

STUDER

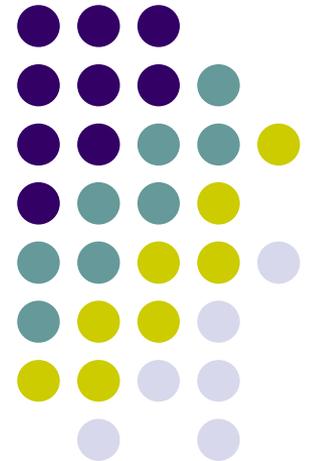
Restoration of Vintage A80 Recorders

For a new life in a new century ...

Frying Pan Studios, MONA Hobart Tasmania



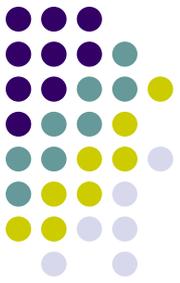
AES Melbourne Section, 13 February 2023
David Hudson





First Things First ...

- *I acknowledge and pay respect to the Bunurong people, the Traditional Custodians of these lands and waters from which this presentation is given, and Indigenous elders past, present and emerging*
- *Mornington Peninsula, Victoria Australia*
- ***Studer** is a brand and registered trademark of Evertz (Canada)*
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- *I have no commercial interest in any supplier mentioned*
- *Corrections are most welcome*



Session Track List (Side A, Side B)

- First tape recorder 1961
- Electronics + Music = Recording Studios career
 - Little Mountain Sound, Vancouver BC 1974-1976
 - EMI Studios 301, Sydney NSW 1978-1988
- Q & A
- A80 VU-3-1" MK IV C-format PAL Video Layback Recorder 2016-2022
 - Acquisition, mechanical & electronic restoration
 - Format conversion options: 1" 2T or 1" 8T, Challenges
- A80 MR-4-1/2" MK II Cassette Master Recorder 2019-2022
 - Acquisition, mechanical & electronic restoration
 - Format conversion to 1/2" 2T, Challenges
- The A80 Adventure Continues 2022+
- Thank You



First Tape Recorder 1961

Voice of Music VM-700

“Tape-O-Matic”

Manufactured in USA 1953-1956

2-head, 1/4” half-track mono valve (tube) recorder, 3.75 - 7.5 in/s

Father was an elementary school principal, brought tape recorder home when not in use

Tapes I recorded on this machine still play well today

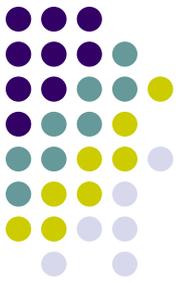
Photo: family and friends at home on Christmas Eve 1961 in Canada



photo: Kate Hudson, mother



photo: www.thevoiceofmusic.com



Music Group 1970s

“Hudson Carr Poole” UBC
Songfest '72, QE Theatre



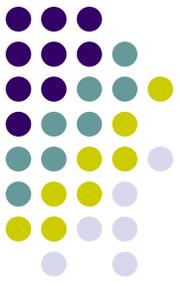
photo: Don Hudson

“Marilyn Hudson Carr & Poole”
CBC Radio & TV 1970s



photo: CBC TV Vancouver

More - visit: www.garypoolesongs.com



Little Mountain Sound Studios, Vancouver BC

Electronics + Music = Recording Studio career!

Engineer 1974-1976 after UBC EE

Western Canada's largest recording studio in the 1970s

Home of Griffiths Gibson Ramsay Productions jingle production firm

Construction, maintenance, mods, recording & mixing engineer

4 Studios, 2 x Neve 8036 & 8014

2 x Scully 100B 2" 16T, Dolby 'A'

Scully 280B full track, 2T & 4T

Olivia Newton-John recorded "*Don't Cry For Me Argentina*" in Studio A
23 January 1977 (I was present)

Later: Aerosmith, Bon Jovi, AC/DC



photo: Little Mountain Sound, Studio A



First Studer A80 VU-24-2” MK II at Little Mountain Sound

Met the late **Bruno Hochstrasser** at WABE in April 1975, Vancouver

Bruno was then Marketing Director at Studer Canada and launched the A80 VU-16-2” MK II which he later loaned to Little Mountain Sound

Little Mountain Sound installed Western Canada’s first 24T in May 1977, an A80 VU-24-2” MK II

I expanded the Neve 8036 patch bay to 24T before a 1-year around-the-world adventure in June 1977

Visited 33 countries before arriving in Sydney in July 1978

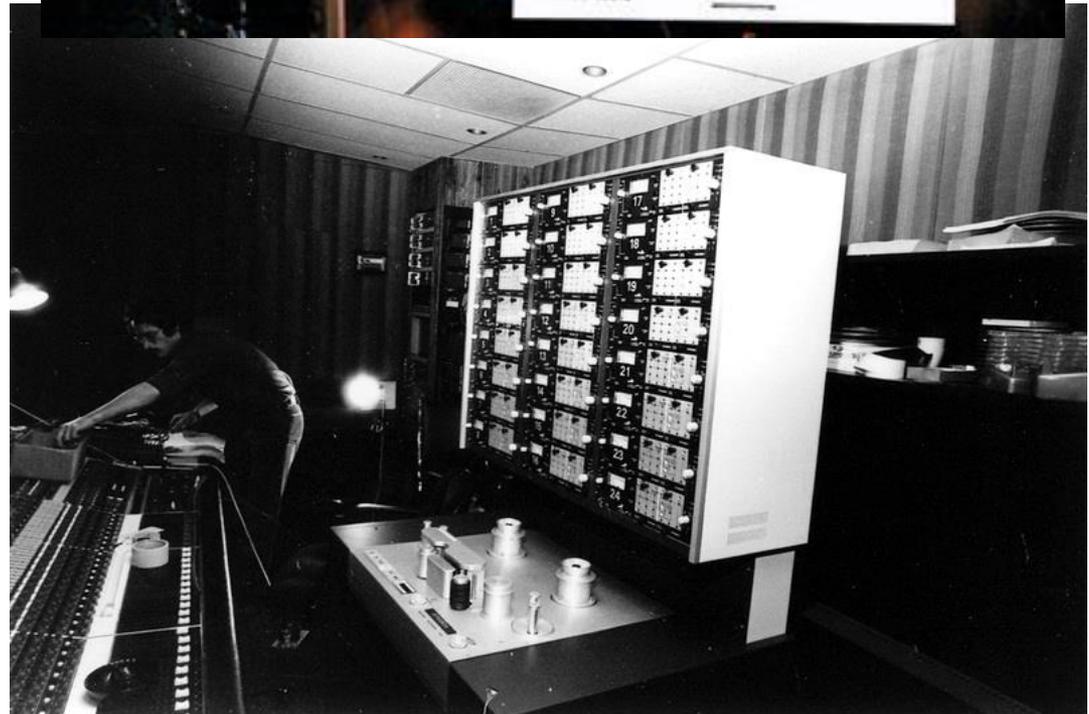


photo: Ron Obvious (Vermeulen), May 1977



Studer HQ & Factory tours at Regensdorf, Switzerland

Bruno Hochstrasser kindly arranged my first factory visit in 1977 while on my world trip

Visited Studer HQ & factory several times in 1980s including AES Montreux 1986



STUDER REVOX Canada Limited

PROFESSIONAL AUDIO EQUIPMENT

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Phone: (416) 423-2831
Telex: 06-23310

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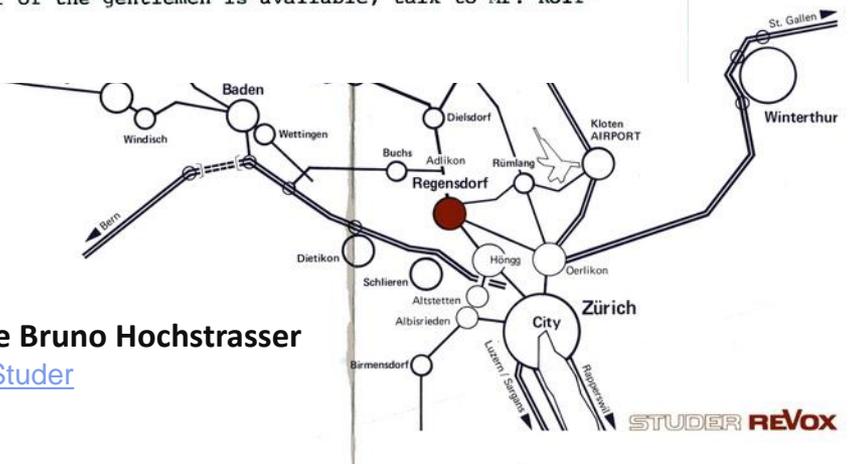
Studer factory tour

Regensdorf plant

contact Mr. Eugen Spoerri of Studer International or Mr. Peter Joss at phone 840 29 60. Refer to me and ask for factory tour. Try to call in advance. If neither of the gentlemen is available, talk to Mr. Rolf Breitschmied.



photo: Martin Berner video of Studer HQ demolition



“The Studer Legend - the history of our tape machines” by the late Bruno Hochstrasser

https://www.youtube.com/watch?v=DDj7k4R4hoM&t=12s&ab_channel=Studer

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13 February 2023

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EMI Studios 301, Sydney Australia

Joined EMI Studios 301 in July 1978

\$2M (1978) major rebuild of 7 studios on levels 7 & 8 at EMI HQ, 301 Castlereagh Street, Sydney

3 x 40CH Neve 8078, NECAM 1

17 x A80 VU recorders including:

2 x 2" 24T TLS-2000 Master (orig 16T)

2 x 2" 16 TLS-2000 Slave

1 x 2" 24T Narrow body

2 x Prelisten version for VMS-70 lathe

1 x MR 1" 4T 64:1 cassette mastering

Various ¼" & ½" 2T recorders

+ A800-24, A810, A820-2, B67 ...

EMI had 2nd largest fleet of Studer recorders in Australia to the ABC

Joined Amber Technology in 1988:
Otari, Nagra, Lyrec, Mitsubishi PD

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Studios 301 is not just another State-of-the-Art studio. Studios 301 is the new generation of recording studio technology. With rapidly developing electronic technology and acoustic philosophy, any up to date recording studio can seem out of date very quickly. Studios 301 is not content to be up to date. Studios 301 is creating new standards of recording studio design.

STUDIOS 301 IS THE NEW GENERATION.

THE MIXDOWN SUITE
New Generation Equipment and Facilities.
1. Neve desk 2. Studer recorders 3. 16 to 45 track capability 4. Choice of DBX or Dolby noise reduction 5. Selective speaker monitoring 6. State-of-the-Art effects equipment 7. Frequency selective video PPM and VU monitoring.

New Generation Mixing
The Studer recorders are computer interlocked and linked to a Necam automated mixdown system through a new generation Neve desk, giving one of the finest mixing set-ups in the world.

The Mixdown Suite has been designed in such a way that the back wall appears to be non-existent. Any sound travelling behind you is soaked up by a broad band total absorber so that your best creative work is not reflected, twisted, discoloured or warped in any way...you hear precisely what is on the tape.

every track if you want: monitor off! Tannoy or JBL speakers; and you have the versatility of all the latest special effects gear – noise gates, compressor/expanders, vocal stressors, digital delay, phasers, flangers, harmonizers and so on. Studios 301 lets you put your production ideas on tape...successfully.

New Generation Acoustics
A world first...what you hear is what you get. A unique acoustic philosophy developed by Studios 301, in conjunction with Central Research Laboratories, enables you to hear only what is coming out of the monitor speakers.

This same philosophy applies to all studio control rooms, making each one acoustically identical – extremely important when you are taking tapes from studio to Mixdown Suite.

The Studios 301 Mixdown Suite also has an overdub studio for those last minute flashes... like extra instrumental parts or vocal harmonies.

Studios 301 lets you go 16, 24, 30 or even 45 tracks; at 15 or 30 l.p.s. with noise reduction on.

Project Architects: KANN FINCH & PARTNERS Acoustic & Systems Concepts: NIGEL WAKE Installation: STEVE SHURTZ

STUDIOS 301
THE NEW GENERATION



Q & A ?



A80 Lifecycle of Continuous Improvements

1966 Prototype of Studer A80 created

1970 A80 MK I introduced in Spring 1970

1970 First multitrack A80 VU built on 5 December (1" 8T)

1971 A80/R broadcast ("Rundfunk") model introduced

1972 A80RT/Quadra quadraphonic model introduced

1973 First 24-track version of A80 VU appeared

1974 A80 VU MK II introduced

1975 A80 VU MK I 8T 1" & 16T 2" transportable versions

1975 A81 built with German tape path – birth of A80 RC ("Rundfunk Compact")

1982 A80 VU MK III – narrow headblock, inline erase head, faster punch-ins

1983 A80 RC-2-1/2" 2T & A80 VU-2-1/2" 2T introduced

1984 A80 MR MK II (VU MK IV) with Dolby HX PRO, transformerless I/O

1985 A80 QC MK II 0.15" cassette QC – dual capstan, preamps in headblock

1985 A80 VU-3LB flyer released January 1985, USA product intro July 1985

1986 A80 MK IV MCH 1"-2" released with Dolby HX PRO, transformerless I/O

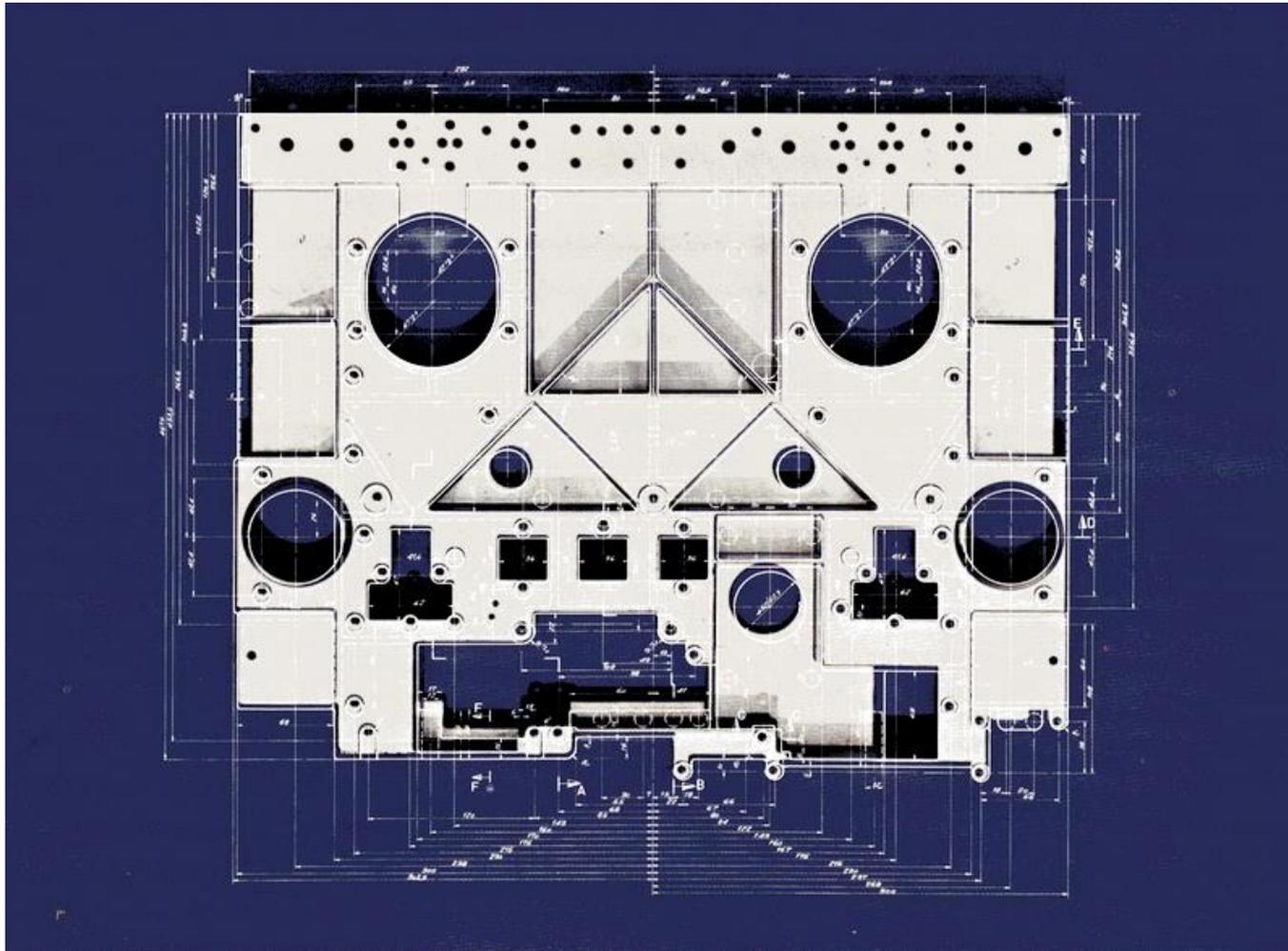
1989 A80 End of A80 Production; more than 10,000 units produced



photo: Studer ftp archive



A80 Diecast Aluminium Transport Chassis

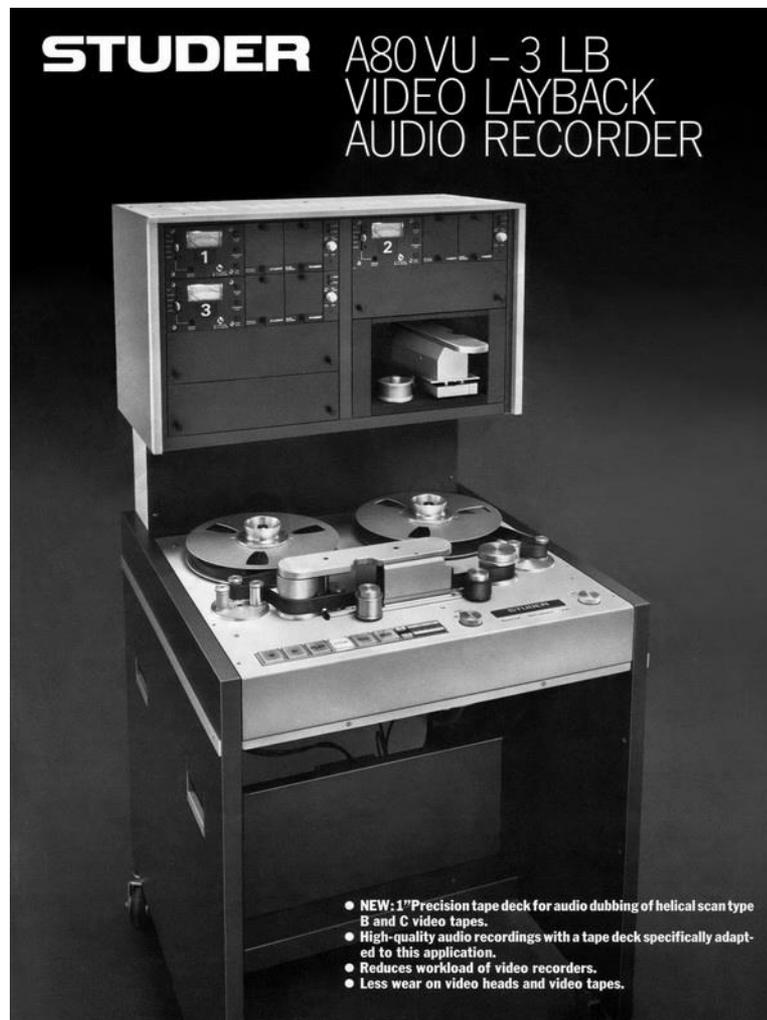


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photo: Studer 25th Year history booklet



A80 VU-3-LB 1" MK IV Video Layback Audio Recorder



STUDER A80 VU - 3 LB
VIDEO LAYBACK
AUDIO RECORDER

- **NEW:** 1" Precision tape deck for audio dubbing of helical scan type B and C video tapes.
- High-quality audio recordings with a tape deck specifically adapted to this application.
- Reduces workload of video recorders.
- Less wear on video heads and video tapes.

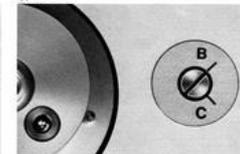
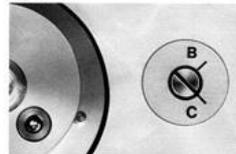
STUDER A80 VU - 3 LB,
the video layback system for high-quality recording and reproduction of audio tracks on 1" video tapes type B and C



Configuration for HELICAL SCAN-Video tapes, type C.



Configuration for HELICAL SCAN-Video tapes, type B.



STUDER VIDEO LAYBACK: THE SOLUTION FOR TOP-QUALITY AUDIO TRACKS AND EFFICIENT VIDEO EQUIPMENT UTILIZATION

Audio dubbing of video tapes is rapidly gaining in importance, not only because of the stringent requirements imposed by video editing but also the new creative facilities offered by multitrack audio transports.

Assigning complex and costly video machines to dubbing and mixdown tasks is no longer an efficient way of utilizing such highly specialized equipment. The STUDER video layback machines improve your return on investment and ensure maximum audio quality.

1" HELICAL FORMAT B AND C DUBBING ON THE SAME MACHINE

The A80 VU - 3 LB can be quickly converted to the other format by exchanging the headblock and the tach roller. The direction of the left-hand spooling motor can be changed over with a switch. The machine is also equipped with a matching interface for the TLS 4000, "Q-LOCK" or other popular synchronizers.

ADVANTAGES IN AUDIO QUALITY

The stability of the reliable A80 tape transport and the renowned quality of the VU electronics ensure that your audio recordings will be of outstanding quality. The frequency response, the signal-to-noise ratio, and the wow and flutter correspond to the advanced A80 technology.

The extremely stable headblock, engineered for 2" tapes, is equipped with erase, record, and reproduce heads for 3 audio channels. One of these identical channels can be used as a time code channel.

ADVANTAGES IN EQUIPMENT EFFICIENCY

- No unnecessary blocking of expensive video machines
- No unnecessary wear on the costly video heads
- Preserves quality of the original video tape
- Final mixdown directly from the multitrack recorder without creating an intermediate 2-track dub
- The final audio information can be recorded off-line in conjunction with a "U-matic" or without any video machine at all

Technical Data

additional Technical Data; all other data same as for standard version.

Frequency response:
± 2 dB, 30 Hz ... 18 kHz
± 1 dB, 60 Hz ... 15 kHz

Signal to Noise ratios:
referred to 254 nWb/m
NAB linear: 60 dB
ASA A-weighted: 65 dB
CCIR linear: 59 dB
CCIR 468-3 weighted: 56 dB

Wow and Flutter: peak value, weighted in accordance with DIN 45507 (IEC 368)
max. 0.04 % (9.44 ... 9.65 ips / 23.98 ... 24.5 cm/sec)

Winding Time:
approx. 180 sec for 1440 m of Video Tape

Tape Tension:
1.5 ... 2 N (150 ... 200 g) during play

Ordering Information

Basic model:
A80 VU - 3 LB, **C-Format 525/60:** 60.160.11252
A80 VU - 3 LB, **B-Format 625/50:** 60.160.11253

To adapt a basic model for operation with an additional format or standard, the following parts are required:

Counter drive roller:
C-Format 525/60: 1.080.445.03
C-Format 625/50: 1.080.445.04
B-Format 525/60: 1.080.445.01
B-Format 625/50: 1.080.445.02

Head block:
C-Format: 1.020.926.00
B-Format: 1.020.925.00

Capstan servo: 1.080.368.00
(required only if operation at more than two standards is desired.)

Sales Offices:
Australia, North Sydney 4064700. **Austria,** Vienna 47 33 09 / 47 34 65. **Belgium,** Bruxelles (02) 735 21 93. **Canada,** Toronto (416) 423-2831. **Denmark,** Gentofte 451652340. **Finland,** Helsinki 80 742133. **France,** Paris (1) 533 58 58+. **Germany,** Löffingen 07654/1021. **Great Britain,** London/Herts. 01-9530091. **Hong Kong** 5-441-310 / 5-412-050. **Italy,** Milano (02) 7384751. **Japan,** Tokyo 03-320-1101. **Netherlands,** Gennep 088511956. **Norway,** Oslo (02) 356110. **Singapore** 2507222/3. **Spain,** Madrid 2317840. **Sweden,** Soina 08/7340750. **USA,** Nashville (615) 254-5651. **Worldwide:** Studer International AG, Regensdorf, Switzerland, (01) 840 29 60.

Some photos show options offered at additional cost.

We reserve the right to make alterations as technical progress may warrant.

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A80 VU-3-LB 1" MK IV PAL C-Format Recorder Acquisition

Acquired 2016 from Doron Kipen at Music & Effects, South Yarra VIC

Carefully stored at his studio after it was decommissioned

Serial nr. 15560, only 686 hours

PAL tape speed 9.44 in/s = 23.98 cm/s

Audio tracks 1&2: 0.8 mm, S/N 56 dB

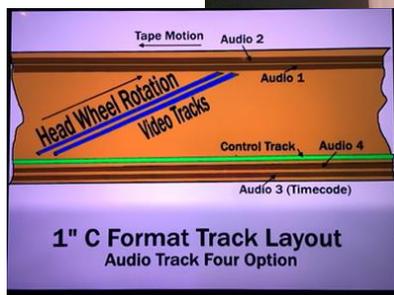
Including ephemera:

- Operation & Service Manual
- Factory Test Report dated 1989, last year of A80 production
- Studer factory documentation to convert 1" 8T to video layback
- Spare parts, Syntec quotation

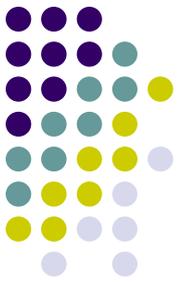
L, R & TC track format >

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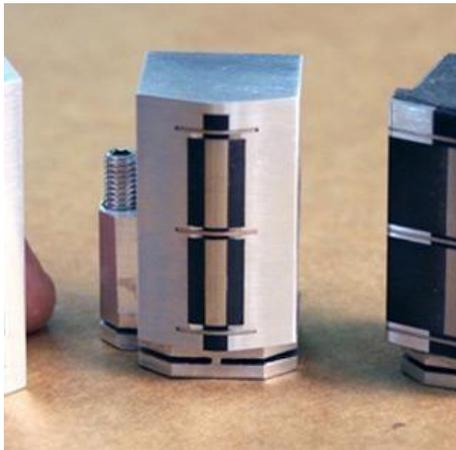


photos: David Hudson



A80 VU 1" Track Format Conversion Options

1" 2T 'Super Analogue' ?



or ...

1" 8T 'Classic' ?



photo: NOS 1.317.xxx heads: David Hudson

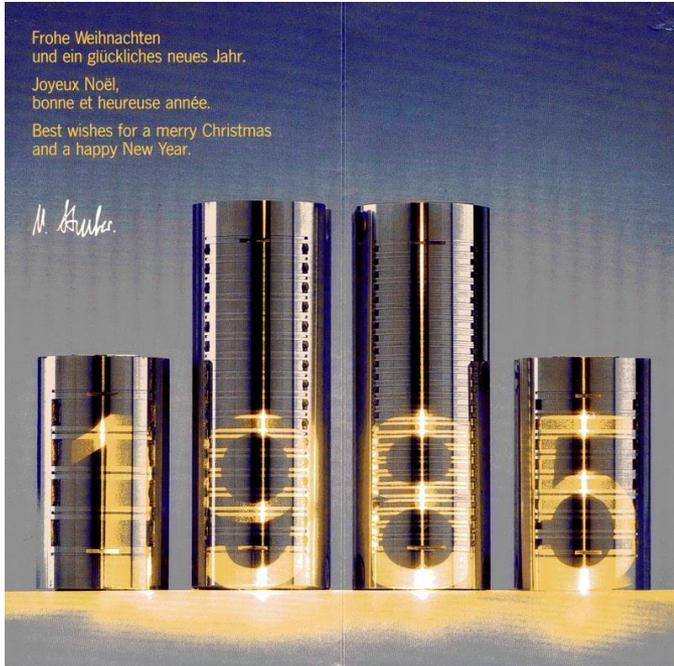


A closeup of the headblock on the one-inch two-track 'Monster Machine'

photos: John French, JRF Magnetics

Chose 1" 8T format in 2020. In 2021 MONA Frying Pan Studio included Studer A80 1" 8T in plans to complement a very rare 1956 EMI REDD.17 console ex-Abbey Road Studios as the main feature

Track Formats & Head Core Material Evolution



Core Materials over A80 Lifecycle:

- 1.216.xxx Vacodur
- 1.316.xxx Recovac
- 1.317.xxx Hy Mu 800
- 1.318.xxx Vitrovac (amorphous)

Spurlage der Studer Studiomagnetonköpfe

	Vollspur 1/4"	
	2 - Spur 1/4"	
	2 - Spur 1/4" (Schmetterling)	
	2 - Spur 1/2"	<input checked="" type="checkbox"/>
	4 - Spur 1/2"	
	4 - Spur 1"	
	8 - Spur 1"	<input checked="" type="checkbox"/>
	16 - Spur 2"	
	24 - Spur 2"	





A80 VU 1" Layback Restoration & Format Conversion

Work started August 2016, completed November 2022

Two parts: transport & audio electronics – a complete rebuild

Restored 2-speed switch, removed Layback "OFF/ON" sign

Rewired Supply Motor Cap connections to Contactor board

Replaced 3 special Layback Tape Tension Rollers 1" Left

Restored Move & Direction Sensors and Roller to standard

Replaced A80 VU Layback badge with A80 VU MK IV badge

Replaced 4 x charge caps and 5 x AC phase shift motor caps

Replaced LB amplifiers with MK IV ex-House of Blues Nashville

Recapped all logic, audio and counter cards

Restored counter to standard, removed divide-by-23 card

Replaced VU meter bulbs with BA7s 24V 50k hour LEDs

Replaced all bearings in spooling motors and tape path rollers

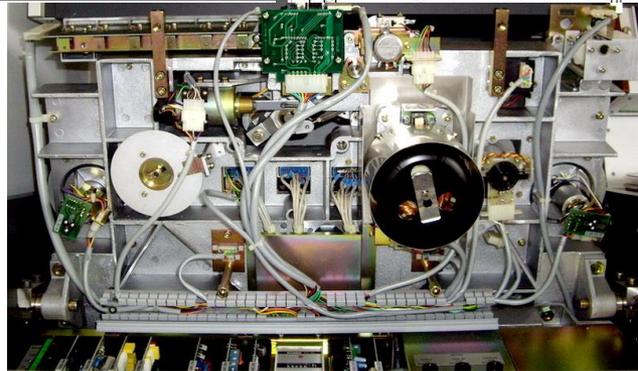
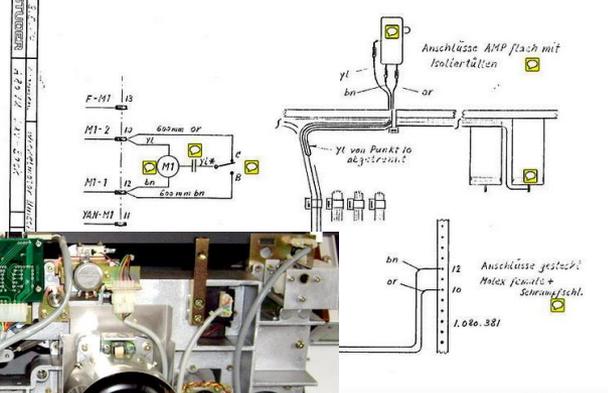
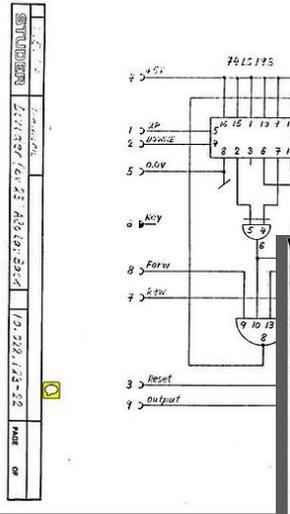
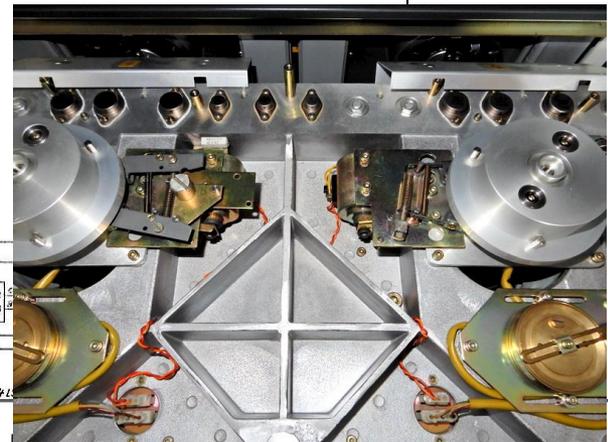
Replaced video layback heads with Studer 1.317.xxx 8T heads

Checked & set guide heights and heads with precision gauges

Converted / replaced EQ plug-ins from 15-30 to 7.5-15 in/s

Installed and tested Frostbox A80 Remote Control

Calibrated transport and audio, Lindos LA100 analyser tests



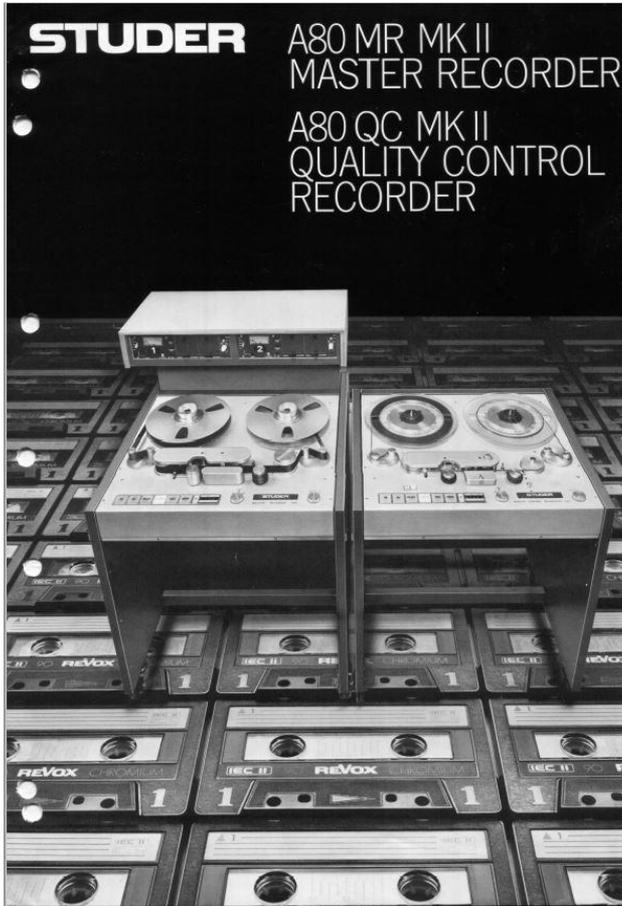


A80 VU 1" 8T Restoration Photos



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A80 MR-4-1/2" MK II Cassette Master Recorder



THE PERFECTLY RIGHT STUDER MASTER RECORDER FOR EACH APPLICATION

Studer's product range comprises master recorders with switch-selectable speeds (3.75 and 7.5 ips) for either 1/2" or 1" tape:

Summary of models

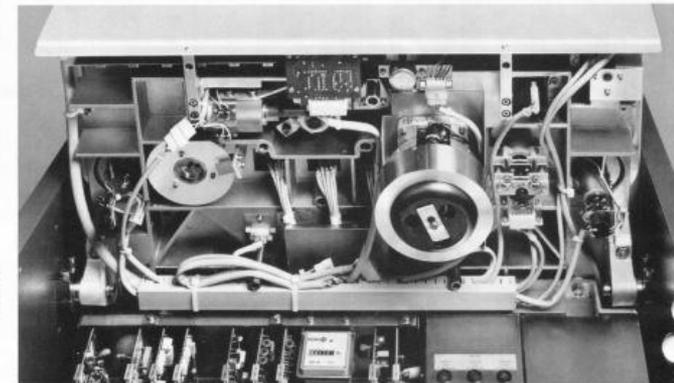
- **A80 MR-2-1/2"**
Two-channel recorder for 1/2" tape with 4-track 1/2" heads, tracks 1 + 2 wired; in-line overlapping 4-track erase head, tracks 1 + 2 wired.
- **A80 MR-4-1/2"**
Four-channel recorder for 1/2" tape with 4-track 1/2" heads, tracks 1 - 4 wired; in-line overlapping 4-track erase head, tracks 1 - 4 wired.
- **A80 MR-2-1"**
Two-channel machine for 1" tape with 4-track 1" heads, tracks 1 + 2 wired; in-line overlapping 4-track erase head, tracks 1 + 2 wired.
- **A80-4-1"**
Four-channel recorder for 1" tape with 4-track 1" heads, tracks 1 - 4 wired; in-line overlapping 4-track erase head, tracks 1 - 4 wired.
- **A80 MR-8-1"**
Eight-channel recorder for 1" tape with 8-track 1" heads, tracks 1 - 8 wired; in-line overlapping 8-track erase head, tracks 1 - 8 wired.

All versions are equipped with complete channel amplifier units and VU-meters, however without sync amplifier for optional reproduction via the record head.

THE A80 MR TAPE TRANSPORT – THE EMBODIMENT OF STABILITY

The A80 MR is the offspring of a family of world-renowned "workhorses" – that have largely codetermined today's reference standard for professional quality. Particularly the exceptional stability of the tape transport has contributed to its fame. Its design is eminently suited for special versions such as master and quality control recorders. Because the deck is designed for 2" tapes, it features enormous stability reserves that are of crucial importance to accuracy and consistent performance to specifications over a long service life. Other important features are:

- Die-cast aluminum alloy chassis for tape transport, headblock, and pressure unit.
- High-precision manufacturing on advanced CNC tool machines.
- Modular design, easily replaceable mechanical assemblies.
- Tilting transport chassis for excellent maintenance access.
- Non-contacting transport logic.
- Extremely stable servo control circuits for all motors.
- Electronically controlled tape tensions; separately adjustable operating and limit values.



A80 MR-4-1/2" MK II Restoration & Format Conversion



Work started in January 2019, completed November 2022

Removed "3.75-7.5" speed sign to reveal 7.5-15 in/s lettering

Restored slow speed Move and Direction Sensors

Replaced 4 x electrolytic capacitors in transport PSU

Replaced 5 x AC phase shift motor capacitors

Replaced 8CH amplifier rack with 2CH amplifier rack

Rewired 8CH head cables for 2CH including Low-Cap Repro

Replaced amplifiers with MK IV ex-House of Blues Nashville

Recapped all logic, audio and counter cards

Configured counter from 3.75-7.5 in/s to 7.5-15 in/s

Replaced VU meter bulbs with BA7s 24V 50k hour LEDs

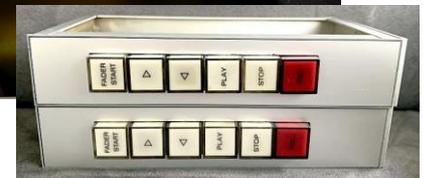
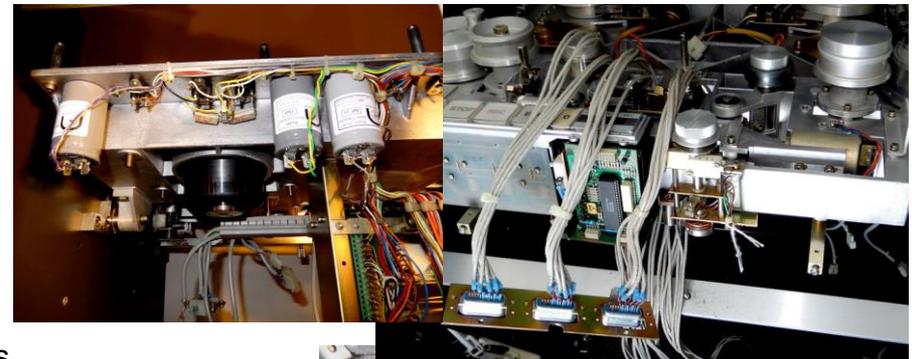
Replaced all bearings in spooling motors and tape path rollers

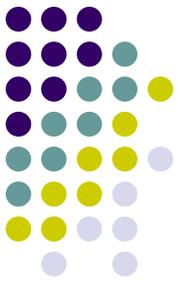
Checked & set guide heights & heads with precision gauges

Converted / replaced all EQ plug-ins from 15-30 to 7.5-15 in/s

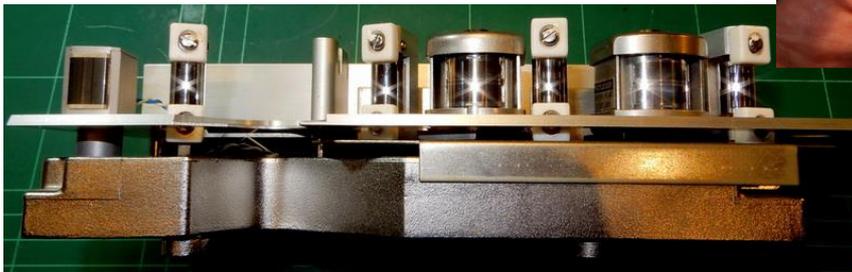
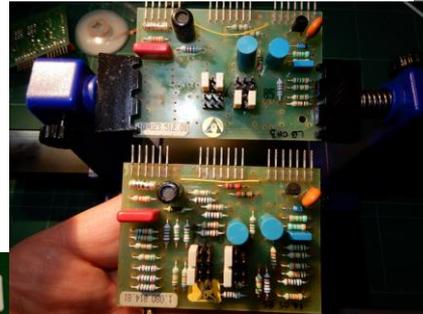
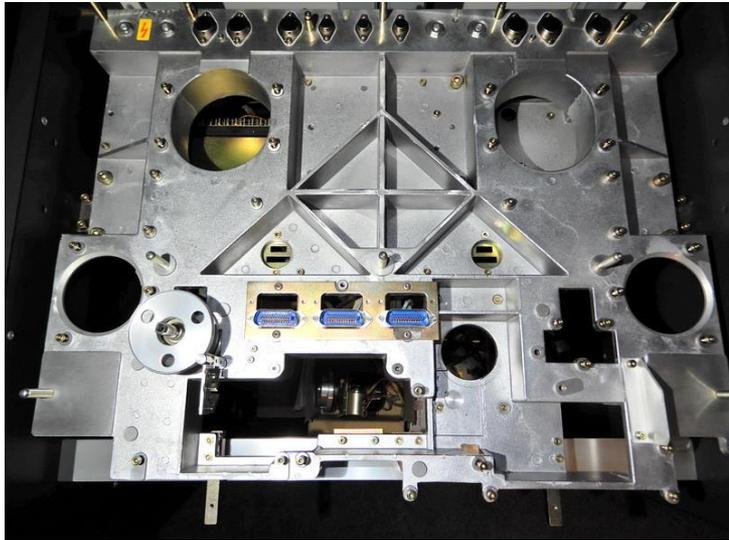
Modified & tested A80 Remote Control from Studer 089 Mixer

Calibrated transport and audio, Lindos LA100 analyser tests





A80 MR-2-1/2" MK II (VU MK IV) Restoration Photos



A80 MR special version diecast steel headblock chassis
Wavelength of 20 kHz at 3.75 in/s = 4.76 μ m! (MWIR range)

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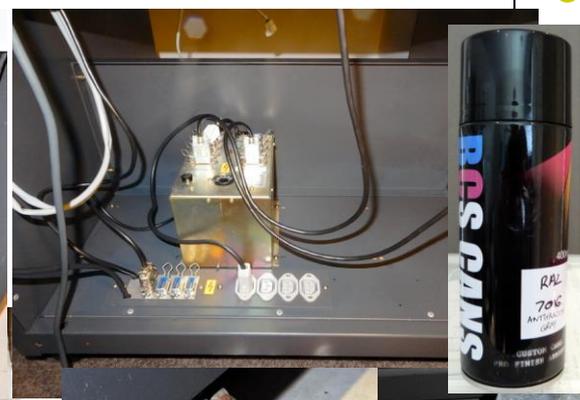
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Some A80 VU Restoration Challenges ...

Parts availability challenges

- 15-30 Capstan motors
- 7.5-15 EQ plug-in cards
- 2CH Amplifier racks
- 1/2" 2T Erase head
- RAL paint matching



"Cable Greening"

- Ultrasonic cleaning



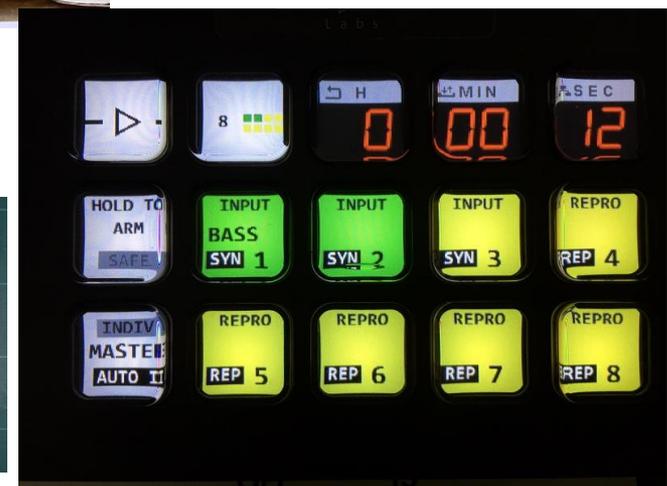
Rare Service Aids

- New Precision Gauges
- Tentelometer



Remote Controls

- Frostbox 8T Remote

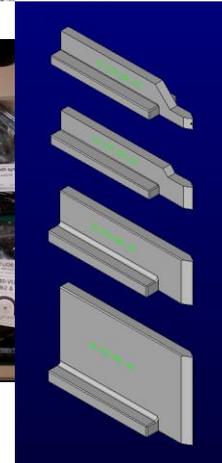


TIME ! ... a "Labour of Love"

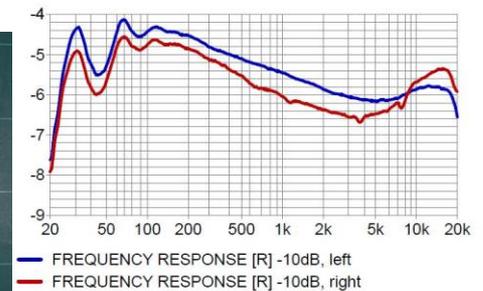
A80 VU Tools & Service Aids

Operation & Service Manual MK II-IV + SI
PB hex 2.5 & 3.0 mm & socket drivers
Knipex circlip pliers, hand tools
Tentelometer, Pesola Medio spring scales
Studer A80 Precision Gauges, Micrometer
Klüber Altemp Q NB 50 lubricant
Cleaners, degreasers, isopropanol, sprays
Nagravox Capacitor kits
Desoldering & soldering tools, pcb jig
20 MHz Oscilloscope & probes
DMM, Frequency Counter, L & C meter
A80 VU logic & audio extender boards
Han-D-Mag demagnetiser
Magnetic Reference Labs calibration tapes
Lindos LA100 Analyser & Lin4Win software
Studer document archive (ftp):

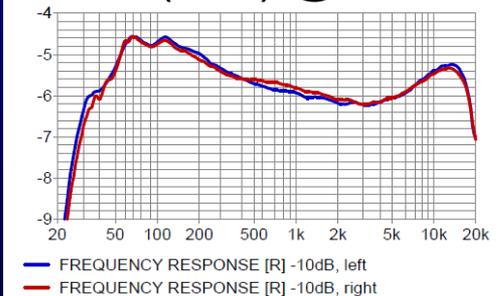
<https://www.reeltoreel.nl/studer/Public/>



1/2" 2T @ 15 in/s



1" 8T (1&2) @ 15 in/s



A80 VU Tapes

MRL Calibration Tapes

1/4" 7.5 in/s IEC1 250 nWb/m

1/4" 1/2" 1" 15 in/s IEC1 355 nWb/m



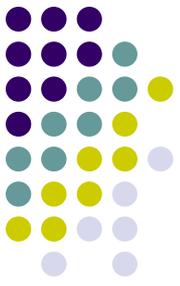
ATR Master Tapes

1/4" x 10.5" ATR40907

1/2" x 10.5" ATR30907

1" x 10.5" ATR10907





New Home at Frying Pan Studios, MONA

- **EMI REDD.17 Console** (1956, ex-Abbey Road Studios)
- Mic Preamps: RCA Vintage, Electrodyne Vintage, Neve, EMI Chandler, Coil Tube, Locomotive Tube, Capi Heider API 312
- Fairchild 670 Mk11, Chandler Zener Limiter, Highland Dynamics tube compressors
- Vintage Spring Reverbs, Bricasti M7 Reverbs, Tape delays , H8000FW
- **Studer A80 VU MK IV 1“ 8-Track**
- **Studer A80 VU (MR) MK IV 1/2“ 2-Track**
- Pro Tools HDX 32 in / 32 out
- Mics: Neumann U67 & U87; Schoeps CMC6, MK21, MK 4; COLES 4038; RCA 44-BX Vintage; AEA and Stager ribbon, Heiserman U47T tube & Type 19, Soyuz, Gefell, Beyer
- ZOD Tube DI's; and more ...
- **More info:**



photo with permission: MONA/Jesse Hunniford

<https://fryingpan.mona.net.au/>

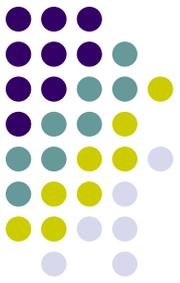
<https://www.abc.net.au/news/2023-02-01/abbey-road-recording-history-finds-new-home-at-mona/101912842>

https://www.youtube.com/watch?v=Yt3GpDwoOcw&ab_channel=ABCNews%28Australia%29

AES Melbourne Section

13 February 2023

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The Studer A80 VU adventure continues ...

A80 VU-2-1/4" MK II

Serial nr. 11162

I purchased this A80 VU #16 of 17 new at EMI Studios 301 in early 1980s

Next restoration project for my own use

Upgrade to transformerless MK IV
Amplifiers with higher power record driver
& Master Oscillator supporting Dolby HX
PRO bias modulation for increased
headroom

Has low-cap repro head cable for
potential 1/2" 2T conversion with repro
head Z = 170 mH (vs standard repro head
Z = 10 mH)

2023+ project in "Retirement" < Warning:
Retirement term undefined! >



L-R: David Hudson, Greg Cameron (Amandala Music Technologies),
Christo Curtis (Utopia Audio)
photo: Anne Hudson



Special Thank You

- Anne Hudson, for her support & patience with my project over years!
- David Roper & Barbara Martin: EMI REDD.17 on loan to MONA, restored by Lukas Glickman of Verville Audio, Montréal QC
- David Walsh, Brian Ritchie, Chris Townend, Tim Kling, Barry Young and all the team at Frying Pan Studios and MONA
- AES Melbourne Section Committee colleagues & Section Members
- Participants in this presentation
- A80 VU suppliers: Doron Kipen, Greg Cameron, Brett Crossley
- EMI Studios 301 engineers aka “Spadgers”, the best team I could hope to have had the pleasure of working with in the 1970s & 1980s

Thank You to many parts suppliers ...

- Amanda, Mornington PO, Australia Post
- Athan Corp (new pinch rollers)
- John Bailey, Jim Gordon, Stephen Theuma, S.G. Prittie, Airport West VIC (new precision gauges)
- Marcel Cattani & Daniela König, audiohouse.ch (7.5-15 in/s EQ plug-ins & many parts)
- Greg Cameron, Amandala Music Technologies, Sydney
- Stephen Crane, Technical Director Studios 301, Alexandria NSW (EQ plug-ins, etc)
- John & Cookie French, JRF Magnetic Sciences (new 1/2" 2T Flux Magnetics erase head)
- Anastasio 'Kali' Kalimeridis, Zürich CH (heads, loan of precision gauges to clone, other parts)
- Uffe Lund-Hansen, Frostbox Labs, Copenhagen Denmark (8T Audio & Transport Remote Control)
- Jay McKnight & Chuck Booyes, Magnetic Reference Lab, San Jose CA USA (calibration tapes)
- Peter Mony, Nagravox, Mona Vale NSW (capacitor kits)
- Mouser, element14, RS, Jaycar, Reverb.com, eBay ...
- Laurie Osmand, Synectix Enclosure Systems, Dandenong South VIC (powder coating 2CH racks)
- Grega Peer, Smart Solutions, Slovenia (bearing kits)
- Alastair Reynolds, Sydney (loan of precision gauges to 'clone')
- Mark Shvartsman, Retro Gear Shop, Nashville (MK IV amplifiers ex-House of Blues 24T & other parts)
- Bette Spitz, ATR Magnetics LLC, York PA USA (blank tapes)
- Techtrading GmbH / Revonline (1" spare NOS capstan motor)
- Peter Tommasini, Handbuilt, Bayswater VIC (metal shaping of 2CH amplifier racks)
- ... and other parts suppliers too numerous to list here, apologies to those not listed



Thank You for your professional advice ...



- Martin Berner, Switzerland
- Greg Cameron, Amandala Music Technologies, Sydney NSW
- Marcel Cattani, audiohouse.ch, Switzerland
- Stephen Crane, Technical Director Studios 301, Alexandria NSW
- Brett Crossley, Sydney NSW
- Roger Ginsley, Tekx Electronics, Pickering ON Canada
- Lukas Glickman, Verville Audio, Montréal QC Canada
- Paul Gold, Salt Mastering, Brooklyn NY USA
- Anastasio 'Kali' Kalimeridis, Zürich, Switzerland
- Peter Mony, Nagravox, Mona Vale NSW
- Gordon New, Ronson Gears Pty Ltd, East Melbourne VIC (precision gauge manufacturer referral)
- Grega Peer, Smart Solutions, Slovenia
- Alastair Reynolds, Sydney NSW
- John Schell, Sydney NSW
- Adolph (Fred) Thal, Adolph Thal Audio Engineering (ATAE), USA
- Gunter Wagner, Sydney NSW <https://www.wagner-microphones.com/>
- Dan Zellman, Zeltec R&D, New York NY USA
- ... and others who helped me, too numerous to list here, apologies to those not listed

The END ... and a new BEGINNING



photo: MONA <https://fryingpan.mona.net.au/story>

Additional slide





R2R Tape Recorders I've owned since 1970s

- Sony TC 377 ¼T stereo, 1.875-3.75-7.5 in/s
- ReVox A77 MK II ¼T stereo, 3.75–7.5 in/s
- ReVox A77 MK IV ¼T stereo, 3.75–7.5 in/s *
- ReVox B77 MK II 2T stereo, 7.5-15 in/s
- Studer A810-2-TC-VU-K 2T stereo, 3.75-7.5-15-30 in/s *
- Studer A80 VU-3-1" Video Layback > 8T 7.5-15 in/s
- Studer A80 MR-4-1/2" Cassette Mastering > 2T 7.5-15 in/s
- Studer A80 VU-2-1/4" MK II 2T stereo, 7.5-15 in/s *

* currently own