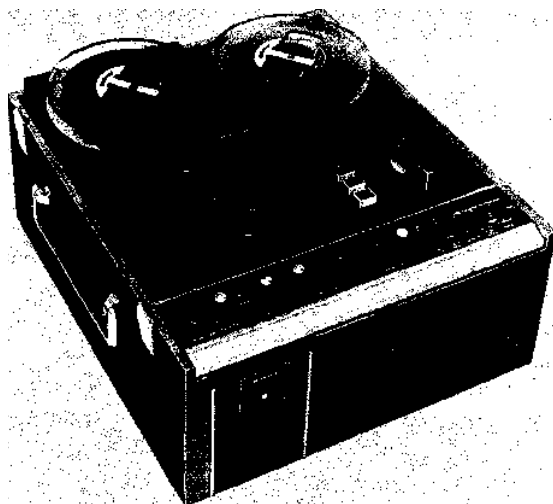


Operating instructions

Color-capable video recorder
for open coils
With inserted cut mechanism

NV-31603



H national

Please before start-up of the equipment carefully read!

TECHNICAL DETAILS

1. This equipment is Färb-und black-and-white video recorder after CCIR and EIAJ.

With this plant taken up volumes are fully exchangeable with those of all other EIAJ devices with 1/2 " - volumes Japan standard 1 (compatibly).

2. Color-capableness in series.

Accessory equipment, additional plug-in cards, converter etc. is void.

3. Tape drive with electronic servo regulation and precise electrical offers to rotary erase head niches Bildschnitt.

Program sections can be angereiht or cut into taped volumes on electronic ways. Picture distortions, black gaps and other disturbances at interfaces do not occur.

4. Halbbiidgehauer Bildschnitt.

If the cut key is pressed, those begins scene always at the beginning, which can be used again, of the next half-image.

During repeated operation of the cut key becomes the cut scene at the end of the following

Half-image terminates. The transition takes place without

Image interferences.

5. Bildschnitt without clay/tone by rotary erase head. Thereby Bildschnitt without clay/tone influence is possible.

6. Additional organization possibilities by Nachvertonung.

No picture influence by separately working clay/tone erase head.

7. For common-wave operation: 2 UHF sockets in parallel connection for sync signal entrance, a UHF buchse for sync signal exit. Thereby a NV-3160 can be operated as mainframe in the gene LOCK enterprise with other devices of same type with precise synchronization together.

8. Three switchable entrances.

By means of a switch on the front plate "camera 1", "camera 2" und "TV entrance" (monitor) can be selected between the entrances. As connection types two UHF sockets are available and a TV-Monitorstecker.

9. Switching possibility between enterprise with normal or High density volume (the latter bound is in Volume with particularly more highly magnetic flow density).

Volume	Horizontal definition S/W color	Intoxicat ion was away	EIAJ standa rd
High density volume	350 lines 260 lines	43 railways	
Normal	300 lines 230 lines	40	EIAJ No.

10. Drive by three engines.

The mechanics of the plant are operated by three engines. Thereby many advantages result, in particular the high synchronization compared with conventional devices with only one engine.

11. High image quality and more largely signal-to-noise ratio through HPF heads.

In addition HPF™ solenoid actuators offer a high abrasion resistance and thus long a life span.

12. A compensation circuit adjusts brief dropouts and suppresses the noise developing thereby. Therefore also stable picture with any coating holes in the volume.

13. Slow motion and view of frame.

Both is possible on depressing the key, whereby the slow motion speed can be regulated additionally by button turn.

14. Tape strain and Trackingregelung with again gift-operated adjustable.

Here a measuring instrument for the Trackingpegel supports the optimal attitude.

15. Jack headset-phone on the front plate offers hearing possibility with Aufnahme-und rendition enterprise.

16. By a precision guidance of the head drum the taken up volumes with all homogeneous national plants are compatible.

The taken up normal volumes can be transferred on every other video recorder for open volumes played as well as into magazines to the rendition on EIAJ 1/2 " - video cassette recorders.

17. Circuit wholly solid state.

Since for electronics only semiconductor-equipped plates are used, the plant is durably, compact, easy and has a low current consumption.

18. Maintenance more simply made.

The NV-3160 is developed in module technology plug-in. Customer service is simple and fast therefore.

19. The recording level indicator shows the Videopegei also with rendition or line stoppage on. That is particularly helpful for the Bildschnitt.

volume		railways	
--------	--	----------	--

WITH THE ENTERPRISE PARTICULARLY TOO

1. The rotary video heads as well as the band controls require some attention. Dirty band controls impair the image quality. As in the paragraph "maintenance work" described more near, the solenoid actuators in distances must be cleaned.
2. High humidity can affect the quality of the admission likewise negatively. The plant should be set up therefore in and dust free area normalkept at a moderate temperature and a dry.
3. Magnetic articles please from solenoid actuators and video tape recording keep away!
4. Only use volumes with clean surface. Dirt and dust deposits on magnetic tapes reduce the image quality.
5. When presenting and removing the volumes power switches on "out".

WITH LONGER REST BREAKS TO BEACIATTENTION

If equipment and volumes should remain unused once longer time, then you consider please the following references:

Video recorder

1. In extremely hot or cold areas do not store.
2. In the free one do not store.
3. Mode selector on "stop".
4. Dust cover put on.
5. Volume remove and separately store.

Video tape recording

1. And do these in one store the volume in the box plastic bags which can be locked.
2. Avoid as stock pile areas, which are particularly, hot, damp or cold.
3. Magnetic influences from the volumes keep away.

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FOR YOUR SECURITY

1. THE EQUIPMENT MUST BE GROUNDED.

In order to secure contact protection, the provided three-core main must be attached to a plug socket with earthing contact. When using extension cords this regulation must be used in a general manner. Wrong or wrongly attached extension cords are one of the main causes of accident. The equipment works also with not attached grounded protective grounding! If you are not sure the fact that the earthing contact is through-put contacts you please an electrician.

2. HOUSING NOT REMOVING.

For the avoidance of current impacts nonspecialists are not to remove the housing of the equipment. In the equipment inside are no parts, which can be stopped or waited by laymen. Call the customer service when disturbances!

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21 VIDEO CONTROLLING AND LEVEL ANNOUNCEMENT

This Instrument indicates not only the photograph level, but also the video input level with all other modes of operation, as long as at all any video signal is present.

22 NF-AUFNAHMEPEGEL

This instrument is the recording level indicator for the Tonteil.

23 AUTOMATIC CONTROLLER FOR NF-AUFNAHMEPEGEL

The NF-rejection regulates. Attitude is optimal, if recording level indicator **22** itself in the red Range finds.

24 TRACKING REGULATION

Attitude of this automatic controller eliminates the noise in the picture, which can develop when playing a volume of another video recorder. During the rendition of volumes, which were taken up on the same equipment, this automatic controller can be brought into the position FIXED.

25 ANNOUNCEMENT OF THE TRACKING LEVEL

The instrument helps with the correct Tracking attitude. (See page 12)

26 SPEED CONTROL FOR SLOW MOTION

The slow motion speed of 1/4 of the nominal speed to zero regulates. See slow motion levers **19**.

27 KOPFHÖRERANSCHLUSS

For the connection headphone. Also to the monitor enterprise with the admission.

28 POWER SWITCH **29 PILOT LAMP**

Shines with switched on net.

30 TAPE STRAIN LEVER

With it an easy distortion can be corrected to the right or left in the upper picture part during rendition.

(BACK)

31 NF PROGRAM EXIT

Here an external NF-amplifier is attached.

32 NF-ENTRANCE

External NF-sources, those for the admission to be needed (radio, Tuner, rear-Fi-plant, tape recorder) are attached here.

If a plug is in this connection, must in the microphone socket of plugs present

41 if an external NF-source will be removed attached, then their audio gain control on a minimum must be, since otherwise the NF-entrance of the video recorder is overridden.

33 PLUG FOR TV-MONITOR

8 poliger plug-in connection for a television monitor receiver. The receiver must possess a homogeneous socket. A special 8-poliges cable connection is necessary.

34 VIDEO SIGNAL EXIT

To this plug-in connection a television monitor receiver is switched to the rendition.

35 CAMERA ENTRANCES

Here two television cameras can be attached at the same time. The desired camera is determined with **17** the Programmwähler.

36 MAINS VOLTAGE VOTER

By means of a small screwdriver to the local mains voltage one adjusts. Stages: 200V, 220V, 240V.

37 ENGINE READINESS SWITCH

The label "STANDBY" explains already, for which it goes: The temporal delay in turning the video rotation head on to the engine already running is small and thus the synchronization faster effective. For starting the driving motor during stop position of the mode selector **14** the automatic-threading button is pressed and the STANDBY switch is placed on "".

38 i of ENTRANCES FOR VERTICAL SYNCHRONIZATION (parallel)

Here negative Vertikal—Synchron impulses are entered. (See page 13)

39 EXIT FOR VERTICAL DEFLECTING VOLTAGE

Negative impulses for Vertikal—Synchronization supply. (See page 13)

40 FARBSPERRE

Attitude by the customer service!

41 MICROPHONE ENTRANCE

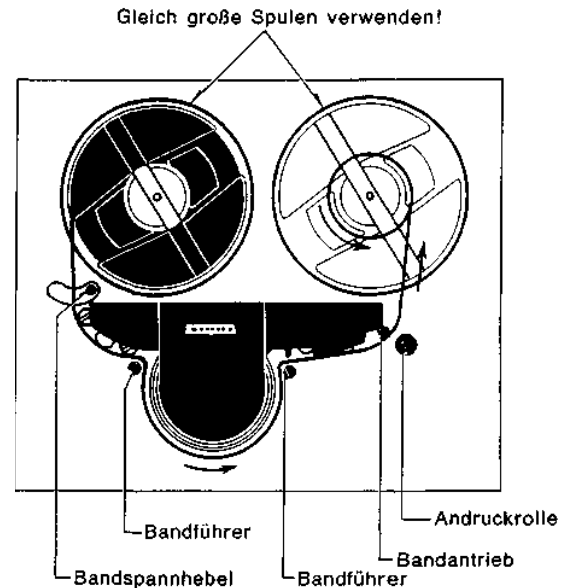
For the connection of a microphone. When using this entrance, plugs must be removed from the NF-entrance **32**i.

42 MAINS VOLTAGE ENTRANCE

INSERTING THE VOLUME

1. Before inserting the volume the video recorder must be switched off. Rotary video heads are damaged, if they still run with the volume inserting.
2. Supply reel on the left tape reel and leerspule on the right.
3. Now approx. 50^60 cm volume complete, with both hands hold and contrive, as shown in fig. 3.
4. This video recorder works in the full trace procedure. Rewind therefore as soon as the volume went through once.

Fig. 3



IMPORTANTLY!

- the video tape recording must always be on the left side of the ribbon chip arm, otherwise admission and rendition become very instable.
- the diameters of supply and Leerspule should be always equally large. Otherwise will the brake applications uneven and after switching the modes of operation ⑭ can the volume be destroyed.

OPERATION OF THE MODE SELECTOR

(STOP)

In this position the volume stands still. If an admission is terminated, then the mode selector is ¹⁴to be always brought into this position. (Fig. 4) around volume and rotary video heads to protect, der head driving motor in the stop position continues, even if the engine readiness switch ²⁶ is still in position "on" (ON). This does not apply, if thereby the automatic-threading button ¹⁸ is pressed.

(REW)

In this position the volume is fast rewind (fig. 5). The reel length counter ⁹ serves for regaining certain places. If the volume is completely rewound, then the drive continues automatically: the switch is to be positioned then STOP.

(FF)

In this position the fast advance is switched on.

(BREAK)

To the frame rendition is the mode selector ¹⁴ in position BREAK to bring (fig. 7). Note: If a "disturbance" should show up in the shown frame, then the Leerspule must ⁵ be turned a little by hand, until it disappears.

If the mode selector is turned during the admission on BREAK, the tape drive stops, but the equipment is further in acceptance. One uses this procedure, if certain things are not to be taken up also on the volume. If the switch on PLAY (rendition) is turned, the equipment runs. **(SLOW)** If slow motion is wished, then is to be proceeded as follows:

1. Mode selector ¹⁴ in position PLAY.
2. Slow motion levers in direction of arrow up to engaging press. (Fig. 8)
3. Desired slow motion speed at the adjusting knob ²⁹ in-regulate. (Fig. 9)
4. Transition to normal rendition speed: Slow motion levers ¹³ again in direction of arrow press, it release then and return to its starting position.
5. Set mode selectors to the volume stop to STOP.

AS AVOIDS MAN DAMAGES OF THE VIDEO TAPE RECORDING

- mode selectors too fast and without clear tracing over the individual functions do not move ¹⁴
- after each shifting process one moment keep, otherwise the volume could get tangled, be bent, torn or stretched.

Fig. 4



Fig. 5

Fig. 6



Fig. 7

Fig. 8

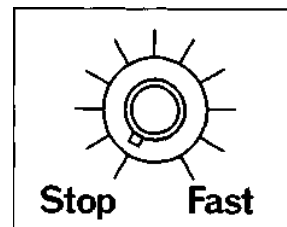
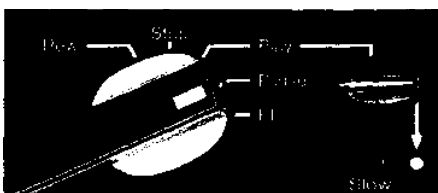
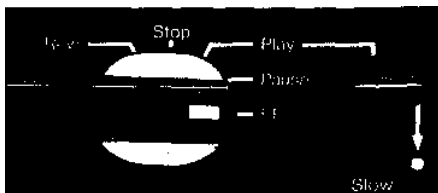
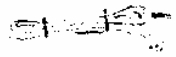


Fig. 9

PHOTOGRAPHS OF A TV HOME RECEIVER OR A MONITOR

Main	
NV-3160-E	
NV-3160-B	
NV-3160-A	

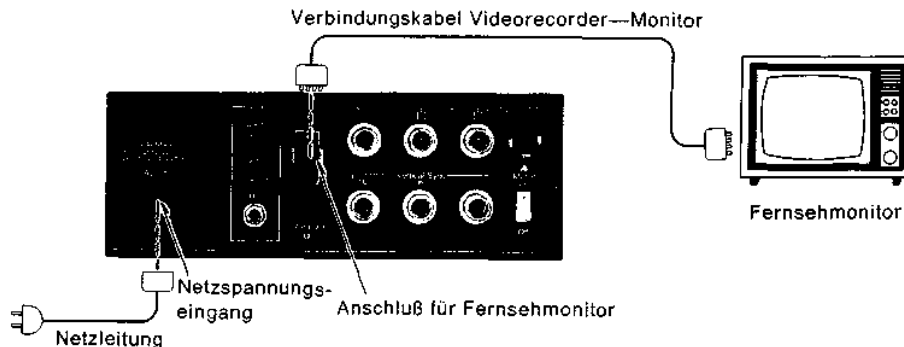


Fig. 11

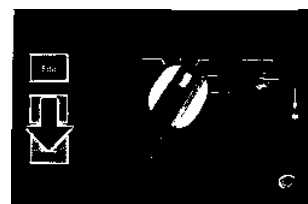
Fig. 12

- Connections in accordance with Abb. 10 above circuit diagram herstellen.
- Video recorders switch on. The pilot lamp²⁹ shines.
- Program switches¹⁷ in position TV push.
- Adjust black-and-white/color change over switches in a general manner.
- Change over switches of kind of volume to the used kind of volume set.
- Television monitor switch on and as follows adjust:

- Change over switches TV/recorder in position TV.
- Channel selectors on desired VHF or UHF program place.
- Micro-adjustment serve.
- Switch "AFT" on " ".
- Change over switches TV/recorder in position VTR.

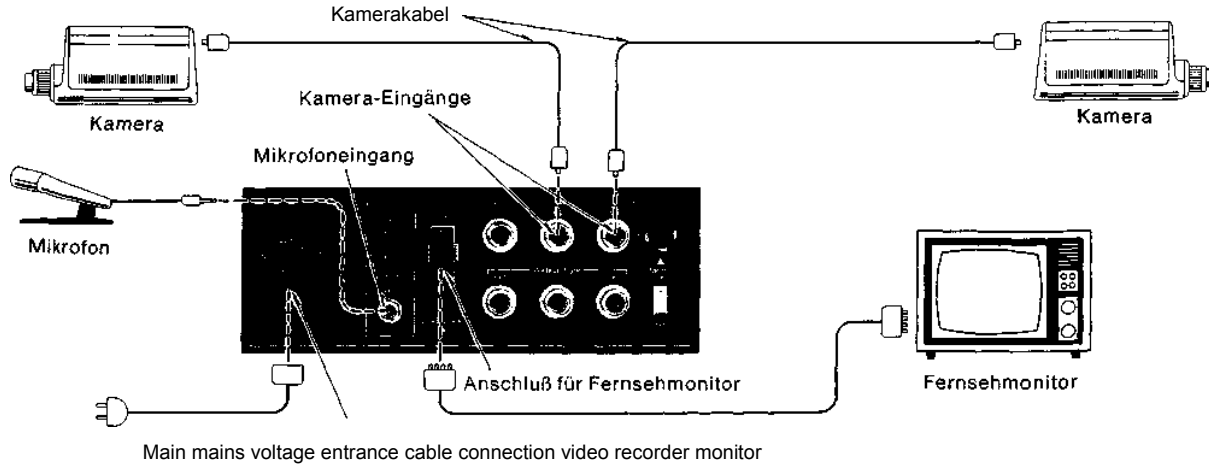
On the screen now a background noise appears.

- Press⁸ automatic-threading button (fig. 12). The appropriate indicator light¹¹ shines now.
- The video photograph level is in-regulated in such a manner with²⁰ the appropriate automatic controller that the needle of the recording level indicator i²¹ is in position 0 VU.
- The NF-Aufnahmepegel is in-regulated in such a manner by means of²³ the appropriate automatic controller that the needle of the recording level indicator²² is with the volume points in position 0 VU.
- Automatic-threading button⁸ press and to the mode selectors¹⁴ in position rendition (PLAY) bring. The volume starts now and the picture and clay/tone admission begins.
- Switch off by the stop position mode selector.



PHOTOGRAPHS OF A TELEVISION CAMERA

Fig. 13

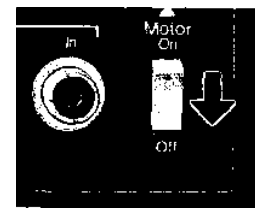


1. Manufacture first the connections after above circuit diagram.
2. Video recorders switch on. The pilot lamp shines up.
3. Program switch¹⁷ on camera 1 or camera 2.
4. Television monitor switch on and change over switches TV/VTR at the monitor in position VTR bring.
5. If clay/tone photographs are to be made at the same time, a microphone must be attached to the appropriate⁴⁰ entrance and/or a tape recorder or a record player to the NF-entrance³².
6. Change over switch black-and-white color¹⁹ into the desired position bring.
7. According to change over switch of kind of volume the used magnetic tape adjust¹⁸ all following steps are in a general manner enumerated the same as already on page 9.

Fig. 14

ENGINE READINESS SWITCH

1. By this switch one can head drive engine¹⁴ also start if the modes of operation switch¹⁴ on STOP stands. The advantage is with faster tape start if necessary: The image quality with the approach is so better.
2. For the start of the head driving motor this switch³⁵ operate and the automatic-threading button¹⁵ press.



RENDITION OVER A TELEVISION MONITOR

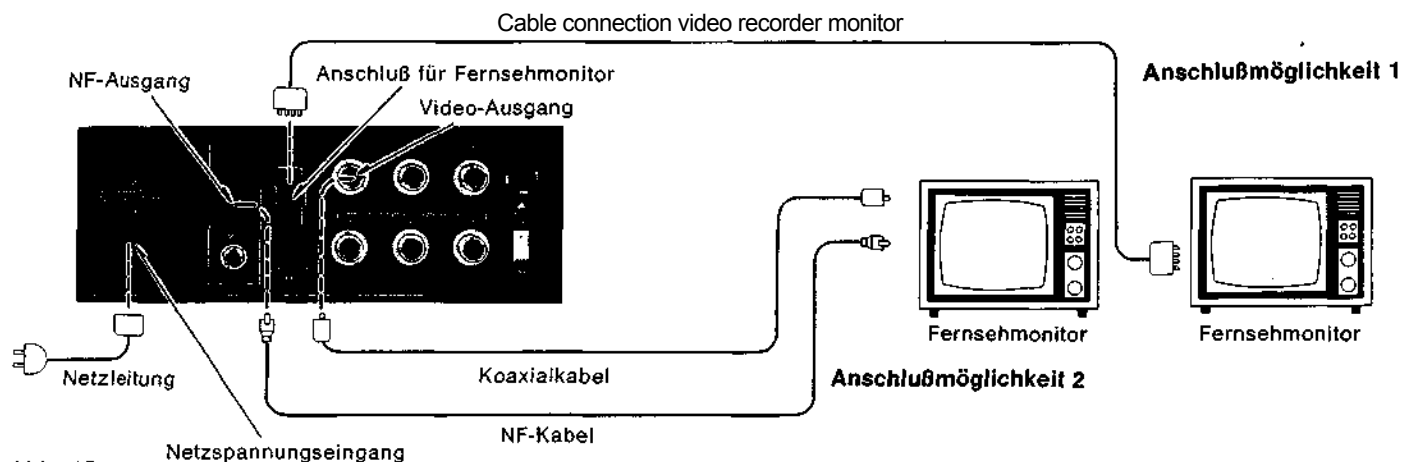


Abb. 15

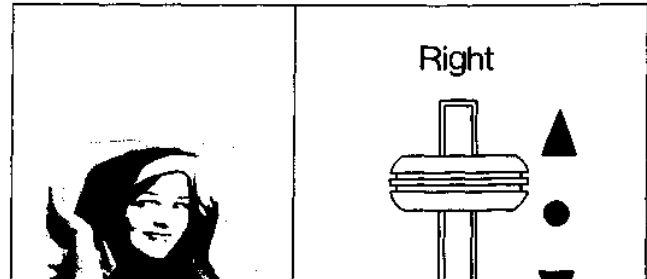
Fig. 16

1. Connections to circuit diagram 1 or 2 manufacture. If both connection types are used at the same time, the program can be shown over two monitor receivers.
2. Change over switch TV-VTR at the monitor VTR (video recorder) position.
3. Voter of kind of synchronous¹⁵ in position "Internal/LINE"
4. Change over switch Schwarzwiess color into the desired position.
5. Change over switch of kind of volume on the used tape quality adjusting¹⁸
6. Volume completely rewind and mode selectors¹⁴ in position "rendition" (PLAY) bring.
7. Stop if necessary, image quality by means of ²⁴Trackingregler or ³⁰tape strain levers optimally.
8. Picture and clay/tone at the monitor optimally stop.
9. The rendition is to be terminated, modes of operation switches¹⁴ to STOP set.



(TAPE STRAIN REGULATION)

Are it shown in the picture upper section distortion in horizontal direction as in fig. 17, then the tape strain lever is to be served. With distortions the lever turned around to the right (RIGHT) to move to the left and.



(TRACKINGREGELUNG)

1. Place to this Relger on FIXED, if you play a volume taken up on the same equipment.
2. If you play against it on another equipment taken up volume and if image interferences point themselves as to fig. 19, then is the Trackingregler  to in-regulate on the maximum at the appropriate  announcement.

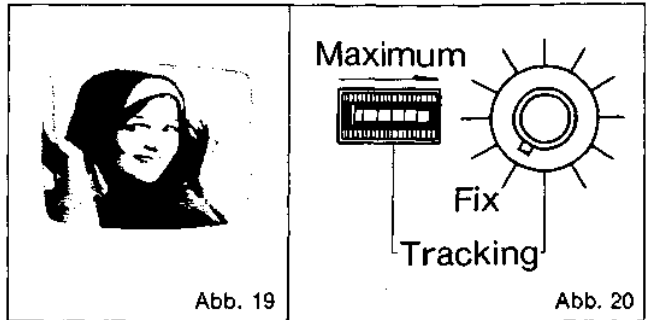


Abb. 19

Abb. 20

CHOICE OF THE KIND OF SYNCHRONIZATION

By the voter or kind of synchronization ⁽⁴⁵⁾ ~ the possibility exists of synchronizing the speeds of mehrer video recorders in such a manner that during the composition of a program perfect electronic Bildschnitte develop.

On the back of the video recorder two plug entrances for the vertical synchronization ("vertically Sync in") are, which from external sources arrive, as well as a socket ("Sync Out") for the synchronous output signal, with which other devices are fed.

(For the "normal" Bildschnitt, i.e. using only one source of program, a synchronization is not necessary. As soon as however several video recorders and cameras co-operate, they are essential.) at the synchronous exit ("Vertical Sync Out") stand continuously net-synchronous impulses of neg. 8 Vss for the order. Homogeneous negative impulses of other video recorders, synchronous generators etc. can be attached to the synchronous entrance ("vertically Sync in").

(Are there the plug-in connections for the synchronous entrances joined in parallel, can them also for the forwarding of the signal to other devices serve.)

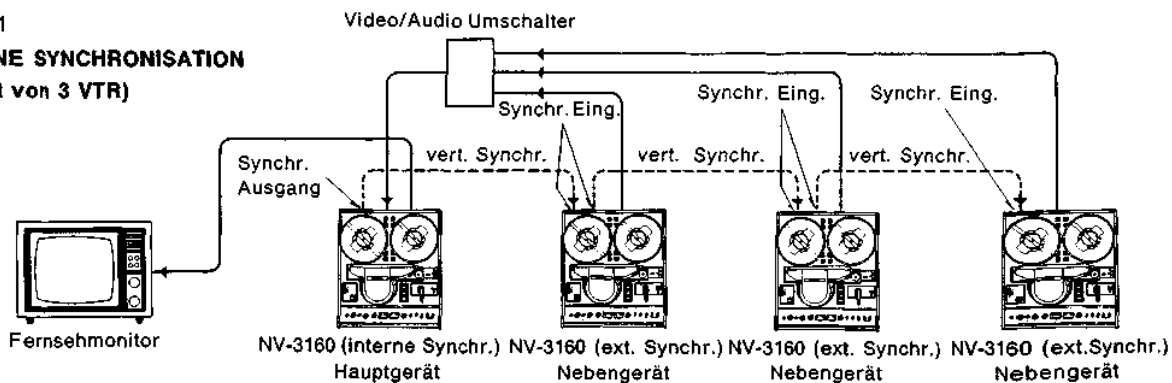
If the voter of kind of synchronous is **(15)** in position "eXternal", the synchronization is made by external deflection impulses, which must be attached to the socket "vertically Sync in". In position "Internal" takes place the synchronization from the net.

In position “normal” takes place the synchronization via the arriving video signal.

Notice however: 1. If “normal” video signal does not break in in position, then the synchronization takes place automatically from the net. 2. If “eXternal” external Synchronsiganl does not arrive at position, then the synchronization takes place automatically from the arriving video signal. Even if no video signal breaks in, then the synchronization takes place via the net. Application of the operation see to fig. 21, 22, 23, and 24.

(SAMPLE APPLICATIONS)

Abb. 21
INTERNE SYNCHRONISATION
(Schnitt von 3 VTR)



The illustrations 21 gives sample applications for this. One sees one mainframe and three Nebengeräte, from which program sections are overacted on the mainframe. From the socket "vertically Sync Out" of the mainframe leads a line to the socket "vertically Sync. In" the first Nebengerätes. The sockets "vertically Sync. In" first and all further Nebengeräte is interconnected. (Like already said, that serves in each case second entrance for the vertical sync signal at each equipment, which is joined in parallel first, only to the by and continuation of the deflecting voltage.) now that becomes

Voter of kind of synchronous of the mainframe posed on "Internal" and those the Nebengeräte on "eXternal". Thereby all four video recorders work perfectly synchronously.

The broken lines in fig. 21 represent the sync signal and the taken off lines the video signal.

Abb. 22

EXTERNE SYNCHRONISATION
(Schnitt von 1 kamera
und 2 Nebengeräten)

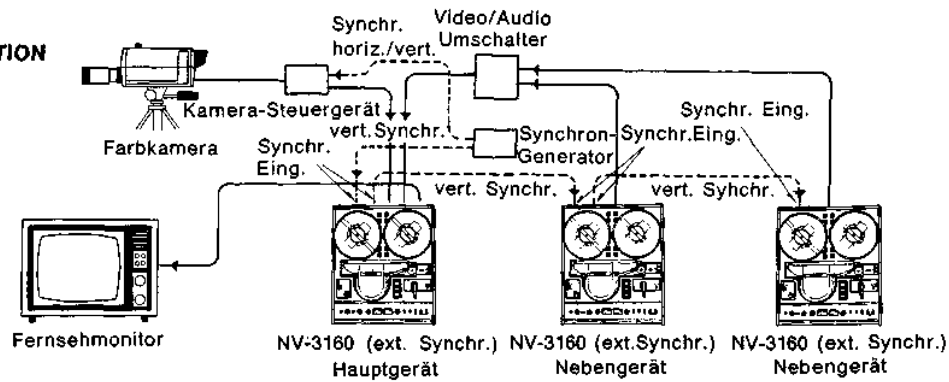


Fig. 22 shows a combination of one video recorder as mainframe, two video recorders as Nebengeräte, a camera and a synchronous generator. Contrary to the previous example, where the synchronization takes place via the mains voltage of the mainframe, all voters of kind of synchronous, thus both at the main and at the Nebengeräten, must stand here on "eXternal", because the deflection impulses come for all of the external synchronous generator. Also the camera is synchronized and the program work is just as simple as in in this way the first example.

The broken lines in fig. 22 represent the sync signal and the taken off lines the video signal.

The illustrations 23 and 24 show still different one, possible equipment compositions.

Abb. 23

EXTERNE SYNCHRONISATION
(Schnitt von 1 kamera
und 1 Nebengerät)

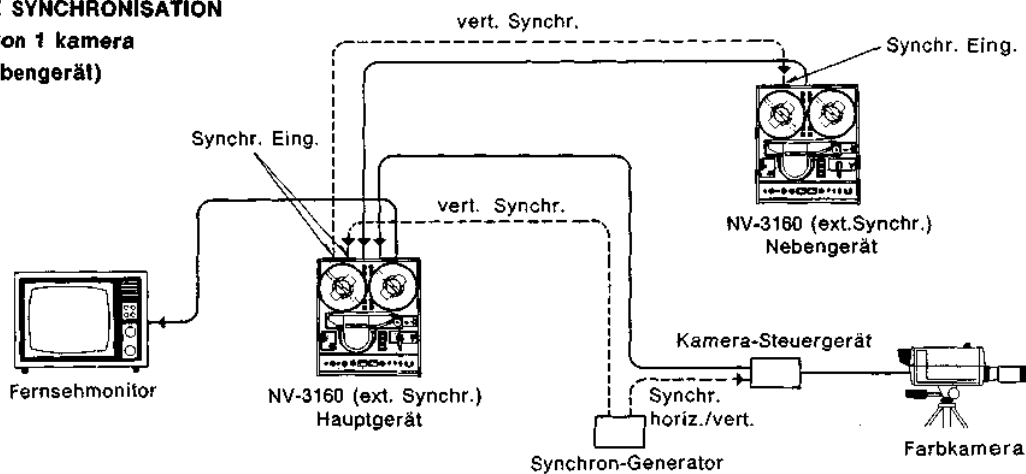
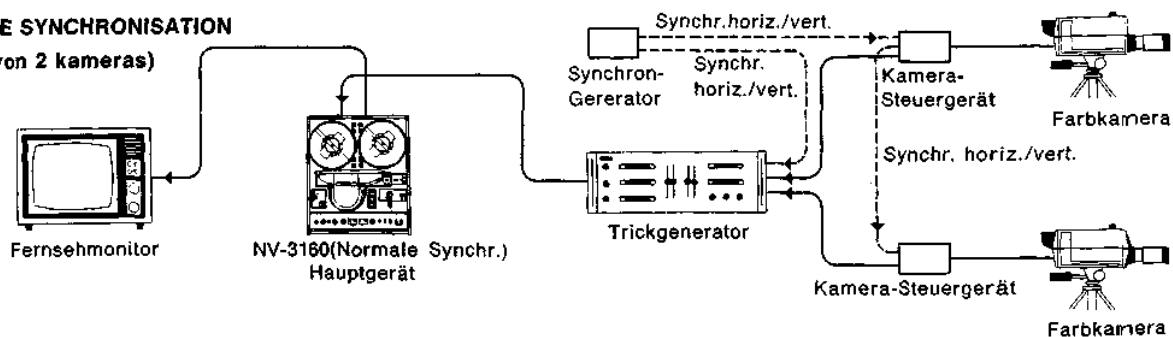


Abb. 24

NORMALE SYNCHRONISATION
(Schnitt von 2 kameras)



ELECTRONIC BILDSCHNITT

With this term it concerns the activity, which is exercised in a professional Studio at the gumption and mixer: "Raw photographs", which from or also several sources can originate, to a program "to assemble". It concerns also to cut new picture and clay/tone fragments into already existing program volumes without on the screen visible interfaces becomes noticeable.

In order to be able to notice these tasks as perfectly as possible, the video recorder NV-3160 is equipped with the following technical characteristics:

1. From a servo-regulated tape drive with more highly synchronization and constant volume speed a picture of more highly quality and a precise Bildschnitt result.
2. Bildschnitte of short duration are possible, since a rotary erase head leads the video head.
3. This rotary erase head permits transitionless cutting, i.e. the added program section begins in each case in the vertical blackout pulse gap.
4. Since in and exit hubs for the field sweep are present, several video recorders and cameras can be hooked up. (S.P. 13, 17.)
5. Since two separate camera entrances are present, the transition of a camera to the next is easier.

Electronic Bildschnitt

The electronic Bildschnitt is possible in two different kind: by Anreihen and using. The video recorder NV-3160 permits in addition using only on the Videospur, without those is clay-purely affected.

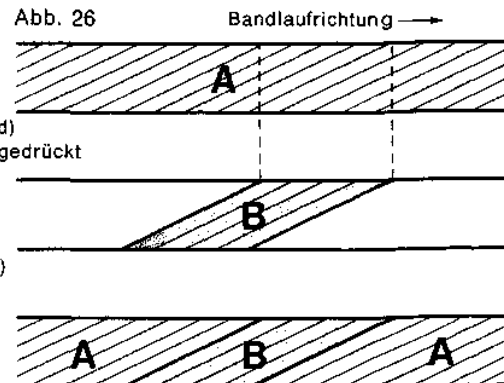
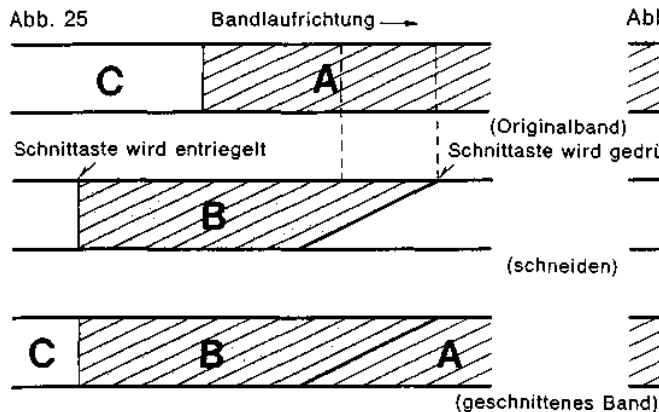
A. Cuts by Anreihen

With this method become program sections, which transfer magnetic tape of the mainframe from different sources (video recorders, cameras) to come to be able, to that successively in each case, so that a complete program closed in itself develops. Fig. 25 explains, how takes place: Accept, part of "A" are taken up program section, part of "C" an already are unplayed or deleted. This the new program, "C", is overacted B", which begins exactly, where "A" stops and begins "C". The result is a new Schnittfolge A, B, C, whereby the latter part consists of further unplayed volume.

b. Cuts by using

With this method a program section of certain length is inserted somewhere into a volume already taped. Fig. 26 points, like the parts of "A" and "B" present at separate volumes to the new program A, B, A join themselves.

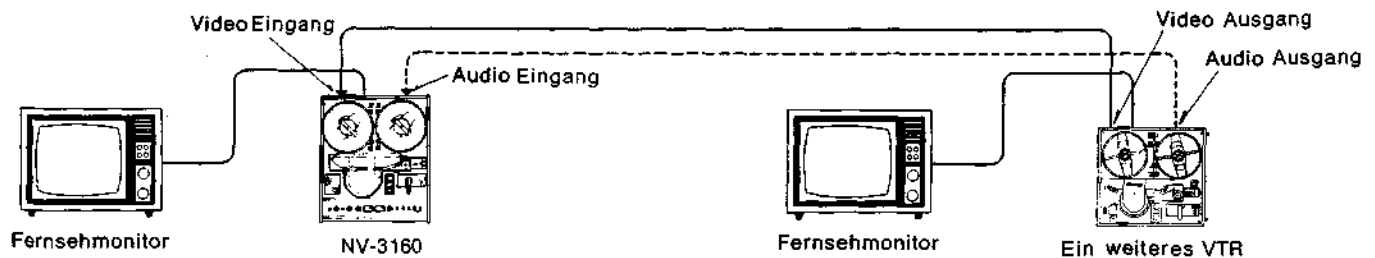
- it is possible to cut only new pictures if to remain clay-purely untouched is.



Notes:

- At the kind of cut "Anreihen" works in the first seconds after the tape start only the rotary erase head, only then goes the full trace erase head into action. Thereby at the interface a part of the before taken up program (approx. 2 seconds of duration) is deleted.
- With the kind of cut "using" is used only the rotary erase head. Interfaces are free therefore at the beginning and at the end from disturbances.

Abb. 27



1. Volume cut by overacting from one other video recorder ACCORDING TO (A) the ANREIHMETHODE (see fig. 25)

1. Voter of kind of cut ^⑩ in position ASSEMBLE.
2. Voter of kind of synchronous in normal position ^⑮
3. Program type voter depending upon requirements on CAMERA 1 or CAMERA 2.
4. Accordingly set the change over switch of black-and-white depending upon kind of the program ^⑲ to color.
5. The volume on the NV-3160 under observation of the monitor picture rewind. Volume stop, if program section appears (A) in fig. 25 on the screen.
6. Now play the volume on another video recorder. Optimize as required the image quality with the Trackingregler.
7. Automatic-threading button ^⑧ of the NV-3160 press, while the volume on the secondary equipment plays. Remains ^⑭ for the mode selector thereby on STOP. So you can in-regulate picture and audio levels at the mainframe on optimal rejection.
8. The picture content for the interfaces (A and B according to fig. 25) must be determined by observing the monitor pictures or the reel length speedometers accurately.
9. After so the program sections (A) and (B) were determined, both volumes must be rewound some seconds long, i.e. around one limited meter each before beginning of the desired interface. After starting the equipment the tape drive up to reaching this place stabilized.
10. Now play both volumes at the same time. The plant is now ready for the Bildschnitt. As soon as the picture of the program section appears A on the monitor of the mainframe, those must be pressed ^⑥ cut branch, so that tape contents can be overacted from equipment on the other one.

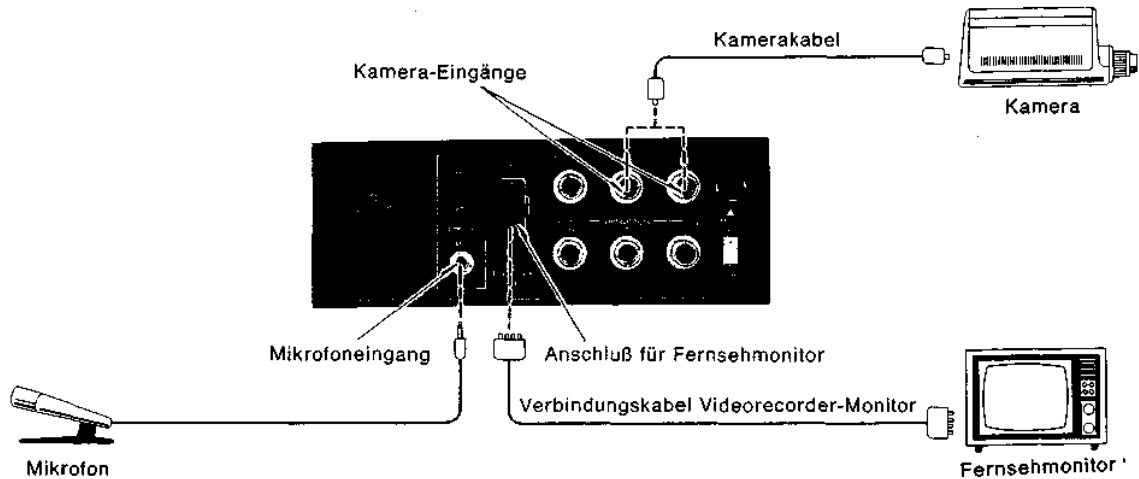
11. Cut stop:

- (1) Cut branch ^⑥ through low pressure unlock. The Schnittvorgang ends with it and the equipment switches to normal playing.
- (2) Alternatively one can set also ^⑭ to the mode selectors to STOP, whereby the equipment is stopped and so that also the cut ends.

(B) VOLUME CUT BY USING (picture/clay/tone or clay/tone alone)

1. First the voter of kind of cut ^⑩ on AUDIO/VIDEO, if picture and clay/tone to be cut at the same time to be supposed and/or on VIDEO ONLY, if only the picture is to be cut.
2. Then you follow the operating steps 2 to 8 of the previous paragraph over cuts after the Anreihverfahren.
3. If the program parts (A) and (B) are together-cut according to fig. 26, those is to be pressed ^⑥ cut branch i for unblocking again. The Schnittvorgang ends then and the monitor switches itself on into the normal rendition.
4. Please, with that mode selectors do not try ^⑭ to terminate the Schnittvorgang, by it it up STOP place. The end of the insertion would not then be distorted and it a clean transition to the section (A) would arise.

Fig. 28



**2. Volume cut with the picture of a television camera
ACCORDING TO (A) the ANREIHMETHODE**

1. Voter of kind of cut¹⁰ in position ASSEMBLE.
2. Program entry voters¹⁷ on CAMERA 1 or CAMERA 2 place, depending on, which is used the entrances.
3. Equipment to rendition switch and monitor picture observe. Volume immediately stop, if the section which can be cut appears (A).
4. Automatic-threading button⁸ press. While the mode selector remains in position STOP, picture and audio levels are in-regulated now on optimal rejection.
5. With the help of the monitor picture or the reel length speedometer the desired interface of the program section (A) is determined.
6. After the interface (B) was determined according to fig. 25, the volume is long rewound some seconds, until it stands for approx. 1 meter before the intended interface. Thus it is guaranteed that the tape drive up to reaching this place stabilized.
7. The equipment to rendition switch and cut branch⁶ press, as soon as the picture of the program section is to be seen (A) after fig. 25 to the television camera on the monitor.
8. As required with beginning of cut into the microphone speak.
9. Cut stop:

- (1) Cut branch⁶ for unblocking press. The Schnittvorgang ends and the monitor returns to the normal rendition.
- (2) The cut can be also terminated, if to STOP¹⁴ one sets to the mode selector.

(B) ACCORDING TO THE USING METHOD

1. Voters of kind of cut¹⁰ on AUDIO/VIDEO place, if picture and clay/tone are to be cut at the same time, and/or on VIDEO ONLY, if only the picture content is to be worked on.
2. Obey then only the operating steps 2 to 10 of the previous paragraph over the Anreihverfahren.
3. For the completion of the cut cut branch⁶ for unblocking press. The monitor shifts itself back then into the normal rendition.
4. The Schnittvorgang please with the mode selector¹⁴ do not terminate, since end of the program section (B) then distorted and the connector does not become clean.

OPERATING STEPS

Desired mode of operation	Mode selector ⑭	Change over switch S/W—Farbe ⑮	Change over switch of kind of volume ⑯	Program entry voter ⑰	Voter of kind of cut ⑱	Voter of kind of synchronous ㉔	Connections on the back
Usual admission. Automatic-threading button pressed	press key REC on PLAY, thereby	depending upon kind of the program	adjust to used volume places	on TV or	arbitrary	arbitrary	Monitor at socket TV MONITOR
				Camera 1 or 2	arbitrary	arbitrary	CAMERA 1 or 2 attach
Rendition	in position PLAY	depending upon kind of the program	adjust to used volume places	place on arbitrary not occupied entrance	arbitrary	up INTERNAL/LINE	no connection occupies
Nachvertonen	press key audio on PLAY, then out	depending upon kind of the program	adjust to used volume places	on CAMERA 1 or 2	arbitrary	up INTERNAL/LINE	Source of clay/tone at MIC INPUTS or AUDIO LINE INPUT
Cut by Anreihen picture and clay/tone	press key EDIT on PLAY, then	depending upon kind of the program	adjust to used volume places	on CAMERA 1 or 2	on ASSEMBLE	on NORMAL	Entrances VIDEO & AUDIO with recorder/camera and microphone occupy
Cut by using fig. u, clay/tone	press key EDIT on PLAY, then	depending upon kind of the program	adjust to used volume places	on CAMERA 1 or 2	on INSERTS AUDIO/VIDEO	on NORMAL	Entrances VIDEO & AUDIO with recorder/camera and microphone occupy
Cut by using only picture	press key EDIT on PLAY, then	depending upon kind of the program	adjust to used volume places	on CAMERA 1 or 2	up INSERT VIDEO	on NORMAL	Entrance VIDEO INPUT with camera or recorder occupy
Several video recorders	press key EDIT on PLAY, then	depending upon kind of the program	adjust to used volume places	on CAMERA 1 or 2		up INTERNAL/LINE	Line of socket SYNC. OUT to synchronous entrances of the other recorders
Video recorder or cameras ext on. Synchronous generator	press key EDIT on PLAY, then	depending upon kind of the program	adjust to used volume places	as required	as required	on eXternal	Vertical deflecting voltage at socket SYNC IN

Special notes for cutting.

- for usual cut work, which is called if several devices to be hooked up does not have, the voter of kind of synchronous always stands on "normal". Exact referring to when this change over switch on "External" or "Internal/LINE" to stand must, is on page 13.
- it is technically quite possible to together-cut coloring and black-and-white transmissions in arbitrary order. For the normal case we do not recommend this however. If it cannot be gone around, then you consider please these rules:

1. When cutting:

The change over switch for the modes of operation black-and-white or color must be already switched before the actual cut to the kind of the source of program which can be processed.

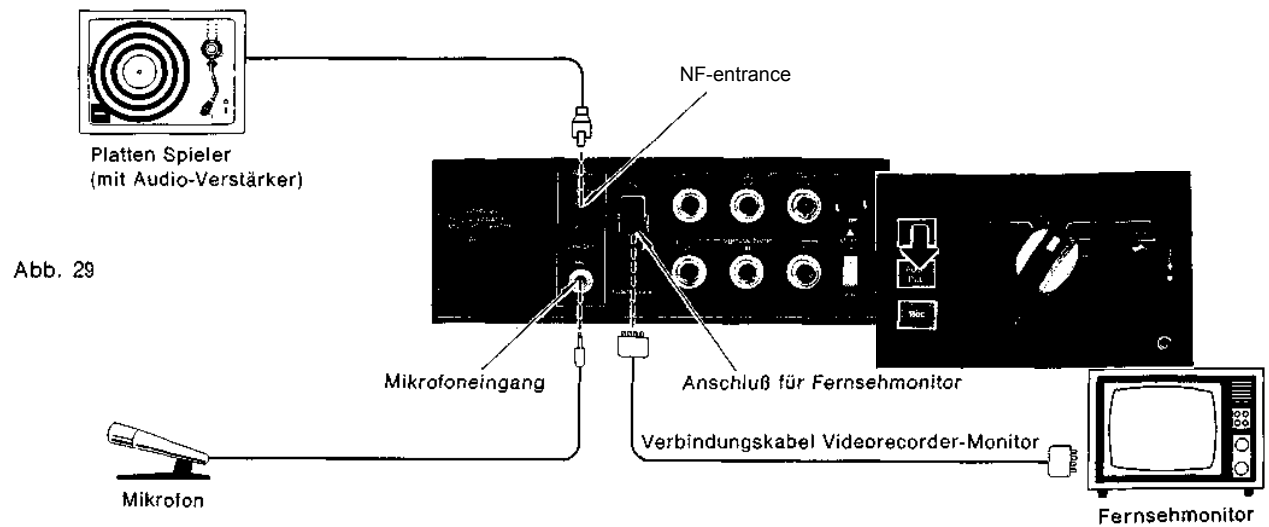
2. During the rendition:

If the volume consists of a mixture of black-and-white and colored program sections, then must with this video recorder, as also with all different without automatic color change-over, which both possible modes of operation are in by hand in each case and/or are switched, if the tape location concerned appears.

3. These references apply to both in this Brochure described kinds of cut.

NACHVERTONUNG

By Nachvertonung one understands the additional treatment that clay-purely of a volume to overact in order to add either to a picture ending already taken up the clay/tone, or a certain clay/tone place with new clay/tone.



1. Clay/ tone voltage supply in accordance with fig. 29 attach.
2. Program entry switches ⑪ CAMERA 1 position.
3. NF-Aufnahmepegel with the appropriate automatic controller ⑫ in-regulate.
4. Volume play and, on observation of the television monitor, at which the Nachvertonungstaste presses desired ⑬ place _.
5. In order to terminate the Nachvertonung, is to be set to the mode selector to STOP.

Fig. 30

STICKING VOLUMES

Even if a video magnetic tape is very durable, then it can nevertheless once break or tear. This is simple to repair.

1. The two clever ends overlapping up each other-put.
A cut after fig. 1 make.
2. Both ends next to each other on a flat under situation put. Volume inside (side roughens) after ■ down.
3. Ends in accordance with fig. 3 and 4 with tape zusamenkleben.

NOTE!

Use please only tape, which is certified for magnetic tapes. Usual cellulose volume damages the video heads.

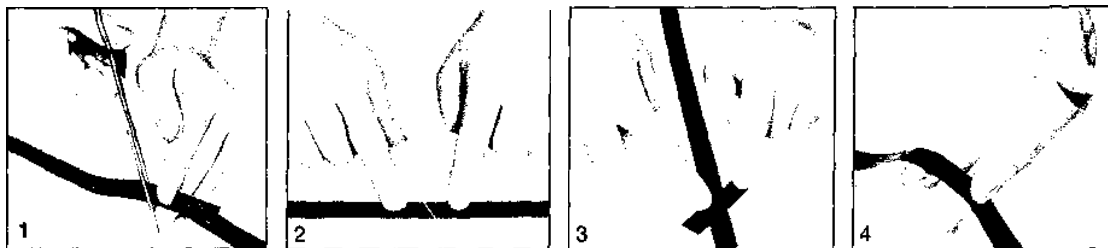


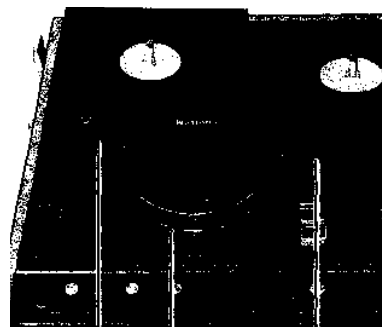
Fig. 31

MAINTENANCE WORK

HEADS CLEANING

The erase heads and the NF/control actuators, but also the video head as well as the rotary erase head do not only have to be cleaned now and then. Dirty heads reduce the image quality and can also the enterprise of the equipment impair. Use for the cleaning of the heads the attached cleaning agent or every other commercial cleaner on Freonbasis, which is laid on with a soft rag.

Video head and rotary erase head



Fully trace erase head

Audio/control actuator

Fig. 32

STANDARD ACCESSORIES

Main	1 (only for NV-3160-E and NV-3160-B)
7 " — Leerspule	1
Cable connection video recorder monitor	1
Tape	1
Head cleaning agent	1

TECHNICAL DATA

Mains voltage:	200/220/240V, 50Hz
Current consumption:	approx. 85 W
Video recording technology:	2 rotation heads, CCIR/PAL 625 lines, 5C i bpses
Volume speed:	Two-sideband of FM
Spulendurchmesser:	16.322 cm/seconds.
Range:	7 " (18cm)
Solenoid actuators:	0.5 " (12.7 mm)
	Video: 2 rotary video heads
	NF/control track: 1 stationary head
Horizontal definition:	Deletion i: 1 rotary erase head
(Test pattern)	1 stationary erase head f. Nachvertonung
	1 stationary full trace erase head
Frequency	S/W: 350 lines (High density volume)
	300 lines (normal volume)
	Color: 260 lines (High density volume)
	230 lines (normal volume)
response: Signal-	Video: 4 MHz (High density volume)
	3 MHz (normal volume)
to-noise ratio:	NF: 50 Hz ¹² kHz ±3 railways
	Video: 43 railways (High density volume)
	40 railways (normal volume)
Input level:	NF: 42 railways
	Video: Eing. f. TV-monitor: 0.5 Vss min.
	UHF Anschl.: 0.5 Vss ² , 0 Vss
	vert. Abi.: 2 Vss neg.
Feed impedance:	NF: Eing. f. TV-monitor: — 25 railways min.
	Mikrof.: — 72 railways min.
	Universal: — 25 railways min.
Output level:	Video: Anschl. Recorder/monitor: 75 Ohm
	UHF Anschl.: 75 ohms
	vert. Abi.: 10 kOhm
	NF: Anschl. Recorder/monitor: 220 kOhm
	Microphone: 600 Ohm ²⁰ kO
	Universal: 220 kOhm
Output impedance:	Video: Anschl. Recorder/monitor: 1.0 Vss
	UHF Anschl.: 1.0 Vss
	vert. Abi.: 8 Vss neg.
	NF: Anschl. Recorder/monitor: 1.0 Vss
	NF-Universalausgang: 1.0 Vss
	Headphone exit: 25 Vrms
Operating temperature range:	Video: Anschl. Recorder/monitor: 75 ohms
Permissible humidity:	UHF connection: 75 ohms
Slow motion speed:	vert. Abi.: 75 ohms
Dimensions:	NF: Anschl. Recorder/monitor: 300 ohms
Weight:	NF-Universalausgang: 300 ohms
	Kopfhöreranschluss: 8 ohms
	+ 5°C to +40°C
	35% to 80% rel.
	approx. 0 ¹ / ₄ of the nominal speed, steplessly
	B x T x H = 435x455x290 mm
	= approx. 28 kg

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