Koehler
INSTRUMENT COMPANY, INC.

K877XX
Automatic Tag Closed Cup Flash Point Tester

Operation and Instruction Manual

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Petroleum Testing & Analysis Instrumentation • Custom Design & Manufacturing

CONTENTS

I – GENERAL

- 1.1 – VERIFICATION AFTER TRANSPORT

- Check the condition of the packaging and make any reservations to the transport operator in the event of any damage.
- Compare the contents (accessories) with the list supplied.
- Check the condition of the accessories.

- 1.2 – SAFETY INSTRUCTIONS

Before using the equipment, the operator must have:

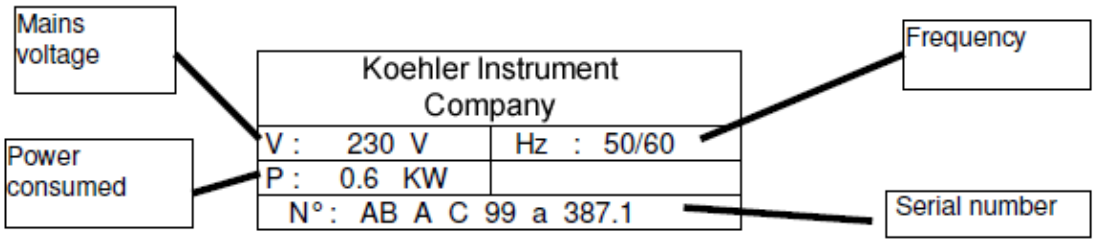
- Knowledge of manual methods and experience of the types of tests to be performed.
- Knowledge of the hazards associated with handling products and samples.

Handling by the user of a hot cover/receptacle containing a sample should be avoided. Otherwise, this operation must be performed with extreme caution.

In all cases the operator must wear the necessary personal protection: gloves, goggles, protective clothing.

- 1.3 – IDENTIFICATION OF THE EQUIPMENT

The equipment has a manufacturer's plate on its left hand side:



- 1.4 – INSTRUCTIONS FOR USE

The equipment must be used solely:

- Using the methods indicated in the instructions.
- Using the accessories supplied and indicated in the instructions.
- In accordance with the test and start up procedures described in the instructions.

When a test is in progress, the equipment should under no circumstances be left unsupervised.

It is mandatory to place the equipment under a smoke extractor hood; the work room must be adequately ventilated.

At least once a month the connections to the cryostat and to the gas must be checked to ensure the pipes and their fastenings are in satisfactory condition.

The gas pipe must be changed before the expiry date indicated on it.
If an incident occurs (excess pressure of gas, abnormal overheating of the equipment, leaking or tipping up of the product) which may have caused damage, an internal and external inspection of the equipment by a qualified person is mandatory.

All maintenance work must be performed only by a qualified technician on an equipment restored to room temperature, switched off (except where necessary for calibration) and disconnected from the electricity, refrigerant and gas supply systems.

The maintenance functions described and detailed in the instructions shall only be performed by a qualified technician.

The functions and commands attached to the keyboard are clearly explained in the instructions; the operator must read these carefully before using the equipment.

- 1.5 – INSTALLATION INSTRUCTIONS

- The cooling circuit for the equipment must be connected to a cryostat regulated to a temperature at least 15 °C lower than the desired bath temperature (that is 32 °C below the expected temperature).
- The connection to the cryostat must be made using the insulated pipes and collars supplied as accessories.

- The gas circuit of the equipment can be connected to mains gas of 50 mbar maximum with the pipes and collars supplied as accessories, or to a removable gas bottle, supplied as an option with its connection accessories.

- The equipment should be placed on a stable, strong table or laboratory bench.

- The electrical supply must comply with that described on the rating plate and the apparatus must be connected to the ground.

- It is mandatory to place the equipment under a smoke extractor hood; the work room must be adequately ventilated.

- Check the condition of the accessories.

II – TECHNICAL CHARACTERISTICS

Field of use

Determination of a flash point in a closed receptacle in accordance with the standards:

- ASTM D 56
- IP 304

⇒ Ambient working temperature	15 °C to 30 °C
⇒ Range of working temperature	-30 °C to 110 °C
⇒ Temperature range of sensor	-70 °C to 700 °C
⇒ Measuring the sample temperature	Glass Pt 100 probe, 4 wire, resolution 0.1 °C
⇒ Detection of flashpoint	Ionising and/or thermocouple
⇒ Presentation of flame	Automatic gas or electric
⇒ Electric ignitor	Supply voltage adjusted by potentiometer
⇒ Bath cooling	Connected to cryostat Connections : outside diameter 12.5 mm
⇒ Gas connection	Mains gas (50 mbar max.), gas bottle (option with 8 hours autonomy)
⇒ Pilot light and test flame	Adjusted by needle valves
⇒ Heating safety device	Heating cut off at 130°C measured in the bath independently of the micro-processor with audible alarm
⇒ Sample safety device	Current test stopped with audible alarm. Safety device programmable from 2 °C to 10 °C above the expected T°C
⇒ Probe safety device	Probe missing on account of no increase in temperature (3°C in 10 min)
⇒ Management of the equipment	microprocessor
⇒ Programming by tactile touch keyboard	• Select French or English • Automatic barometric correction or with manual input of atmospheric pressure • Select units : °C, °F, mbar, mmHg • Calibration of temperature measurements (regulated baths or decade unit) • Deletion or holding of expected temperature after each test • Buzzer (continuous or 3 min) • Correction of deviation of result: ± 9.9 °C • Sample security device parametrable from 3 °C to 10 °C above the expected temperature Alarm = safety - 3 °C

	• Printing of results with or without heating gradient • Programming equipment no. • Configuration of ignition, gas or electric
⇒ Control of the equipment	Tactile touch keyboard, liquid crystal backlight screen, 240 x128 pixels
⇒ Printing configuration log	
⇒ Printing results	80 column or ticket printer (supplied)
⇒ Maintenance functions	For logical I/O test
⇒ Backing up programmed parameters	Flash Eprom
⇒ Software update	Downloaded
⇒ Last 100 results backed up	
⇒ Dimensions LxHxD (mm)	270 x 550 x 550
⇒ Weight	20 kg
⇒ Operating voltage	230 V ± 10 % - 50/60 HZ

III - DESCRIPTION OF THE EQUIPMENT

- 3.1 - PRESENTATION (see presentation diagram)

3.1.1 – Control Panel

- 1 tactile touch keyboard (1)
- 1 liquid crystal backlight graphics display (2)

3.1.2 – Middle front panel

- The flashpoint detection thermocouple connector (3)
- The ionising detection cable connector (4)
- The Pt 100 sample probe connector (5)
- The bath probe connector (7)
- The gas connections for the pilot light and test flame (6)
- The plug power supply connectors (24)

3.1.3 – Lower front panel

- The gas regulation valves for the pilot light (8), test flame (9)
- The heating (10) and refrigeration (11) indicator lights for the bath Potentiometer for adjusting electrical voltage supplying the electric ignitor (35)

3.1.4 – Rear panel

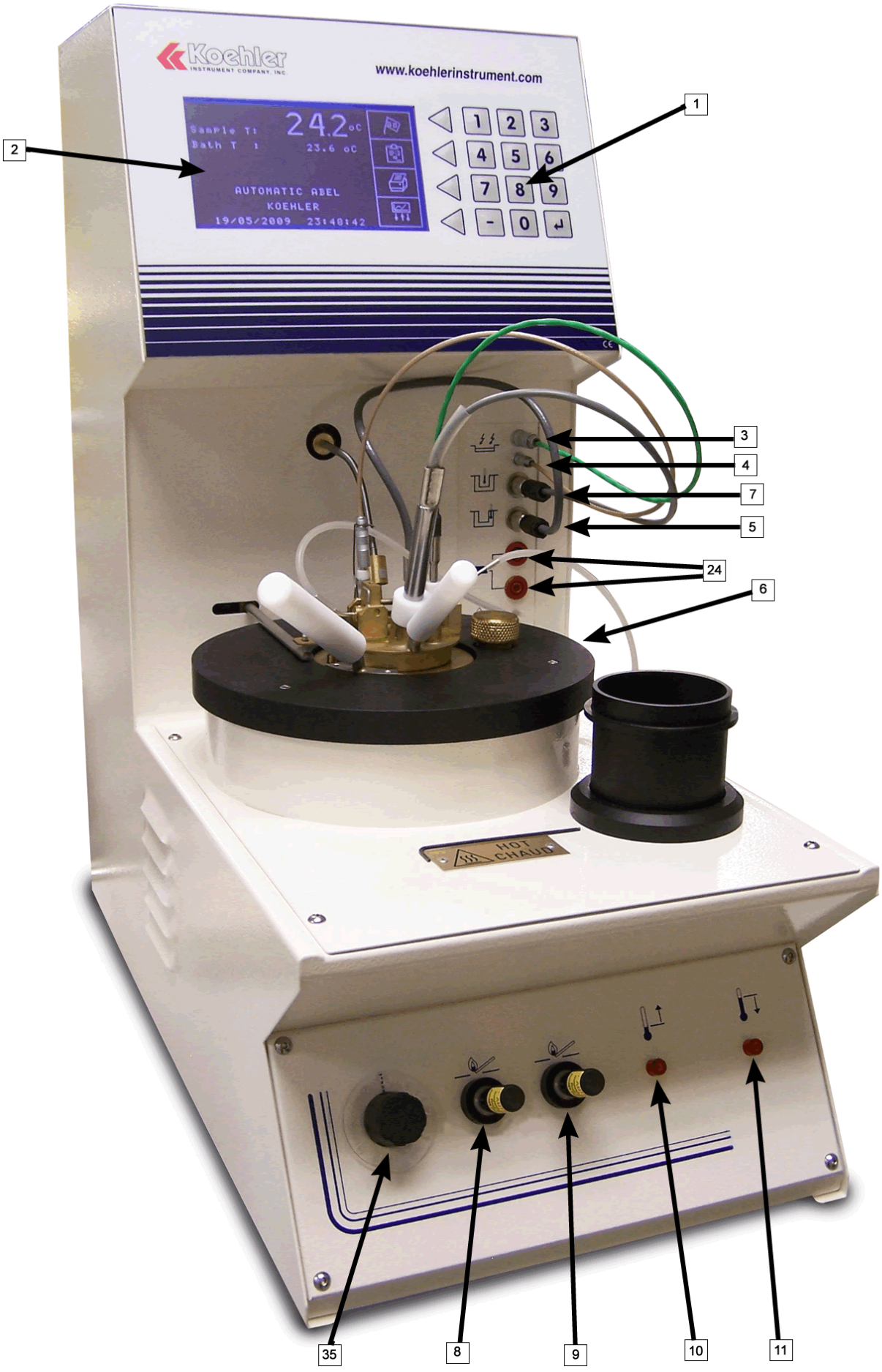
- The mains switch with protective fuse (12)
- The RS232 connector for link with the PC (13)
- The printer connection (14)
- The gas connection (15)
- The inlet (16) and outlet (17) to the cooling circuit.
- Gas bottle fastenings (18) (option)
- Output of barometric pressure sensor for calibration by pressure simulation (19)
- Barometric pressure sensor connector for calibration with a voltage generator (20)
- Bath over flow (21)
- Bath bleed (22)
- Drain for recovery of internal condensation (23)

3.1.5 – Working zone

- Electrical plug connections (24)
- Rest receptacle (25)
- Bath (26)
- Flame presentation (27) or electric ignitor
- Pilot light (28)
- Flame presentation door control arm (29)
- Agitator connection rod (30)
- Temperature measuring probe rest (32)
- Bath filling intake (33)

3.1.6 – Right side

- Rating plate (31)


Koehler
INSTRUMENT COMPANY, INC.
www.koehlerinstrument.com
Sample T: 24.2 oC
Bath T : 23.6 oC
AUTOMATIC ABEL
KOEHLER
19/05/2009 23:48:42
1 2 3
4 5 6
7 8 9
- 0
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CHAUD
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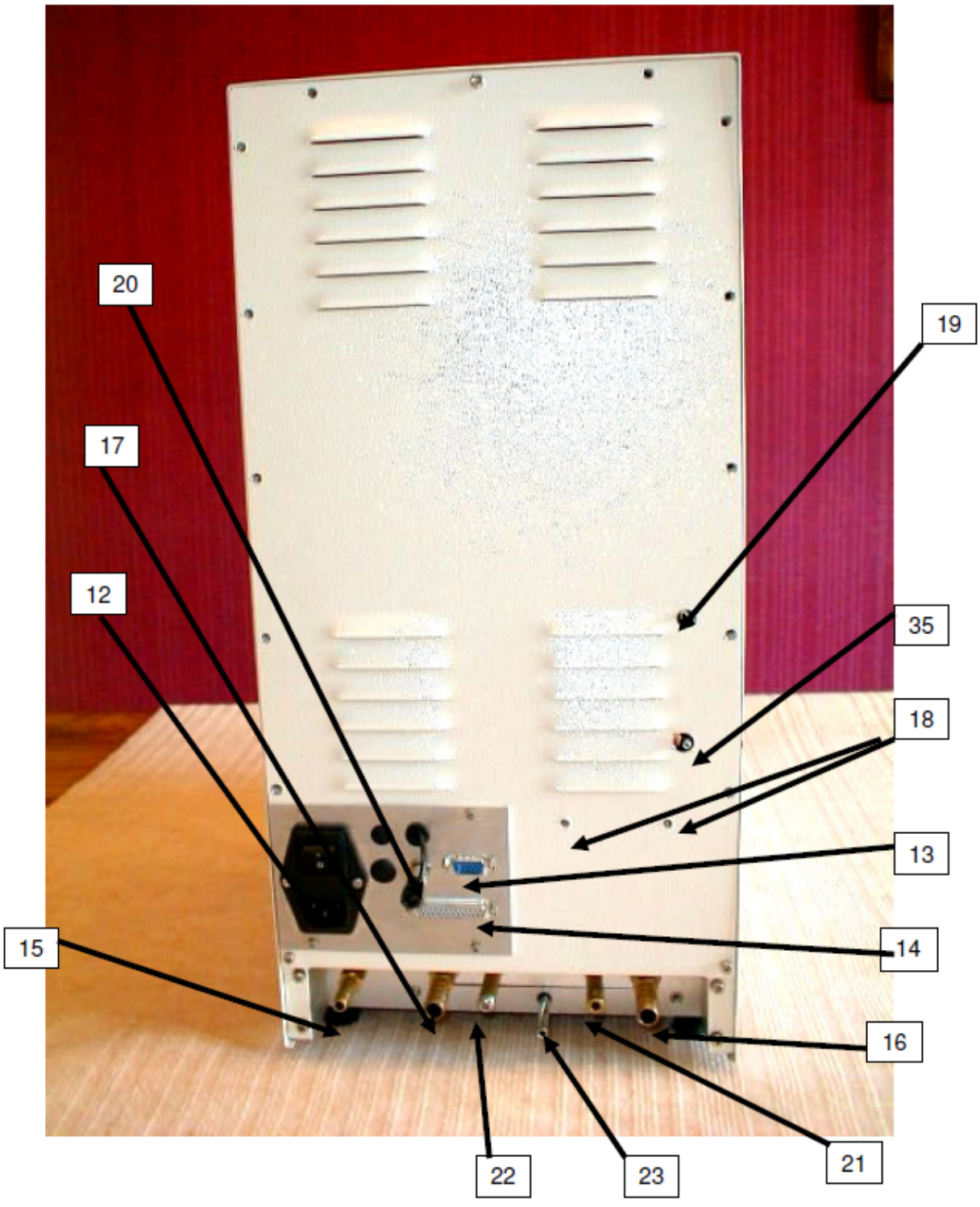
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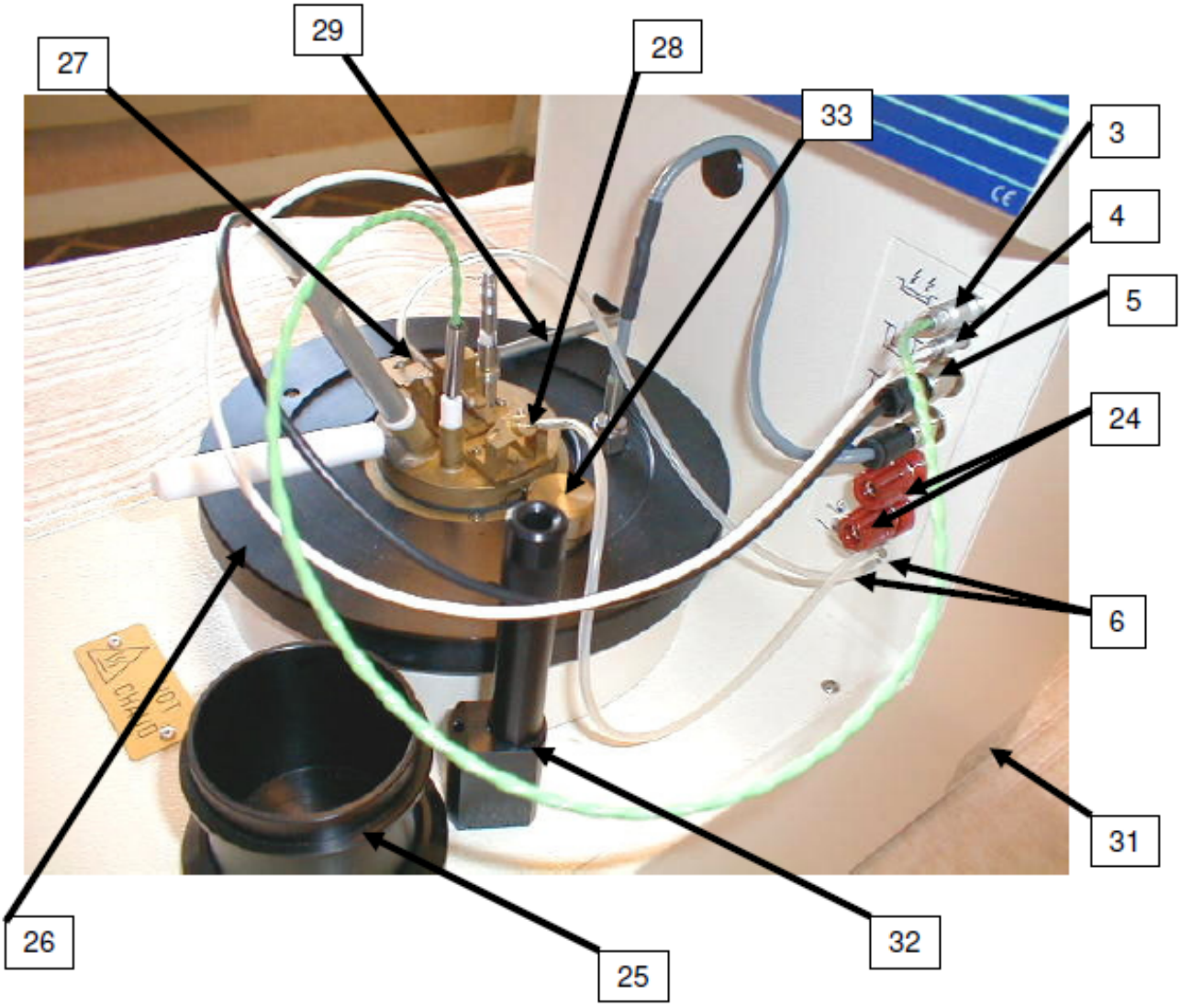
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25
32

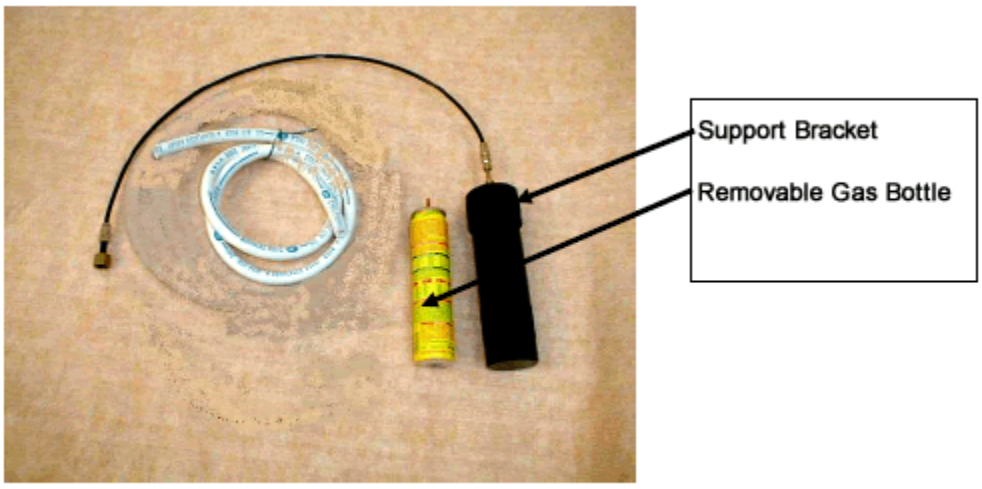
IV – ACCESSORIES SUPPLIED WITH THE EQUIPMENT

- 4.1 – ACCESSORIES SUPPLIED AS STANDARD

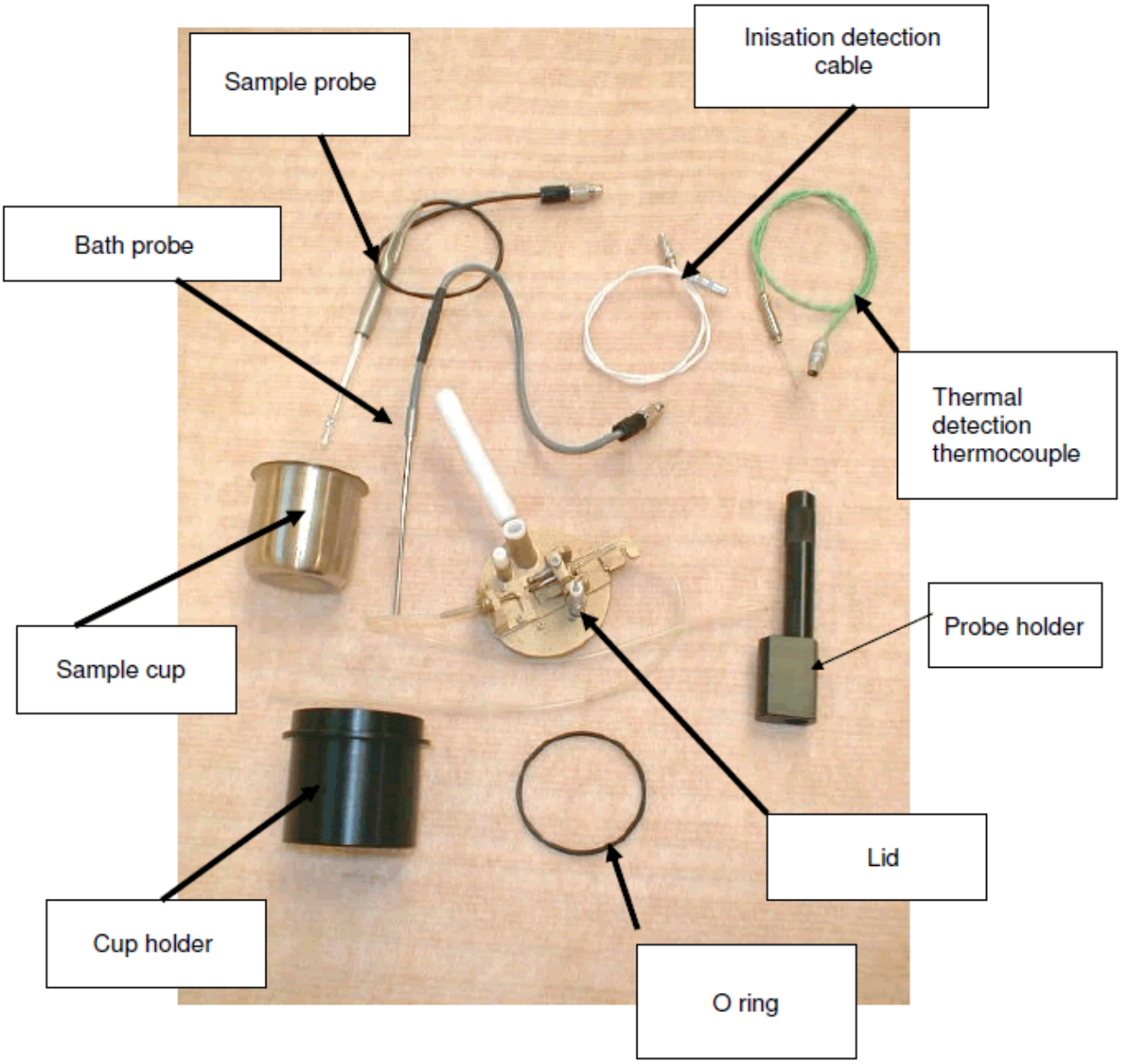
- 1 mains cable
- 1 cover and a TAG cup
- 1 rest receptacle
- 1 flash detection thermocouple
- 1 ionising detection cable
- 1 glass Pt 100 probe for the sample
- 2 pipes with collars for attaching to the cryostat
- 1 gas pipe with collars
- 1 agitation spring
- 1 operator's manual
- 1 certificate of conformity and attestation of final inspections
- 1 ticket printer with connector cable + recharge transformer
- 1 electric ignition coil
- 1 dipstick (small bath)
- 1 funnel
-

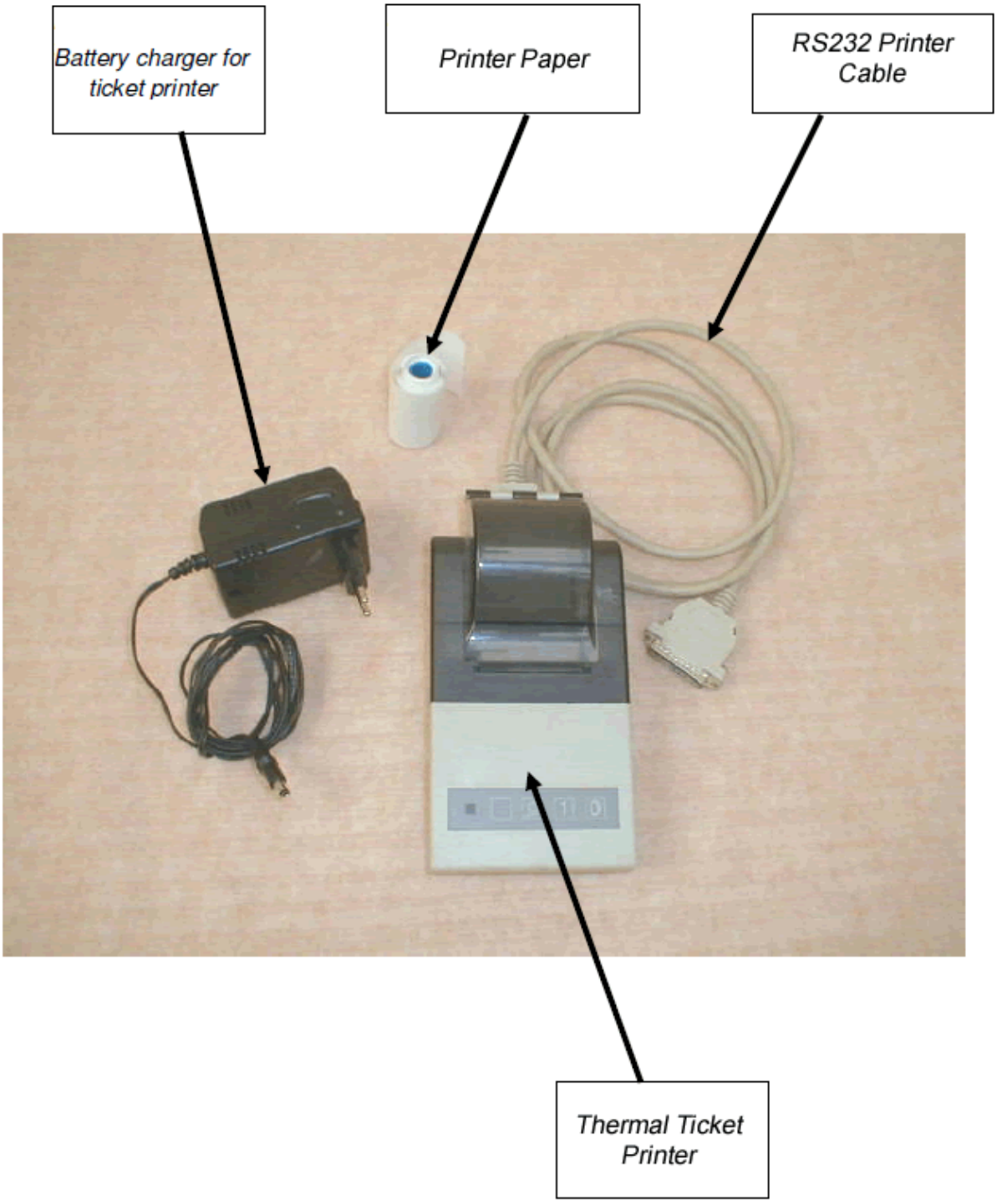
- 4.2 – OPTIONS

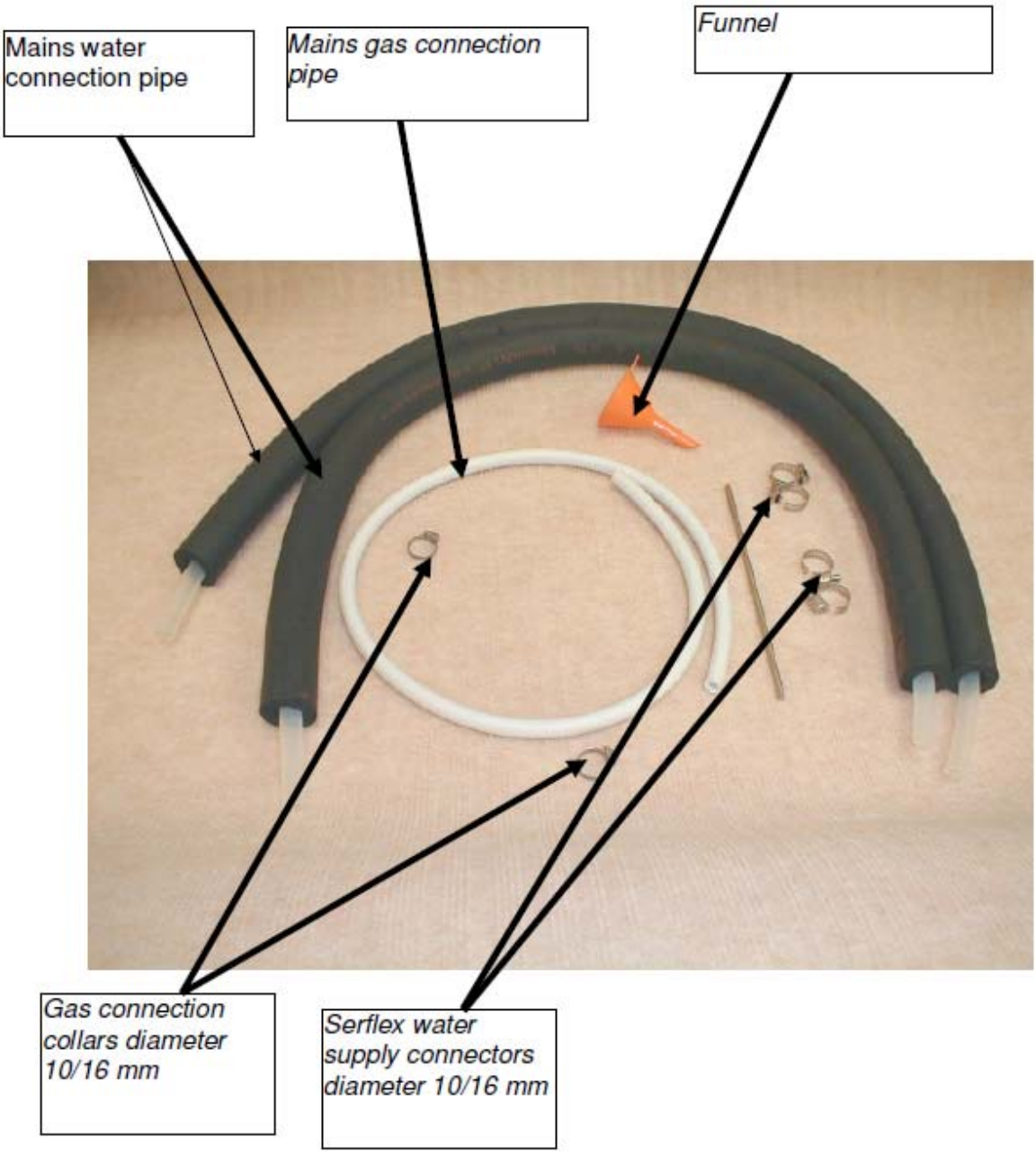
- Removable gas bottle with support bracket and connections



- 4.3 – ACCESSORY MODELS




Battery charger for ticket printer
Printer Paper
RS232 Printer Cable
Thermal Ticket Printer


Mains water connection pipe
Mains gas connection pipe
Funnel
Gas connection collars diameter 10/16 mm
Serflex water supply connectors diameter 10/16 mm

V – METHODS AND BRINING INTO SERVICE

- 5.1 - STANDARDS

This equipment complies with the following standards:

- ASTM D 56
- IP 304

Determination of the flashpoint in a closed cup of petroleum products and liquid mixtures practically free of foreign matter.

Test range	EFP < 60°C (140 °F)	-18 to 71 °C
Repeatability	1.2°C (2 °F)	1.6°C (3 °F)
Reproducibility	4.3 °C (8 °F)	5.8 °C (10 °F)

- 5.2 – METHODS

METHOD	GRADIENT °C/MIN	1st PRESENTATION	RATE
ASTM D 56 EFP < 60 °C (140 °F)	1 °C / mn (2 °F / mn) +/- 6 sec	5 °C before EFP (10 °F)	0.5 °C (1 °F)
ASTM D 56 EFP < 60 °C (140 °F)	3 °C / mn (5 °F / mn) +/- 6 sec	5 °C before EFP (10 °F)	1 °C (2 °F)

- 5.3 – STARTUP

5.3.1 – Connections on the back of the equipment

Connection of utilities:

- Connect the refrigeration inputs/outputs, tighten the collars, open the cryostat valve (with the equipment in use) and check there are no leaks.
- Connect the overflow and the drain to a waste pipe (avoid any siphoning by the hoses).
- Connect the gas (50 mBars maximum pressure), tighten the collars (the electro-valve is closed except during testing, check the flame regulation valves are closed), open the gas and check there are no leaks.
- Plug in the printer cable.
- Plug in the mains cable (mains voltage: 230 V +/- 10%).

Filling the bath:

- Remove the plug from the bath orifice
- Using a funnel, slowly pour in the liquid (water and glycol) until it runs through the overflow (discharged to the rear)
- Fill the bath under the receptacle with appropriate liquid (water if the tests are at positive temperatures, add glycol for negative temperatures) using the dipstick supplied
- Replace the filling plug

Note: This apparatus has an exchanger. It is not mixture between the bath and the coolant liquid of the cryostat

Do not fill the bath with only water. You must add anti freeze.

5.3.2 – Connections to the front of the equipment

Connect:

- The Pt 100 glass probe.
- The ionising detection cable (the spring on the cover ground must be correctly positioned against the cable connector)
- Possibly, the thermocouple detection cable.

Use with electrical ignition :

- Remove the presentation flame nozzle
- Remove the 2 silicone gas supply pipes
- Isolate the equipment from the gas supply

Place the electric ignition coil in its holder

Check the position of the electric ignition with the edge of the trap, by pushing with finger the mechanism: the filament of the electric ignition must not touch the edge of the trap.

Connect the two electrical supply wires of the heating plug to the two power supply terminals (see diagram).

Adjust the potentiometer for the ignition coil supply to 7/8 for the first time of use.

Configure the equipment (see functions flow chart) for electrical ignition.

- Note: the electric ignitor is supplied by low voltage AC.

Use of the equipment with an electrical test "plug" requires mandatory disconnection of the gas supply at the back of the equipment.

5.3.3 – Powering on the equipment

Note: Ensure the mains electricity supply is compatible with the equipment.

Throw the switch on the back of the equipment.

Initialisation of the CPU requires a short wait during which the screen will remain blank.

After about 20 seconds, the equipment is operational; the screen will indicate the values (see standby screen).

If the equipment is connected to a printer, power on the printer after the equipment.

VI – GENERAL DESCRIPTION OF THE SOFTWARE

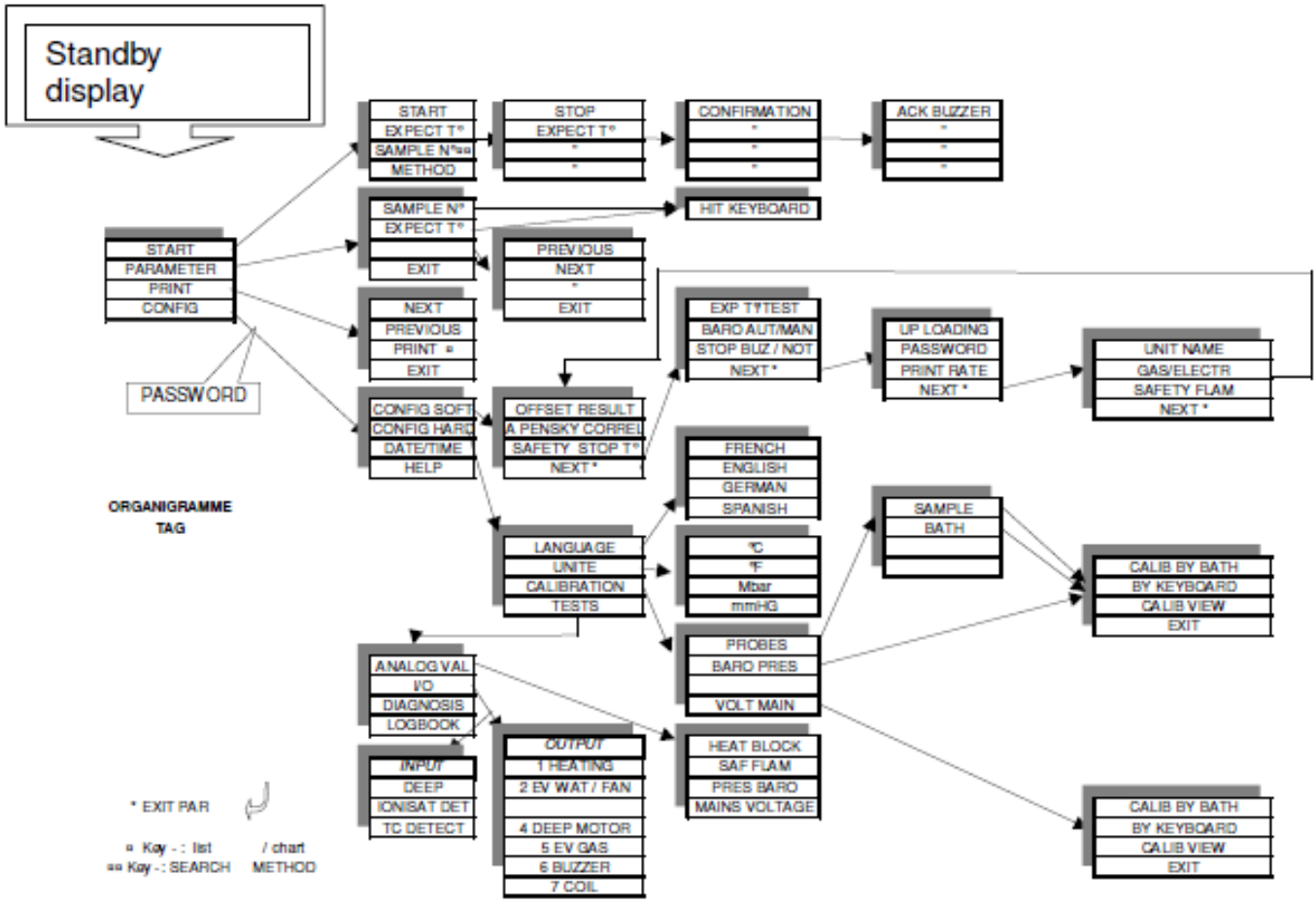
- 6.1 – MAIN STANDBY SCREEN

6.2 - MENUS FLOW CHART

Note: Access to the various menus and submenus of the program is obtained by pressing the arrows to the right of the icons they designate. The screen is not a touch screen and excess pressure on the icons displayed on screen may damage the screen.

Each menu and submenu is represented by an icon with the following significance: ↵

Note: in all cases pressing the key causes a return to the standby screen or the previous screen (except when waiting for numeric input).

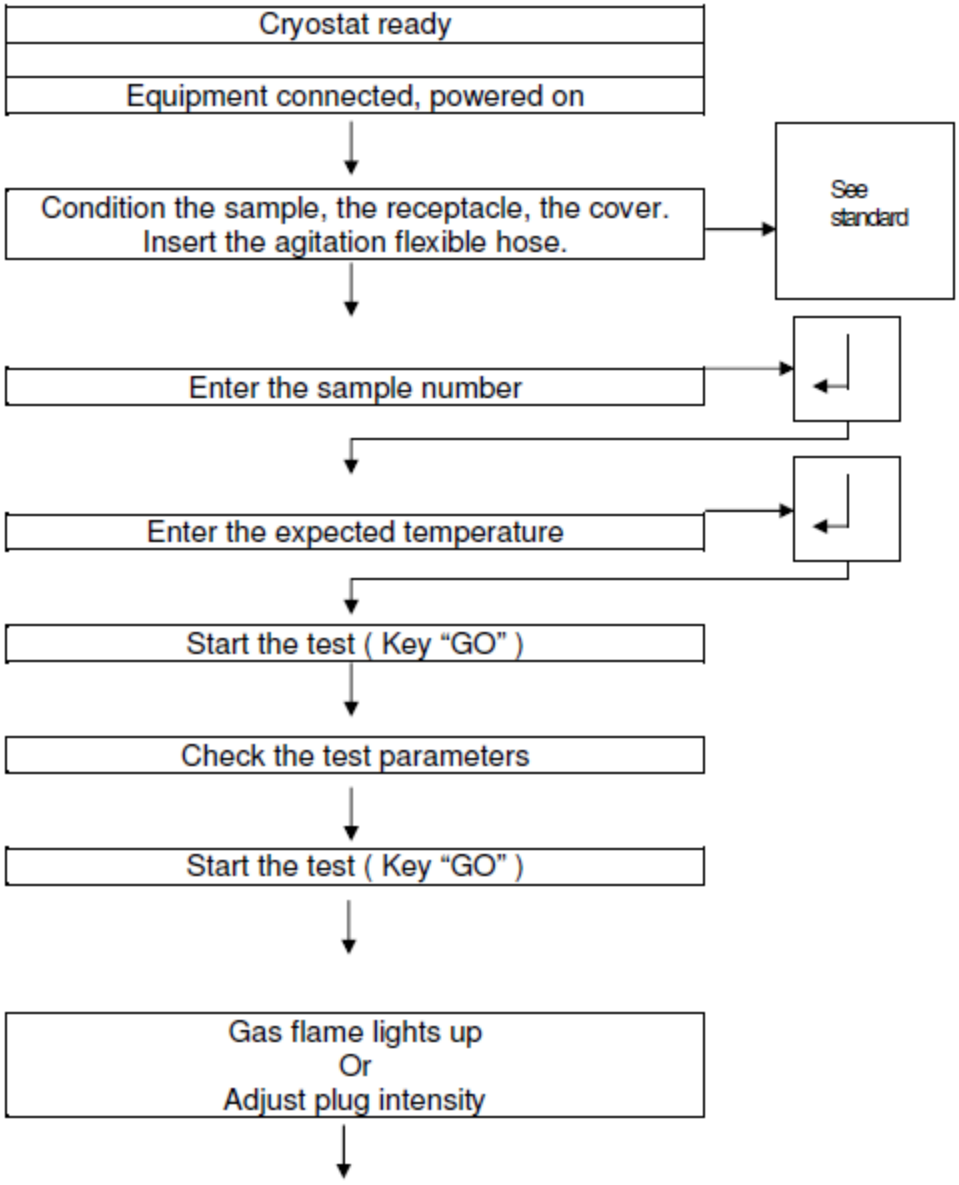


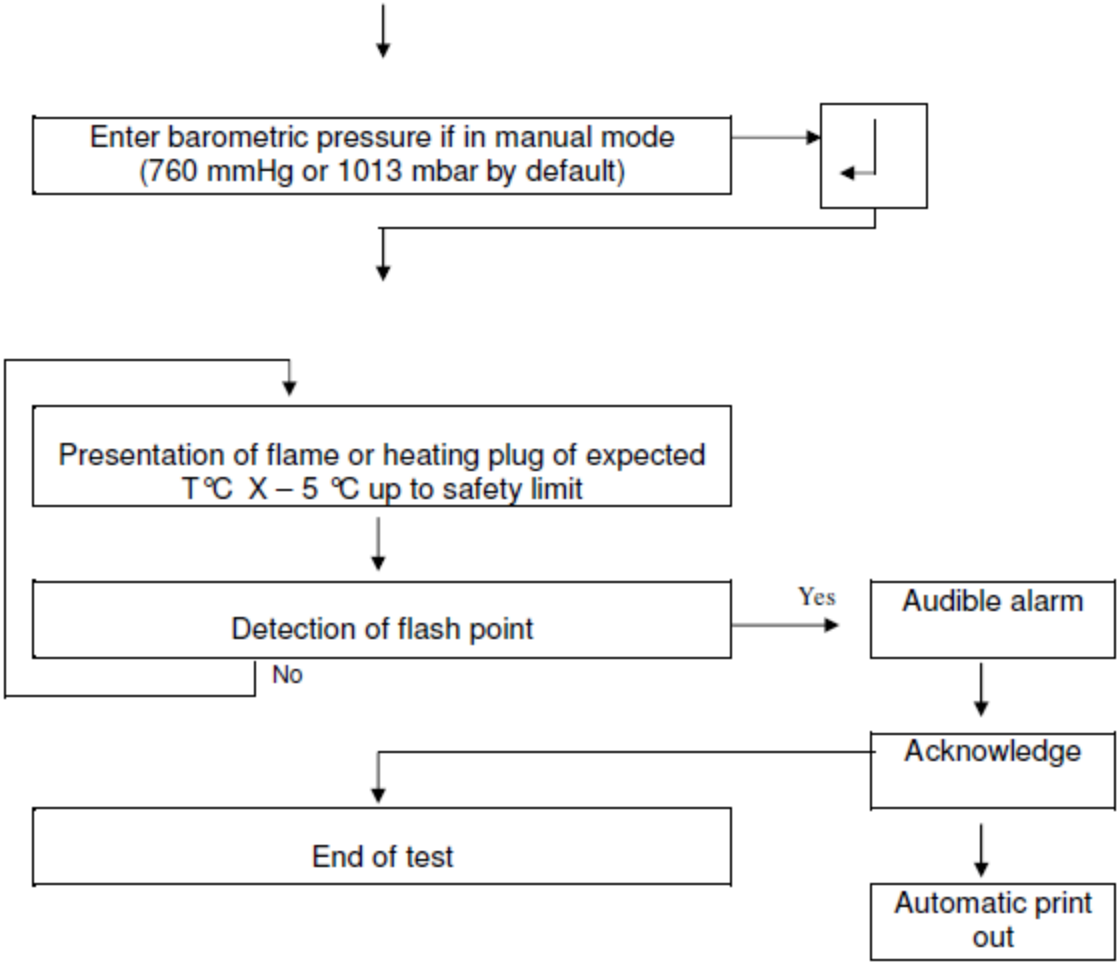
Note : In any case , you get out by pushing the key ↵

VII – STARTING A TEST

Handling liquid petroleum products or similar requires wearing protection (gloves, goggles, working clothes). Do not handle flammable products near a source of heat or a flame.

- 7.1 – CONDUCT OF A TEST




Enter barometric pressure if in manual mode
(760 mmHg or 1013 mbar by default)
Presentation of flame or heating plug of expected
T℃ X – 5 ℃ up to safety limit
Detection of flash point
Yes
Audible alarm
No
Acknowledge
End of test
Automatic print
out

7.2 – START OF A TEST IN "SEARCH" MODE

FOR A PRODUCT SATISFYING THE SPECIFICATIONS OF THE TAG METHOD, OF WHICH THE FLASH POINT IS UNKNOWN

Important: This method allows approximating the flash point. To determine the true value another test complying with the method for finding the true value must be performed.

- Enter an expected T° C.
- Replace a sample number by pressing (-).
- Start the test as in 7.1.

The equipment will then present flames from the start of the test, every 1 °C. The gradient depends on the method selected.

Note: for a wider ranging search without intervention, use the keyboard to modify the alarm and safety shutdown parameters linked to the expected temperature.

VIII – PRINTING

- 8.1 - TYPES OF PRINTER

- Ticket printer (model supplied as standard).
- 80 column dot matrix printer (except laser printers).

- 8.2 – PRINTING RESULTS OF TESTS IN PROGRESS

Automatic on acknowledgement of the audible alarm at the end of the test. Two possibilities for displaying the result: select by pressing “-“on the keyboard (list or table of the results).

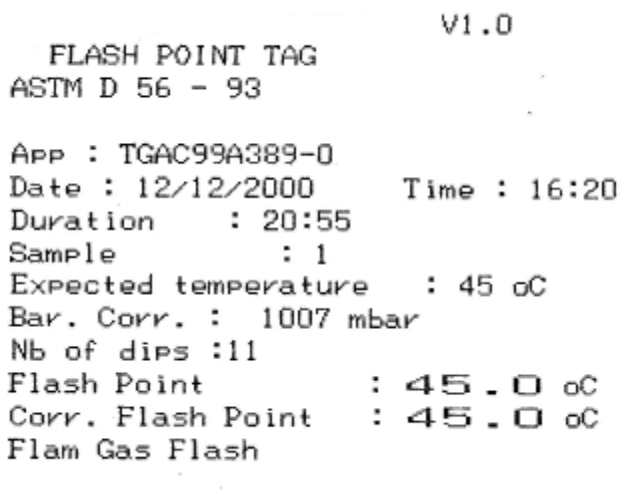
- 8.3 - PRINTING RESULTS OF ARCHIVED TESTS

Possibility of printing out the last 100 tests one by one.

- 8.4 – PRINTING THE TEMPERATURE GRADIENT

Allows "following up" the increase in the temperature of the sample during the test (printing out every minute from the 3rd minute of the test).

- 8.5 – MODEL PRINTOUT



- 8.6 – PRINTING OUT OF LOG

Printing out of the log supplies all the information necessary for ‘‘quality’’ monitoring of the equipment.

```
    CONFIGURATION :  V1.0
App : TGAC99A389-0
Date : 1/1/1980     Time : 00:01

Stop safety at expected temper + 05 oC
Atmo pressure calibration  :
690 mmHg / 920  mbar -> 0096 pts
800 mmHg / 1066 mbar -> 0210 pts
Last Calibration of Pressure: 12/12/2000
Power Supply Calibration  :
210 V -> 0041 pts
245 V -> 0133 pts
Last Calibration of Supply : 12/12/2000
Corrected result : 0.0 oC
Temperature Calibration :
92.2 ohms  ->  -20.0 oC  ->  77623 pts
130.9 ohms  ->  80.0 oC  ->  224908 pts
Last temperature calibration: 12/12/2000
Bath Calibration  :
92.2 ohms  ->  -20.0 oC  ->  79301 pts
130.9 ohms  ->  80.0 oC  ->  226504 pts
Last temperature calibration: 12/12/2000
Nb of test since last calibration: 2
Nb of test since first uses : 1
```

IX – SAFETY DEVICES

- 9.1 – SAFETY DEVICE - ABSENCE OF SAMPLE PROBE

On starting the test, the equipment detects the fault and rejects the tests with a message and audible signal.

- 9.2 – NO INCREASE IN SAMPLE PROBE TEMPERATURE

Current test stopped with message and audible signal if no increase in temperature (3 °C) is recorded after 10 minutes of testing.

Note: To miss an alarm by no increasing temperature for the sample probe, you must put the probe in the sample before to launch the test.

- 9.3 – ELECTRICAL SAFETY DEVICE

A bath temperature safety device is set at the factory to 130 °C. When the device is activated, there is an audible alarm with display of a safety message "safety limit". Only pressing the On/Off switch will allow restoring the normal functions of the equipment. If the fault persists, leave the equipment powered off, adopt the security precautions (isolate the equipment from the mains gas and electricity) and contact the After Sales department or the retailer as quickly as possible so that prompt action can be taken.

- 9.4 - SAMPLE TEMPERATURE SAFETY DEVICE

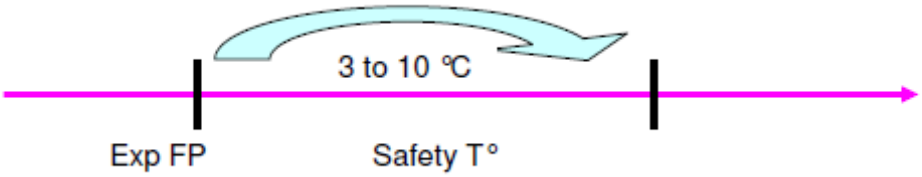
This is set at the expected temperature of the current test plus X degrees, programmed from the keyboard during the software configuration process.

The limits are from 3 °C to +10 °C above the expected T°.

An audible alarm sounds when the sample reaches safety T° – 3 °C. It is then possible to increase to the expected T° and continue the test.

An audible alarm sounds with display of ‘‘safety shutdown" when the safety T° is reached. The test is then stopped and acknowledgement is necessary.

The programmed difference between the expected T° and the safety T° remains the same irrespective of the expected T° entered.



- 9.5 – GAS SAFETY DEVICE

Message "gas lit" with audible signal at the start of the test.
At the end of the test, the apparatus switches off automatically the electro-valve of gas.

X – UPDATING OF SOFTWARE

Power on the equipment.

Use the "administrative" pass word to access the item ‘‘new version" in "configuration/software configuration".

Note: the “administrative” pass word is supplied with the connector cable ‘‘kit’’ and the updating diskette.

Follow the instructions on the screen.

Link the serial port of the equipment with COM 1 of the PC and boot the PC using the updating diskette (boot program included). Follow the instructions on the PC screen.

XI – CONFIGURATION

This function allows accessing all programming, test and maintenance functions.

Access can be protected by a password.

When the apparatus get out of the workshop, the password is blank.

- 11.1 – PASSWORD

There is no need to enter the original password, simply validate it to access the following menus.

- 11.1.1 – Creation of a password

Validate the software configuration icon.

Use the arrows to access the ‘‘new password" icon.

Enter the new password and validate.

Confirm the password and validate.

Switch the equipment off and then back on after a few seconds.

Note: the configuration item remains accessible **until the equipment is switched off.** Then access to this item is once more impossible unless the password is used.

- 11.2 – SOFTWARE CONFIGURATION

- 11.2.1 – Correction of the result

Offers the possibility of correcting the result by up to +/- 9.9 °C (9.9 °F). For negative values, first enter the value then - .

- 11.2.2 – Stop cooling

Setpoint for stopping cooling of the bath after the test: expected T° – 17 °C

- 11.2.3 – Safety shutdown

Allows stopping a test at the expected temperature + X °C.

X °C is the value entered as the safety shutdown setpoint
(3 °C to10 °C).

- 11.2.4 – Enter presumed temperature

Offers the possibility of entering the expected temperature each time a test is started with deletion at the end of each test or storing in memory for the next test.

- 11.2.5 – Barometric pressure

Automatic or manual barometric pressure (modification of status by ).

If manual barometric pressure is selected, a default value (760 mmHg or 1013 mbar) which can be modified, appears when the test is first started.

- 11.2.6 - Buzzer

Choice of the time the alarm "buzzer" sounds: continuous or 3 minutes.

- 11.2.7 – New version of software

Update of equipment software.

- 11.2.8 - New password

Allows changing the password.

To validate the password after it has been recorded, the equipment must be powered off. When it is powered on again, the configuration items are no longer accessible except by using the recorded pass word.

- 11.2.9 – Print out temperature gradient)

Allows selecting:

- printing out the temperature gradient for the current test and the result at theend of the test.
- Or solely the result at the end of the test.

(Modification of status by '⇨).

- 11.2.10 - "Escaping" from the software configuration item

Press↵(excluding anticipated numeric input)

- 11.3 – HARDWARE CONFIGURATION

- 11.3.1 - Language

Choice of language, French or English, to be enabled for display on screen.

- 11.3.2 - Units

Selection of units for measuring pressure and temperature for display on screen.

- 11.3.3 - Calibration

Allows accessing calibration of the temperature, the bath, the barometric pressure, the test starting stages and the "image" of the electricity supply network.

- 11.3.3.A – Sample probe and bath

Note : physical calibration of the measurement of the sample and bath temperature require a decade unit of resistors simulating a Pt 100 probe (resolution 0.01 Ω) and a special cable to link the equipment to the decade unit.

Calibration of the total measuring chain of the sample and bath temperature (including the sensor) is the optimum calibration. It requires immersing the Pt 100 probe in two thermostatically controlled baths, one after the other. A special extension cable is necessary. There must be a significant difference in the temperature of the two baths (minimum 90 °C) to perform calibration under satisfactory conditions. Temperatures below –50 °C and above 450 °C are not acceptable.

Connect the decade resistors unit with the special cable or connect the Pt 100 probe using the special extension in the case of calibration using thermostatically controlled baths.

Adjust the decade unit to a low value. For example: 50 °C (see table 1) or for example, immerse the Pt 100 probe in a bath of 40 °C.

Enter the same low value on screen in °C, validate by ‘‘input’’.

Adjust the decade unit to obtain a high value. For example 100 °C (see table 1) or for example, immerse the Pt 100 probe in a bath of 150 °C.

Enter the same high value on screen in °C, validate by ‘‘input’’.

The message "calibration rejected" indicates that the calibration is not correct.

The values entered are too close or the difference between the 2 baths does not exceed 90 °C. Recommence the calibration operations.

Table 1

°C	Ohms
-40	84.7
-30	88.3
-15	94.2
0	100
25	109.73
50	119.
75	128.8
100	138.
150	157.2

Print out the log.
The information in the log can be used for calibration by points, in the case of accidental loss of calibration.

Displaying the probe calibration values

Allows checking the conversion point values of the probe calibration.

Calibration by points

In the case of accidental loss of probe calibration, it is possible to enter a calibration value using the conversions points previously printed out in the log.

Calibration by conversion point requires entering the low and high temperatures corresponding to the high and low conversion points to be entered.

- 11.3.3.B – Barometric pressure

Physical calibration

Note: physical calibration of the barometric pressure measurement requires:

Either a device capable of accurate generation (+/- 1 mbar) of a pressure of 920 mbar (690 mmHg) and of 1066 mbar (800 mmHg).

Or a voltage generator (accuracy 1 mV) capable of generating a voltage of 4.345 V (for 920 mbar) and 4.877 V (for 1066 mbar). A special cable is required.

Connect the pressure or voltage generator using the special cable.

Apply pressure or equivalent voltage of 920 mbar (690 mmHg) and validate by ‘‘input’’ (see table 2).

Apply pressure or equivalent voltage of 1066 mbar (800 mmHg) and validate by ‘‘input’’ (see table 2).

The message "calibration rejected" indicates that the calibration is not correct.

Recommence the calibration operations (values of 2 points too close).

Table 2

Mbar	mmHg	mV
920	690	4345
1066	800	4877

Print out the log.

The information in the log can be used for calibration by points, in the case of accidental loss of calibration.

Displaying the pressure sensor calibration values

Allows checking the conversion point values of the pressure sensor calibration.

Calibration by points

In the case of accidental loss of the barometric pressure calibration, it is possible to enter a calibration value using the conversions points previously printed out in the log.

Calibration by conversion points requires entering the low and high pressures corresponding to the high and low conversion points to be entered.

- 11.3.3.C – Electrical network image

The network image is a device which ensures, during the first 5 minutes of a test, compensation of output in the case of a variation in the network voltage during the 3 start-up stages.

Physical calibration

Note: physical calibration of the electrical network image requires use of a self transformer with a minimum amplitude of 210 V to 245 V.

The equipment must be supplied using the transformer solely during the calibration procedure.

Supply the equipment with 210 V (wait approximately 1 minute before validation).

Enter the value 210 and validate by ‘‘input’’.

Supply the equipment with 245 V (wait approximately 1 minute before validation).

Enter the value 245 and validate by ‘‘input’’.

Print out the log.

The information in the log can be used for calibration by points, in the case of accidental loss of calibration.

Displaying the network image

Allows checking the calibration values of the electrical supply network image.

Calibration by points

In the case of accidental loss of network image calibration, it is possible to enter a calibration value using the conversions points previously printed out in the log.

Calibration by conversion point requires entering the conversion point values corresponding to the voltages displayed on the screen.

- 11.3.4 - Checks

- 11.3.4.A – Analogue readings

Display of the various analogue inputs of the equipment

(Output by )

- 11.3.4.B – Logical inputs/outputs

Allows enabling the logical inputs of the equipment and displaying the logical outputs.

(Output by )

- 11.3.4.C – Self diagnostic

Automatic procedure for automatic checking of various components of the equipment with printing out of a report.

- 11.3.4.D – Printing the log

Printing of a log containing the various calibration, safety and operating parameters.

Model

V1.0

FLASH POINT TAG
ASTM D 56 - 93

App : TGAC99A389-0
Date : 12/12/2000 Time : 16:20
Duration : 20:55
Sample : 1
Expected temperature : 45 oC
Bar. Corr. : 1007 mbar
Nb of dips :11
Flash Point : 45.0 oC
Corr. Flash Point : 45.0 oC
Flam Gas Flash

CONFIGURATION : V1.0
App : TGAC99A389-0
Date : 1/1/1980 Time : 00:01

Stop safety at expected temper + 05 oC
Atmo pressure calibration :
690 mmHg / 920 mbar -> 0096 pts
800 mmHg / 1066 mbar -> 0210 pts
Last Calibration of Pressure: 12/12/2000
Power Supply Calibration :
210 V -> 0041 pts
245 V -> 0133 pts
Last Calibration of Supply : 12/12/2000
Corrected result : 0.0 oC
Temperature Calibration :
92.2 ohms -> -20.0 oC -> 77623 pts
130.9 ohms -> 80.0 oC -> 224908 pts
Last temperature calibration: 12/12/2000
Bath Calibration :
92.2 ohms -> -20.0 oC -> 79301 pts
130.9 ohms -> 80.0 oC -> 226504 pts
Last temperature calibration: 12/12/2000
Nb of test since last calibration: 2
Nb of test since first uses : 1

XII – INCIDENTS

Excess gas pressure may cause uncoupling of the internal connections of the equipment (internal flexible connections).

Intervention by a qualified technician is mandatory before the equipment is reused.

Abnormal heating may damage internal components and the gas pipes. Intervention by a qualified technician is mandatory before the equipment is reused.

If a sample is spilled on the working plate this may eventually cause a fire inside the equipment.

Thorough cleaning by a qualified technician is mandatory.

A bad mixture (water / anti freeze) can disturb the temperature slope in the negative temperatures. In this case, check the fluidity of the mixture at these temperatures.

XIII – GENERAL MAINTENANCE

- 13.1 - CALIBRATION

Check the calibrations at least once a year.

- 13.2 – MISCELLANEOUS CHECKS

The equipment should be cleaned as frequently as possible to ensure optimum use conditions (do not use strong solvents).

An internal check of the equipment should be performed depending on the intensity of use. In the case of intensive use, we recommend annual servicing of the equipment.

Change the liquid of the bath of the apparatus

XIV – LIST OF ACCESSORIES

- 14.1 – ACCESSORIES

Description
Cup
Complete cover
Glass Pt 100 probe
Ionization detection cable
Detection thermocouple
Ticket printer
Paper roll for ticket printer
Electric ignitor
Insulated refrigerant pipe (10x16)
Gas pipe (rear connection) 1 metre
Gas pipe for test flame, minimum 2 metres
O ring for cover

- 14.2 – ADDITIONAL ACCESSORIES (options)

Description
Sample temperature measurement calibration cable
Extension cable for Pt 100 sample probe (calibration with thermostatically controlled baths)
Barometric pressure sensor calibration cable

- 14.3 – ERROR CODES

Trouble code on the report:

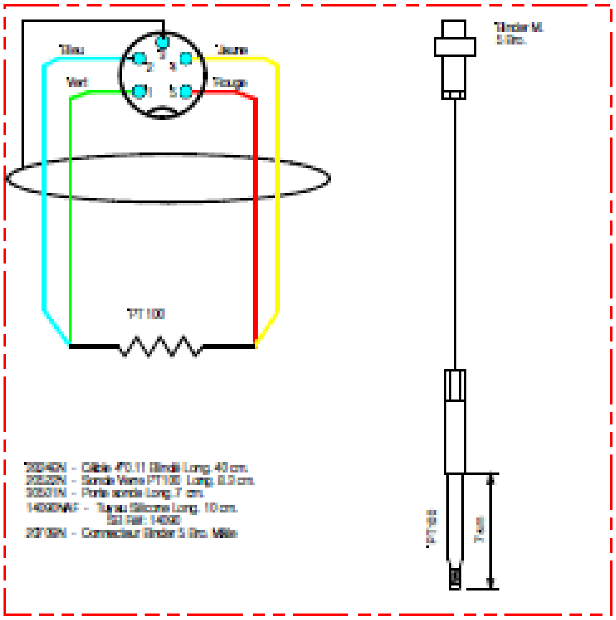
-55	Overflow in the cup (emulsion)
-66	Security flame (ingnition gaz or electric)
-77	Safety stop (no detection)
-88	Flash on the first dip
-99	Manual stop

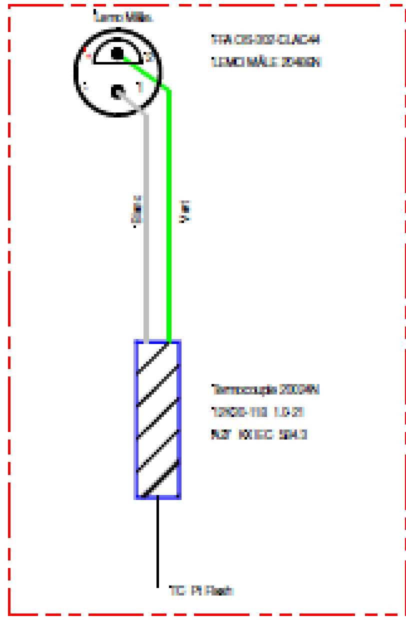
XVI - YOUR CONTACT

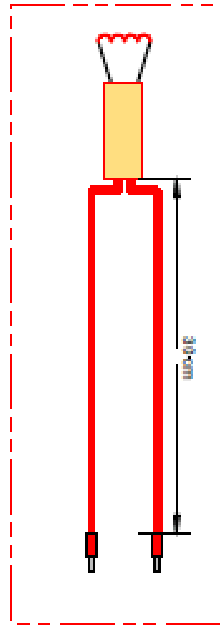
Koehler Instrument Company
1595 Sycamore Avenue
Bohemia, NY 11716

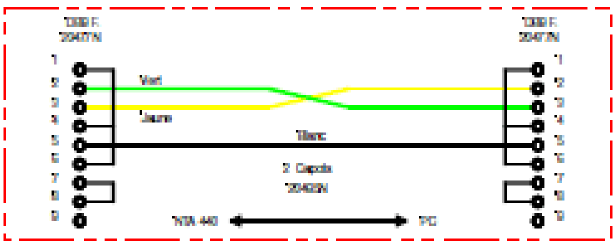
Tel: 1 631 589 3800
Fax: 1 631 589 3815
Web: http://www.koehlerinstrument.com

XVII – ELECTRICAL/ELECTRONIC DIAGRAMS









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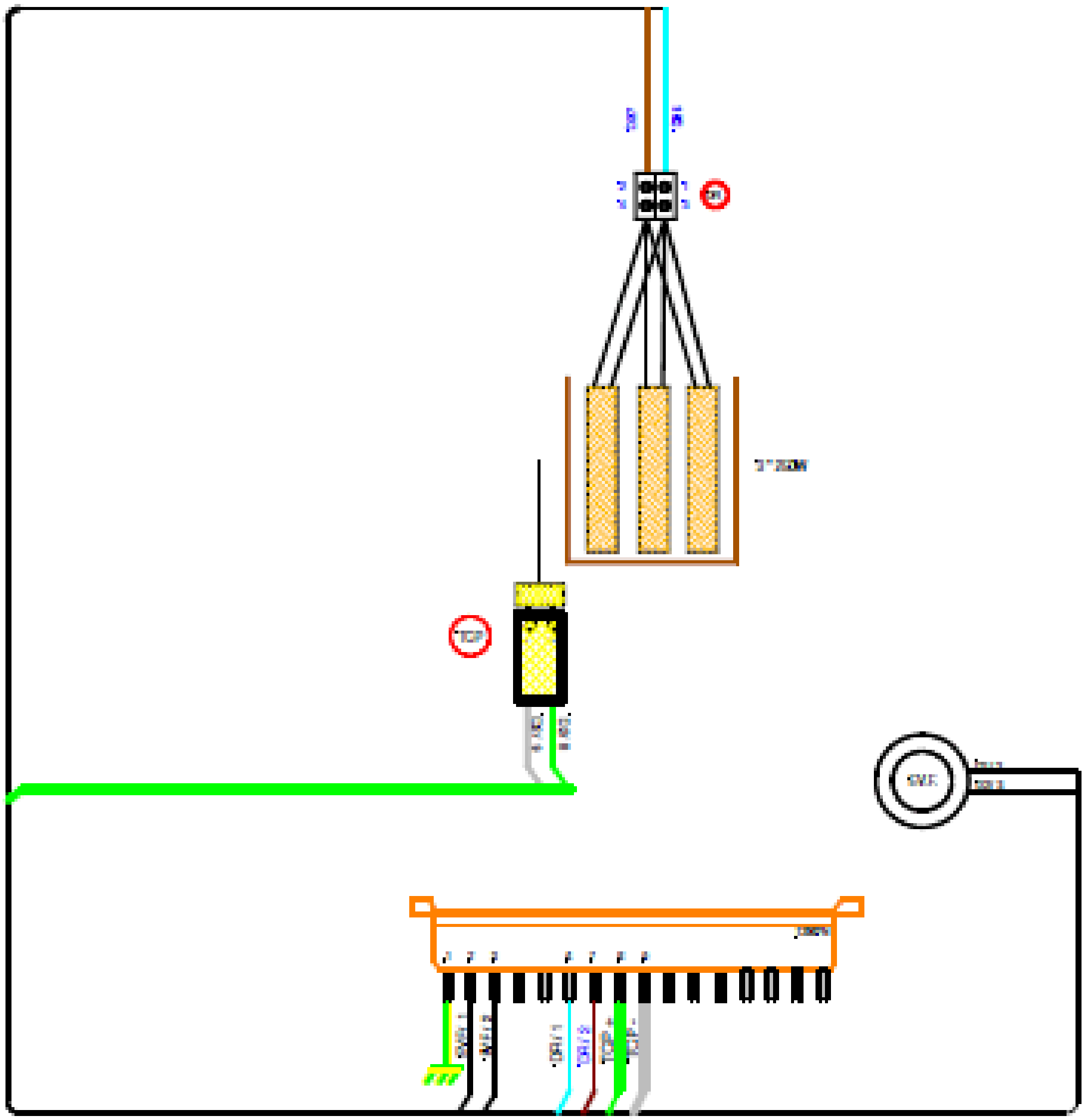
TITRE: Cablages des Accessoires NTA 440		
	PLAN N°: ACCESSOIRES NTA 440 Ind 0	DATE



Koehler Instrument Company			
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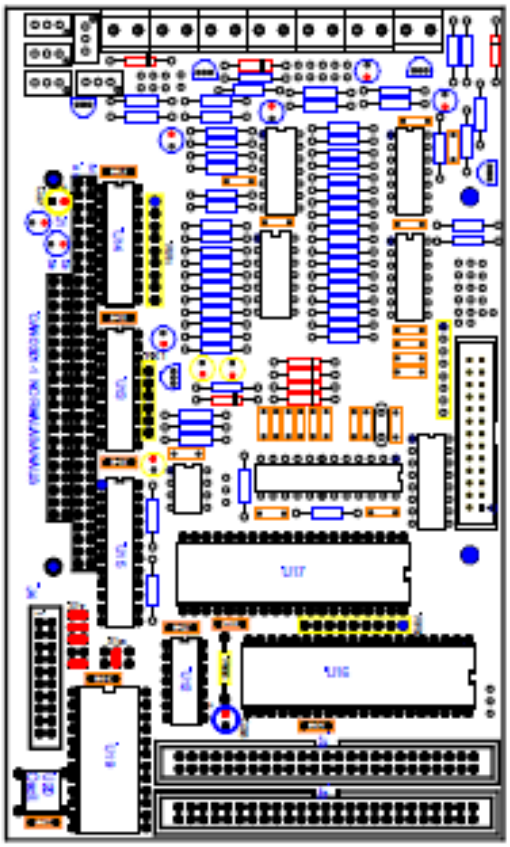
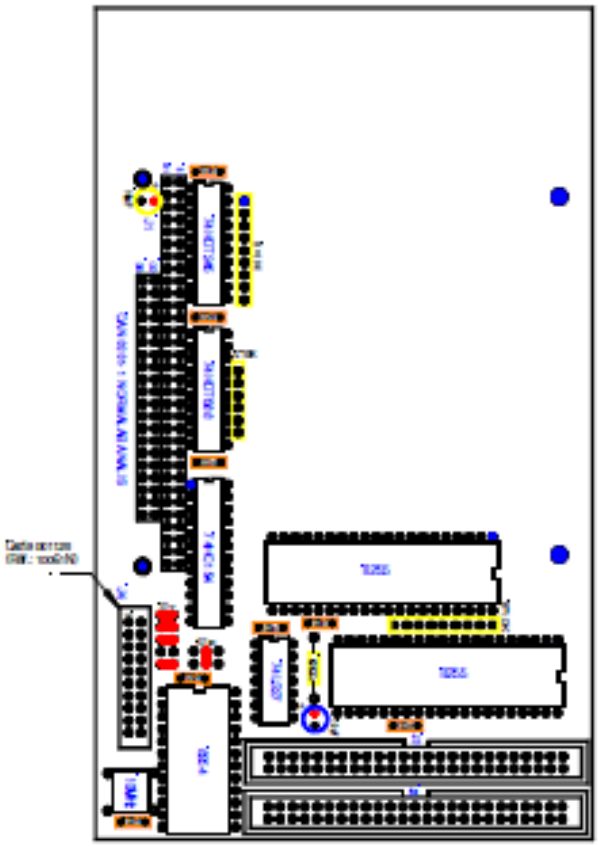
REP / NTA440	PLAN No	Câblage Bas NTA440 Ind 0	DATE





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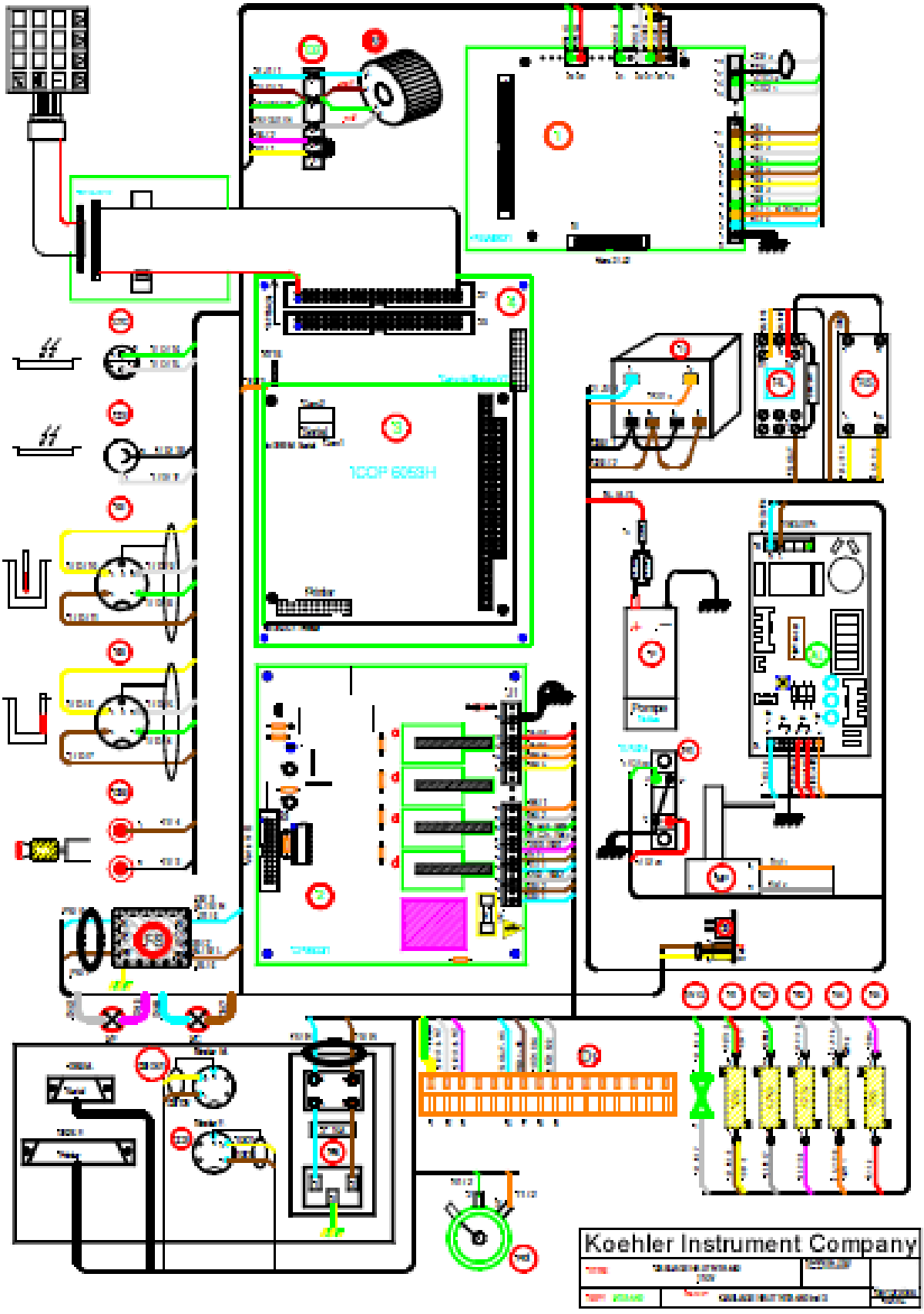
Carte CAN 0301-1		
	Câblage Carte CAN0301-1 NTA440 ind 0	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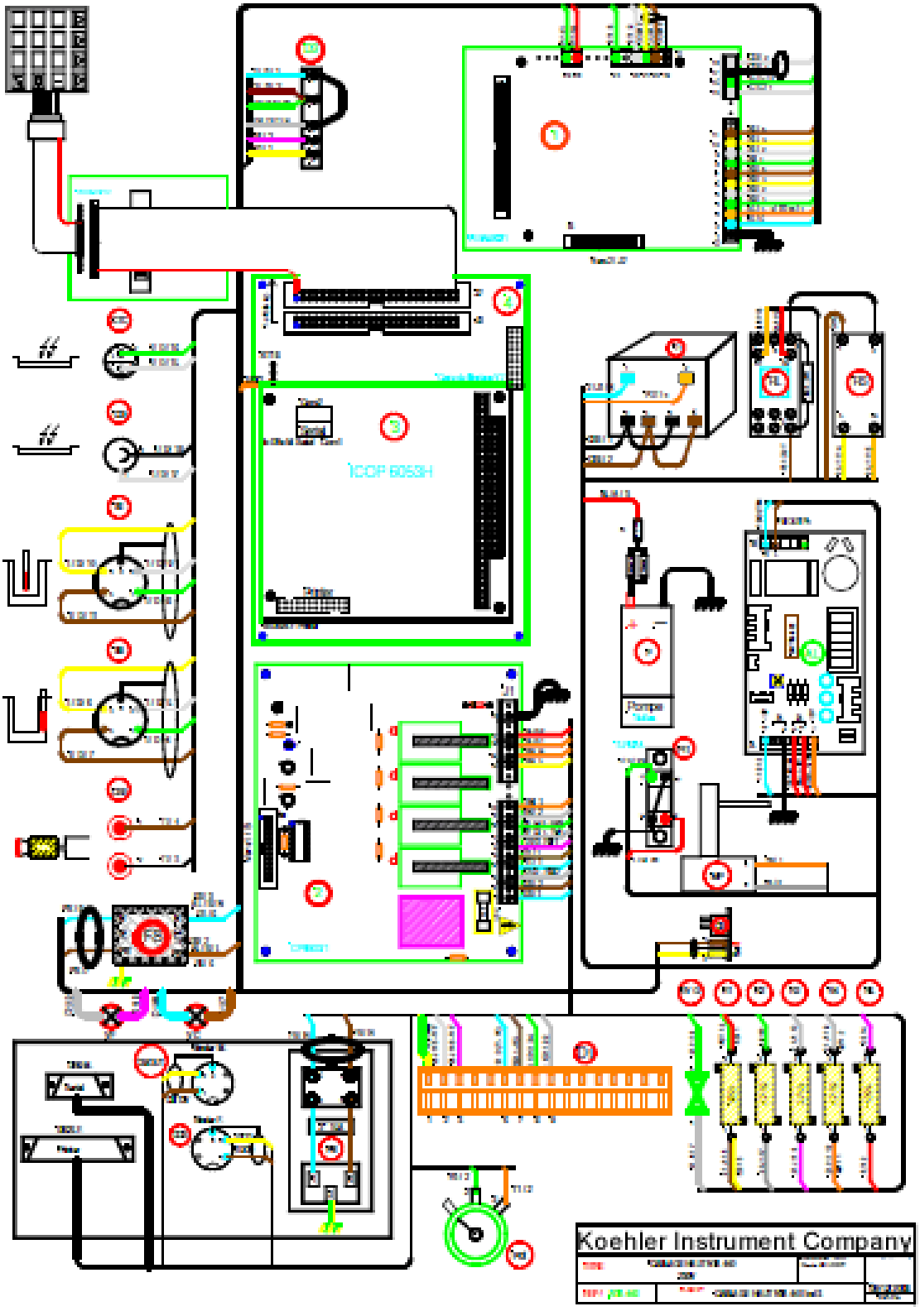
Koehler Instrument Company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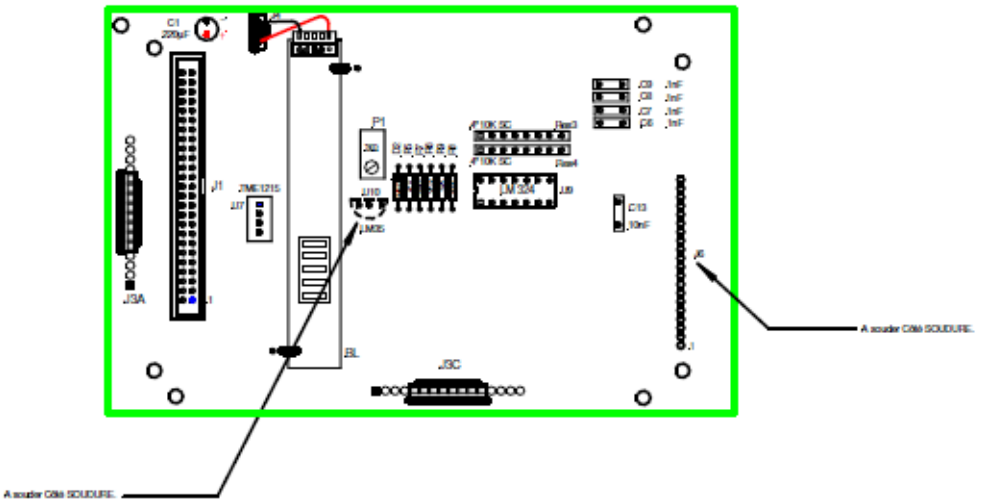

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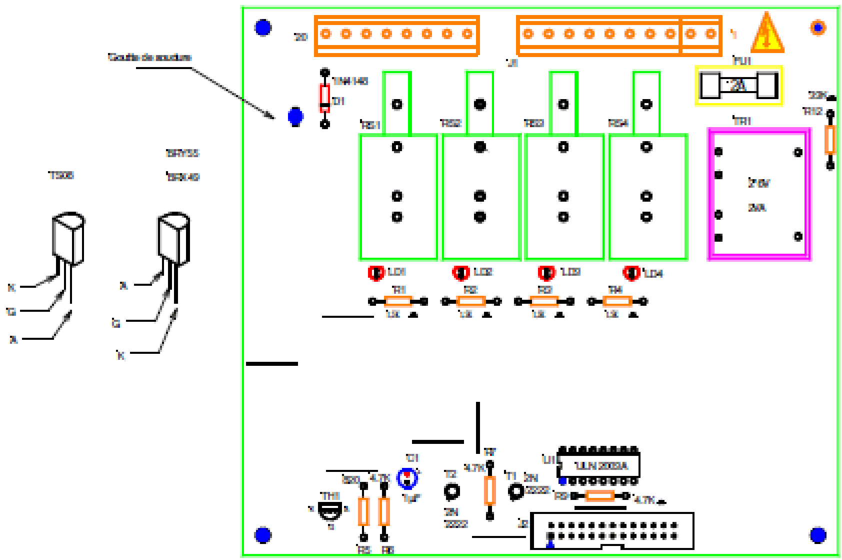
REF: NTA440	PLAN N°: Câblage INTCLA 97'12 NTA 440 Ind 0	DATE: 09/12/2008



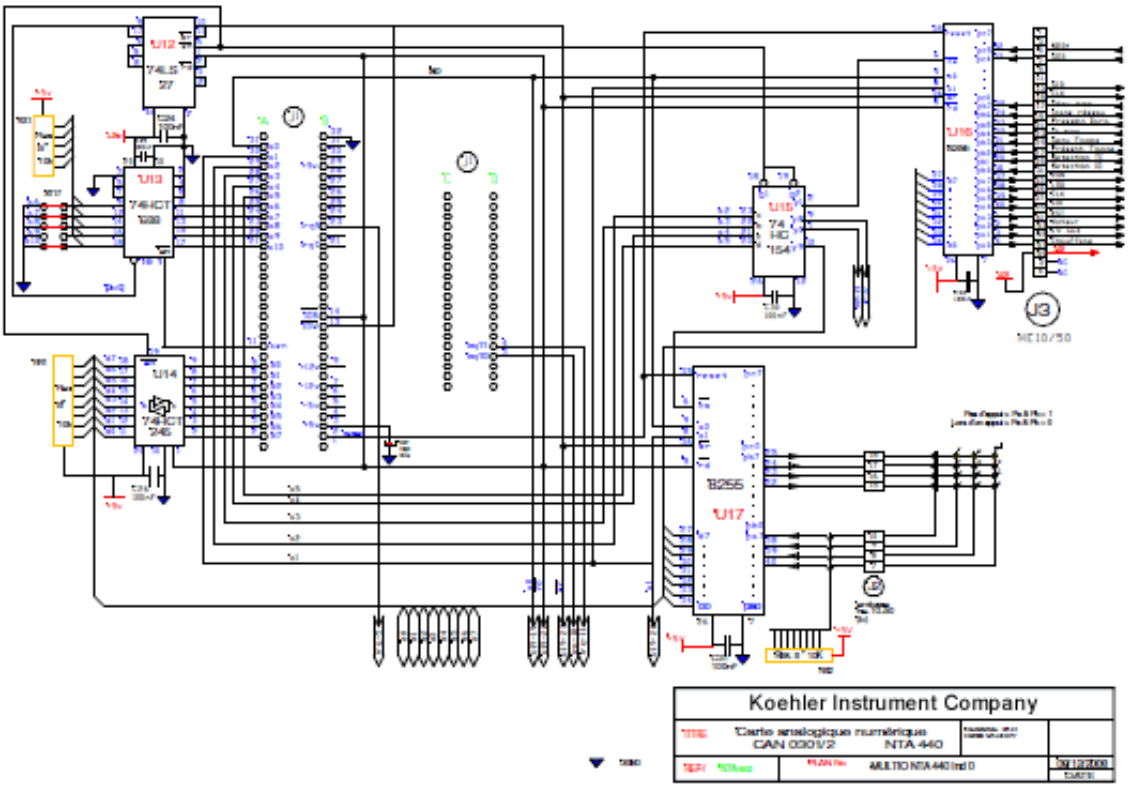
Koehler Instrument Company

Câblage CP[illegible] 1

NTA 440

Carte CP [illegible]_1 NTA 440 Ind 1

DATE



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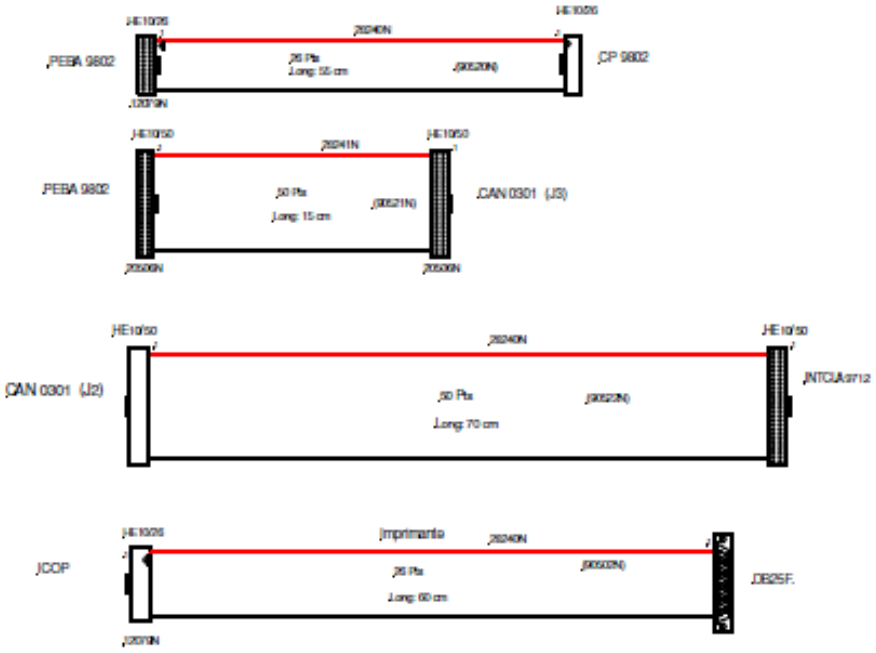
REV: NTA440	PLAN No: AMLTIO NTA 440 Ind 0	Mar 12/2008



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REP / NTA 440	PLAN No: NAPPES NTA 440 Ind 1		

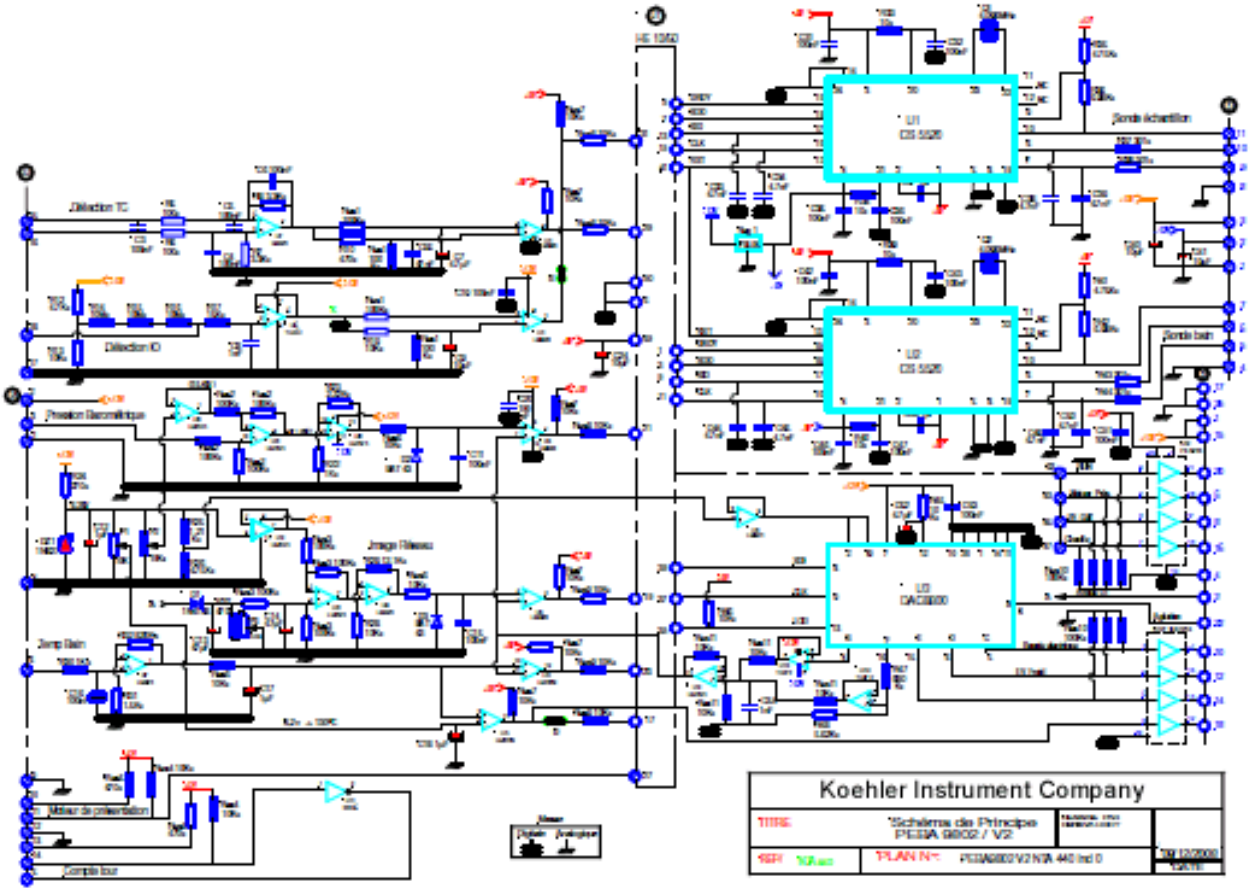
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Schéma de Principe
PESTA 9802 / V2
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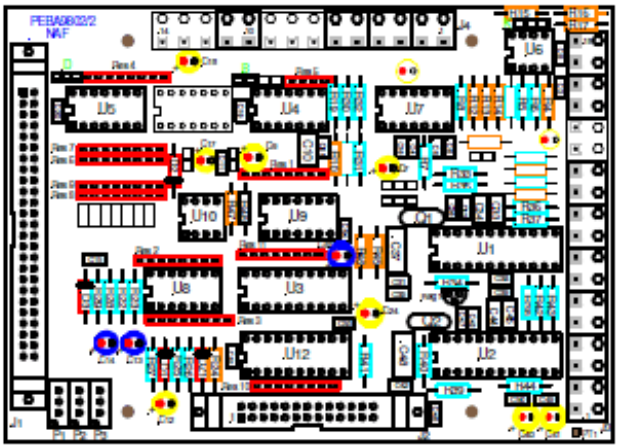

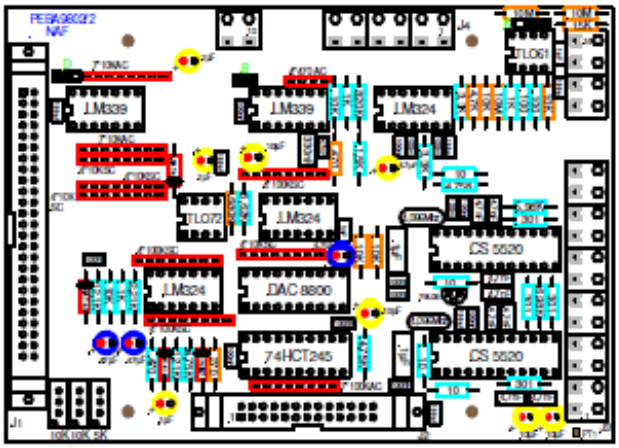

Koehler Instrument Company			
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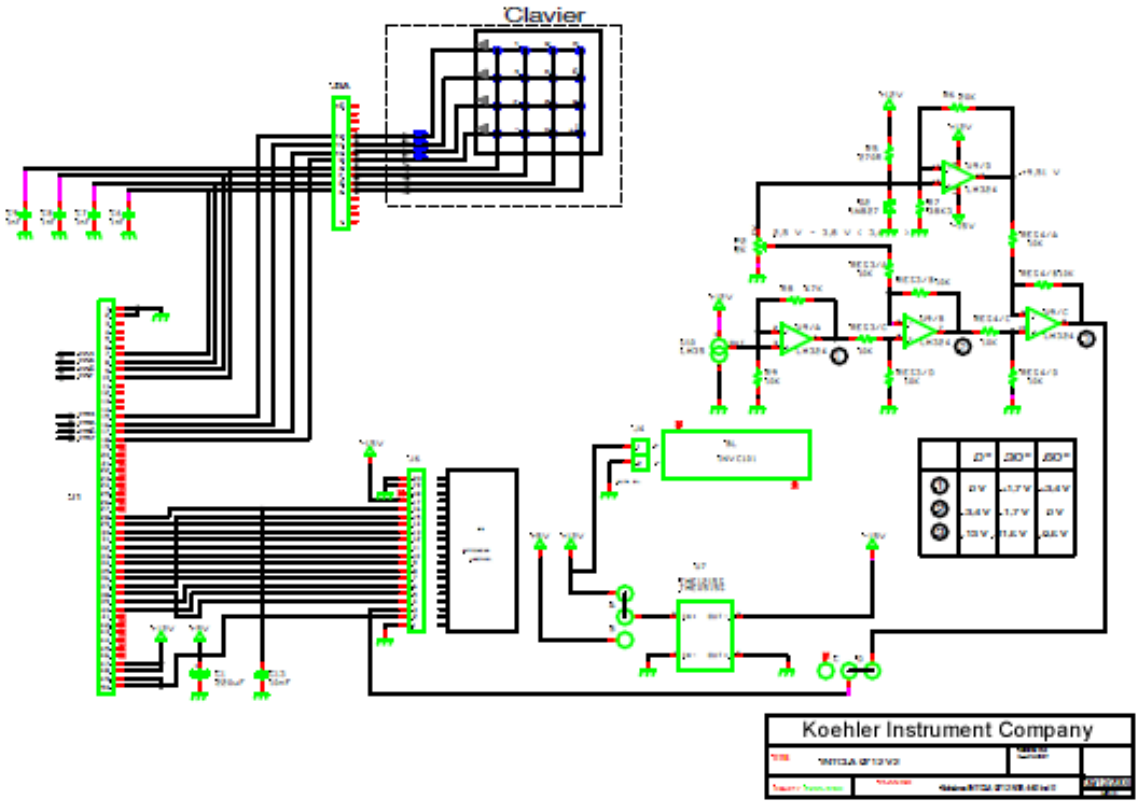
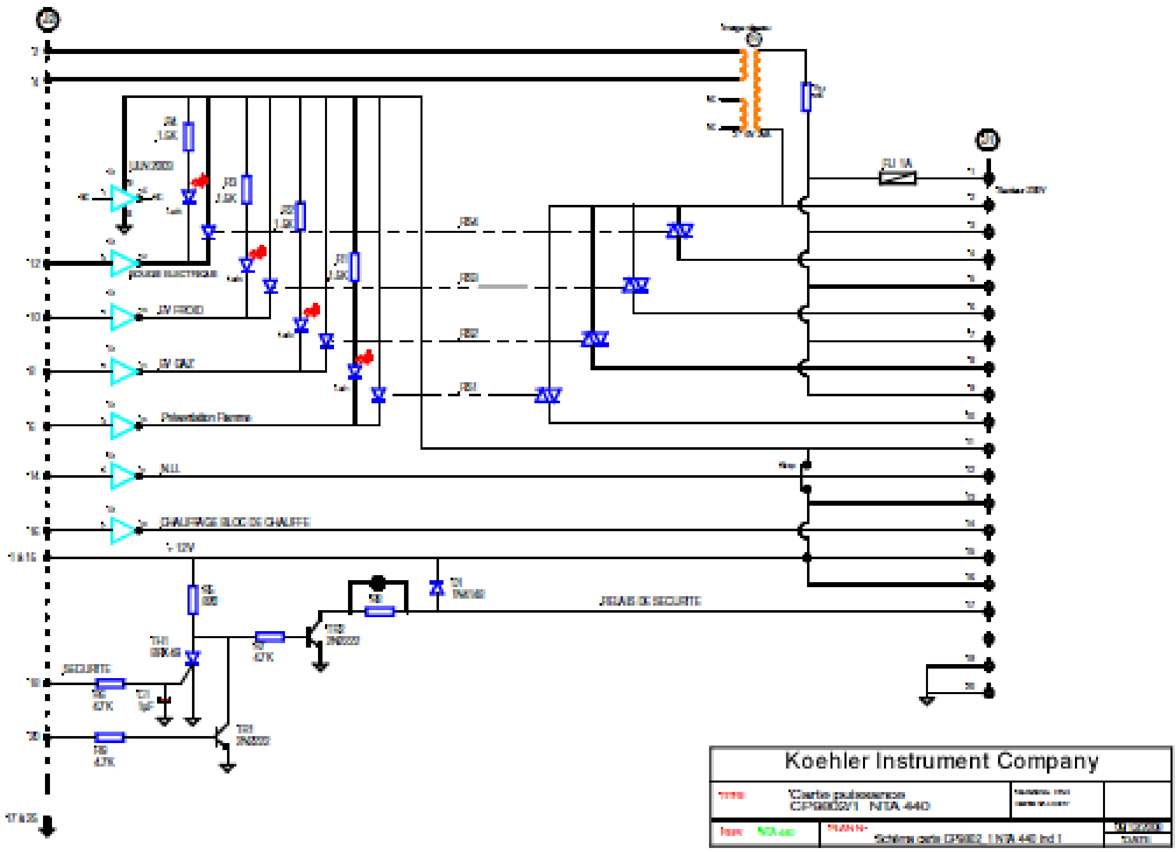
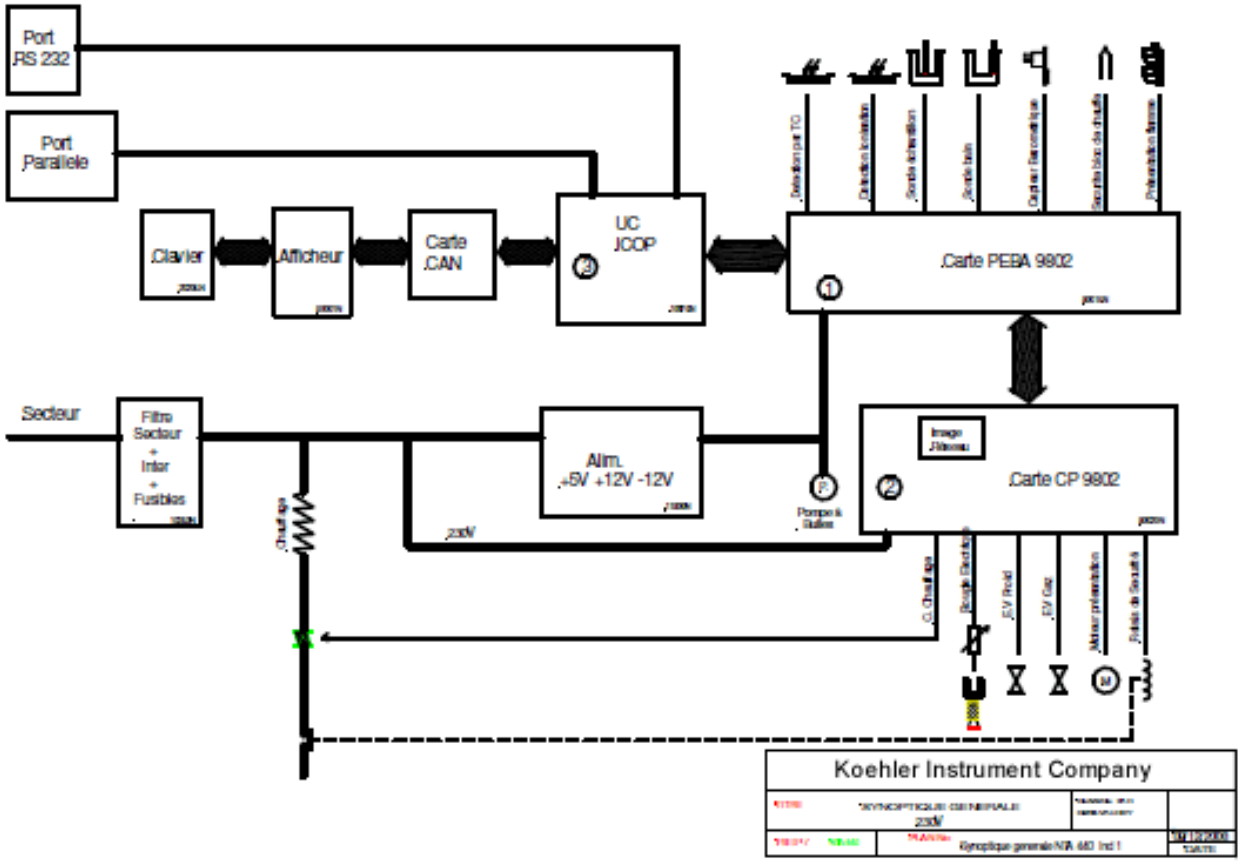
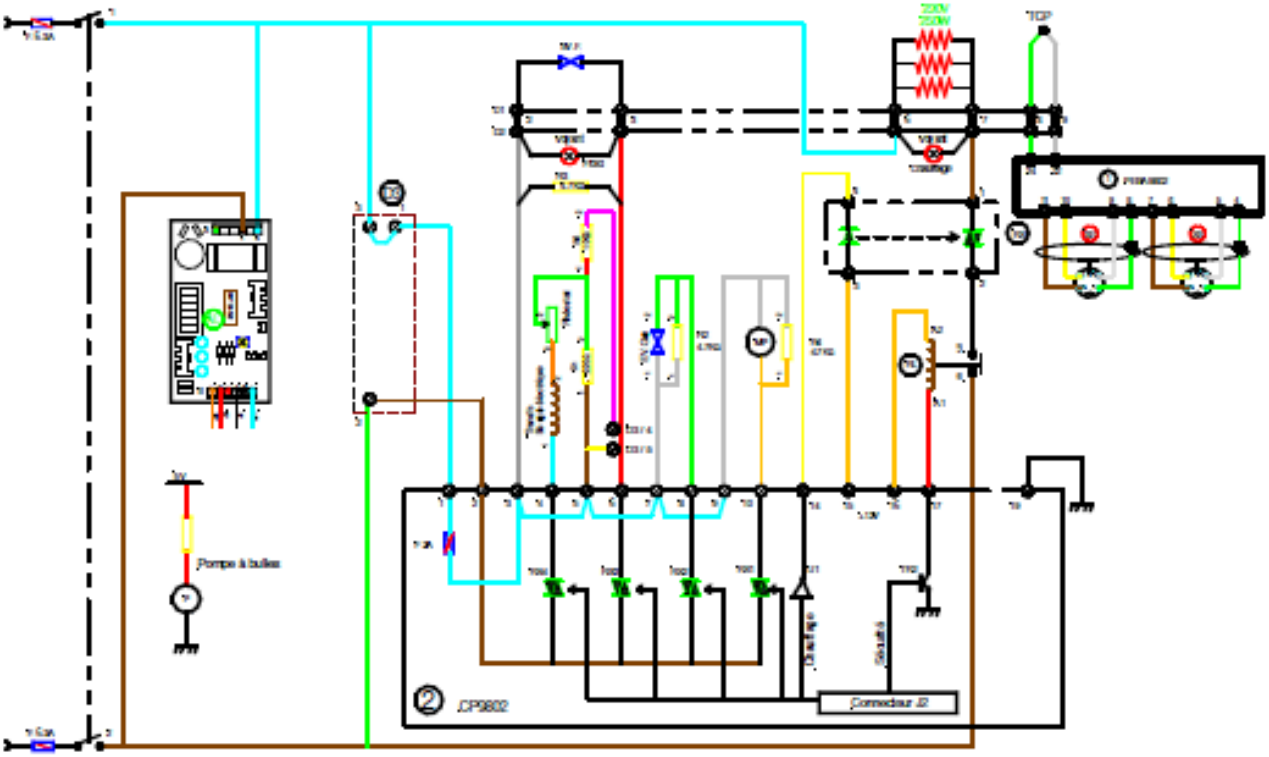
REPY NOMAD	PLAN N°: PEBA9802 V2 NTA 440 Ind 0		09/12/2008 DATE:


Clavier
Koehler Instrument Company

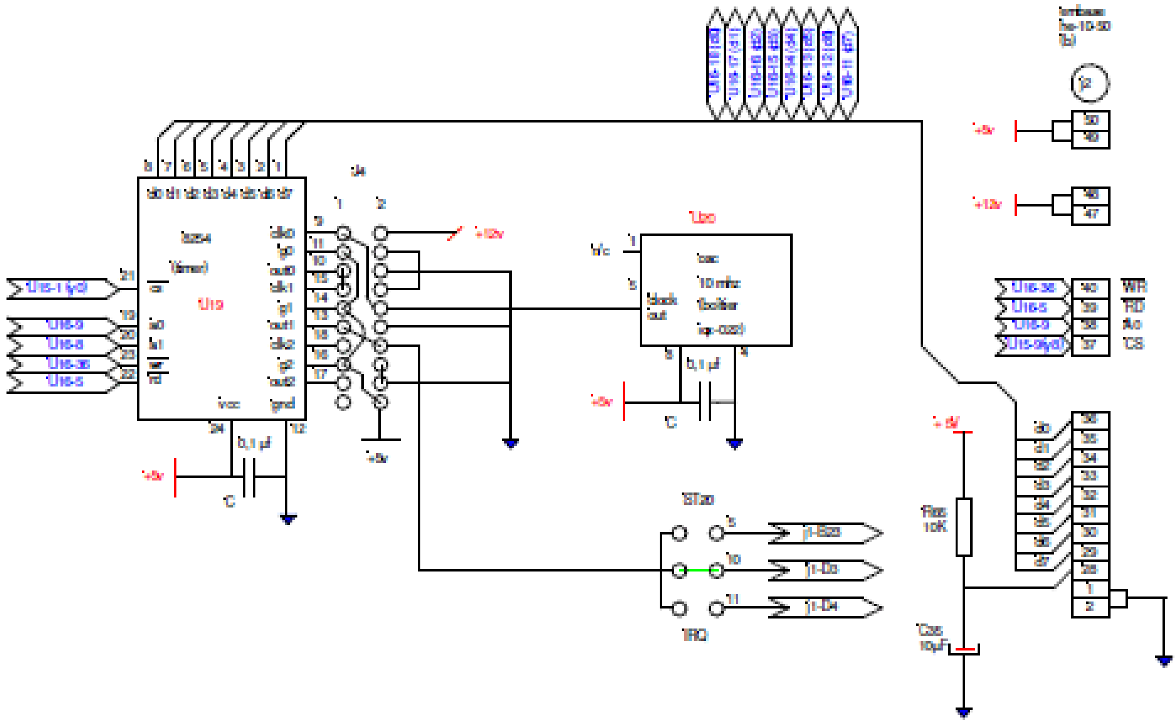


Koehler Instrument Company
Carte puissance
Présentation Flamme
CHAUFFAGE BLOC DE CHAUFFE
RELAIS DE SECURITE
SECURITE
+ 12V


Port RS 232
Port Parallele
Clavier
Afficheur
Carte CAN
UC JCOP
Carte PEBA 9802
Secteur
Filtre Secteur + Inter + Fusibles
Alim. +5V +12V -12V
Carte CP 9802
Image Réseau
Chauffage
230V
Pompe à Boue
Koehler Instrument Company
230V
Synoptique generale NFA 60 Ind 1



Koehler Instrument Company		
SYNOPTIQUE PUISSANCE TENSION 230V		
	Synoptique NTA 460 Ind 1	



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Koehler Instrument Company		
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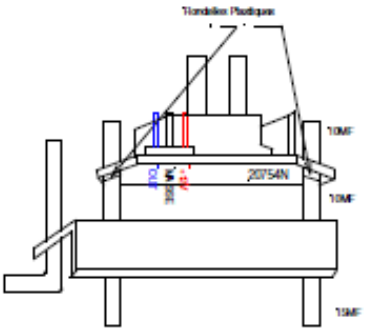
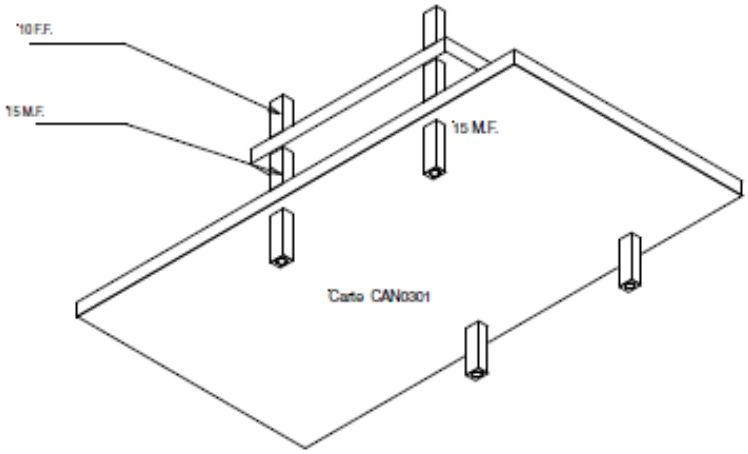
REP NTA 440	PLAN No TIME AFFICHEUR NTA 440 Ind 0	DATE





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REF / NTA440	TRAME: Tour Icop NTA440 Ind 2		07/04/2008 DATE: