Детектор углекислого газа A5

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1 INTRODUCTION

Options which can be fitted to the basic Analox 5 instrument (PCB revision AA5-231-12) include

a) Remote Alarm Repeater
b) Liquid Crystal Display (Analox 5D versions)
c) Oxygen sensor
d) Two relay contacts on the main printed circuit board
e) 0-1V output

This document details all of the options. Some details will not apply to models on which certain options are not fitted.

2 INSTALLATION

Please refer to the detail in the User/Installation Manual.

The following items are not covered in the basic User Manual, as they involve gaining access to the enclosure.

2.1 0-1V ANALOGUE OUTPUT MODELS

Instruments with a voltage output are normally supplied with a pre-fitted two core cable which provides the voltage output. The red core is the positive signal and the blue core is the negative signal or 0V reference.

Internally these connect to two terminals marked ST5 ANOP. The right hand cable entry on ST1 is the positive signal. Pot VR3 controls the span of the voltage output.

2.2 4-20mA ANALOGUE OUTPUT MODELS

Instruments with a 4-20mA current output are normally supplied with a pre-fitted two core cable which provides the signal output. The red core is the positive signal and the blue core is the negative signal.

2.3 SINGLE/DUAL RELAY OUTPUT MODELS (MAIN PCB)

One or two light duty relays may be optionally fitted to the main printed circuit board within the enclosure. This relay may be used to switch 240V AC OR 30VDC at 1A. Connections are made to the screw terminals marked ST2 and ST4. There are three terminals, marked C, NO and NC giving access to the

Common, Normally Open and Normally Closed contacts of the relay.

Unless specifically requested otherwise, when relays are fitted they are operated in 'fail safe' mode. The relays will be energised (NO and COM are connected), after the instruments warm up period, in the absence of any alarms.

The instrument may be configured either at the time of ordering, or using the Analox 5 Configuration kit, to assign the relay to either Alarm 1, Alarm 2, Oxygen or the Fault Alarm. Alarm 1, Alarm 2 and Oxygen may be specified as latching or non-latching. When latched, the relay can only be re-energised after having pressed the Mode switch to accept the alarm condition.

When the appropriate alarm condition is present, the relay will be de-energised (NC and COM are connected). (Applies in 'fail safe' mode only).

Unless otherwise specified at the time of order, the relays will be assigned to Alarm 1 and Alarm 2, and will be configured as non-latching.

NOTE : When an oxygen sensor is fitted, the instrument can normally only be fitted with one relay. If a second relay is required, the oxygen alarm indicator must be removed. Users requiring an oxygen relay as opposed to an indicator may contact the manufacturer for further details. Where an oxygen sensor and one relay are fitted the normal factory configuration will be to assign the one relay to any combination of Alarm1, Alarm2 and Oxygen Alarm.

3 OPERATION

Please refer to the detail in the User Manual.

4 FAULT CONDITIONS

During normal operation, the instrument carries out a continuous self-test procedure. If operation is satisfactory, the 'Good' indicator will be on, blinking off momentarily every 5 seconds.

1 If there are no indications on the Analox 5, check that power is connected and that the fuse in the plug is OK.

2 If the 'Good' indicator is off, and the alarm indications are believed to be incorrect, perform the Auto Zero Operation. If the fault persists, attempt the Sensor Trim operation. If this does not resolve the problem, contact the supplier or manufacturer.

3 In the unlikely event that the Infra Red (IR) source or sensor fail then appropriate indications are provided.

a) IR source failure is signaled by the internal buzzer sounding at its fast speed, and the 'Alarm 1' , 'Alarm 2' and 'Fault' indicators flashing. The Alarm Repeaters will provide the same indications if fitted.

b) IR detector failure is signaled by mid rate pulsing, of the internal buzzer together with the 'Alarm 2' and 'Fault' indicators only. The Alarm Repeaters will provide the same indications if fitted.

If either of these faults occur, then the user should perform the Auto Zero operation. If the fault persists, attempt the Sensor Trim operation. If this does not resolve the problem, contact the supplier or manufacturer.

A summary of the indicator lamps and buzzer operations is provided in Appendix B. A plasticised copy of this table is provided, to act as a quick user reference.

5 INSTRUMENT TEST/CALIBRATION

5.1 INSTRUMENT CHECK

It is recommended that the Analox 5 be checked regularly. The extent of the test depends on the instrument version.

For basic instruments providing alarm status indication only, perform the following:

a) Press the Mode switch once and ensure that all LED's illuminate and the buzzer sounds. Once complete ensure the unit returns to working mode (green lamp on/blip off)

5.2 PERFORMING CALIBRATION

For instruments featuring either a numeric display or an analogue output, perform the following:

a) Zero Check and if necessary an Auto Zero Adjustment
b) A Span Check and if necessary a Span Adjustment
c) An alarm check if appropriate.

Instruments with displays do not require calibration gas to set the alarms. They rely on the instrument's internal linearisation being correct. If the linearisation is considered defective, the instrument will need to be connected to a computer using the Configuration kit available from the manufacturer/distributor.

All testing using gases assumes that the technician is familiar with the instructions in the section 'Using Test Gas on the Analox 5' as detailed in Appendix A.

If the Auto Zero adjustment fails to make the instrument work correctly, it is possible that the 'Sensor Trim' should be adjusted. Note that after adjusting the Sensor Trim, the instrument must be recalibrated. Ensure before making any adjustments that they are necessary, and not for instance because test calibration gases have been used incorrectly.

5.3 PERFORMING ZERO TEST

This test is only applicable to instruments with display or analogue outputs.

1 Apply a zero gas consisting of 100% Nitrogen to the sensor.

2 Confirm that the reading is correct within acceptable limits.

If the reading is incorrect, proceed to perform an Auto Zero adjustment.

5.4 PERFORMING AUTO ZERO ADJUSTMENT

This test is applicable to all instruments. Note that it involves the use of 'zero gas'. For instruments with no oxygen sensor fitted, zero gas must have no carbon dioxide (pure nitrogen is suitable, or air with 0% carbon dioxide). For instruments with an oxygen sensor fitted, the zero gas must have 20.9% oxygen and 0% carbon dioxide. The balance gas will usually be nitrogen.

1 Whilst the Analox 5 is switched on, press the Mode switch three times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press).

2 If this is done successfully, the instrument will enter 'Technician Mode'. This is signified by the green indicator which instead of flashing off for a brief period every few seconds, will now flash on for a brief period every few seconds. If the instrument is left in this mode, it will timeout back to normal operation after a short period. If Technician Mode is inadvertently selected, press the Mode switch once to return to normal operation mode.

3 From Technician Mode, press the Mode switch four times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press). If this is done successfully, the instrument will show both the Alarm 1 and Alarm 2 indicators, indicating that Auto Zero mode has been selected. If this is done inadvertently, or if another mode is selected, press the Mode switch once to return to Technician Mode, and then repeat this selection.

4 Pass zero gas over the sensor for 2 minutes.

5 To proceed with the Auto Zero operation, press the Mode switch twice. (Each press must be within 1 second of the previous press).

The instrument will then perform its Auto Zero operation for a period of 1 to 2 minutes. It will bleep once on completing the test, after which the green indicator will stop flashing.

During the Auto Zero period, the 'Alarm 1' and 'Alarm 2' indicators show whether the sensor signal is within acceptable bounds. When the signal is acceptable, neither indicator will be on. If either indicator remains on, ensure that

a) The sensor is exposed to zero gas
b) The adaptor is held over the sensor properly.

6 On completion of the test the user may accept the new setting by pressing the Mode switch twice, or alternatively ignore the new setting by pressing the switch once. The reading can only be accepted if neither the Alarm 1 or Alarm 2 indicators are illuminated.

This will return to the Technician Mode.

7 To exit from Technician Mode, press the Mode switch once The Analox 5 then restarts by performing the normal power on sequence (4 flashes).
If the Auto Zero procedure failed to work correctly, the procedure should be performed again, and if still faulty, the instrument will probably require a Sensor Trim operation. (refer to Section 5.10).

5.5 SPAN CHECK

This test is only applicable to instruments with displays or analogue output options.

1 Apply a test gas containing carbon dioxide with a concentration of between 50 and 100% of the range of the instrument. eg for a 5% range instrument use a test gas with between 2.5% and 5% CO2.

2 Confirm that the reading is correct within acceptable limits.

If the reading is incorrect, proceed to perform a Span Adjust.

5.6 SPAN ADJUST FOR INSTRUMENTS WITH DISPLAYS

This test is only applicable to instruments with the display option.

1 Whilst the Analox 5 is switched on, press the Mode switch three times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press).

2 If this is done successfully, the instrument will enter 'Technician Mode'. This is signified by the green indicator which instead of flashing off for a brief period every few seconds, will now flash on for a brief period every few seconds. If the instrument is left in this mode, it will timeout back to normal operation after a short period. If Technician Mode is inadvertently selected, press the Mode switch once to return to normal operation mode.

3 From Technician Mode, press the Mode switch five times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press). If this is done successfully, the instrument will show both the Alarm 1, Alarm 2 and Fault indicators, indicating that Span Adjust mode has been selected. The present value of the Span Correction Factor is also displayed. If the incorrect mode is selected press the Mode switch once to return to Technician Mode, and then repeat this selection.

4 Pass the relevant span gas (refer to Section 5.5) over the sensor for 2 minutes.

5 To proceed with the Span Adjust operation, press the Mode switch twice (Each press must be within 1 second of the previous press).

The instrument will then perform its Span Adjust operation for a period of 1 to 2 minutes. It will bleep once on completing the test, after which the green indicator will stop flashing.

6 On completion of the test the instrument will display (liquid crystal display and analogue output options when fitted) the measured gas value with a minimum adjustment factor applied.

7 Press the Mode switch and maintain it pressed. The displayed value will count up at approximately two counts per second. Release the switch when the displayed value is equal to the span gas concentration used. The display will only count up as far as the maximum adjustment factor acceptable to the instrument. If the required value does not appear on the screen, the span cannot be adjusted, and the instrument will need to be returned to the manufacturer/distributor.

8 Press the Mode switch twice, to accept the new setting or alternatively ignore the new setting by pressing the switch once.

This will return to the Technician Mode.

9 To exit from Technician Mode, press the Mode switch once The Analox 5 then restarts by performing the normal power on sequence (4 flashes).

5.7 SPAN ADJUST FOR 4-20mA ANALOGUE OUTPUT INSTRUMENTS

This procedure is only applicable to instruments with a 4-20mA current output which are not fitted with displays. For instruments with displays, please refer to Section 5.6. It is necessary to gain access to the inside of the instrument to adjust a potentiometer. It is easier to perform the necessary adjustments with the instrument on a suitable work surface.

EXTREME CAUTION MUST BE EXERCISED FOR MAINS POWERED INSTRUMENTS AS HAZARDOUS VOLTAGES ARE PRESENT WITHIN THE ENCLOSURE. THIS WORK MUST ONLY BE PERFORMED BY TRAINED PERSONNEL.

1 Switch off the power to the Analox 5.

2 Remove the enclosure lid from the Analox 5 by first unscrewing the green sensor locking ring, and then slackening the four screws at each corner of the enclosure lid. Ease the printed circuit board from the 4 pillars.

3 Identify the small option board fitted to the instrument to provide the 4-20mA output. It is a small 34 x 36mm rectangular board plugged into the main printed circuit board. It has two screw terminals for the output signal and 2 potentiometers marked RV1 (ZERO) and RV2 (SPAN).

4 Pass the relevant span gas (refer to Section 5.5) over the sensor for between 2 and 5 minutes.

5 Measure the 4-20mA signal generated by the instrument and adjust RV2 such that the 4-20mA output is at the correct value corresponding to the calibration gas.

6 Now pass zero gas over the sensor for between 2 and 5 minutes.

7 Measure the 4-20mA signal generated by the instrument and adjust RV1 such that the 4-20mA output reads 4.00mA.

8 Repeat the process from Step 4 until no further adjustment of the potentiometers is necessary.

9 Reassemble the instrument, ensuring the lid is correctly secured, such that the instrument remains waterproof.

5.8 VERIFICATION OF ALARM SETTINGS/DISPLAY READINGS

On basic instruments without displays or analogue outputs, it is only possible to determine if the alarm thresholds operate correctly by applying test gas to the instrument. On enhanced instruments, the accuracy of the display and/or output may similarly be checked using calibration gases.

The extent of the test depends on the customer's requirements. To correctly verify operation of each alarm point the following tests are required:

a) Check that at a selected tolerance below the alarm threshold, the alarm is not annunciated (eg at 1.3% CO2 for a 1.5% CO2 alarm)

b) Check that at a selected tolerance above the alarm threshold, the alarm is annunciated (eg at 1.6% CO2 for a 1.5% CO2 alarm)

Some customers will be satisfied if only the second of these tests is performed, particularly if it is an enhanced instrument, and it is clearly evident how close the measured value is to the alarm setting. It is possible to judge by the time taken for an alarm to annunciate, whether the first test is likely to be satisfactory. Similarly, if only the Alarm 2 threshold is tested, the time taken to announce Alarm 1 can be used to judge the effectiveness of the Alarm 1 setting.

For the appropriate test method applicable to the use of the instrument:

1 Pass the appropriate test gas across the sensor

2 Verify that the alarm operates as expected, and that the display readings (if fitted) are correct.

If the alarms fail to operate, the alarms can be recalibrated as detailed in Section 5.9.

5.9 CALIBRATION OF OPTIONAL 0-1V ANALOGUE OUTPUT

This test need only be performed on instruments fitted with the 0-1V Analogue output. Calibration of the analogue output should be performed automatically by performing the Auto Zero Adjust (Section 5.4) and Span Adjust (Section 5.6).

The pot VR3 is factory set to match the analogue output to the displayed reading. On models without displays fitted, VR3 may be adjusted to correct minor discrepancies in the analogue output.

To adjust the calibration of the 0-1V analogue output in this way, follow the procedure below:

1 Pass a suitable span gas (refer to Section 5.6) across the sensor for two minutes.

2 Whilst the sensor is still subject to span calibration gas, adjust pot VR3 to obtain the correct voltage output for the gas applied. (eg for a 0-5% instrument, using 2.5% test gas, set the voltage output to half scale, 0.5V).

5.10 ADJUSTING THE ALARM SETPOINTS

This procedure need only be performed when either the alarm setting is to be changed, or when the operation of the existing alarm is unsatisfactory.

Different methods are used depending on whether the instrument is a basic version, or whether it is enhanced with either a display or an analogue output.

5.9.1 ADJUSTING ALARM SETPOINTS - NON DISPLAY/OUTPUT MODELS

In the absence of a display the alarm settings may be defined using calibration gas. The procedure is very similar for either the Alarm 1 or Alarm 2 setting.

It would be normal to have completed the Auto Zero operation prior to setting the alarms.

The calibration gas must be carefully selected for the desired mode of operation. If an alarm MUST be annunciated at say 1.5% CO2, 1.5% CO2 is not the ideal calibration gas. Within the specification of the instrument, when measuring actual 1.5% gas, the instrument could measure 1.5% +/-2% of full scale. For a 5% Full Scale instrument, 2% full scale equates to 0.1% CO2. In this particular example, the calibration gas would ideally be selected as 1.4% CO2.

1 Whilst the Analox 5 is switched on, press the Mode switch three times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press).

2 If this is done successfully, the instrument will enter 'Technician Mode'. This is signified by the green indicator which instead of flashing off for a brief period every few seconds, will now flash on for a brief period every few seconds. If the instrument is left in this mode, it will timeout back to normal operation after a short period. If Technician Mode is inadvertently selected, press the Mode switch once to return to normal operation mode.

3 From Technician Mode, press the Mode switch as follows:

2 times Alarm 1 Setting
3 times Alarm 2 Setting

The buzzer will bleep on each press. (Each press must be within 1 second of the previous press). If this is done successfully, the instrument will show the Fault indicator and the appropriate Alarm indicator If this is done inadvertently, or if another mode is selected, press the Mode switch once to return to Technician Mode, and then repeat this selection.

4 Pass the alarm calibration gas over the sensor for 2 minutes.

5 To proceed with the Alarm Set operation, press the Mode switch twice (Each press must be within 1 second of the previous press).

The instrument will then perform the Alarm Set operation for a period of 1 to 2 minutes. It will bleep once on completing the test, after which the

green indicator will stop flashing.

6 On completion of the test the user may accept the new setting by pressing the Mode switch twice, or alternatively ignore the new setting by pressing the switch once.

This will return to the Technician Mode.

7 To exit from Technician Mode, press the Mode switch once The Analox 5 then restarts by performing the normal power on sequence (4 flashes).

5.9.2 ADJUSTING ALARM SETPOINTS - DISPLAY MODELS

The presence of the display makes it possible to define the alarm settings without the use of calibration gas.

The procedure is very similar for either the Alarm 1 or Alarm 2.

1 Whilst the Analox 5 is switched on, press the Mode switch three times. The buzzer will bleep on each press. (Each press must be within 1 second of the previous press).

2 If this is done successfully, the instrument will enter 'Technician Mode'. This is signified by the green indicator which instead of flashing off for a brief period every few seconds, will now flash on for a brief period every few seconds. If the instrument is left in this mode, it will timeout back to normal operation after a short period. If Technician Mode is inadvertently selected, press the Mode switch once to return to normal operation mode.

3 From Technician Mode, press the Mode switch as follows:

2 times Alarm 1 Setting
3 times Alarm 2 Setting

The buzzer will bleep on each press. (Each press must be within 1 second of the previous press). If this is done successfully, the instrument will show the Fault indicator and the appropriate Alarm indicator If this is done inadvertently, or if another mode is selected, press the Mode switch once to return to Technician Mode, and then repeat this selection.

4 The display will indicate the present value of the alarm.

5 Press the Mode switch twice to proceed to define a new setting, or once to abort and return to Technician Mode

6 When setting Alarm 1, the display will show the minimum display value (usually 0.0).

When setting Alarm 2, the display will show the maximum display value (full scale).

7 Press and maintain the Mode switch. The displayed value will count up (Alarm 1) or down (Alarm 2) at approximately two counts per second. Release the switch when the displayed value is equal to the desired alarm value.

8 Upon release of the switch, the display will continue to show the new value just entered. Accept the new setting by pressing the Mode switch twice, or alternatively ignore the new setting by pressing the switch once.

This will return to the Technician Mode

9 To exit from Technician Mode, press the Mode switch once. The Analox 5 then restarts by performing the normal power on sequence (4 flashes).

5.11 ADJUSTING SENSOR TRIM

The sensor output may be adjusted by means of the small screw accessible behind the front panel label (bottom right hand corner of enclosure lid). This operation is only necessary after having been unsuccessful to perform an Auto Zero.

Note that after adjusting the Sensor Trim, the instrument must be recalibrated. Ensure before making any adjustments that they are necessary, and not for instance because test calibration gas has been used incorrectly.

1 Follow the same instructions as for the Auto Zero operation in Section 5.4, up to and including step 5.

2 During the 1 to 2 minute period, up until the instrument bleeps, adjust the trim adjuster as described below. Pause briefly for a few seconds whilst making adjustments, and if the adjustment is not completed by the time the instrument beeps, then press the switch once to cancel the 'new' setting and to return to Technician Mode, and then reselect the Auto Zero mode (4 presses, followed by 2 confirmation presses).

CONDITION	ALARM 1	ALARM 2	ACTION REQUIRED
1	ON	OFF	Rotate the 'Sensor Trim' adjuster anti-clockwise until ALARM 1 LED turns off. Continue turning until the ALARM 2 LED just comes on, and then rotate the adjuster clockwise until the ALARM 2 LED just goes out.
2	OFF	OFF	Rotate the 'Sensor Trim' adjuster anti clockwise until the ALARM2 LED just comes on, and then rotate the adjuster clockwise until the ALARM2 LED just goes out.
3	OFF	ON	Rotate the 'Sensor Trim' adjuster clockwise until the ALARM2 LED just goes out.

3 When adjustment of the Sensor Trim is complete, the instrument must be recalibrated.

6 OXYGEN SENSOR REPLACEMENT

The oxygen sensor is mounted in a special housing on the under-side of the Analox 5 enclosure. This housing allows the oxygen sensor to be easily replaced when necessary.

The procedure for replacing the cell is as follows:

1 Switch off the instrument
2 Unscrew the cap retaining the oxygen sensor in position (do not attempt to unscrew the complete housing)
3 The oxygen sensor will now be visible. Gently pull the sensor downwards to release it from the housing. It will be retained by an electrical connector.
4 Carefully pull the electrical connector from the rear of the oxygen sensor
5 Inspect the new oxygen sensor. Note it must have an O-ring fitted around its gas inlet.
6 Fit the new oxygen sensor to the connector inside the sensor housing – note it will only connect one way round.
7 Carefully push the sensor and the wiring back into the housing
8 Screw the cap back into position to retain the oxygen sensor in position (do not over-tighten or the whole housing could turn).
9 Switch the instrument back on
10 Perform an Auto Zero adjustment (Section 5.4) to calibrate the new sensor
11 Test the operation of the oxygen alarm by subjecting the sensor to a low concentration of oxygen.

7 REPEATER INFORMATION

Analox 5 instruments are shipped with one of two types of repeater. These are the Quick Connect model and the older Hard-wired version which is still supplied on request to some customers. There are also some older hard-wired versions in circulation which are detailed here for reference.

7.1 QUICK CONNECT REPEATER

The Quick connect repeater uses an RJ45 connector to connect the repeater cable to the repeater. Contact the manufacturer for details of extension cables. The user therefore does not need to know details of the cable cores within the cable.

7.2 HARD-WIRED REPEATER

The Hard wired repeater is hard wired to the Analox 5. The cable cores must be inserted into the correct terminals at the time of installation. The repeater also has an internal link (marked 6Wr and 8Wr) which allows this repeater to be used on older systems with only a 6 core cable. On new systems, this link will always be in the '8Wr' position.

Remote Unit Terminal No	Cable Core Colour
1	Black
2	White
3	Red
4	Blue
5	Yellow
6	Green
7	Orange
8	Brown

7.3 ORIGINAL HARD-WIRED REPEATER

The original hard-wired repeater (no longer manufactured) uses a smaller cable than it's replacement. The audible sounder has no specific cable core, and therefore has to operate whenever either the Alarm 1 or Alarm 2 indicators is on.

Remote Unit Terminal No	Cable Core Colour
1	Black
2	White
3	Red
4	Blue
5	Yellow
6	Green

APPENDIX A : USE OF TEST GAS ON THE ANALOX 5

It is necessary to use test gases on the Analox 5 when verifying operation or recalibrating.

You will require :

a) Appropriate test gas cylinders with flow indicator and control valve

b) A gassing cap with plastic tubing

1 Fit the flow indicator and control valve securely to the test gas cylinder, note there will be a small escape of gas as it is fitted.

2 Connect the gassing cap to one end of the plastic tubing, and the other end of the plastic tubing to the outlet on the flow indicator.

3 Carefully unscrew the control valve until the floating ball is around the mid-scale position (1.0 litres/minute approx.)

4 Place the gassing cap over the flow adaptor on the Analox 5 for at least 2 minutes.

5 When the test is complete, the test gas should be removed and the flow indicator control valve should be closed. The flow indicator and fine control valve should be removed from the test gas cylinder to prevent leakage.

Note that on instruments fitted with an oxygen sensor, two gassing caps are connected in series to subject both of the sensors to calibration gas.

APPENDIX B : SUMMARY OF INDICATOR LAMP STATUS

GOOD LAMP (GREEN)	ALARM1 LAMP (RED)	ALARM2 LAMP (RED)	FAULT LAMP (YELLOW)	MEANING
OFF	OFF	OFF	OFF	Power Off
ON/ BLIP OFF	OFF	OFF	OFF	Normal Operation
OFF	FLASHING AND SLOW BUZZER	OFF	OFF	CO_2 Level is > 1.5% *
OFF	FLASHING	FLASHING AND MED. BUZZER	OFF	CO_2 Level is > 4.0% *
OFF	OFF	OFF	FLASHING AND SLOW BUZZER	Calibration Error at Switch On **
OFF	OFF	FLASHING	FLASHING AND MED. BUZZER	Detector Fault **
OFF	FLASHING	FLASHING	FLASHING AND FAST BUZZER	I.R. Source Fault ***

* Note that Alarm levels may be set at different values, depending on customer specification. Refer to details below

** A Calibration error or a Detector fault requires the attention of a Service Engineer. A recalibration procedure may overcome the problem.

** An I.R source fault will necessitate returning the unit for repair.

APPENDIX C : TECHNICIAN MODE SWITCH – ANALOX 5 (WITH NO DISPLAY)

CHART 1 : ANALOX 5 - ACCESS TO TECHNICIAN MODE

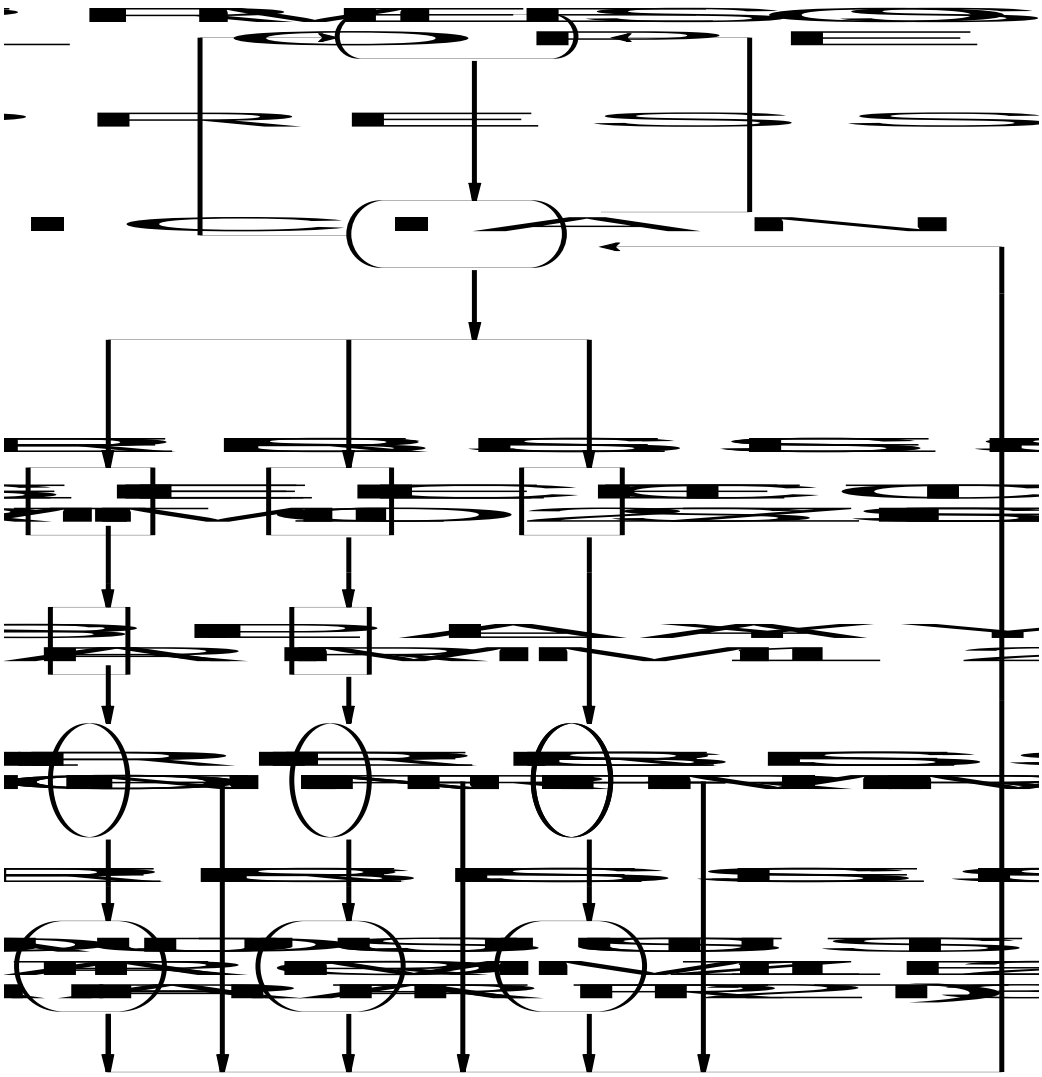


CHART2 : ANALOX 5 – ADJUST ALARM1

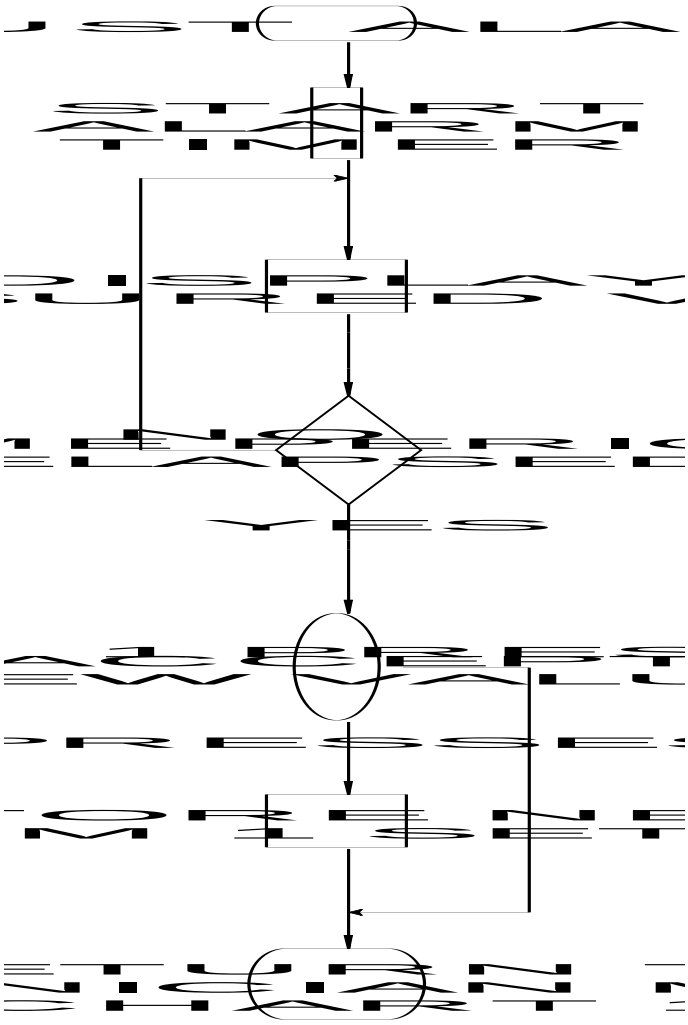


CHART3: ANALOX 5 – ADJUST ALARM2

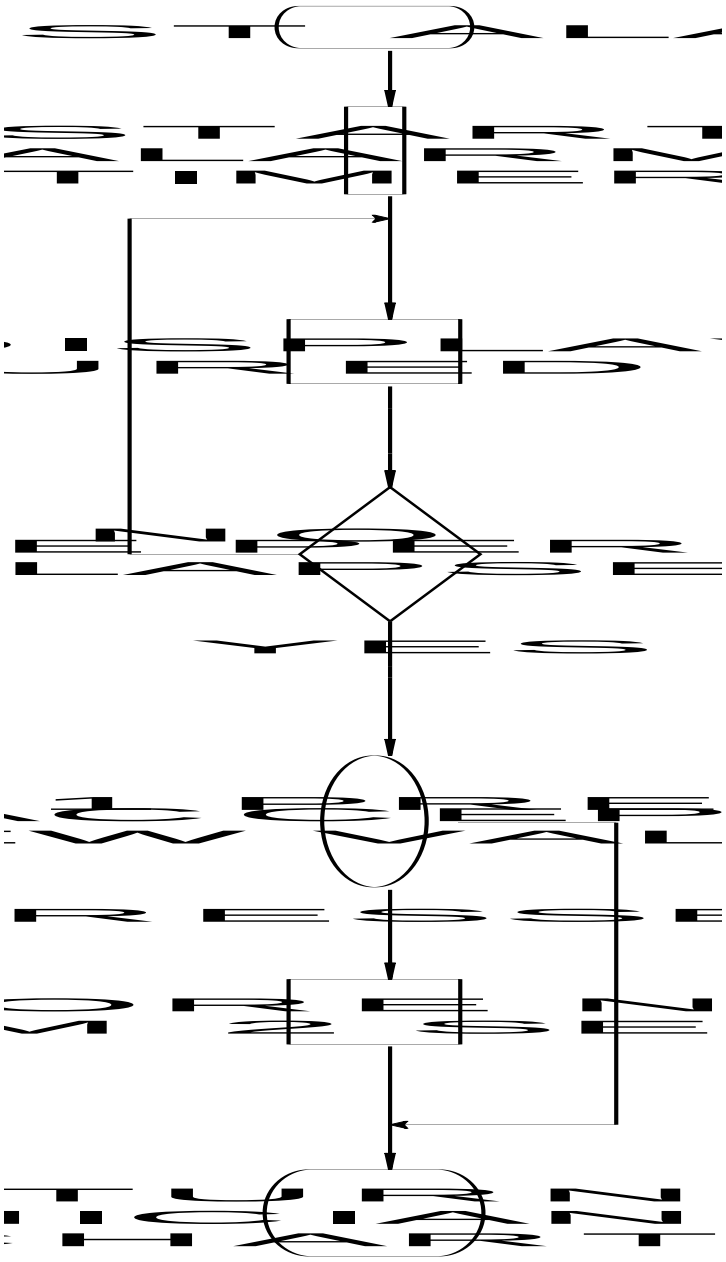
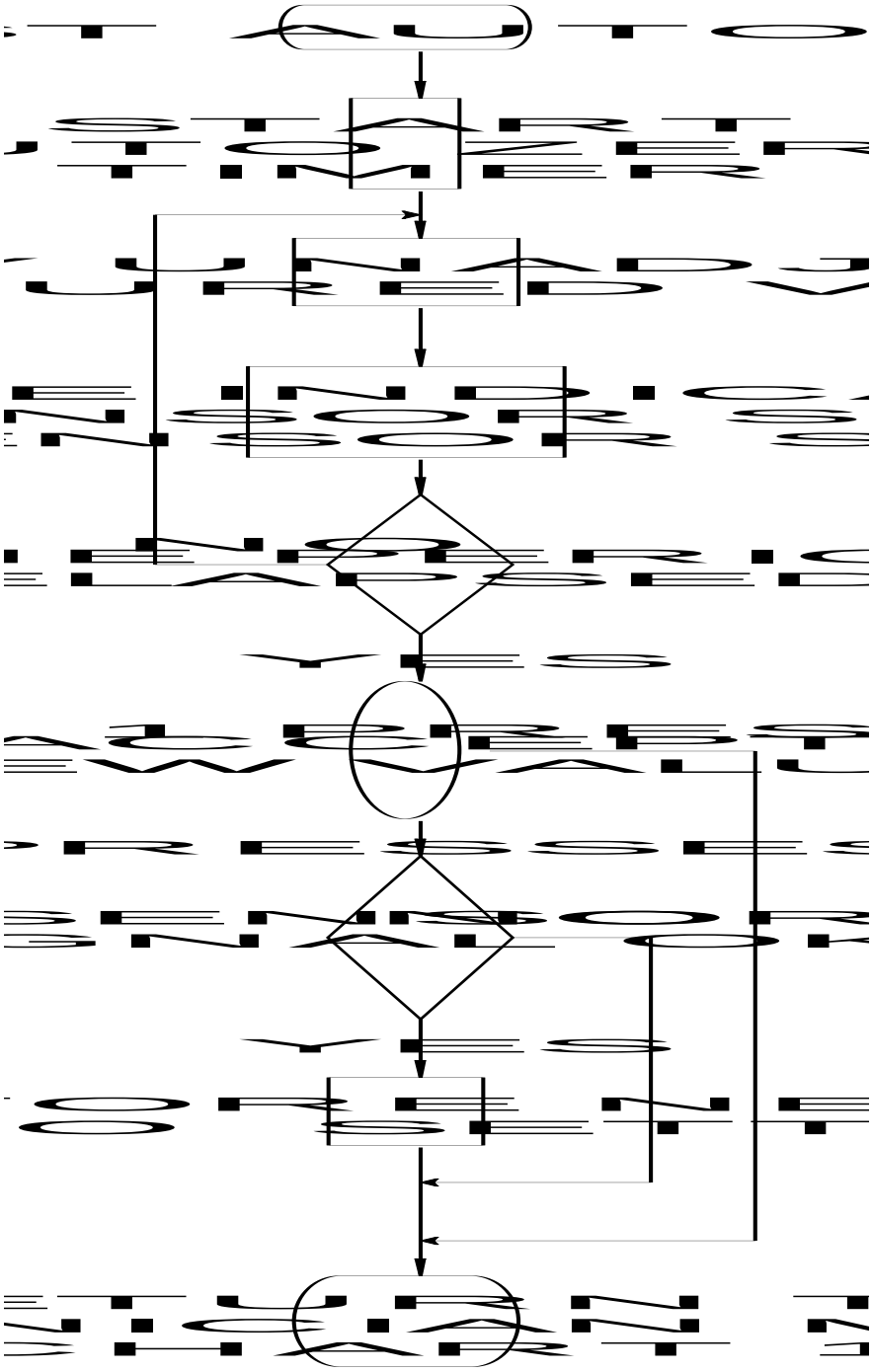


CHART4: ANALOX 5 – ADJUST AUTO ZERO



APPENDIX D : TECHNICIAN MODE SWITCH – ANALOX 5D (WITH DISPLAY)

CHART1: ANALOX 5D – ACCESS TO TECHNICIAN MODE

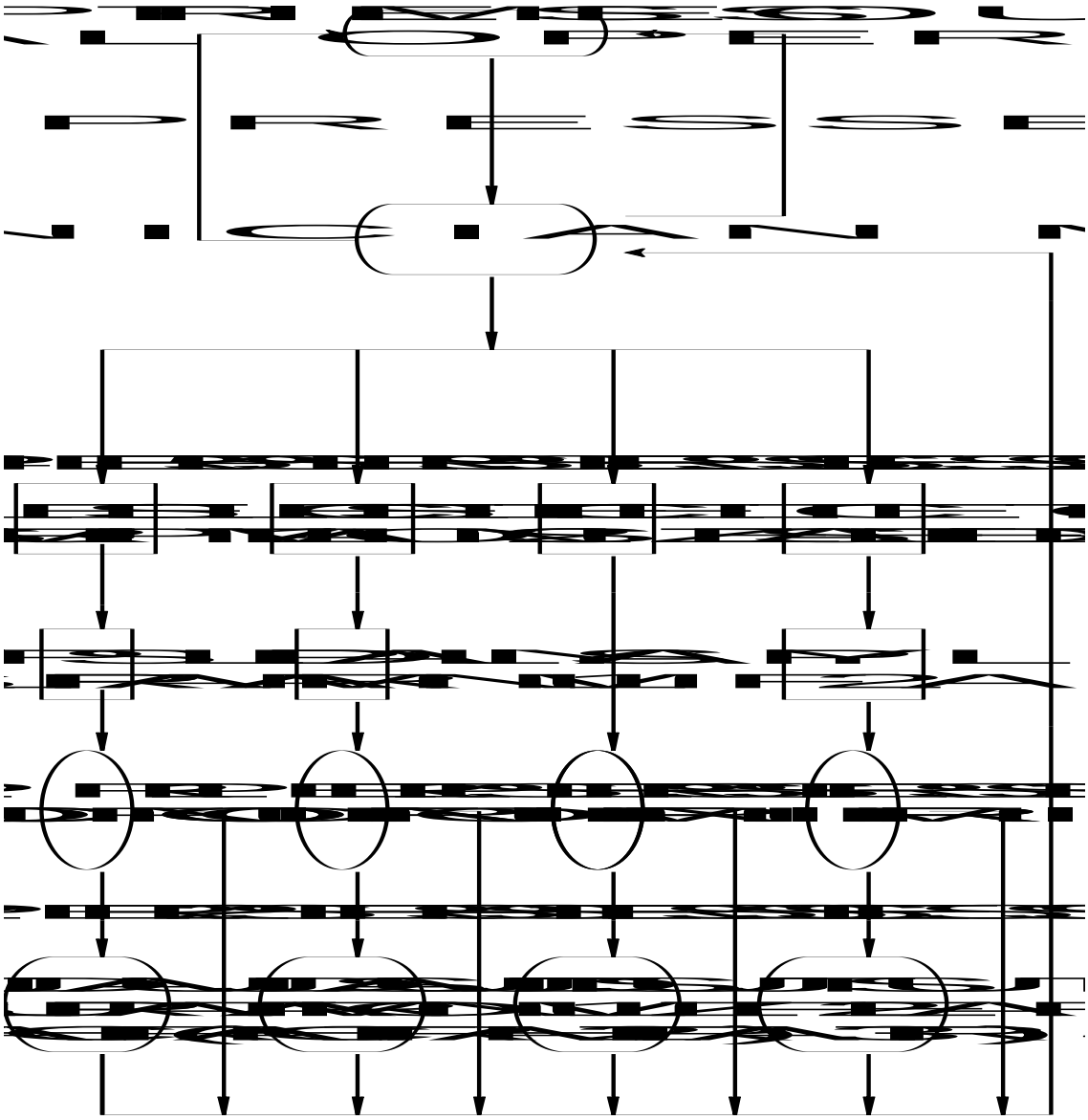


CHART2: ANALOX 5D – ADJUST ALARM1

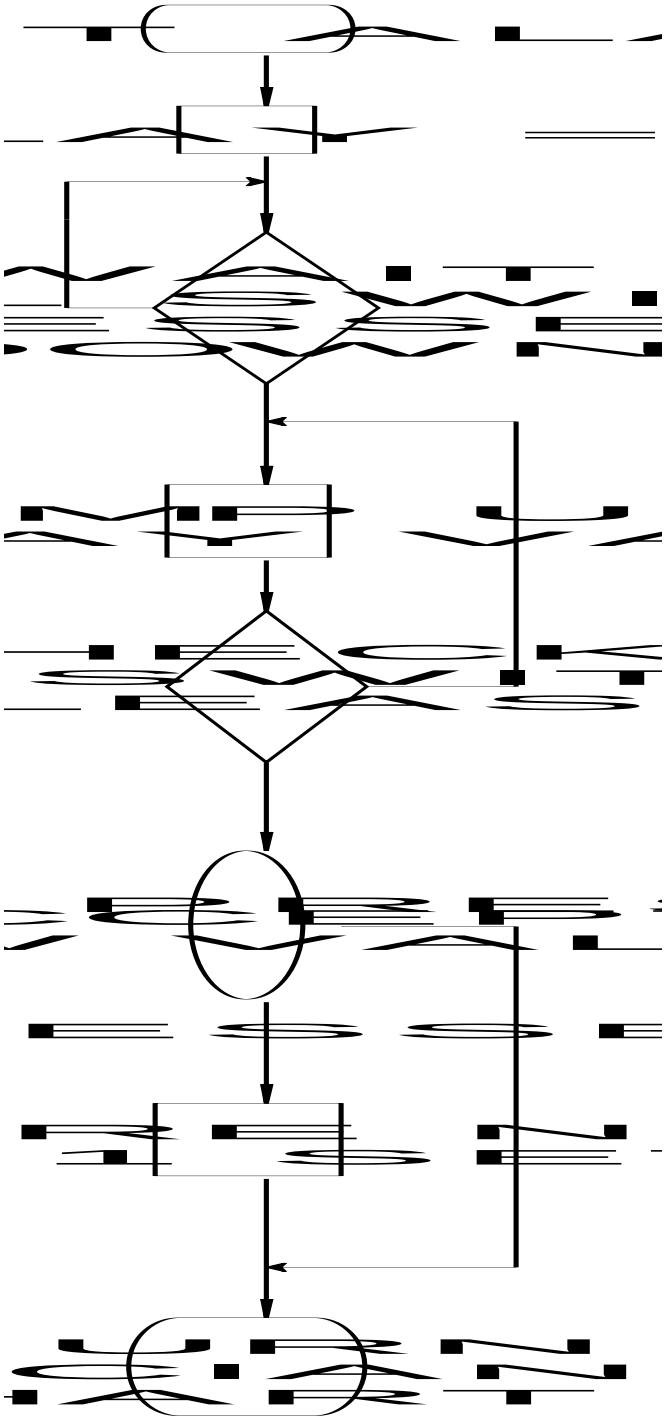


CHART3: ANALOX 5D – ADJUST ALARM2

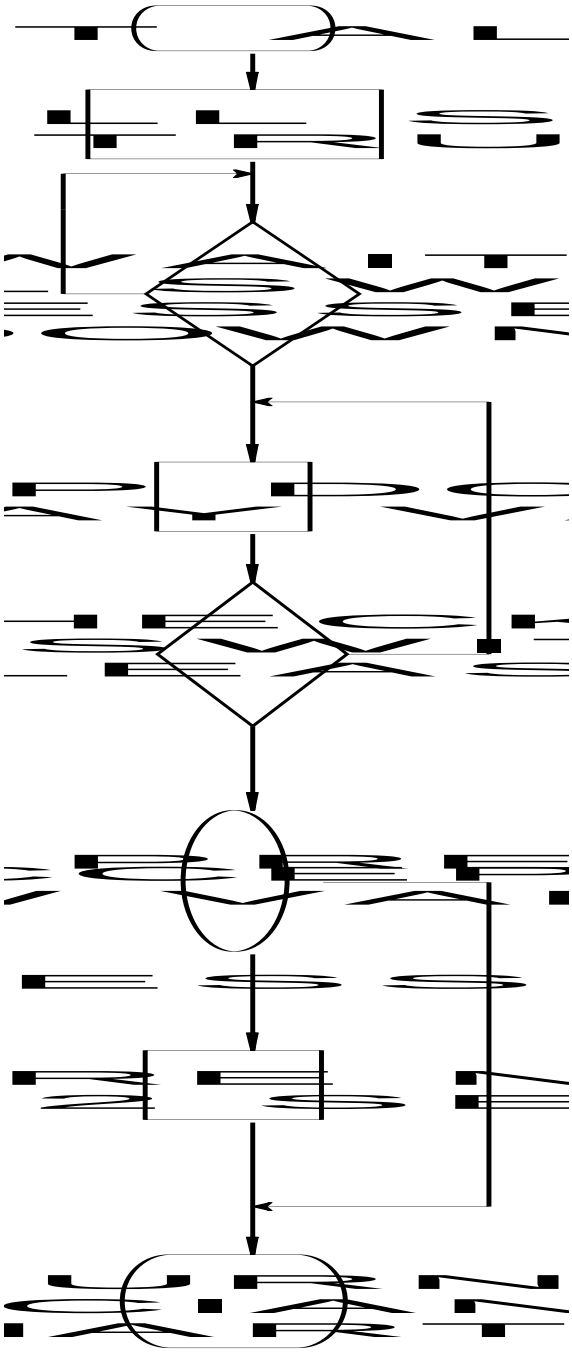


CHART4: ANALOX 5D – ADJUST AUTO ZERO

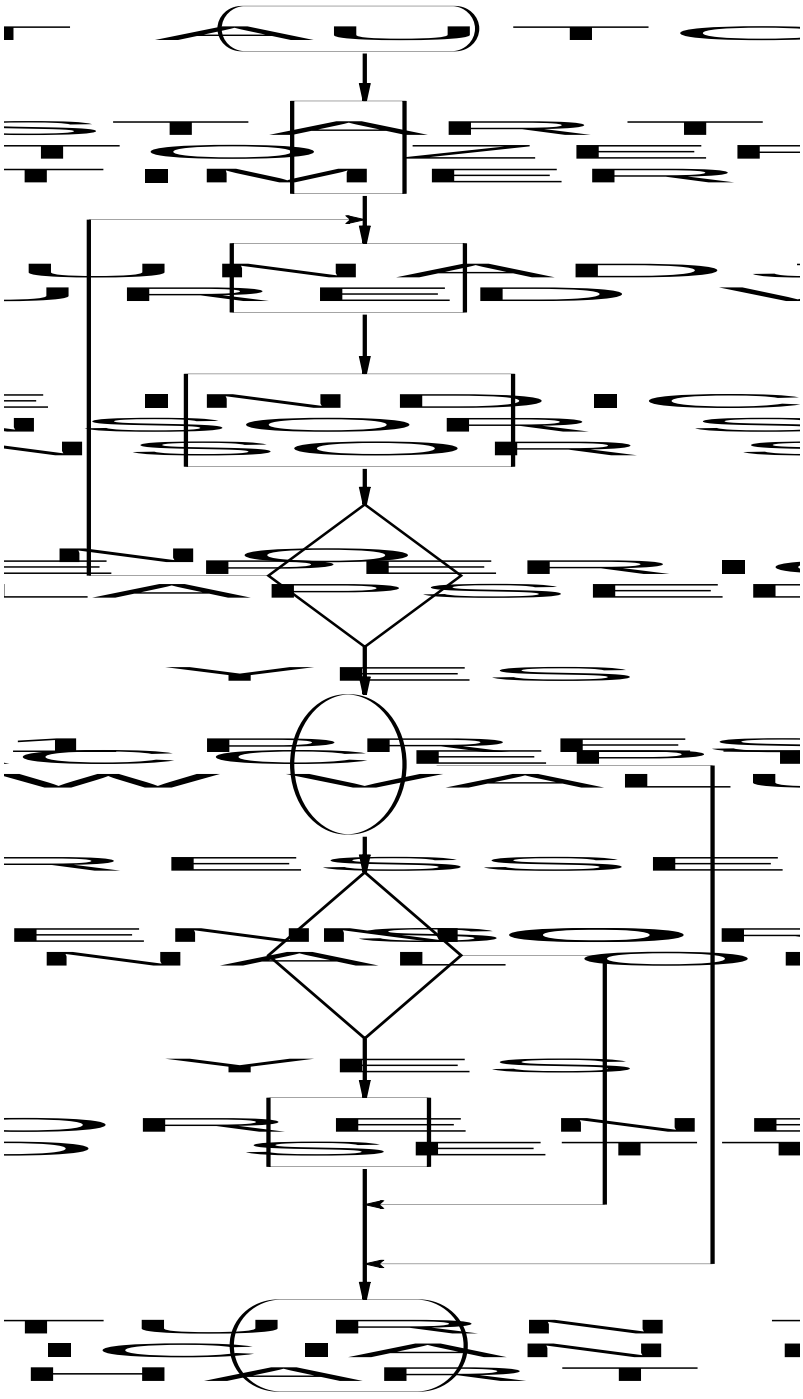
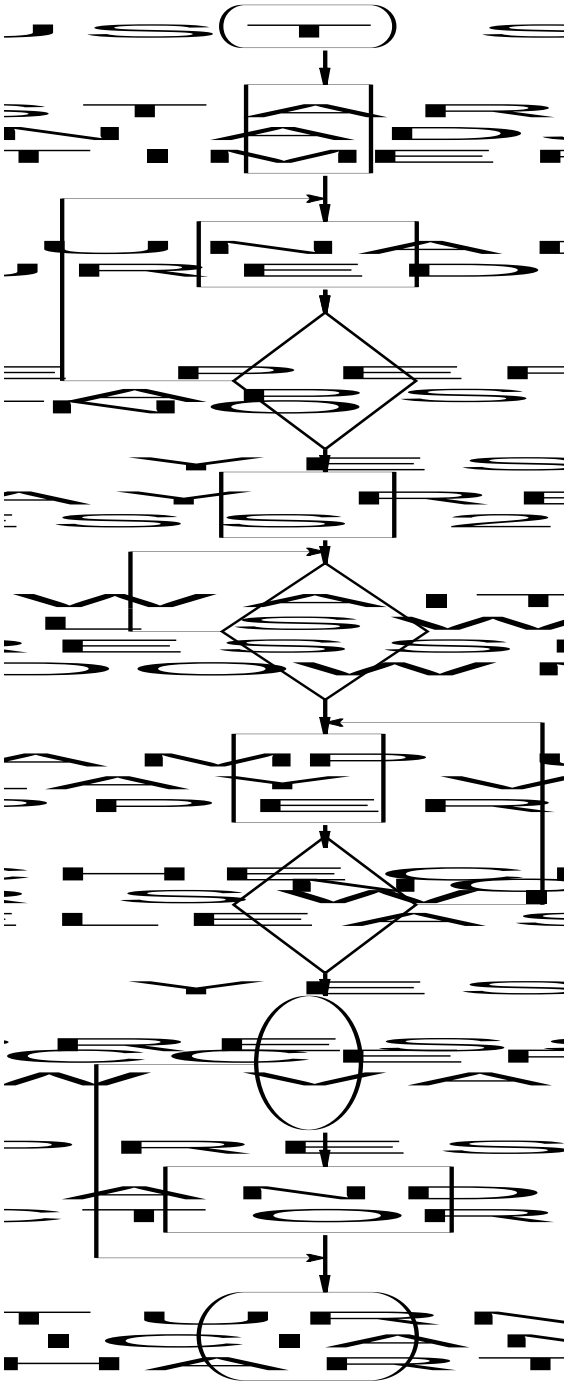


CHART5 : ANALOX 5D – ADJUST SPAN



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