

# ECLAIR 16

## MULTY DUTY MOTOR

(Beauviala Patent)

ECLAIR INTERNATIONAL have designed this new QUARTZ CRYSTAL controlled motor (reference BEALA) with the cameraman in mind.

The features incorporated will make filming easier and also reduce the volume and weight of equipment that has to be carried when filming.

- The camera-motor unit is compact because of the integrated electronics of the motor.
- The camera is easier to use because the subject is always in view when the motor stops.
- The motor is reliable because of the extensive use of integrated circuits.
- The motor can be used with all the international standards of speed and frequency used in filming and this eliminates the necessity of purchasing several motors.
- It can be used with all the ECLAIR 16 cameras now in use.
- The motor is supplied complete with a CICAB cable, jack and spare fuse.
- The standard BAKEL or BACIN batteries are recommended.

### TECHNICAL CHARACTERISTICS

POWER SUPPLY : 12 volt battery

CONSUMPTION : motor alone 0.8 ampere  
: camera with film 2.5 amperes

MAXIMUM TORQUE : 1 800 gram. centimetres  
(25 inch ounces)

TEMPERATURE RANGE : — 20° C to + 60° C  
(— 7° F to + 140° F)

SIZE : 153 x 133 x 133 mm  
(6" x 5 1/4" x 5 1/4")

WEIGHT : 1,95 kilogramme  
(4.3 lbs)

## **SPEEDS**

- 24 or 25 frames per second crystal controlled internally (switch 2) or controlled externally by a frequency supply (switch 3) through the jack 1.
- Variable speeds between 4 and 40 frames per second are available with a maximum variation of  $\pm 2\%$  from the set speed (potentiometre 6).  
The tachometer indicates the operating speed.

## **SYNCHRONIZATION PULSE**

- In the crystal controlled or external frequency conditions the frequencies are selected on switches 4 and 5.
- In the INTERNAL position the pulse is supplied through the 3-pin Cannon socket on the battery 16. In the EXTERNAL position (playback function or synchronous motor function) the frequency of 50, 60 or 100 Hz (cycles per second) is supplied to the motor through the jack 1.
- The acceptable variation in frequency is  $\pm 10\%$ .

## **CLAPPER**

- The 3-position switch 8 controls the clapper functions and provides either, manual or automatic clapper, or no clapper.
- The effects obtainable are :
- Fogging of the image by an internal lamp.
  - The supply of an 8 volt impulse to the sound recorder (BLOOP NAGRA).
  - Suppression of the synchronization pulse (PERFECTONE).
- The duration of these effects, for automatic operation, is 0.3 second which is the time taken for the motor to reach the operating speed.

## **CONTROLLED STOP**

Every time the motor is stopped the reflex mirror comes to rest in the viewing position.

## **STARTING THE MOTOR**

The BAKEL or BACIN battery is connected to the motor by a CICAB cable at the 4-pin Cannon socket on the battery.  
Starting and stopping is controlled by the button 10.

## **WARNINGS**

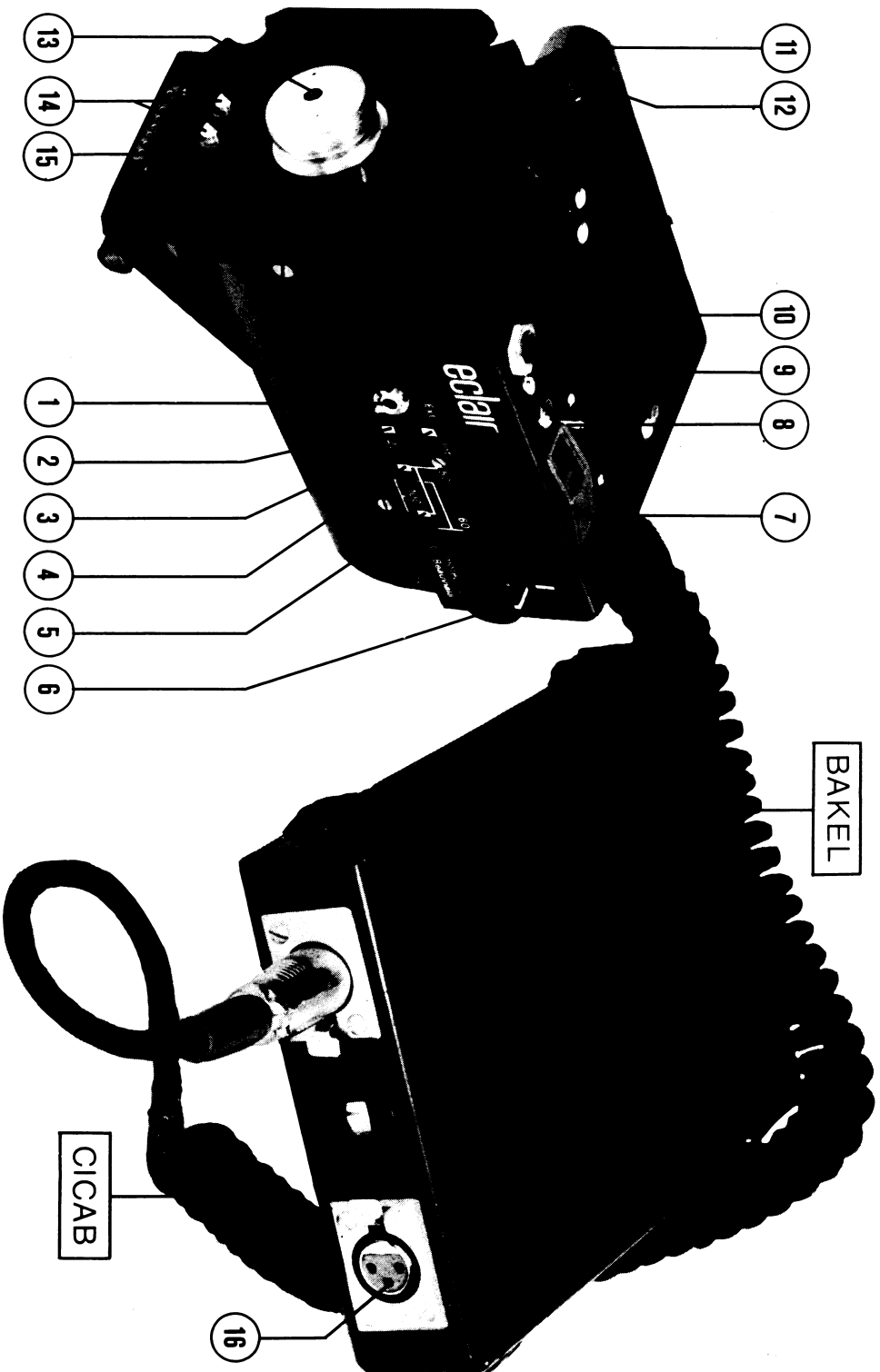
- The lamp 9 is OFF during crystal controlled or external frequency controlled operation, and ON when the motor is set for variable speed operation or when the battery power falls below the required level.
- The motor speed drops to about 2 frames per second when it is no longer servo-controlled (e. g. the battery power is low or the camera mechanism is sticking) and bright flickering in the viewfinder warns the cameraman.
- In the non-servo controlled situation the synchronization signal is also cut off thus alerting the sound engineer.

## **SECURITY**

The fuse 12 protects all the motor electronics. Removing this fuse allows a polarity check for batteries other than BAKEL or BACIN.

## **ACCESSORIES**

- The 8-pin socket 15 will provide a power supply for various accessories such as a handgrip switch, a radio controlled clapper, a 50 watt fill-in-lamp, etc.
- WHEN YOU HAVE USED THE ECLAIR 16 CRYSTAL MOTOR YOU WILL KNOW WHY ECLAIR INTERNATIONAL REMAINS IN ITS COMMANDING POSITION IN THE FIELD OF PROFESSIONAL FILMING.**



1. Jack for external frequency supply.
2. Switch for crystal controlled speeds (24 or 25 frames per second).
3. Switch for internal or external speed control.
- 4.5. Switches for external frequency supply of 50, 60 or 100 Hz (cycles per second).
6. Speed control potentiometer.
7. Tachometer.
8. Clapper switch.
9. Control lamp.
10. Start/Stop button.
11. 4-pin Cannon socket for battery connection.
12. Fuse.
13. Drive spigot.
14. Contacts for clapper lamp.
15. 8-pin socket for accessories.
16. 3-pin Cannon socket for sound recorder connection.

The new eclair 16 motor has been constructed using the latest developments in reliability integrated circuitry. The motor is adaptable to all the international standards of speed and frequency used in professional film making.

We recommend that, before you commence using your motor, you read carefully the instructions provided in this handbook.

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of the operating manual

# operating manual

## 1. POWER SUPPLY 12 volt DC (Ref. drawing CIR 897)

Before connecting the motor to the power supply, ensure that the "ON-OFF" switch (10) is in the "OFF" position.  
"ON" position : depress switch until it locks in place.  
"OFF" position : fully depress switch and allow to return to the fully up position.

### BATTERIES :

When using ECLAIR "BAKEL" or "BACIN" batteries  
— use standard "CICAB" cable.

When using other 12 volt batteries

— to avoid destroying the power transistor the following checks must be made.

Remove the fuse (12) and then plug in the battery.

If the lamp (9) does NOT light polarity is correct. Replace the fuse and proceed.

If the lamp (9) lights up the connection is wrong. REVERSE THE POLARITY before replacing the fuse. Note: All other electronic components are protected.

If the lamp of the clap stick lights up permanently, MODIFY THE BATTERY WIRING according to diagram N° 897.

## 2. AUTOMATIC STOP

Immediately power is supplied to the motor, the drive spigot (13) will rotate to a position of rest.

To ensure that the spigot has assumed the correct position, turn the spigot in an anticlockwise direction and release.

The two small holes in the spigot will be seen to be at an angle to the horizontal.

## 3. ASSEMBLING THE MOTOR TO THE CAMERA (Photograph B)

a) Turn the camera drive mechanism: (20) until the claw (18) is exactly half way through the film drive movement (18).  
i.e. the shutter has closed the aperture (17).

b) Position the four catches (19) as shown in photograph B.

c) Insert the drive spigot into the camera drive rubber (20) and close the catches (19) to lock the motor in position.

**CORRECT OPERATION OF INSTRUCTIONS 2 AND 3 WILL ENSURE THAT THE REFLEX MIRROR ALWAYS STOPS IN THE VIEWING POSITION.**

Note: If the mirror fails to stop in the viewing position, CHECK the condition of the driving rubber (20), CHECK THE HEIGHT of the drive spigot (13) (Drawing 800 E 1).

## 4. CRYSTAL CONTROLLED SPEED OPERATION

The photograph A shows the motor set for a crystal controlled speed of 25 frames per second at 50 Hz (cycles per second) with automatic clapper.

a) Lock the potentiometer (6) by turning fully in an anticlockwise direction over the click-stop (the white markings will be aligned).

b) Set switch (3) to position "INT", i.e. internal crystal controlled drive.

c) Set switch (2) to required speed (24 or 25 frames per second).

d) Start motor (switch 10).

Note that the lamp (9) will flicker briefly but not come on.

The tachometer (7) indicates the selected speed.

## 5. SYNCHRONIZATION PULSE

To obtain a synchronization pulse if required :

Set switches (4) and (5) for the frequency required (50, 60 or 100 cycles per second).

The synchronization pulse is provided, through the 3-pin cannon socket (16) on the battery, to sound recorders not equipped with a crystal-controlled motor.

The wiring is shown on diagram CIR 897.

### WARNING

The synchronization pulse (1 volt into 50 ohms) is not suitable for tape recorders fitted with a synchronization pulse control lamp. It is necessary to remove this lamp and replace it with an electromagnetic indicator (clover leaf).

## 6. EXTERNAL FREQUENCY CONTROLLED SPEED

In this condition the speed of the motor is controlled by a frequency supplied from an external source.

e.g. a sound recorder (playback function)

or the main supply (3-phase motor function)

or, another motor driving a second camera.

a) Lock the potentiometer (6) by turning fully anticlockwise.

b) Set switch (3) to "EXT" - the lamp (9) will light up.

c) Set switch (2) to the required speed (24 or 25).

d) Set switches (4) and (5) to the required frequency 50, 60 or 100 Hz (cycles per second).

e) Plug in the jack (1) to obtain the frequency signal (signal level between 1 and 20 volts)  
— the lamp (9) will go out.

f) Start motor :

— the lamp (9) will flicker briefly but not come on. The tachometer (7) indicates the selected speed.

## 7. WARNINGS

Synchronization Pulse :

A synchronization pulse can be obtained as explained in Section 5.

Frequency variation :

The frequency tolerance for speed control by this method is  $\pm 10\%$

— if the frequency is too high the motor will oscillate

— if the frequency is too low the lamp (9) will light up

— the tachometer will show the speed error.

Signal Supply Faults :

If the amplitude of the signal is too low OR if the cable is disconnected, the lamp (9) will light up.

Battery condition :

If the battery no longer has sufficient power to drive the motor at the speed imposed by the crystal, the following effects will be observed :

— the lamp (9) lights up.

— the camera speed reduces to about 2 frames per second and a bright flickering in the viewfinder will warn the cameraman.

— the synchronization signal is cut off thus alerting the sound engineer.

If in this situation it is essential to continue a shot :

— turn the potentiometer (6) fully clockwise (maximum variable speed).

This operation will provide a speed of approximately 24 or 25 frames per second but without sync. pulse.

**DO NOT OPERATE IN THIS CONDITION FOR MORE THAN ONE MINUTE AS DAMAGE TO THE BATTERY CAN OCCUR.**

Magnetic Speed Sensors :

The magnetic speed sensors supply a continuous reading of the motor speed to the phase compensator.

If the motor runs up to maximum speed under crystal or external frequency controlled operation the magnetic speed sensor has stopped functioning.

To continue filming move the switch (2) to the alternative speed (24 or 25 depending on which speed is being used) and continue filming.

This speed change should obviously be noted when transferring from magnetic tape to magnetic perforated film.

### 8. VARIABLE SPEED

For variable speed operation set the motor as follows :

- a) Unlock the potentiometer (6) by turning clockwise.
- b) Start the motor (the lamp (9) will light and STAY ON).
- c) The tachometer (7) shows the speed in frames per second :
  - with switch (2) in the "24" position the speed is indicated by the BLUE SCALE.
  - with switch (2) in the "25" position the speed is indicated by the WHITE SCALE.
- d) Turn the potentiometer (6) until the required speed is indicated by the tachometer within the range of 4 frames per second to 40 frames per second.

Note : The selected speed is regulated to  $\pm 2\%$  under the normal operating conditions.

The diagram CIR 898 shows the alternative settings for controlled and variable speed operation.

### 9. THE CLAPPER

The clapper (switch 8) performs the following functions :

- a) Fogging of the image by a lamp in the camera (contacts 14).

- b) An audible signal from the despatch of an 8 volt impulse to the sound recorder oscillator (BLOOP NAGRA).
- c) Suppression of the synchronization signal (PERFECTONE).

SWITCH POSITION (8)	OPERATION	SPEED SETTING	FUNCTION
OUT	Automatic clapper for 0.3 second (8 frames) each time the camera is started	Fixed crystal controlled (24 or 25)	a-b-c-
		Fixed external frequency (24 or 25)	a-b-c-
Central	No clapper	Variable	None
		Fixed crystal controlled (24 or 25)	None
IN (hand held)	Manual clapper	Fixed external frequency (24 or 25)	a-b-c-
		Variable	a-b-

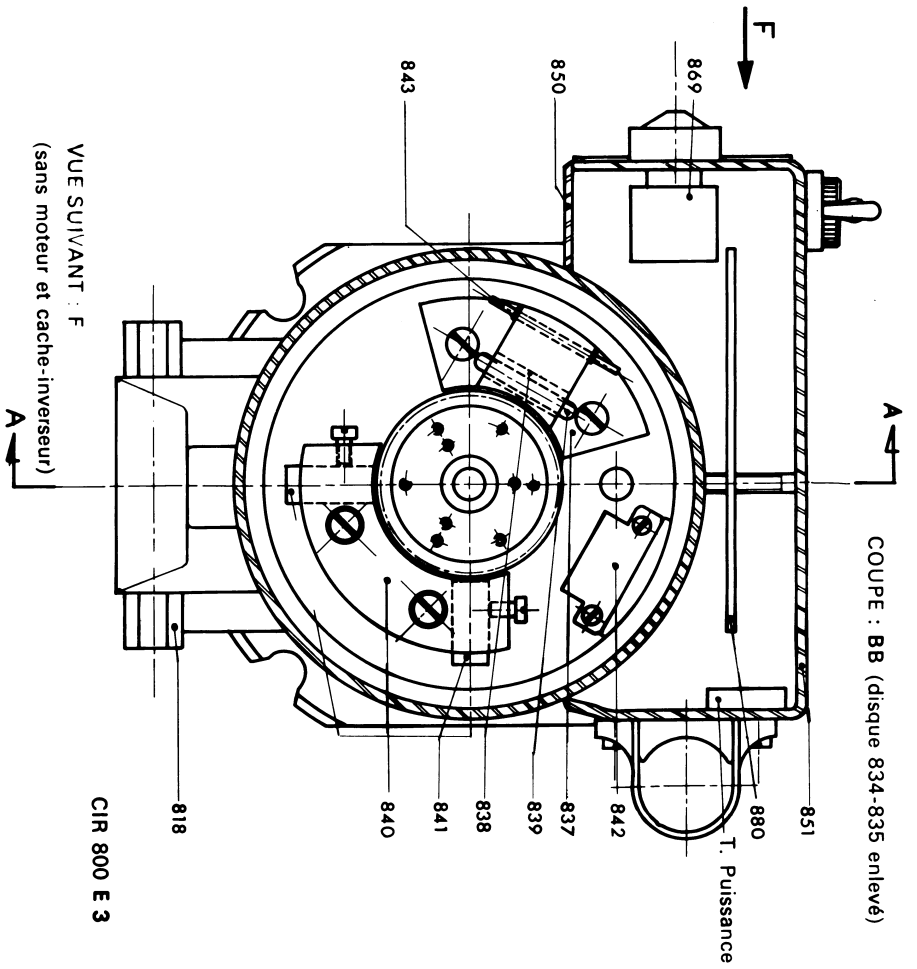
### 10. ACCESSORIES

The blue multiple socket (15) allows the operation of various accessories :

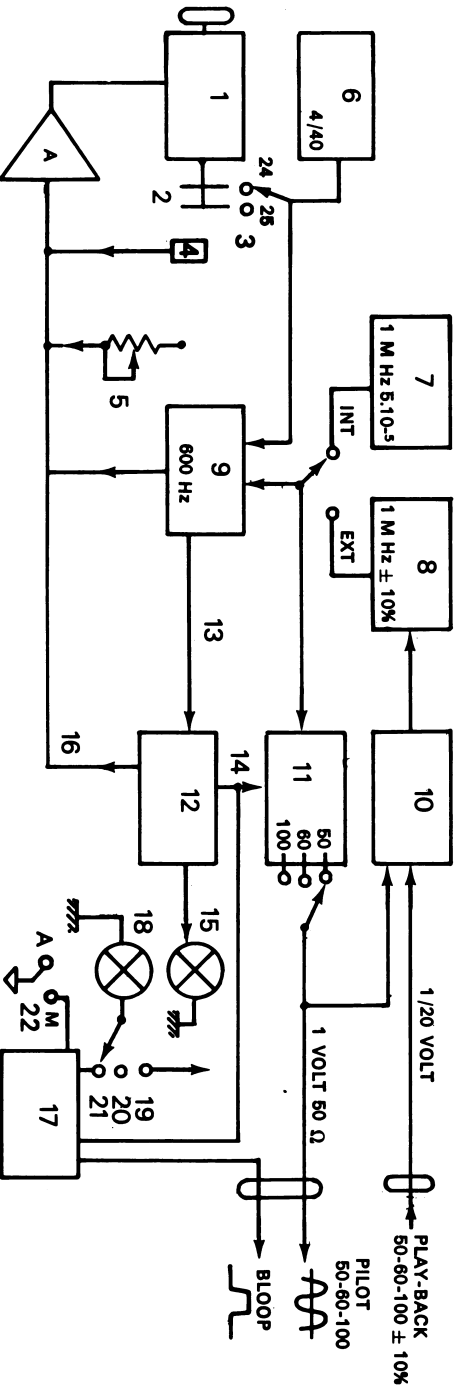
- a) Remote control (a single throw switch from sockets (2) and (3) the current flowing is less than 200 mA).
- b) Handgrip switch.
- c) Power for a powered zoom lens, a 50 watt fill-in lamp, etc.
- d) Operation of a radio controlled clapper.
- e) Continuous editing mark on film and sound tape (X).
- f) Single frame operation (X).
- g) A side fogging clapper lamp (X).
- (X) Please enquire for information.

### 11. COMPONENTS

Drawings CIR 800 E show the reference numbers for the electro-mechanical components and printed circuits.

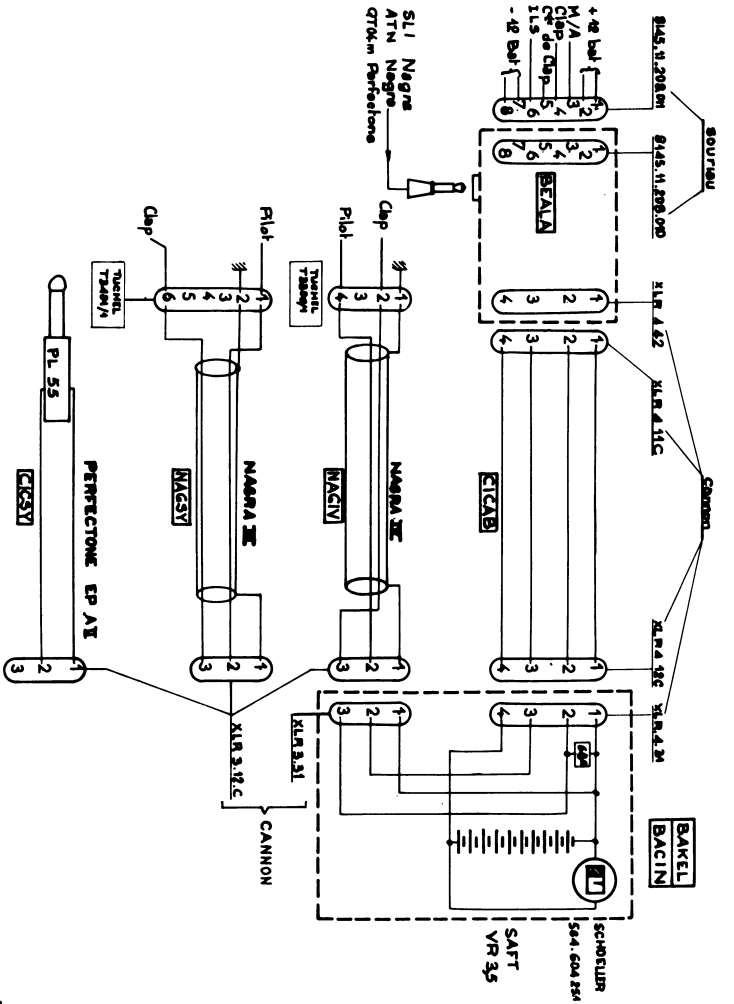


- |   |                               |
|---|-------------------------------|
| 1. Moteur                               | Motor                         |
| 2. Roue phonique                        | Phonic wheel                  |
| 3. Capteurs de vitesse                  | Speed sensor                  |
| 4. Arrêt automatique                    | Automatic stop                |
| 5. Vitesse variable                     | Variable speed control        |
| 6. Tachymètre                           | Tachometer                    |
| 7. Oscillateur quartz                   | Crystal oscillator            |
| 8. Oscillateur fréquence extérieure     | External frequency oscillator |
| 9. Comparateur de phase extérieure      | Phase comparator              |
| 10. Comparateur de fréquence extérieure | External frequency comparator |
| 11. Diviseur                            | Frequency divider             |
| 12. Protection                          | Warning circuit               |
| 13. Détection défaut                    | Fault detection function      |
| 14. Absence pilote                      | Synchronous pulse cutout      |
| 15. Lampe défaut                        | Defect lamp                   |
| 16. Vitesse lente                       | Slow speed                    |
| 17. Claque                              | Clapper circuit               |
| 18. Lampe claque                        | Clapper lamp                  |
| 19. Claque automatique                  | Automatic clapper             |
| 20. Pas de claque                       | No clapper                    |
| 21. Claque manuelle                     | Manual clapper                |
| 22. Interrupteur de mise en marche      | "On-Off" switch               |

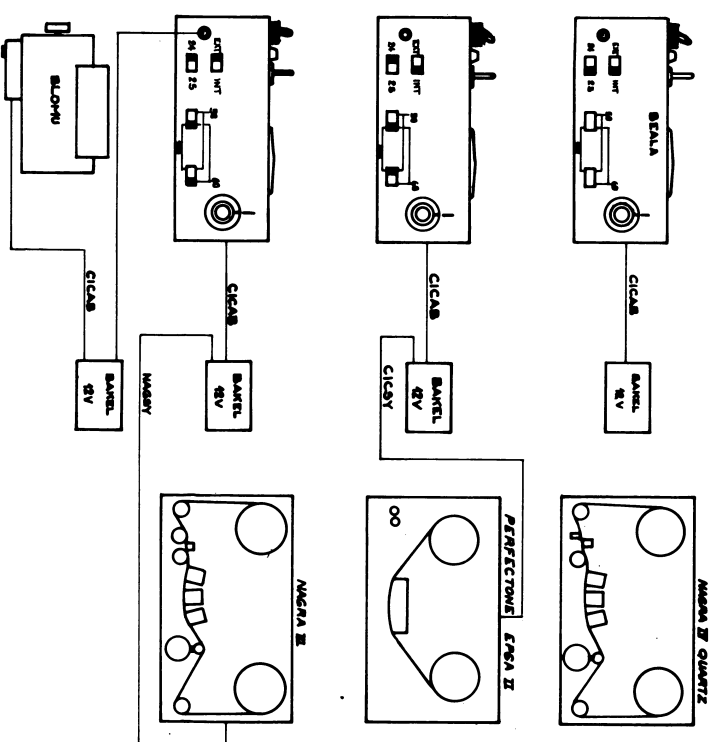


CIR 896





CIR 898 A



TOURNAGE QUARTZ  
CRYSTAL  
CONTROLLED  
OPERATION  
QUARTZGESTEUERTER  
BETRIEB

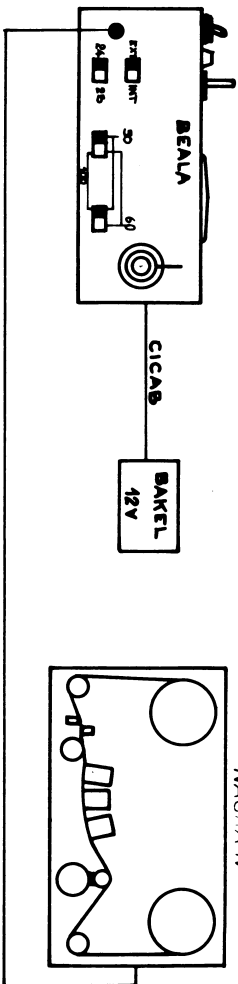
25 I/S  
25 fps  
25 B/S

TOURNAGE PILOT  
SYN. PULSE  
OPERATION  
PILOTTON-BETRIEB

24 I/S 100 Hz  
24 fps 100 Cs  
24 B/S 100 Hz

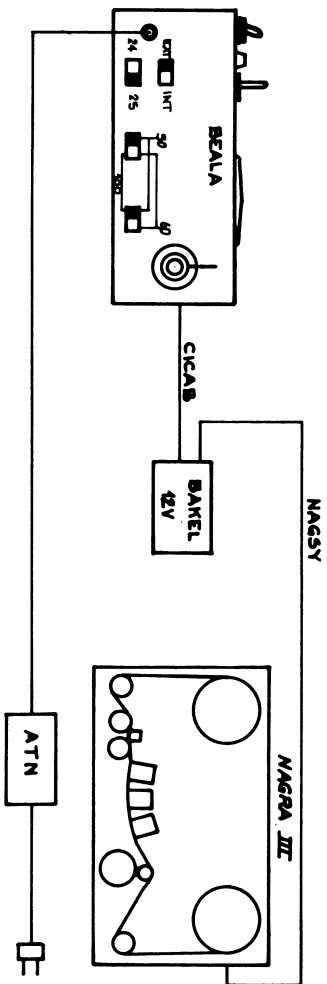
TOURNAGE AVEC  
UNE 2<sup>e</sup> CAMERA  
NON QUARTZ  
EXTERNAL MOTOR  
CONTROLLED  
OPERATION  
BETRIEB MIT  
ZWEITER NICHT  
QUARTZGESTEUERTER  
KAMERA

24 I/S 60 Hz  
24 fps 60 Cs  
24 B/S 60 Hz



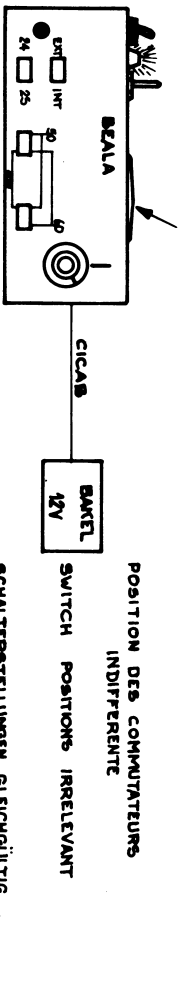
PERFECT ONE QUARTZ  
ou  
MAGRA IV

PLAY BACK  
24 I/S 50 Hz  
24 fps 50 Cs  
24 B/S 50 Hz



MAGRA III

FONCTION TRIPHASE  
THREE PHASE  
FUNCTION  
DREHSTROM-  
FUNKTION  
25 I/S 50 Hz  
25 fps 50 Cs  
25 B/S 50 Hz



POSITION DES COMMUTATEURS  
INDIFFERENTE  
SWITCH POSITIONS  
IRRELEVANT  
SCHALTERSTELLUNGEN  
GLEICHGÜLTIG

VITESSE VARIABLE  
VARIABLE SPEED  
REGELGESCHWINDIGKEIT

**CIR 888 B**