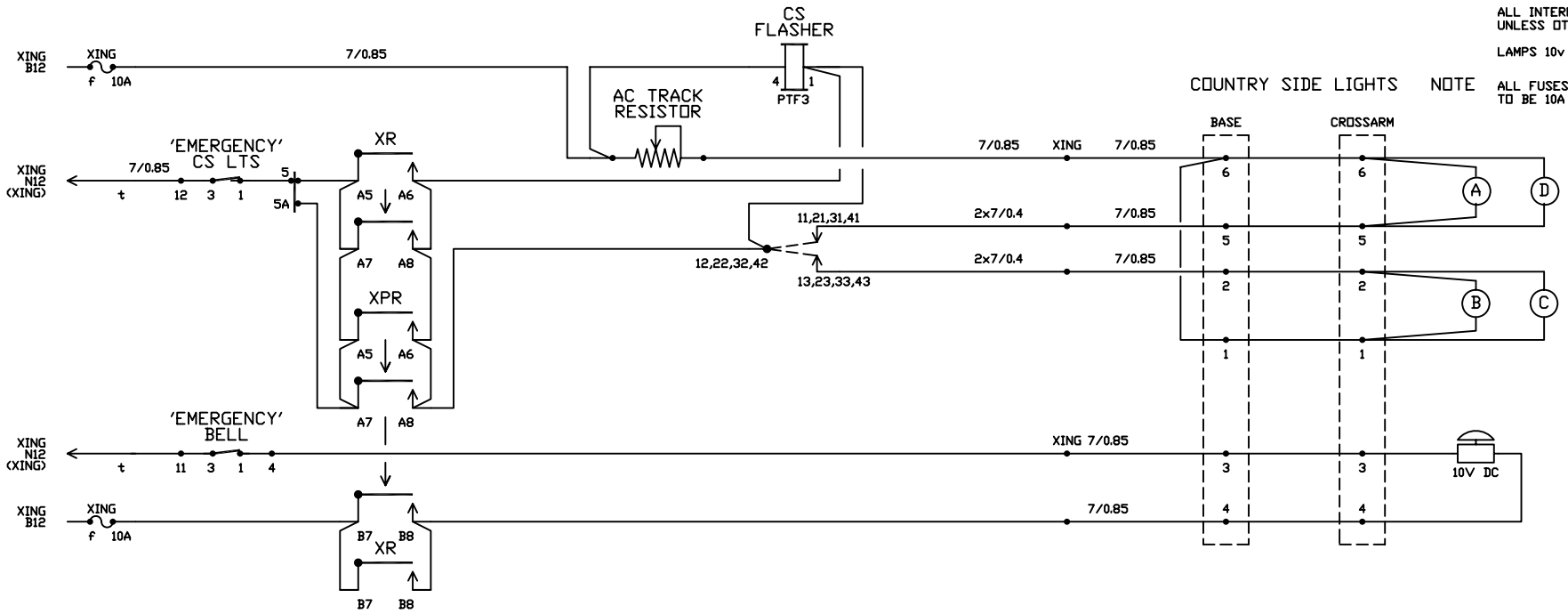
			ISSUE-03	4/7/07	11:24			CSTDX001	LEVEL CROSSING - SINGLE LINE AUTOMATIC			SHT: X001	CB: STD

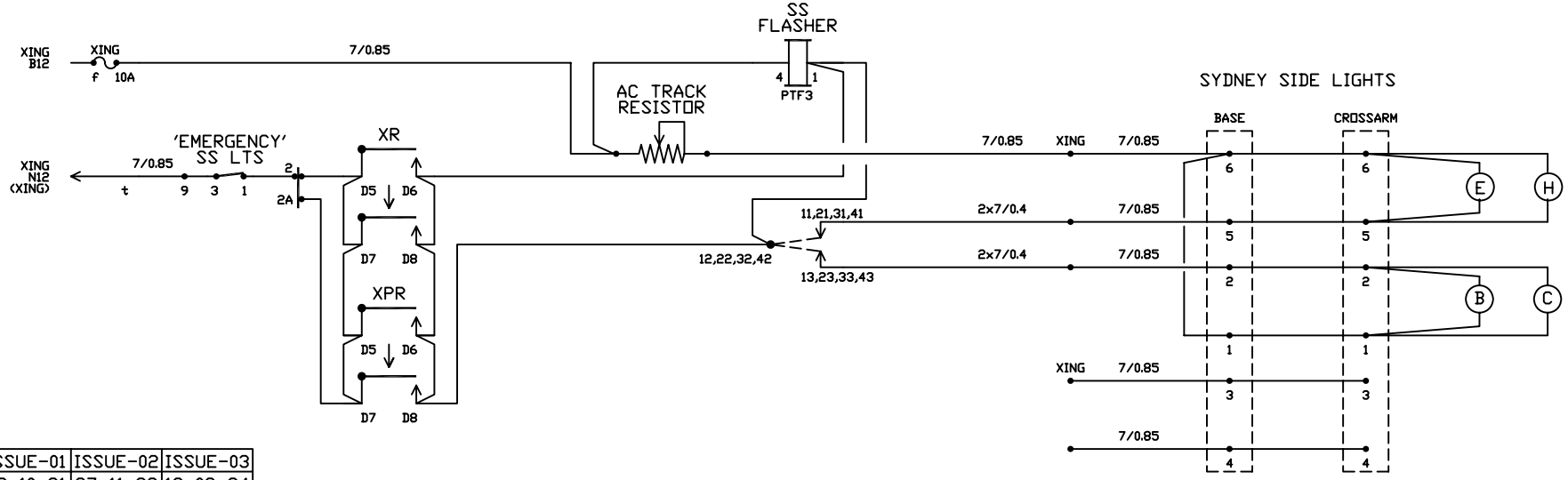
NOTE FLASHING RELAYS MUST BE REMOVED DURING INSULATION TESTING

ALL INTERNAL WIRING 7/0.4mm UNLESS OTHERWISE SHOWN

LAMPS 10v 25w S.C.M.B.C.

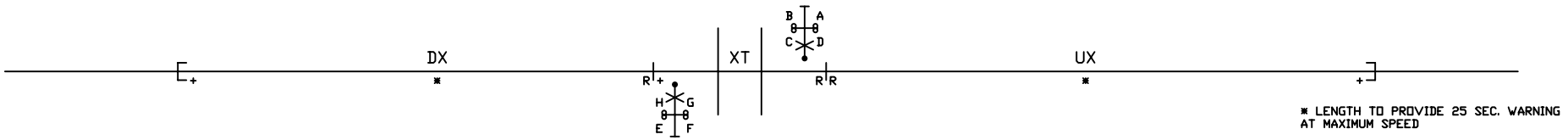
NOTE ALL FUSES ON XING B12 BUS TO BE 10A MINIMUM



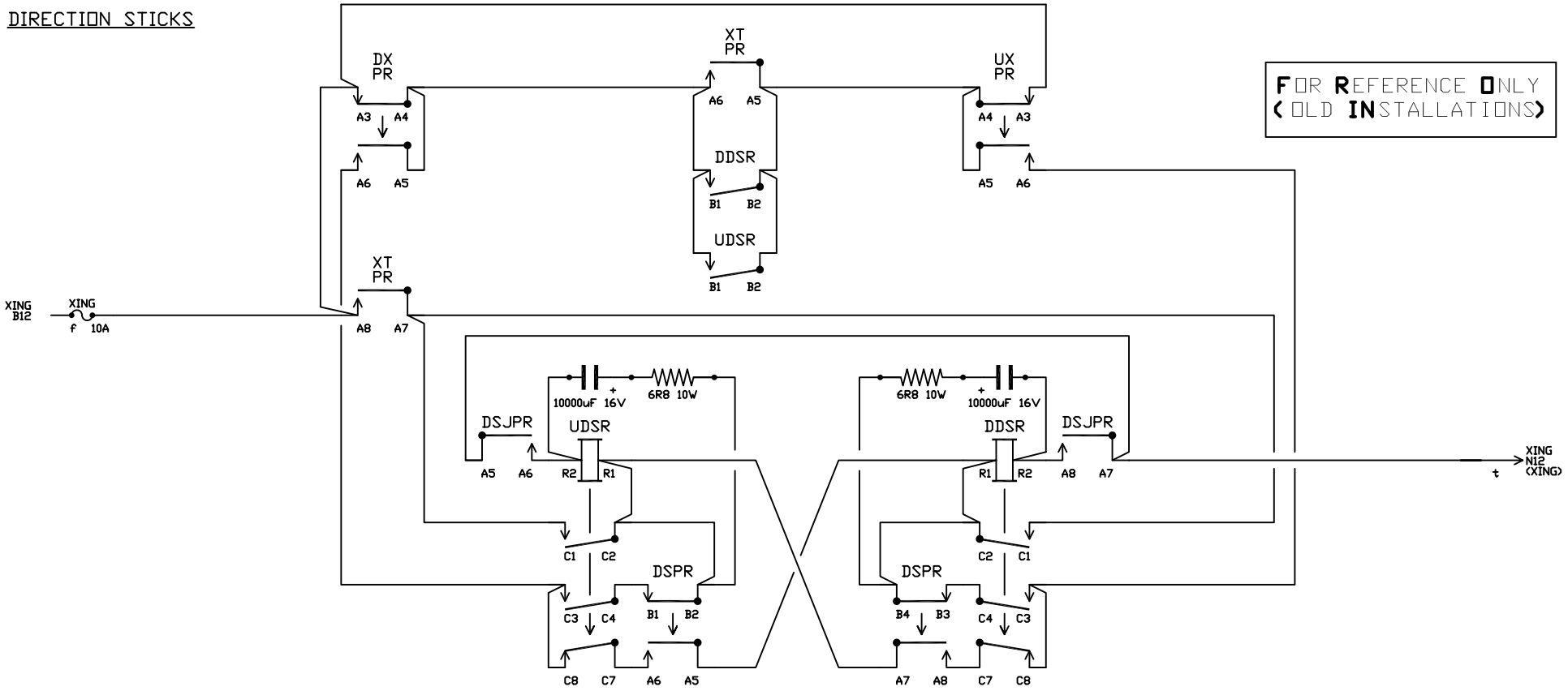


ISSUE-01	ISSUE-02	ISSUE-03
23-10-91	27-11-92	18-03-94
JOB NUMBER		

			ISSUE-05	4/7/07	12:03			CSTDX002	LEVEL CROSSING - SINGLE LINE AUTOMATIC (DTS)			SHT: X002	CB: STD

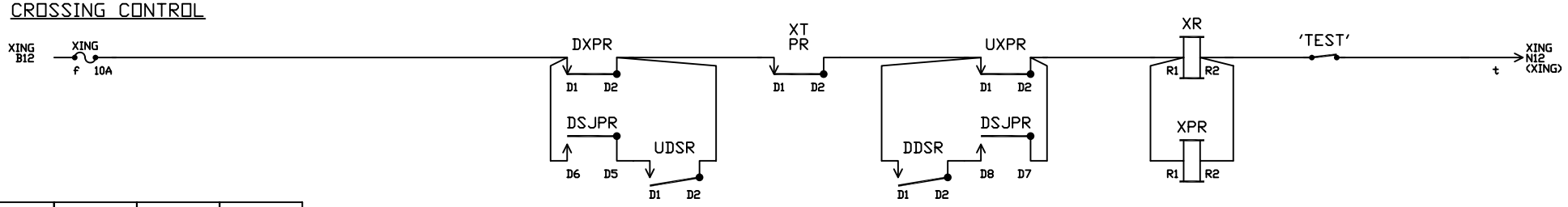


DIRECTION STICKS



FOR REFERENCE ONLY
(OLD INSTALLATIONS)

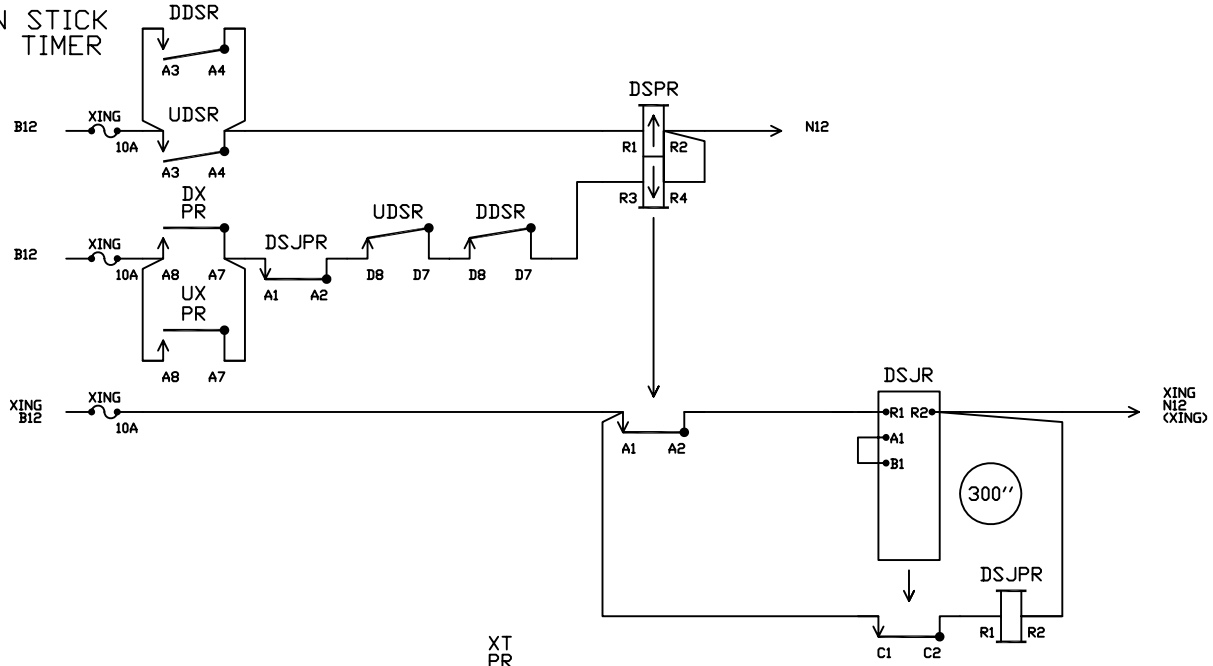
CROSSING CONTROL



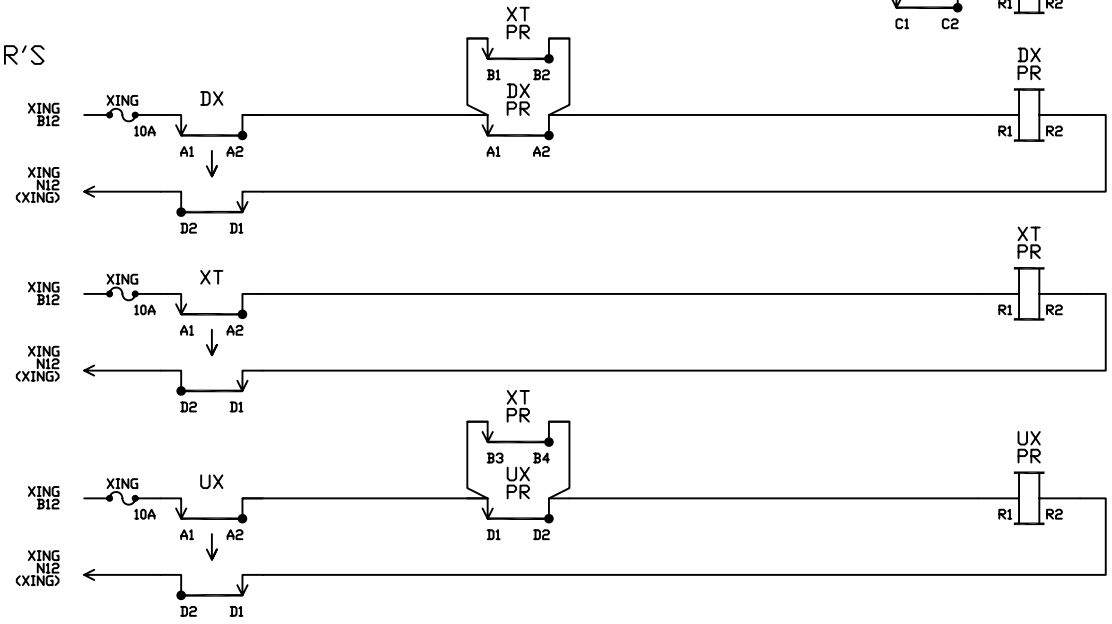
ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
23-10-91	27-11-92	23-08-95	01-09-01
JOB NUMBER			

FOR REFERENCE ONLY
(OLD INSTALLATIONS)

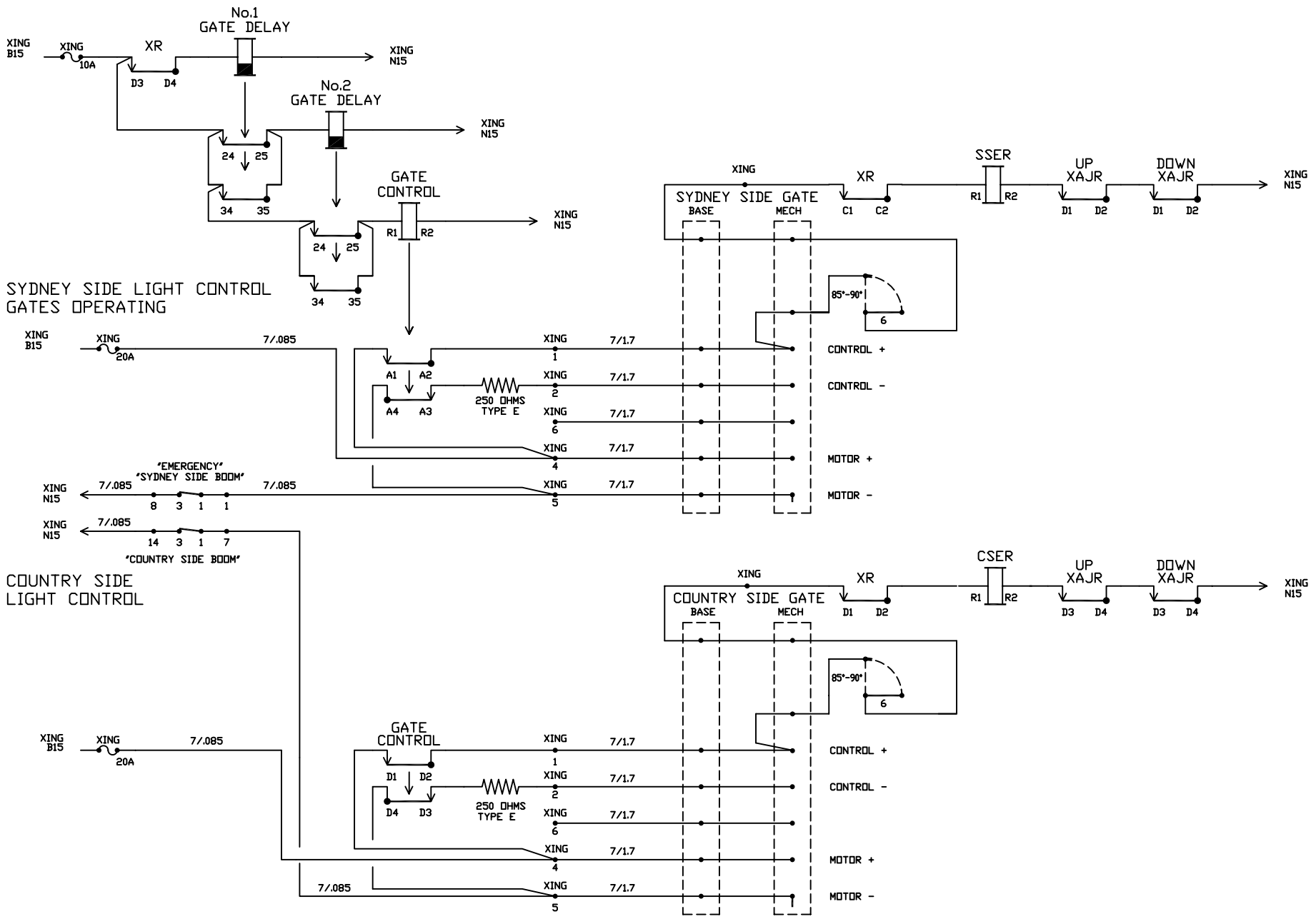
DIRECTION STICK REPEAT & TIMER RELAYS



TRACK PR'S

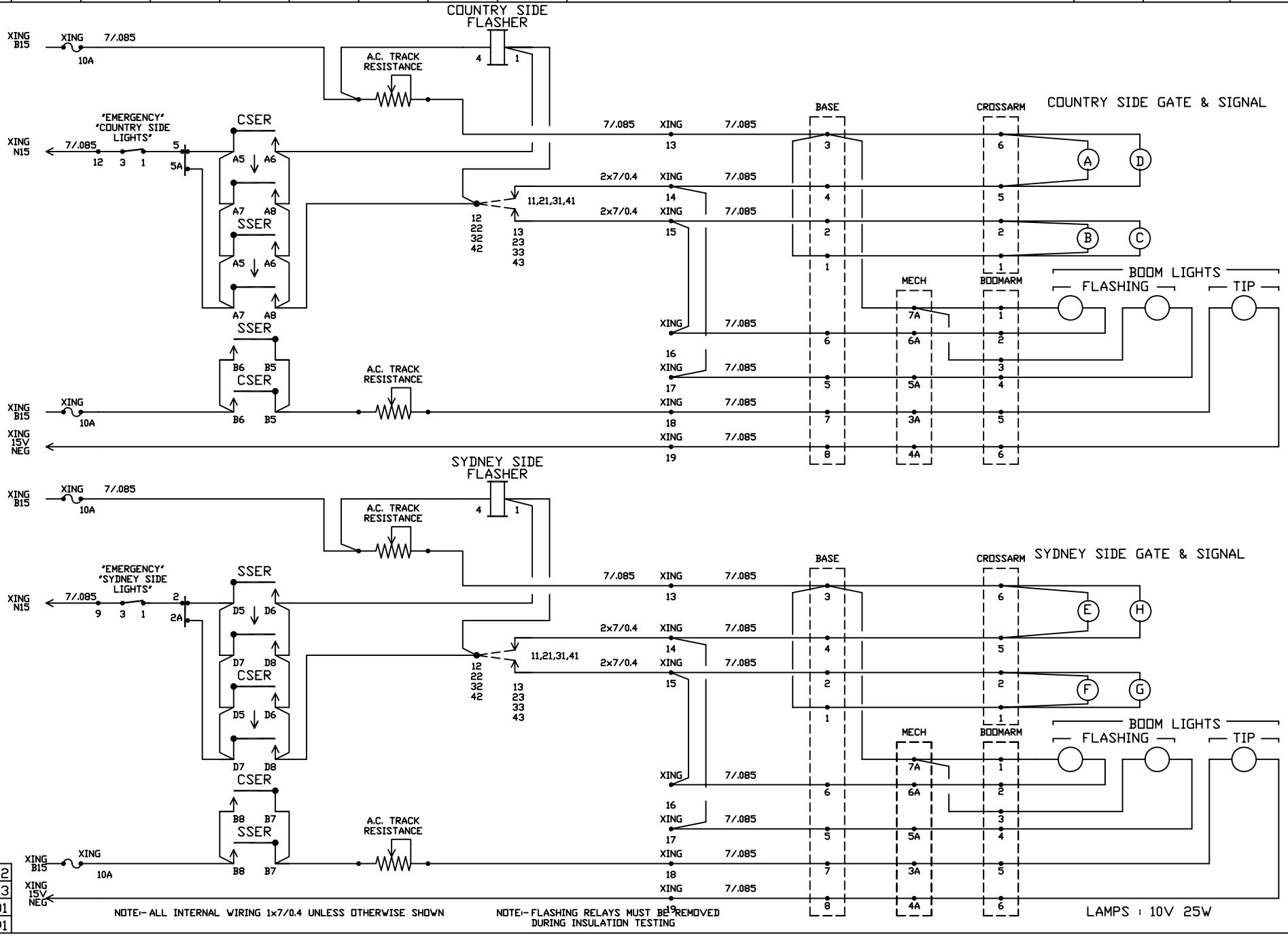


ISSUE-05	
30-12-99	
ISSUE-03	ISSUE-04
23-08-95	01-05-96
ISSUE-01	ISSUE-02
23-10-91	27-11-92



ISSUE 01
23-10-91

30-12-99	ISSUE-03							CSTDX05	LEVEL CROSSING - DOUBLE LINE AUTOMATIC		SHT: X05	CB: STD2



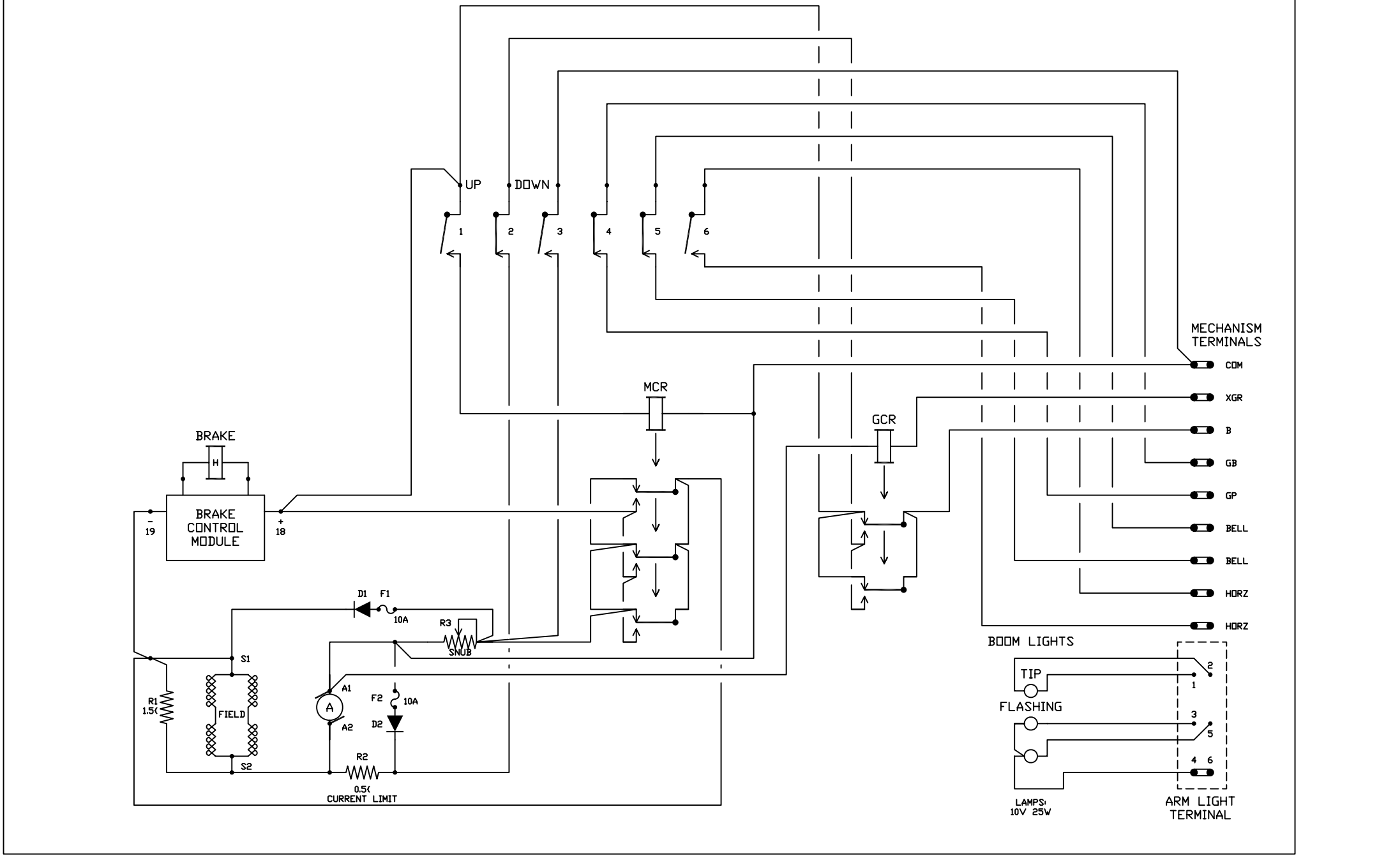
ISSUE-02
18-09-93
ISSUE-01
23-10-91

NOTE:- ALL INTERNAL WIRING 1x7/0.4 UNLESS OTHERWISE SHOWN

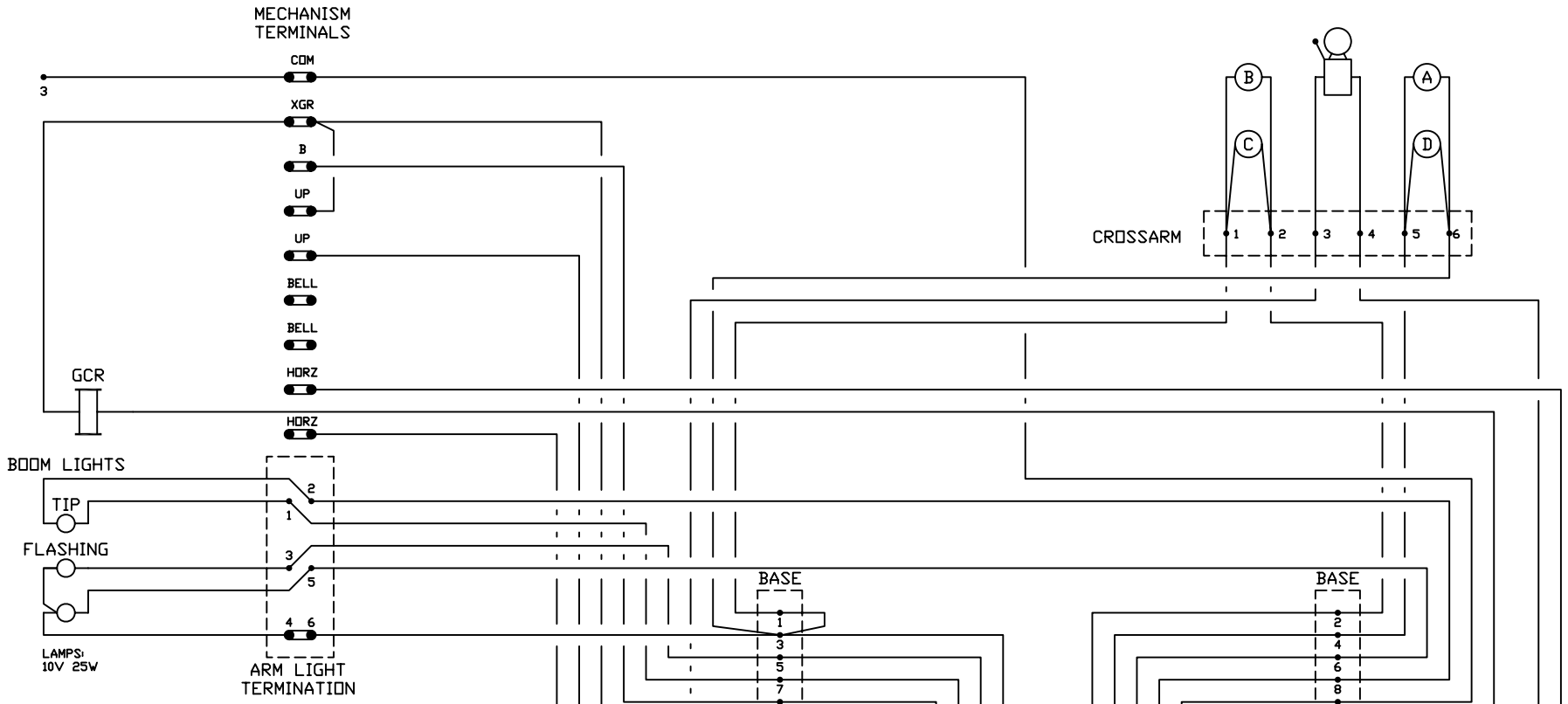
NOTE:- FLASHING RELAYS MUST BE REMOVED DURING INSULATION TESTING

LAMPS : 10V 25W

23-10-91	ISSUE-01							CSTDX06	LEVEL CROSSING - HARMON MECHANISM C1A		SHT: X06	CB: STD2

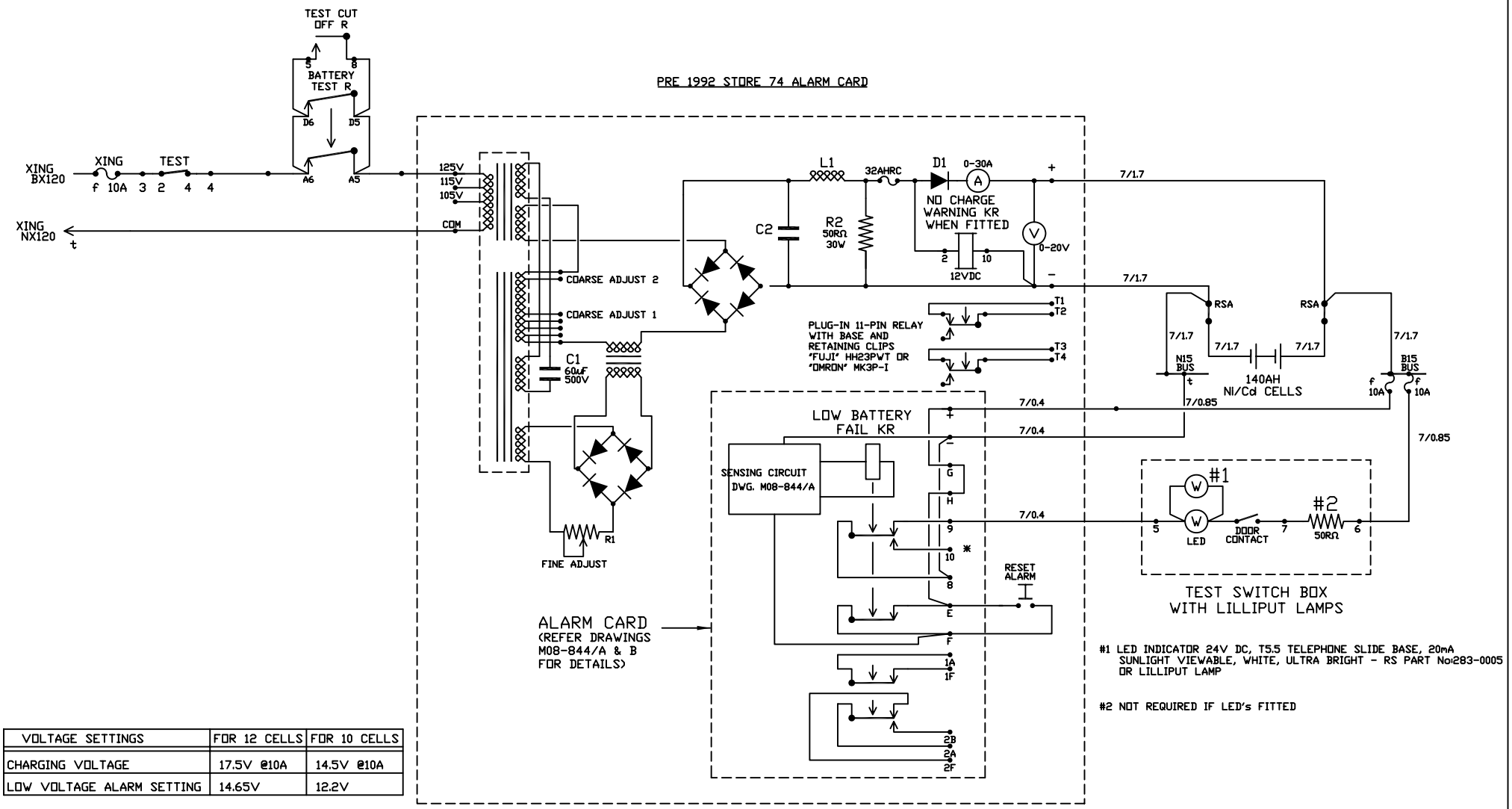


23-10-91	ISSUE-01							CSTDX07	LEVEL CROSSING - HARMON MECHANISM C1B		SHT: X07	CB: STD2



CONTACT ASSEMBLY		
CONTACT	CONTACT CLOSED	CONTACT FUNCTION
1	0°-89°, 84°-0° DOWN	TO OPEN MOTOR UP CIRCUIT
2	46°-90°	TO OPEN DOWN CIRCUIT
3	0°-10°	TO SHUNT SNUB RESISTOR
4	80°-90°	TO INDICATE VERTICAL POSITION
5	10°-90°	SPARE
6	0°-10°	TO INDICATE HORIZONTAL POSITION

01-09-01	ISSUE-03						Rev 01	CSTDX08	LEVEL CROSSING BATTERY CHARGER STORE 74-ABW 1990		SHT: X08	CB: STD2



#1 LED INDICATOR 24V DC, T5.5 TELEPHONE SLIDE BASE, 20mA SUNLIGHT VIEWABLE, WHITE, ULTRA BRIGHT - RS PART No:283-0005 OR LILLIPUT LAMP

#2 NOT REQUIRED IF LED's FITTED

VOLTAGE SETTINGS	FOR 12 CELLS	FOR 10 CELLS
CHARGING VOLTAGE	17.5V @10A	14.5V @10A
LOW VOLTAGE ALARM SETTING	14.65V	12.2V

LEVEL CROSSING BATTERY CHARGER (STORE 74)

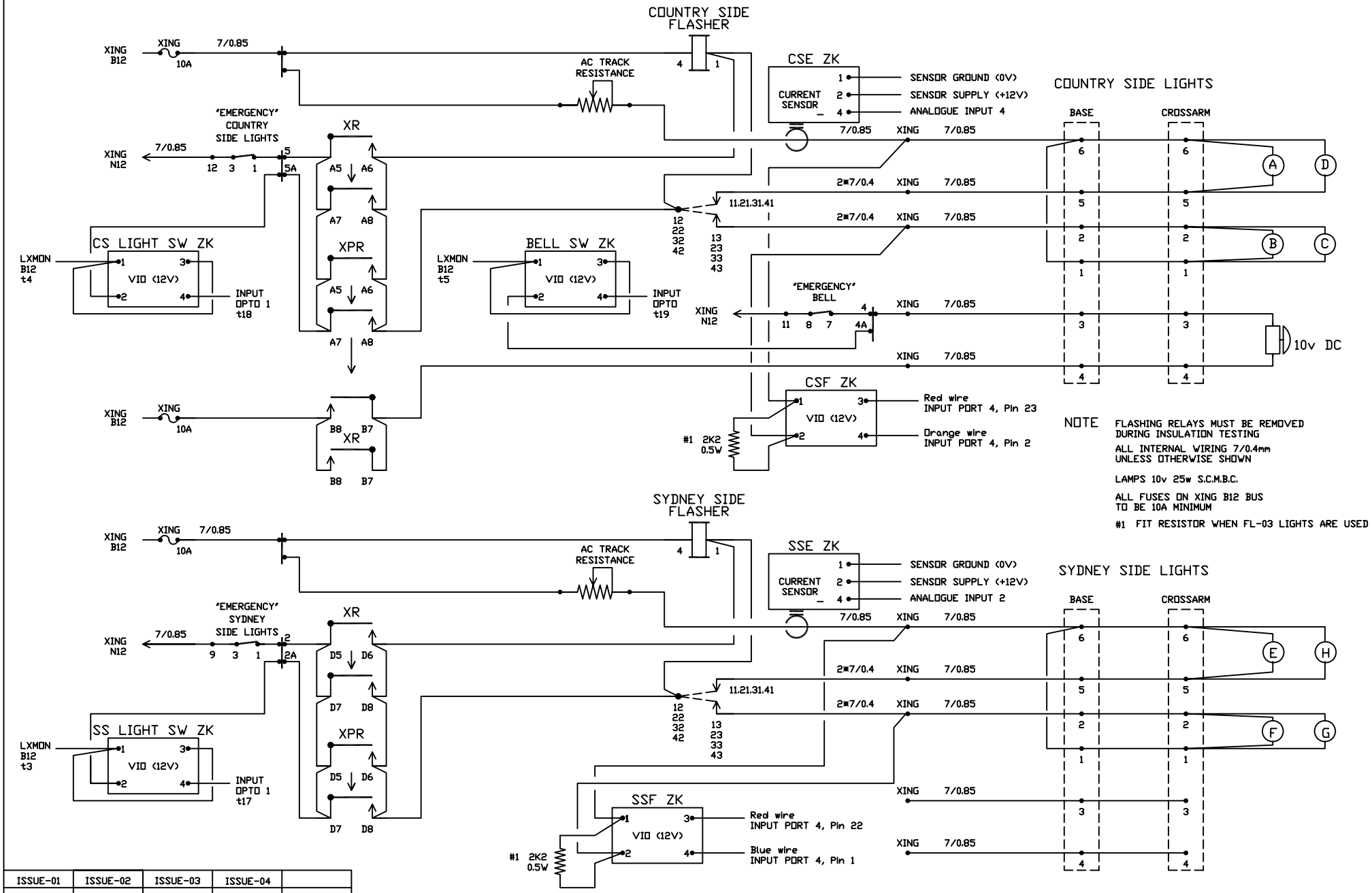
MI08016305 13-20V, 20A DC

MI08527517 13-20V, 30A DC

* 5 IN SOME CASES

ISSUE-02
18-03-94
ISSUE-01
25-9-92

01-09-01	ISSUE-05						Rev 01	CSTDX09	LXMON - SINGLE LINE AUTOMATIC		SHT: X09	CB: STD2



NOTE

FLASHING RELAYS MUST BE REMOVED DURING INSULATION TESTING

ALL INTERNAL WIRING 7/0.4mm UNLESS OTHERWISE SHOWN

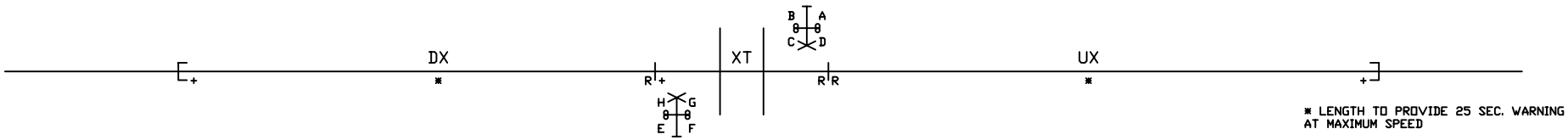
LAMPS 10v 25w S.C.M.B.C.

ALL FUSES ON XING B12 BUS TO BE 10A MINIMUM

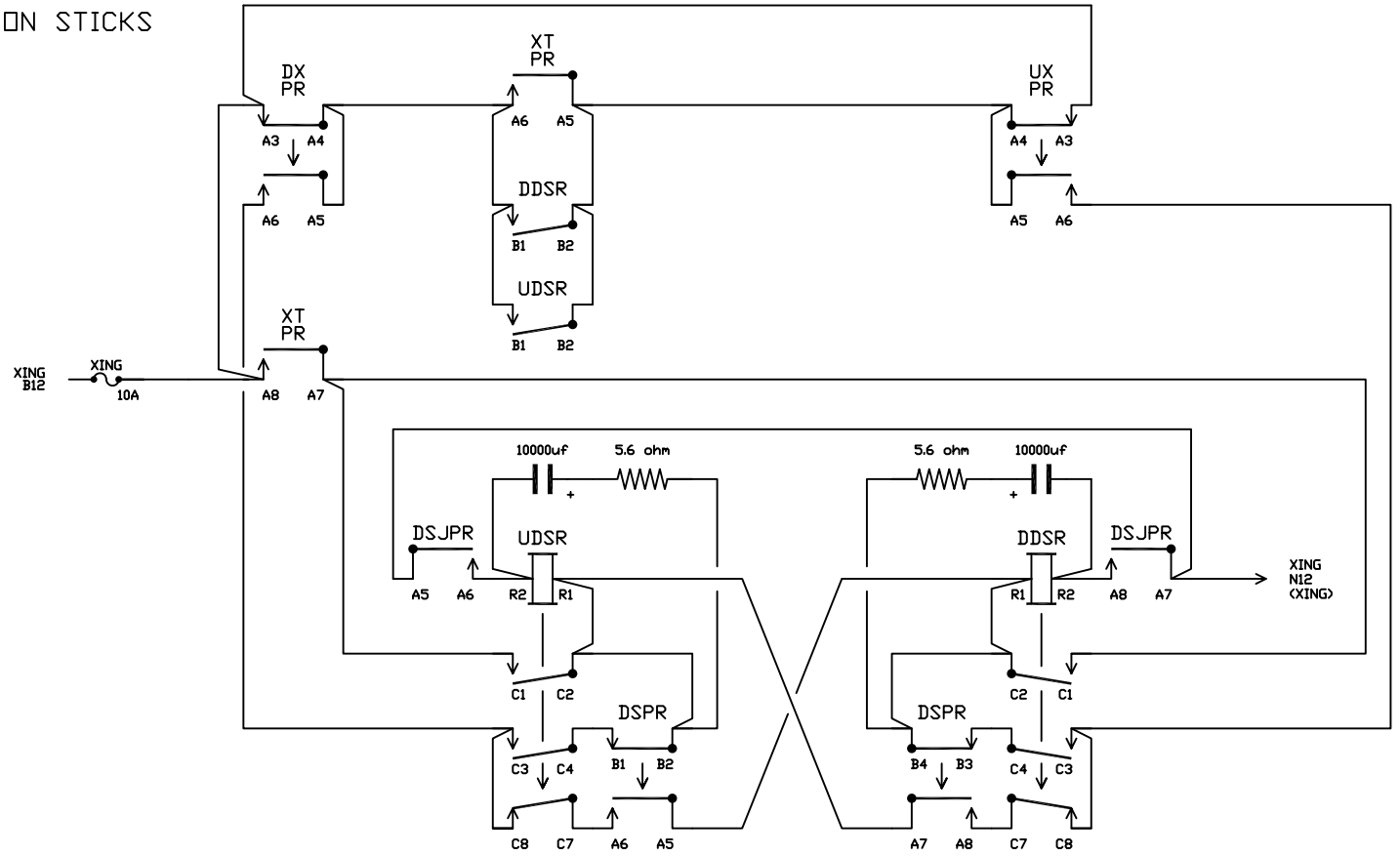
#1 FIT RESISTOR WHEN FL-03 LIGHTS ARE USED

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04	
9-10-92	5-3-93	11-8-93	21-6-94	

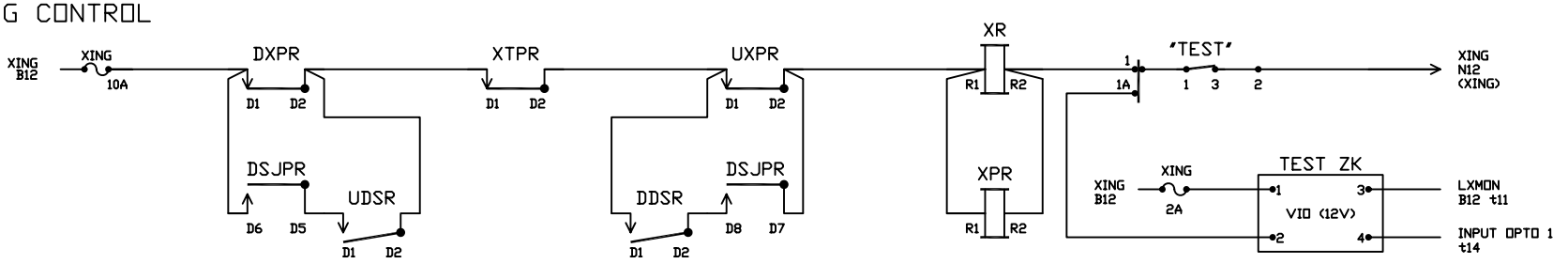
16-06-94	ISSUE-02						Rev 01	CSTDX10	LXMON - SINGLE LINE AUTOMATIC (DTS)		SHT: X10	CB: STD2



DIRECTION STICKS

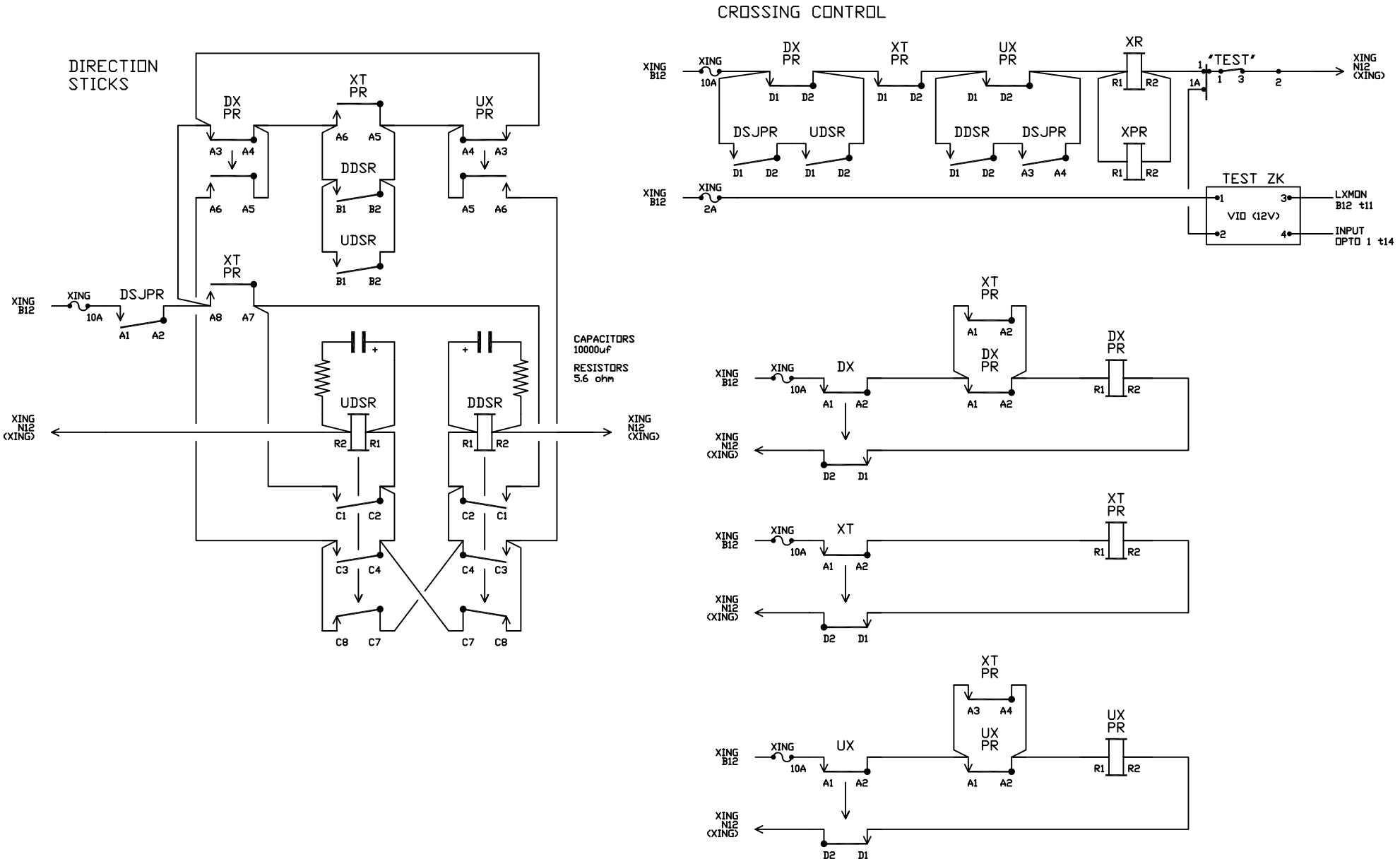


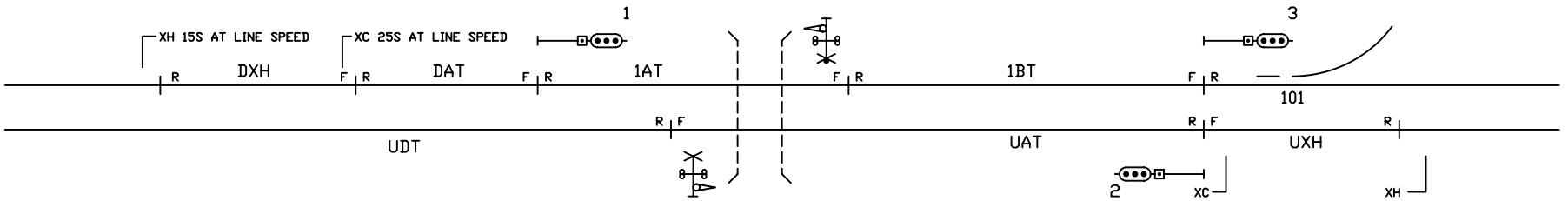
CROSSING CONTROL



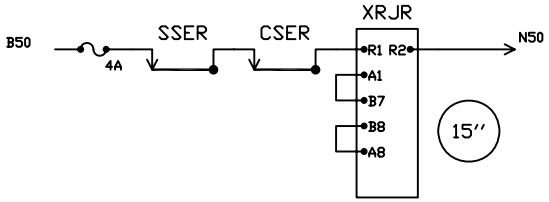
ISSUE-01
9-10-92

01-09-03	ISSUE-01						Rev 01	CSTDX11	LXMON - SINGLE LINE AUTOMATIC (ETS)		SHT: X11	CB: STD2

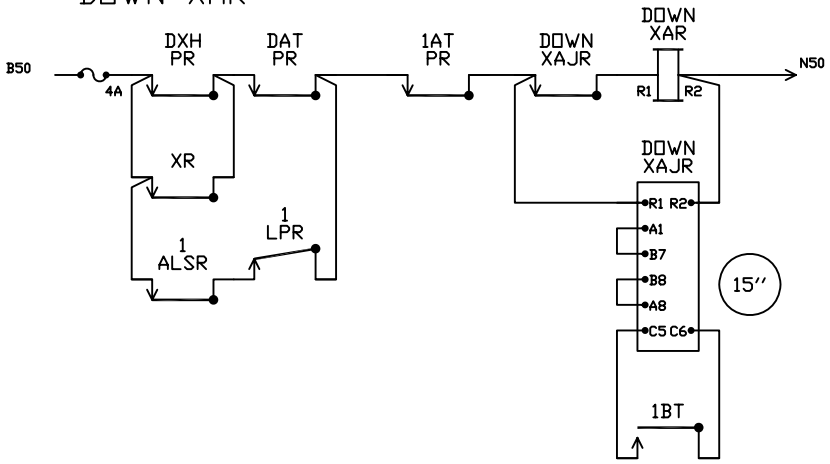




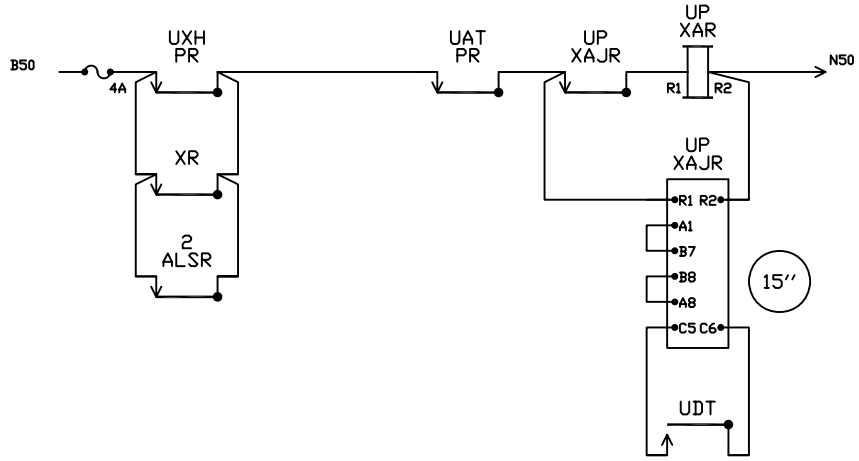
XRJR



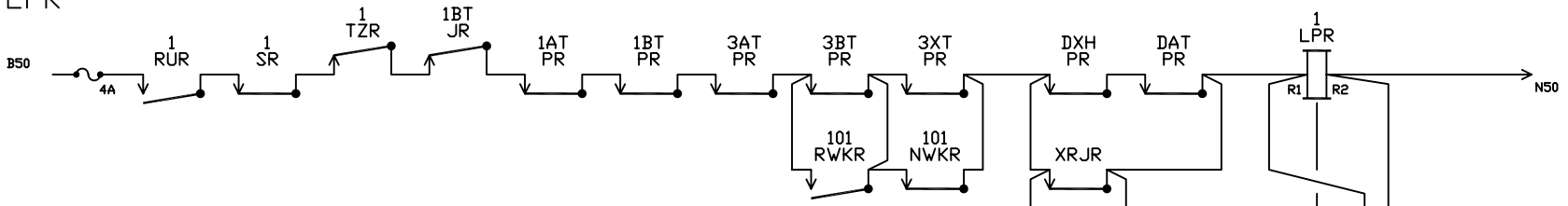
DOWN XAR



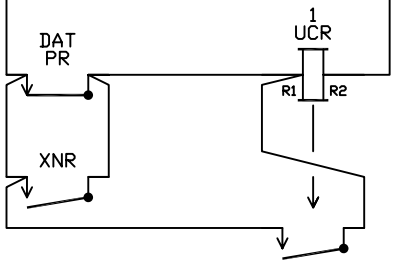
UP XAR



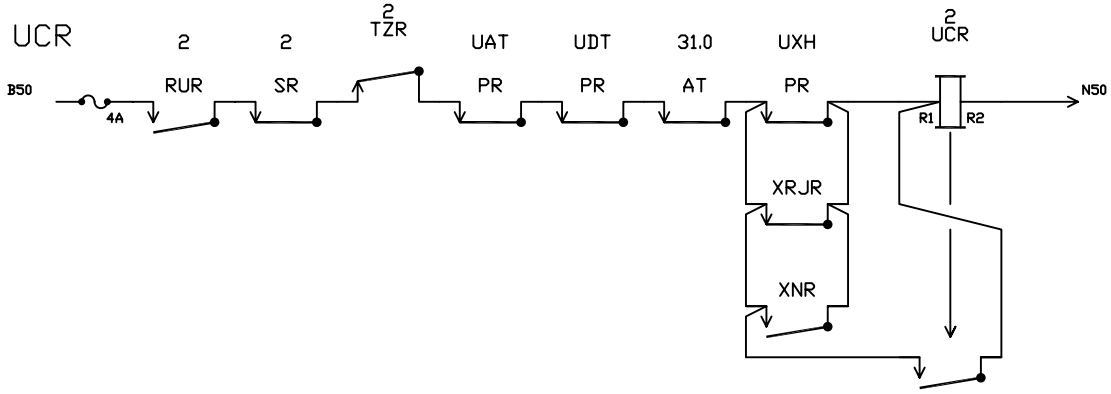
1 LPR



1 UCR



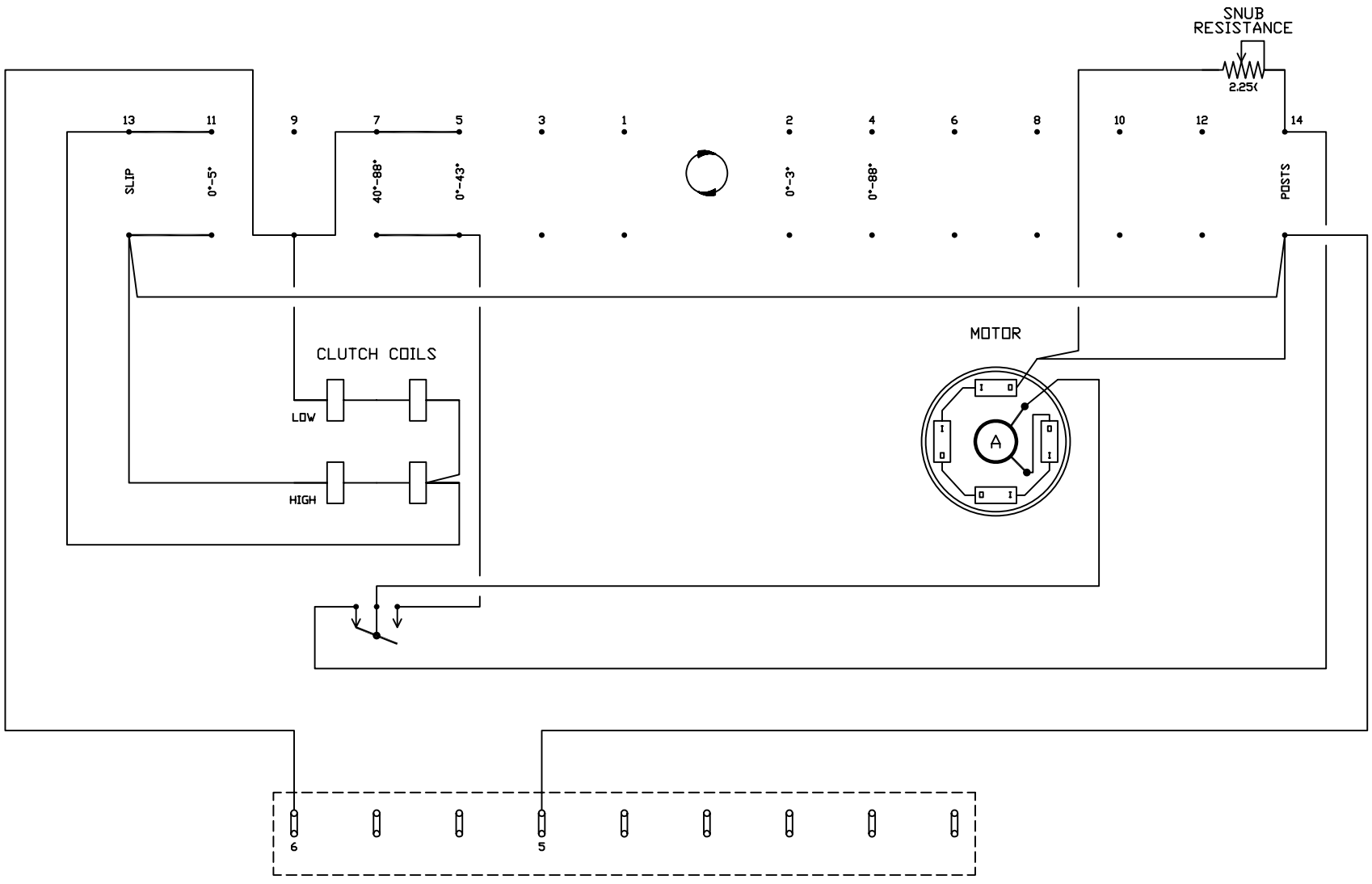
2 UCR



23-11-93	ISSUE-02						Rev 01	CSTDX13	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X13	CB: STD2

PEDESTRIAN BARRIER

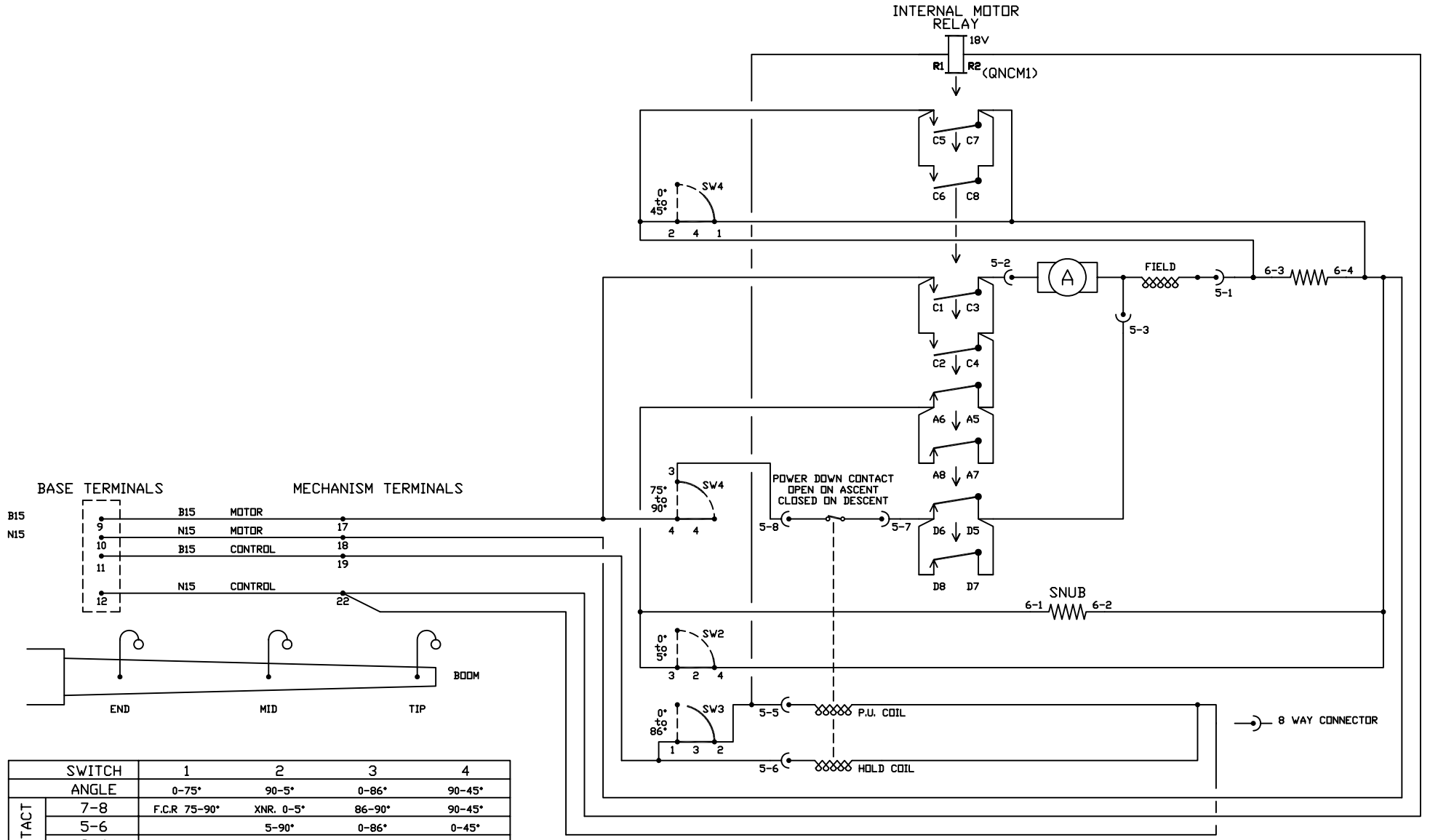
(G.R.S. 10V D.C. U.Q. SIGNAL MECHANISM)
APPLIES TO COUNTRY SIDE & SYDNEY SIDE BARRIERS



TERMINAL BLOCK IN BASE

ISSUE-01
26-10-92

01-08-97	ISSUE-03						Rev 01	CSTDX14	WESTINGHOUSE EB 12V BOOM MECHANISIM 'POWER DOWN' TYPE BOOM		SHT: X14	CB: STD2



	SWITCH	1	2	3	4
	ANGLE	0-75°	90-5°	0-86°	90-45°
CONTACT	7-8	F.C.R 75-90°	XNR. 0-5°	86-90°	90-45°
	5-6		5-90°	0-86°	0-45°
	3-4	75-90°	SNUB 0-5°	86-90°	POWER DOWN 75-90°
	1-2		BELL 10-90°	MOTOR C.O.	POWER DOWN 0-45°

THE ANGLE GIVEN IS THE ANGLE THROUGH WHICH THE CAM LIFTS THE CAM FOLLOWER

FCR - FLASHING CONTOL RELAY
CO - CUT OFF

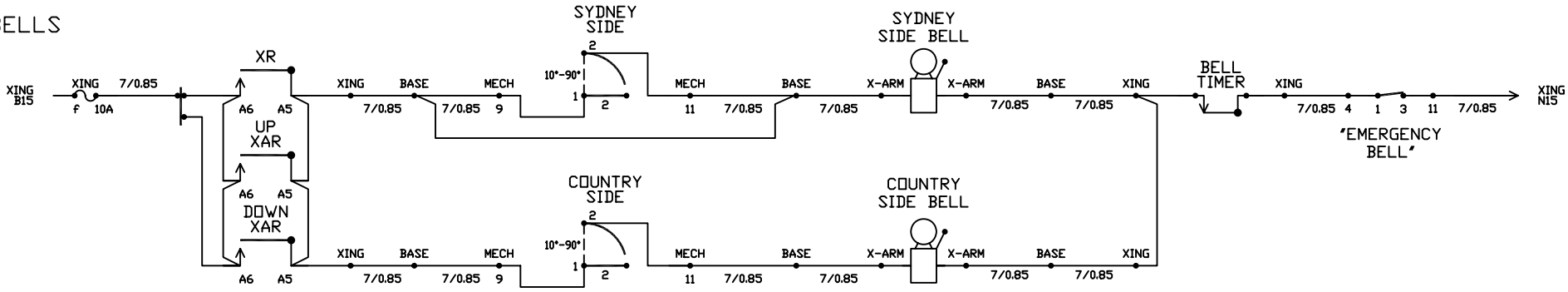
NOTES: 1. ALL SWITCHES ARE SHOWN WITH CONTROL DE-ENERGISED AND BARRIER HORIZONTAL.

2. INDICATION OF LOWERED POSITION OF BARRIER IS GIVEN BY CONTACTS 7-8 OF SWITCH No.2

ISSUE-01	ISSUE-02
27-11-92	23-11-93

18-03-94	ISSUE-02							CSTDX15	WESTINGHOUSE EB 12V 'POWER DOWN' TYPE BOOMS ONLY		SHT: X15	CB: STD2

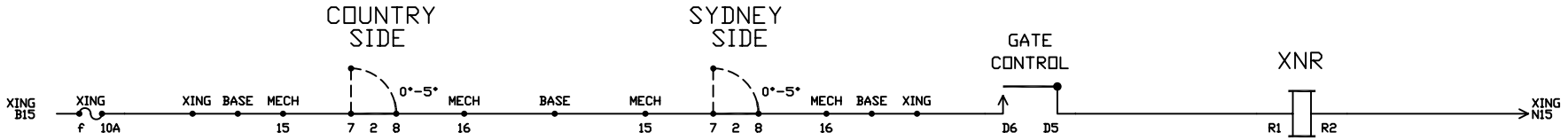
BELLS



NOTE:

THIS DRAWING IS TO BE REFERRED FOR WESTINGHOUSE EB 12V 'POWER DOWN' TYPE BOOM MECHANISIM CONTACT ARRANGEMENT DETAILS ONLY.

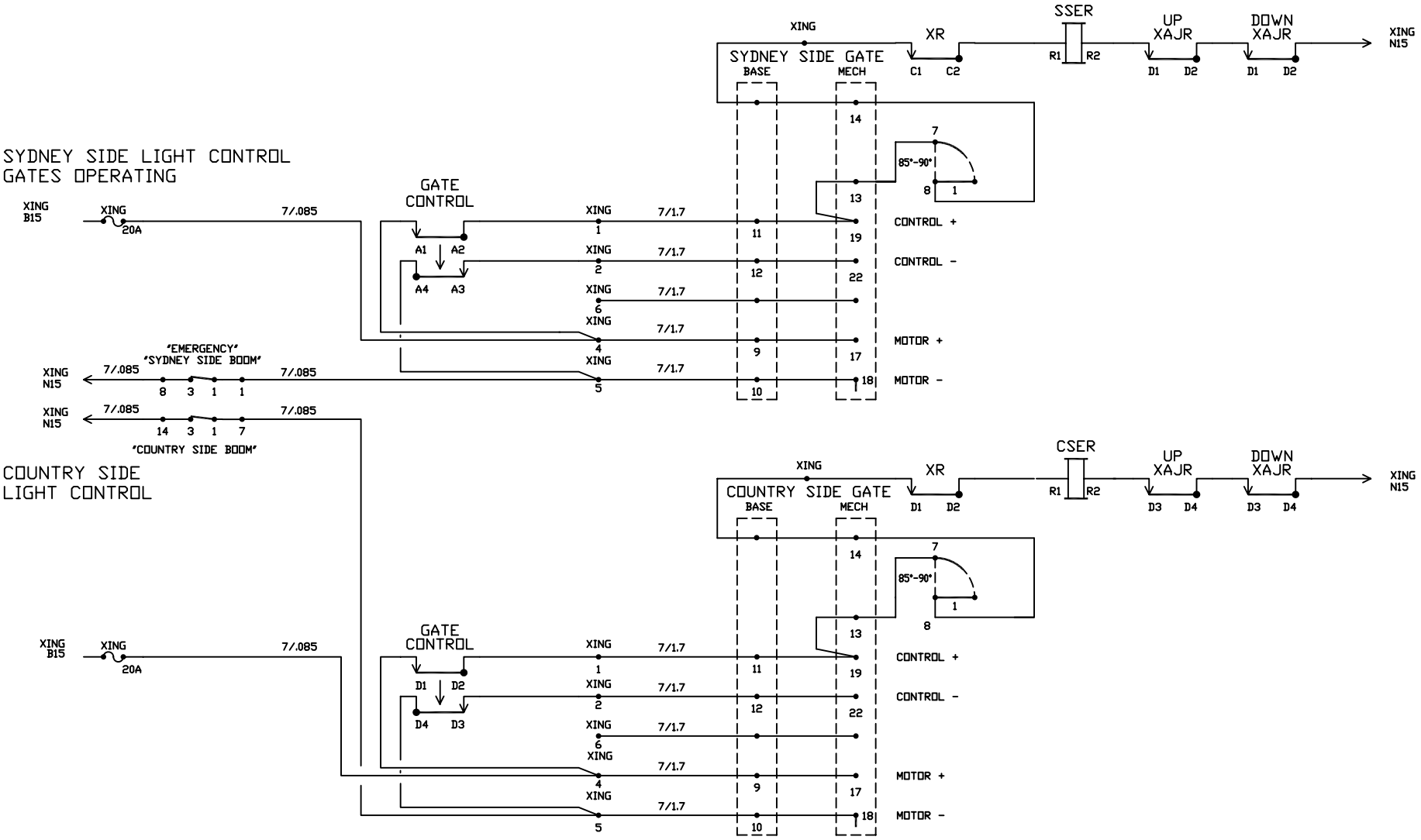
XNR



ISSUE-01
27-11-92

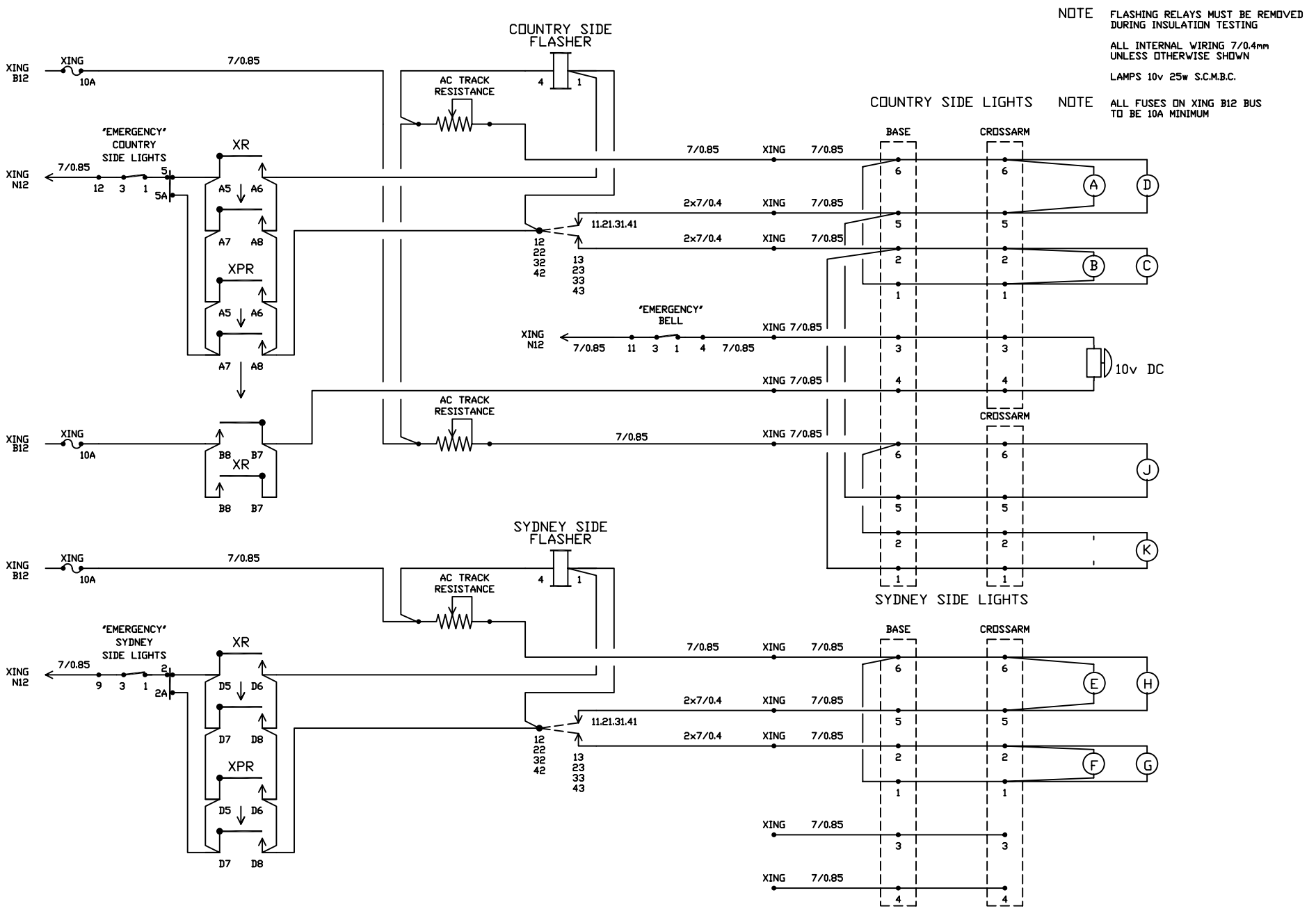
NOTE:

THIS DRAWING IS TO BE REFERRED FOR WESTINGHOUSE EB 12V 'POWER DOWN' TYPE BOOM MECHANISIM CONTACT ARRANGEMENT DETAILS ONLY.



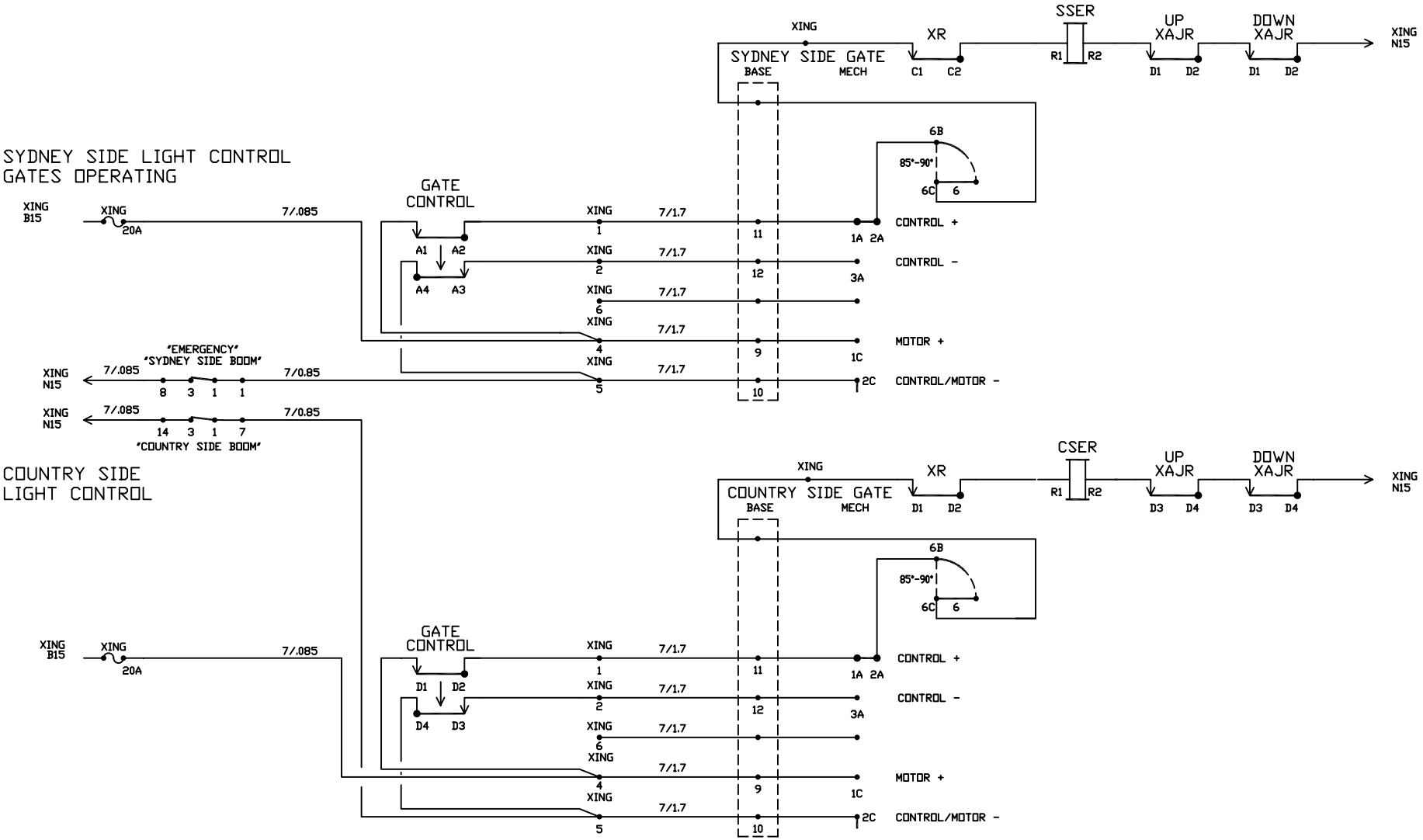
ISSUE-01
27-11-92

18-03-94	ISSUE-01							CSTDX17	L-XING - WITH AUXILIARY SET OF FLASHING LIGHTS		SHT: X17	CB: STD2

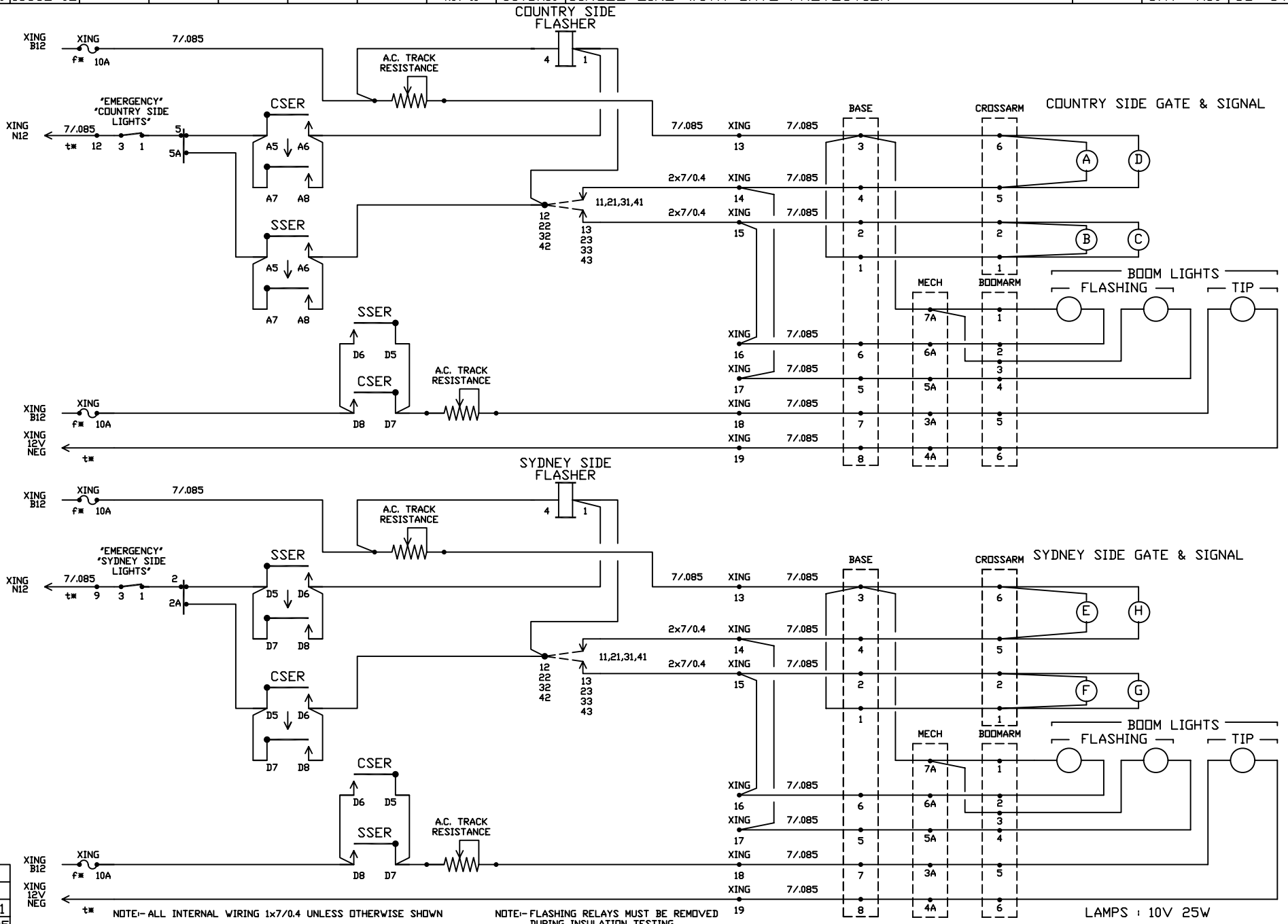


NOTE:

THIS DRAWING IS TO BE REFERRED TO FOR
WESTERN CULLEN GATE MECHANISM MODEL 3593B
CONTACT ARRANGEMENT DETAILS ONLY.

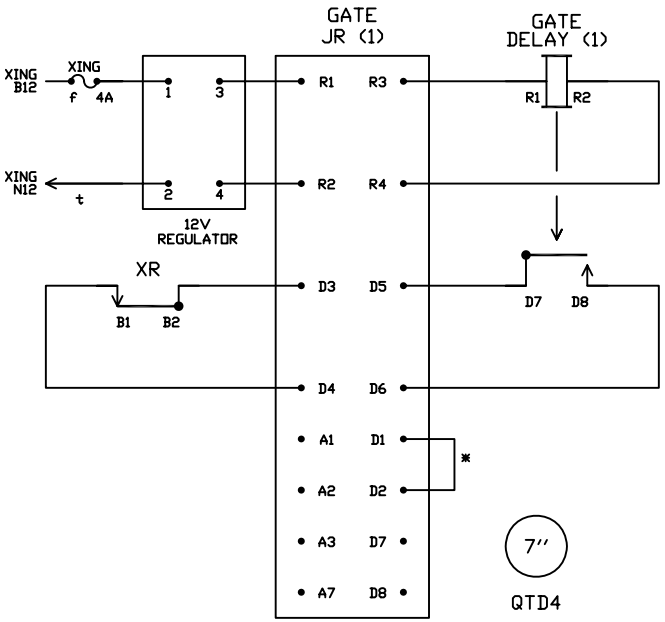


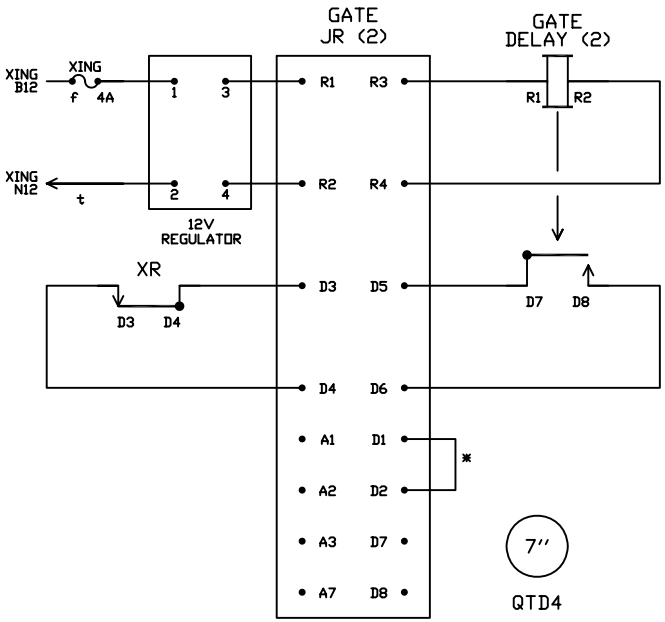
30-12-99	ISSUE-02						Rev 01	CSTDX19	SINGLE LINE WITH GATE PROTECTION		SHT: X19	CB: STD2



ISSUE-01	
23-08-95	

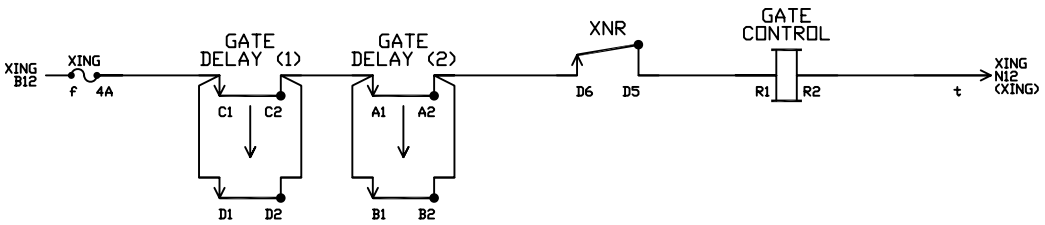
01-09-03	ISSUE-05						Rev 01	CSTDX20	GATE CONTROL CIRCUIT WITH QTD4 RELAYS		SHT: X20	CB: STD2

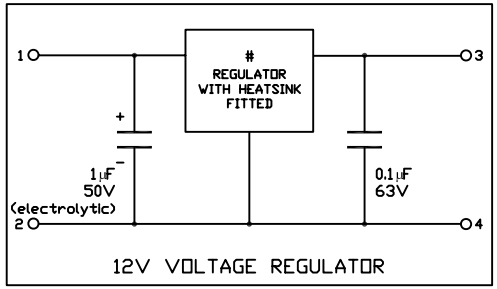




NOTE:
OUTPUT RELAY
VOLTAGE STRAPPING
12V-D1/D2
24V-D7/D2
50V-D8/D2

* STRAPPING SHOWN FOR
12V GATE DELAY RELAY
D3/D4 LOOP WIRING
MUST BE LESS THAN 2m



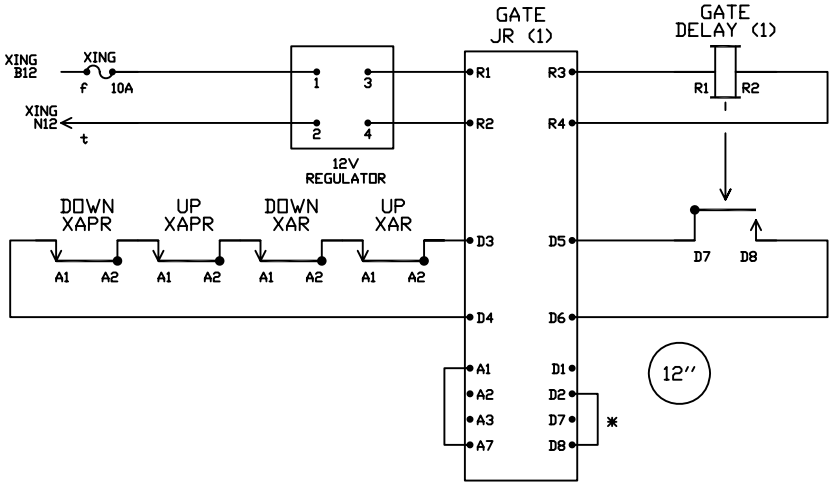


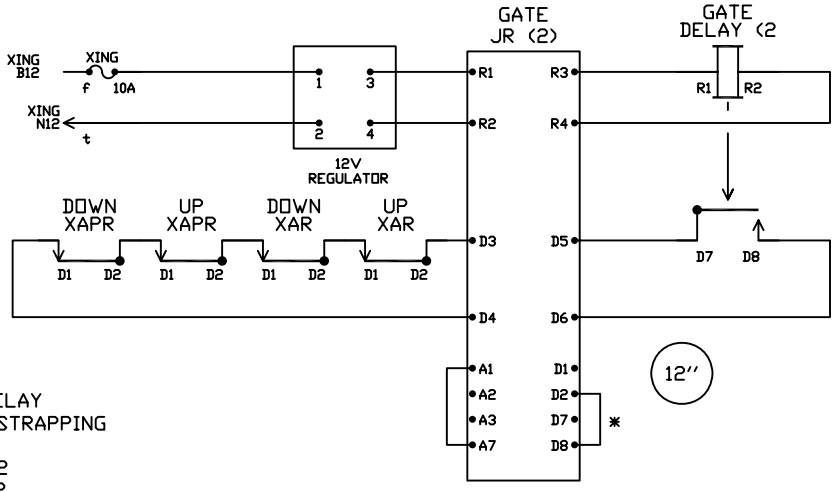
12V REGULATOR L78S12CV, 2A OUTPUT CURRENT:
RS STOCK No: 633-032
HEATSINK: 8.6°C/W RS STOCK No: 268-076

ISSUE-01	ISSUE-02	ISSUE-03	ISSUE-04
21-06-94	1-06-98	30-12-99	01-09-01

01-09-03	ISSUE-03						Rev 01	CSTDX21	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X21	CB: STD2

GATE DELAYS





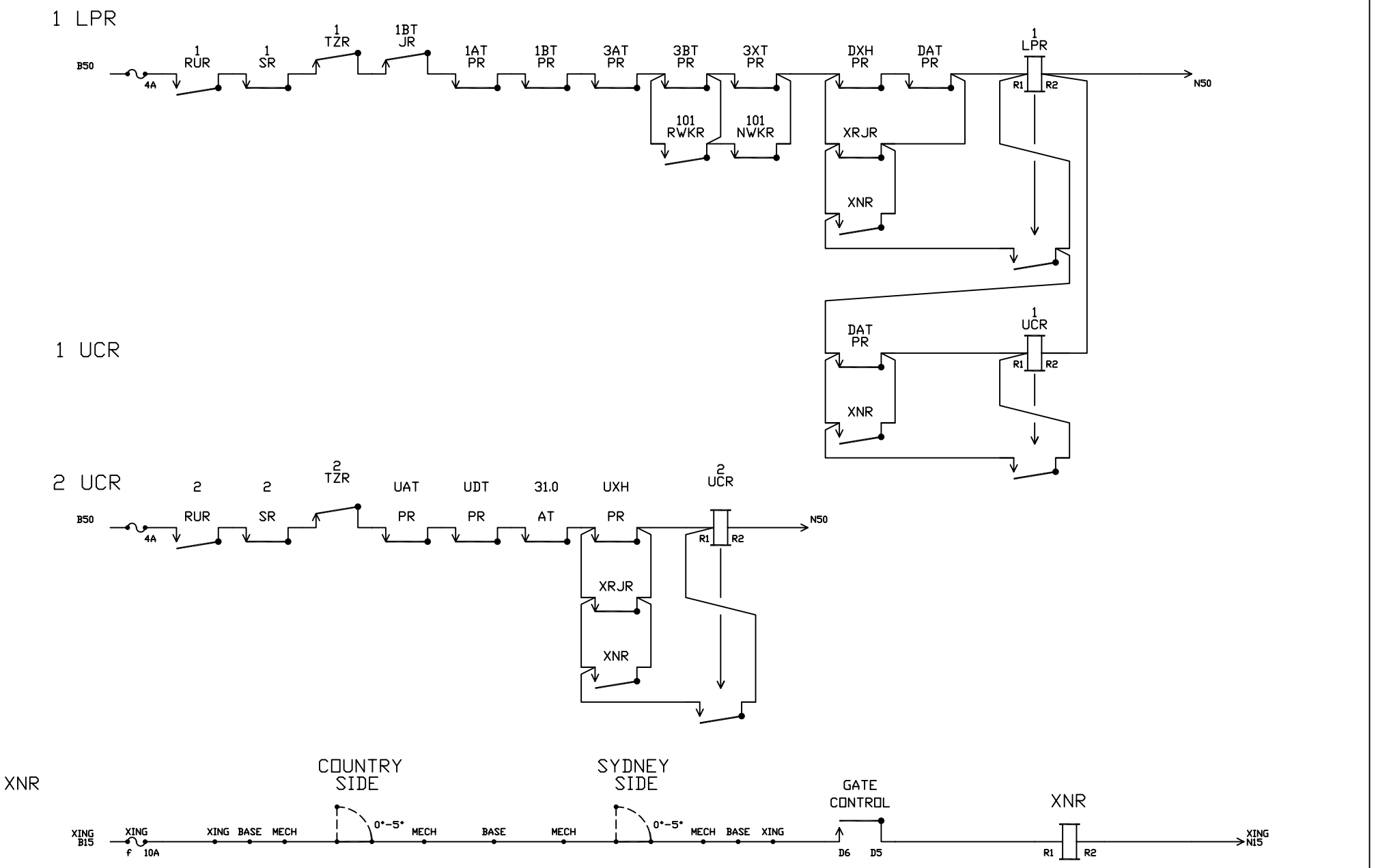
NOTE:
OUTPUT RELAY
VOLTAGE STRAPPING
12V-D1/D2
24V-D7/D2
50V-D8/D2

* STRAPPING SHOWN FOR
50V GATE DELAY RELAY

D3/D4 LOOP WIRING MUST
BE LESS THAN 2m

GATE CONTROL

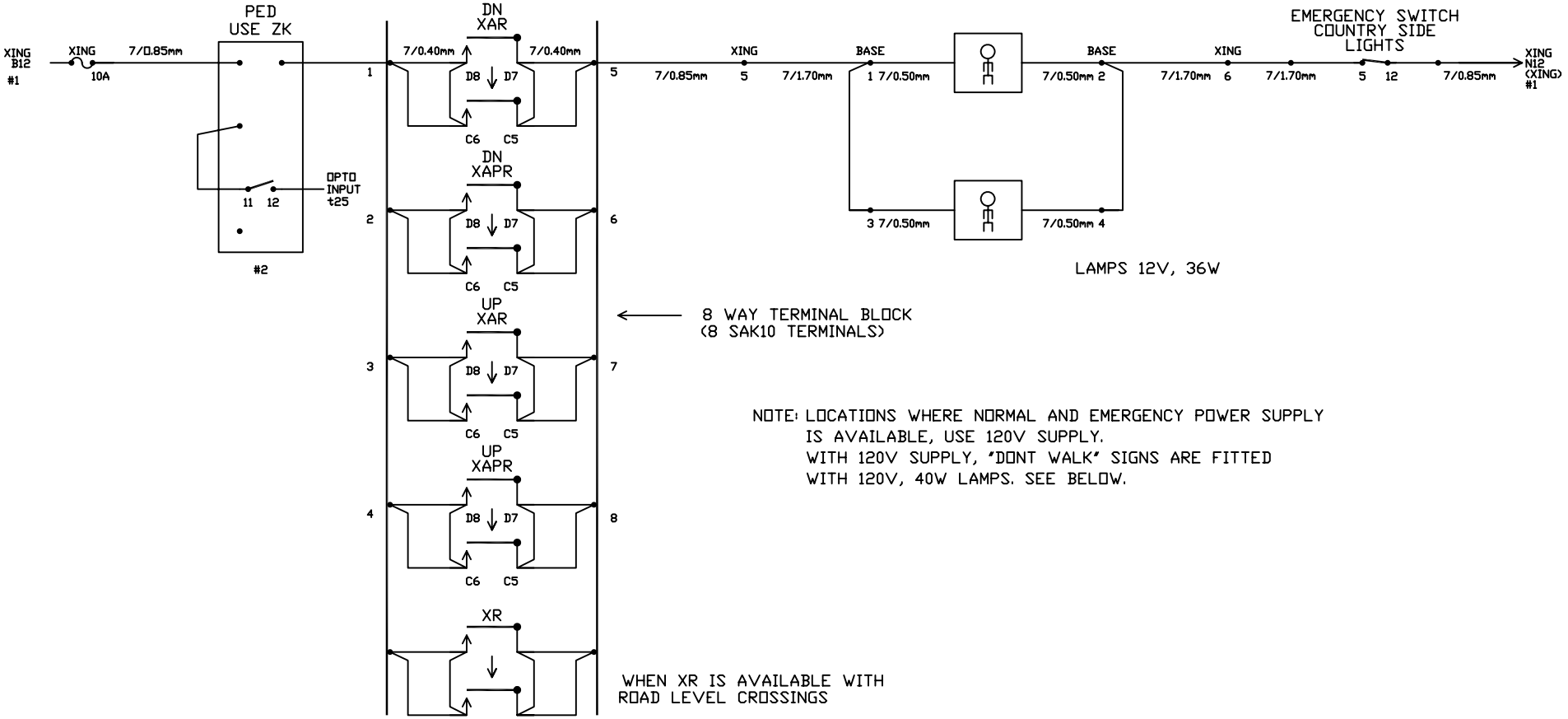
ISSUE-02
30-12-99
ISSUE-01
26-10-92



ISSUE 01
23.10.91

14-03-03	ISSUE-03						Rev 01	CSTDX23	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X23	CB: STD1

COUNTRY SIDE "DON'T WALK"



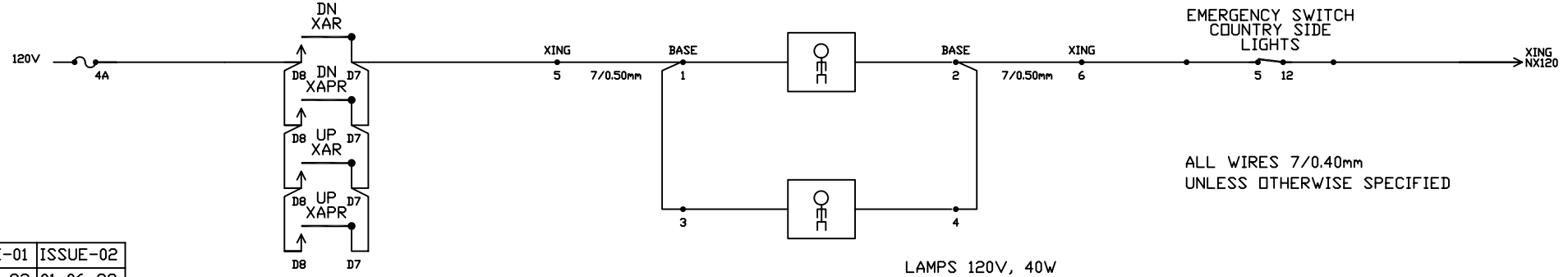
LAMPS 12V, 36W

← 8 WAY TERMINAL BLOCK
(8 SAK10 TERMINALS)

NOTE: LOCATIONS WHERE NORMAL AND EMERGENCY POWER SUPPLY
IS AVAILABLE, USE 120V SUPPLY.
WITH 120V SUPPLY, 'DONT WALK' SIGNS ARE FITTED
WITH 120V, 40W LAMPS. SEE BELOW.

WHEN XR IS AVAILABLE WITH
ROAD LEVEL CROSSINGS

ALTERNATE CIRCUIT WHERE 120V SUPPLY IS AVAILABLE



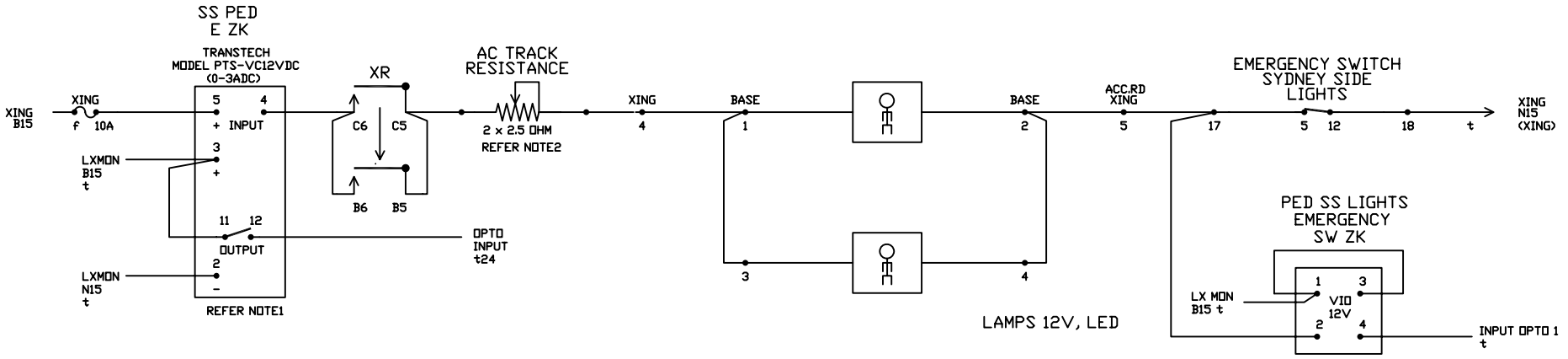
ALL WIRES 7/0.40mm
UNLESS OTHERWISE SPECIFIED

LAMPS 120V, 40W

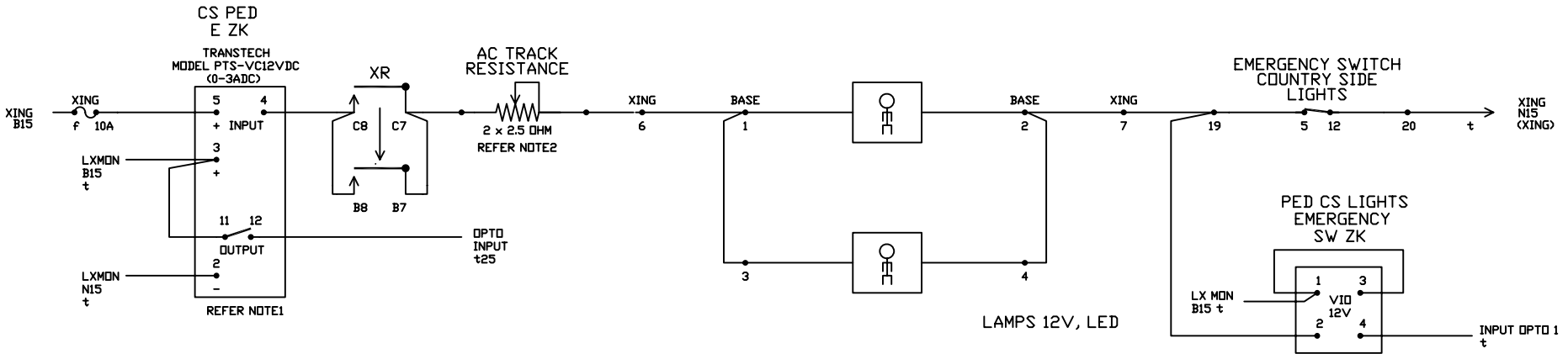
ISSUE-01	ISSUE-02
26-10-92	01-06-98

				29/5/03	11:26			CSTD1X24	PEDESTRIAN CROSSING		SHT: X24	CB: CSTD1

SYDNEY SIDE "DON'T WALK"



COUNTRY SIDE "DON'T WALK"

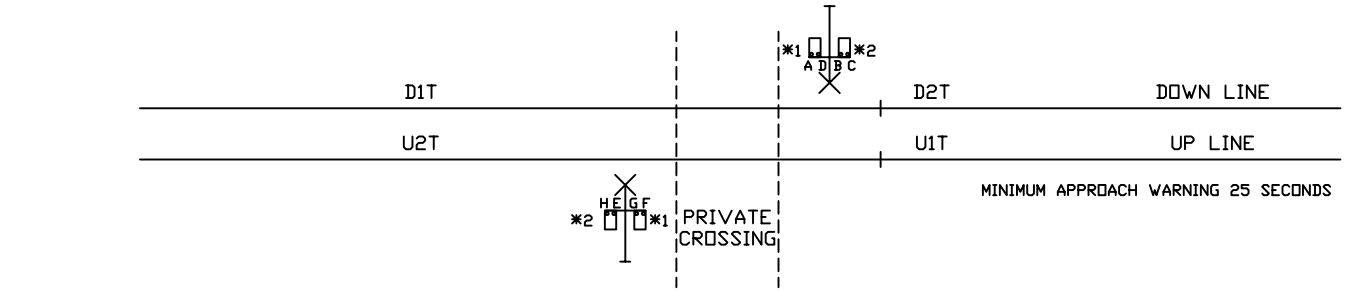


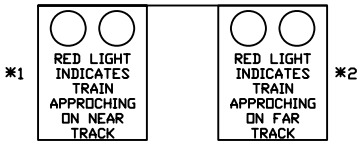
12VDC LED PEDESTRIAN LIGHTS

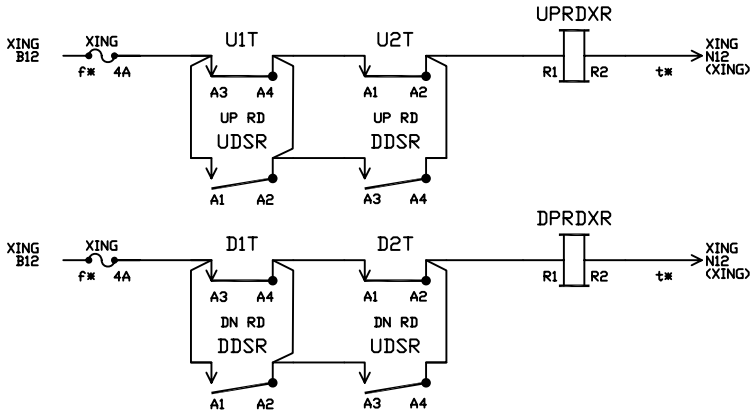
ALL WIRES 7/0.40mm UNLESS
OTHERWISE SPECIFIED

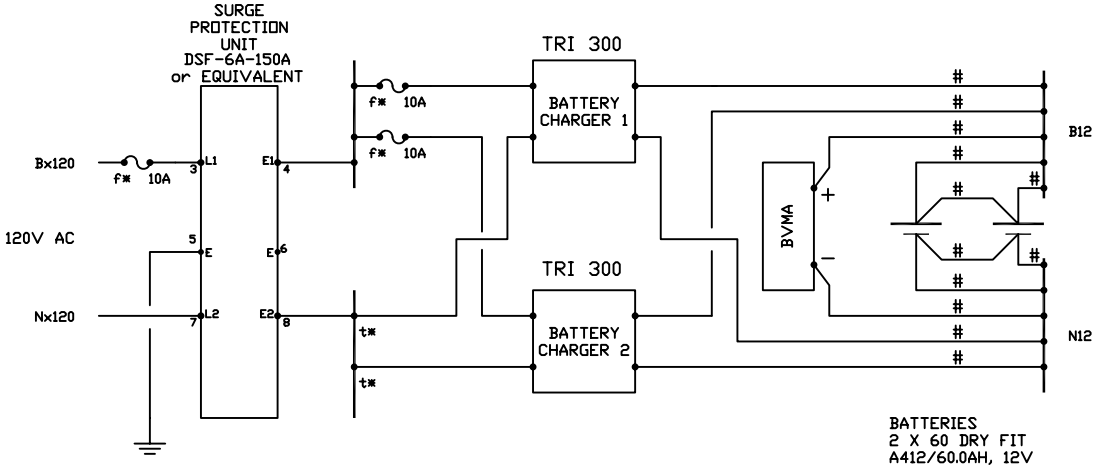
NOTE 1: ADJUST OUTPUT ALARM TO
DETECT LOSS OF ONE OUT OF TWO LIGHTS.

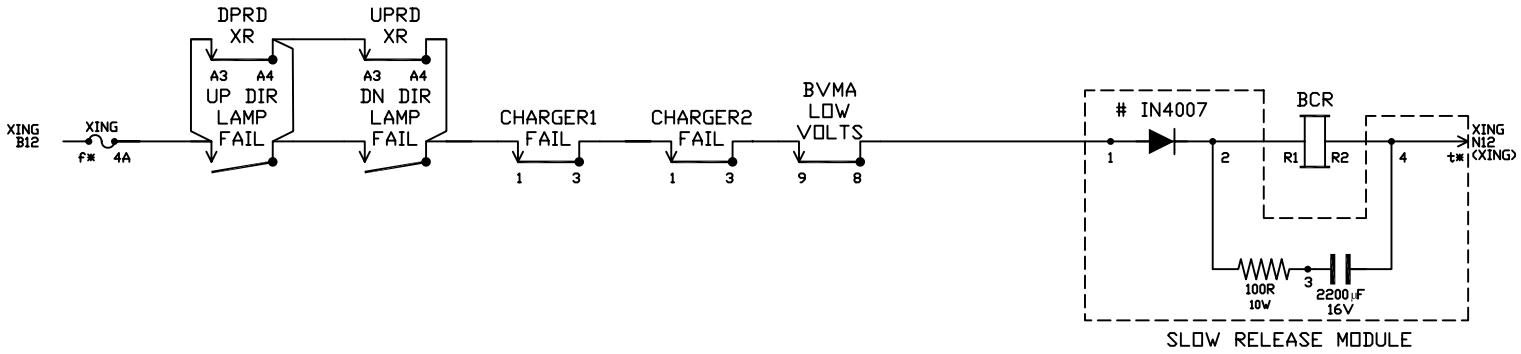
NOTE2: ADJUST VOLTAGE ACCROSS LIGHTS
TO 13.2 VOLTS


*1
A D B C
*2
D1T
D2T
DOWN LINE
U2T
U1T
UP LINE
MINIMUM APPROACH WARNING 25 SECONDS
H E G F
*2
*1
PRIVATE CROSSING

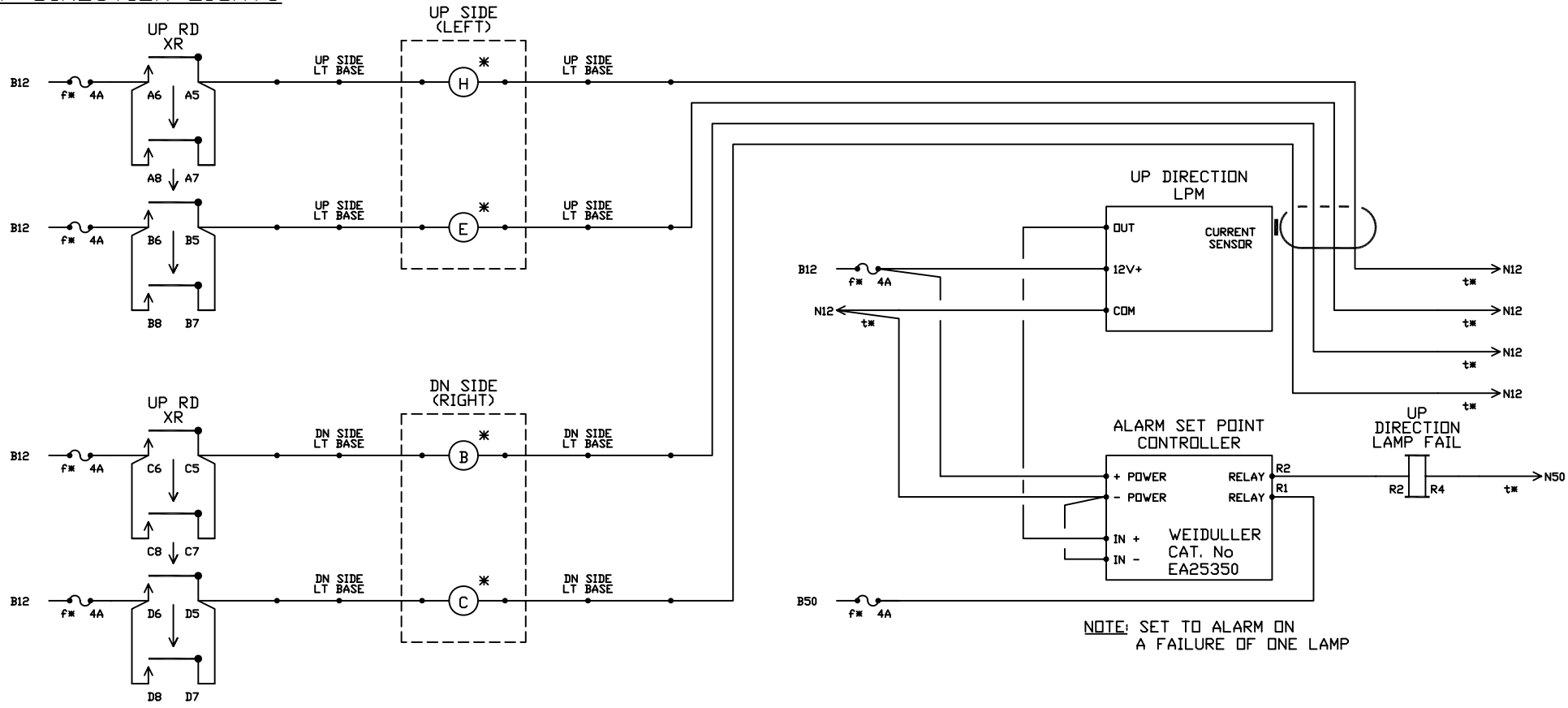

*1
RED LIGHT INDICATES TRAIN APPROCHING ON NEAR TRACK
RED LIGHT INDICATES TRAIN APPROCHING ON FAR TRACK
*2


XING B12
XING
f* 4A
U1T
U2T
UPRDXR
A3 A4
UP RD
UDSR
A1 A2
A1 A2
UP RD
DDSR
A3 A4
R1 R2
t*
XING N12 (XING)
XING B12
XING
f* 4A
D1T
D2T
DPRDXR
A3 A4
DN RD
DDSR
A1 A2
A1 A2
DN RD
UDSR
A3 A4
R1 R2
t*
XING N12 (XING)


SURGE PROTECTION UNIT DSF-6A-150A or EQUIVALENT
Bx120
f* 10A
3 L1
E1 4
120V AC
5 E
E 6
Nx120
7 L2
E2 8
f* 10A
f* 10A
t*
t*
TRI 300
BATTERY CHARGER 1
TRI 300
BATTERY CHARGER 2
BVMA
+
–
B12
N12
BATTERIES
2 X 60 DRY FIT
A412/60.0AH, 12V
7/0.85 WIRE


XING B12
XING
f* 4A
DPRD XR
A3 A4
UP DIR LAMP FAIL
UPRD XR
A3 A4
DN DIR LAMP FAIL
CHARGER1 FAIL
1 3
CHARGER2 FAIL
1 3
BVMA LOW VOLTS
9 8
IN4007
1
2
BCR
R1 R2
4
t*
XING N12 (XING)
100R 10W
3
2200µF 16V
SLOW RELEASE MODULE

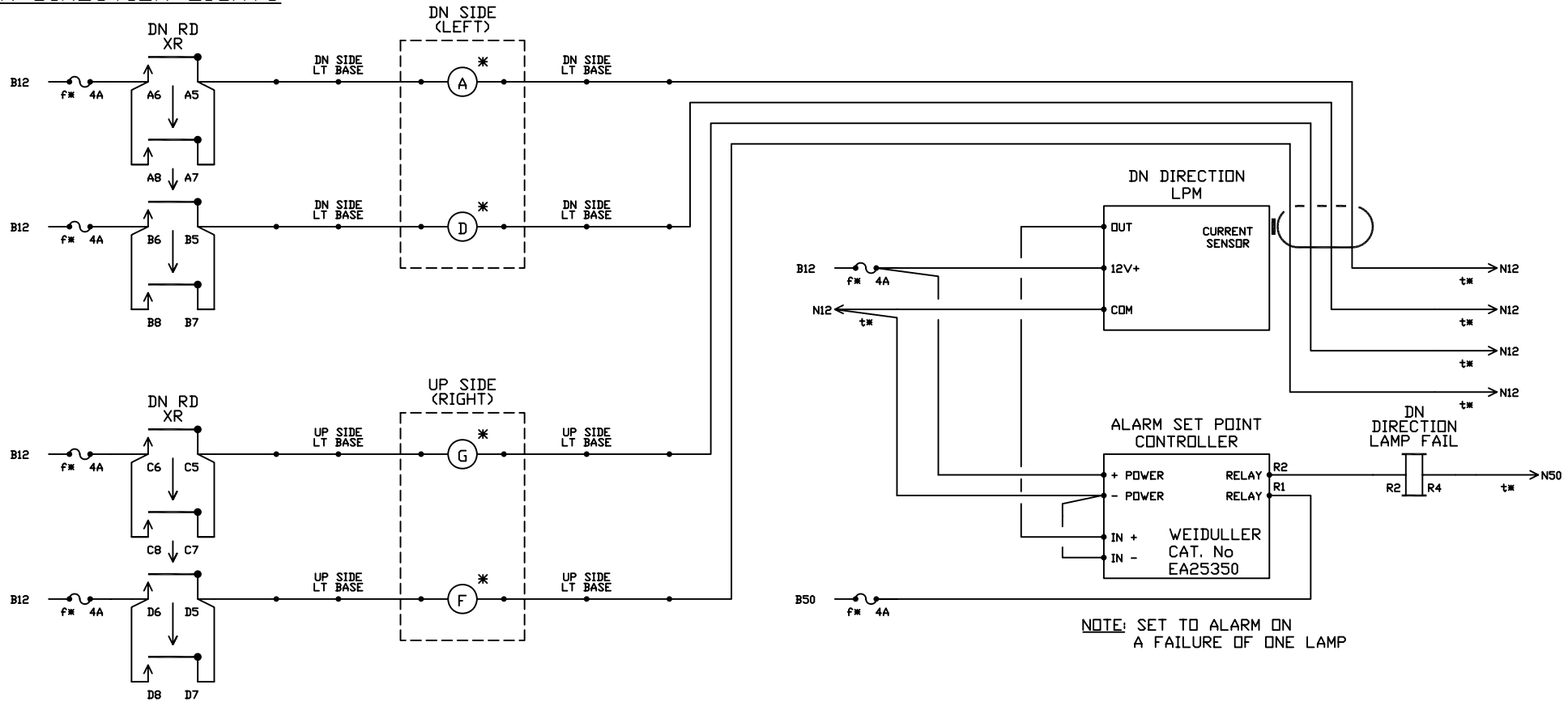
UP DIRECTION LIGHTS



NOTE: SET TO ALARM ON A FAILURE OF ONE LAMP

* LED INDICATOR 12V DC, 6W HIGH CONTRAST, SUNLIGHT VIEWABLE, 90mm RED, ULTRA BRIGHT

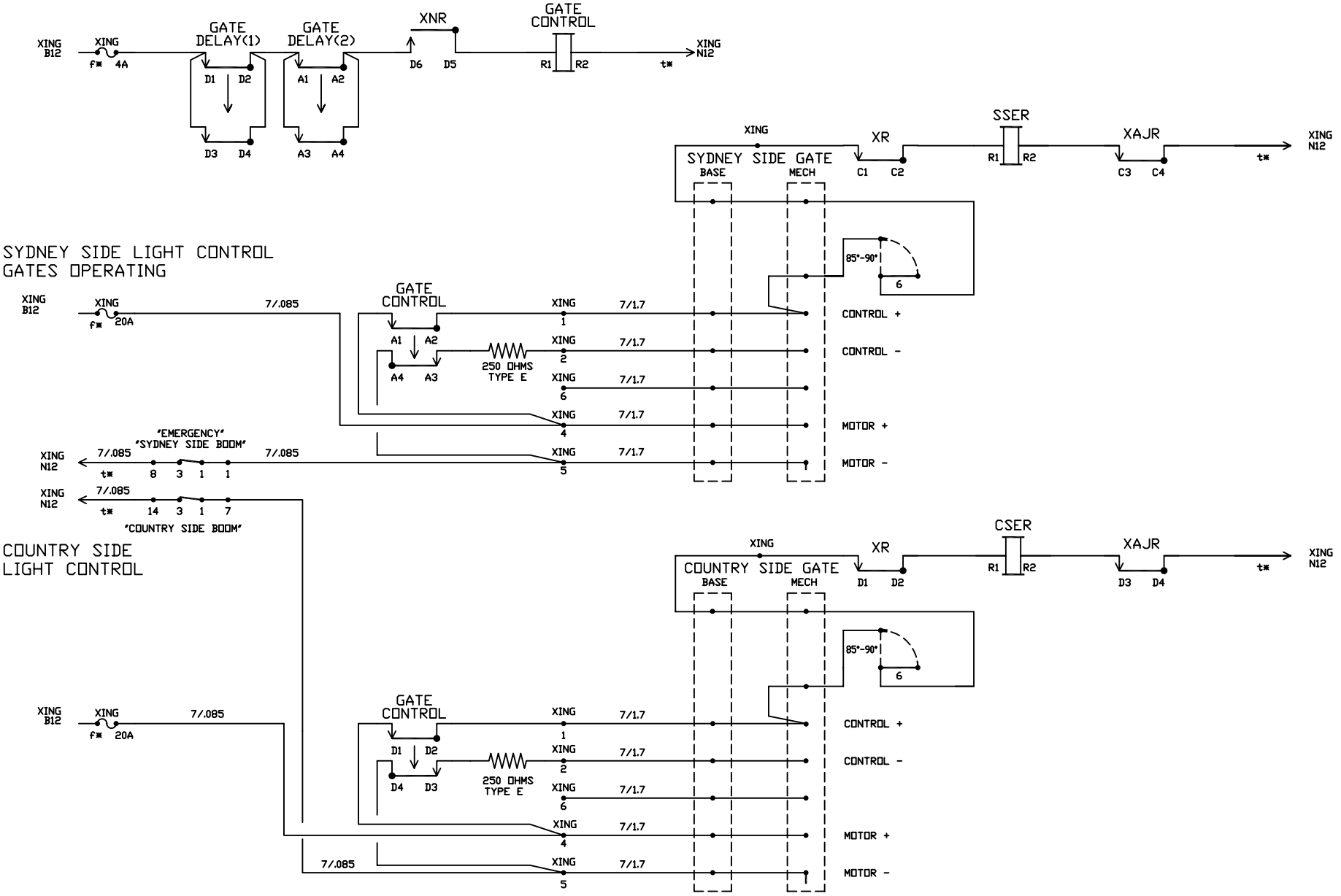
DN DIRECTION LIGHTS



NOTE: SET TO ALARM ON A FAILURE OF ONE LAMP

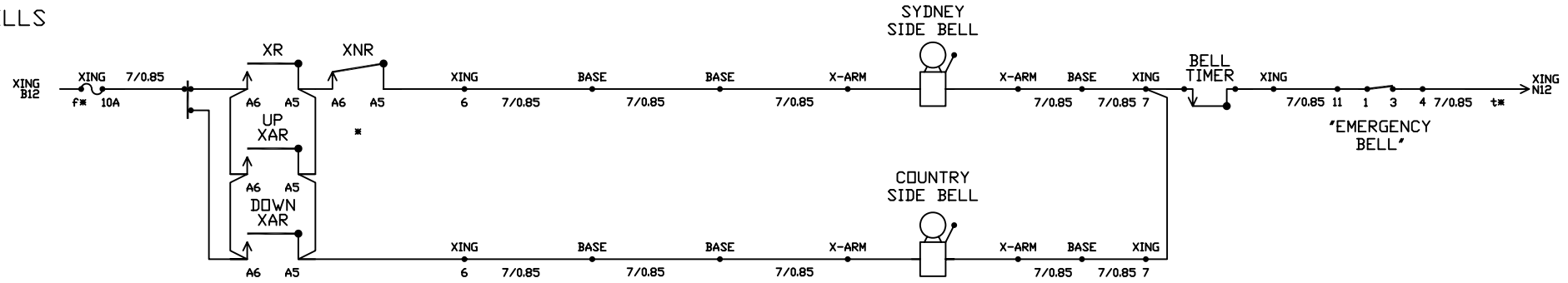
* LED INDICATOR 12V DC, 6W HIGH CONTRAST, SUNLIGHT VIEWABLE, 90mm RED, ULTRA BRIGHT

23-08-95	ISSUE-01						Rev 01	CSTDX29	SINGLE LINE WITH GATE PROTECTION		SHT: X29	CB: STD1

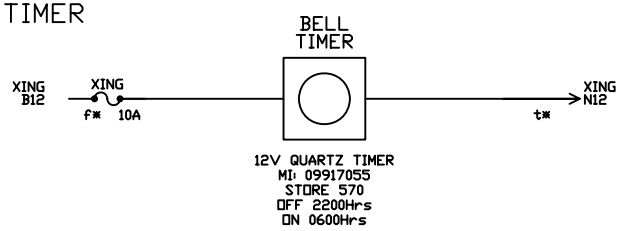


23-08-95	ISSUE-01							CSTDX30	SINGLE LINE WITH GATE PROTECTION		SHT: X30	CB: STD1

BELLS



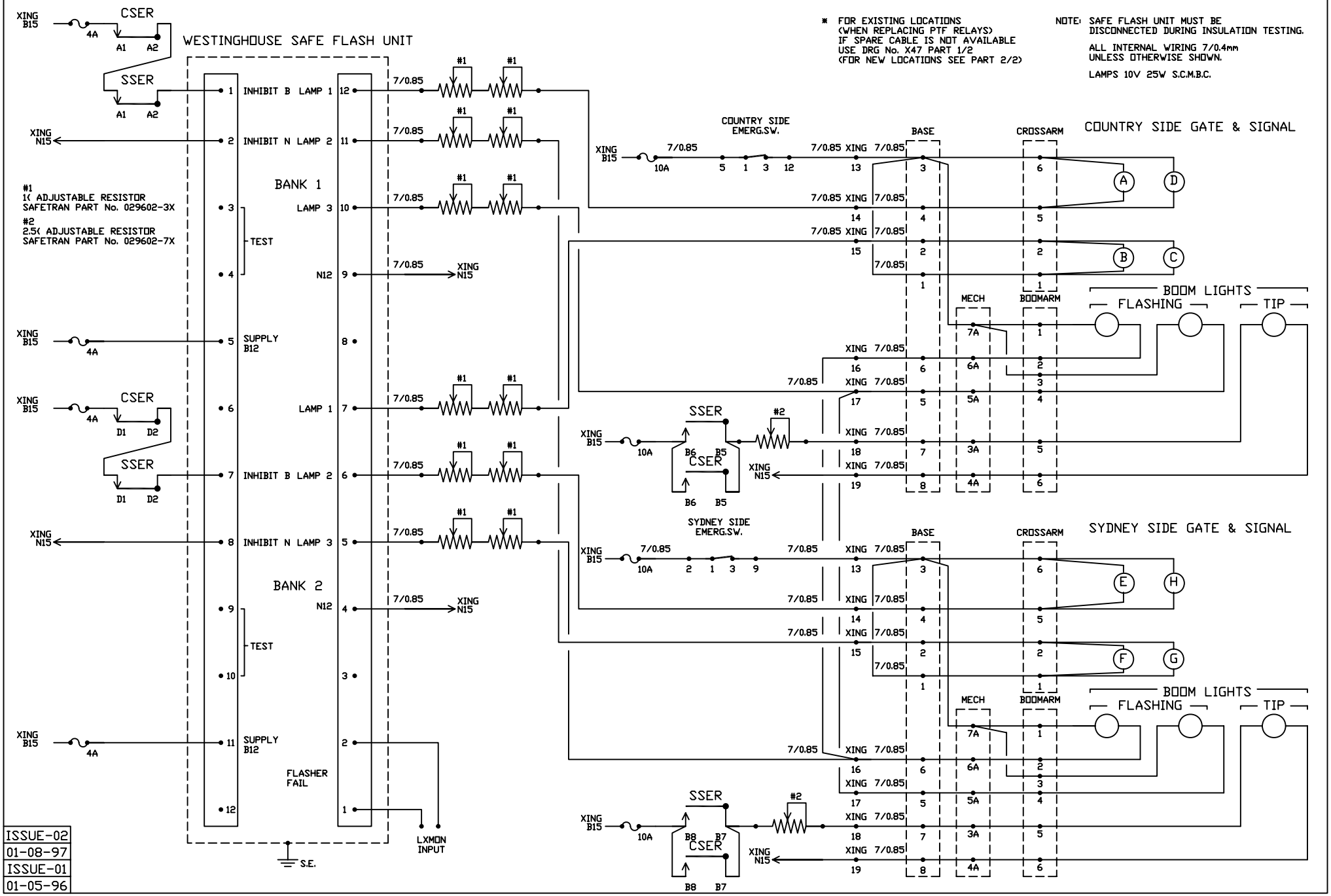
BELL TIMER



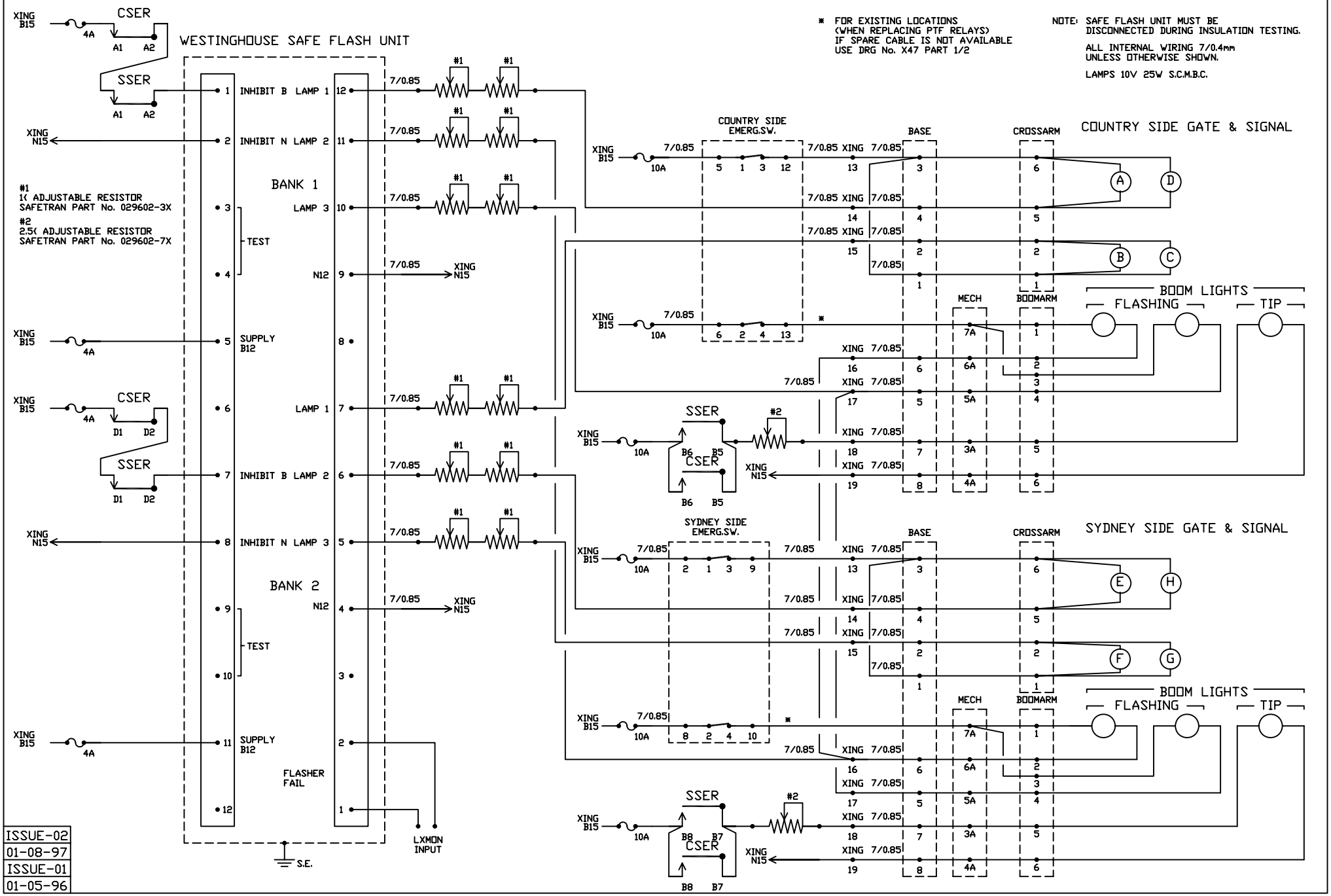
SUPPRESSION OF BELL

* BELL ON MORE DENSELY POPULATED SIDE OF THE CROSSING SHOULD BE SUPPRESSED WHEN THE GATES ARE NORMAL.

30-12-99	ISSUE-03							CSTDX31	LEVEL CROSSING-DOUBLE LINE AUTOMATIC-WBS FLASHER		SHT: X31	CB: STD1

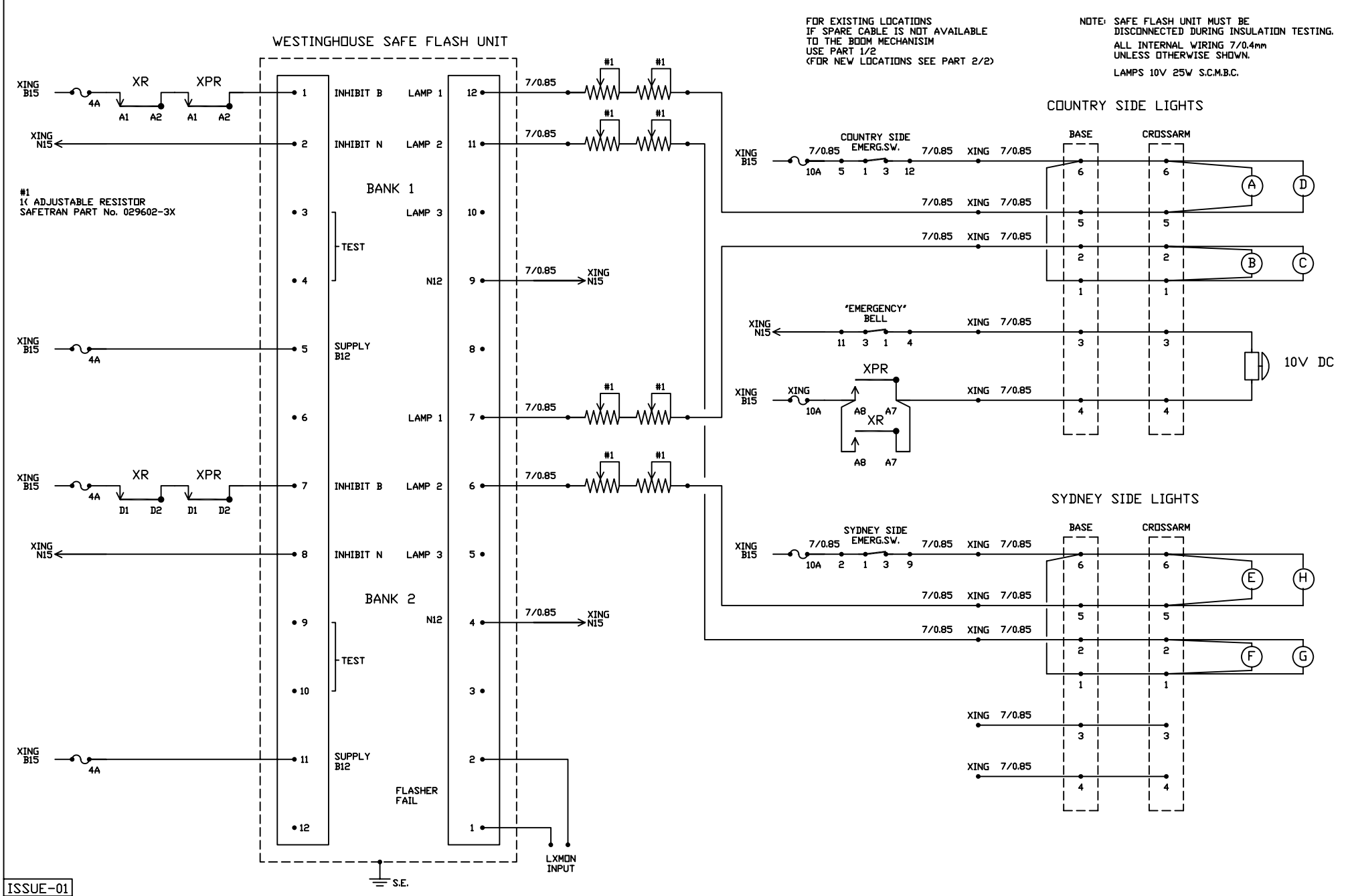


30-12-99	ISSUE-03							CSTDX32	LEVEL CROSSING-DOUBLE LINE AUTOMATIC-WBS FLASHER		SHT: X32	CB: STD1



ISSUE-02
01-08-97
ISSUE-01
01-05-96

01-08-97	ISSUE-02						Rev 01	CSTDX33	LEVEL CROSSING-SINGLE LINE AUTOMATIC-WBS FLASHER		SHT: X33	CB: STD1



ISSUE-01
01-05-96

01-08-97	ISSUE-02						Rev 01	CSTDX34	LEVEL CROSSING-SINGLE LINE AUTOMATIC-WBS FLASHER		SHT: X34	CB: STD1

* FOR EXISTING LOCATIONS (WHEN REPLACING PTF RELAYS) IF SPARE CABLE IS NOT AVAILABLE USE DRAWING No. X48 PART 1/2

NOTE: SAFE FLASH UNIT MUST BE DISCONNECTED DURING INSULATION TESTING.
ALL INTERNAL WIRING 7/0.4mm UNLESS OTHERWISE SHOWN.
LAMPS 10V 25W S.C.M.B.C.

WESTINGHOUSE SAFE FLASH UNIT

#1
1(ADJUSTABLE RESISTOR
SAFETRAN PART No. 029602-3X

XING B15 — 4A — XR — XPR — A1 A2 A1 A2 — 1 — INHIBIT B — LAMP 1 — 12 — 7/0.85 — #1 #1
XING N15 — 2 — INHIBIT N — LAMP 2 — 11 — 7/0.85 — #1 #1
BANK 1
3 — LAMP 3 — 10
TEST
4 — N12 — 9 — 7/0.85 — XING N15
XING B15 — 4A — 5 — SUPPLY B12 — 8
6 — LAMP 1 — 7 — 7/0.85 — #1 #1
XING B15 — 4A — XR — XPR — D1 D2 D1 D2 — 7 — INHIBIT B — LAMP 2 — 6 — 7/0.85 — #1 #1
XING N15 — 8 — INHIBIT N — LAMP 3 — 5
BANK 2
9 — N12 — 4 — 7/0.85 — XING N15
TEST
10 — 3
XING B15 — 4A — 11 — SUPPLY B12 — 2
FLASHER FAIL
12 — 1 — LXMON INPUT
S.E.

COUNTRY SIDE LIGHTS

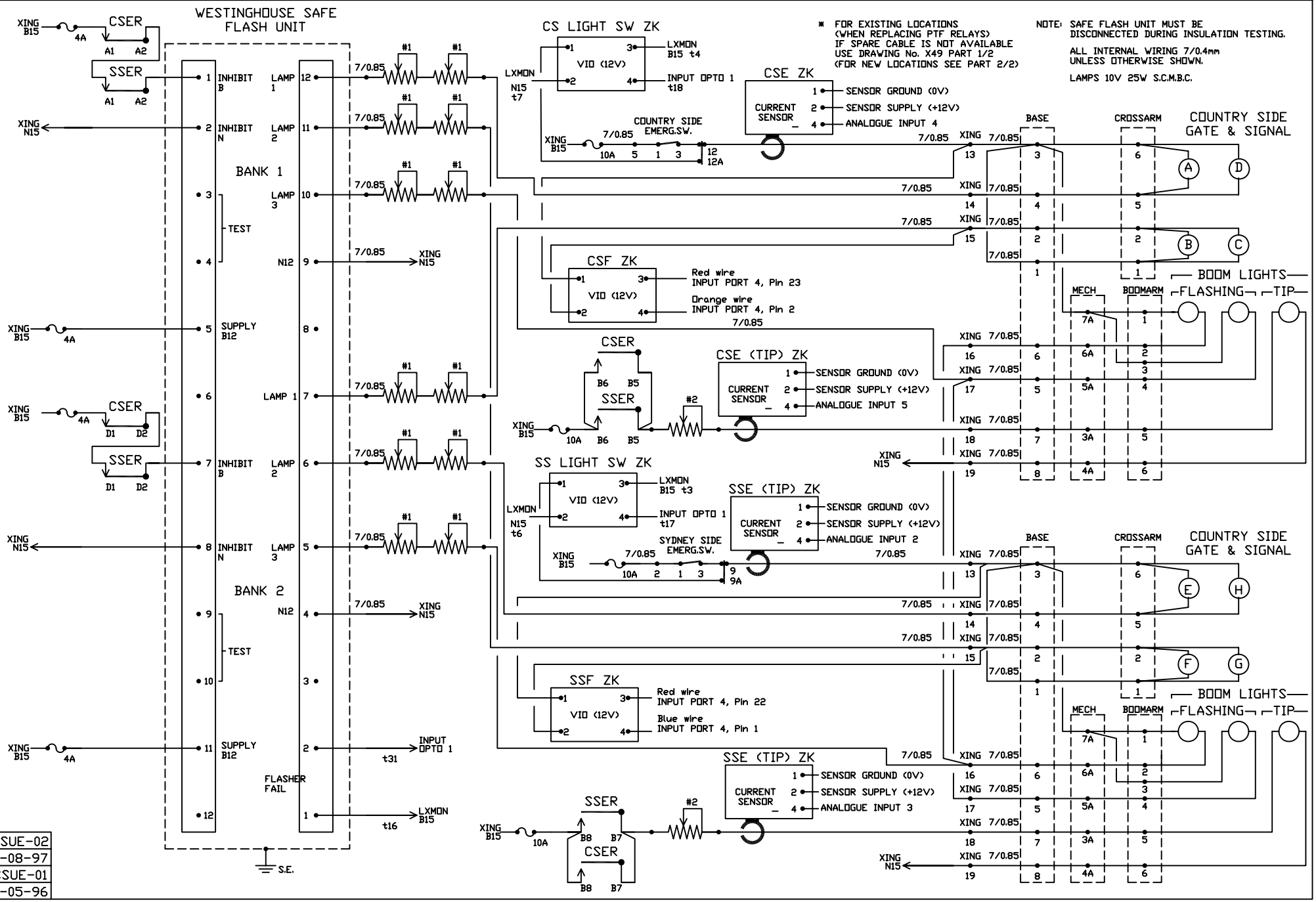
XING B15 — 10A — 7/0.85 — COUNTRY SIDE EMERG.SW. (5 1 3 12) — 7/0.85 XING 7/0.85 — BASE 6 — CROSSARM 6 — A D
7/0.85 XING 7/0.85 — 5 — 5
7/0.85 XING 7/0.85 — 2 — 2 — B C
XING B15 — 10A — 7/0.85 — (6 2 4 13) — 7/0.85 XING 7/0.85 * — 1 — 1
"EMERGENCY" BELL (11 3 1 4)
XING N15 — XING 7/0.85 — 3 — 3 — 10V DC
XING B15 — XING — 10A — XR (A8 A7) XPR (A8 A7) — XING 7/0.85 — 4 — 4

SYDNEY SIDE LIGHTS

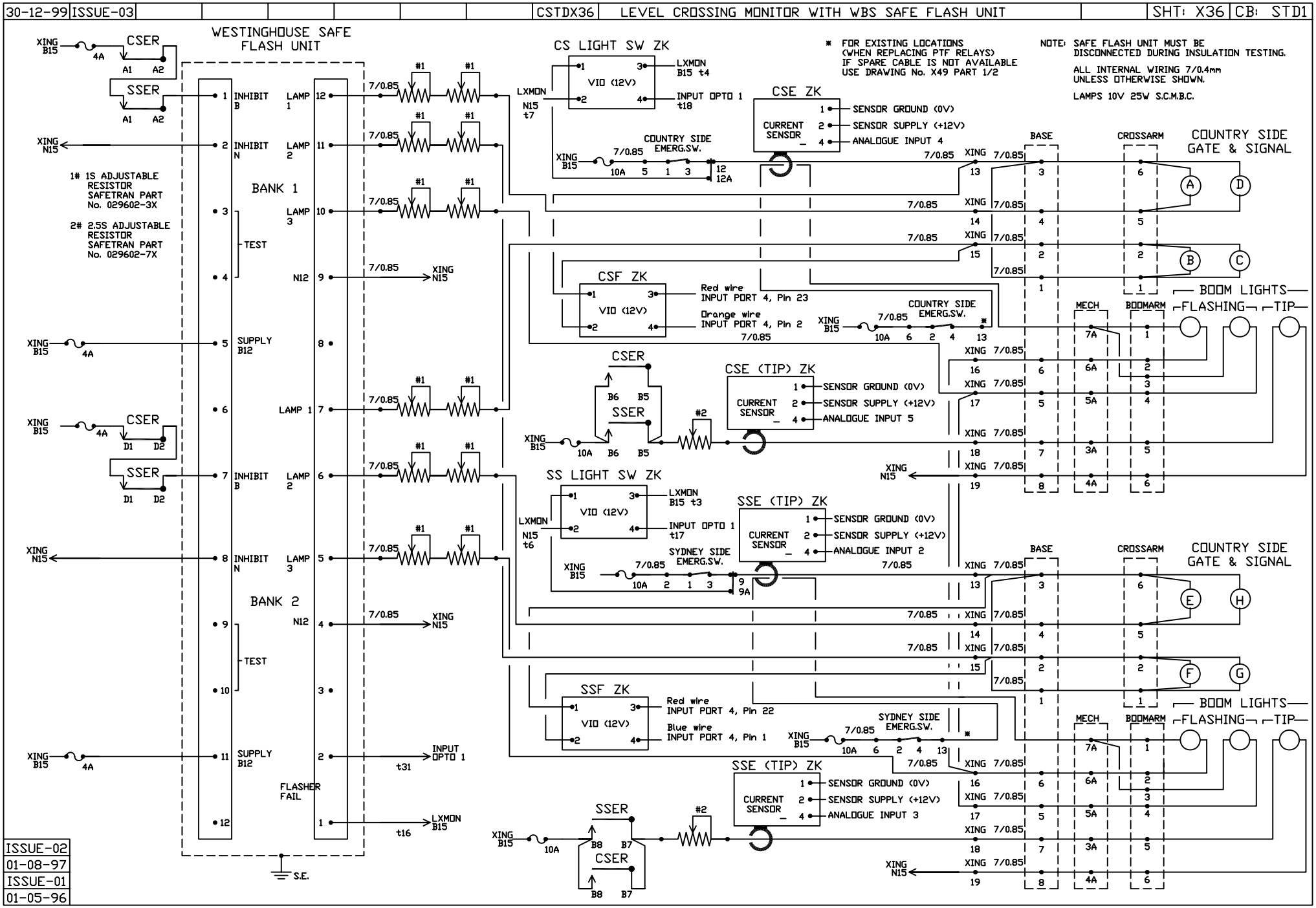
XING B15 — 10A — 7/0.85 — SYDNEY SIDE EMERG.SW. (5 1 3 12) — 7/0.85 XING 7/0.85 — BASE 6 — CROSSARM 6 — E H
7/0.85 XING 7/0.85 — 5 — 5
7/0.85 XING 7/0.85 — 2 — 2 — F G
XING B15 — 10A — 7/0.85 — (6 2 4 13) — 7/0.85 XING 7/0.85 * — 1 — 1
XING 7/0.85 — 3 — 3
XING 7/0.85 — 4 — 4

ISSUE-01
01-05-96

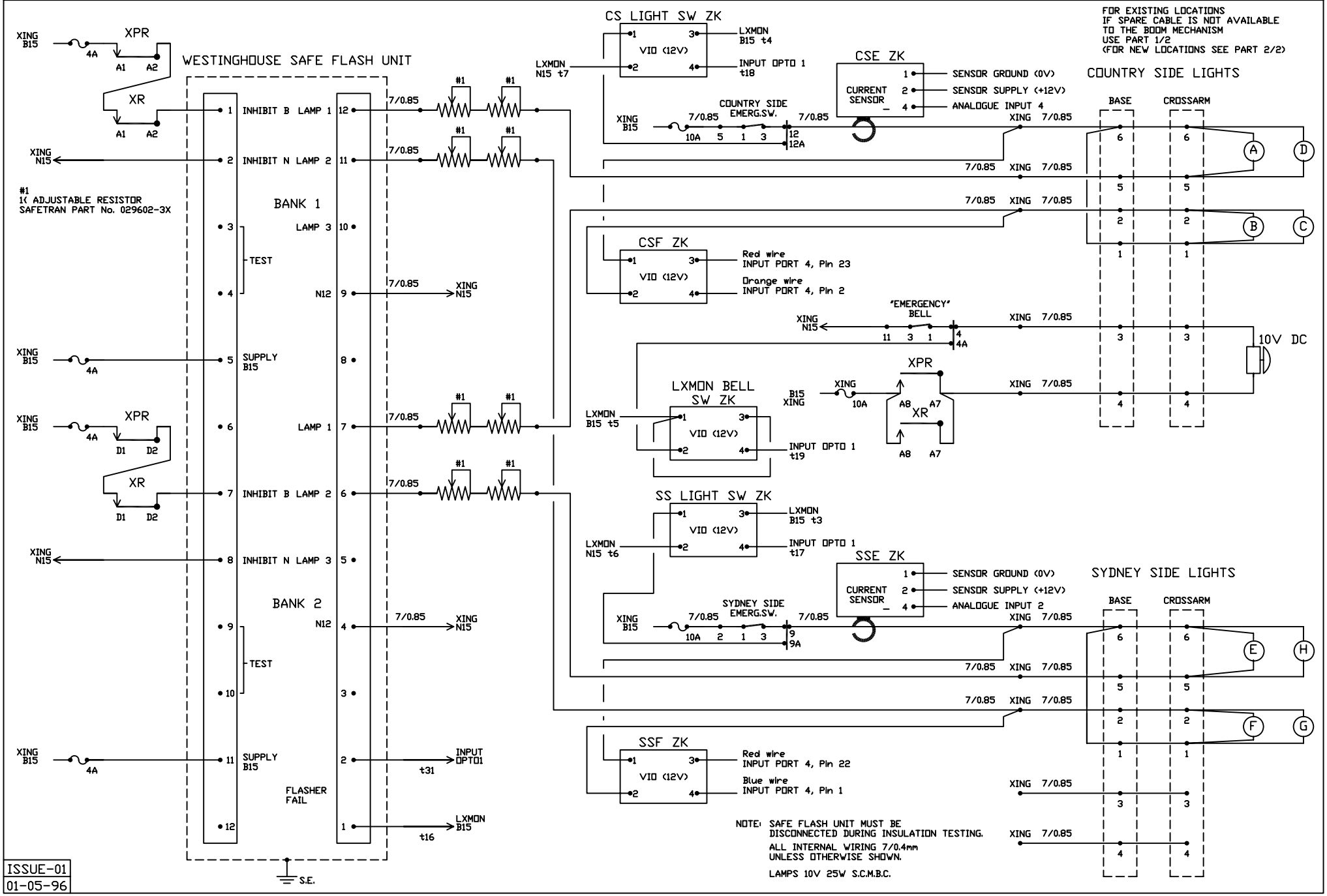
30-12-99	ISSUE-03						CSTDX35	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT		SHT: X35	CB: STD1



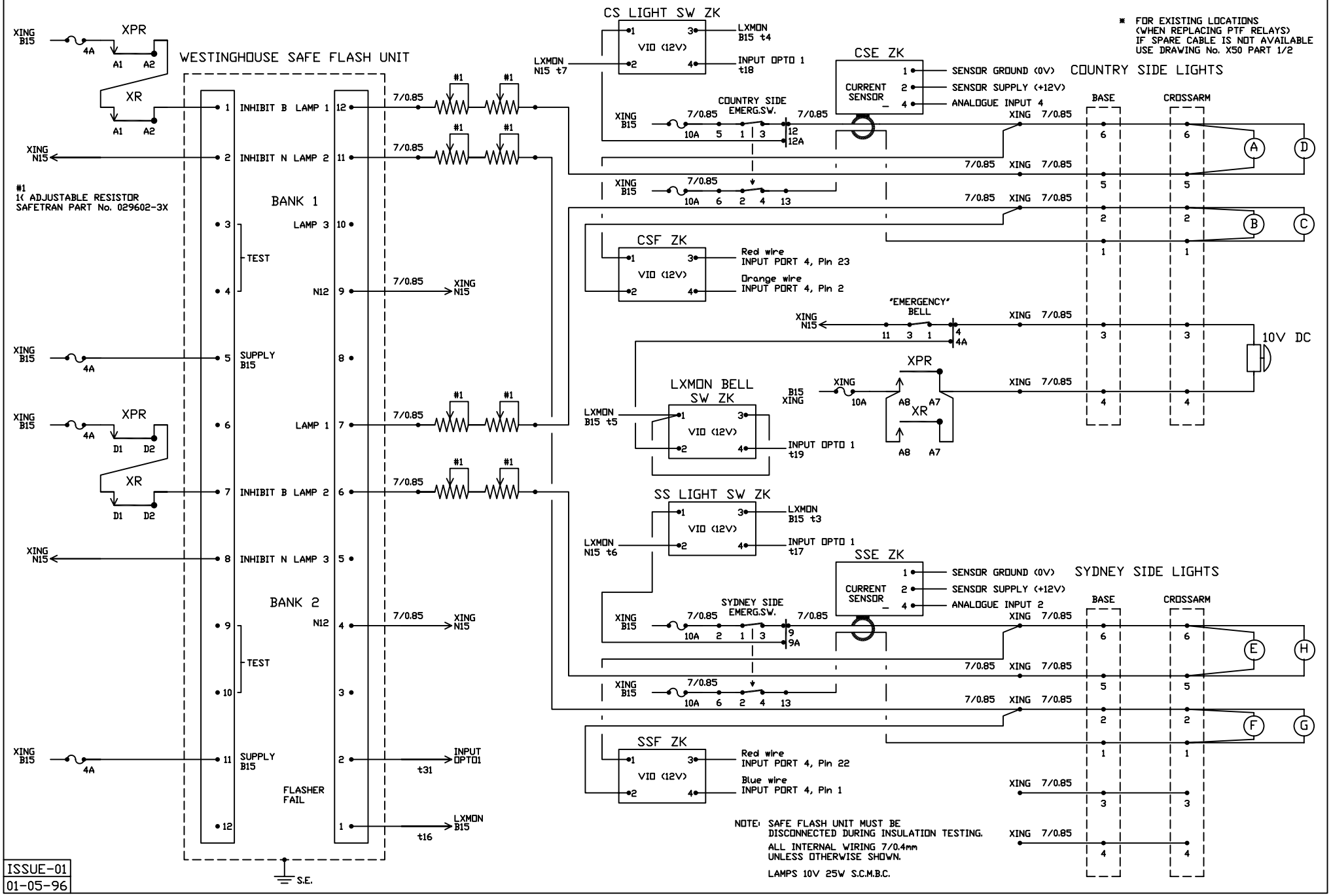
ISSUE-02
01-08-97
ISSUE-01
01-05-96


30-12-99 ISSUE-03
CSTDX36 LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT
SHT: X36 CB: STD1
WESTINGHOUSE SAFE FLASH UNIT
CS LIGHT SW ZK
CSE ZK
CSF ZK
CSE (TIP) ZK
SS LIGHT SW ZK
SSE (TIP) ZK
SSF ZK
SSE (TIP) ZK
CSER
SSER
VID (12V)
CURRENT SENSOR
SENSOR GROUND (0V)
SENSOR SUPPLY (+12V)
ANALOGUE INPUT 4
ANALOGUE INPUT 5
ANALOGUE INPUT 2
ANALOGUE INPUT 3
Red wire INPUT PORT 4, Pin 23
Orange wire INPUT PORT 4, Pin 2
Red wire INPUT PORT 4, Pin 22
Blue wire INPUT PORT 4, Pin 1
COUNTRY SIDE EMERG.SW.
SYDNEY SIDE EMERG.SW.
INHIBIT B
INHIBIT N
SUPPLY B12
TEST
LAMP 1
LAMP 2
LAMP 3
BANK 1
BANK 2
FLASHER FAIL
INPUT OPTO 1
LXMON B15
XING B15
XING N15
BASE
CROSSARM
MECH
BOOMARM
COUNTRY SIDE GATE & SIGNAL
BOOM LIGHTS
FLASHING
TIP
* FOR EXISTING LOCATIONS (WHEN REPLACING PTF RELAYS) IF SPARE CABLE IS NOT AVAILABLE USE DRAWING No. X49 PART 1/2
NOTE: SAFE FLASH UNIT MUST BE DISCONNECTED DURING INSULATION TESTING.
ALL INTERNAL WIRING 7/0.4mm UNLESS OTHERWISE SHOWN.
LAMPS 10V 25W S.C.M.B.C.
1# 1S ADJUSTABLE RESISTOR SAFETRAN PART No. 029602-3X
2# 2.5S ADJUSTABLE RESISTOR SAFETRAN PART No. 029602-7X
ISSUE-02 01-08-97
ISSUE-01 01-05-96

01-08-97	ISSUE-02						Rev 01	CSTDX37	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT		SHT: X37	CB: STD1



ISSUE-01
01-05-96



* FOR EXISTING LOCATIONS (WHEN REPLACING PTF RELAYS) IF SPARE CABLE IS NOT AVAILABLE USE DRAWING No. X50 PART 1/2

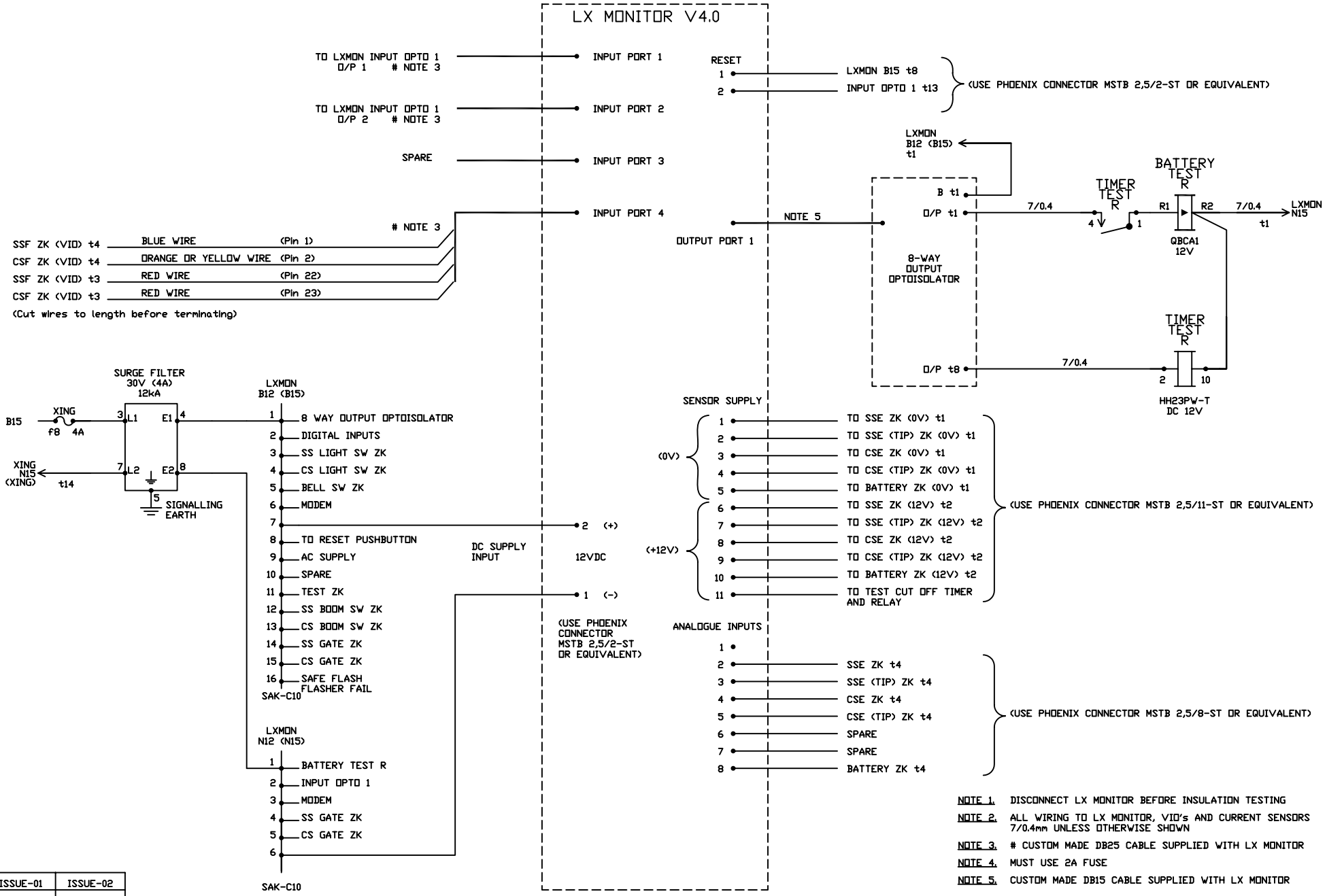
NOTE: SAFE FLASH UNIT MUST BE DISCONNECTED DURING INSULATION TESTING.

ALL INTERNAL WIRING 7/0.4mm UNLESS OTHERWISE SHOWN.

LAMPS 10V 25W S.C.M.B.C.

ISSUE-01
01-05-96

01-09-03	ISSUE-03						Rev 01	CSTDX39	LXMON CIRCUIT CONNECTIONS (WBS FLASHER)		SHT: X39	CB: STD1



NOTE 1. DISCONNECT LX MONITOR BEFORE INSULATION TESTING

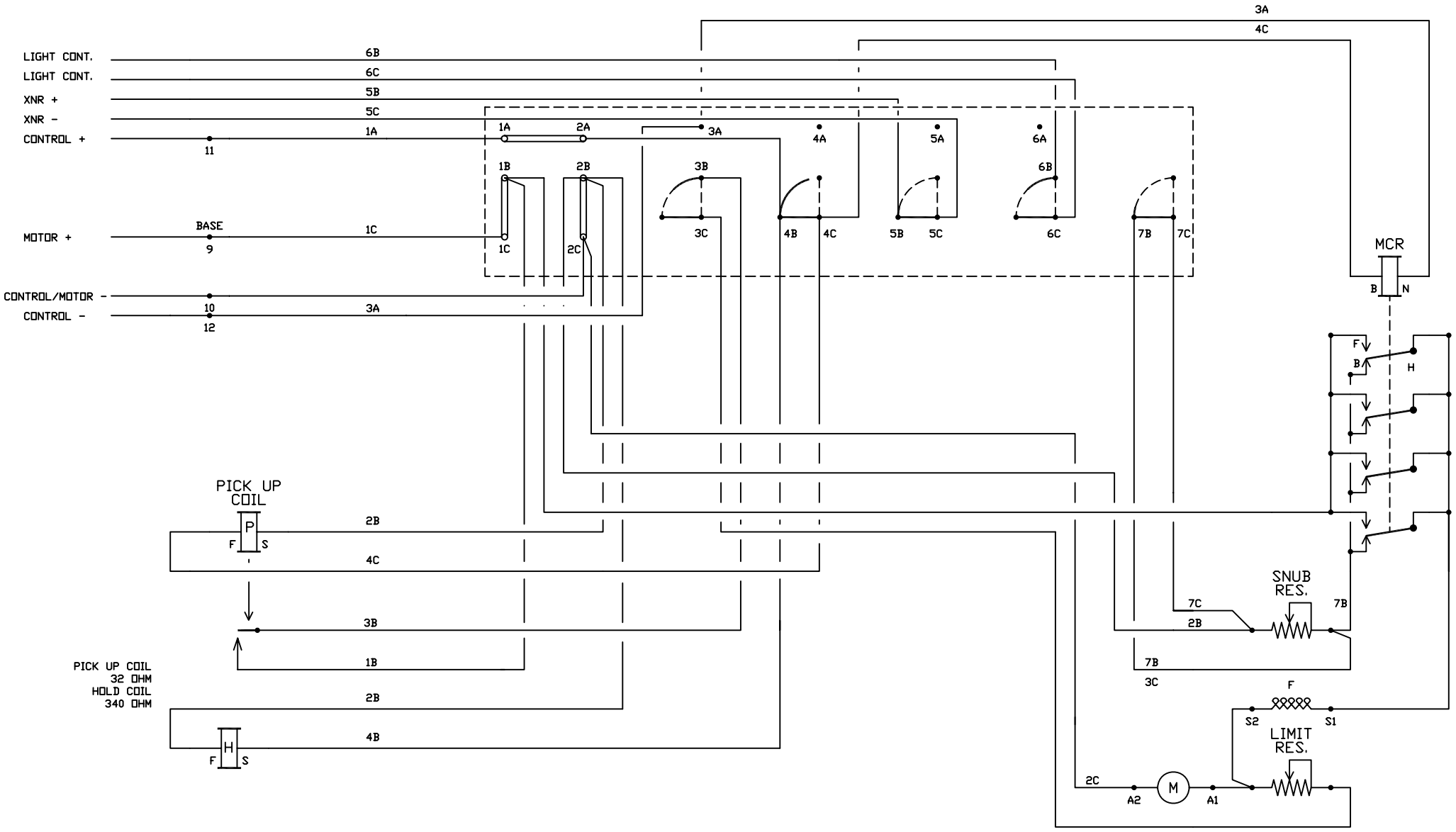
NOTE 2. ALL WIRING TO LX MONITOR, VID's AND CURRENT SENSORS 7/0.4mm UNLESS OTHERWISE SHOWN

NOTE 3. # CUSTOM MADE DB25 CABLE SUPPLIED WITH LX MONITOR

NOTE 4. MUST USE 2A FUSE

NOTE 5. CUSTOM MADE DB15 CABLE SUPPLIED WITH LX MONITOR

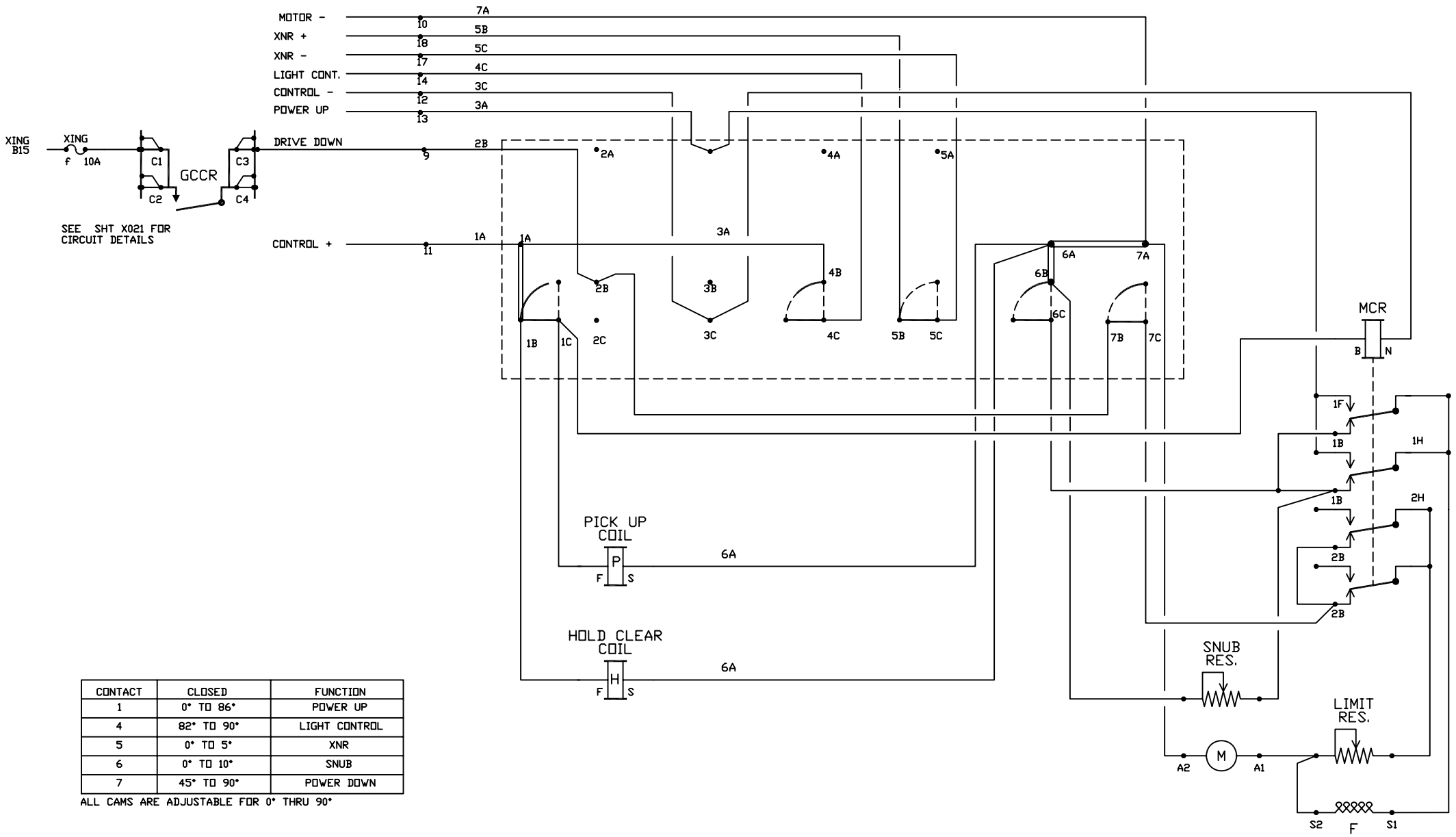
ISSUE-01	ISSUE-02
01-05-96	01-12-98



CONTACT	CLOSED	FUNCTION
3	45° TO 90°	MOTOR DOWN
4	0° TO 87°	MOTOR UP
5	0° TO 5°	XNR
6	85 TO 90°	LIGHT CONTROL
7	0° TO 5°	SNUB

ALL CAMS ARE ADJUSTABLE FOR 0° THRU 90°

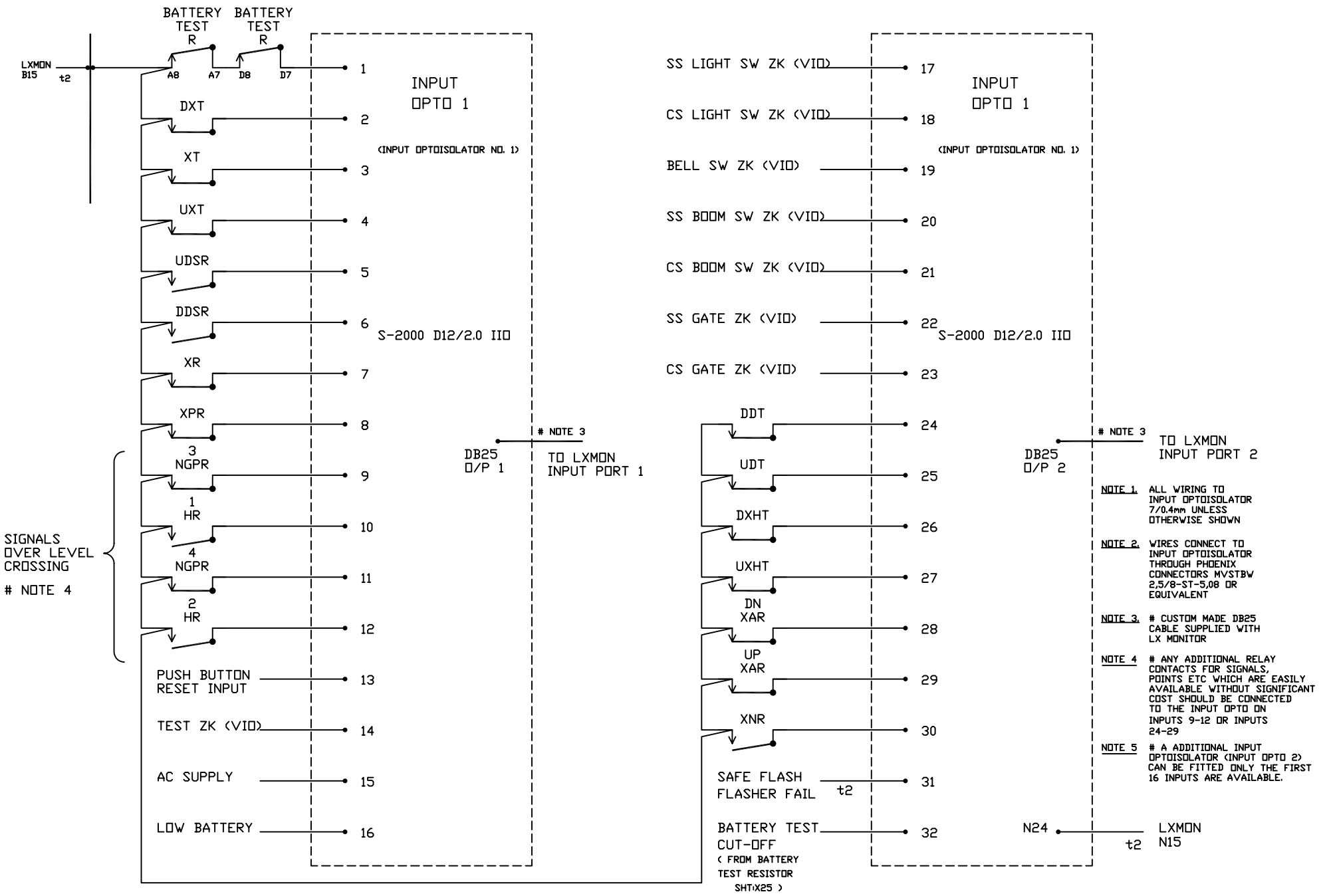
ISSUE 01
01-09-03
JOB NUMBER



CONTACT	CLOSED	FUNCTION
1	0° TO 86°	POWER UP
4	82° TO 90°	LIGHT CONTROL
5	0° TO 5°	XNR
6	0° TO 10°	SNUB
7	45° TO 90°	POWER DOWN

ALL CAMS ARE ADJUSTABLE FOR 0° THRU 90°

ISSUE 01
01-09-03
JOB NUMBER



NOTE 1. ALL WIRING TO INPUT OPTOISOLATOR 7/0.4mm UNLESS OTHERWISE SHOWN

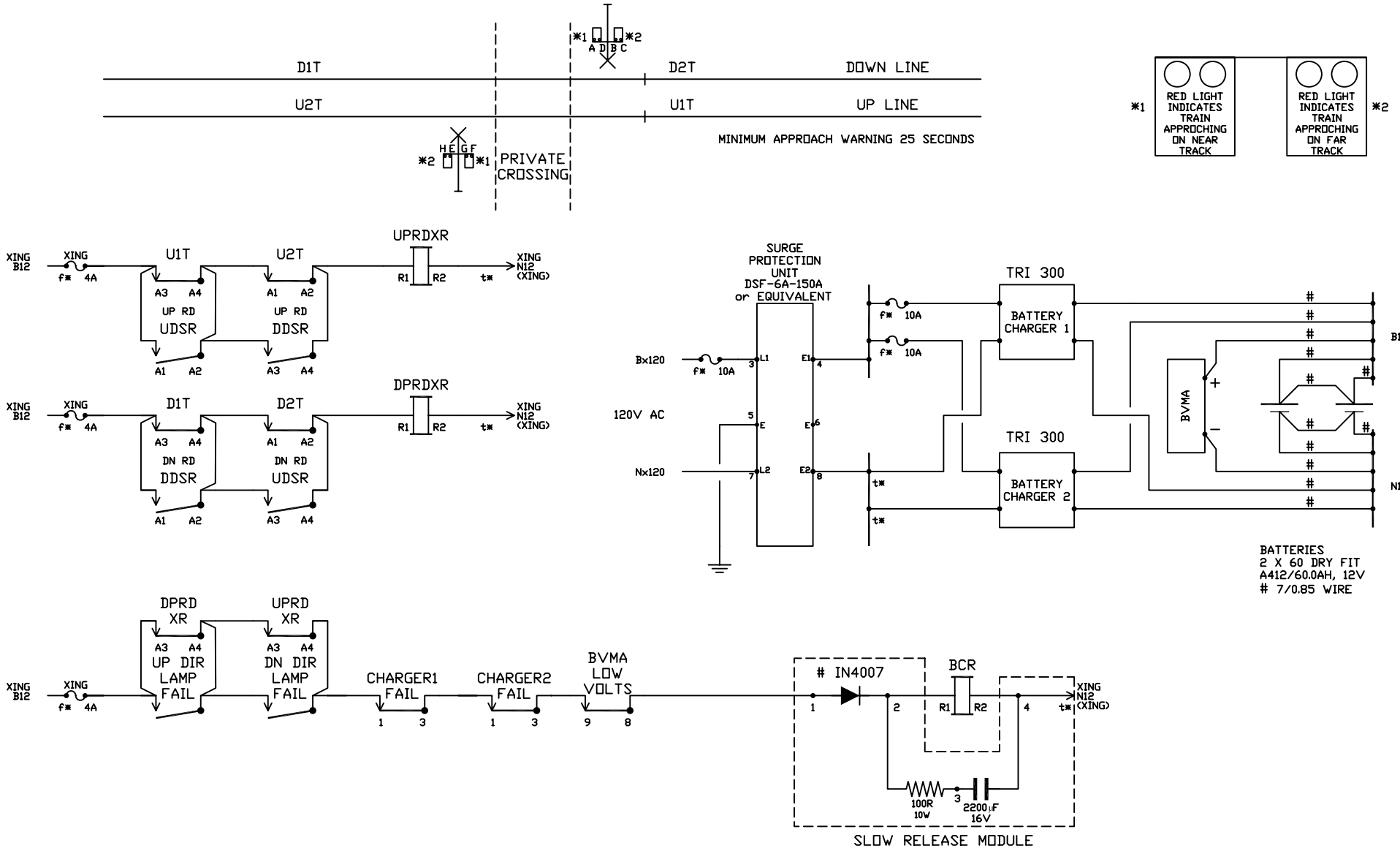
NOTE 2. WIRES CONNECT TO INPUT OPTOISOLATOR THROUGH PHOENIX CONNECTORS MVSTBW 2,5/8-ST-5,08 OR EQUIVALENT

NOTE 3. # CUSTOM MADE DB25 CABLE SUPPLIED WITH LX MONITOR

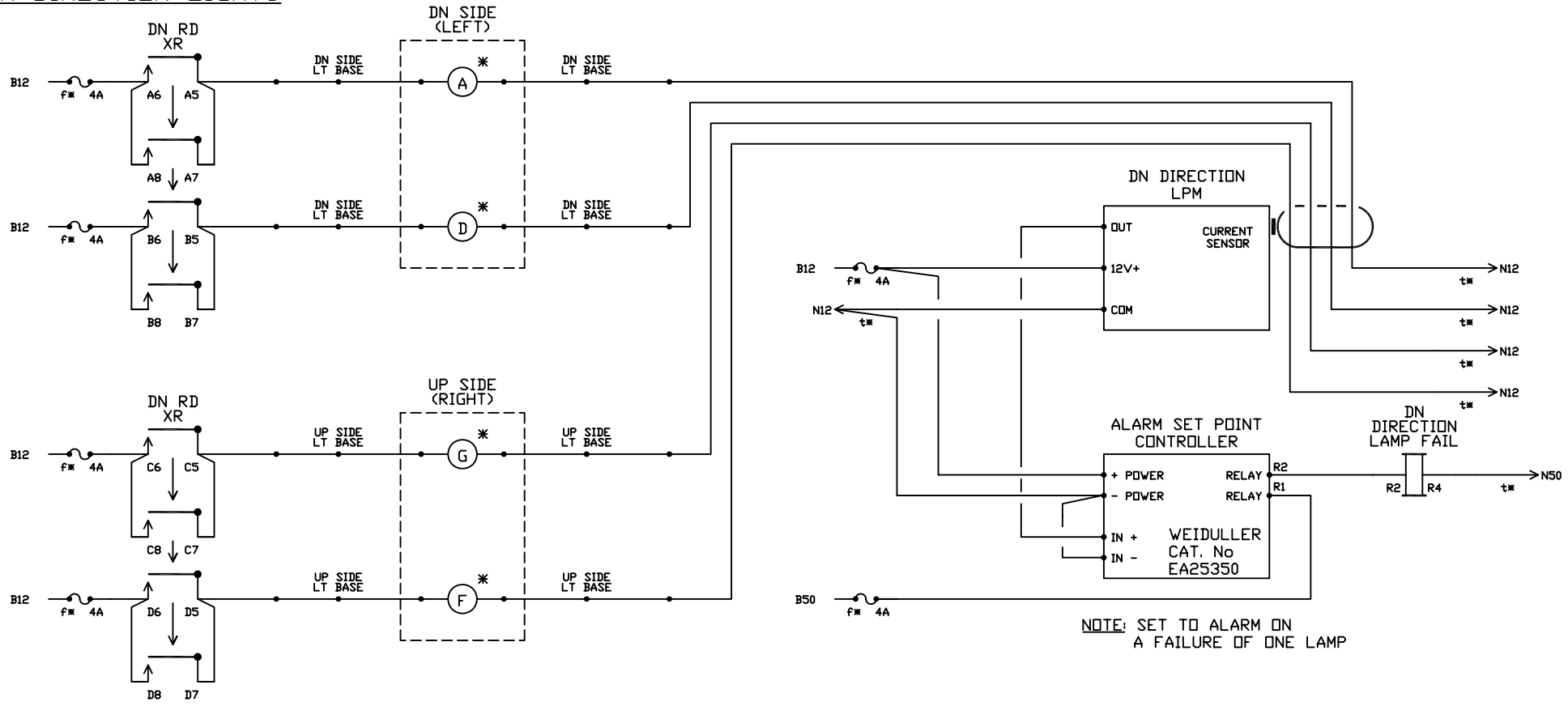
NOTE 4 # ANY ADDITIONAL RELAY CONTACTS FOR SIGNALS, POINTS ETC WHICH ARE EASILY AVAILABLE WITHOUT SIGNIFICANT COST SHOULD BE CONNECTED TO THE INPUT OPTO ON INPUTS 9-12 OR INPUTS 24-29

NOTE 5 # A ADDITIONAL INPUT OPTOISOLATOR (INPUT OPTO 2) CAN BE FITTED ONLY THE FIRST 16 INPUTS ARE AVAILABLE.

01-09-01	ISSUE-01						Rev 01	CSTDX41	PRIVATE CROSSING PROTECTION		SHT: X41	CB: STD2



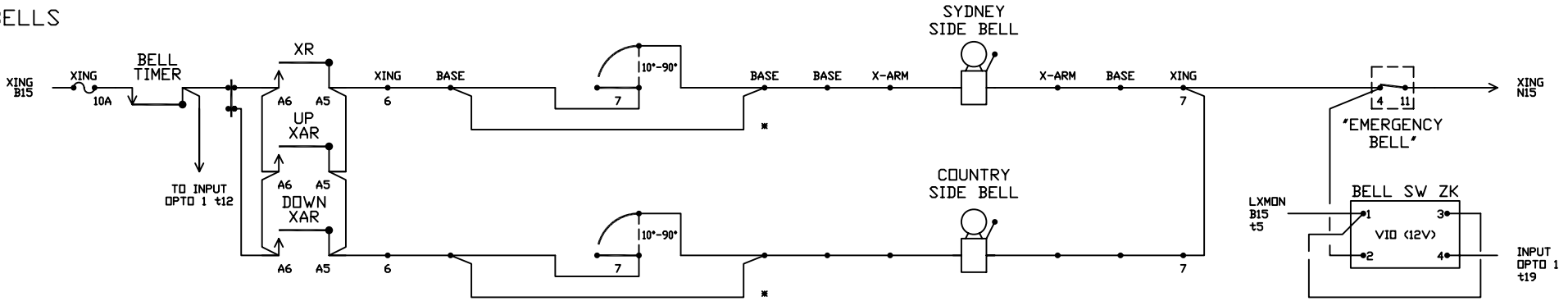
DN DIRECTION LIGHTS



NOTE: SET TO ALARM ON A FAILURE OF ONE LAMP

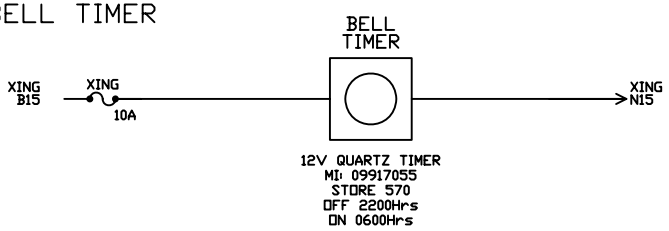
* LED INDICATOR 12V DC, 6W HIGH CONTRAST, SUNLIGHT VIEWABLE, 90mm RED, ULTRA BRIGHT

BELLS

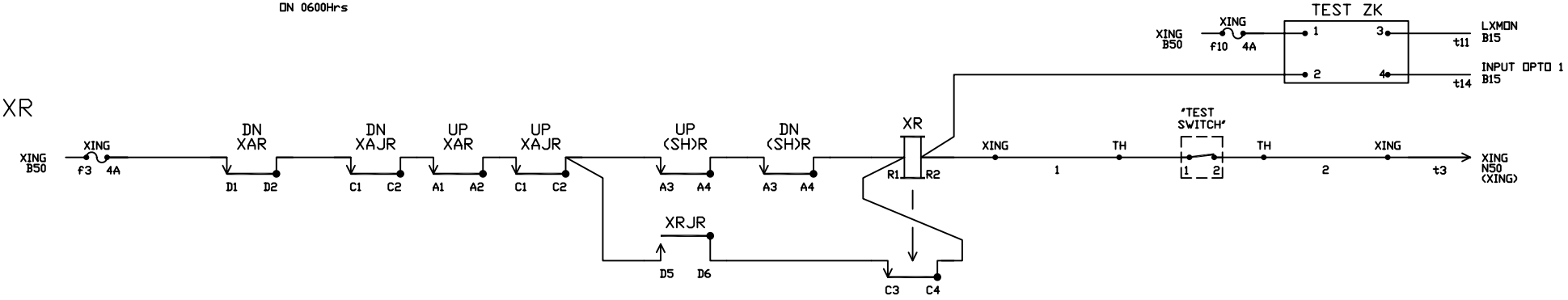


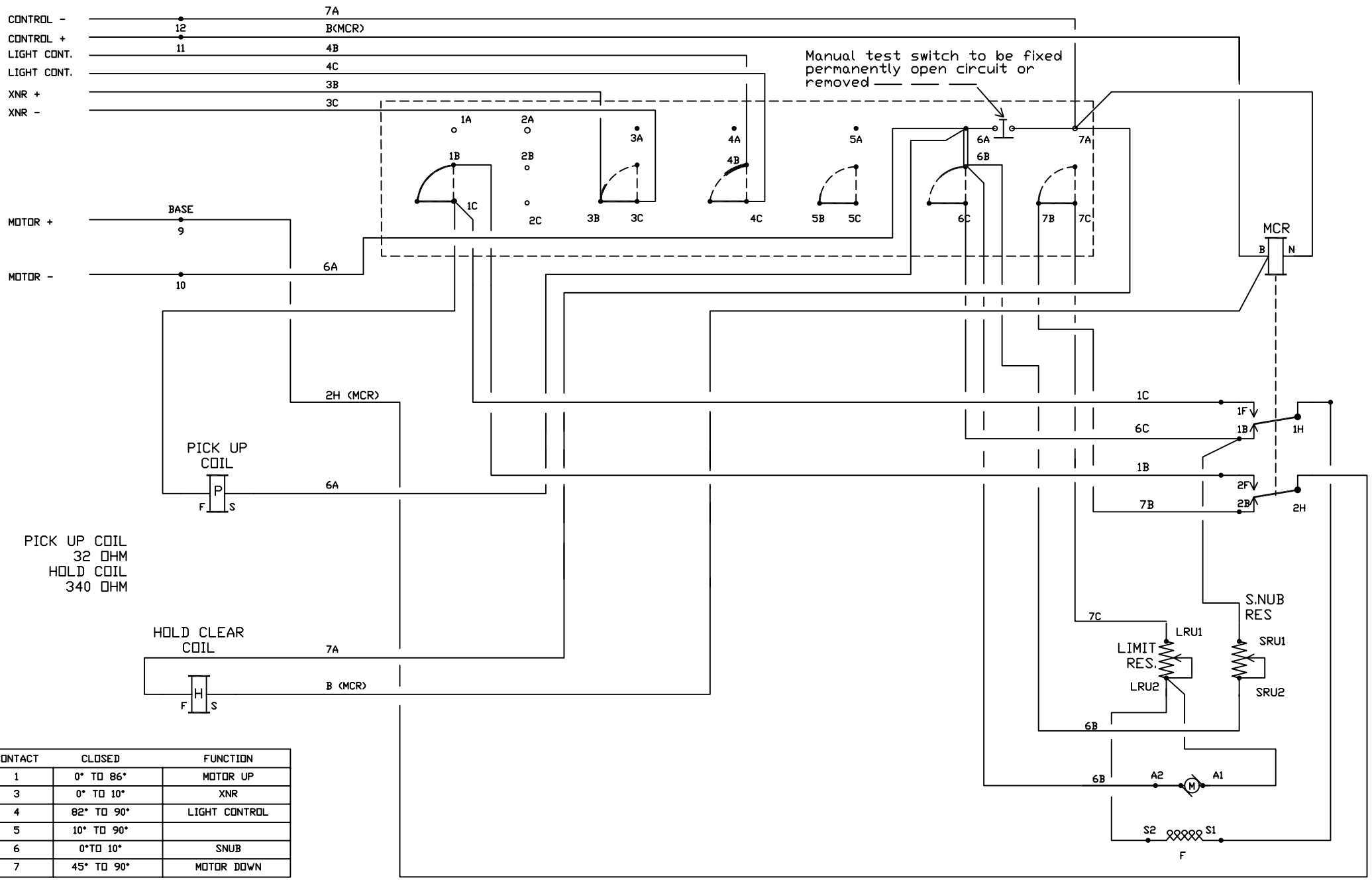
* DELETE THE BRIDGE AS REQUIRED

BELL TIMER



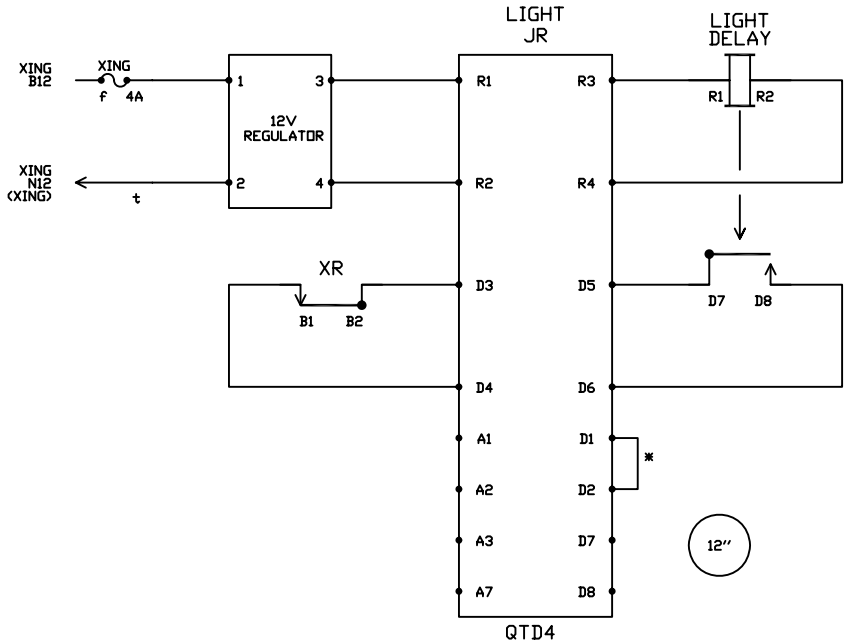
XR

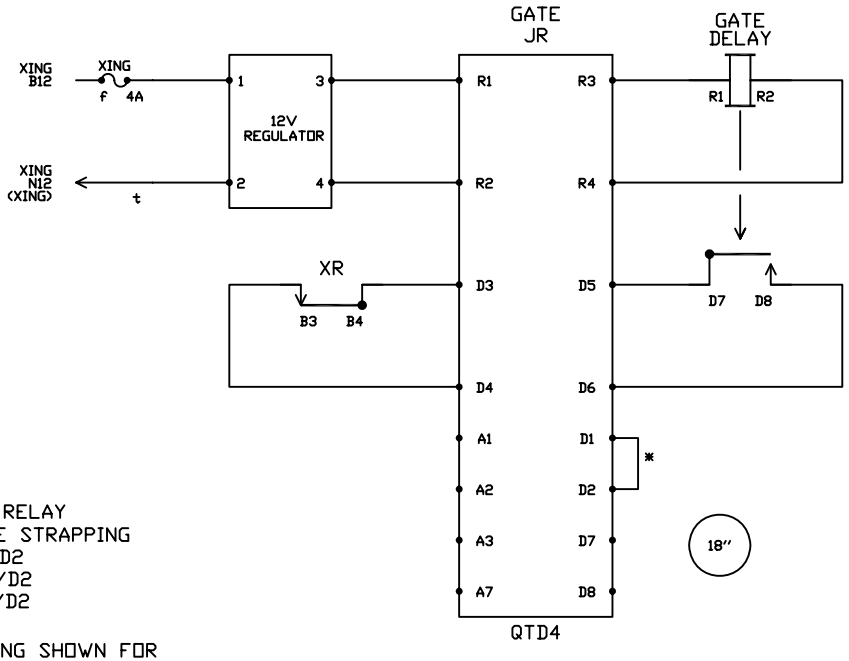




CONTACT	CLOSED	FUNCTION
1	0° TO 86°	MOTOR UP
3	0° TO 10°	XNR
4	82° TO 90°	LIGHT CONTROL
5	10° TO 90°	
6	0°TO 10°	SNUB
7	45° TO 90°	MOTOR DOWN

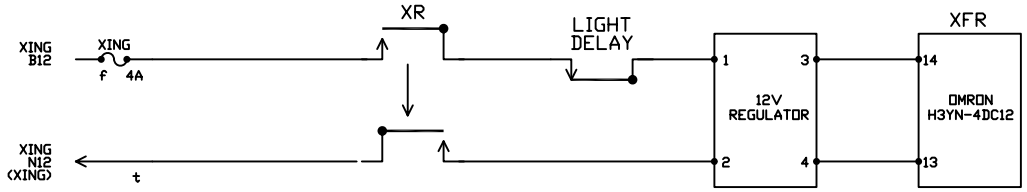
based on Western Cullen Circuit Diagram 38-0045-330 dated 3/12/98.

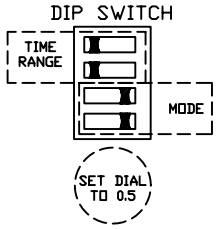




NOTE:
OUTPUT RELAY
VOLTAGE STRAPPING
12V-D1/D2
24V-D7/D2
50V-D8/D2

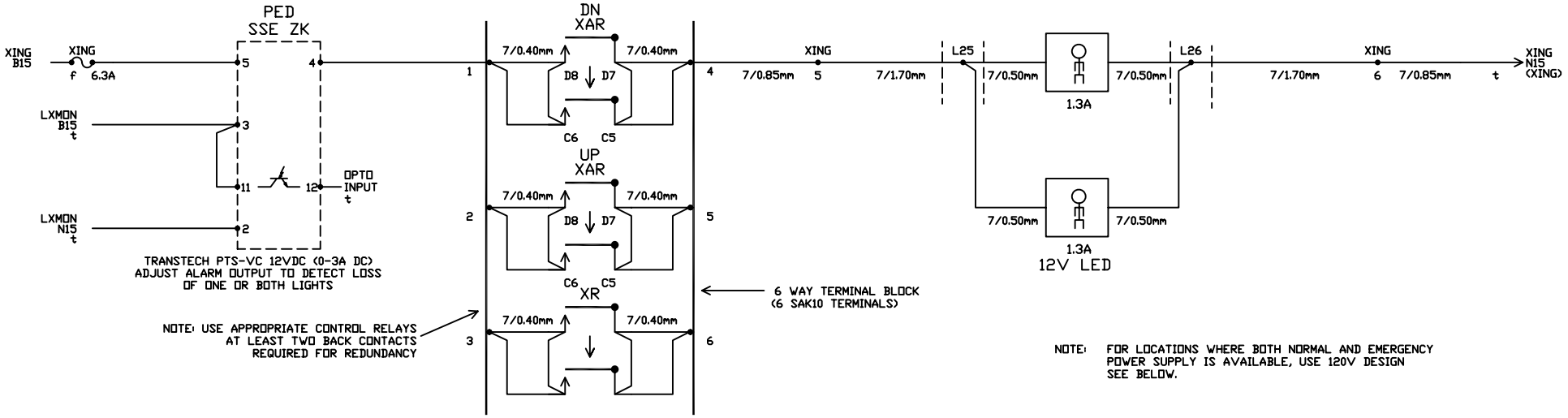
* STRAPPING SHOWN FOR
12V GATE DELAY RELAY
D3/D4 LOOP WIRING
MUST BE LESS THAN 2m





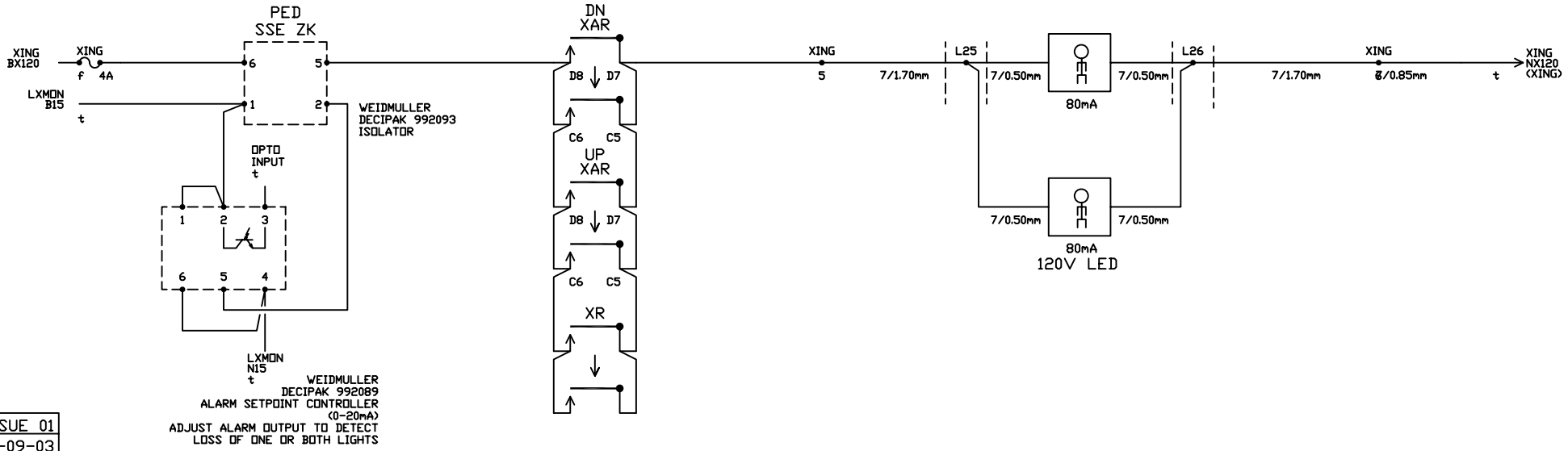
			ISSUE 02	29/6/07	13:37			CSTDX051	PEDESTRIAN CROSSING LIGHTS			SHT: X051	CB: STD

SYDNEY SIDE "DON'T WALK"



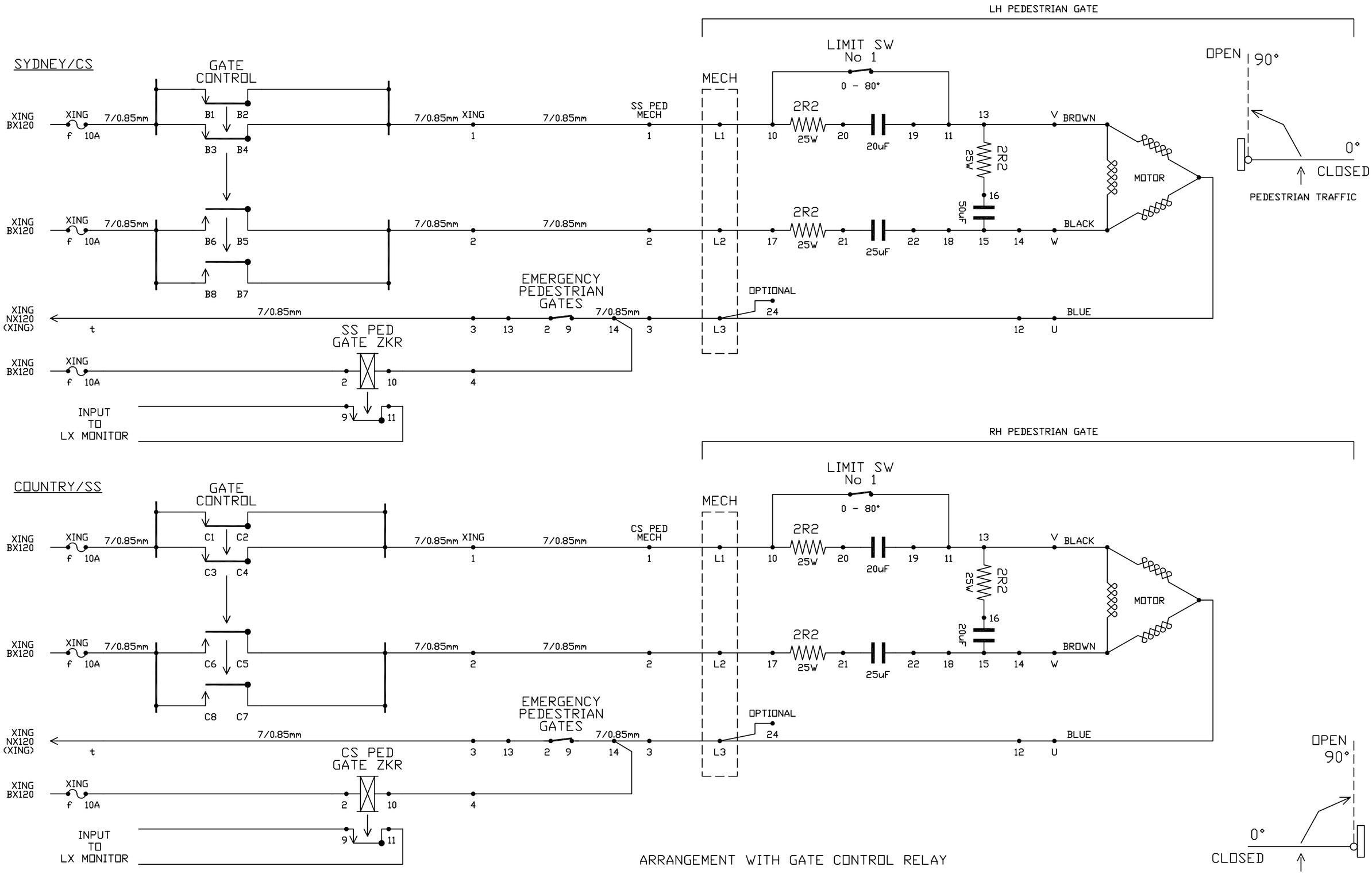
NOTE: FOR LOCATIONS WHERE BOTH NORMAL AND EMERGENCY POWER SUPPLY IS AVAILABLE, USE 120V DESIGN SEE BELOW.

ALTERNATE CIRCUIT WHERE 120V SUPPLY IS AVAILABLE



ISSUE 01
01-09-03
JOB NUMBER

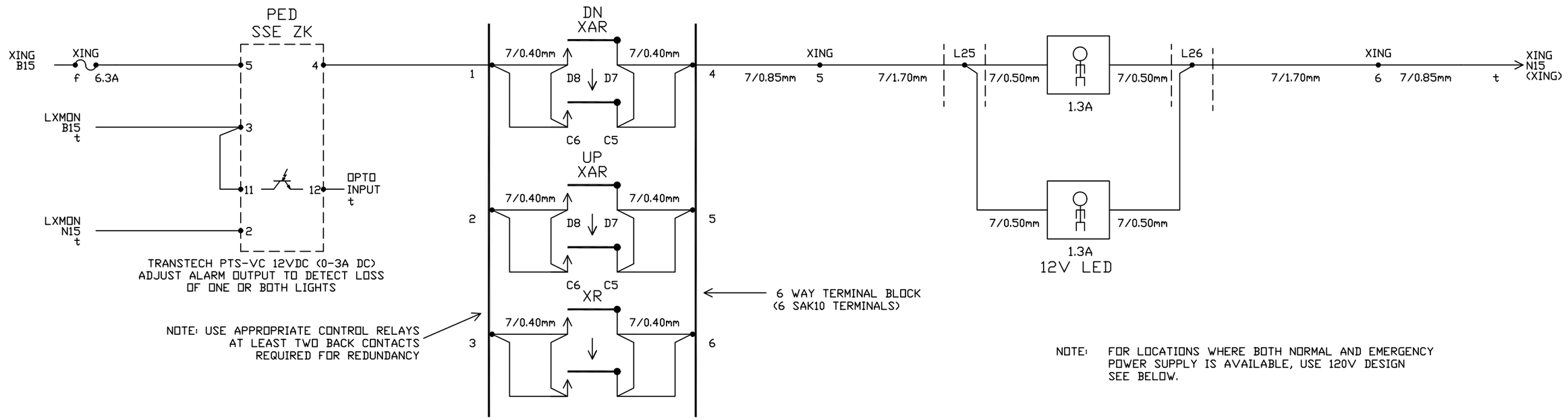
			ISSUE-02	11/1/11	14:10			CSTDX052	PEDESTRIAN GATE - THE MET STYLE M2			SHT:X052	CB: STD



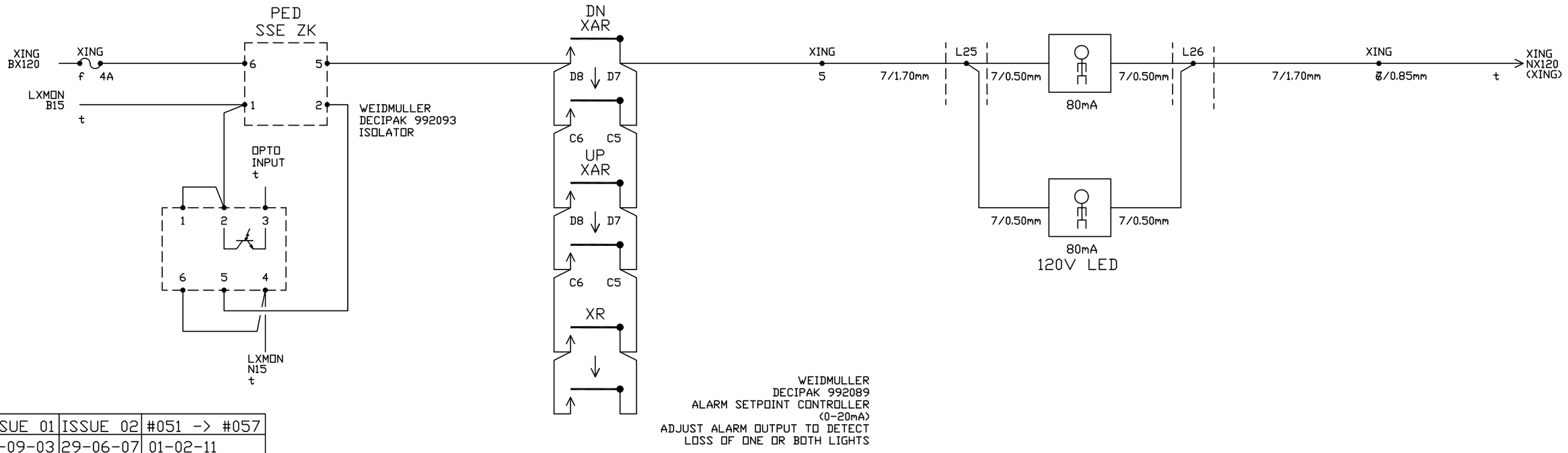
ARRANGEMENT WITH GATE CONTROL RELAY
(NOTE: XNR PROVED IN GATE CONTROL)

ISSUE-01	ISSUE-02	New Sh#	ISSUE-01
01-09-03	10-12-07	04-06-08	04-06-08
JOB NUMBER			

SYDNEY SIDE "DON'T WALK"



ALTERNATE CIRCUIT WHERE 120V SUPPLY IS AVAILABLE



ISSUE 01	ISSUE 02	#051 -> #057
01-09-03	29-06-07	01-02-11
JOB NUMBER		