

Identification of Film Soundtracks

Brian Pritchard 2021

[Meaning of
Symbols - Page 24](#)

[START - Page 2](#)

Film Sound

[Return to Start](#)

There are four types of film sound – optical sound - variable density and variable area, digital sound and magnetic sound. There are, however, numerous versions of all types produced by different inventors, mainly to circumvent patents but also to improve sound quality.

Variable Area

Unilateral tracks have the modulations on one side only;

Bilateral have modulations on both sides.

Twin tracks have two lines of modulations.

Multi hump tracks have multiple lines of modulation

Stereo analogue tracks have two lines of modulation that should be slightly different. It is important not to confuse stereo tracks with push-pull tracks where the two lines of modulation are also different.

Variable Density

Instead of the area of the track varying the volume the density of the track varies the volume.

Colour print tracks until recently were a dark blue colour, they became magenta which again have been replaced by cyan tracks. Technicolor imbibition prints have a silver track, they appear grey. This is because the stock used for imbibition printing was a black and white stock.

[Possible incorrect identification - Page 15](#)

Check for problems

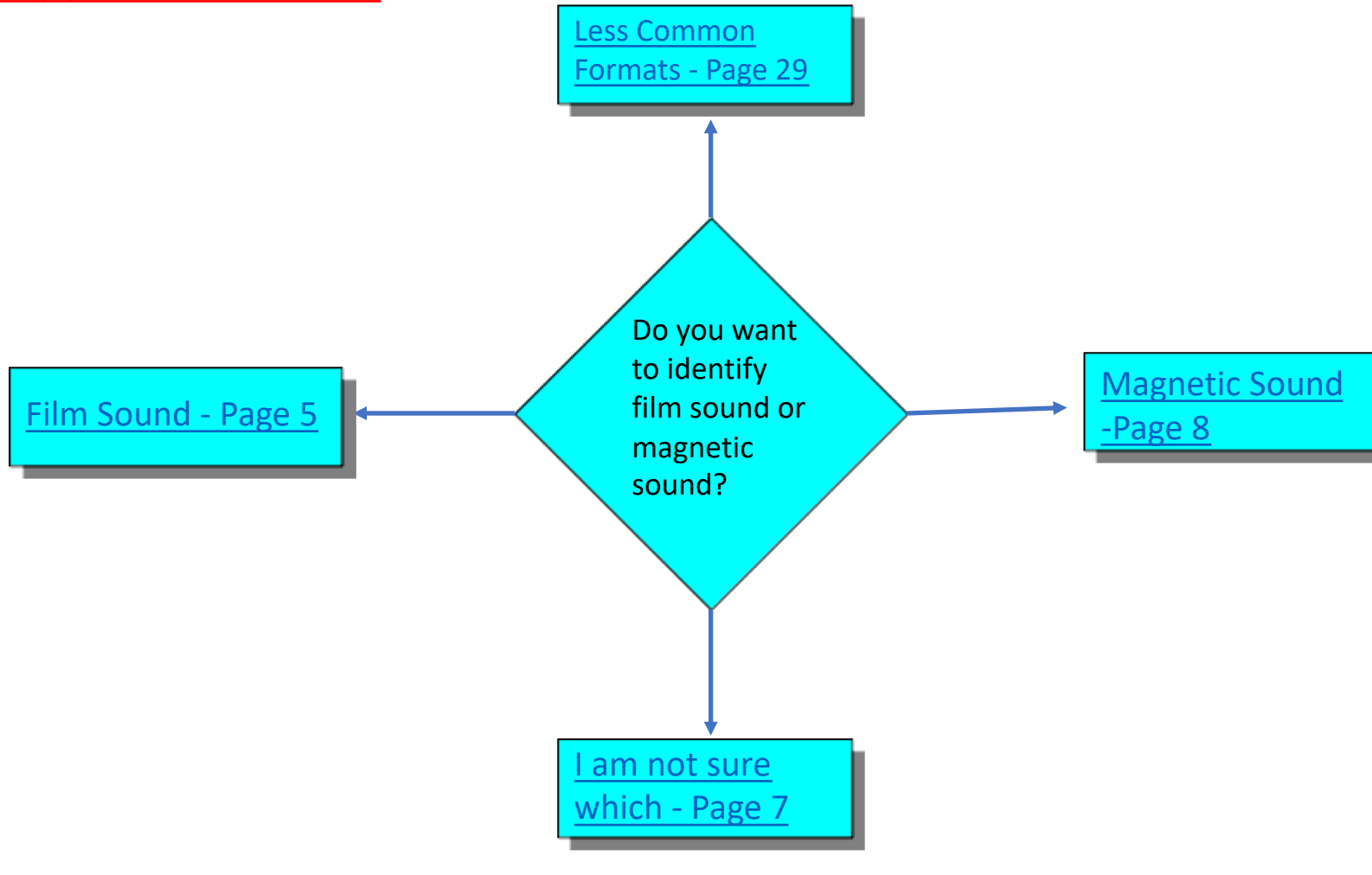
[Sound Artifacts - Page 11](#)

Bloos for example

[Next - Page 3](#)

Track Type Selection

[Return to Start](#)

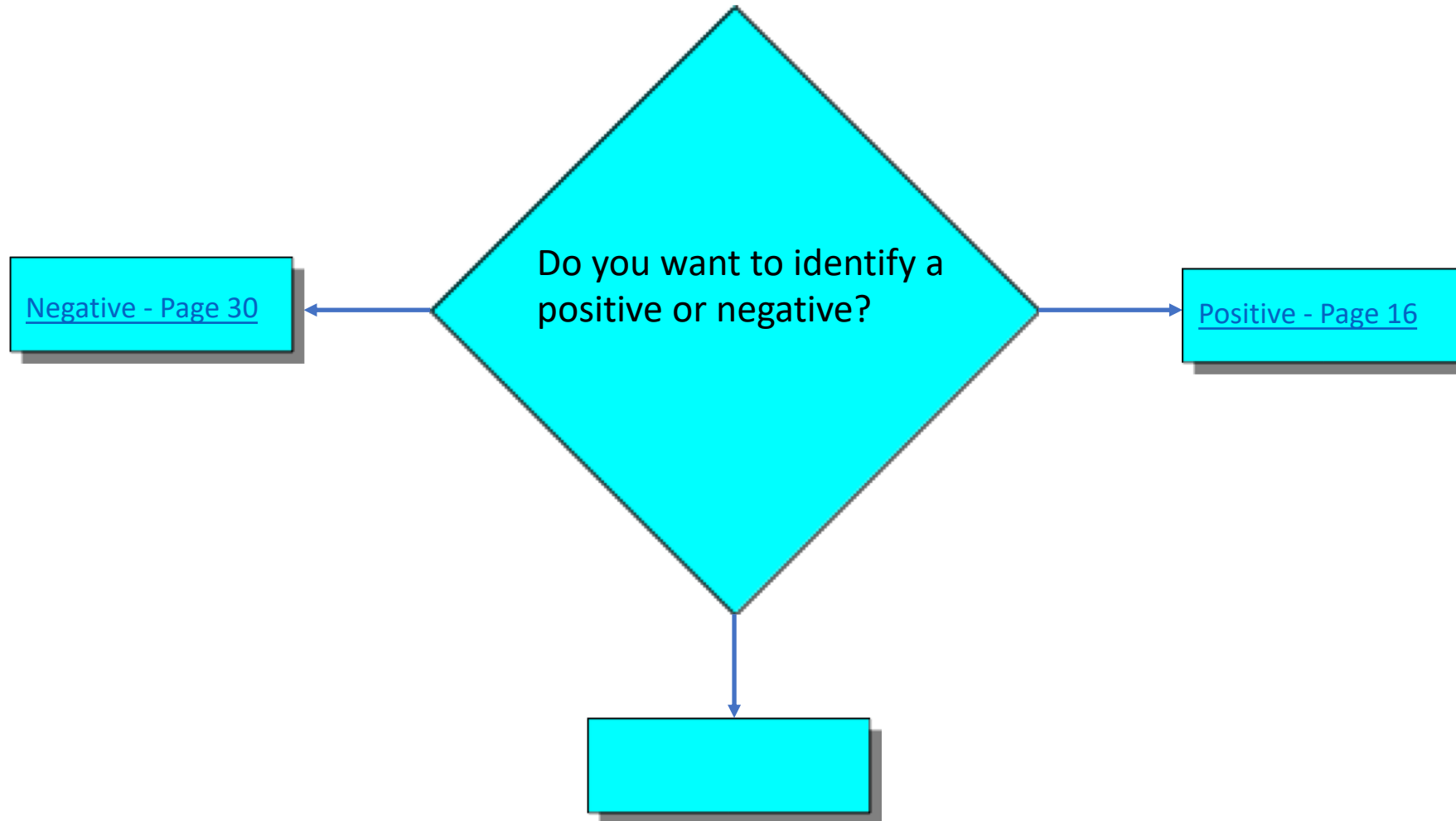


[Back to Page 2](#)

Positive or Negative?

We need to check if the film we are identifying is a negative or a positive

[Return to Start](#)

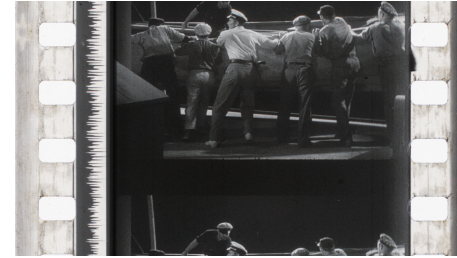


Sound Types

[Return to Start](#)

There are three types of optical sound track:

1. Variable Area or RCA Track
2. Variable Density or Western Track
3. Digital Tracks



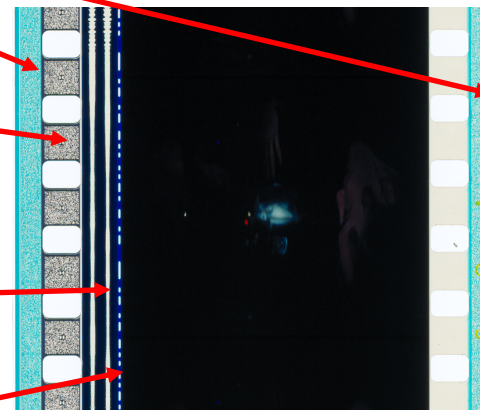
Variable Area Track

[Variable Area Tracks - Page 26](#)



Variable Density Track

[Variable Density Tracks - Page 4](#)



Three types of Digital Track plus a Variable Area track

[Digital Tracks - Page 27](#)

[Back to Page 3](#)

SDDS Digital Track

Dolby Digital Track

Analogue Stereo Track

Control Track for Disc

Film could have any combination of the four types.

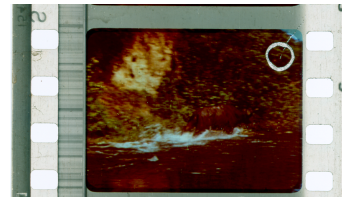
Identify Negative or Positive

[Return to Start](#)

The next decision we have to make is whether the film is a positive or negative. Negative tracks are black where a positive is white and white where the positive is black. Colour prints usually have coloured tracks rather than black.

Your film is positive go back to the previous page.

[Go back to Page 7](#)

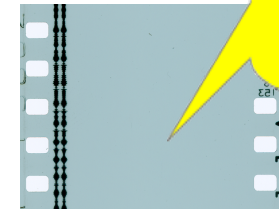


Positive variable density tracks have black edges

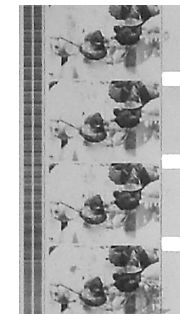
Negative – modulations are black



Positive – modulations are white



Modern tracks are almost invariably on blue base film



16mm combined negative with twin variable density tracks

Type of film to Identify

[Back to Page 3](#)

These are samples of positive sound

This is the optical sound track

These are digital Tracks

This is a full coat magnetic film. Note the brown colour of the oxide coating

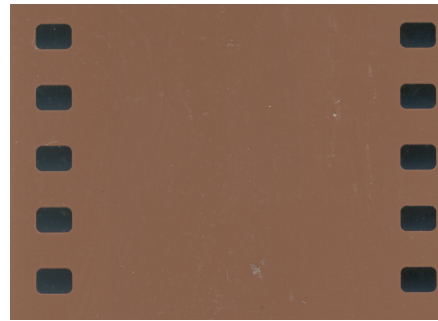
[Return to Start](#)

This is a sample of negative analogue sound

This is a sample of negative digital and analogue sound

Magnetic Sound

Magnetic sound was used mainly for recording, copying and editing sound. However 16mm and 8mm sound in the form of magnetic stripe was very common. Magnetic stripe was latterly used for various multi-track sound tracks for example in Cinemascope.



Full coat Magnetic film



Part coated Magnetic film with 100 mil and balance stripe

[Return to Start](#)

To make the film cheaper it was only coated where the sound was recorded

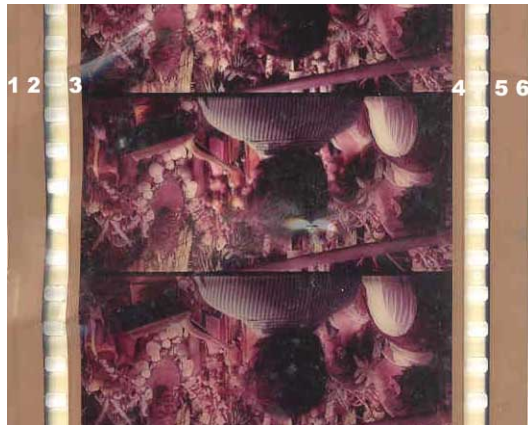
Half the optical track has been coated with a magnetic stripe



Mag-Optical Track



Cinemascope print with 4 magnetic sound tracks the thin stripe carrying the surround sound.



70mm 6 track film

70mm Print with magnetic stripe

Note: Left is left when looking at screen

Track Position	6 Track Stereo	Dolby
1	Outer Left	Left
2	Inner Left	Left Surround
3	Centre	Centre
4	Inner Right	Right Surround
5	Outer Right	Right
6	Surround	mono Surround



16mm pre-striped black and white negative to record the sound when filming picture mainly for newsreels

[Next Page - Page 9](#)

[Back to Page 3](#)

Magnetic Sound 2



16mm Double Perforated
Magnetic Film



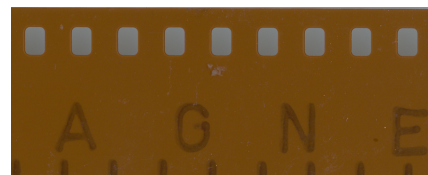
16mm Single Perforated
Magnetic Film



Pre-Striped print stock -
Unprocessed



Print Stock that has been post processing striped by
Zonal Film Facilities



17.5mm Full coated Magnetic
Film



Striped
Kodachrome Print

The stripe could be
pre-striped print
stock or post
processing stripe

Pre-striped film stock usually was
glued into a groove cut in the film base
and does not come off in a film
cleaner. Post stripe was usually
magnetic tape glued to the film base
and will come off in a film cleaner

[Previous page -
Page 8](#)

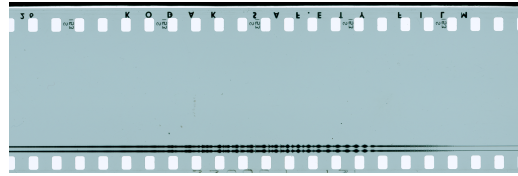
Negative Tracks

There are 3 formats of negative film with sound tracks.

1. Negative with sound only
2. Combined negative with picture and sound
3. Double-sided sound negative

In order to save money, film and storage space one reel was printed down one side and another reel up the other side

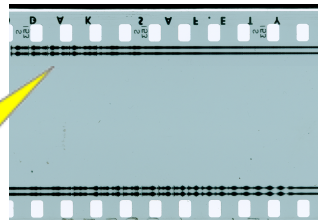
These tracks are
Variable Area
track negatives



Sound
Negative



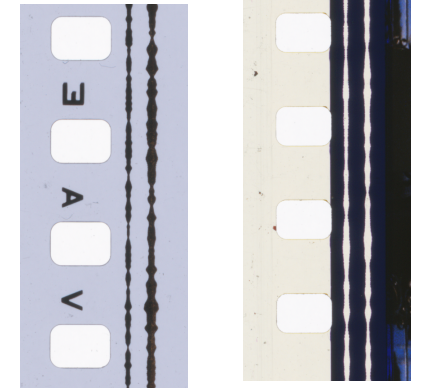
Combined
Negative



Double-
sided sound
negative

[Return to Start](#)

[Next Page -
Page 23](#)



Sound Track Artifacts

[Return to Start](#)

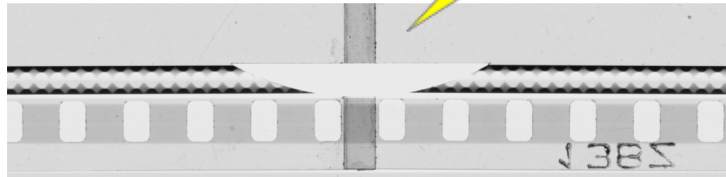
BLOOPS: When joins are made in any kind of optical sound track unless the join is treated it will make an unwanted noise. The treatments are known as bloops.



Gasparcolor print with painted bloop – partly worn off. Used when a join is made in a print.

Usually only made where the sound is low. If the volume is high the silence from the bloop will be more noticeable than the sound of the join

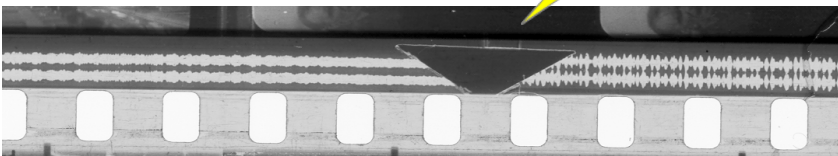
A triangular section is cut from the negative so it will print black when the print is made.



Insert Plop Image!

[Go back to Page 2](#)

The bloop has printed black



Positive Tracks

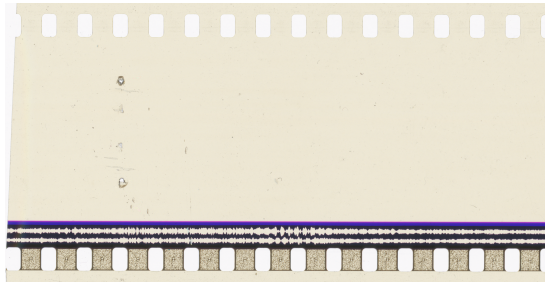
There are 3 formats of positive film with sound tracks.

1. Combined print with picture and sound
2. Print with sound only
3. Double-sided sound print

In order to save money, film and storage space one reel was printed down one side and another reel up the other side



Combined
Print



Sound
Print



Double-Sided
or up and down
print

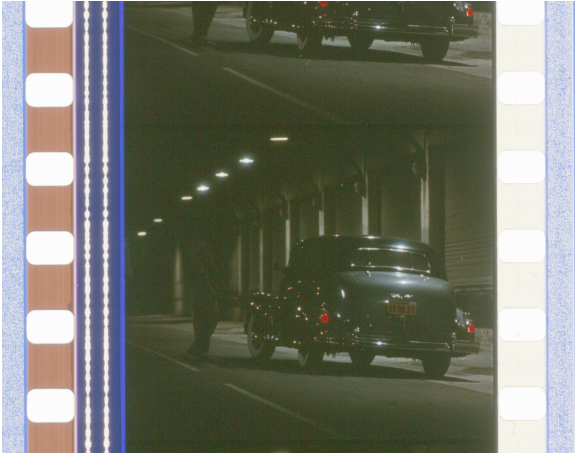


[Return to Start](#)

[Next Page - Page 18](#)

Digital Sound Types

[Return to Start](#)



Dolby SR Type A Analogue and
SDDS Digital



Dolby SR Type A Analogue and
DTS Digital



Dolby SR Type A Analogue and Disc
control



Digital Tracks with Cyan Analogue
Dolby SR Type A

[I am not sure -
Page 4](#)

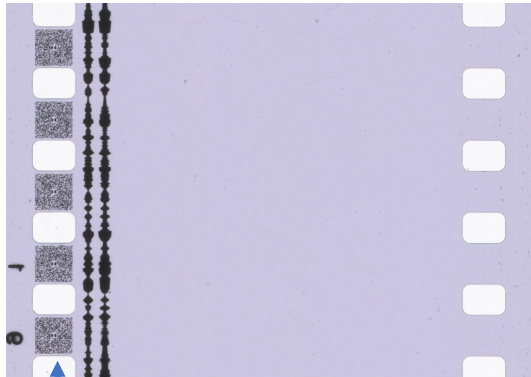
[Back to Page 3](#)

Check on
differences between
Negative and
positive

Digital Sound Negatives

[Return to Start](#)

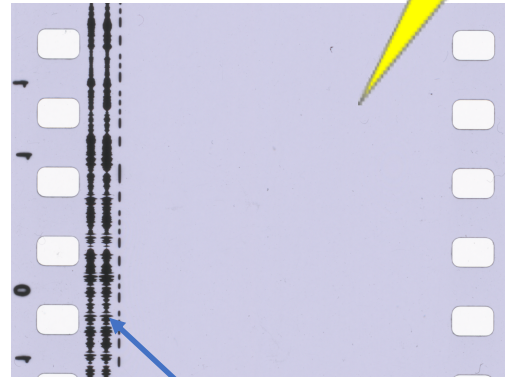
Dolby SR Analogue and DTS Digital
Sound Negative



DTS Digital Track

Dolby SR
Analogue Track

Dolby SR Analogue and Digital Disc
Control Sound Negative



Dolby SR
Analogue Track

Disc control Track

The picture area will be
clear usually a blue
colour and the
modulations will be
black

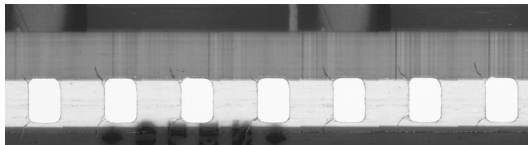
[Go back to
Page 13](#)

Possible Incorrect Identifications

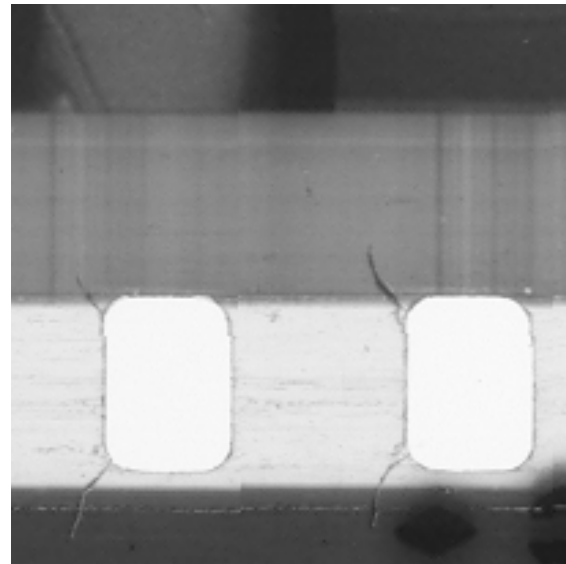
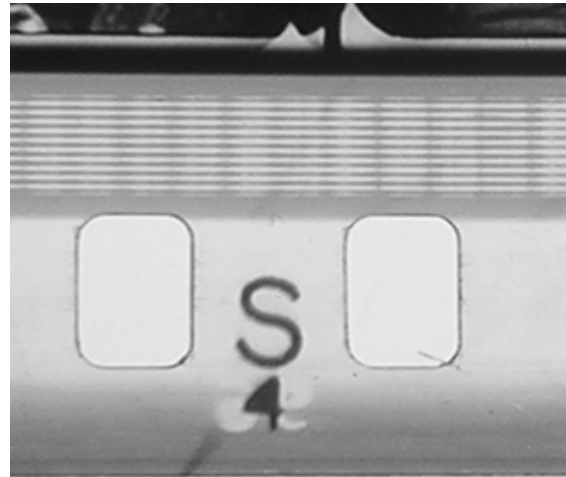
Certain sound types can be identified incorrectly



Multi-hump Variable Area

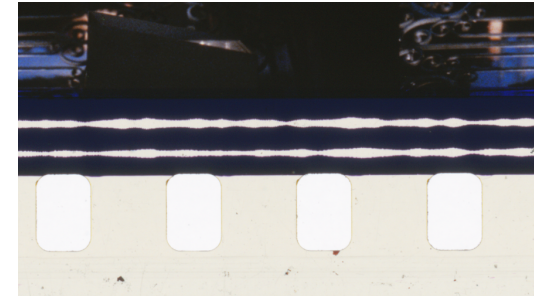


Variable Density



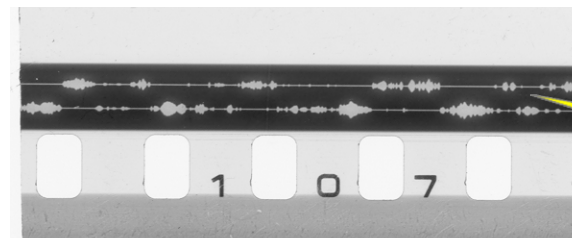
Without a close look this appears to be a variable density track

[Return to Start](#)



Two tracks are different

Dolby Encoded Stereo Track

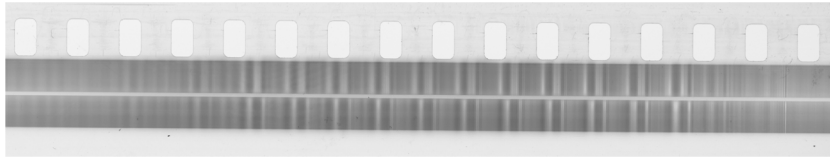


Class B Push pull Track

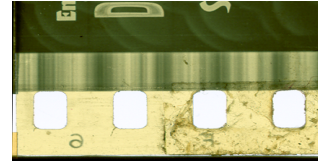
The two tracks cancel themselves out. When one is loud the other is silent

[Back to Page 2](#)

Variable Density Tracks



Class A Push-pull track



Yellow tinted print



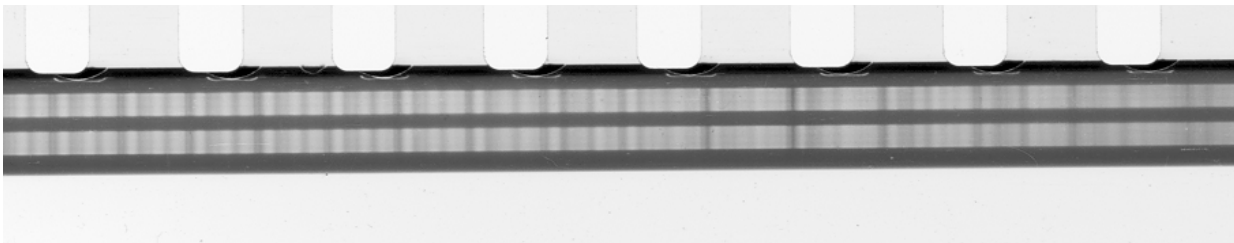
Rose tinted print



Gasparcolor

[Return to Start](#)

[Next Page Page 17](#)



Twin Squeezed Track



Technicolor Print

Note that although this is a colour print the track is Black and White; a way to identify Technicolor Prints



Blue Track

Variable Density 2 - 16mm and 17.5mm

[Return to Start](#)



16mm Telerecording



16mm Blue base TV Positive



32mm film with two 16mm images

[Next Page Page 19](#)

[Go back to Page 16](#)

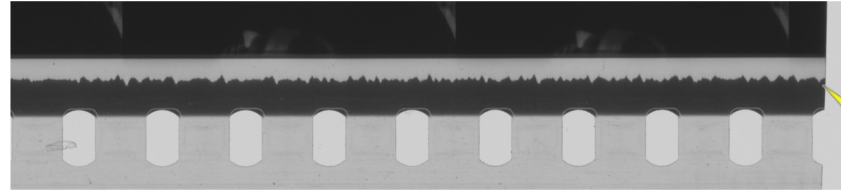
Variable Area tracks

Variable area tracks consist of one or more lines of sound modulation. The lines get wider with more volume. The increase in width can be from one side of the line, known as unilateral or from both sides, known as bilateral

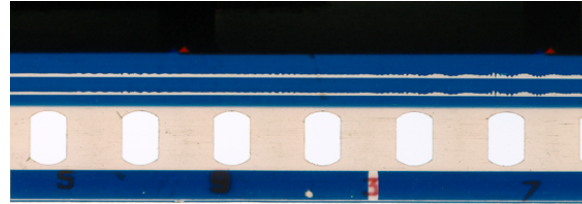
[Return to Start](#)

Modulations on one side

[Next Page - Page 19](#)



Unilateral Track

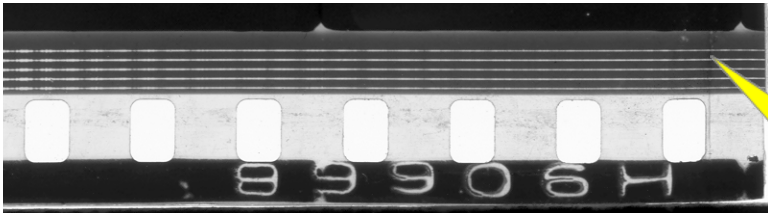


Twin Unilateral Track



Bilateral Track

Modulations on both sides



5 Bilateral Tracks

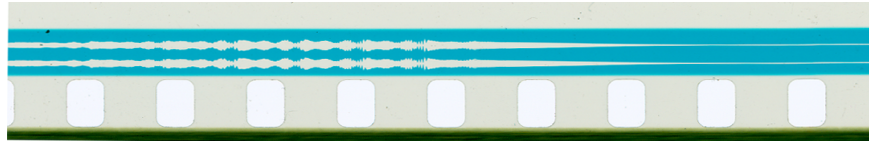
Multi Hump Track



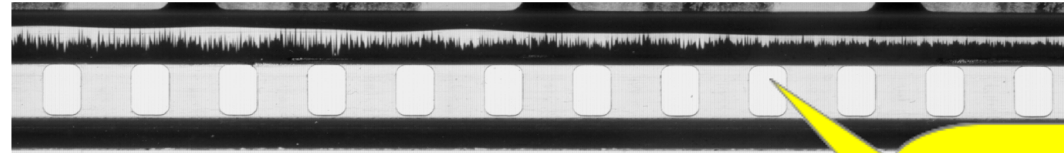
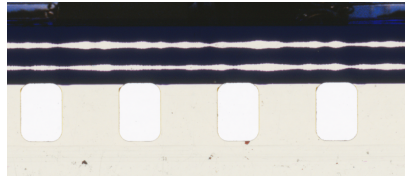
Twin Bilateral

Variable Area Tracks 2

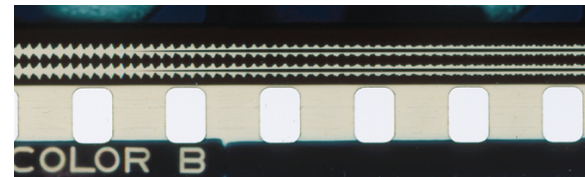
[Return to Start](#)



Cyan Twin Bilateral – produced for use with red reader on projector

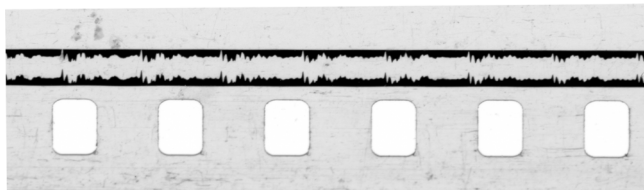


Photophone Unilateral Track

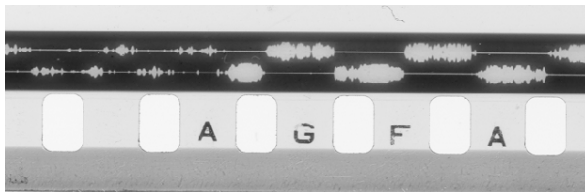


Note the change in width of track as the volume changes. This was produced by the McDowell ground-noise reduction shutter

Dolby SR Type A Stereo Track



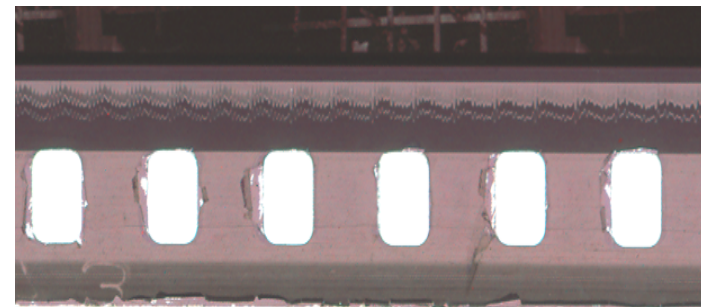
Class A Push Pull Track



Class B Push Pull Track

Push Pull tracks cannot be played on a normal projector

Twin Bilateral with centre septum noise reduction



Visatone Track

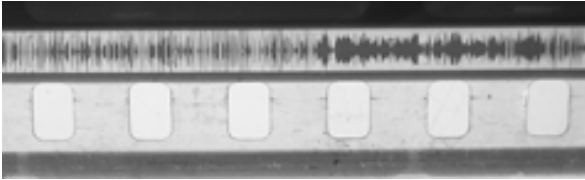
[Next Page Page 20](#)

Note the changing densities

[Back to Page 18](#)

Variable Area Tracks 3

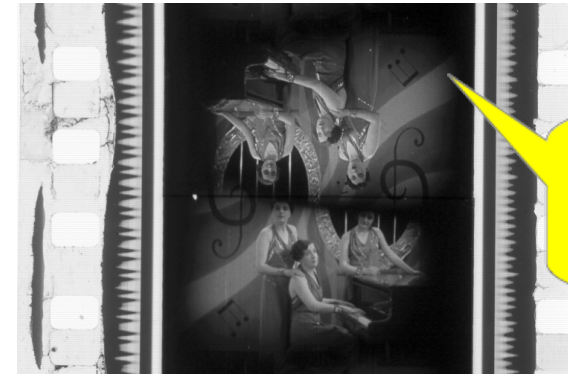
[Return to Start](#)



Duplex Variable Area

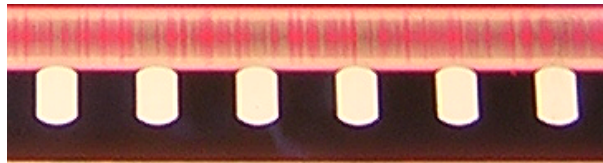


Gasparcolor Cyan Unilateral

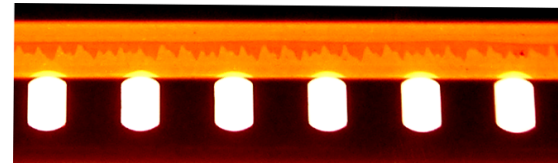


Alternate pictures are upside-down and run from the other end to economise film use

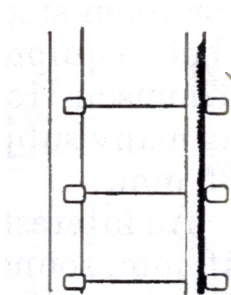
35mm Experimental Double Run Unilateral



Gasparcolor Red Duplex

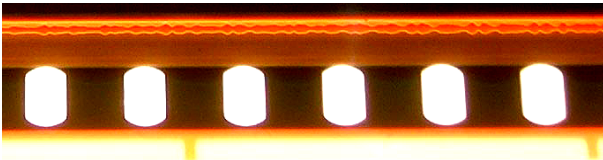


Gasparcolor Red and Yellow Unilateral



Note two sets of perforations with track inside one set

16mm B T-H Unilateral



Gasparcolor ?



Gasparcolor Cyan Unilateral

[Next Page - Page 21](#)

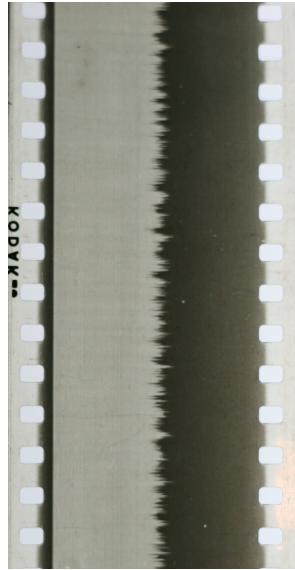
[Go back to Page 19](#)

Variable Area Tracks 4

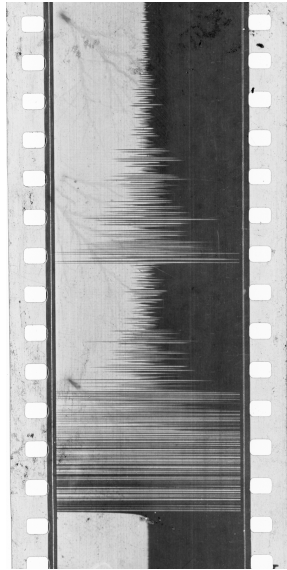
[Return to Start](#)



Lauste Wide 1906



Kingston
Experimental Sound



British Acoustic
Sound Track 1927



Agfacolor Multihump

[Go back to Page 20](#)

Your film is positive go back to the previous page.



[Return to previous page](#)

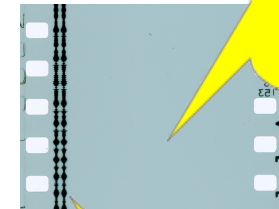
The next decision we have to make is whether the film is a positive or negative. Negative tracks are black where a positive is white and white where the positive is black. Colour prints usually have coloured tracks rather than black.

[Return to Start](#)

Modern Tracks are almost invariably on blue base film



Positive – modulations are white



Negative – Modulations are black

Identify Negative or Positive

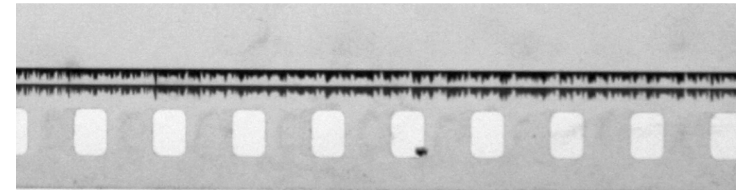
[Check different types of negative film](#)

Variable Area Negatives

[Return to Start](#)



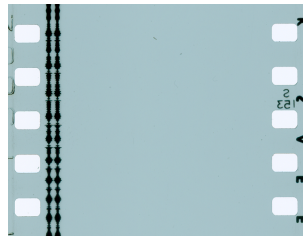
16mm Photophone Unilateral Track



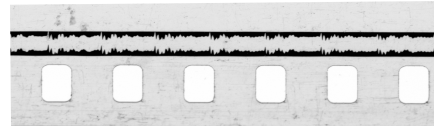
Leevers Rich Twin Unilateral Track



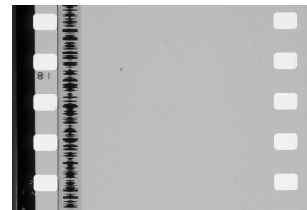
Dolby SR Stereo Track



Twin Bilateral Track



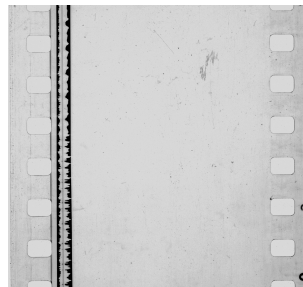
Class A Push pull Duplex track



Bilateral Duplicate
Negative Track



Unilateral track with
shutter noise reduction



Twin Track M&E
and Dialogue track

If you are unable to identify the sound system then go to the next page and find the equivalent positive type of sound system. Negative tracks are black where a positive is white and white where the positive is black. Colour prints usually have coloured tracks rather than black.

[Back to Previous
Page 10](#)

[Next Page - Page 18](#)

[Return to Start](#)

Decision Box

**Additional Information
About the illustrations**

**Advice for
further Identification**

**Hyperlink to
return to start**

Hyperlink

Film Type Identified

Legend - What the shapes mean!

Your film is positive go back to the previous page.



[Go back to Page
7](#)

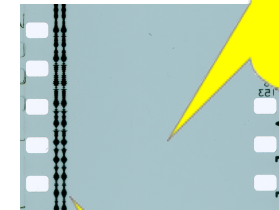
The next decision we have to make is whether the film is a positive or negative. Negative tracks are black where a positive is white and white where the positive is black. Colour prints usually have coloured tracks rather than black.

[Return to Start](#)

Identify Negative or Positive



Positive –
modulations
are white



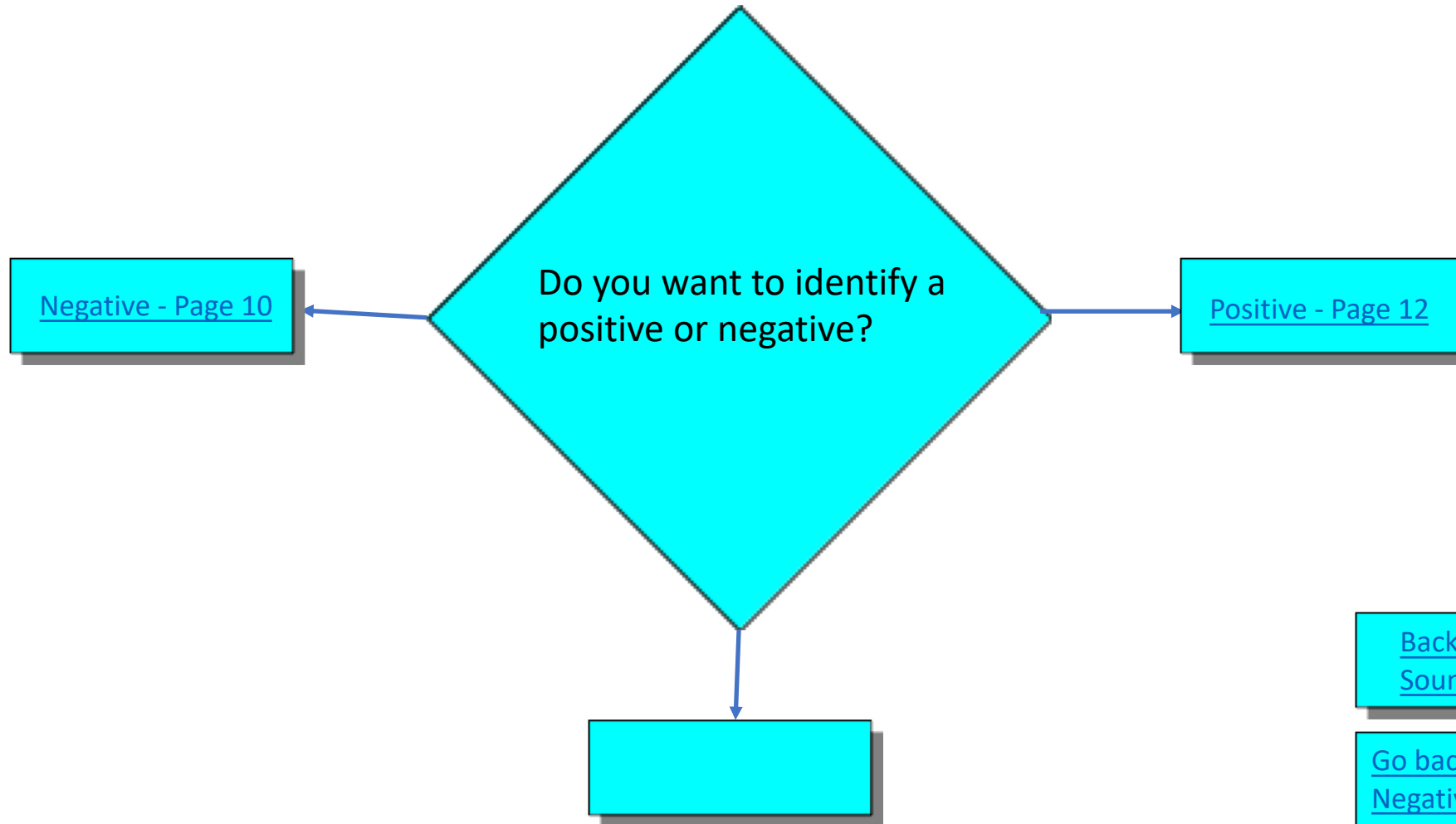
Negative –
Modulations
are black

Modern Tracks
are almost
invariably on
blue base film

Positive or Negative?

We need to check if the film we are identifying is a negative or a positive

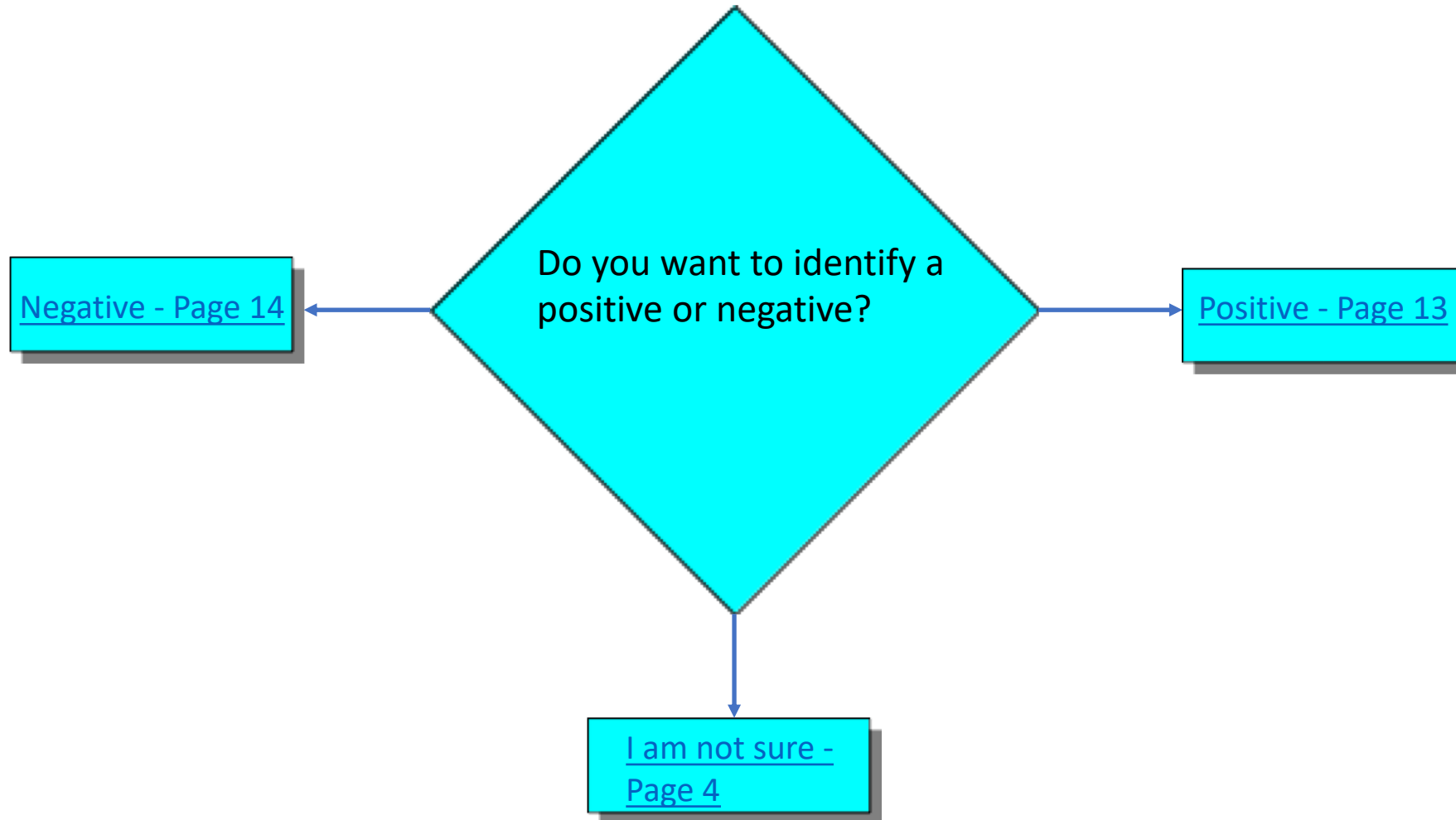
[Return to Start](#)



Positive or Negative?

We need to check if the film we are identifying is a negative or a positive

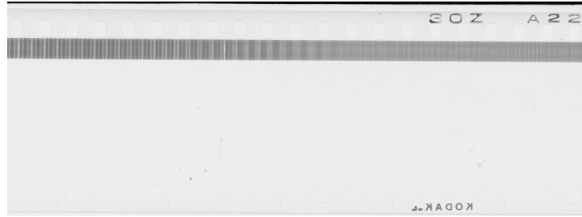
[Return to Start](#)



Negative Tracks

There are 3 formats of negative film with sound tracks.

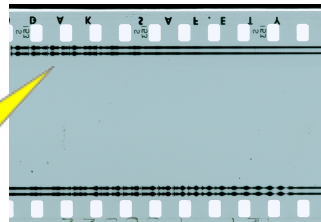
1. Negative with sound only
2. Combined negative with picture and sound
3. Double-sided sound negative



Sound
Negative

[Return to Start](#)

Combined
Negative



In order to save money, film and storage space one reel was printed down one side and another reel up the other side

These tracks are
Variable Area
Tracks negatives

Double-
sided sound
negative

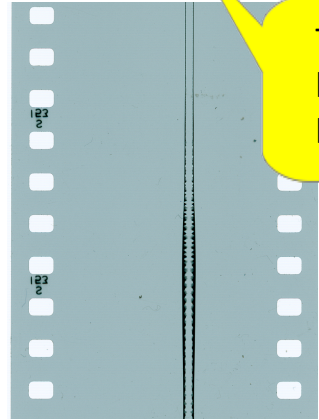
[Next Page - Page 18](#)

On the next page are various Variable Area tracks, the negative track will be identical but the modulations will be black rather than white or possibly coloured

Less Common Track Formats



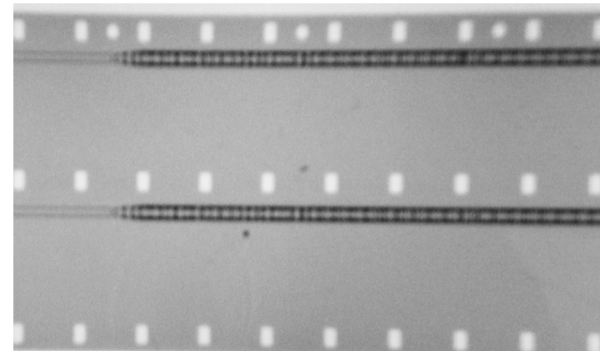
Note track outside the perforations



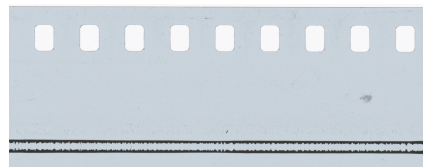
Track would be printed here



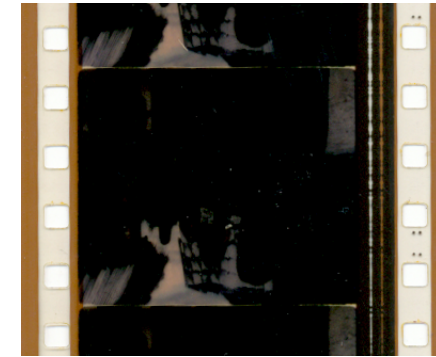
17.5mm Logie Baird telerecording



35/32mm negative track. After print has been made the print is slit into 2 x16mm and 1 x3mm



Here the track has been slit to 17.5mm



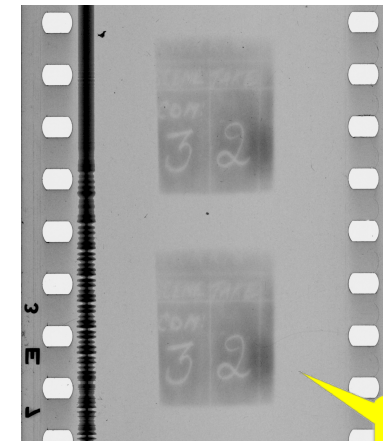
Cinemascope film with magnetic half track covering half the optical track



9.5mm variable density sound



Experimental 16mm system. Alternate frames were projected one way then back the other. Note the alternate perforations



Scene and Take Ident

A 35mm original sound recording, recorded during filming

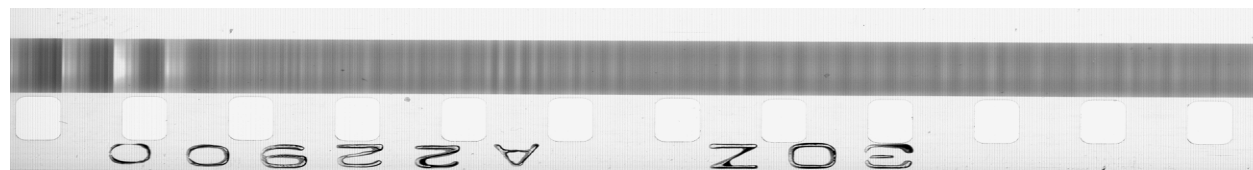
[Return to Start](#)

[Back to Page 3](#)

Variable Density Negatives



16mm with twin
Variable Density tracks



35mm Variable Density track