ANTENNA SERVO, DRIVE AND CONTROL SUB-SYSTEM

VOLUME FIVE

ILLUSTRATIONS

GROUPS 11, 21, 31, 50

Group-Sheet Suffix a : 50 Hz Large
b : 50 Hz Medium
c : 60 Hz Large
d : 60 Hz Medium
No Suffix : all stations

WARNING

VOLTAGES USED IN THIS EQUIPMENT CAN ENDANGER LIFE.

ISOLATE THE EQUIPMENT FROM POWER SUPPLIES BEFORE MAKING INTERNAL ADJUSTMENTS.

IF IT IS ESSENTIAL TO WORK ON LIVE EQUIPMENT, THE WORK MUST ONLY BE PERFORMED BY QUALIFIED PERSONNEL WHO ARE AWARE OF THE RISKS INVOLVED AND WHO HAVE TAKEN ADEQUATE PRECAUTIONS.

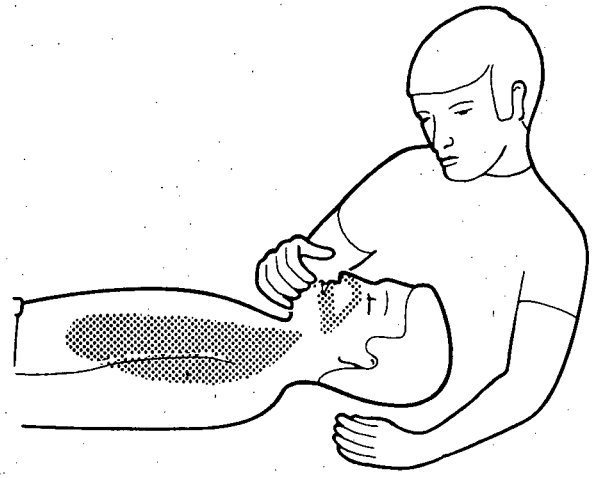
THE PROCEDURE TO BE ADOPTED IN CASES OF ELECTRICAL SHOCK IS GIVEN ON PAGE (iv).

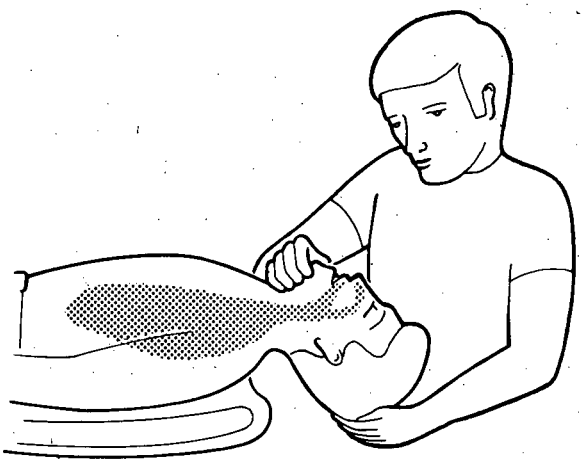
THE 'KISS OF LIFE' RESUSCITATION

WHEN BREATHING HAS STOPPED DUE TO ELECTRIC SHOCK

1. INITIAL PROCEDURE

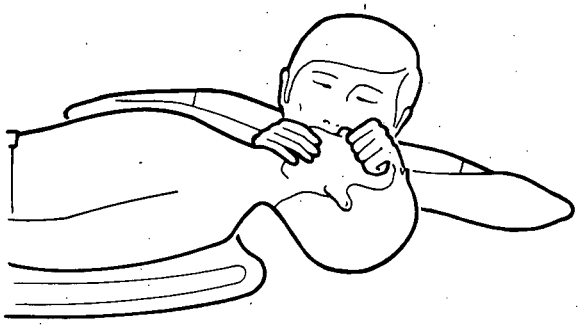
Switch off the current. If this is impossible free the person using something made of rubber, cloth or wood or a folded newspaper; use the casualty's own clothing if dry. Do not touch his skin before the current is switched off. If the victim's breathing has stopped IMMEDIATE EFFORT to restart it is essential. EVERY SECOND COUNTS.

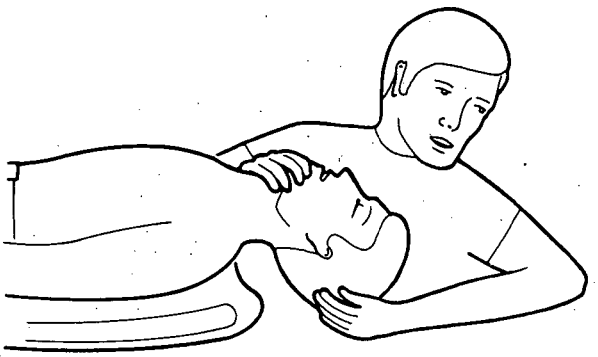




2. STARTING POSITION

Victim face up. Tilt head back and pull chin forward to open air passages.





3. INFLATION

Seal victim's nose by pinching nostrils. Open your mouth wide and inflate the victim's lungs by blowing air into his mouth.

4. EXHALATION

When you see the victim's chest rise remove your mouth to allow the air to escape from his lungs, and turn your head to one side. Continue with 3 & 4 until natural respiration returns.

Do not exceed 10-12 breaths per minute. If stomach contents are regurgitated, turn the victim's head to one side and clean out his mouth. When there are signs of natural respiration returning adjust your breathing to coincide with the victim.

HANDBOOK CONTENTS

VOLUME CONTENTS

VOLUME ONE	PART ONE	TECHNICAL DETAILS SECTIONS ONE TO SIX
VOLUME TWO	PART ONE	TECHNICAL DETAILS SECTION TWO - APPENDIX A (ANC 1720)
VOLUME THREE	PART TWO	MAINTENANCE
	PART THREE	FAULT LOCATION
	PART FOUR	COMPONENTS LIST
VOLUME FOUR	ILLUSTRATIONS	GROUPS 00, 10, 20, 30.
VOLUME FIVE	ILLUSTRATIONS	GROUPS 11, 21, 31, 50.
VOLUME SIX	ILLUSTRATIONS	GROUPS 02, 12, 22, 32.

PREFACE

A detailed preface is included in the preliminary pages of Volume One. This preface defines the figure and group-sheet coding, component identification, cross referencing and connector coding used throughout this handbook.

LIST OF ILLUSTRATIONS

GROUP II

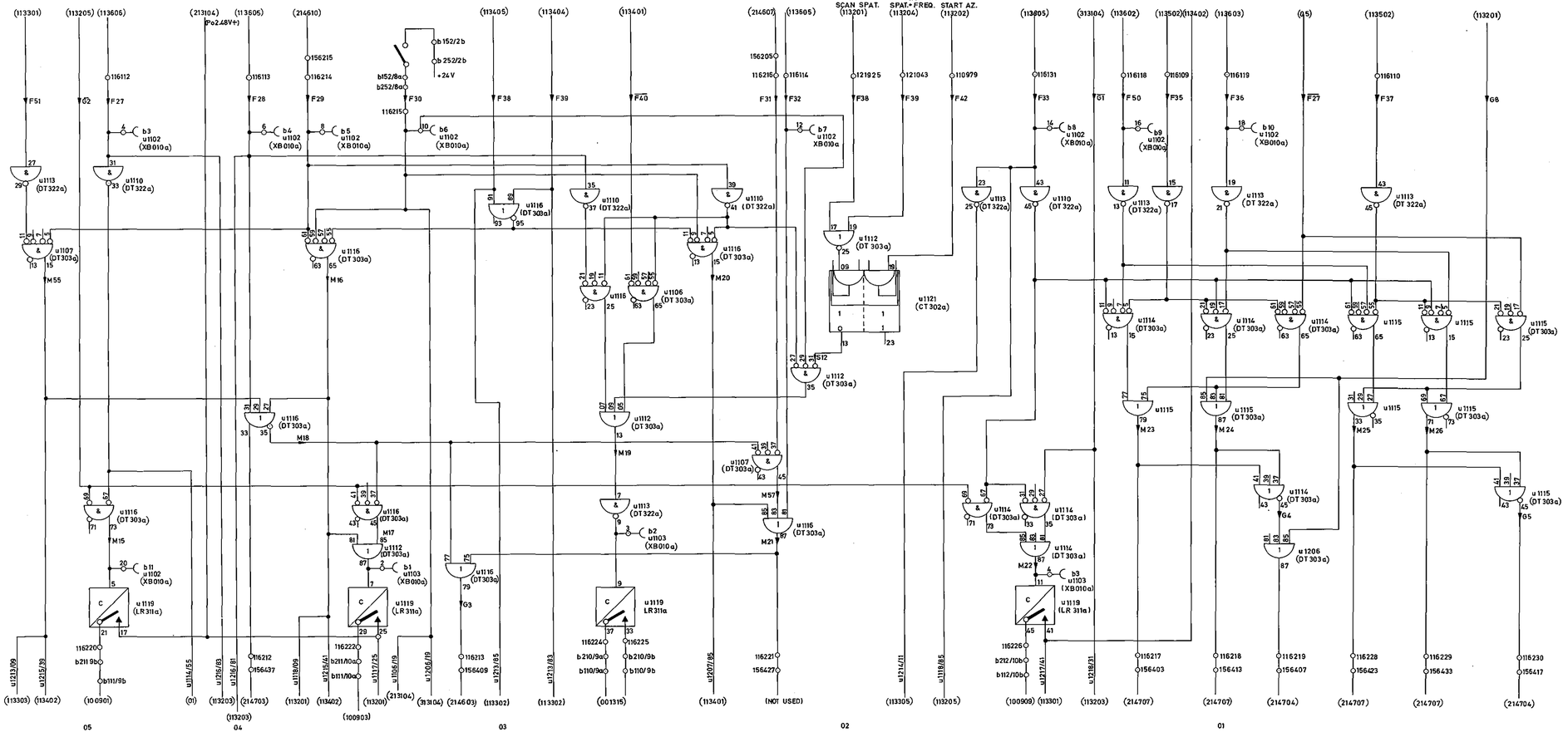
GROUP 21

GROUP 31

Figure No. (Group-Sheet)	Title
31 31	Logic (Elevation) : Circuit Diagram
31 46	Autotrack Channel (Elevation) : Circuit Diagram
31 47	Preset, Manual and Slew Channel (Elevation) : Circuit Diagram
31 48	Anti-backlash and Current Regulation (Elevation) : Circuit Diagram
31 49	Control Logic (Elevation) : Circuit Diagram
31 50	Speed Control (Elevation) : Circuit Diagram
31 50	Speed Actual Value Alarm Detection (Elevation) : Circuit Diagram

GROUP 50

50 03 ac	Antenna Servo Drive and Control Sub-system Cable Diagram
50 03 bd	Antenna Servo Drive and Control Sub-system Cable Diagram
50 04	Summary of Cables and Connectors
50 70	Bay 5 Station Control Console : Wiring Diagram
50 71	Bay 5 Station Control Console : Wiring Diagram
50 78	Cabin Control Panel : Wiring Diagram
50 79	Cabin Control Panel : Wiring Diagram
50 104	Distribution Box Q1 : Wiring Diagram
50 105	Distribution Box Q1 : Wiring Diagram
50 106	Distribution Box Q2 : Wiring Diagram
50 107	Distribution Box Q2 : Wiring Diagram
50 108	Distribution Box Q3 : Wiring Diagram
50 109	Distribution Box Q3 : Wiring Diagram
50 110	Distribution Box Q4 : Wiring Diagram
50 111	Distribution Box Q4 : Wiring Diagram
50 114	Data Pick-Up Unit (Azimuth) : Circuit Diagram
50 116	Data Pick-Up Unit (Elevation) : Circuit Diagram

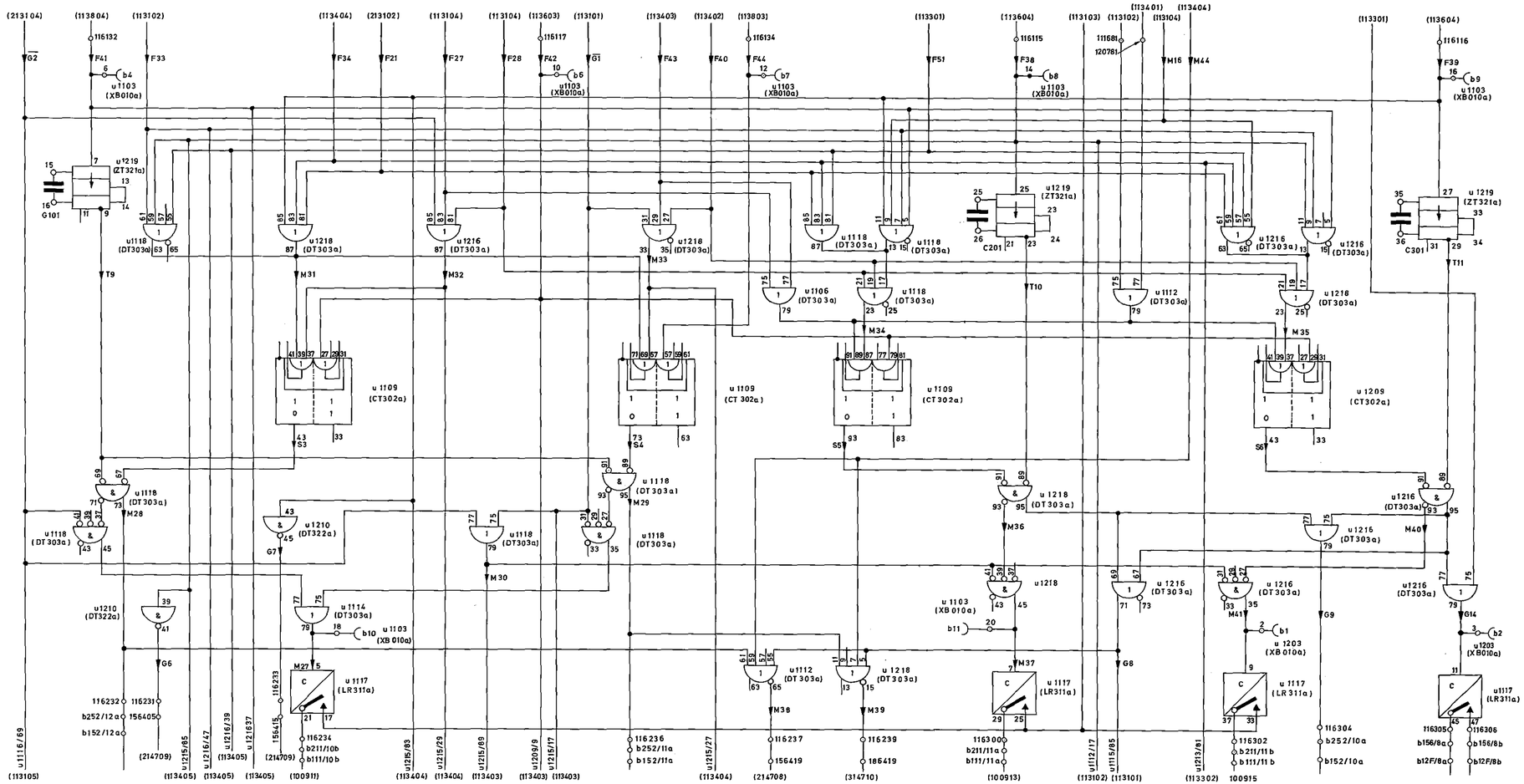


NOTE:
SEE TABLE 2.2-2. PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

Command Control (Azimuth): Circuit Diagram

Figure 11-31

Part 1

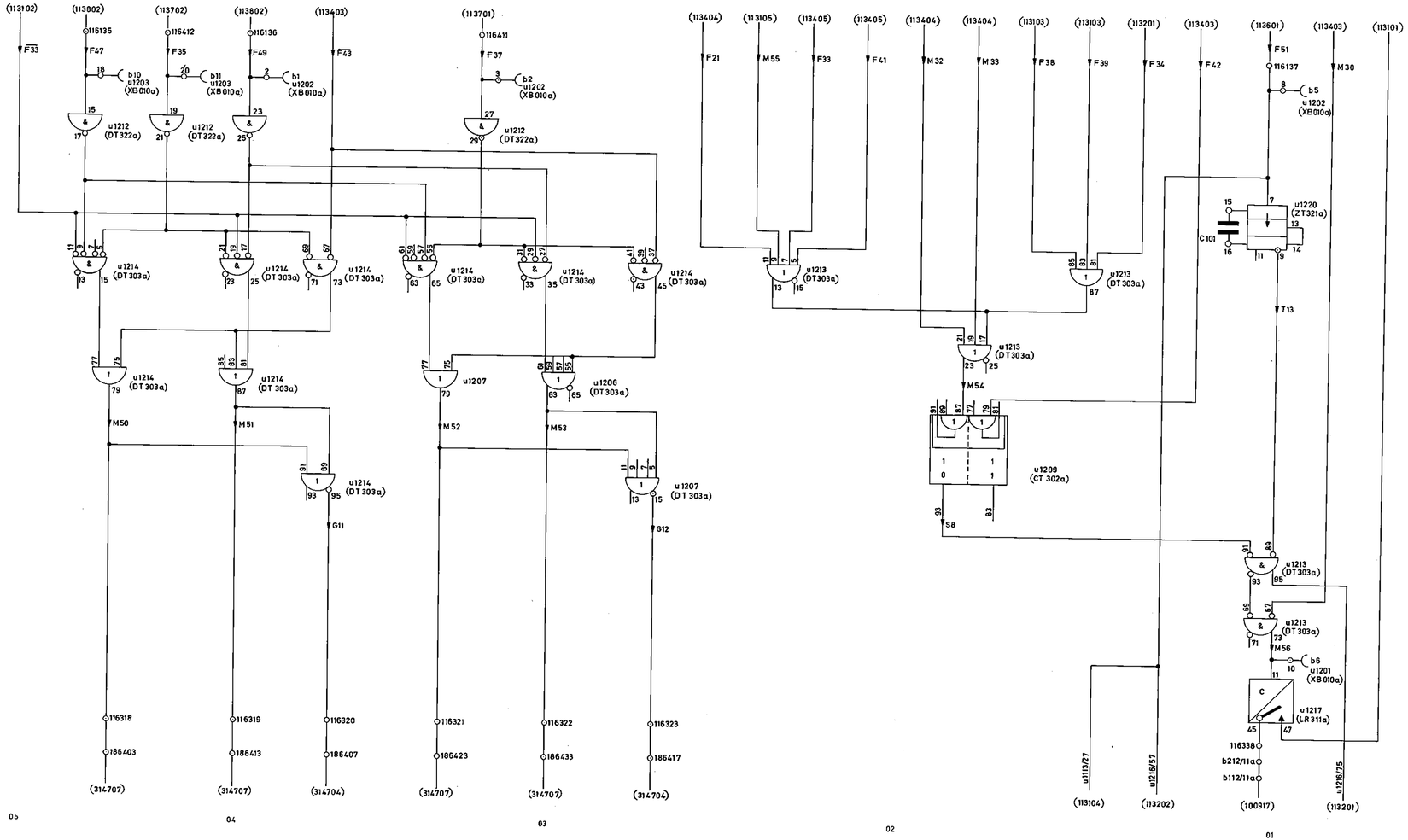


NOTE:
SEE TABLE 2.2-2 PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

Command Control (Common): Circuit Diagram

Figure 11-32

Part 1

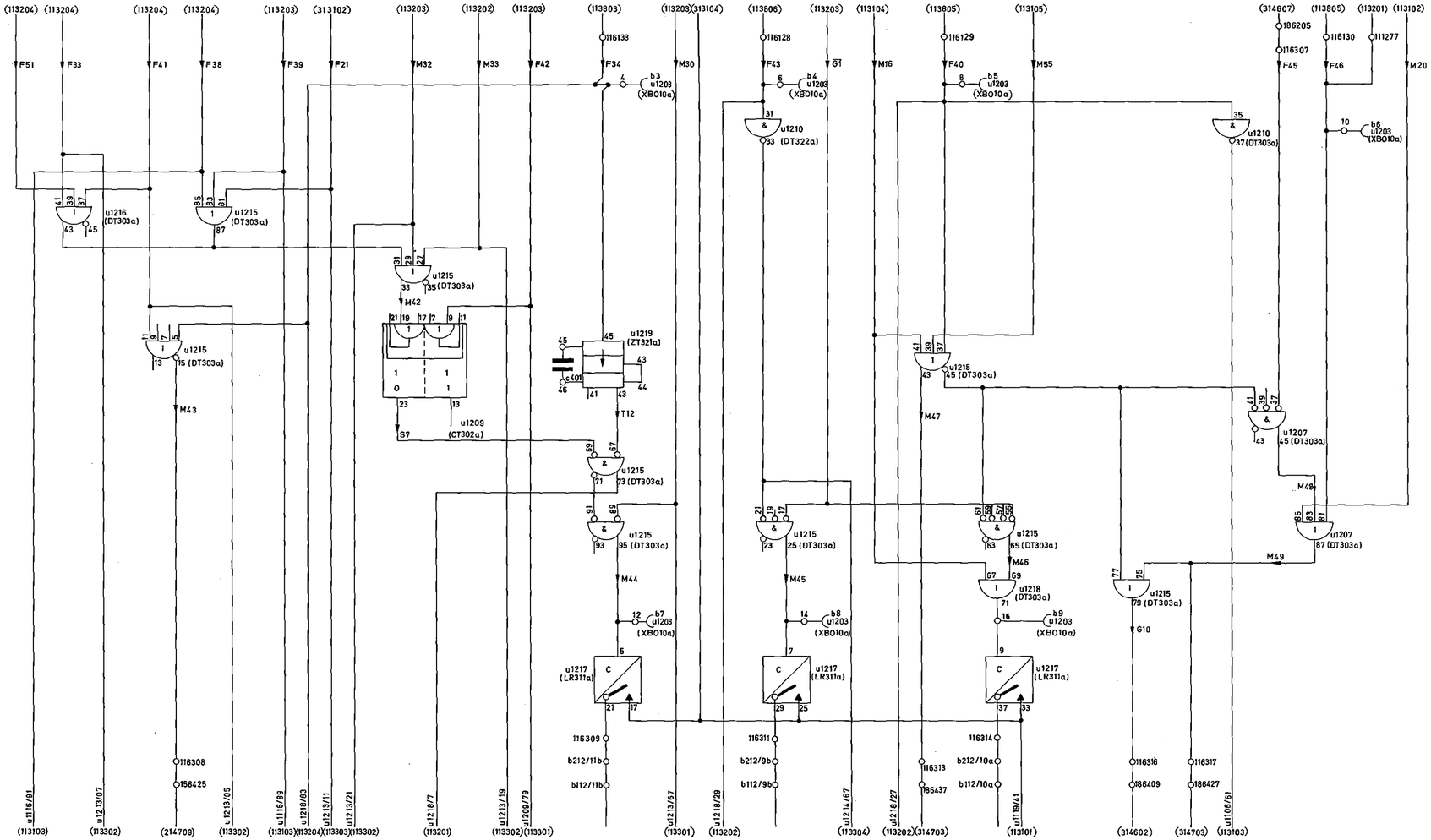


NOTE:
SEE TABLE 2.2-2 PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

Command Control (Common) : Circuit Diagram

Figure 11 – 33

Part 1



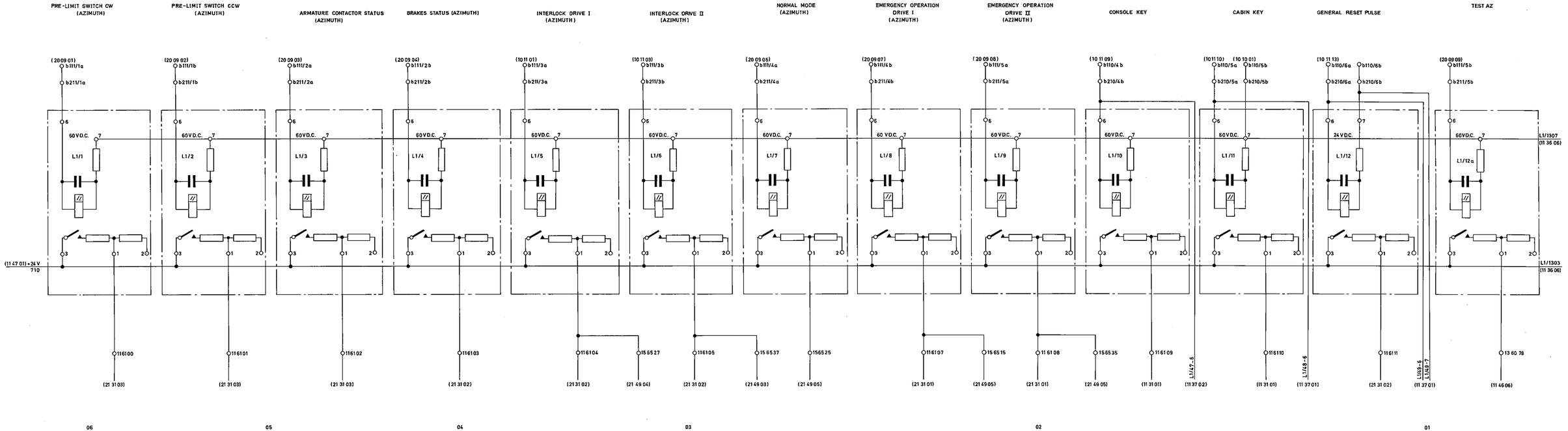
NOTE:

SEE TABLE 2.2-2 PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

Command Control (Elevation) : Circuit Diagram

Figure 11-34

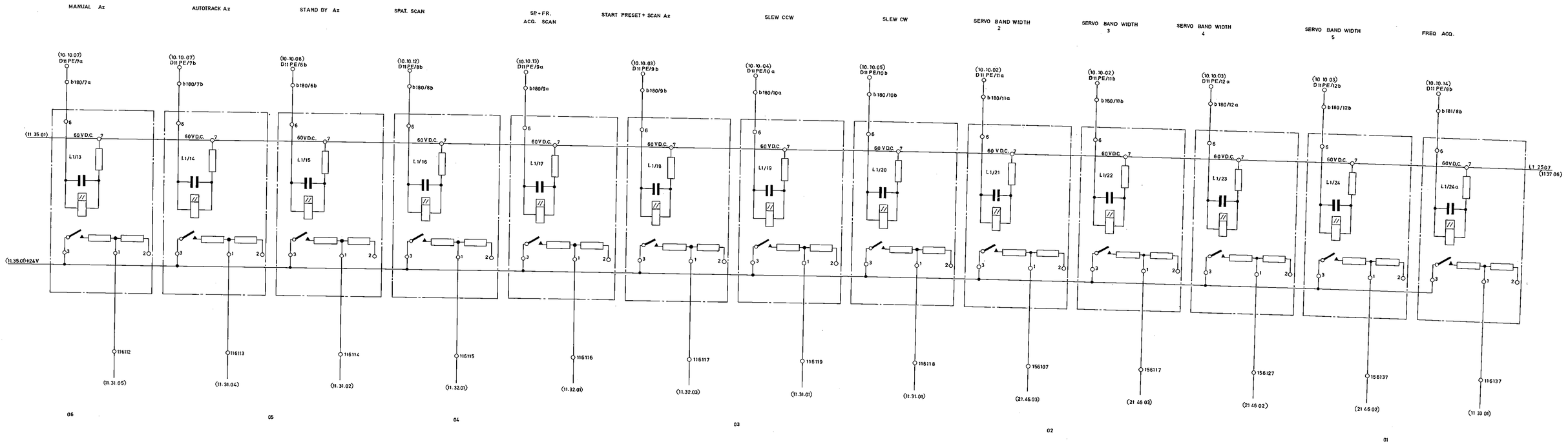
Part 1



Input Terminal UR 008a, L1(1-12a): Circuit Diagram

Figure 11-35

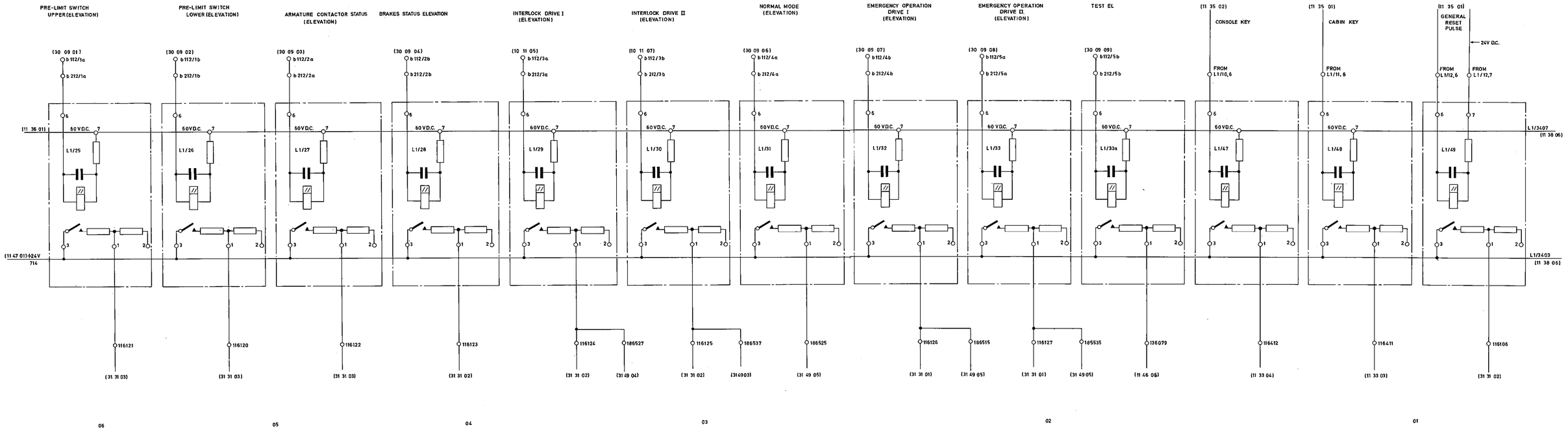
Part 1



Input Terminal UR 008a, L1(13-24a): Circuit Diagram

Figure 11-36

Part 1

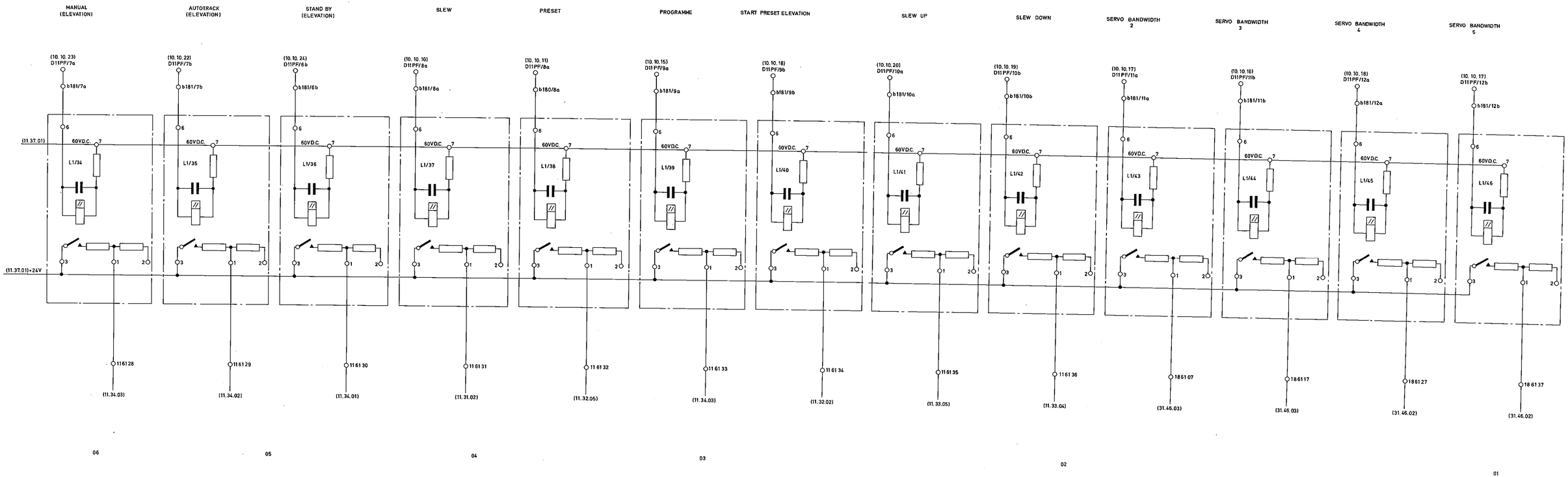


Input Terminal UR 008a, L1 (25–33a, 47–49) Circuit Diagram

Figure 11–37

Part 1

Iss. 1

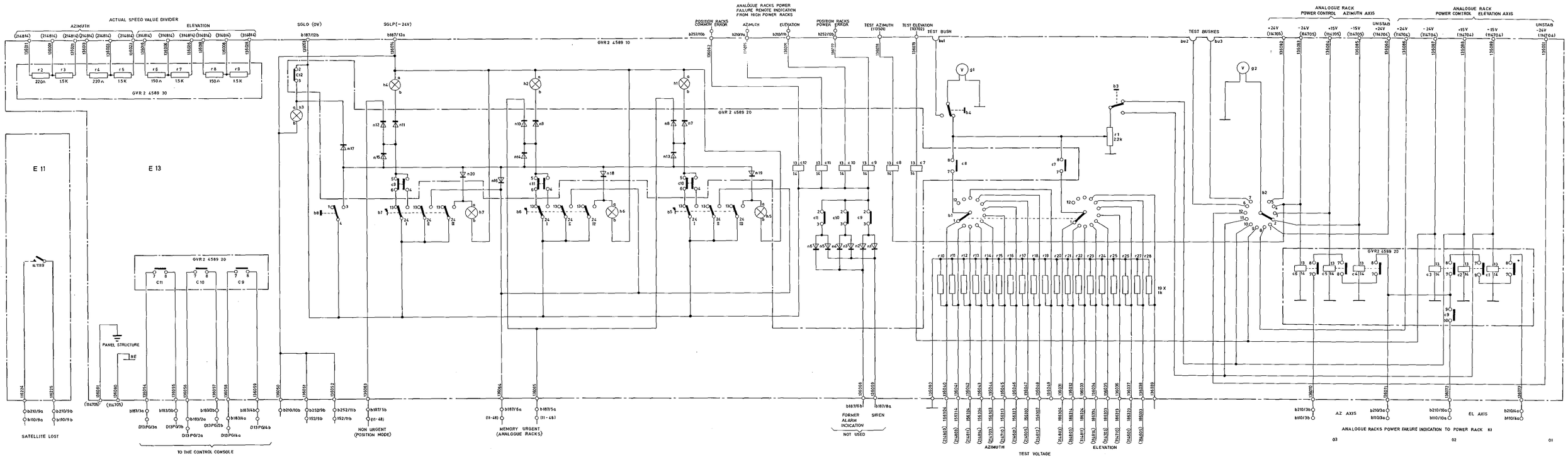


Input Terminal UR 008a, L1(34-46): Circuit Diagram

Figure 11-38

Part 1

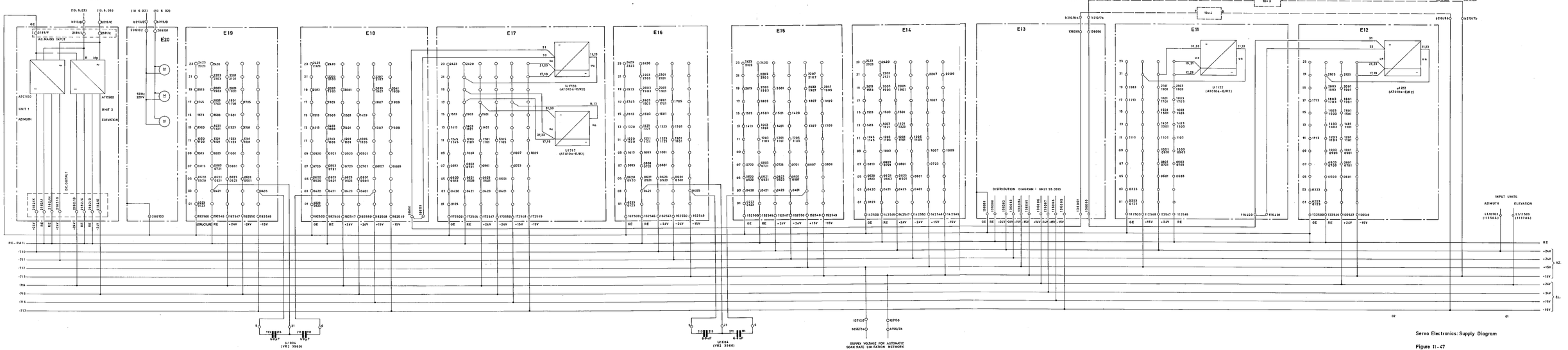
Iss. 1



Test Panel Rack H5 : Circuit Diagram

Figure 11-46

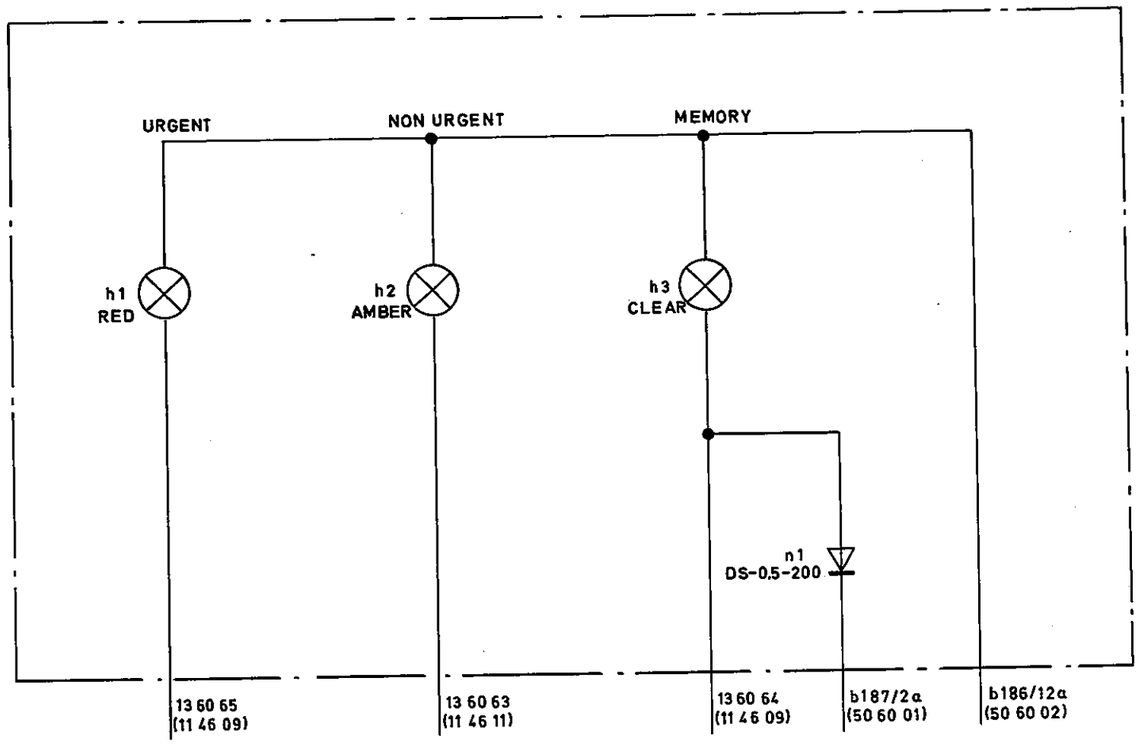
Part 1



Servo Electronics: Supply Diagram

Figure 11-47

Part 1

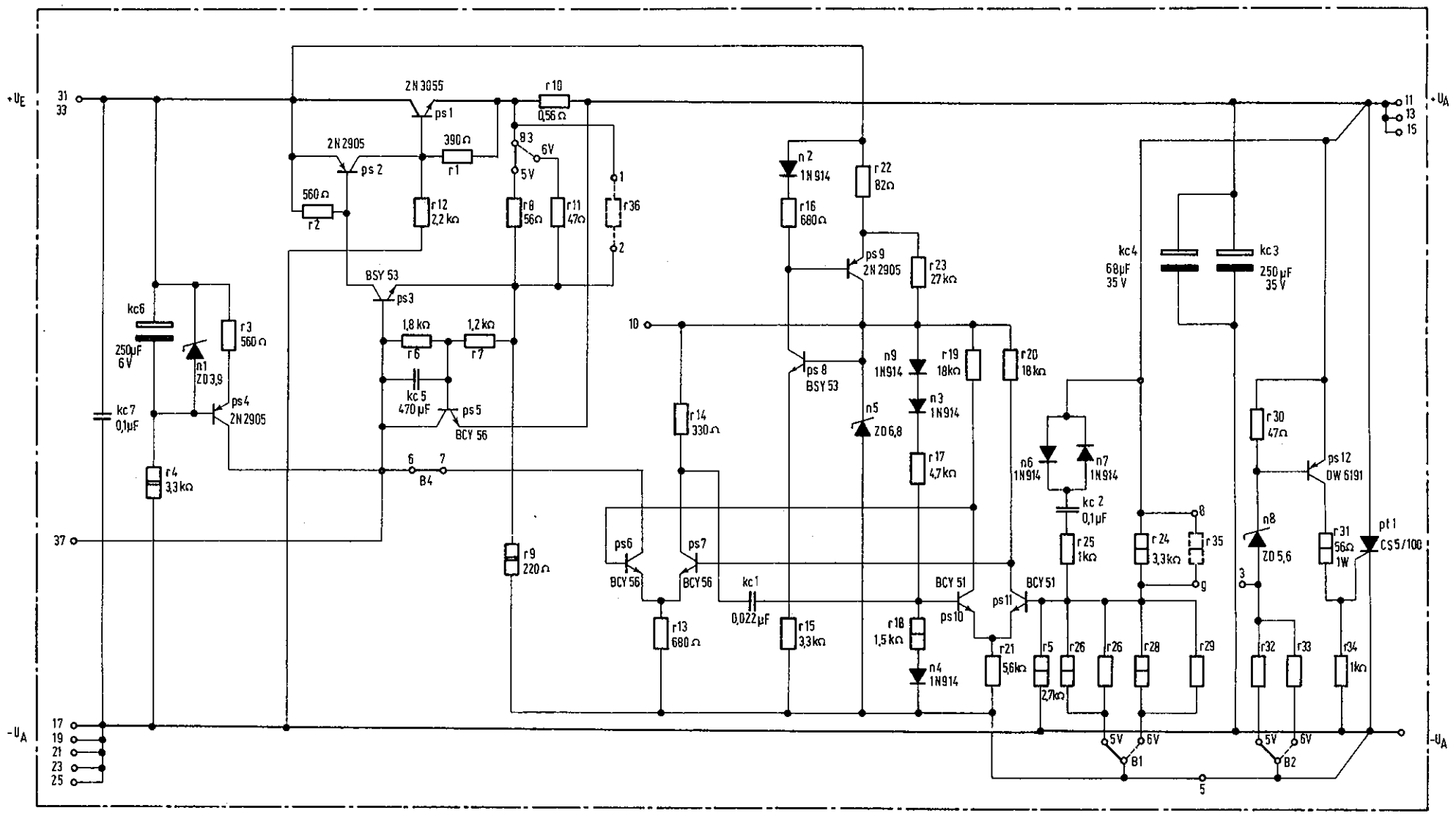


ARRANGEMENT OF LAMPS (SEEN FROM FRONT)
LEFT : URGENT
MIDDLE : NON URGENT
RIGHT : MEMORY

Alarm Indication : Urgent - Non Urgent - Memory

Figure 11 - 48

Part 1



VOLTAGE REGULATOR TYPE AT 010a-E

FIG. 11-49

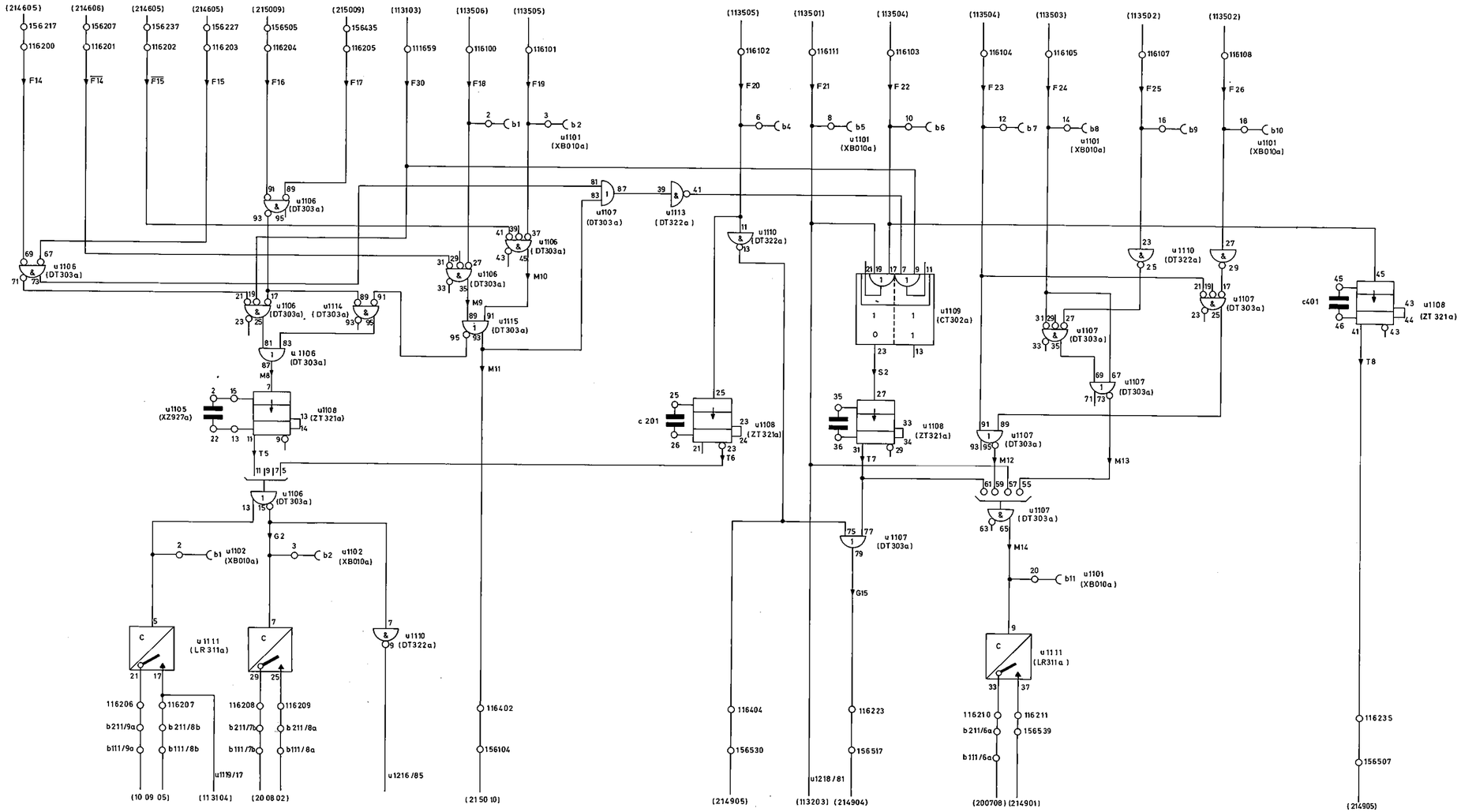
ORIGINATOR	DATE	ISSUE	CHKD/APPD
SDSD	22.06.77	1	

NICSMA

DRAWING NO 04-A3-005

SHEET 1 OF 1

Iss. 1



NOTE:
SEE TABLE 2.2-2 PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

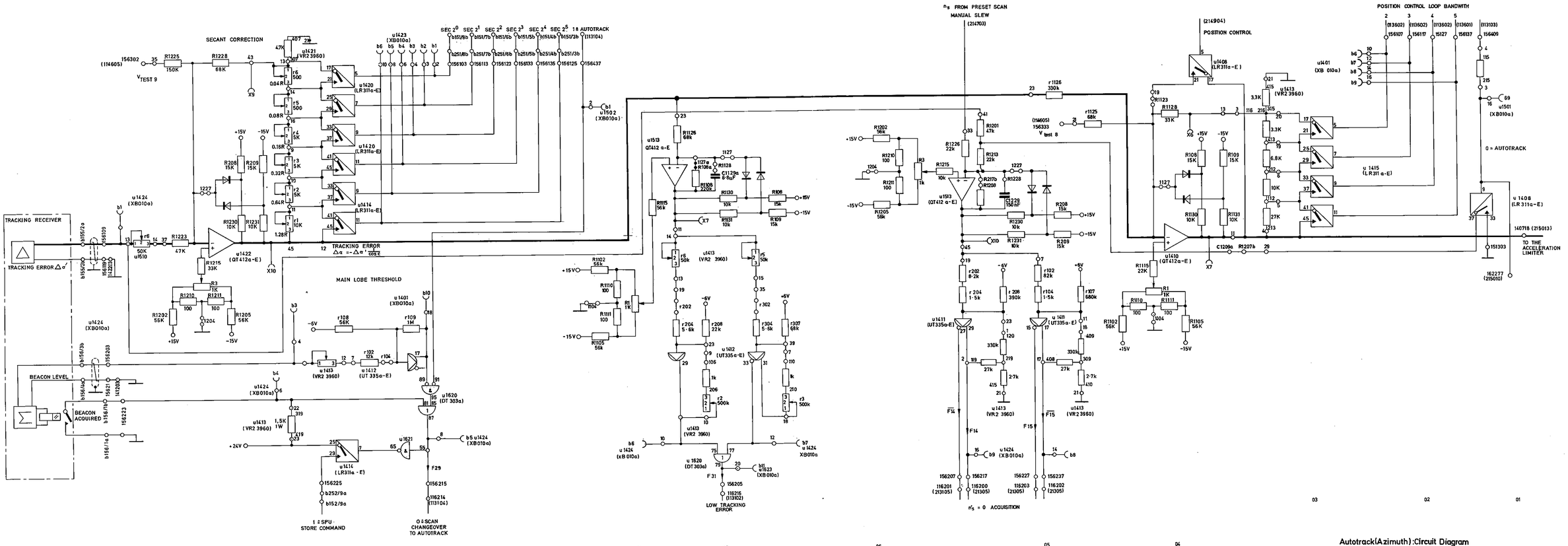
05 04 03 02 01

Logic (Azimuth): Circuit Diagram

Figure 21-31

Part 1

Iss.1

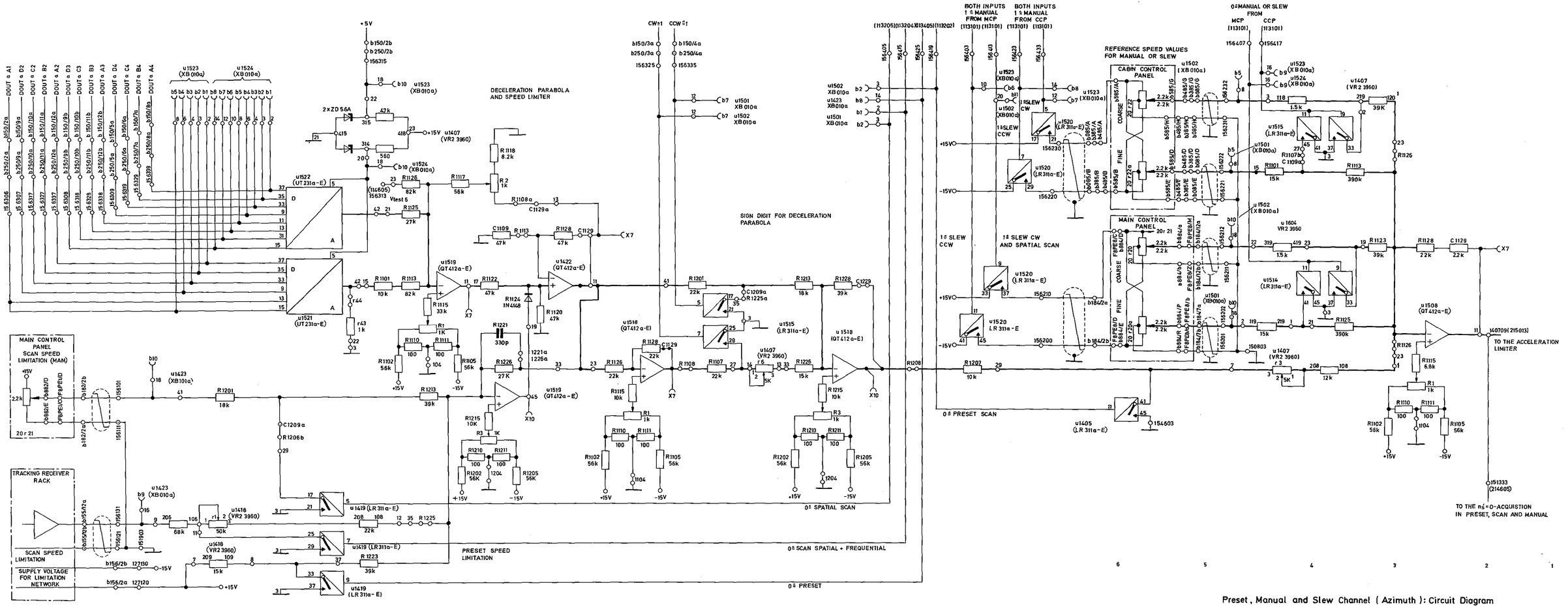


Autotrack(Azimuth):Circuit Diagram

Figure 21-46

Part 1

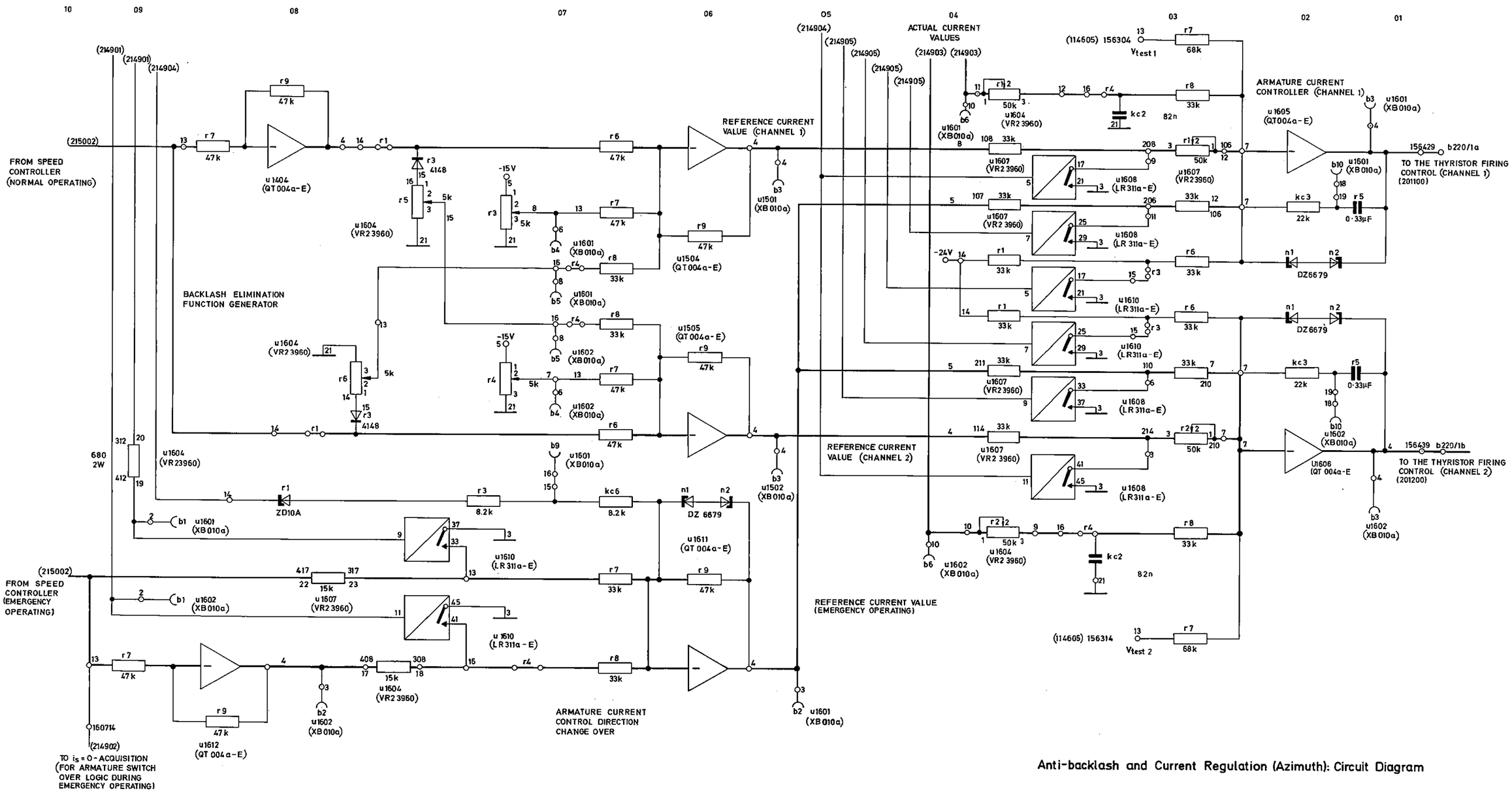
Iss. 1



Preset, Manual and Slew Channel (Azimuth): Circuit Diagram

Figure 21-47

Part 1

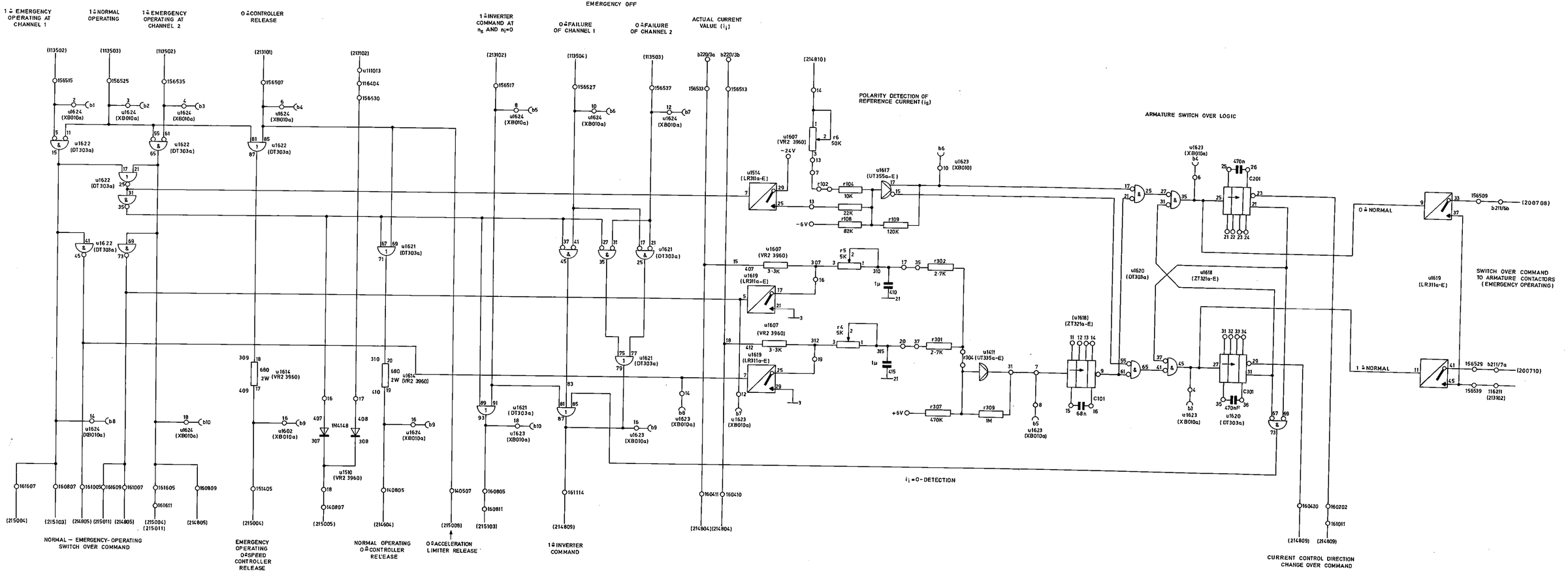


Anti-backlash and Current Regulation (Azimuth): Circuit Diagram

Figure 21-48

Part 1

Iss. 1

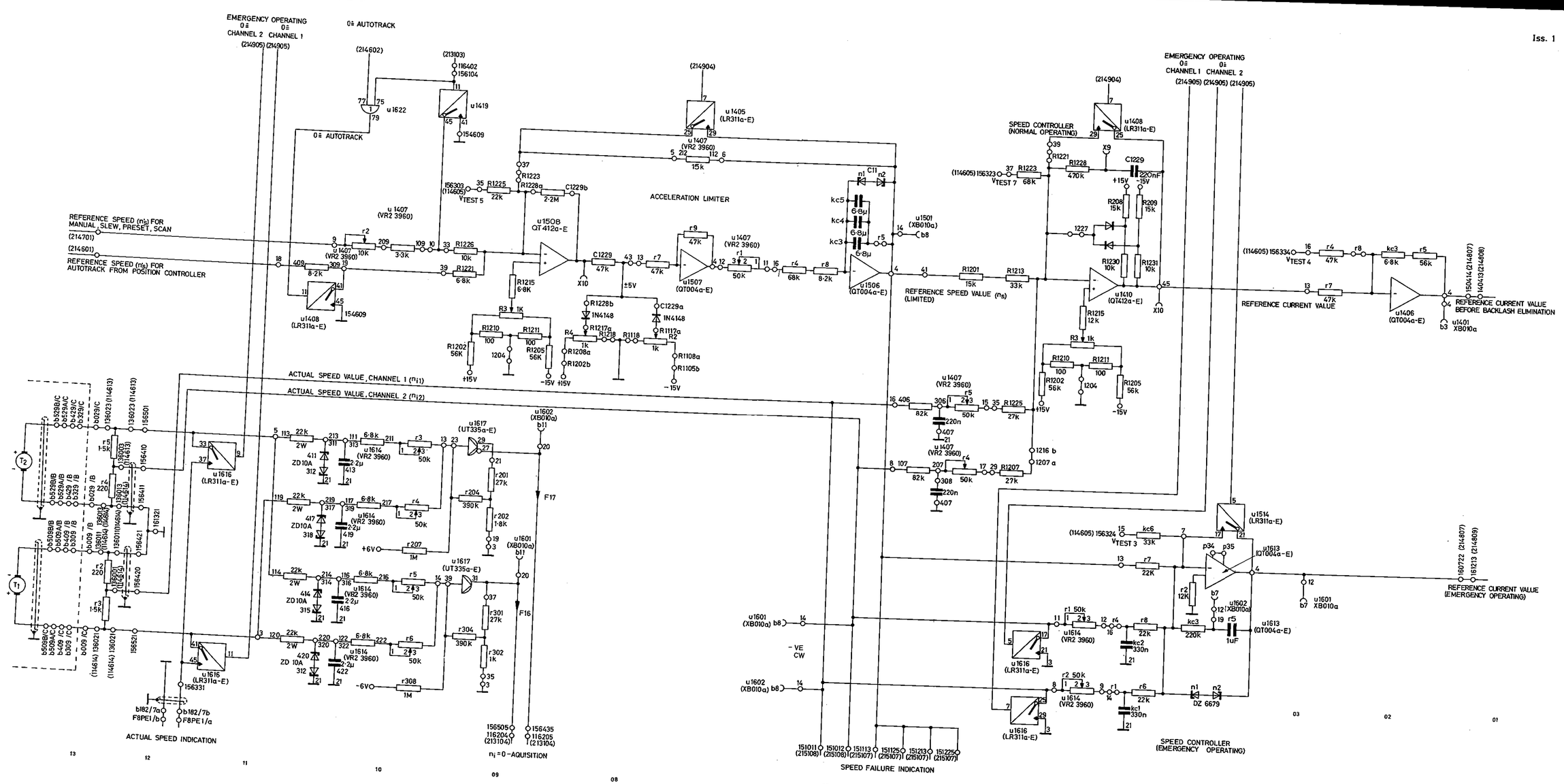


Control Logic (Azimuth): Circuit Diagram

Figure 21-49

Part 1

Iss. 1

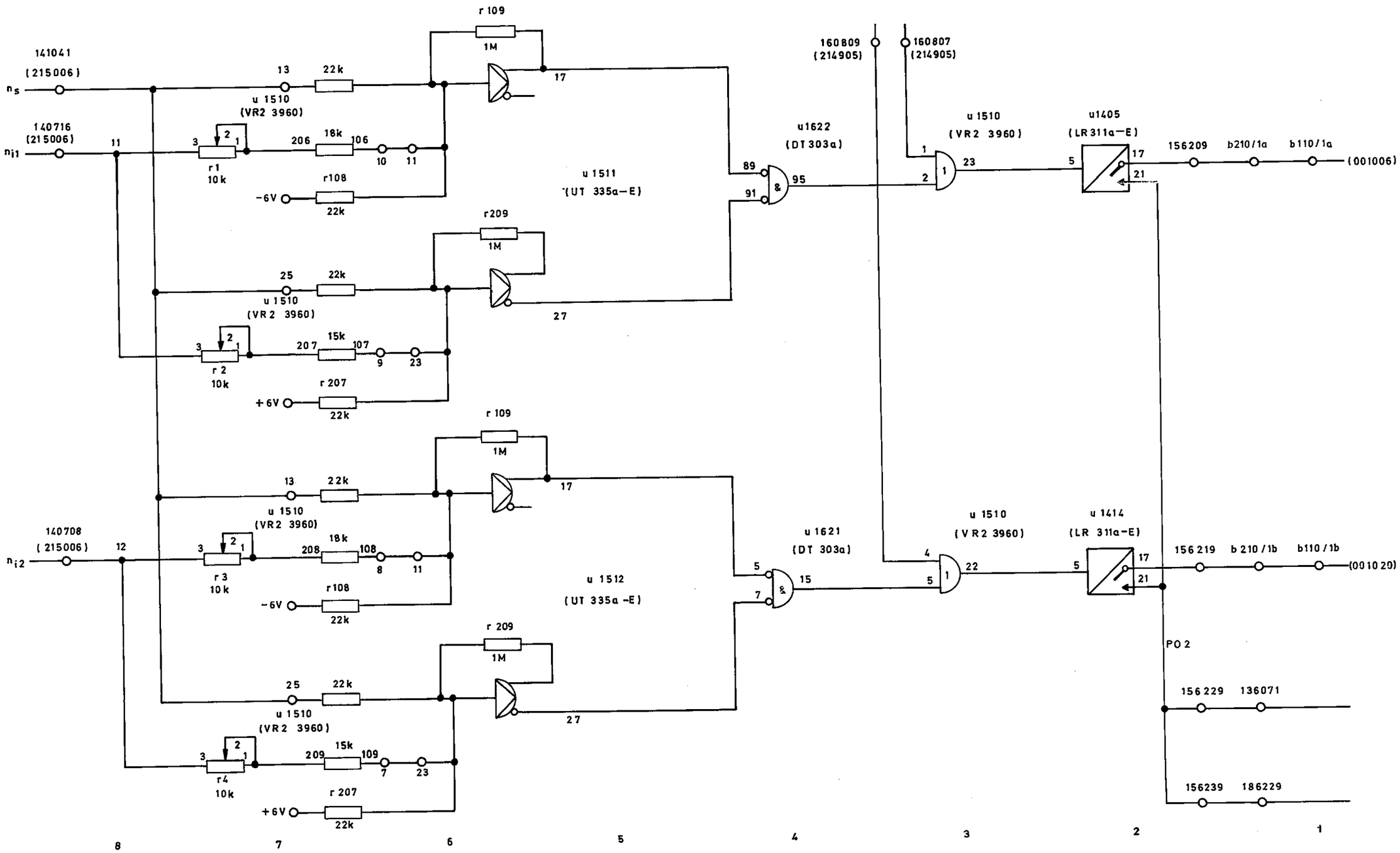


Speed Control (Azimuth): Circuit Diagram

Figure 21-50

Part 1

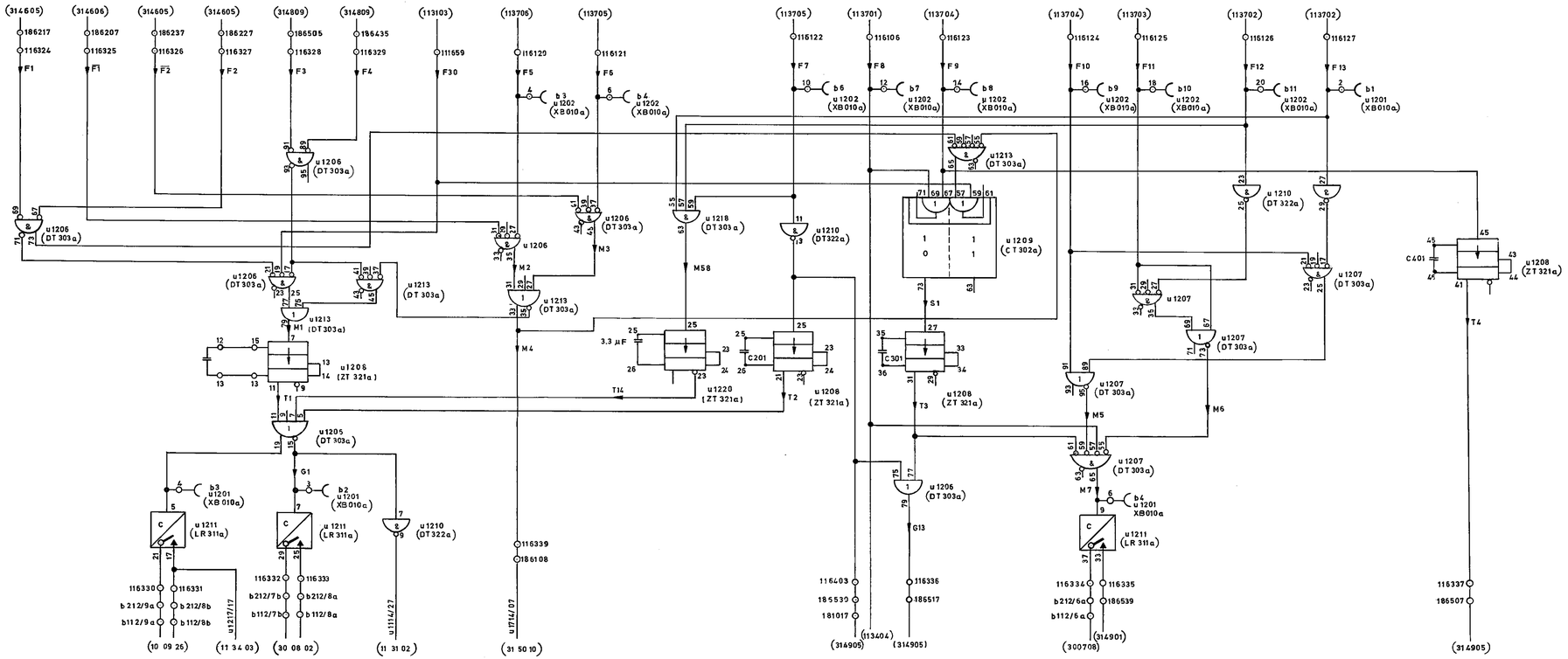
Iss.1



Speed Actual Value Alarm Detection (Azimuth): Circuit Diagram.

Figure 21-51

Part 1



NOTE:

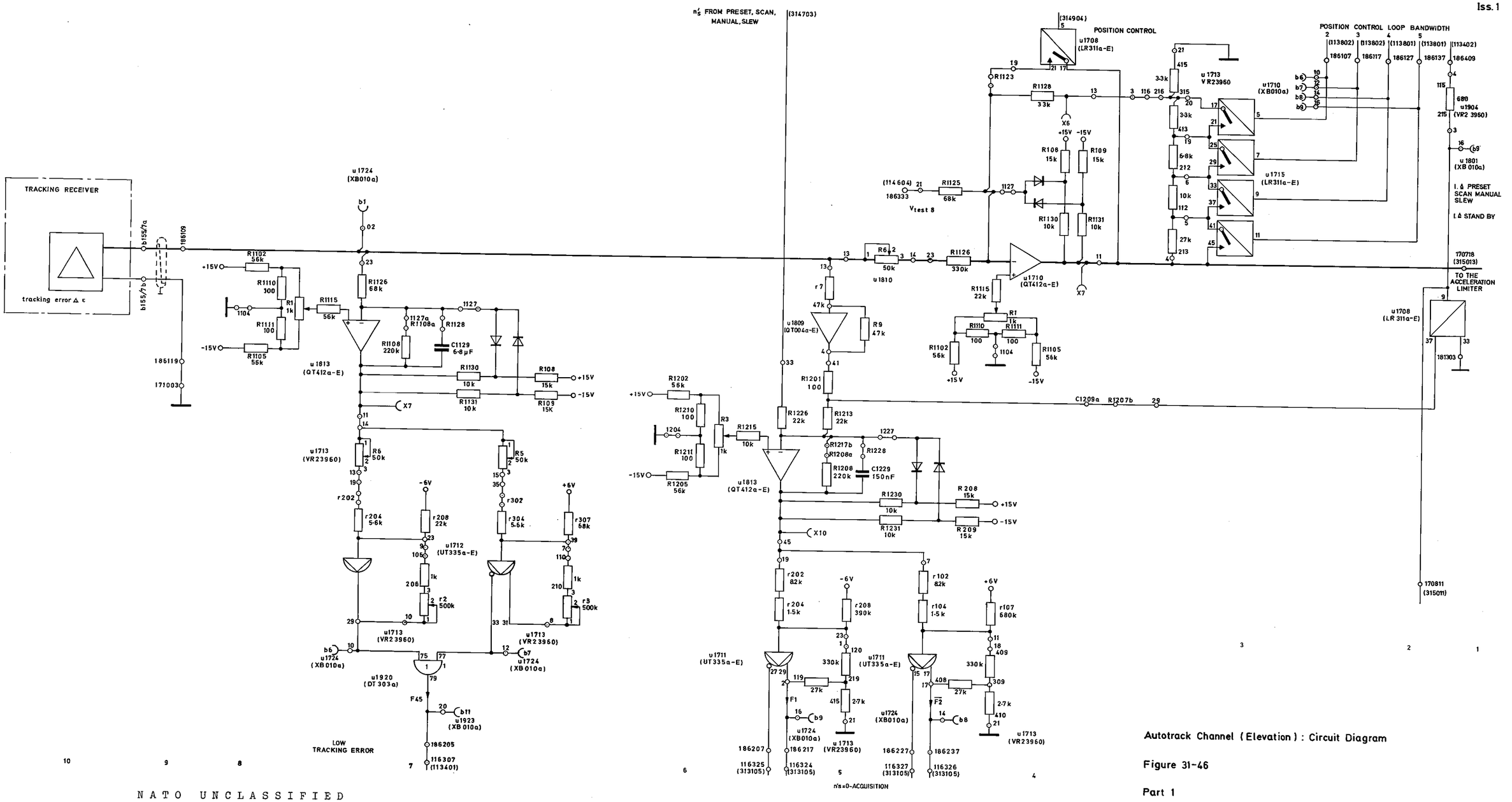
SEE TABLE 2.2-2 PART ONE SECTION TWO FOR LOGIC FUNCTIONS.

Logic (Elevation); Circuit Diagram

Figure 31 - 31

Part 1

Iss. 1

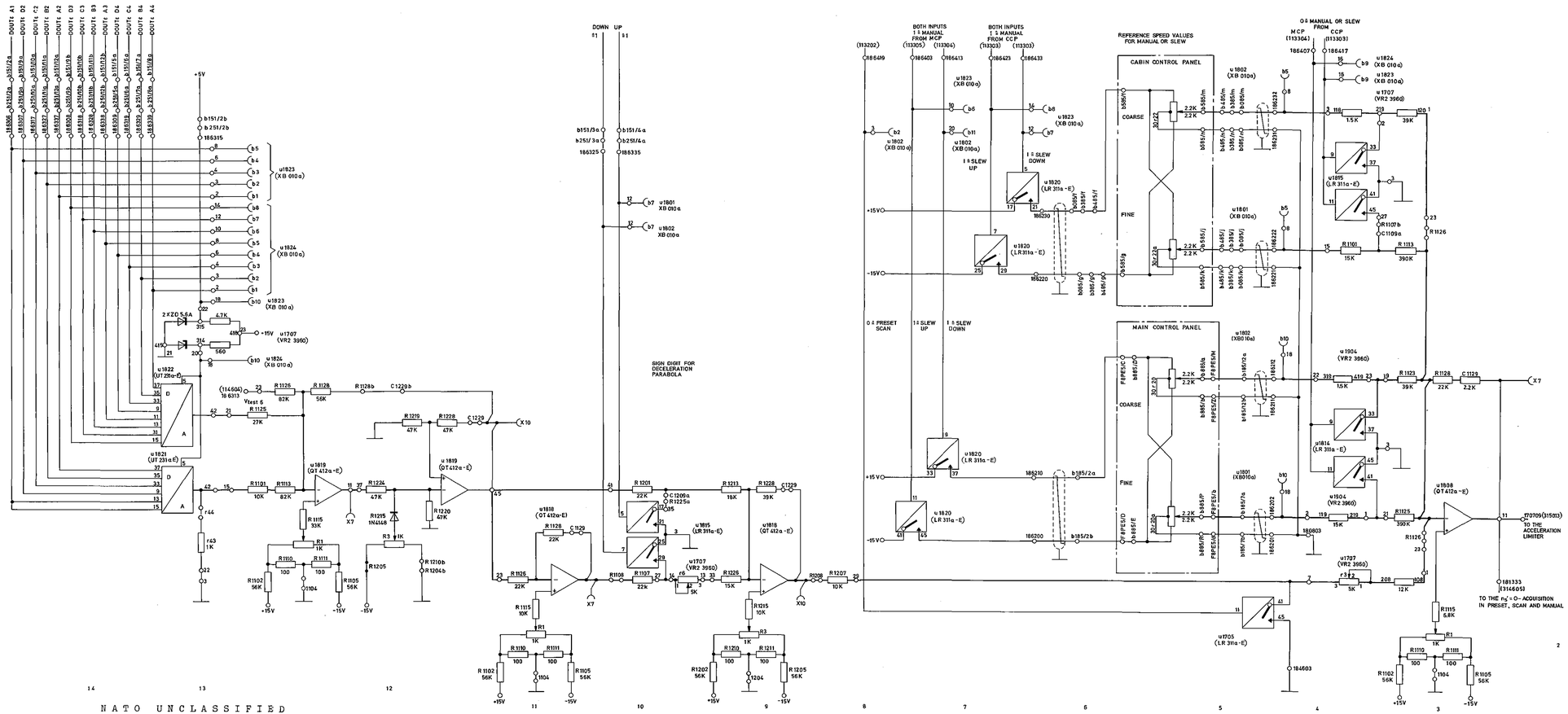


Autotrack Channel (Elevation) : Circuit Diagram

Figure 31-46

Part 1

Iss. 1

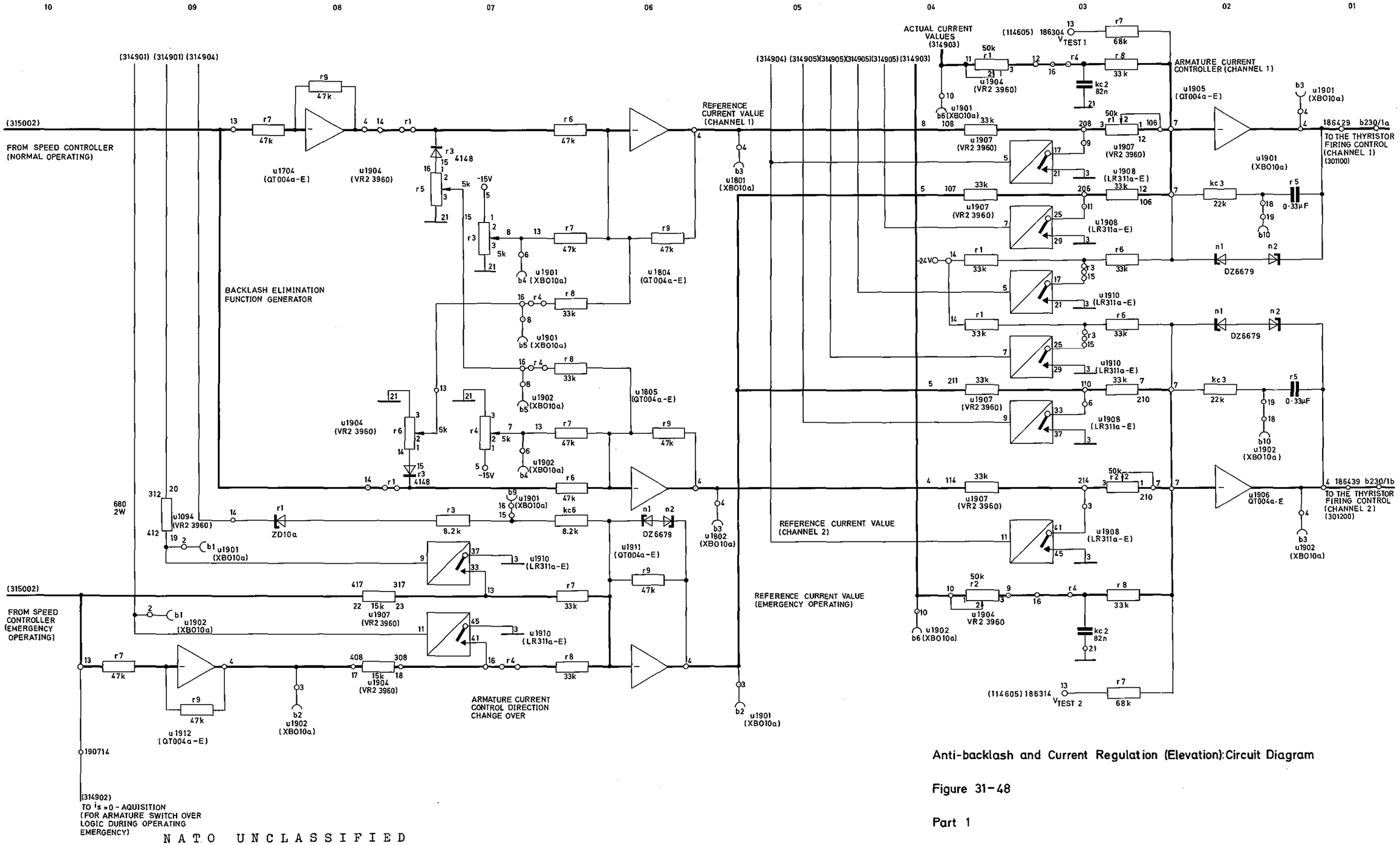


Preset, Manual and Slew Channel (Elevation): Circuit Diagram

Figure 31-47

Part 1

Iss. 1

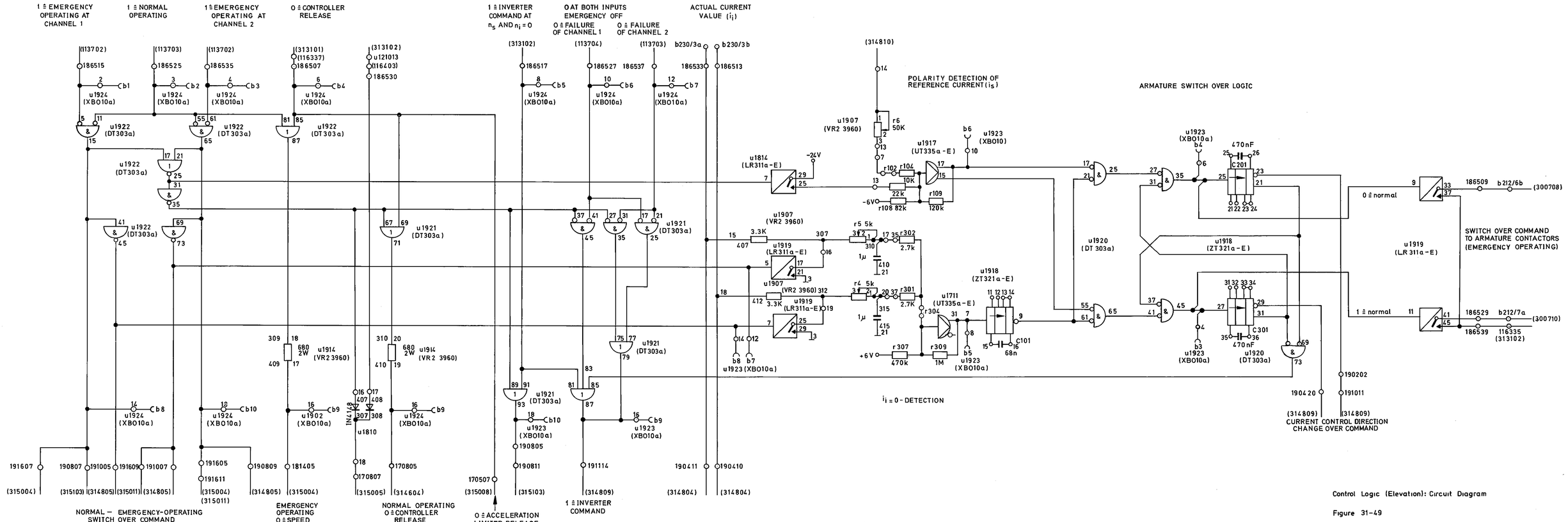


Anti-backlash and Current Regulation (Elevation): Circuit Diagram

Figure 31-48

Part 1

Iss. 1

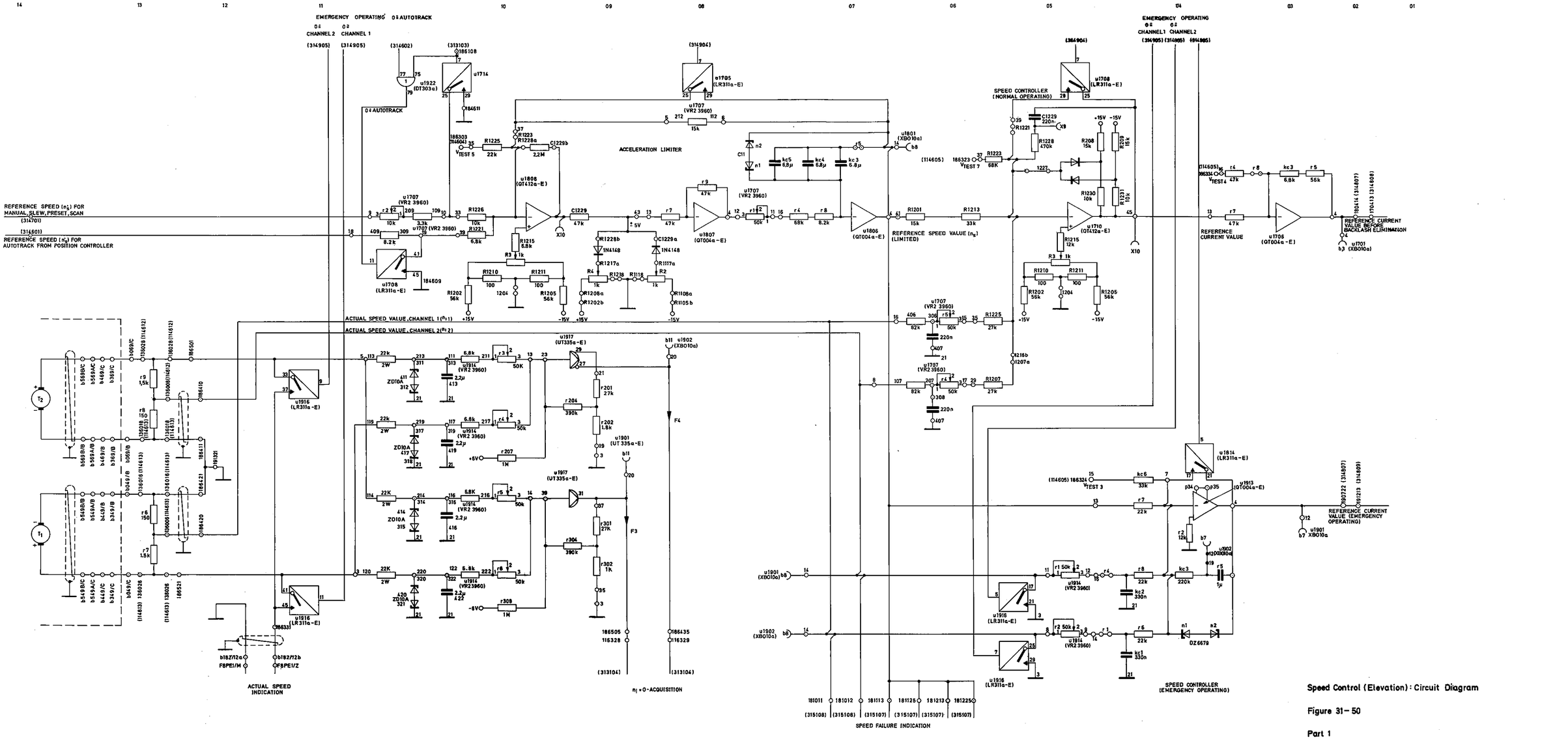


Control Logic (Elevation): Circuit Diagram

Figure 31-49

Part 1

Iss. 1

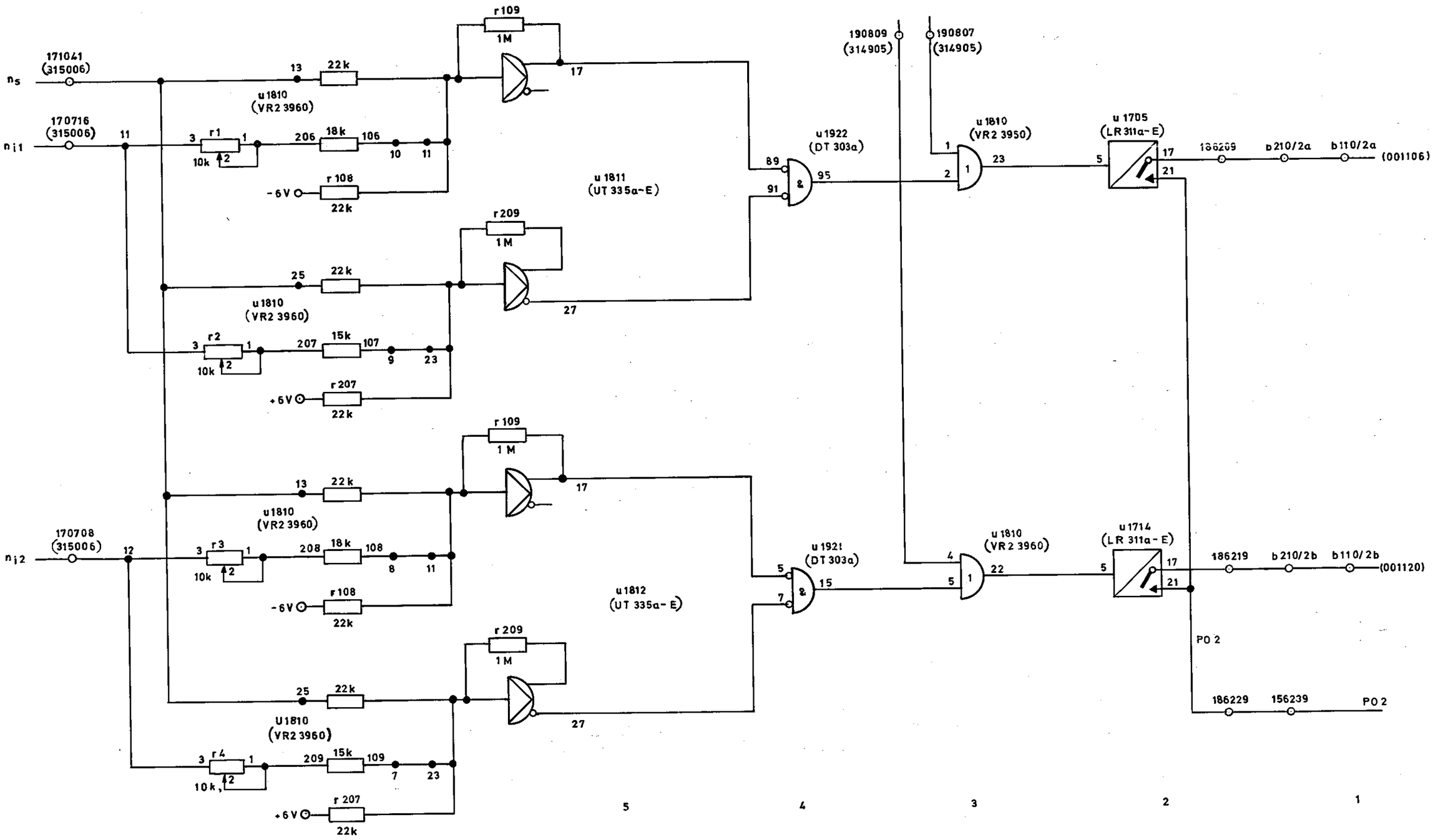


Speed Control (Elevation): Circuit Diagram

Figure 31–50

Part 1

Iss.1

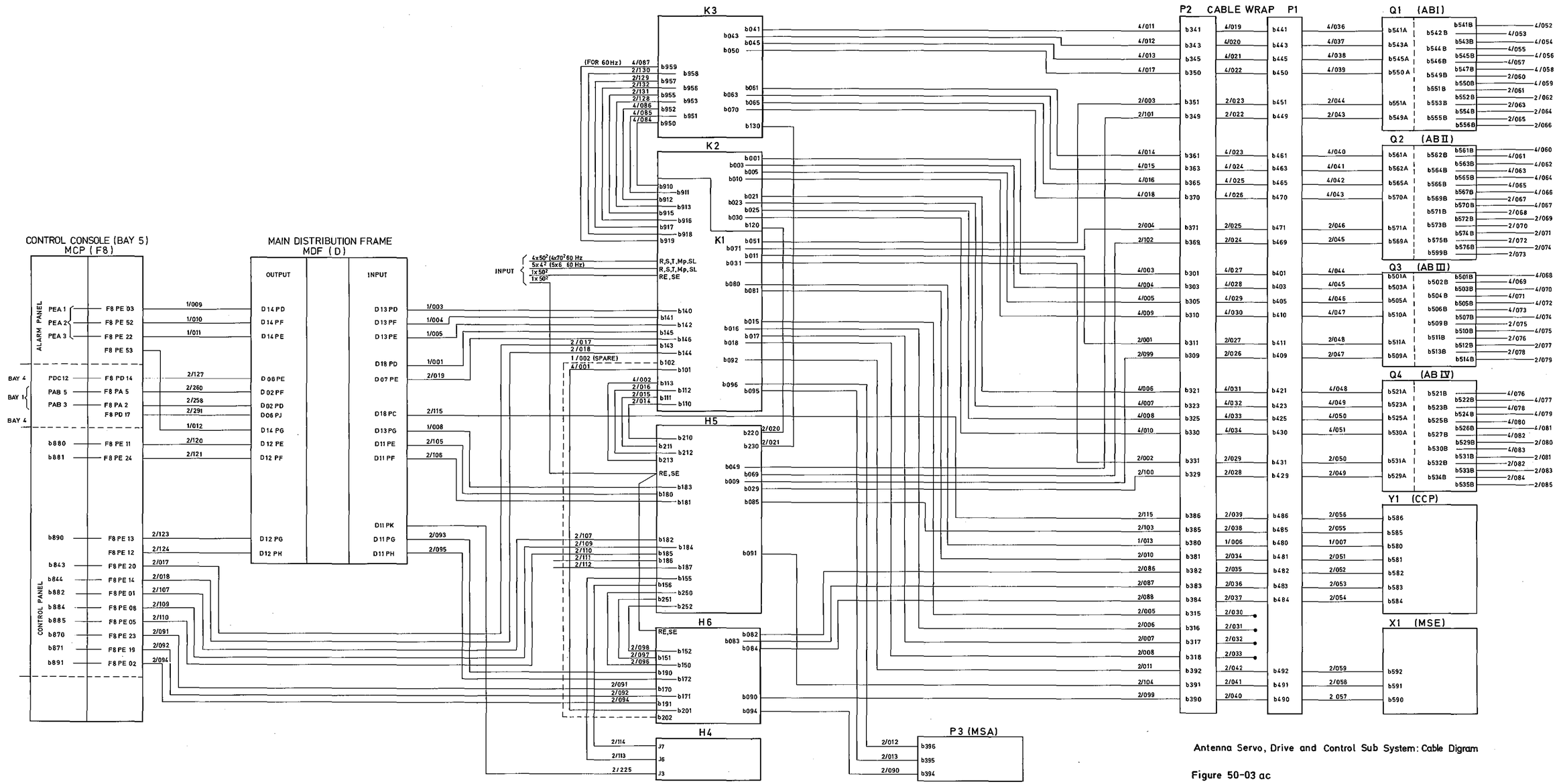


Speed Actual Value Alarm Detection (Elevation): Circuit Diagram

Figure 31-51

Part 1

Iss. 1

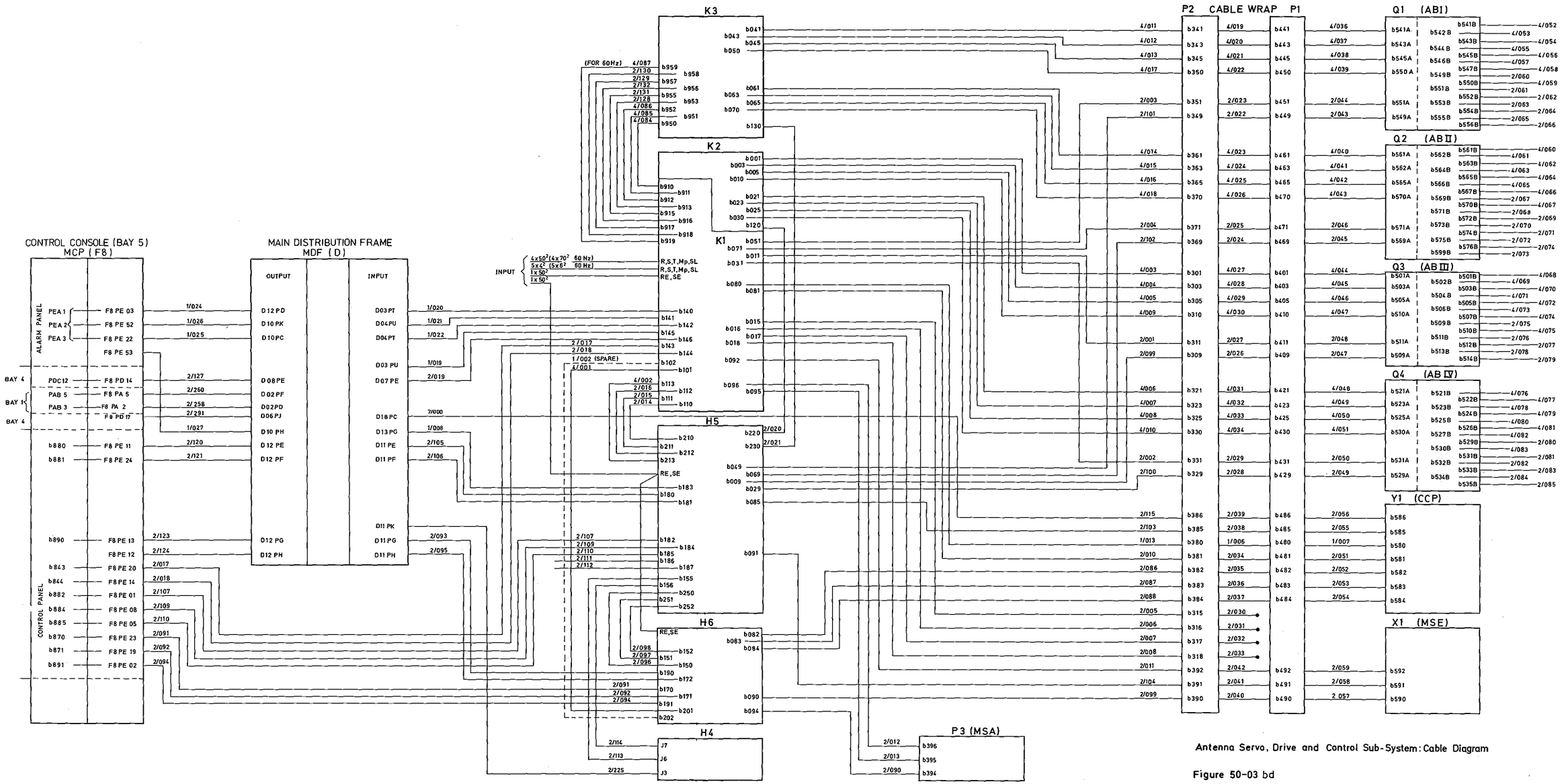


Antenna Servo, Drive and Control Sub System: Cable Digram

Figure 50-03 ac

Part 1

Iss.1



Antenna Servo, Drive and Control Sub-System: Cable Diagram

Figure 50-03 bd

Part 1

A) CABLES

B) PLUGS AND BOXES MOUNTING RECEPTACLE

LIST FOR STANDARDIZED CABLES AND CIRCULAR CONNECTORS (MIL-C-5015D)
USE FOR WIRES OF SERVO AND DRIVE.

Iss. 1

No.	TYPE OF CABLE: VARIATION		No OF WIRES	SCREEN	CROSS SECTION mm²	CABLE Ø mm	BOX MOUNTING RECEPTACLE FOR CABLE WRAP: VARIATION	WITH PINS	VARIATION	WITH SOCKET	STRAIGHT PLUG: VARIATION	WITH PINS	VARIATION	WITH SOCKETS	THROUGH BULKHEAD RECEPTACLES: VARIATION		BOX MOUNTING RECEPTACLE FOR ARMATURES AND BOXES: VARIATIONS	WITH PINS	VARIATIONS	WITH SOCKETS	RATINGS OF CONTACTS: AWG	MAX. mm²	MAX. CURRENT A
1	C1	EPD 0842 (4 x AWG 18)	4	X	0·96	5·9	S 11	MS 3100 G 16S-8P /F 80	S 21	MS 3100 G 16S-8S /F 80	S 31	MS 3106 G 16S-8P /F 80	S 41	MS 3106 G 16S-8S /F 80	S 51	TBF 16S-8PS	S 61	MS 3102 R 16S-8P /F 80	S 71	MS 3102 R 16S-8S /F 80	16	1·23	22
1A	C 28	44A 1141.16-0/2/5/9-9 (4 x AWG 16)	4	X	1·23						S 31A	MS 3106E 16S-8P /F 80	S 41A	MS 3106 E 16S-8S /F 80									
1B	C 28A	44A 1121.16-0/9-0 (2 x AWG 16)	2	X	1·23																		
2	C2	EPD 0840 (12 x AWG 18)	12	X	0·96	9·3	S 12	MS 3100 G 22-19P /F 80	S 22	MS 3100 G 22-19S /F 80	S 32	MS 3106G 22-19P /F 80	S 42	MS 3106 G 22-19S /F 80	S 52	TBF 22-19 PS	S 62	MS 3102R 22-19P /F 80	S 72	MS 3102 R 22-19S /F 80	16	1·23	22
											S 32A	MS 3106E 22-19P /F 80	S 42A	MS 3106 E 22-19S /F 80									
3	C3	EPD 0835 (25 x AWG 22)	25	X	0·38	9·98	S 13	MS 3100 G 28-12P /F 80	S 23	MS 3100 G 28-12S /F 80	S 33	MS 3106 G 28-12P /F 80	S 43	MS 3106 G 28-12S /F 80	S 53	TBF 28-12 PS	S 63	MS 3102R 28-12P /F 80	S 73	MS 3102 R 28-12S /F 80	16	1·23	22
											S 33A	MS 3106E 28-12P /F 80	S 43A	MS 3106E 28-12S /F 80									
4	C4	EPD 0838 (4 x AWG 14)	4	X	1·94	7·9	S 14	MS 3100 G 18-11P /F 80	S 24	MS 3100 G 18-11S /F 80	S 34	MS 3106G 18-11P /F 80	S 44	MS 3106G 18-11S /F 80	S 54	TBF 18-11 PS	S 64	MS 3102R 18-11P /F 80	S 74	MS 3102 R 18-11S /F 80	12	3·77	47
4A	C27	44A 1141.12-0/1/2/9-9 (4 x AWG 12)	4	X	3·27						S 34A	MS 3106E 18-11P /F 80	S 44A	MS 3106E 18-11S /F 80									
5	C5	EPD 0841 (3 x AWG 8)	3	X	8·6	16·1	S 15	MS 3100 G 32-17P /F 80	S 25	MS 3100 G 32-17S /F 80	S 35	MS 3106G 32-17P /F 80	S 45	MS 3106G 32-17S /F 80	S 55	TBF 32-17 PS	S 65	MS 3102R 32-17P	S 75	MS 3102 R 32-17S	4	21·55	135
5A	C26	EPD 0882 (3 x AWG 12)	3	XX	3·27						S 35A	MS 3106E 32-17P /F 80	S 45A	MS 3106 E 32-17S / F 80									
6	C6	HC 314-9 x MA 1024S + MSB 6	9 x 2	XX	0·34		S 16	MS 3100G 32-7P/A95[1])/F 80	S 26	MS 3100 G 32-7S/A95[1])/F 80	S 36	MS 3106G 32-7P/A95[1])/F 80	S 46	MS 3106G 32-7S/A95[1])/F 80	S 56	TBF 32-7 PS / A95[1])	S 66	MS 3102R 32-7P/A95[1])/F 80	S 76	MS 3102 R 32-7S/A95[1])/F 80	16 BZW 12	1·23	22
											S 36A	MS 3106E 32-7P/A95[1])/F 80	S 46A	MS 3106 E 32-7S/A95[1])/F 80									
7	C7	EPD 0833 (48 x AWG 18)	36+6 x 2 TWISTED	X	0·96	21·4	S 17	MS 3100 G 36-10P /F 80	S 27	MS 3100 G 36-10S /F 80	S 37	MS 3106G 36-10P /F 80	S 47	MS 3106G 36-10S /F 80	S 57	TBF 36-10 PS	S 67	MS 3102 R 36-10P	S 77	MS 3102 R 36-10S /F 80	16	1·23	22
											S 37A	MS 3106E 36-10P /F 80	S 47A	MS 3106 E 36-10S /F 80									

[1] A95 DESIGN WITH GOLD CONTACTS

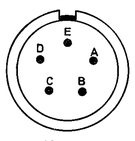
C26–C28A CABLES ON DRIVING MOTORS

X SINGLE SCREEN

XX DOUBLE SCREEN

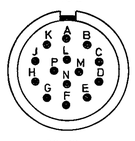
FIG	ARRANGEMENT No.	CORRESPONDING CABLE (GMJ 2 56 0201)
1	16S-8	C1 + C28 + C28A
2	22-19	C2
3	28-12	C3
4	18-11	C4 + C27
5	32-17	C5 + C26
6	32-7	C6
7	36-10	C7

FIG 1



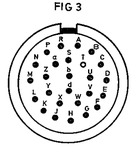
16S-8

FIG 2



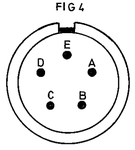
22-19

FIG 3



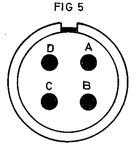
28-12

FIG 4



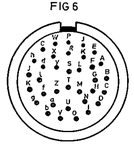
18-11

FIG 5



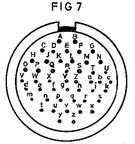
32-17

FIG 6



32-7

FIG 7



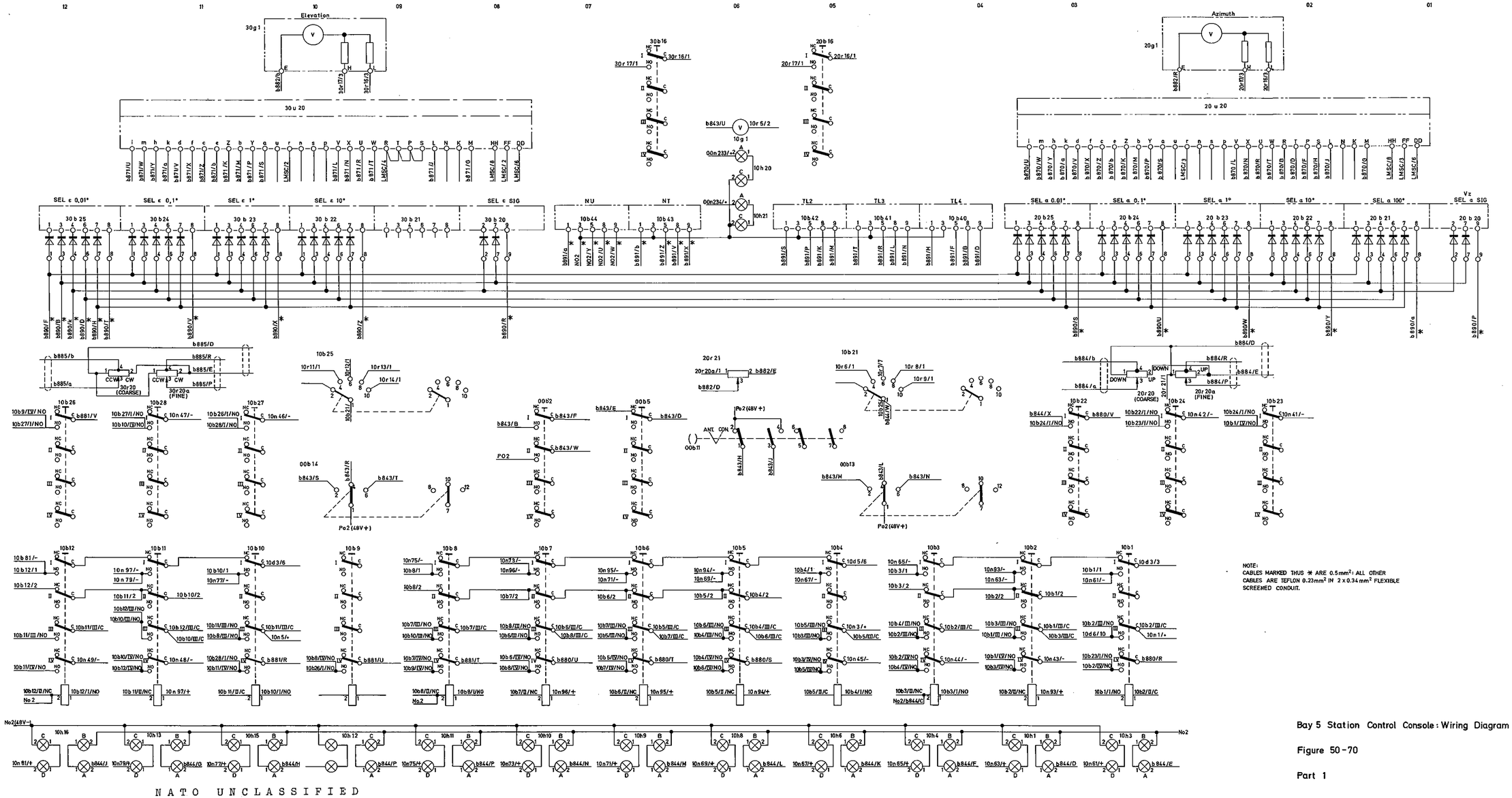
36-10

Summary of Cables and Connectors

Figure 50-04

Part 1

Iss. 1

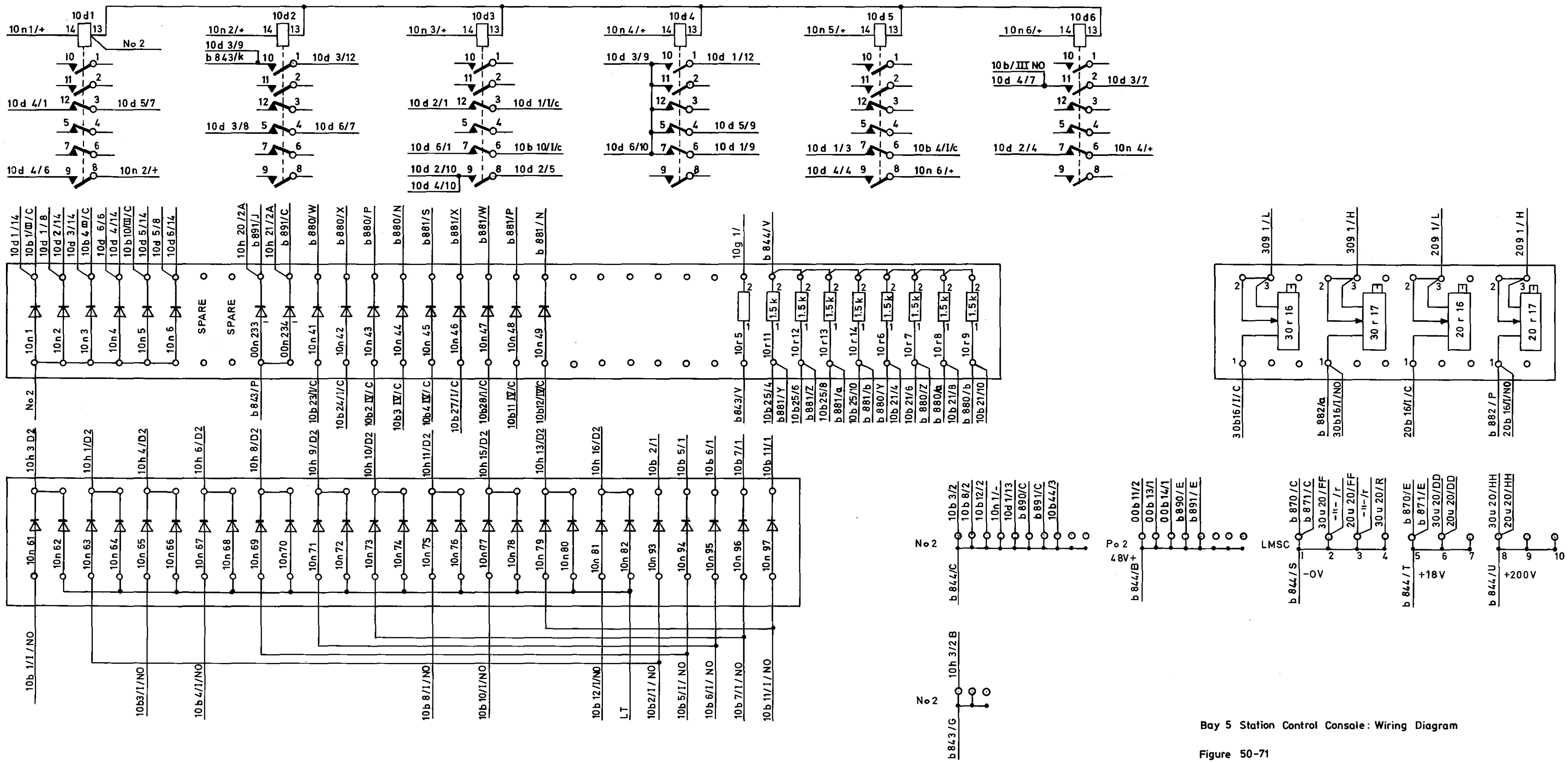


Bay 5 Station Control Console: Wiring Diagram

Figure 50-70

Part 1

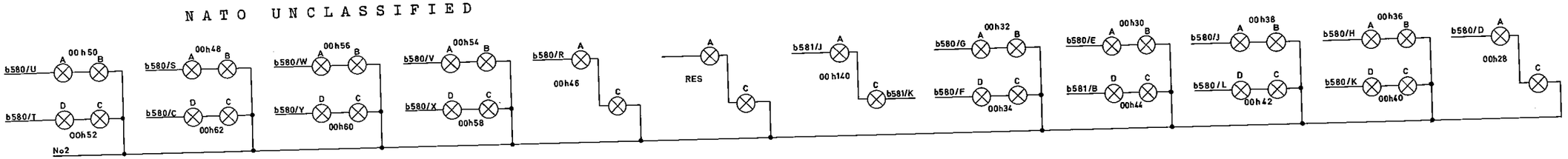
Iss. 1

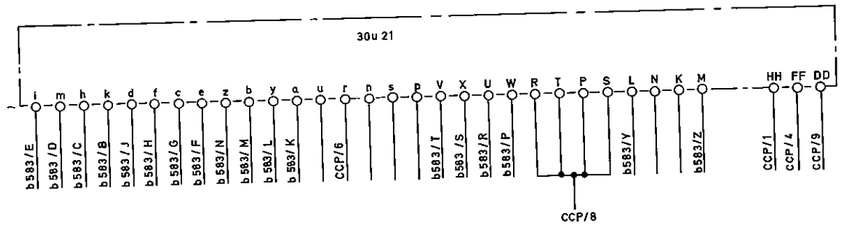


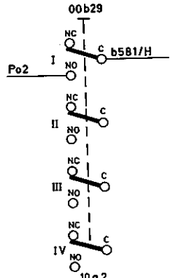
Bay 5 Station Control Console: Wiring Diagram

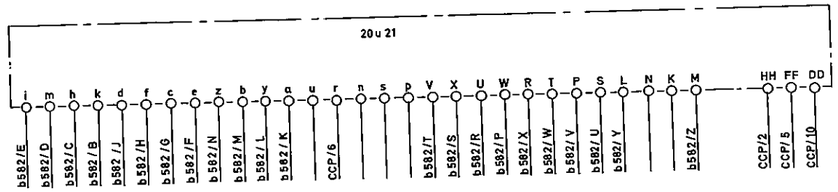
Figure 50-71

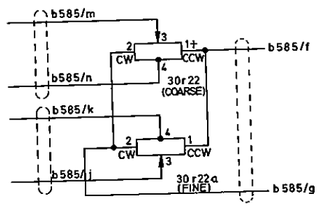
Part 1

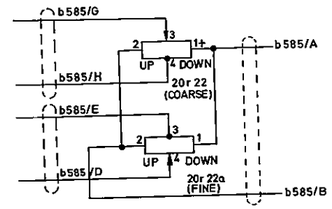


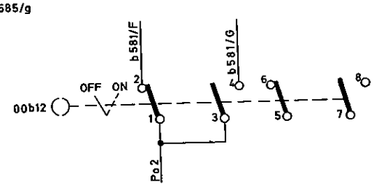


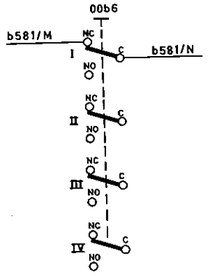


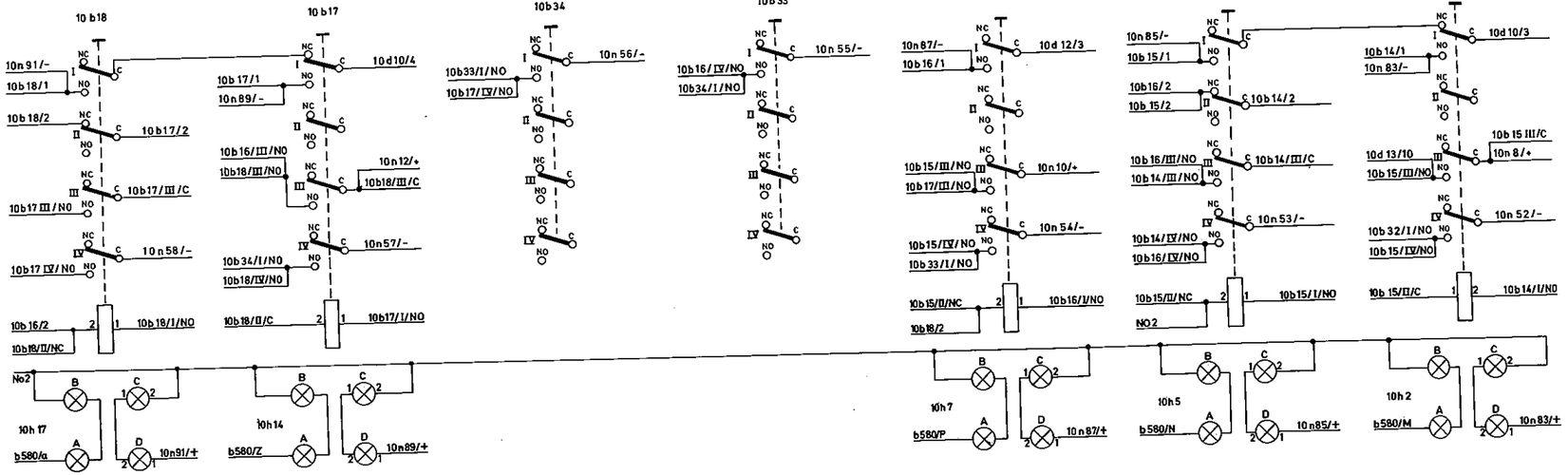








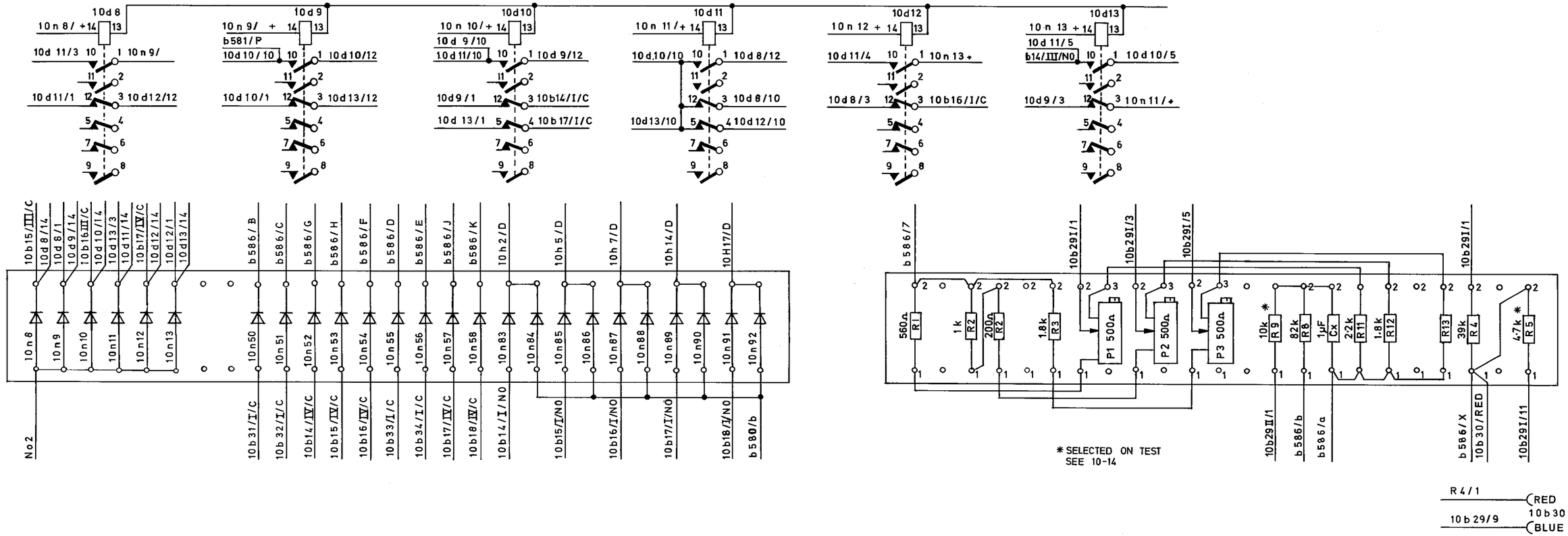




Cabin Control Panel: Wiring Diagram

Figure 50-78

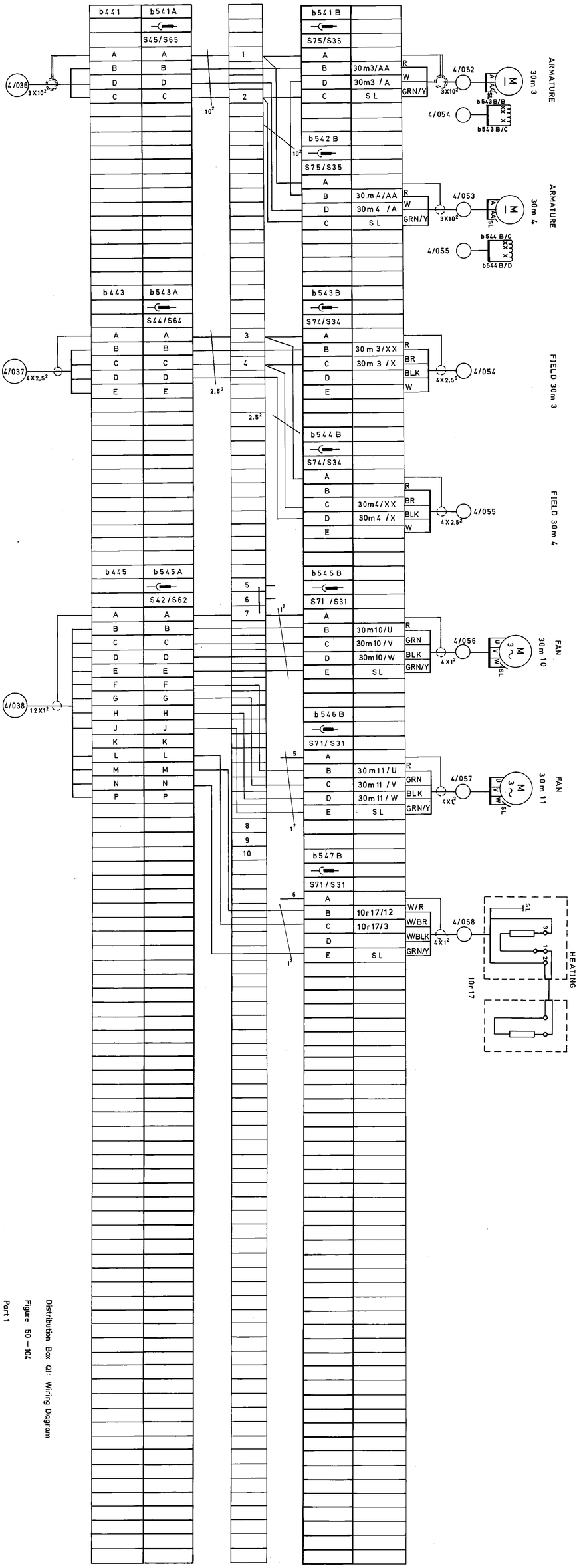
Part 1



Cabin Control Panel: Wiring Diagram

Figure 50-79

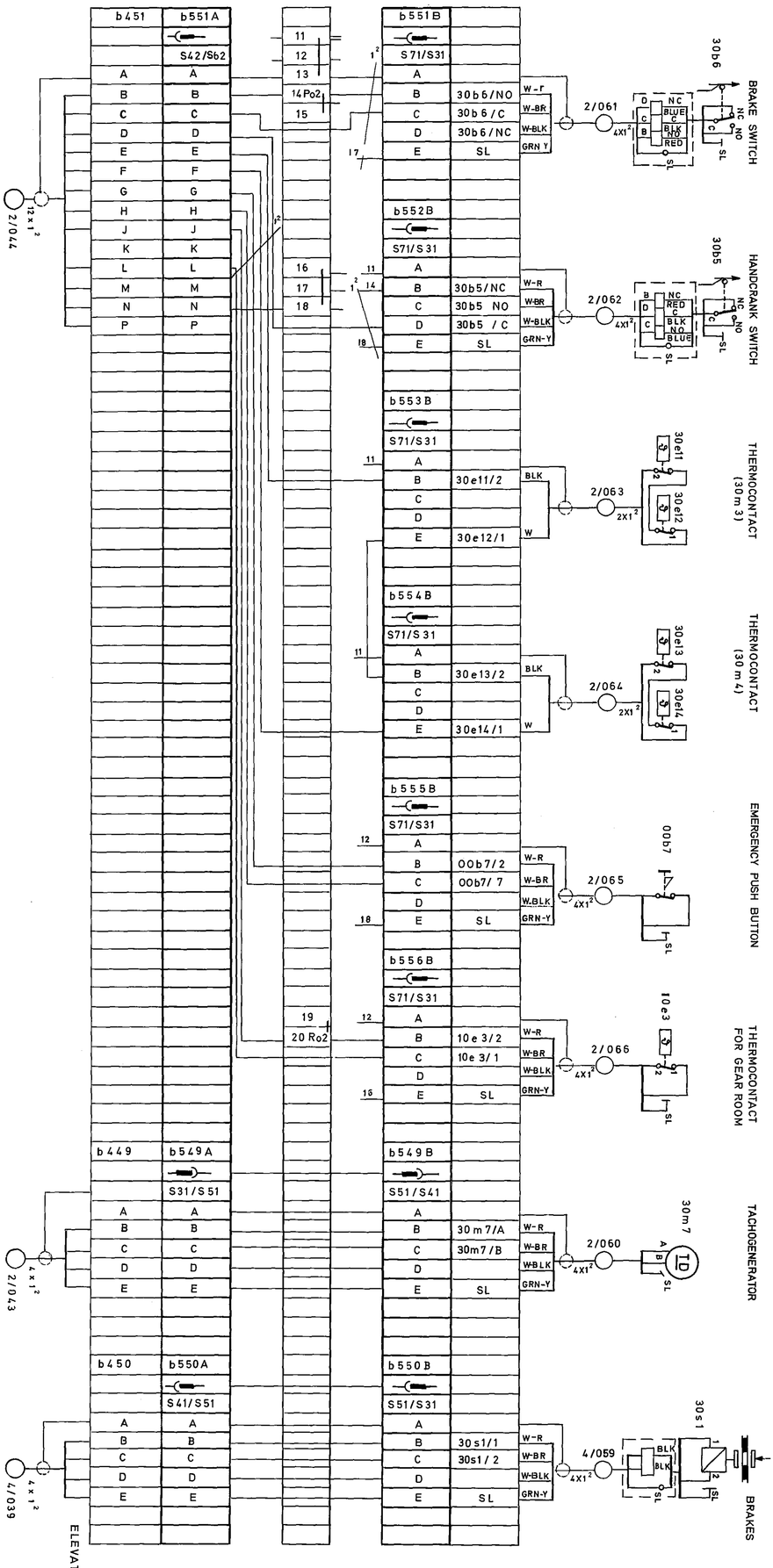
Part 1



Distribution Box A1: Wiring Diagram

Figure 50 – 104

Part 1



NATO UNCLASSIFIED

Distribution Box Qt: Wiring Diagram

Figure 50-105

Part 1

STRAIGHT PLUG | THROUGH-BULKHEAD RECEPTACLE | STRAIGHT PLUG

b 461 | b 561A | 1 | b 561B

S45/S65 | S75/S35

A | A | A

B | B | B | 30m 5/AA | R | W | GRN-Y | 4/060 | 3x10² | M | ARMATURE 30m5

D | D | D | 30m5/A

C | C | 2 | SL | b563 B/B

4/040 — 3x10² — 10² — 4/062 — b563 B/C

b562 B | 10² | S75/S35

A

B | 30m 6/AA | R | W | GRN-Y | 4/061 | 3x10² | M | ARMATURE 30m6

D | 30m6/A

C | SL | b564 B/C

4/063 — b564 B/D

b 463 | b563A | b563 B

S44/S64 | S74/S34

A | A | 2.5² | 3 | A

B | B | B | 30m 5/XX | BR | R | BLK | W | 4x2.5² | 4/062

C | C | 4 | C | 30m5/X

4/041 — 4x2.5² — D | D | D

E | E | E

2.5² | b564 B

S74/S34

A

B | R

C | 30m 6/XX | BR

D | 30m 6/X | BLK | W | 4x2.5² | 4/063

E

b 465 | b565A | 5 | b565 B

6 | 1² | S71/S31

S42/S62 | 7 | A

A | A | B | 30m 1/U | R | BR | BLK | GRN-Y | 4/064 | 4x1² | M | FAN 30m12

B | B | C | 30m 1/V

C | C | D | 30m 1/W

D | D | E | SL

E | E

F | F

G | G

4/042 — 12x1² — H | H | b566 B

J | J

K | K | 1² | 5

L | L | S71/S31

M | M | A

N | N | B | 30m 13/U | R | BR | BLK | W | 4x1² | 4/065 | M | FAN 30m13

P | P | C | 30m 13/V

D | 30m 13/W

E | SL

8

9

10 | b567B

S71/S31

1² | 6 | A

B | 10r 18/2 | W-R | W-BR | W-BLK | GRN-Y | 4/066 | 4x1² | SL | 3 | 1 | 2 | HEATING | 10r18

C | 10r 18/3

D

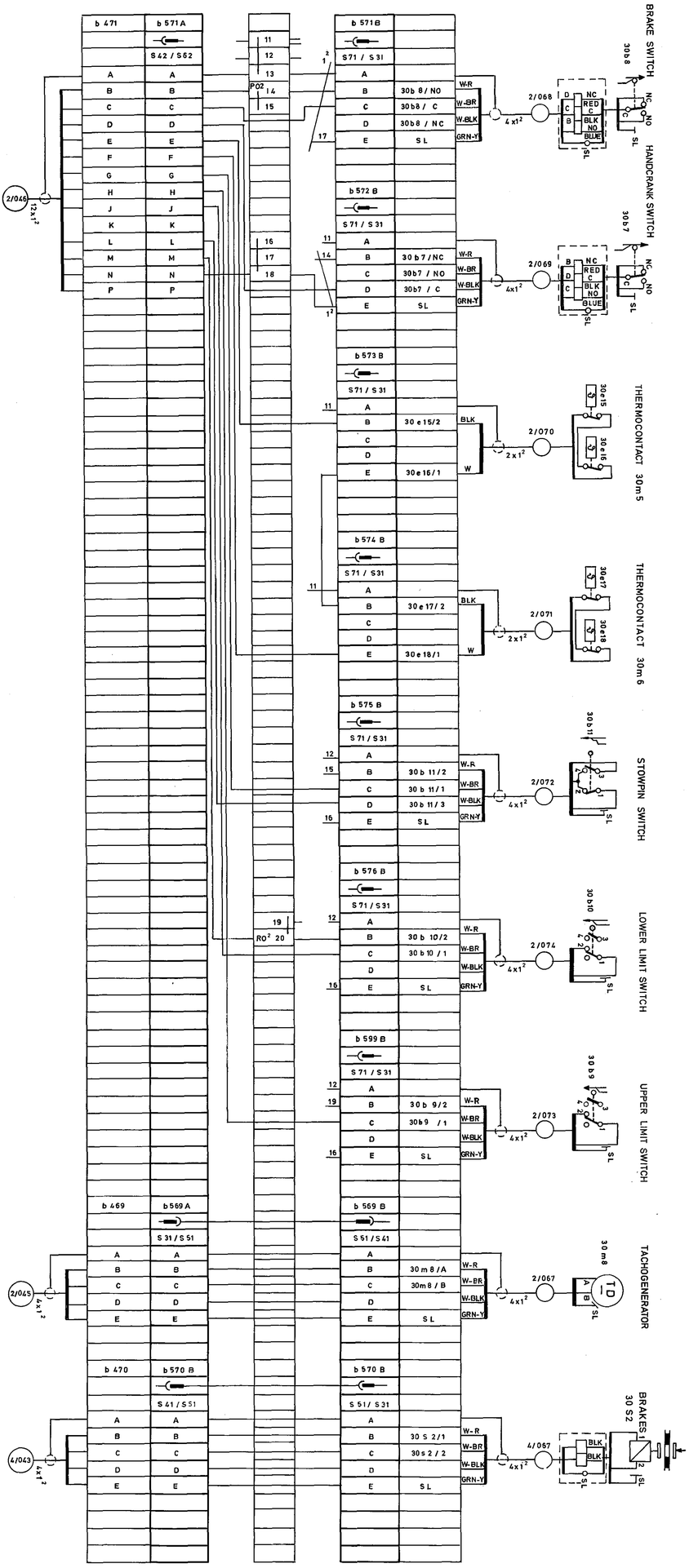
E | SL

Iss.1

Distribution Box Q2: Wiring Diagram

Figure 50-106

Part 1



Distribution Box O2: Wiring Diagram

Figure 50-107

Part 1

STRAIGHT PLUG | THROUGH-BULKHEAD RECEPTACLE | STRAIGHT PLUG

b401 — S45/S65 — A B D C

4/044 — 3 X 10²

b501A — S45/S65 — A B D C

1 — 2 — 10²

b501B — S75/S35 — A B D C

20m3/AA — R — 20m3 / A — W — S L — GRN/Y

3X10² — 4/068 — b503B/B — ARMATURE 20m3

4/070 — b503B/C

b502B — S75/S35 — A B D C

10²

20m4/AA — R — 20m4 / A — W — S L — GRN/Y

3X10² — 4/069 — b504B/C — ARMATURE 20m4

4/071 — b504B/D

b403 — S44/S64 — A B C D E

4/045 — 4X2,5²

b503A — S44/S64 — A B C D E

3 — 4 — 2,5²

b503B — S74/S34 — A B C D E

20m3/XX — 20m4/X — R — BR — BLK — W

4X2,5² — 4/070

b504B — S74/S34 — A B C D E

20m4/XX — 20m4/X — R — BR — BLK — W

4X2,5² — 4/071

FIELD 20m3

FIELD 20m4

b405 — S42/S62 — A B C D E F G H J K L M N P

4/046 — 12 X 1²

b505A — S42/S62 — A B C D E F G H J K L M N P

5 — 6 — 7 — 8 — 9 — 10 — 1²

b505B — S71/S31 — A B C D E

20m10/U — 20m10/V — 20m10/W — S L — R — GRN — BLK — GRN/Y

4X1² — 4/072 — FAN 20m10

b506B — S71/S31 — A B C D F

20m11/U — 20m11/V — 20m11/W — S L — R — GRN — BLK — GRN/Y

4X1² — 4/073 — FAN 20m11

b507B — S71/S31 — A B C D E

10r15/2 — 10r15/3 — W/R — W/BR — W/BLK — GRN/Y

4X1² — 4/074 — HEATING 10r15

Iss.1

Distribution Box Q3: Wiring Diagram

Figure 50 – 108

Part 1

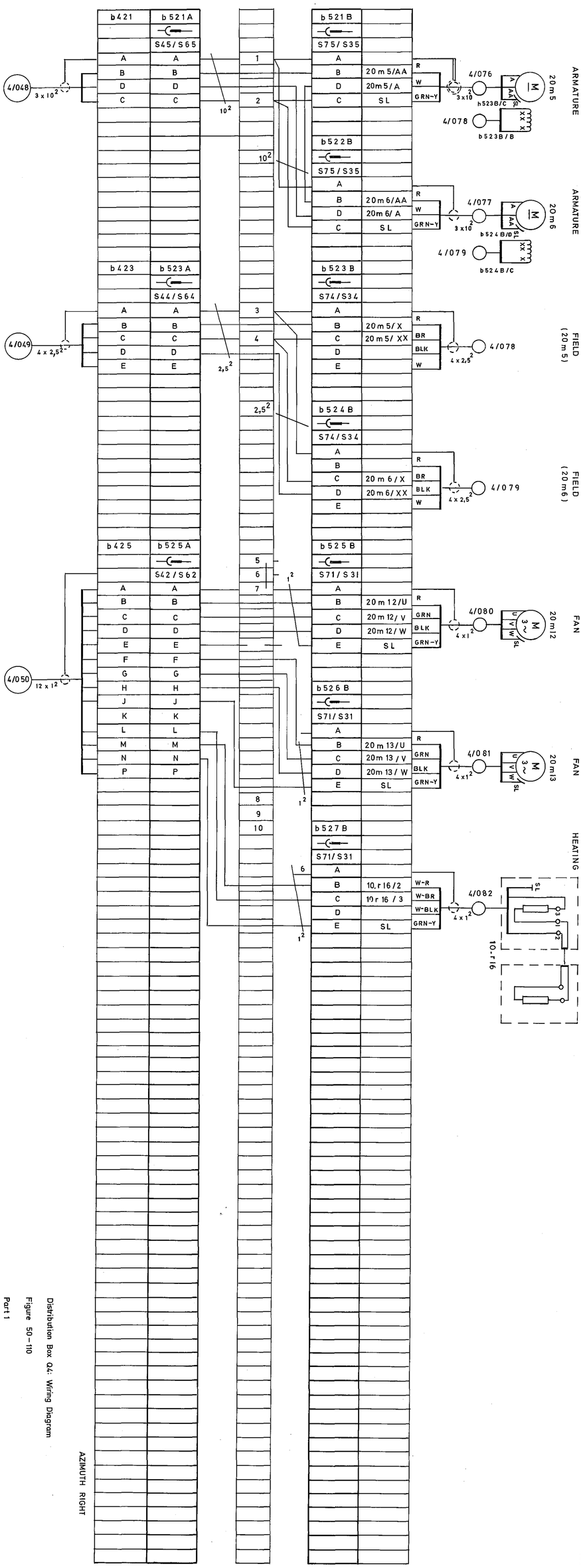
STRAIGHT PLUG | THROUGH — BULKHEAD RECEPTACLE | STRAIGHT PLUG

Distribution Box Q3: Wiring Diagram

Figure 50 — 109

Part 1

Iss.1

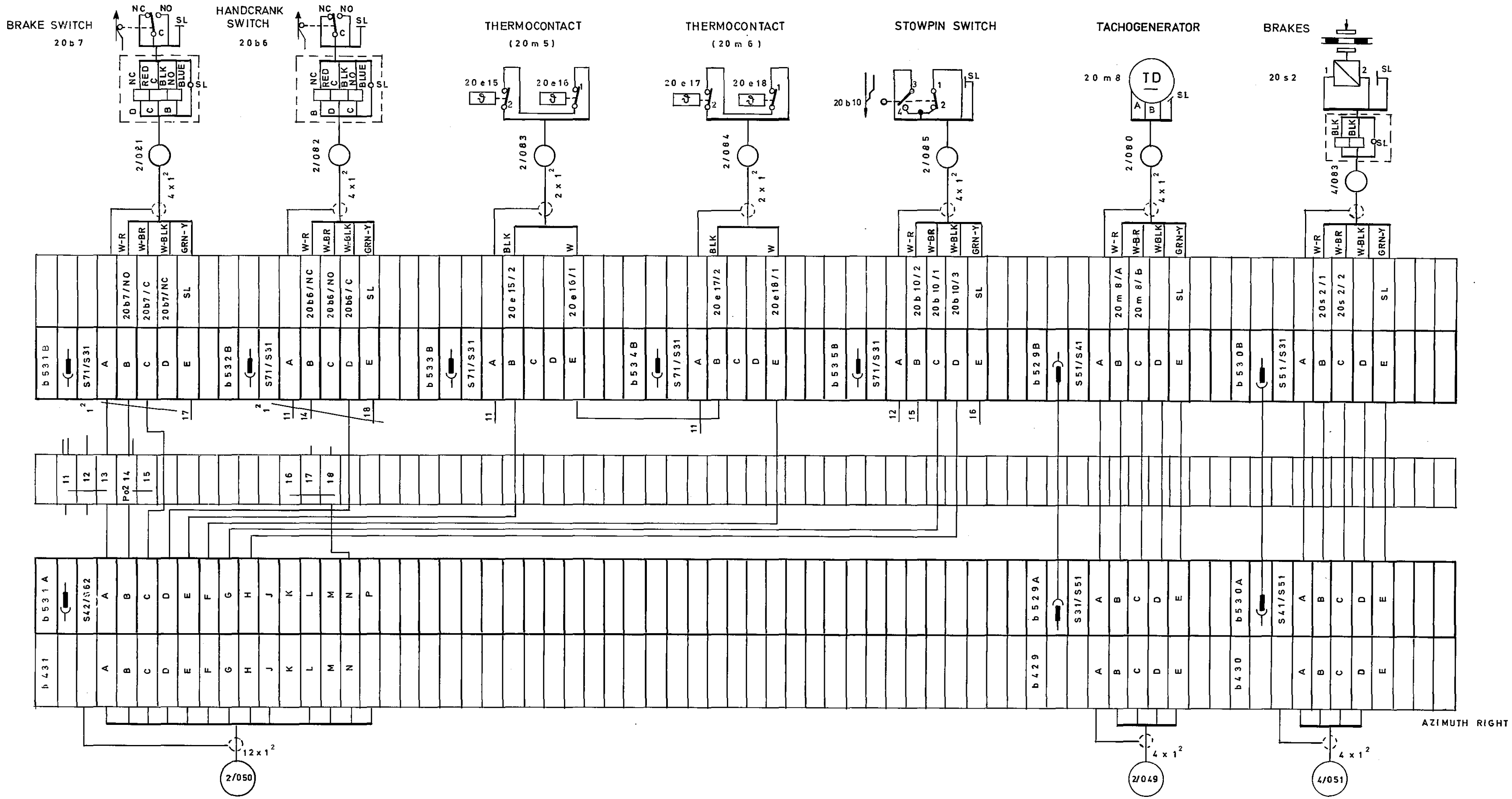


Distribution Box 04 Wiring Diagram

Figure 50–110

Part 1

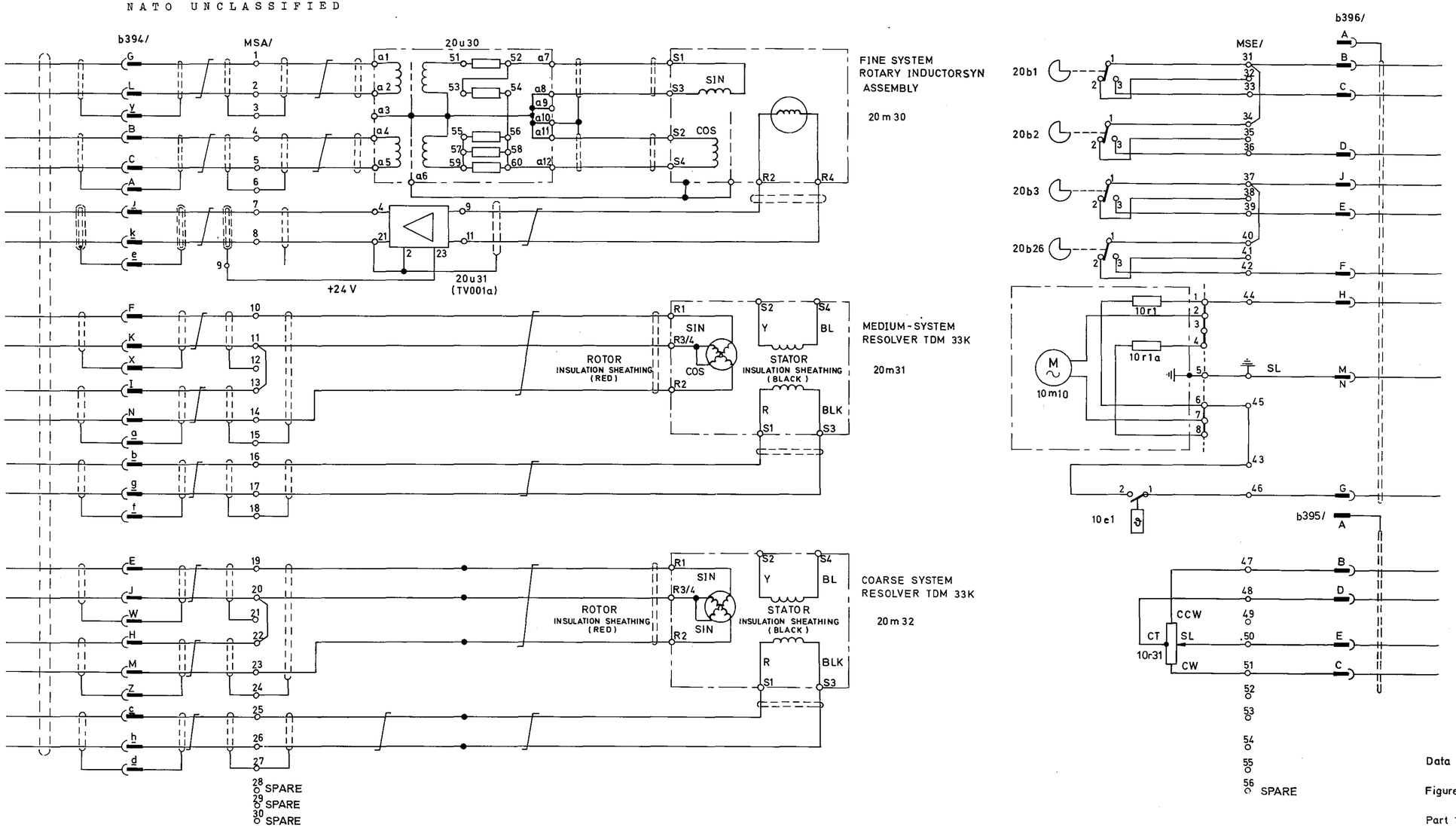
Iss.1



Distribution Box Q4 : Wiring Diagram

Figure 50-111

Part 1

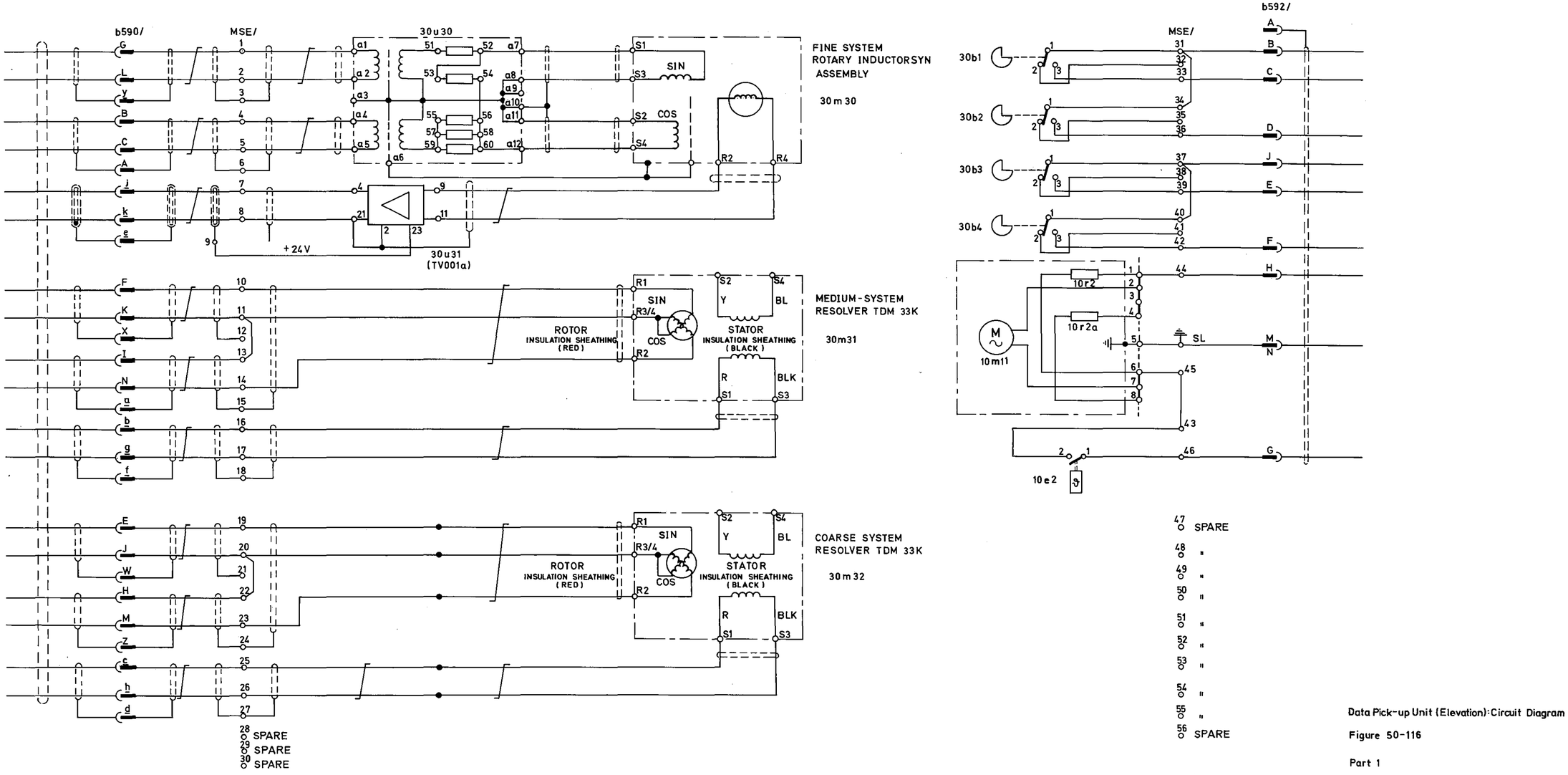


Data Pick-up Unit (Azimuth): Circuit Diagram

Figure 50-114

Part 1

Iss.1.



Data Pick-up Unit (Elevation): Circuit Diagram

Figure 50-116

Part 1