Instruction handbook

USING THE 3D PHOTO PROGRAM

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Program requisites

FILE PROGRAM
The following details need to be known when using the 3D PHOTOGRAPHIC program.

- File format (Windows BMP grey scale 8bits)
- File format (Windows BMP black and white 1bits)
- Size of the picture expressed in pixels)

HOW TO SIZE THE PICTURE
The following calculation needs to be made to obtain the correct picture size:

Required picture size in mm ÷ 0.3

Example
52 x 52 mm marking
- Using picture handling and processing software, we first convert the picture into a standard format (Windows BMP).
- Then we convert the picture into
  - **an 8-bit grey scale** if it is a colour photographic picture
  or
  - **an 1-bit black and white** picture if it is a B/W picture.

- Then we adjust the size of the picture using the above formula, which using this example would mean

52 ÷ 0.3 **= (173 pixel x 173 pixel)**

Then the work must be saved on floppy disk and downloaded to the marking machine, after which it is possible to obtain the correct marking of a finished object sized 52 x 52 mm as described.

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4 3D PHOTOGRAPHIC MARKING [F4]

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4. USING THE COMPUTER

The JOLLY unit is run and controlled by an operator using a computer that monitors the situation in real time. After the initiation procedure has been completed, the following menu is displayed.
Function keys F1 to F12 on the keyboard can be used to access the various software procedures as follows.

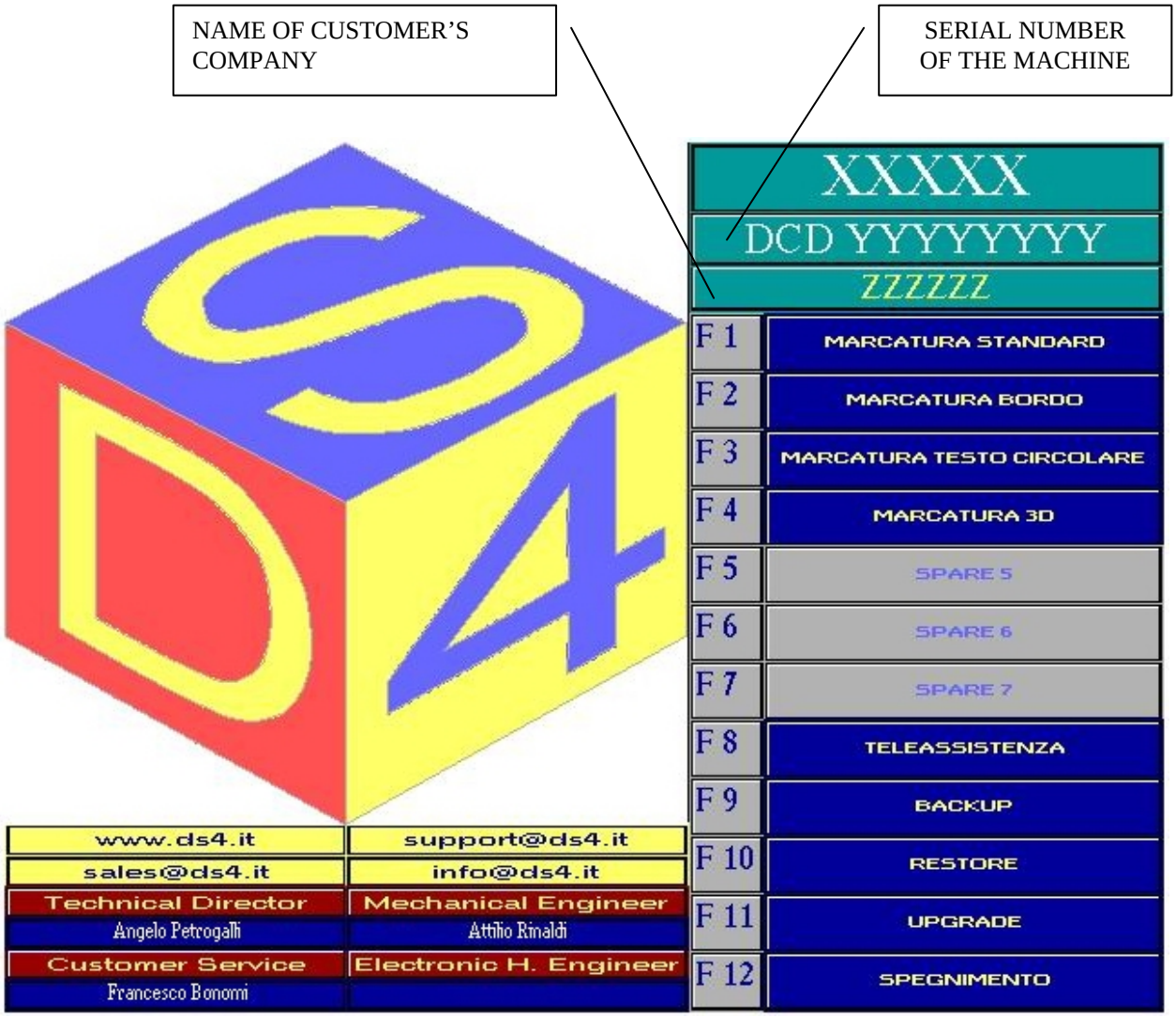

FIG.. 1

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- When you the key-operated selector to ON and press F4, this standard marking window is displayed.

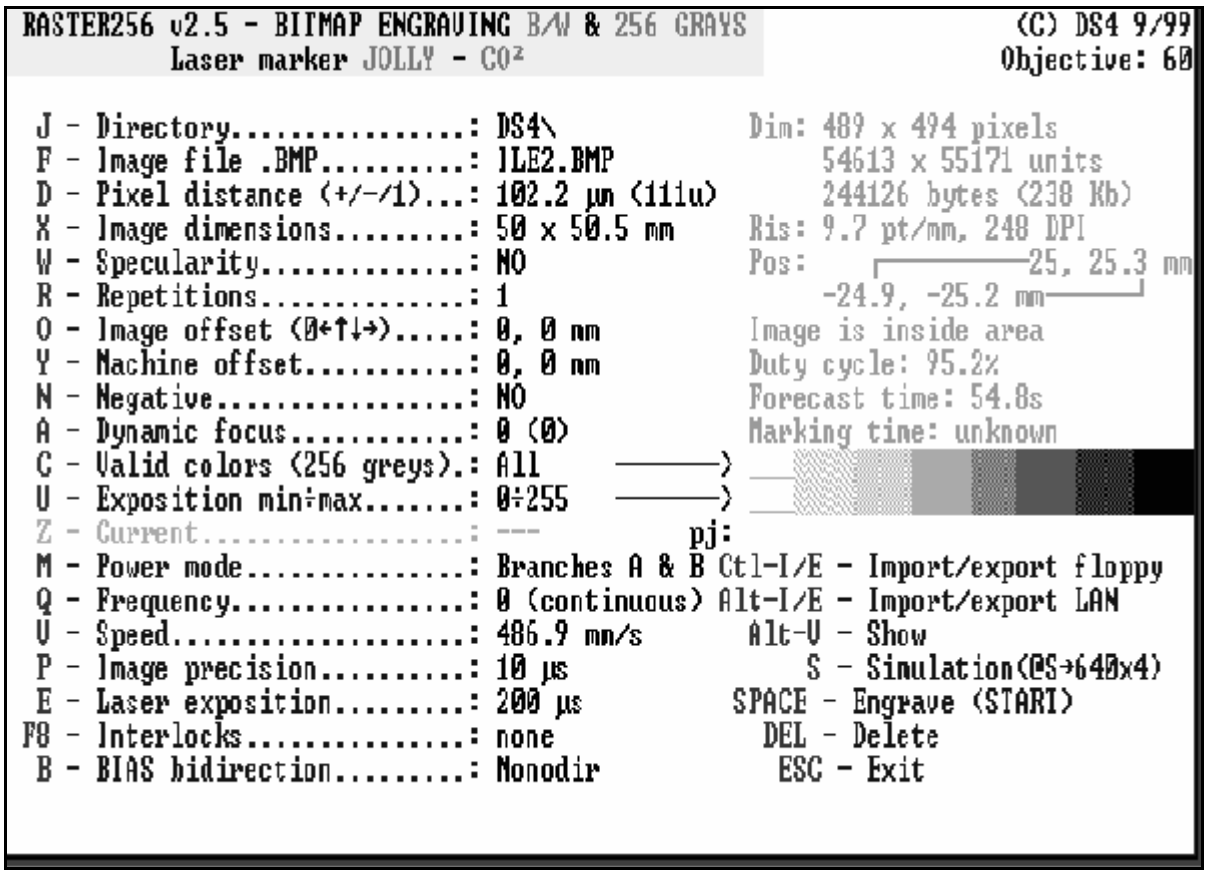

FIG. 2

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4.1) HOW TO LOAD A PICTURE FROM HARD DISK

To mark an OBJECT, first you have to load a picture. This can be done by pressing

[F]

on the keyboard.

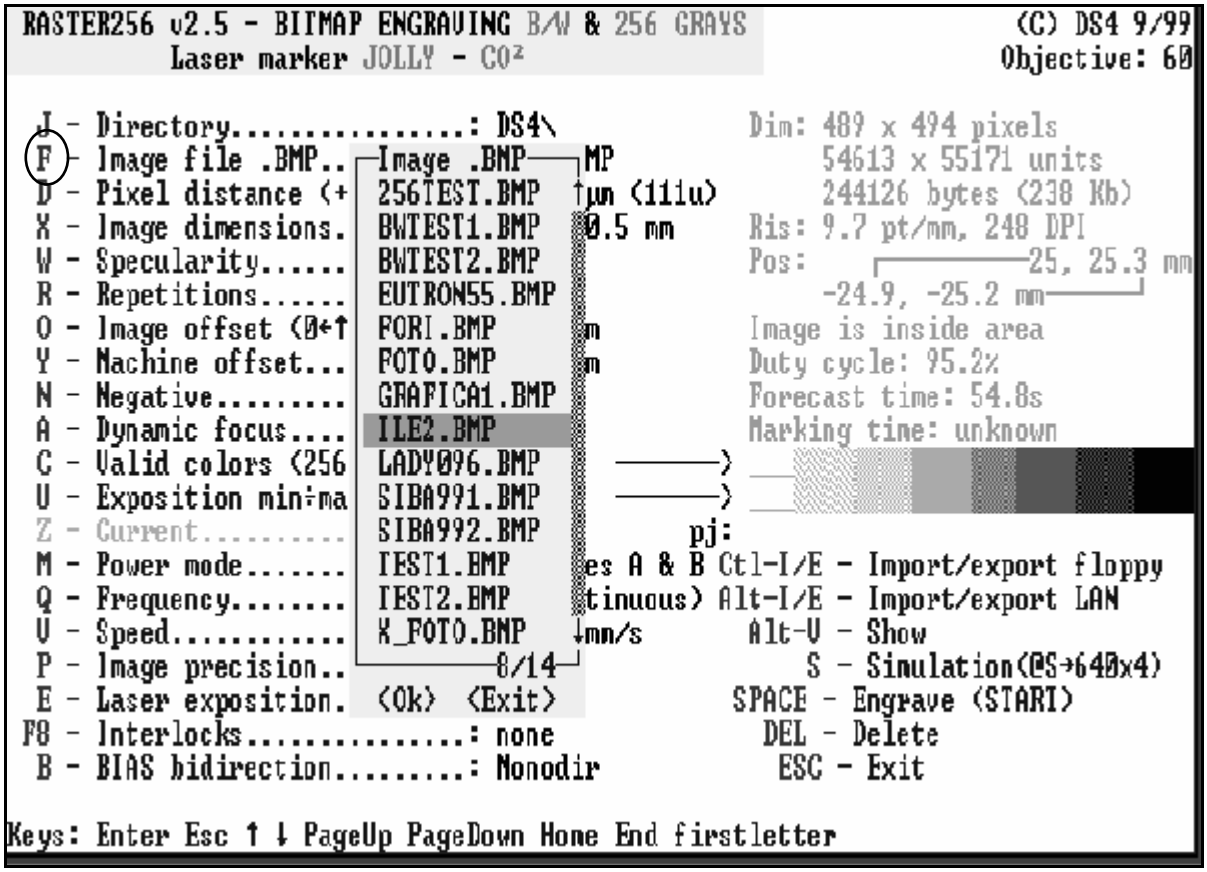

FIG. 3

When you press [F], a window appears showing all the names of the picture files in the directory in alphabetical order.
If you know the first letter of the name of the picture you want to download, enter it on the keyboard and the cursor will move to the names beginning with that letter. You can also key in the whole name or carry out a file-by-file search using the keys [↑] and [↓].
When you have located the file you require, press [↵] to confirm or [Esc] to cancel.

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4.2) HOW TO DISPLAY A PICTURE

There are two ways to display a picture.
With the first you can simulate the marking exactly by pressing

[S] - graphic simulation

When you press [S], a window displays the picture loaded in the memory and the main parameters.

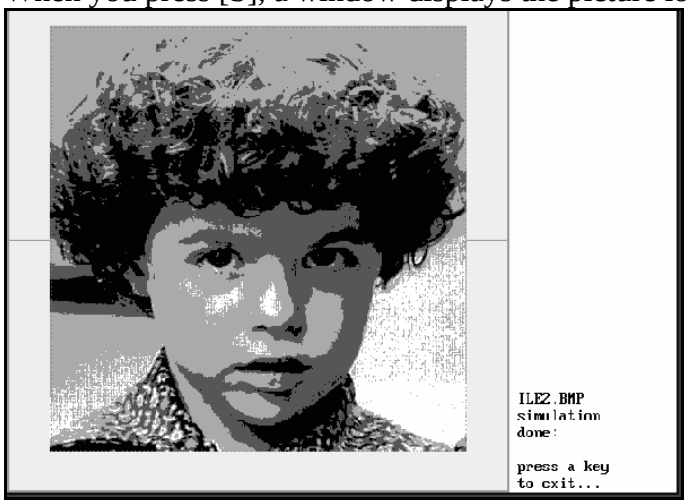

FIG. 4

With the second method you can display the figure as it was presented graphically by the computer. To display the photograph, press

[Alt +V] - graphic display

When you press [Alt + V], a window displays the required picture.

FIG. 5

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4.3) ADJUSTING PICTURE SIZE

When you load the picture to be marked, you have to enter the dimensions to adapt them to the surface to be engraved.

key [X]

These variables can be modified as required, but the ratio between dimensions X and Y remain constant.

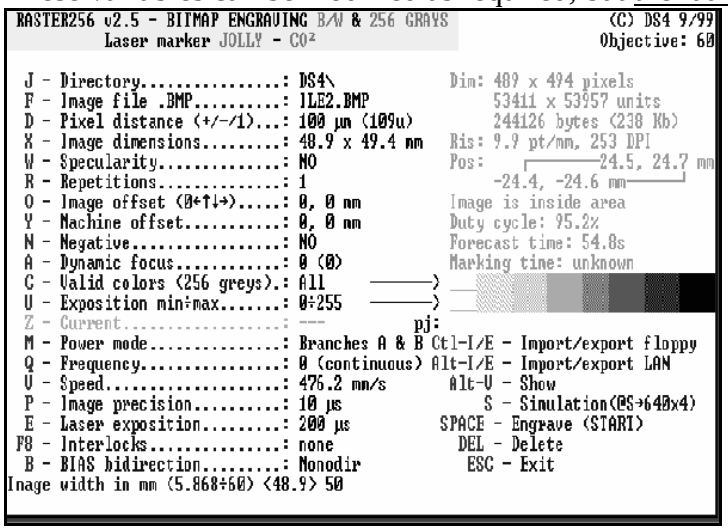

FIG. 6

The photographic method may be simpler to define the width and height of the marking and the distance between one pixel and the next. To activate this function, which adjusts marking size but in a different way, press

[D]

These variables can be modified as required, but the ratio between dimensions X and Y remain constant.

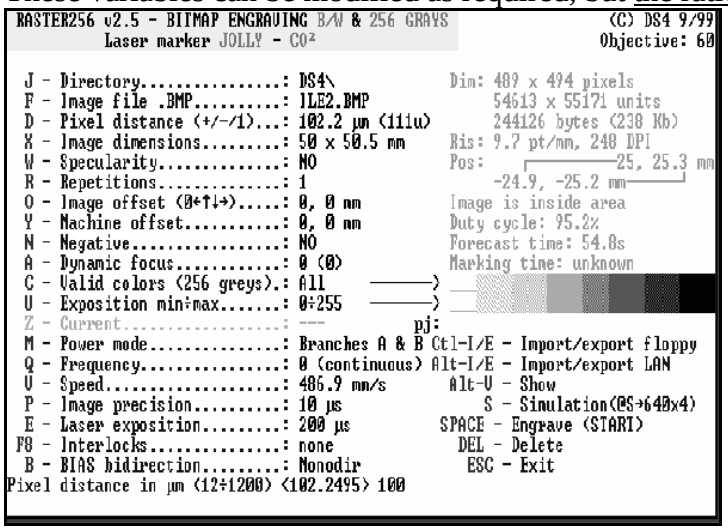

FIG. 7

By pressing [+] and [-] you can enlarge or reduce the size of an object.
An increase in the distance between pixels will increase the size (picture size in mm) and vice versa.
When the [distance between pixels] value increases, this will increase the value indicated by the variable [picture size]

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4.4) ADJUSTING MARKING OFFSET

After mounting the laser unit on the machine, it is necessary to adjust the OFFSET. This is to align the centre of the laser unit with the centre of the OBJECT
To do this, press

[Y]

When you press [Y], a window opens and you have to enter the value corresponding to the horizontal position. When you press [↵], another window opens and you have to enter the value corresponding to the vertical position.
These values express the position of the centre of the picture.
It is advisable to tabulate these values as they will be important whenever you remove the laser unit from the machine and remount it.

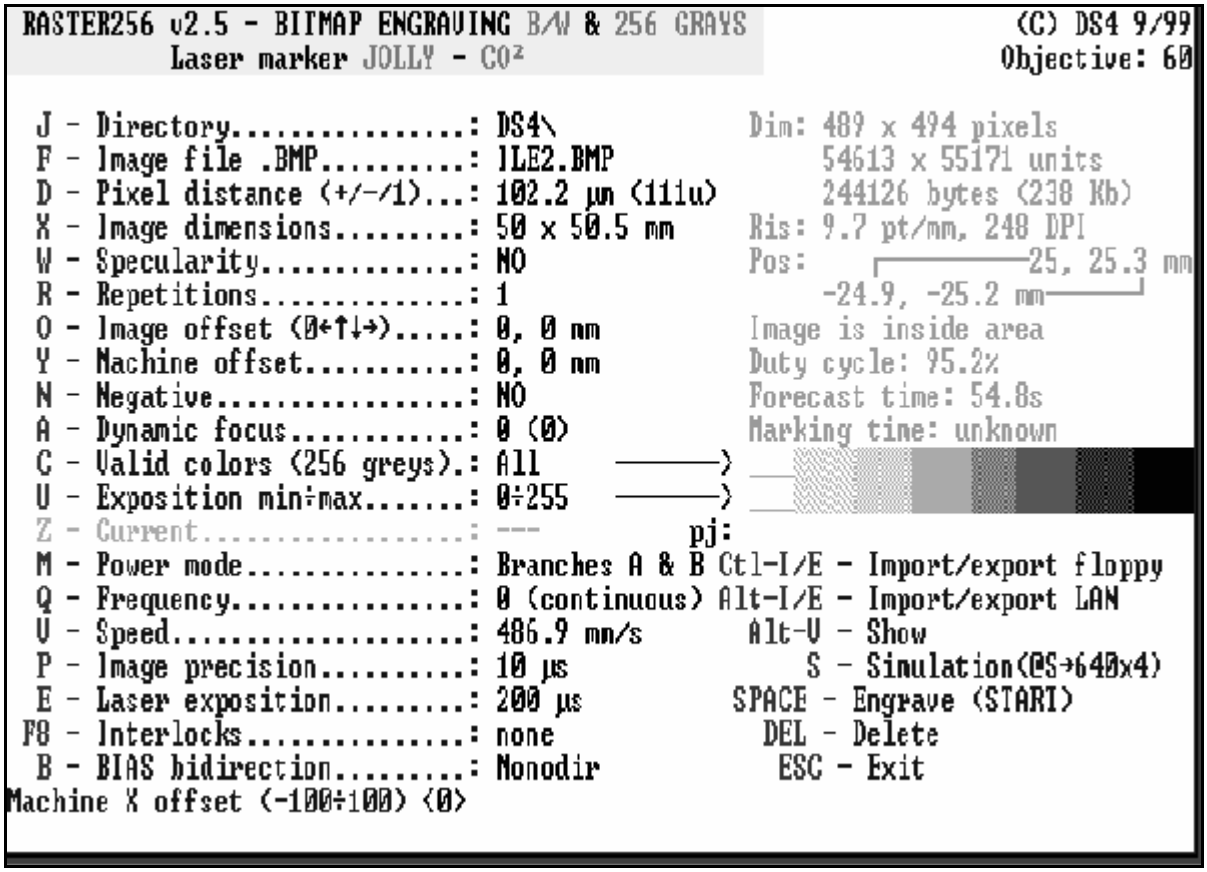

FIG. 8

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4.4.1) ADJUSTING PICTURE OFFSET

It may sometimes be useful to off-centre the marking without having to adjust the offset value. This can be done by pressing

[O]

When you press [O], a window opens and you have to enter the value corresponding to the horizontal position. When you press [↵], another window opens and you have to enter the value corresponding to the vertical position.
These values express the position of the centre of the picture.

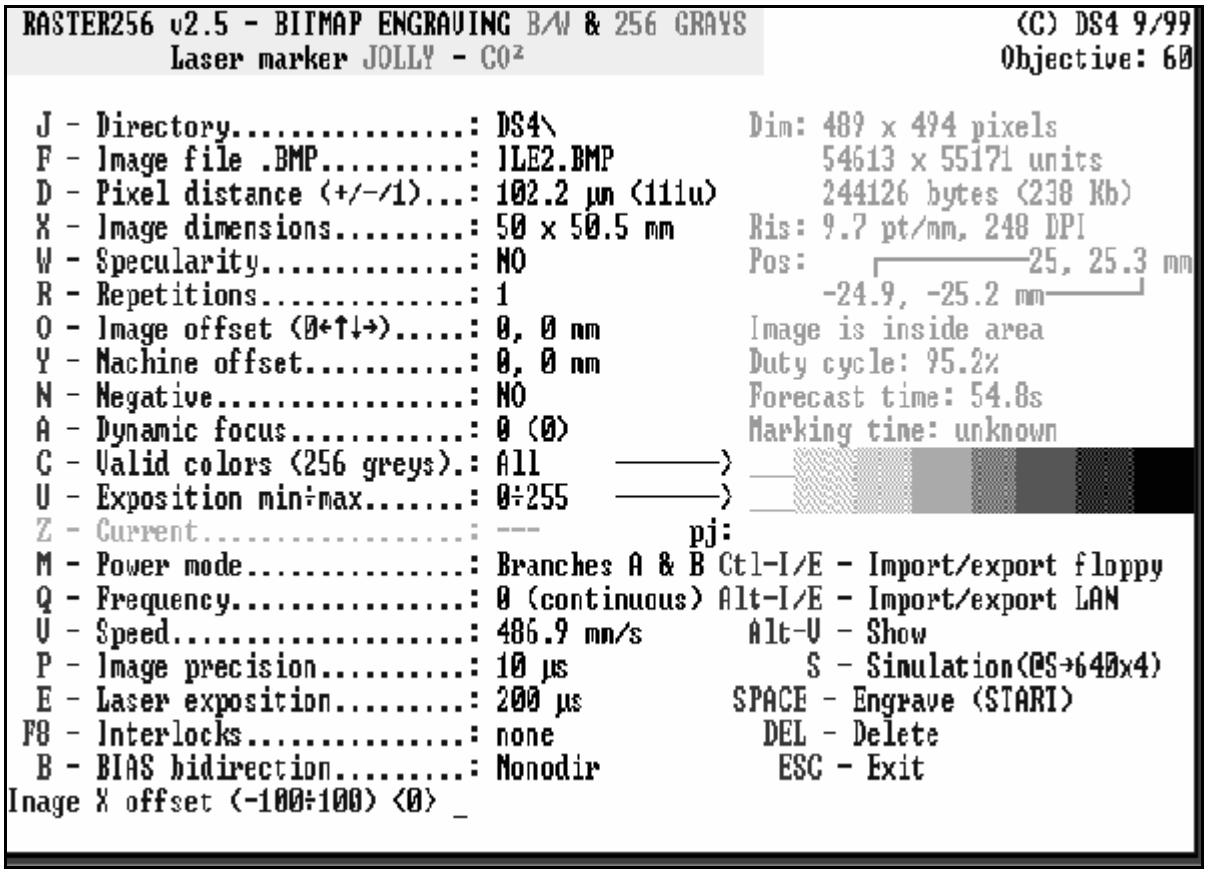

FIG. 9

The default values of this function are normally (0.0).

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4.5) ADJUSTING MARKING POWER

Maximum and minimum marking POWER can be regulated by pressing

[U]

When you do this, the selection will be displayed in the main menu as follows.

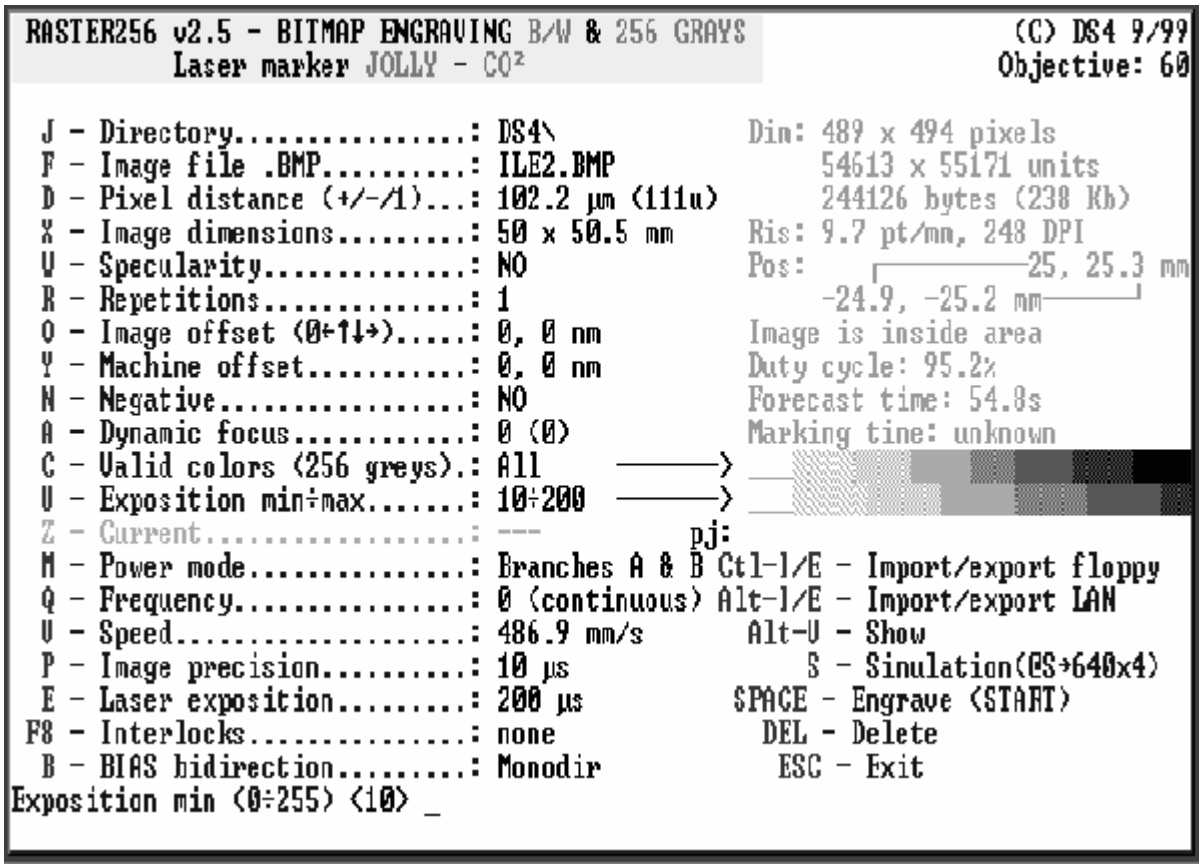

FIG. 10

This parameter indicates the maximum and minimum POWER to be applied to the object to be marked. The possible range is 0 to 255. The value 0 means ZERO POWER and 255 means MAXIMUM POWER.
The normal value is 255, but it can be reduced when marking very delicate materials.

IMPORTANT

DO NOT ENTER VALUE 0 as this would result in no marking.

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4.6) ADJUSTING MARKING RATE

Marking rate can be adjusted by pressing

[V]

The result of this selection is shown in the main menu as follows.

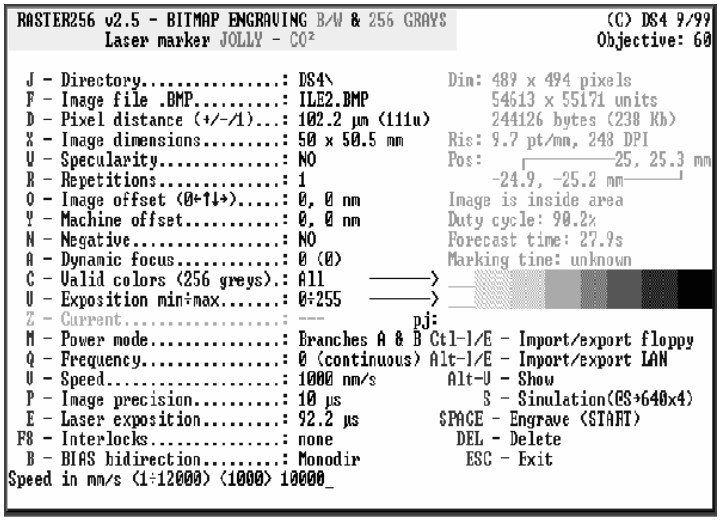

FIG. 11

For photographic use it may be simpler, in order to define the marking rate and hence the POWER applied at each point, to identify these values with the EXPOSURE definition.
To use this function, which affects the time the laser is on for each pixel of the picture, press

[E]

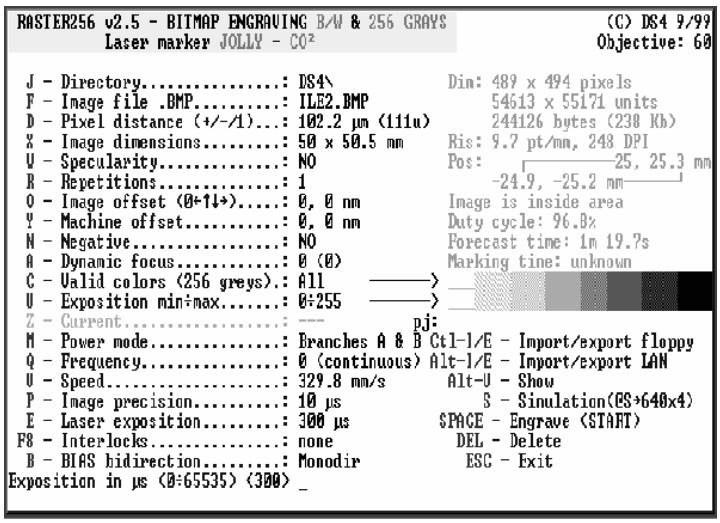

FIG. 12

This parameter indicates the length of time that POWER is applied at each point of the object. The possible range is 0 to 65535 µsec .

IMPORTANT

DO NOT ENTER VALUE 0 as this would result in no marking.

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4.7) SELECTING POWER MODE

IMPORTANT

Function only available for model MCL 50

With this marking machine you can decide whether to use 100% of the POWER available or just 50% without having to modify the marking rate or POWER described under point 4.4.6. All you need to do is press

[M]

When you press [M], you have three options.
BRANCHES A & B - for use with all models of machine
BRANCH A - only for use with model MCL50
BRANCH B - only for use with model MCL50

The result of your selection will be displayed in the main menu next to function [M].

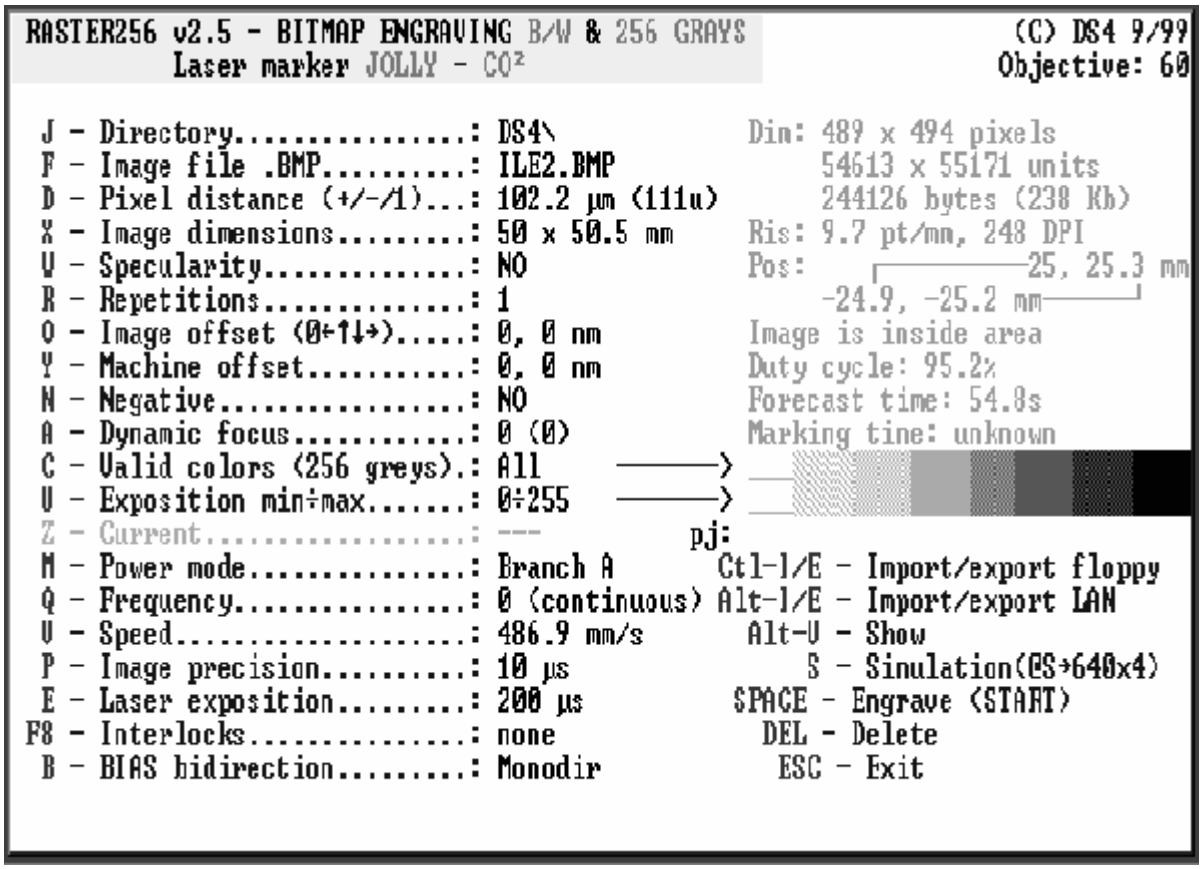

FIG. 13

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4.8) ADJUSTING DYNAMIC FOCUS

With DS4 marking machines the laser focus position can be adjusted electronically to ensure the best results in terms of marking quality and efficiency. With this function you can modify the laser focus position to adapt the machine to the thickness of the object. You need a high value with a thick object and a low value with a thin one.
To set the focus position , press

[A]

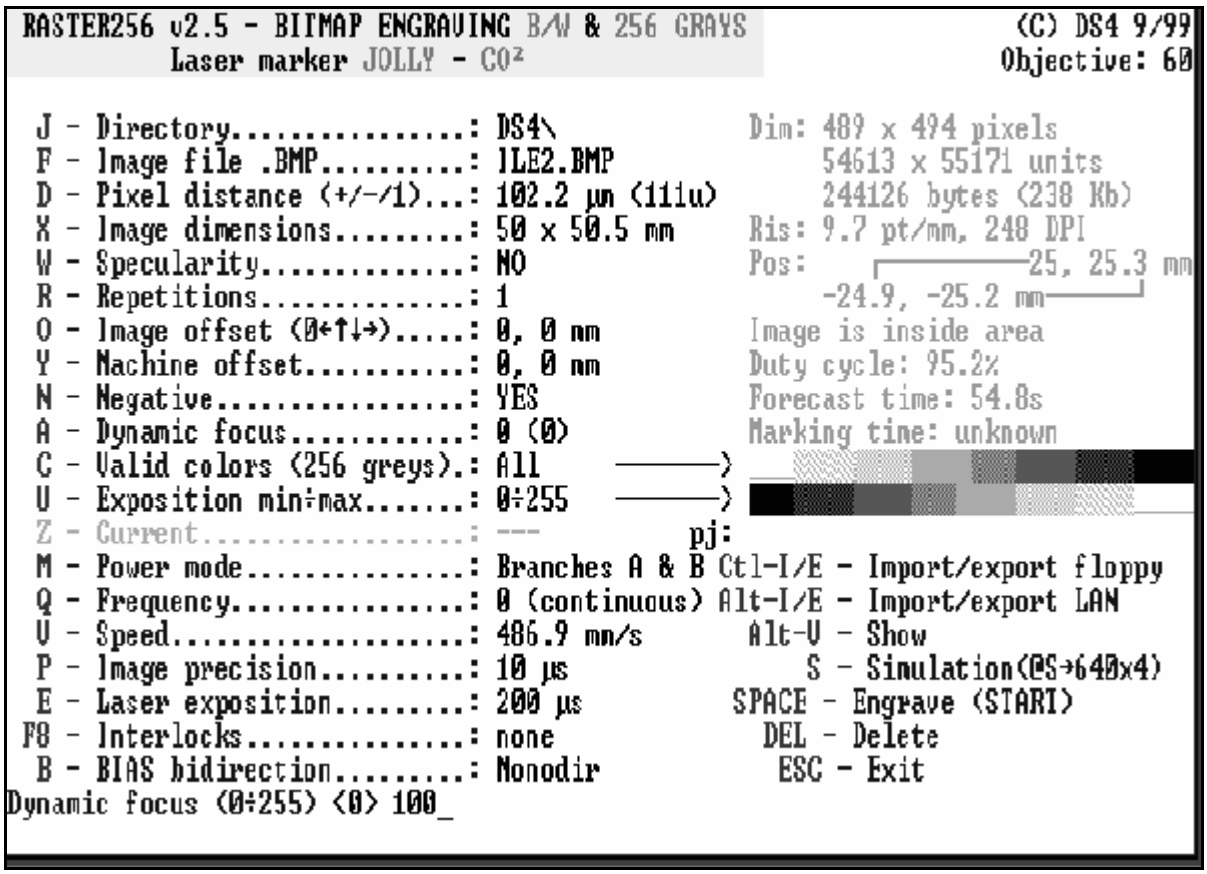

FIG. 14

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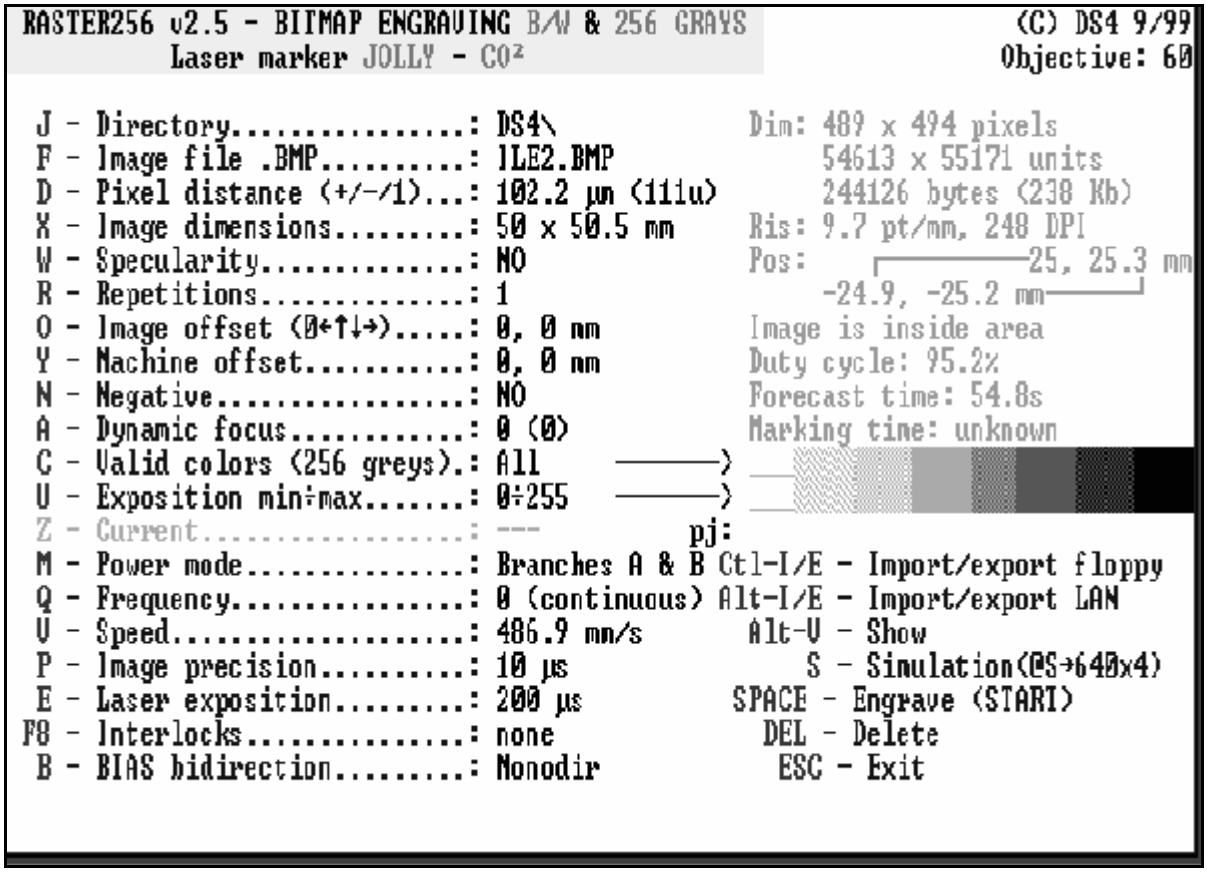
4.9) HOW TO DO A SINGLE MARKING

To do a sample marking, first
- check there is an object present
- make sure all the safety guards are mounted
- start up the gas purification system

and then press

[↵] - space bar

on the keyboard. Marking will be done each time you press this key.



Marking time

FIG. 15

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4.10) HOW TO DO REPEAT MARKINGS

Sometimes it may be easier or even necessary to repeat the same marking on an item, to increase the depth of the engraving for example.
To activate this function, press

[R]

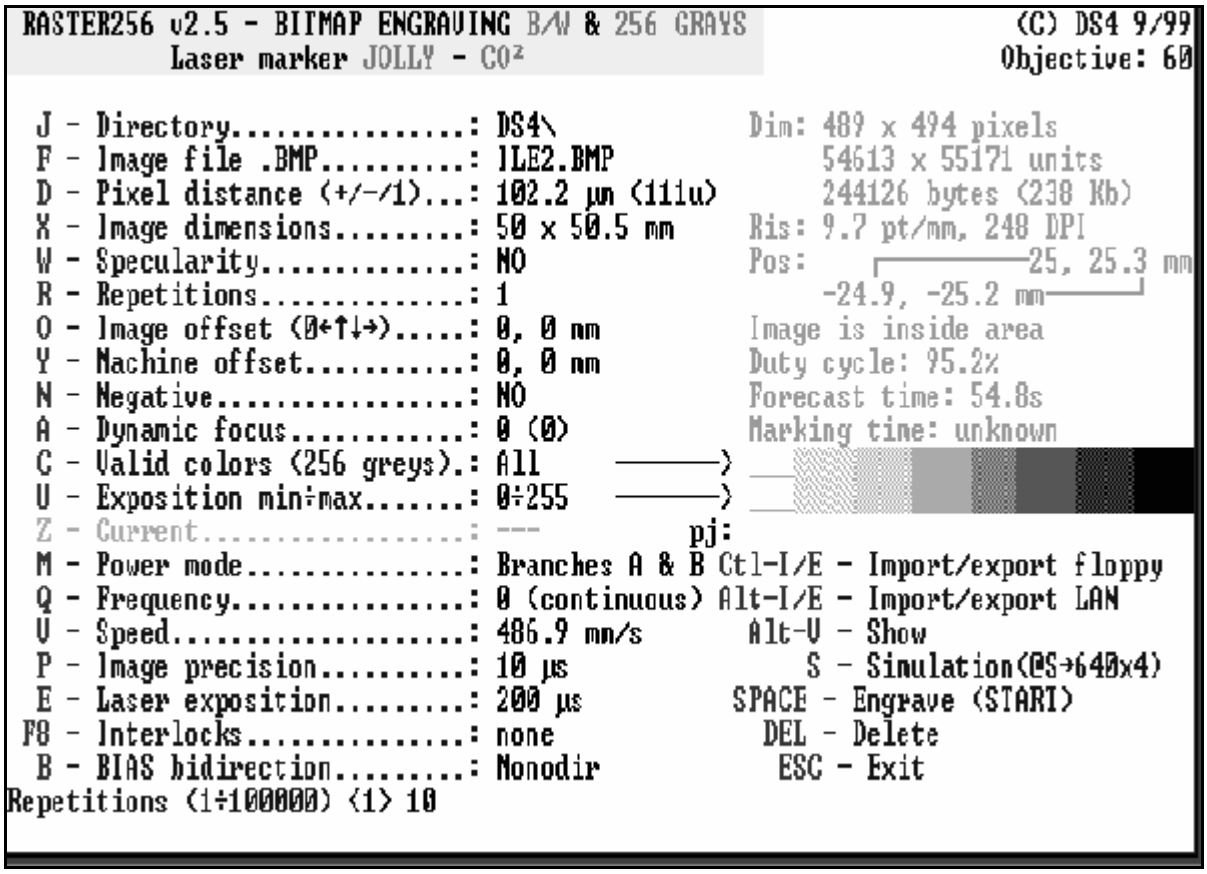

FIG. 16

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4.11) HOW TO SELECT A DIRECTORY

To select a directory of pictures on hard disk, press

[J]

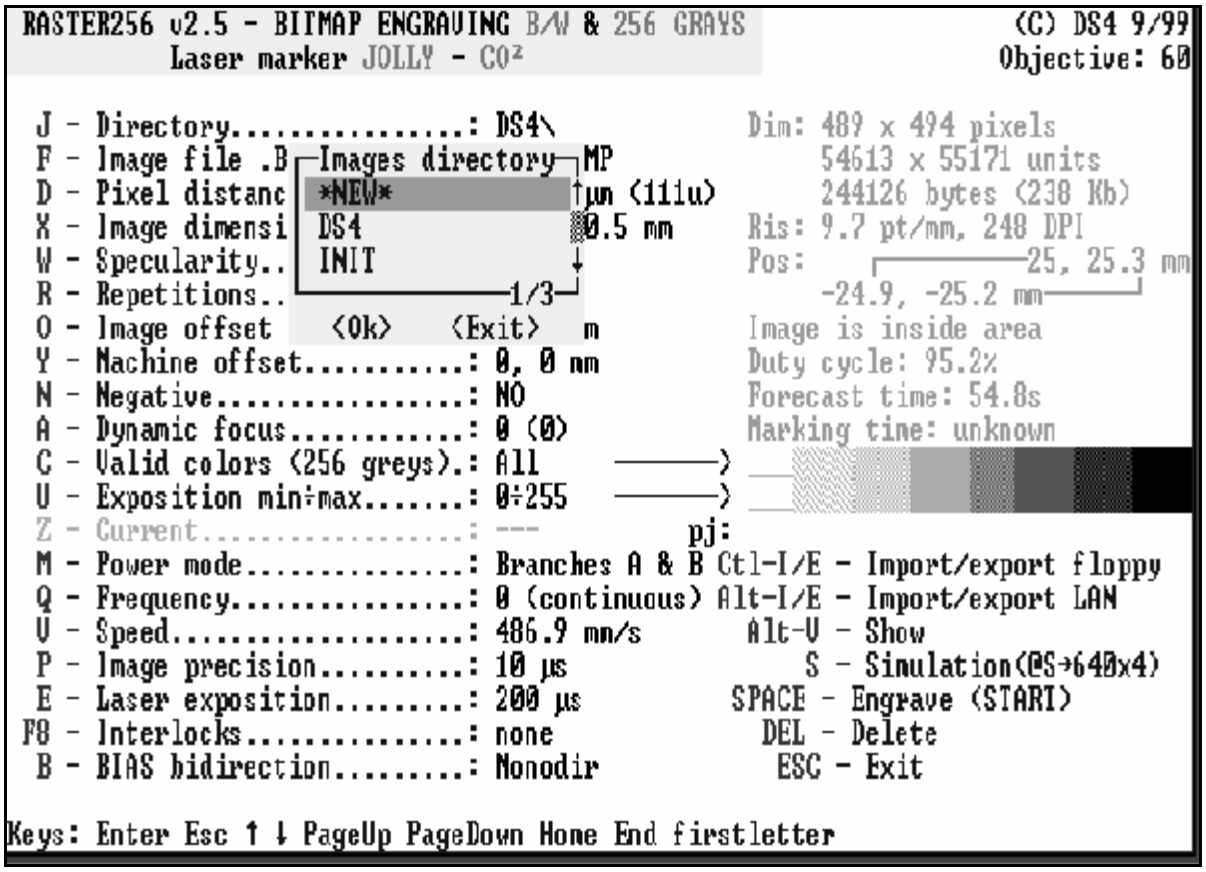

FIG. 17

This will open a window showing the names of all the directories on the hard disk.
Press [↑]or [↓] to carry out a directory-by-directory search.
When you have located the required directory, press [↵] to confirm or [Esc] to cancel.

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4.11.1) HOW TO CREATE A DIRECTORY

To create a new directory of pictures on the hard disk, press

[J]

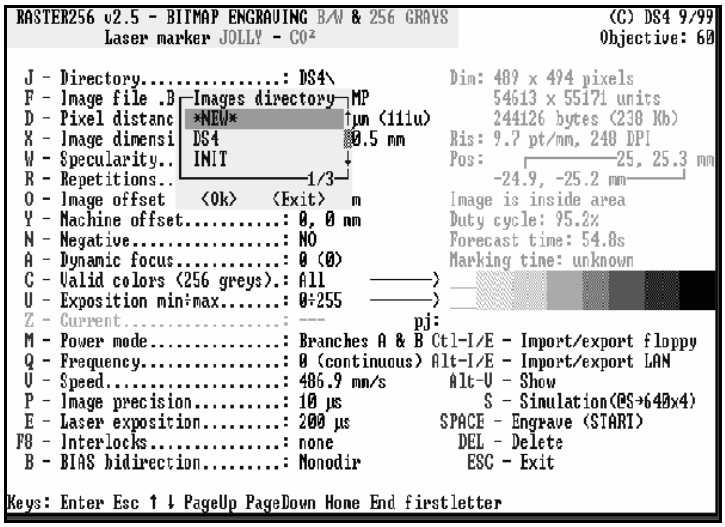

FIG. 18

This will open a window showing the names of all the directories on the hard disk.
Press [↑]or [↓] to find the word [NEW] .
Then press [↵] to confirm.

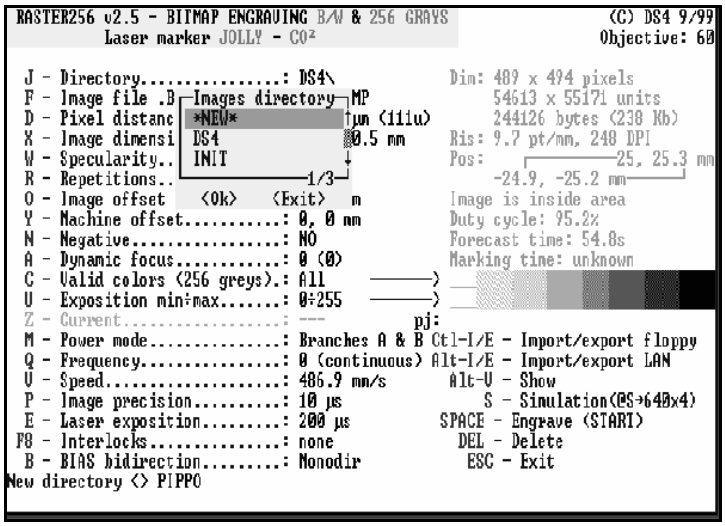

FIG. 19

Now type in the name of the new directory you wish to create, up to a maximum of 8 characters, e.g. 12345678. When you have decided on the name, e.g. PIPPO, press [↵] to confirm.

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4.12) HOW TO UPLOAD A PICTURE FROM FLOPPY DISK

Insert the floppy disk correctly in the disk unit, wait until the green light comes on and then press

[Ctrl + I]

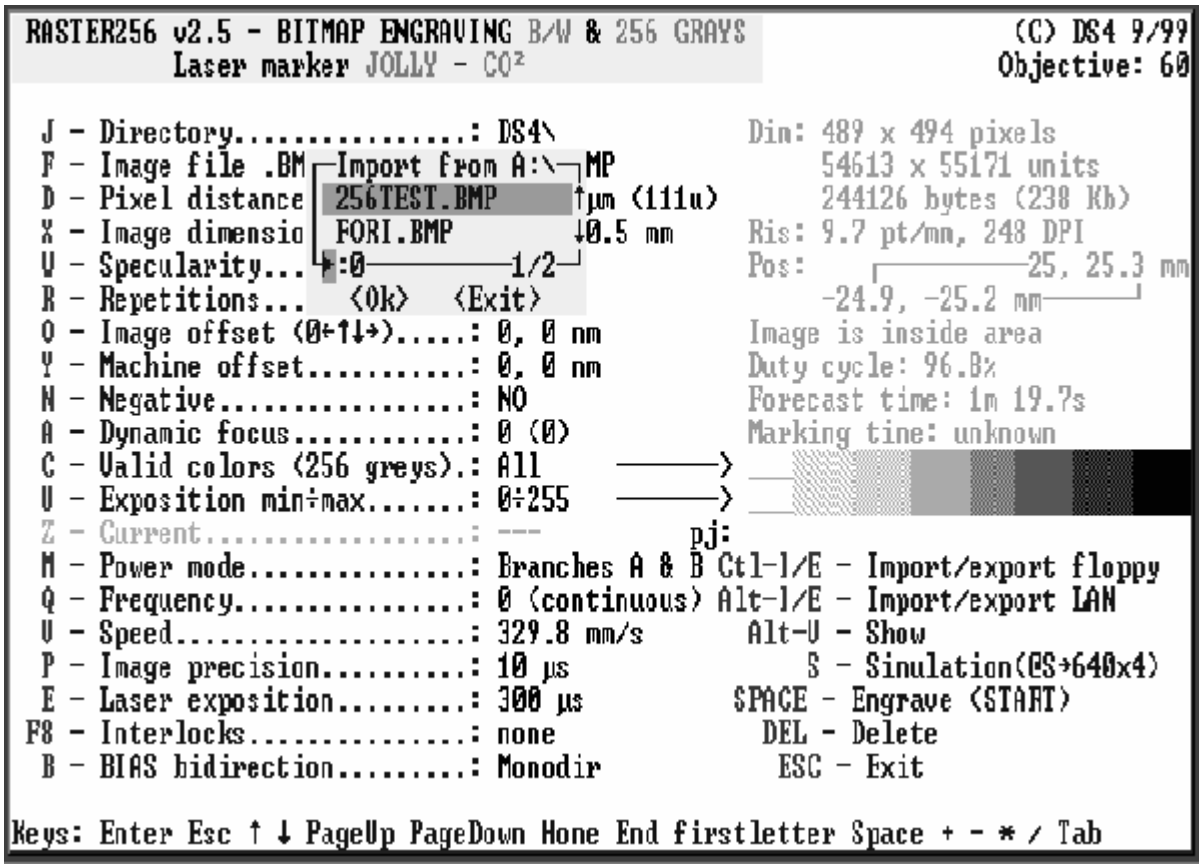

FIG. 20

This will open a window showing the names of all picture files on the floppy disk.
Press [↑]or [↓] to carry out a file-by-file search.
When you have located the file to download, press [↵] to confirm or [Esc] to cancel.

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4.13) HOW TO DOWNLOAD A PICTURE ONTO FLOPPY DISK

To download a picture from the hard disk onto a floppy disk, insert the floppy disk correctly in the disk unit, wait until the green light comes on and then press

[Ctrl +E]

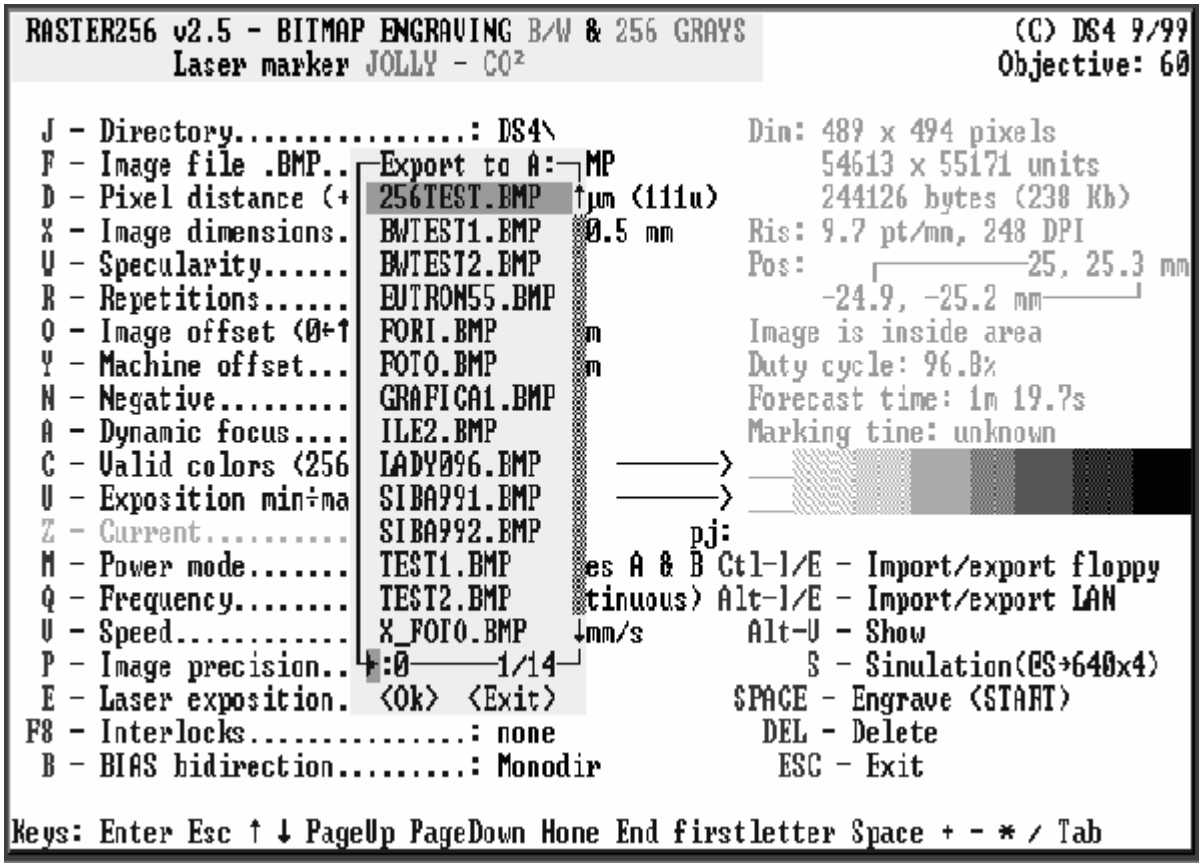

FIG. 21

This will open a window showing the names of all picture files on the hard disk.
Press [↑]or [↓] to carry out a file-by-file search.
When you have located the file to download, press [↵] to confirm or [Esc] to cancel.

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4.14) HOW TO UPLOAD A PICTURE FROM THE LAN (if there is a link)

To upload a picture from the LAN onto the hard disk, check that
- the marking machine is ready and the LAN card is installed
- the server is operational
- the machine is correctly linked to the LAN

then press

[Alt + I]

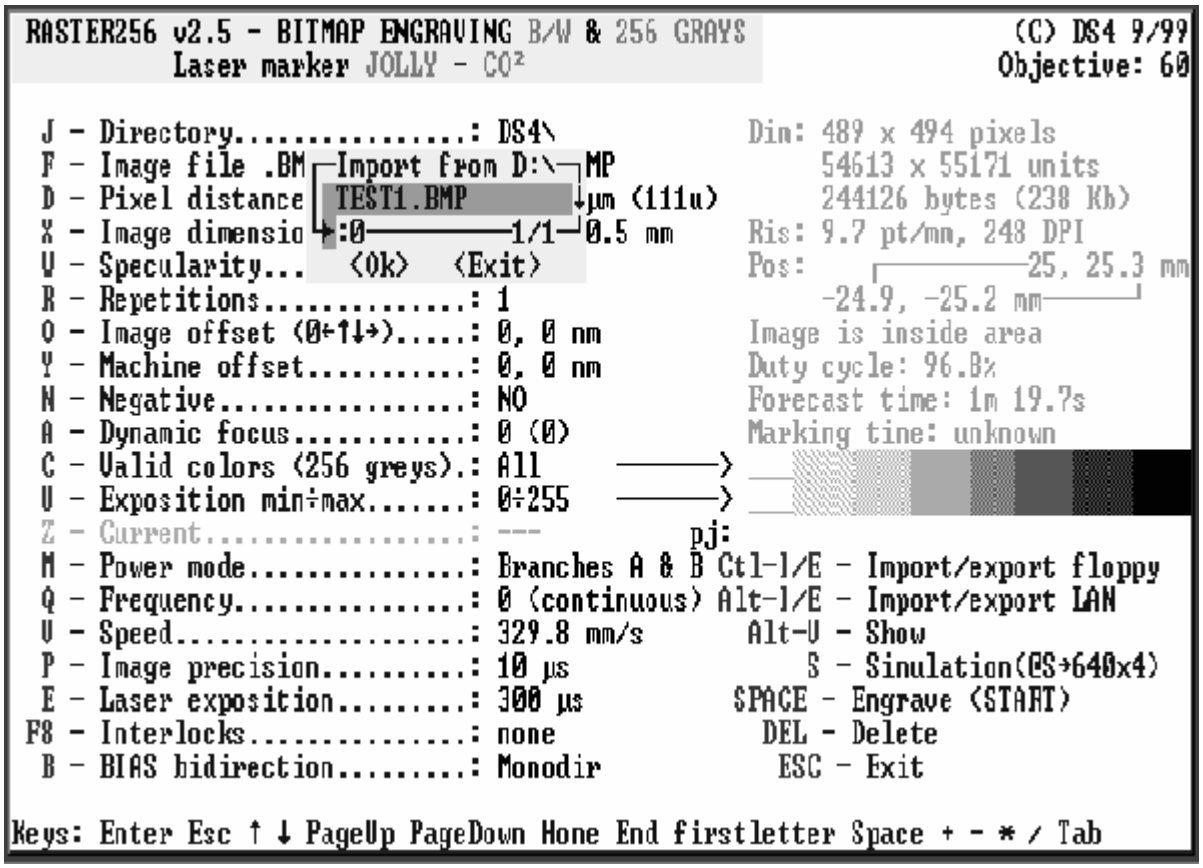

FIG. 22

This will open a window showing the names of all picture files in the LAN server directory
Press [↑]or [↓] to carry out a file-by-file search.
When you have located the file to download, press [↵] to confirm or [Esc] to cancel.

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4.15) HOW TO DOWNLOAD A PICTURE FROM THE HARD DISK TO THE LAN (if there is a link)

To download a picture from the hard disk to the LAN, first check that
- the marking machine is ready and the LAN card is installed
- the server is operational
- the machine is correctly linked to the LAN

then press

[Alt + E]

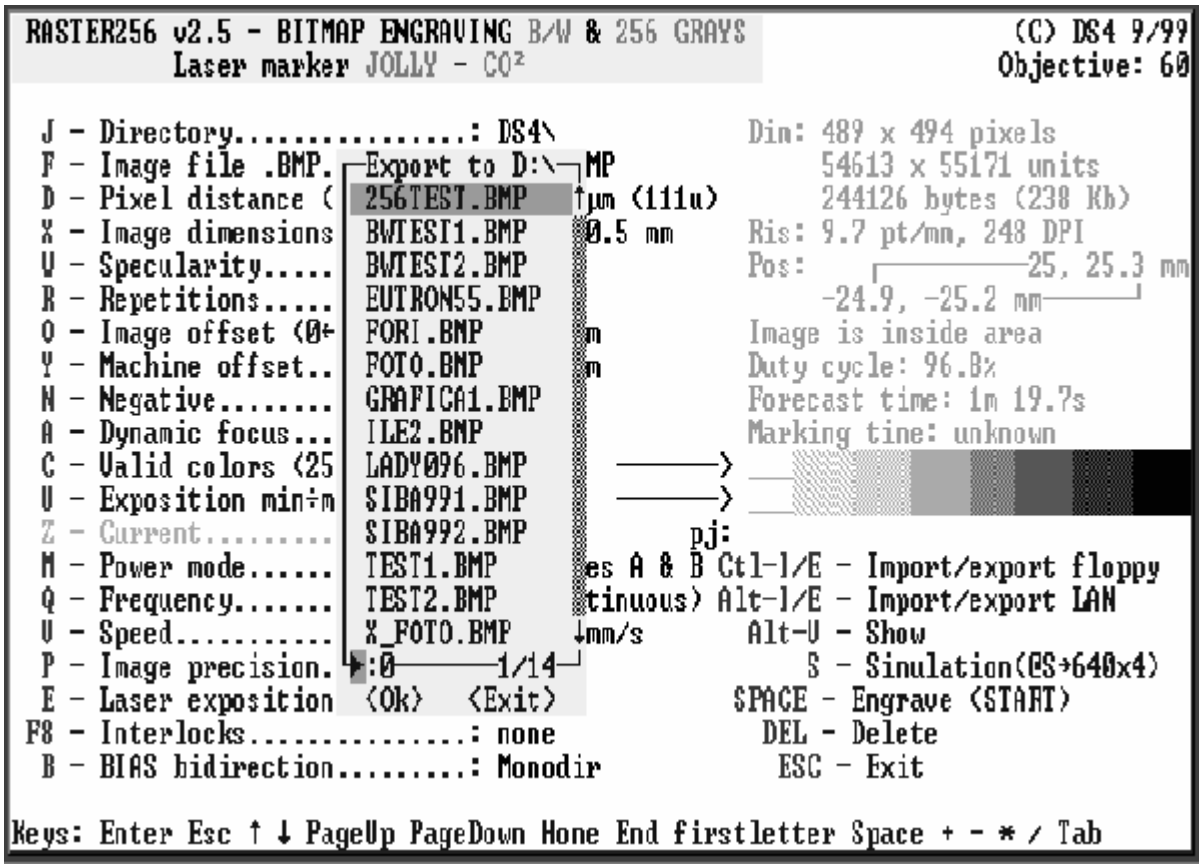

FIG. 23

This will open a window showing the names of all picture files on the hard disk
Press [↑]or [↓] to carry out a file-by-file search.
When you have located the file to upload, press [↵] to confirm or [Esc] to cancel.

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4.16) HOW TO ERASE A PICTURE

To erase a picture from the current directory on the hard disk, press

[DEL,CANC]

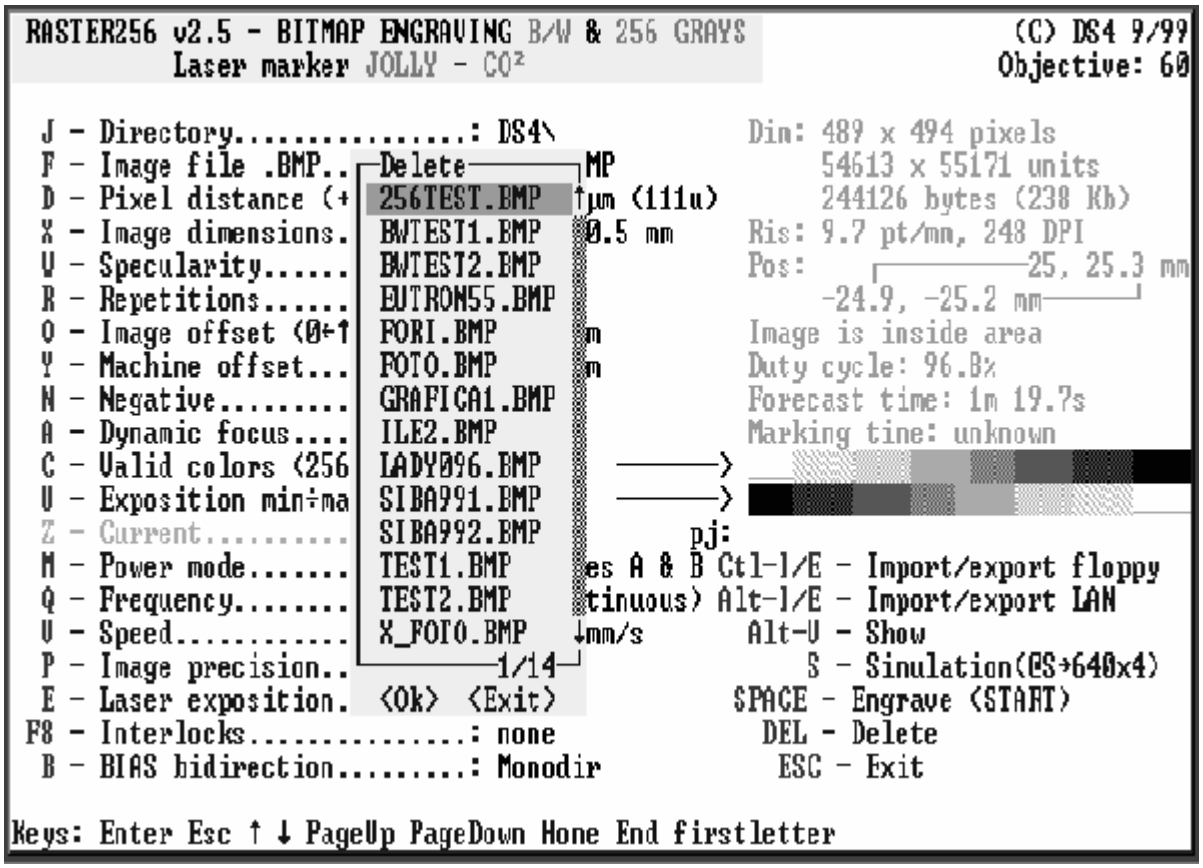

FIG. 24

This will open a window showing the names of all picture files in the current directory.
Press [🡅]or [🡇] to carry out a file-by-file search.
When you have located the file to erase, press [↵] to confirm or [Esc] to cancel.

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4.17) HOW TO DO POSITIVE OR NEGATIVE MARKING

When you have selected the picture, it can be marked as it is or in negative. This allows you to mark white on a black background, or black on a white background.

[N]

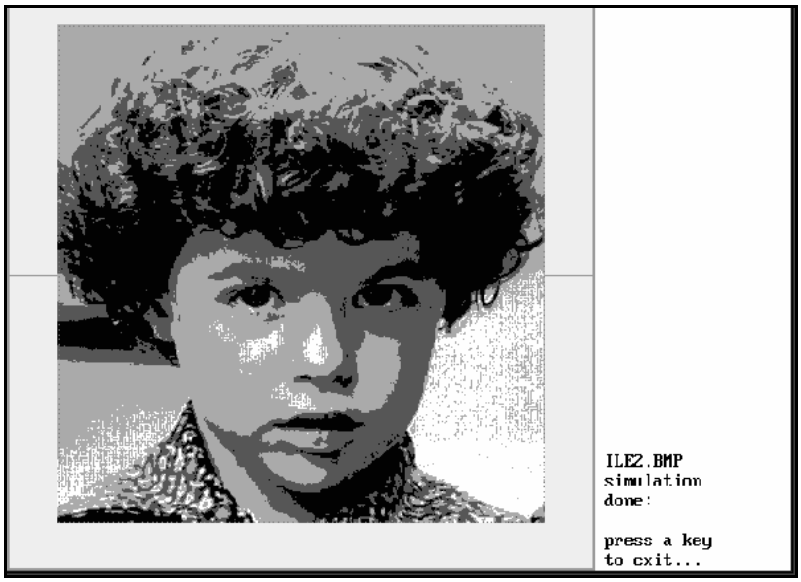

FIG. 25

[N]

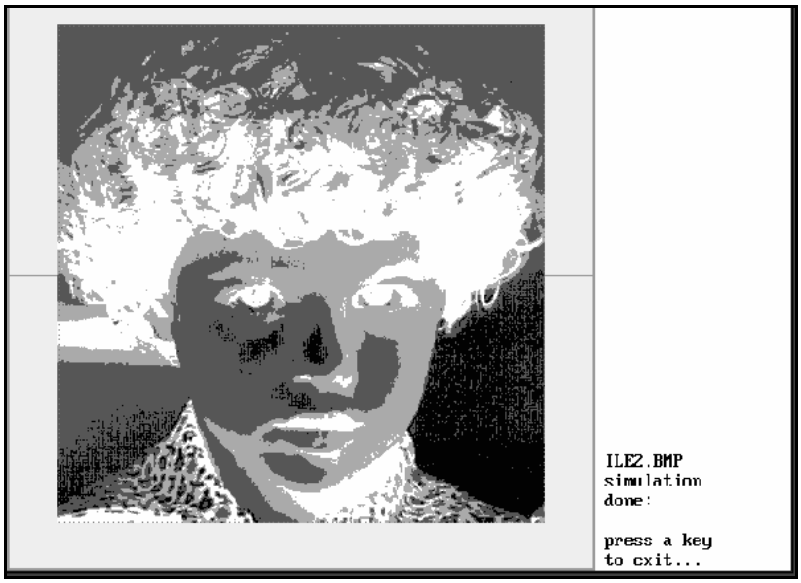

FIG. 26

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4.18) HOW TO DO SPECULAR MARKING

When you have selected the picture, it can be marked as it is or SPECULAR. This allows you to mark on a transparent background. To do this, press

key [W]

You now have the following options:

NO	-	not specular
X	-	specular along the X-axis
Y	-	specular along the Y-axis
X AND Y	-	specular along the X-axis and Y-axis

Your selection is displayed in the main menu next to function W.
Below is an example of specular marking along the X-axis.

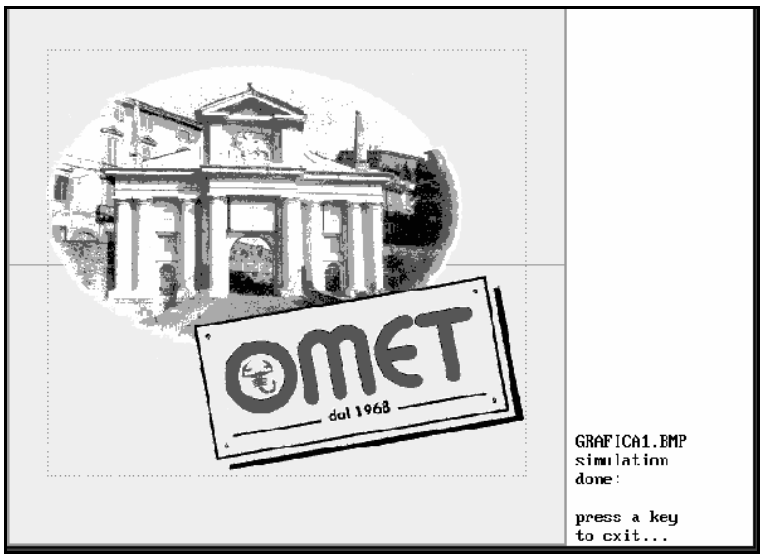

FIG. 27

FIG. 28

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4.19) HOW TO DO MARKING, EXCLUDING UNDESIRED COLOURS

When you have selected the picture, it can be marked as it is or without the colours you wish to exclude. This enables you to mark without one or more parts of the picture. To do this, press

[C]

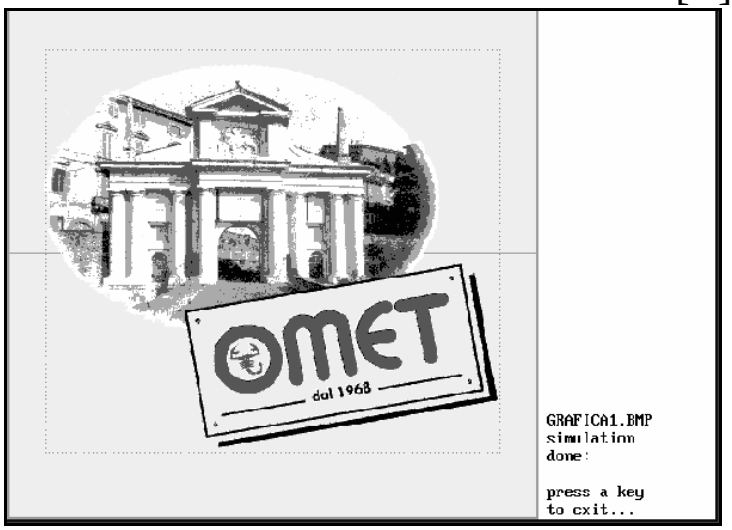
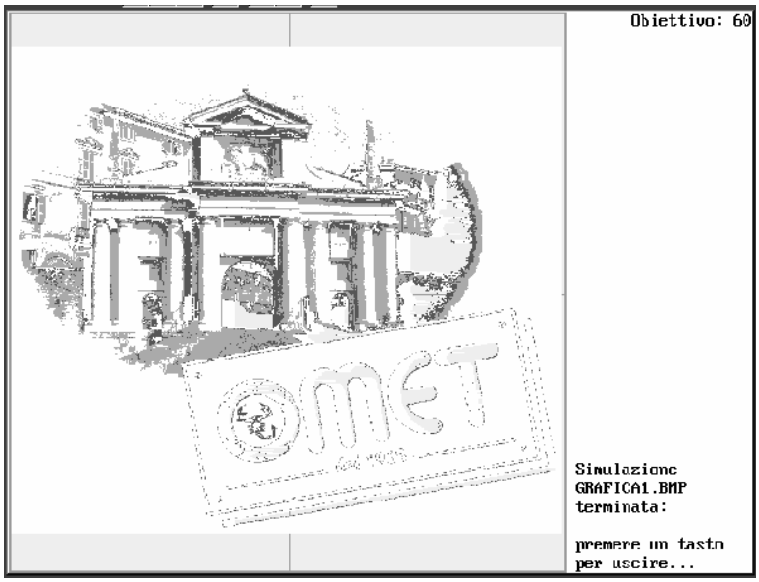


FIG. 29

If you want to use all the colours, enter the relevant values (0-255) or, as in the example below, if you wish to exclude the colours

Black to Grey
corresponding to
0 to 121,
press
[N]
and then enter
0 and 121.



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4.20) HOW TO DISPLAY MALFUNCTIONS AND SOLUTIONS

The software has a function allowing you to display possible causes of machine malfunctions. To do this, press

[F8]

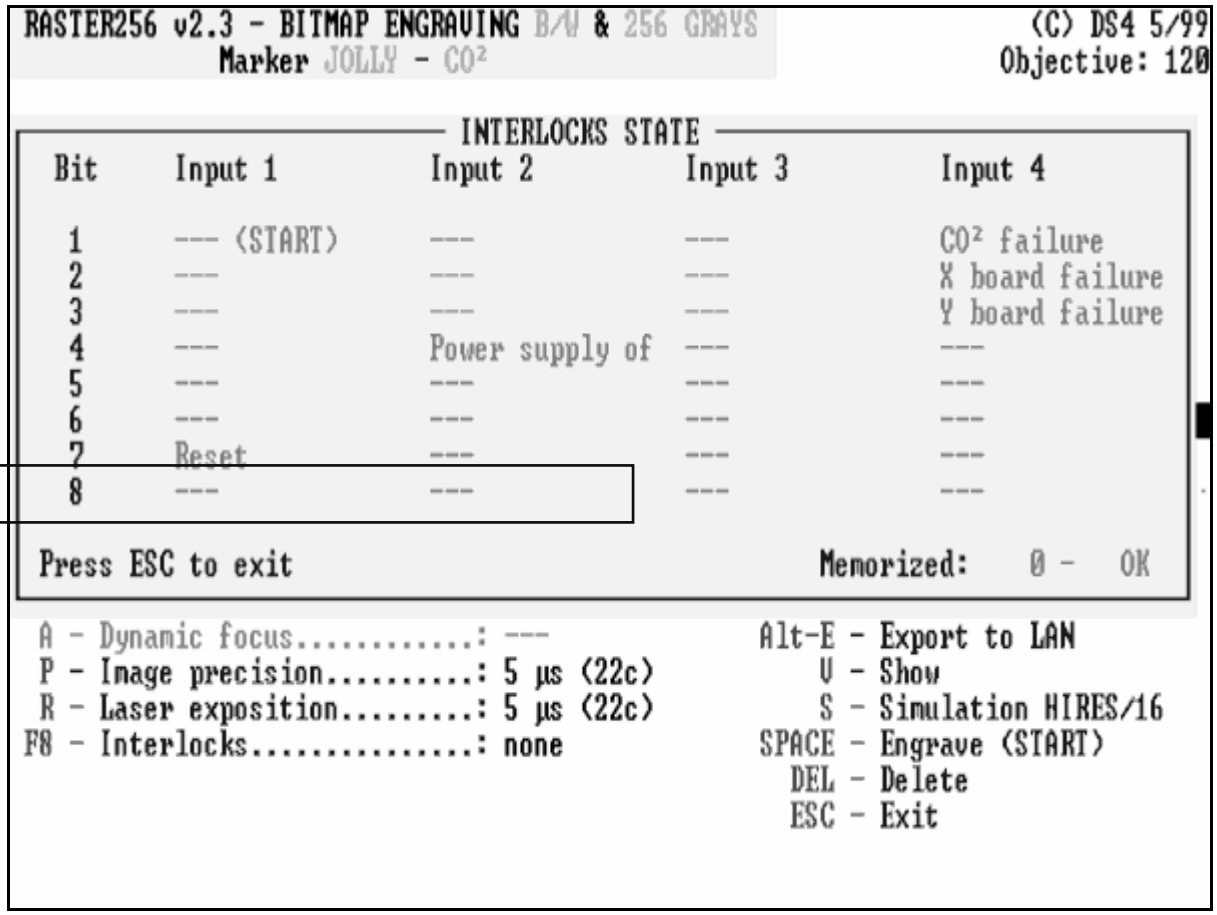

FIG. 30

This will open a window showing the status of the other systems to which the marking machine is connected. To exit, press [Esc] .

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4.21) HOW TO EXIT THE MARKING PROGRAM

When you have completed the marking, stop the machine and press

[ESC]

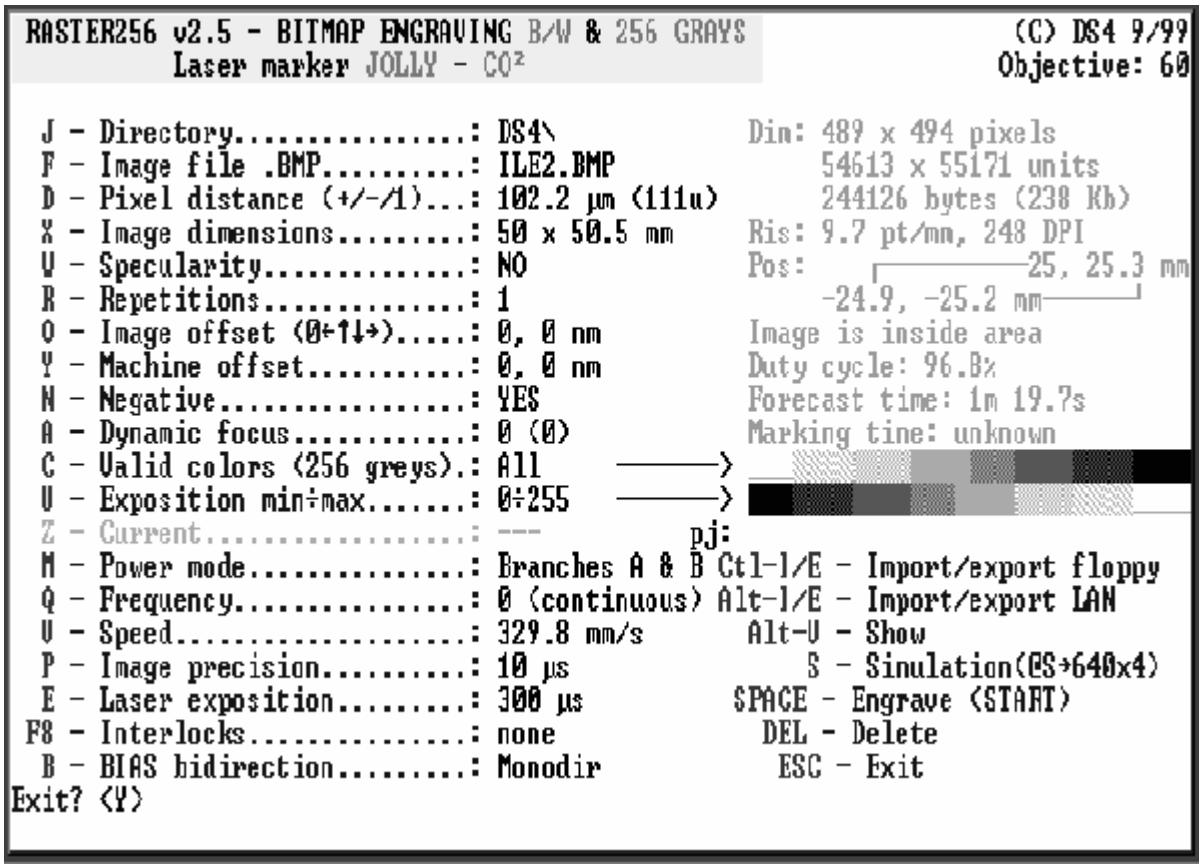

FIG. 31

Press [S] then [↵], or [Esc] to cancel everything. .

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4.22) PARAMETERS THAT MUST NOT BE MODIFIED

This program contains functions with parameters that have not been dealt with here as they are of a strictly technical nature and for internal use.
However, we feel it important to give a brief description here, particularly as regards the value these parameters must have.

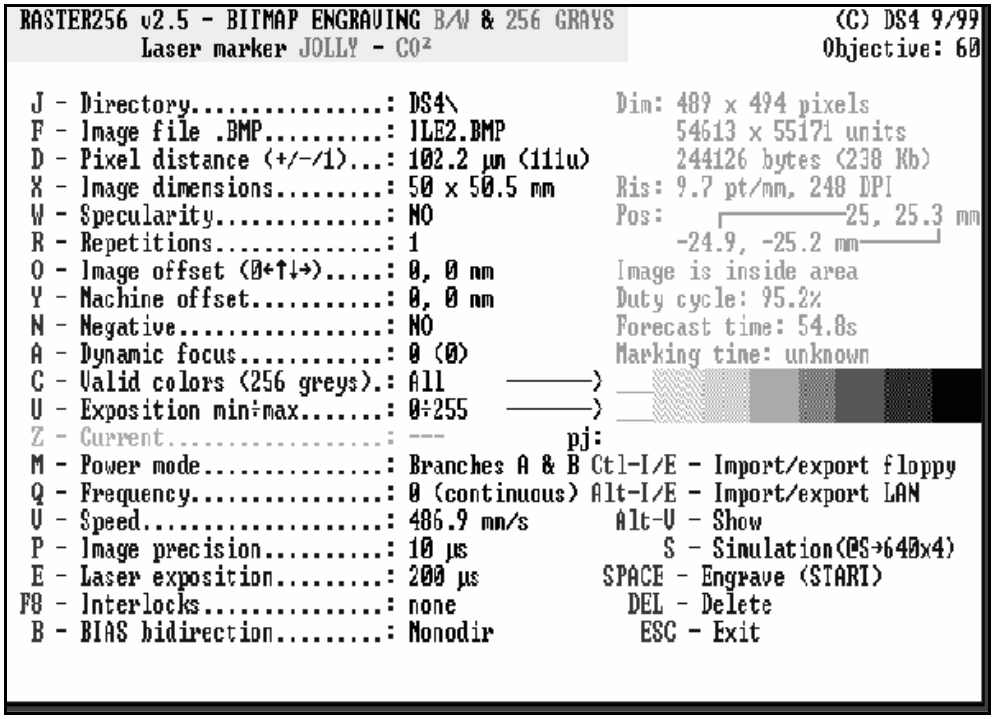

FIG. 32

[O] Picture shift
Equivalent to machine shift (offset) but referring to each individual picture and this parameter is saved together with the values of each individual picture.
Default value =**[0.0 mm]**

[Q] Frequency
Indicates laser frequency.
Default value = **[0]**

[P] Picture accuracy
Indicates the degree of accuracy in marking.
Value 0 means normal accuracy. Higher values mean greater accuracy, so the quality of the marking will be higher and the marking time will also be longer.
Default value = **[10 µs]**

[B] Two-way BIAS
This allows two-way marking. Since this type of marking requires specific know-how and is not possible for all pictures, it will be dealt with where we think it necessary or of interest.
Default value = **[-1]**

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