



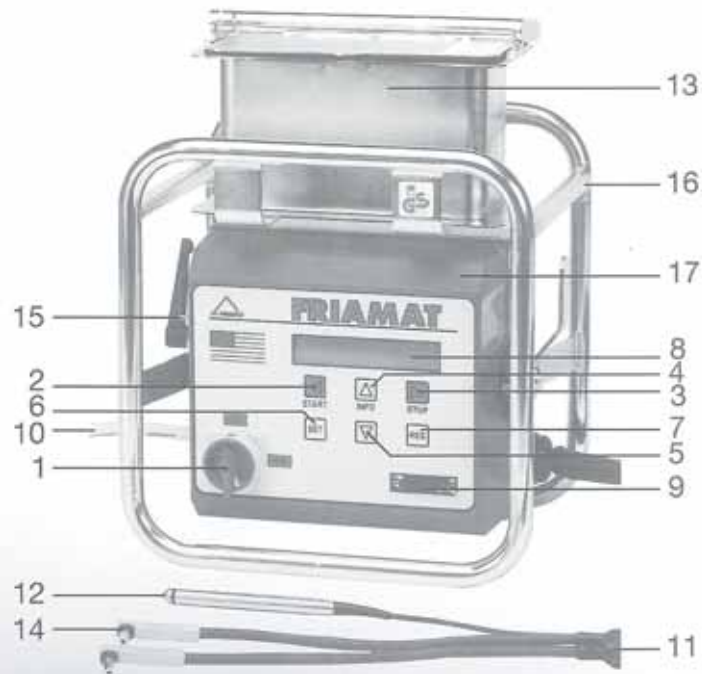
**Revised Operation Instructions
for the**

FRIAMAT

Keep for future use!



Issue/Rev. 05/98 – FRIAMAT · USA



- 1 Master switch
- 2 START button
- 3 STOP button
- 4 INFO button
- 5 Menu setting button
- 6 SET button
- 7 RESET button
- 8 Illuminated LCD display
- 9 Parallel interface (for printer and FRIALEN® memory box)
- 10 Power cable
- 11 Fusion cable
- 12 Reader wand
- 13 Accessories compartment
- 14 Fusion plug
- 15 Temperature probe
- 16 Carrying frame
- 17 Casing

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1. Safety

1.1 Dangers

The FRIAMAT is constructed using state of the art technology and in accordance with recognised safety rules, and is fitted with protective equipment.

It has been checked functionally and for safety before being delivered. Incorrect operation or misuse however can mean potential danger to

- the health of the operator,
- the FRIAMAT and other property of the user,
- the efficiency of the FRIAMAT.

All personnel who are in any way involved with the commissioning, operation, maintenance or repair of the FRIAMAT must

- be suitably qualified and
- observe the operating instructions precisely.

This affects YOUR safety!

1.2 Safety hints and tips

These operating instructions employ the following SYMBOLS with WARNING NOTES:



DANGER!

Describes an impending threat of danger!

Non-compliance with this instruction can cause severe damage to health and property.



WARNING!

Describes a dangerous situation.

Non-compliance with this instruction can cause slight injuries or damage to property.



IMPORTANT!

Designates user hints and other useful information.

1.3 Use in accordance with the requirements

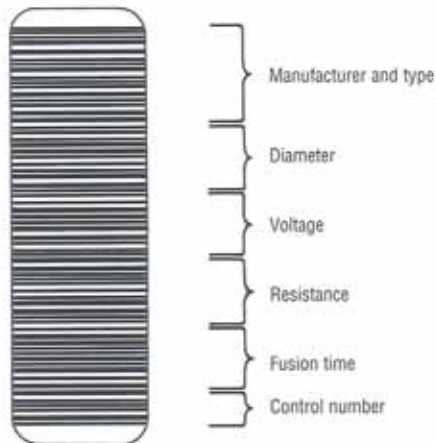
The FRIAMAT fusion machine is exclusively for use in the fusion of

- FRIALEN® Safety fittings with HD-PE pressure pipes (PN 6, SDR 17 and PN 10, SDR 11) and
- FRIAFIT® Drainage fittings with HD-PE drainage pipes (SDR 17 – 32).

The FRIAMAT can also be used with fittings from other manufacturers as long as they have a Bar Code 2/5 interleaved to ANSI HM 10.8 M-1983 and ISO TC 138 GT9 N 153.

Use in according with the requirements also includes observing

- all the directions in these Operating Instructions and also
- the guidelines from the DVGW Code of Practice, from the DVS, the UVV and the appropriate national and local regulations.



Schematic construction of a Bar Code 2/5 Interleaved



IMPORTANT!

Any other application does not comply with the requirements!

FRIATEC AG accepts no liability for use which does not comply with the requirements:

- Modifications or alterations are not permitted for safety reasons.
- The FRIAMAT must only be opened by specialist personnel from the FRIALEN® service centres.
- Fusion with equipment whose lead seals are broken will render all claims for warranty and liability null and void.

Other examples of use which contravenes the requirements:

- use as a battery charger.
- use as a power supply for heaters of any type.

1.4 Sources of danger

- Damaged connection cables must be replaced immediately.
- Do not either remove or by-pass safety devices.
- Eliminate known faults immediately.
- Do not leave the FRIAMAT unattended.
- Keep away from flammable liquids/gases.
- Do not operate in an explosive environment.

1.5 Permitted users

Only trained personnel may work with the FRIAMAT equipment. The operator is responsible for third parties in the working area.

The user must

- make the operating instructions available to the operator and
- satisfy himself that the latter has read and understands them

1.6 Dangers from electrical power

- Do not use any damaged connecting cables.
- Check the connection leads for damage.
- Disconnect the power plug before all care and maintenance work!
- Only have maintenance and repairs carried out by FRIALEN® service specialists!
- Only connect the FRIAMAT to the supply voltage stated on the rating plate.



WARNING!

Distribution points on the construction site: Pay attention to the regulations on circuit breakers!

Outside power points must be fitted with earth leakage circuit breakers.

Current rating selection: to suit the power requirements for the largest fitting being used.

The generator output rating is dependent on connection conditions, ambient conditions and the actual generator type (its control characteristics).

Since generators from different model ranges exhibit very different control characteristics the suitability of a generator cannot always be guaranteed by the specified rated output alone. In the event of doubt (e.g. when purchasing new) ask the FRIALEN® Service centre.

Only use generators whose operating frequency lies within the range from 45-66 Hz.

First start the generator and let it run for half a minute. Set the off-load voltage if necessary and limit it to a maximum of 120 V AC!

Generator (mains) fuse max. 30 A (slow acting)

If using an extension cable make sure the cross section is adequate:

– AWG 10/3 up to 100 feet / AWG 8/3 up to 200 feet.

Always unroll the cable fully before use!

Do not connect any other equipment to the same generator whilst fusion is taking place!

At the end of the fusion operation first disconnect the power connection to the generator and then shut the generator off.



DANGER!

Risk to life!

Never open FRIAMAT whilst it is connected to the power supply!

The FRIAMAT must only be opened by specialist personnel from the FRIALEN® service centres!

1.7 Emissions

The (equivalent) continuous noise level from the FRIAMAT is below 70 dB(A). When working in a quiet environment the effect of the signal tone is very loud (around 100 dB(A)).

1.8 Safety precautions on site



IMPORTANT! The FRIAMAT is proofed against water splashes. It must not however be submersed in water.

1.9 Signal equipment

The FRIAMAT confirms certain operating processes with an acoustic signal tone (1, 2, 5 tones or a continuous tone). These have the following meanings:

Signal tone x 1 means:	Confirmation of reading in a bar code.
Signal tone x 2 means:	Fusion process ended. Check the fusion time and transfer to the pipe.
Signal tone x 5 means:	Warning – Fault. Lock at the display I.
Continuous tone means:	Voltage/frequency is outside the tolerance range.

1.10 Emergency

In an emergency press the STOP button immediately and disconnect the FRIAMAT from the power supply!

The FRIAMAT will be stopped by

- pressing the STOP button on the control panel
- operating the master switch
- pulling out the power supply plug

2. Transport / Commissioning

2.1 Technical data

Electrical supply figures:

Input (mains) voltage	AC 95 ... 135 V
Frequency range	45 ... 66 Hz
Current consumption	AC 30 A max.
Power	AC 3.5 kVA
Generator rated output 1–	
1/2" CTS ÷ 2" IPS	2 kW
3" IPS ÷ 20" IPS	4 kW
Equipment fuse	30 A
Casing	Enclosure class IP 54 DIN 40 050 Protection class I DIN 57 700
Connection cable	5 m with 30 A twist plug
Fusion cable	4 m with Ø 4 mm fittings plug
Bar code	Code 2/5 interleaved to ANSI HM 10.8 M-1983, ISO TC 138 GT 9 N 153
Working temperature range	– 4 °F to + 113 °F
Fusion current monitor	Short circuit 95 A Open circuit 0.25 x rated current or fusion current falls 20 % during 20 ms
Printer interface	Centronics

Conductor cross section for an extension lead (option)
Fusion (low) voltage
(electrically isolated by transformer)

AWG 10/3 up to 100 feet
AWG 8/3 up to 200 feet
max. AC 48 V

Other data:

Size:

B = 350 mm; H = 450 mm;
D = 260 mm

Weight of FRIAMAT

27.5 kg

Transport weight with box

32.0 kg

2.2 Transport / storage / despatch

The FRIAMAT is delivered in a transport box. There are no particular requirements for unpacking, or for (temporary) storage in the transport box.

Storage temperature – 4 °F ... + 158 °F.



WARNING!

Do not damage the front face of the FRIAMAT! Only transport it with the protective cover! Always despatch in the transport box.

Before sending to a FRIALEN® Service Centre fill in and attach the info-sheet (if not available ask for one from FRIATEC). This will shorten the repair time.

If the FRIAMAT has not been used for a lengthy period it will automatically go into the input mode for time and date when it is switched on. The time and date must then be re-entered (see Section 3.3.6).

2.3 Setting up / connection

If protected from rain and wet the FRIAMAT can be set up and operated out of doors.

- Set up the FRIAMAT on level ground (as near horizontal as possible).
- Ensure that the mains/generator are fused with a 30 A (slow acting) fuse.
- Plug the mains plug into the mains socket or connect to the generator.
- If necessary use an extension cable, ensuring that the cross section is adequate (see Technical Data).
- Always comply with the operating instructions for the generator.



WARNING!

Always unroll the cable before use!
This prevents inductive losses.

2.4 Commissioning



WARNING!

Charring!

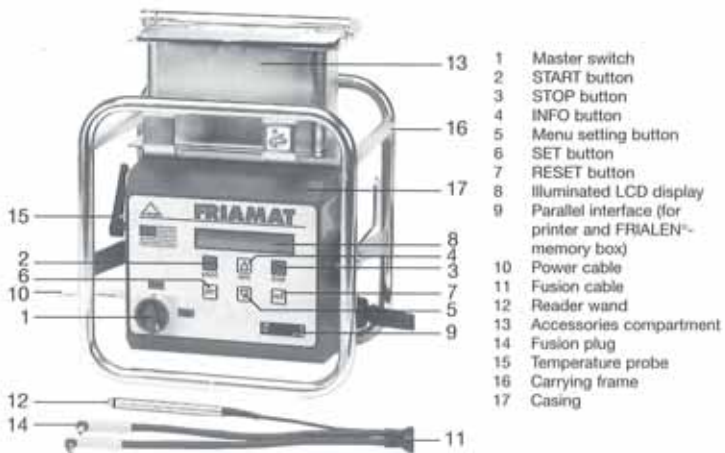
Dirty contacts can char the plug.

The contact surfaces of fitting and fusion plug must be clean.

- Remove any existing deposits cleanly.
- Protect the plug from contamination, replacing it if necessary.
- Check the fusion plug and contact socket for dirt, and only then make the connection.

3. Operation

3.1 Construction / components



The electronics in the FRIAMAT are housed in a splash-proof casing. The carrying frame is also used to hold the cables. The FRIAMAT is designed for a low fusion voltage of 48 V maximum. The supply and fusion voltage are isolated from each other by a transformer.

3.2 Functional principles

Only electro-fusion fittings with a bar code can be fused with the FRIAMAT:

Each fitting is assigned a sticker with a bar code. This contains the information to ensure that fusion is carried out properly.

The computerised command system of the FRIAMAT

- is completely automatic in regulating and checking the metering of the electrical power
- determines the fusion time depending on the ambient temperature

The temperature probe on the left hand side of the casing continually determines the ambient temperature.

The "DOCUMENTATION" function (record keeping) is used to save the technical fusion parameters. These can be printed out on a printer.

Other accessories (optional):

FRIALEN® Memory Box in conjunction with PC software FRIATOOL for issuing the fusion parameters (for details see the appendix or the appropriate operating instructions)

3.3 Basic setting

The FRIAMAT is supplied with the DOCUMENTATION deactivated (switched off).

The "DOCUMENTATION" function (record keeping) is used to save the technical fusion parameters. These can in each case be assigned to an Order/Commission number and/or to an operator with an operator pass.

The actual setting at any time can be queried: Press the INFO button (4). The control code (bar code) for the basic setting can be found in the appendix.

Reading in the control code (bar code)

Hold the reader wand (12) slightly inclined like a pencil and place on the fitting in front of the label. Now move the reader wand (12) **quickly and smoothly** across the whole label and a little beyond. The reading can be done left to right or right to left.

FRIAMAT

FRIAMAT
-> Code

FRIAMAT

1 FRIAMAT
-> Code 500

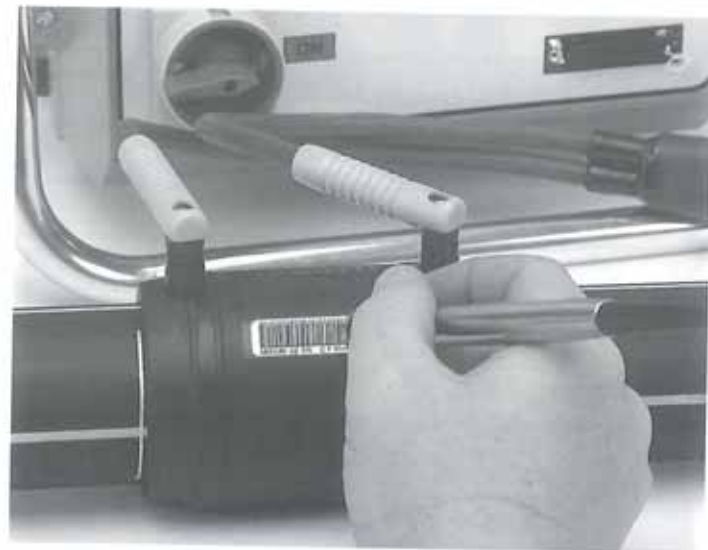
When this has been done correctly the machine will confirm it with a signal tone. If the reading in is not successful first time try again, if necessary at a different angle or speed.



IMPORTANT! At the end of the reading in process the reader wand (12) must be replaced in the reader wand pocket immediately to avoid damage and contamination of the tip of the wand.

3.3.1 Language modes

The FRIAMAT offers three language modes (English, Spanish and Italian) and comes **factory preset in English** which is indicated in the software version after switching on the FRIAMAT. To change the language you must press the INFO key (4) until the language appears in the display. Then press SET key (6) which brings you into the language mode, which is indicated through the flashing "" at each end of the display. Pressing either the INFO key (4) or MENU key (5) will



display all available languages. When desired language is displayed press SET key (6) to store selected language. Pressing RES key (7) will keep the FRIAMAT in the previous language.

3.3.2 Documentation

Switching on:

Reading in the DOCUMENTATION bar code activates or deactivates this function.

With the function activated the LCD display shows the sequential number for the fusion which actually comes next. The figure on the right shows the number of fusions which can still be put into memory for this recording run (and above that if necessary the appropriate commission number)

Switching off:

The DOCUMENTATION function can be deactivated by reading in this control code again. The security query – whether this is really wanted – can be confirmed by pressing the START button (2) or denied by pressing the STOP button.

(Breaking off with the STOP button thus recreates the previous state).

FRIAMAT



2 FRIAMAT
-> Code 499

FRIAMAT



Documentation :
switch off ?

3.3.3 Operator pass

The FRIAMAT can be set for use with an operator pass where the user code is obtained from an operator pass. The operator pass can be ordered from FRIATEC.

When a user code has been input for the first time all fusions which are then carried out will be saved under the code for this operator pass. The FRIAMAT can now be used until:

- a) the same user code is input again
- b) a change of date takes place

Re. a): When the present operator pass has been input again the query will appear "Block the unit?". This can be confirmed by pressing the START button (2) or the process can be broken off by pressing the STOP button (3).

If another operator pass is input the FRIAMAT will be switched over to suit.

FRIAMAT

Operator :
read in operator

FRIAMAT

Block
the unit ?

The FRIAMAT can be cleared for use without an operator pass by inputting the USER OFF code. The question "Deactivate operator?" then appears. This can be confirmed by pressing the START button (2) or the process can be broken off by pressing the STOP button (3).

3.3.4 Job numbers

For easy management of up to 20 separate Job numbers the FRIAMAT has a special software Job number storage-Menu.

3.3.4.1 Entering a Job number

To switch on the Job number option the JOB-N°-Code must be scanned. The FRIAMAT changes into the following Job number change/storage Menu.

FRIAMAT

Operator :
switch off ?

FRIAMAT

job number
change storage

By pressing the STOP-button (3) you will transfer to the Job number storage-Menu.

By pressing the START button the present job number will appear and first digit will flash.

Each position can be changed by pressing the INFO button (4) or Menu/Setting button (5).

By pressing the START-button (2) or the STOP-button (3) you can move the cursor to the left or to the right on the now activated job number.

Example of a 16 character Job number:

SUNSET-BLV#####

By pressing the SET-button (6) the job will be stored in the memory, by pressing the RES-button (7) you will stop the input mode and the job number will not be saved.

It is possible to store 20 separate job numbers in this mode.

FRIAMAT

job number
new select delete

FRIAMAT

job number
SUNSET-BLV#####



IMPORTANT! The FRIAMAT will always return to the previous job number by pressing the RES-button during the process of entering a new Job number.

3.3.4.2 Selection of previously stored job numbers

There are two methods of getting into the input mode to store job numbers.

Version 1:

Read in the JOB-N°-Code.

Version 2:

Press the INFO-button (4) until the Job number is displayed. Than press the SET-button (6).

By Pressing the STOP-button (3) you will get into the Job number storage menu.

FRIAMAT

job number
«change storage»

FRIAMAT

job number
«new #select delete»

Already stored job numbers will be displayed by pressing the INFO button (4) or Menu/Setting button (5)

By pressing the START button (2) or the SET button (6) the displayed job number will be activated. Pressing the STOP button (3) or the RES button (7) will stop the process.

3.3.4.3 Deleting Job numbers

Change into the Job number storage menu as shown in 3.3.4.2.

To enter the delete menu press the STOP button (3).

By pressing the START button (2) the displayed Job number will be deleted from the Job number storage memory. By pressing the STOP button (3) the following job number will be displayed without any delete option.

The fusions documented under the deleted job number will remain in the documentation memory, including the job number.

FRIAMAT

job number
◀new #select delete▶

FRIAMAT

SUNSET-BLU#####
◀delete next▶

Deleted job numbers will no longer be available in the job number storage.

To Exit the delete menu press the STOP button (3) until the FRIAMAT returns to the basic mode.

3.3.4.4 Changing present job number

See 3.3.4.2 entering the change/storage menu.

After pressing the START button (2) the current job number will be displayed and the first digit will be flashing.

To change job number see 3.3.4.1.

Press the SET button (6) to confirm the change. Pressing the RES button (7) will stop the input mode.



IMPORTANT! The changed job number will not be available in the Job number storage.

FRIAMAT

job number
«change storage»

FRIAMAT

job number
SUNSET-BLU#####

3.3.5 Infotext

In the documentation mode you can access two lines of text (2x16 characters) pertaining to each fusion.

After reading the barcode on the fitting the display will look as in the following example.

Press the INFO button (4) or Menu/Setting button (5). The entered text will be displayed. The cursor is flashing on the first digit. To change the text see 3.3.4.1.

Now press the SET button (6) to save the input on the fusion data. The RES button (7) will cancel this procedure. And the two line readout in the protocol will display this:

*** *
" ... "

FRIAMAT

FRIA MON 6" I
4START #Infotext

FRIAMAT

COUP*****
DEEP_2.5_FT*****



IMPORTANT! For every fusion new relevant Infotext must be entered if desired.

By pressing the START button (2) after scanning the barcode you will see the same display in the protocol as shown above („***...“ in two lines).

3.3.6 Switching off the Job number

Inputting the JOB N° OFF code will deactivate the Job number option. "FRIAMAT" will appear in the first line of the display.

3.3.7 Setting date and time

There are two methods of getting into the setting mode for date and time.

Version 1:

Input the TIMER code. The day number will begin to flash.

FRIAMAT

job number
SUNSET-BLV#####

FRIAMAT

FRIAMAT
-> Code

Version 2:

Press the INFO button (4). Press the SET button (6). The day number will begin to flash.

By pressing the START button (2) or STOP button (3) it is possible to move between Month, Day, Year, Hour and Minute. The setting is changed using the INFO button (4) or the Menu/Setting button (5). Operating the SET button (6) will save the new setting, pressing the RES button (7) will break off the process. The previous setting will then be retained.

3.4 Fusion operating procedure

So that the FRIALEN® Safety fittings and the FRIAFIT® Drainage fittings will be properly processed it is essential to adhere to the FRIALEN® operating instructions.

The same applies to fittings from other manufacturers.

FRIAMAT



START



INFO



STOP

3.4.1 Preparation



IMPORTANT! Unroll the cable completely!

This applies to mains, fusion and, if applicable, extension leads.

The contact surfaces of the fitting and the fusion plug must be clean; dirty contacts can cause overheating and charring of the plug. If necessary remove any existing deposits cleanly.

Always protect the plug from contamination. If there is a deposit which cannot be removed completely the plug must be replaced.

- Prepare the fitting + pipes for fusion in accordance with the assembly instructions (e.g. adhere to the 10 commandments for FRIALEN® assembly).
- Ensure that the contact sockets on the fitting are accessible for connection of the plug.

- Connect up the power supply (mains or generator).
- If using a generator start it up first and allow to warm up for 30 seconds.
- Switch on the master switch (1).
- Connect the fusion plug to the contact sockets on the fitting.

3.4.2 Reading in the bar code



IMPORTANT! It is not acceptable to read the bar code label from another fitting. After ending the reading process the reader wand (12) must be replaced in the reader wand pocket immediately to avoid damage and contamination to the tip of the wand.

If there is a bar code label on the fitting this should always be used. If the bar code label on the fitting being fused is illegible due to damage, **an identical fitting from the same manufacturer** with a legible bar code label should be used. Hold the reader wand (12) slightly inclined like a pencil and place on the fitting in front of the label. Now move the reader wand (12) quickly and smoothly across the whole label and a little beyond. The reading can be either left to right or right to left. When this has been done correctly the machine will confirm it with a signal tone. If the reading in is not successful first time try again, if necessary at a different angle or speed.

If reading in is impossible, you can also use the manual input feature.

Press SET key (6) while "CODE" appears in display.

Displayed will be the previous manual entry. If used for the first time, you will find zeros displayed as shown below.

First flashing digit (shown shadowed) is changed while pressing INFO key (4) or MENU key (5), once desired number is displayed, press STOP key (3) which moves you to the second digit. Repeat this procedure to establish the entire

manual entry. The data for the manual entry can be found on the top of the bar code (24 digits).



NOTE!

INFO key (4) and MENU key (5) are used to change digits – up (4) and down (5).

START key (2) and STOP key (3) are used to change position – left (2) and right (3).

After completing manual entry press SET key (6) to start fusion process.

To terminate entry press RES key (7).

In case of error message "faulty/incorrect barcode" press SET key (6) which will allow you to correct your current entry.



3.4.3 Starting the fusion process



IMPORTANT! If there is a malfunction in the fusion process hot molten PE can be expelled in rare cases, so:

Keep at a safe distance of at least 3 feet from the fusion point during the fusion process!

Do not connect any other equipment during the fusion process!

No printer should be connected during the fusion process!

The fusion process can be broken off at any time by pressing the STOP button.

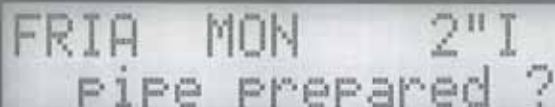
When the fused area has cooled down (and the fault eliminated if necessary) the fusion process can be repeated.

Operating steps:

1. Press the START button (2)
2. Display – "START"?, confirm with the START button
3. Display – "Pipe prepared?", confirm with the START button if applicable.
4. If not prepared press the STOP button and machine the pipe. Now restart the process at item 1.
5. Press the START button to initiate the fusion process.
6. Display "End of fusion" means: ready for the next fusion.
7. To initiate the next fusion process restart the process at item 1, i.e. press the START button.
8. Note the fusion parameters on the pipe/fitting. This will also avoid fusing twice.



FRIA MON 2"
START ?



FRIA MON 2"
Pipe prepared ?



End of fusion
t:0 /53 s



FRIAMAT
2 -> Code 499

3.5 Fusion record

3.5.1 Print/delete contents of memory



IMPORTANT! Only printers with a parallel Interface can be used (Centronics).
No printers must be connected during the fusion process.

The fusion record stored in the memory can be printed out at any time. For this the printer has to be connected to the fusion unit. The printer must be set to "ONLINE". The PRINT code is then input.

After this there is a query on whether all fusions should be printed out.

FRIAMAT



START



INFO



STOP

A complete print-out arranged in commission number order is started by pressing the START button (2). A new page is started for each commission number.

Delete the whole content of the memory:

When the complete print-out has finished there is a query as to whether the record memory should be deleted. If the START button (2) is pressed the query "Are you sure?" will appear.



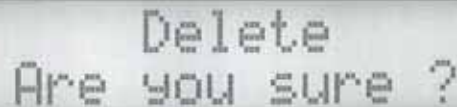
IMPORTANT! Pressing the START button (2) will irretrievably delete the data!

3.5.2 Job numbers

Deleting selected Job numbers

Pressing the STOP button (3) will display the first Job number. This can be deleted with the START button (2) or bypassed with the STOP button (3). This procedure can be broken off with the RES button (7).

FRIAMAT



Delete
Are you sure ?



START



INFO



STOP

Printing out individual Job numbers

Read in the PRINT code and press the STOP button (3). The first Job number will be displayed.

This can be bypassed and the next Job number displayed by pressing the STOP button (3). If the START button (2) is pressed the displayed Job number will be printed out and a query will follow on whether the data for this Job number should be deleted.

Pressing the START button (2) will delete the data. The delete function will be bypassed and the next Job number displayed by pressing the STOP button (3).

This procedure can be broken off with the RES button (7).

Deleting data without printing out the records.

Input the PRINT code and press the INFO button (4) or the Menu/Setting button (5). A query follows on whether data is to be deleted. Proceed in a similar manner to Section 3.5.1.



SUNSET-BLV#####
4Print next



SUNSET-BLV#####
4delete next

The fusion parameters can also be processed in a standard dBase data format on a PC by using the FRIATool software.

4. Operating faults

4.1 General

The bar code is not confirmed

If the bar-code is not confirmed by an acoustic signal after several attempts the reader wand should be checked for dirt or physical damage.

FRIAMAT

error 5
INFO ?

FRIAMAT

Fitting winding
open circuit

4.2 24 Digit Manual Input

If the reader wand is unable to read a barcode then you can also use the manual input feature.

Press the SET button (6) while "CODE:" appears in display. The previous manual entry will be displayed. If used for the first time, you will find zeros displayed.

First flashing digit (shown shadowed) is changed while pressing the INFO button (4) or the Menu/Setting button (5), once and the desired number is displayed, then press the STOP button (3) which moves you to the second digit. Repeat this procedure to complete the entire manual entry. The data for the manual entry can be found on the top of the barcode (24 digits).

FRIAMAT

Code: 36 18 09 01 86
08 36 06 26 44 07 31



START



INFO



STOP



NOTE!

INFO button (4) and Menu/Setting button (5) are used to change digits – up (4) and down (5).

START button (2) and STOP button (3) are used to change position – left (2) and right (3).

After completing the manual entry press the SET button (6) to start the fusion process.

To terminate the entry press the RES button (7).

In case of an ERROR message or of a "faulty/incorrect bar-code" press the SET button (6) which will allow you to correct your current entry.

4.3 Fault messages

The fault message in the FRIAMAT display can be shown in clear text after noting with the INFO key (4). The unit can then be set to the basic condition by pressing the START button (2) or the STOP button (3).

No	Text in display	Meaning/causes	Remedy
1	–	–	–
2	"Temperature outside range"	Ambient temperature outside the permitted range (–4 °F...+113 °F)	● if necessary construct a cover
3	"Resistance outside tolerance"	Electrical resistance of the fitting is too high	● Check contacts for firm seating/dirt ● Clean contacts if necessary ● If necessary replace fitting
4	"Fitting winding short circuit"	Short circuit in the wire winding of the fitting	● Replace fitting, send in for examination
5	"Fitting winding open circuit"	Current flow interrupted	● Check the connection of the fusion plug on the fitting ● If O.K. replace fitting and send in for examination

No	Text in display	Meaning/causes	Remedy
6	"Voltage outside tolerance"	Deviation of secondary voltage by more than 2% of target value	● Inform FRIALEN® Service centre
7	"Fault in operating system"	Malfunction in the FRIAMAT hardware or software	● Inform FRIALEN® Service centre
8	"Mains voltage outside range"	Mains voltage outside the permitted range during fusion	● Extension cable too long or its cross section too small ● Check voltage and connections of the generator
9	"Frequency outside range"	Frequency outside the permitted range during fusion	● Check the frequency of the generator voltage
10	"Fusion broken off"	Fusion broken off by pressing the STOP button	–
11	–	–	–
12	–	–	–
13	– (only appears in he record)	Mains failure or low voltage	● Generator power possibly too low
14	–	–	–
15	"Rating exceeded"	Power consumption of the fitting exceeds the rating of the FRIAMAT	● Inform FRIALEN® Service centre

4.4 Warning notes

Text in display	Hint/Remedy
"Faulty or damaged bar code"	● Use a new bar code on an identical fitting
"Memory full"	● Print out record ● Delete data
"Memory empty"	● No print-out is possible with an empty memory
"Printer not ready"	● Check whether the output device (printer, Memory-Box, PC with FRIATOOL) is correctly connected.
"Let the unit cool down"	In extremely long continuous use the FRIAMAT can overheat. ● Switch off the FRIAMAT and allow it to cool. The FRIAMAT is ready for use again when the warning note is no longer displayed after switching on.
"Maintenance period exceeded"	To ensure long term functioning of the FRIAMAT a service should be carried out every year. ● Inform FRIALEN® Service centre

Text in display	Hint/Remedy
"Voltage: ... V; Frequency: ... Hz"	Appears for under or over-voltage or a deviation in frequency ● Reset the generator regulator and acknowledge with the STOP button.
No text, just a continuous acoustic tone	Voltage/frequency outside the tolerance range for the FRIAMAT ● Replace the generator

4.5 Deviations in voltage/frequency

There are two methods of displaying voltage and frequency.

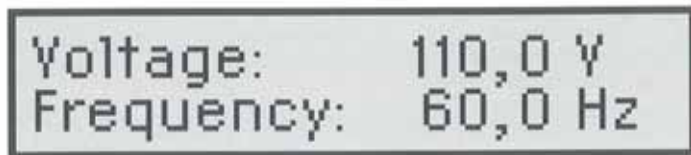
Version 1:

Press button 5 (menus)

Version 2:

The display "**Voltage: ... V; Frequency: ... Hz**" appears automatically when there is under/over-voltage or a deviation in the frequency of around 10%.

In this case reset the generator regulator and acknowledge with the START button.



A digital display with a black border showing two lines of text. The first line reads "Voltage: 110,0 V" and the second line reads "Frequency: 60,0 Hz". The text is in a pixelated, monospaced font.

Voltage:	110,0 V
Frequency:	60,0 Hz

4.6 Fusion interruption

If the fusion is broken off because, for example, the power supply has been interrupted during a fusion run, the fusion can be repeated after removing the source of the problem and allowing the fitting to cool down completely.

4.7 Extremely long or continuous use

As a precaution, we have installed a special overheating control program to protect the FRIAMAT electrofusion processor from overheating during extremely long continuous use. Before fusing a coupling the FRIAMAT calculate the expected temperature inside the unit after fusing. If the expected temperature will be too high the FRIAMAT displays „let the unit cool down“.

Switch off the FRIAMAT and allow the unit to cool down. Remember the unit can still fuse smaller diameter couplings than the original coupling which would cause an overheating.

5. Maintenance/taking out of service

We recommend that you have the FRIAMAT serviced by us at least once a year; maintenance can also be carried out at the FRIALEN® Service Centres. Include all connection adapters for checking at the maintenance intervals.

5.1 Warranty

The warranty period for the FRIAMAT is 12 months. If it is sent in for a paid service within the first 12 months the warranty period is extended by a further 12 months from the date of the service.

5.2 Maintenance chart

WHAT?	WHEN?	WHO?
Clean the reader wand	Daily	Operator
Check the function	Weekly	Operator
Clean the contacts	Weekly	Operator
Check the reader wand for damage	Monthly	Operator
Factory service	Annual	FRIALEN® service Centre

5.3 Checking the reader wand

If after reading a bar code several times the reading is not confirmed the reader wand can be checked by reading the TEST code. "TESTCODE" will appear in the display for 4 seconds.

5.4 Checking the power supply

Supply voltage and frequency can be displayed at any time in the basic setting by pressing the Menu/Setting button (5). This makes it possible to regulate the power supply to an optimum level.

5.5 Taking out of service



IMPORTANT! The FRIAMAT contains various components which when replaced, are necessary to be disposed of properly. These can be disposed of at the factory or at one of the FRIALEN® Service Centres.

6. Appendix

6.1 Bar codes/control codes

JOB



JOB OFF



TEST



USER OFF



PRINT



Timer



DOCUMENTATION



6.2 Recommended accessories (options)

- FRIALEN® Memory Box to transfer fusion data
- FRIATool for electronic processing of the fusion data