

A80 RC Modification to high speed, HS (30 ips)

Required Material:

Amount	Parts	Order Number
1 x	Capstan Motor ¼" / ½", 15 / 30 ips	1.021.177.82
1 x	Capstan servo 15 / 30 ips	1.080.372.00 ❶
1 x	Spooling Motor Control	1.080.385.81 ❷
1 x	Capstan Motor screen	1.080.105.53 ❸
1 x (either)	Phase shift capacitor, 10 µF, (50 Hz)	59.14.1100 ❹
2 x (or)	Phase shift capacitor, 4,3 µF, (60 Hz)	59.99.0452 ❹
1 x	Speed Label 15 / 30 ips	10.238.001.01

Required Material for converting the audio section of the A80 RC to 15 / 30 ips:

QTY	Parts need for modification	CCIR	NAB
2 x	Record equalizer 15 / 30 ips	1.080.926.00 ❺	
2 x	Repro equalizer 15 / 30 ips	1.080.927.00 ❺	
2 x	Record equalizer 15 / 30 ips		1.081.880.00 ❺
2 x	Repro equalizer 15 / 30 ips		1.081.882.00 ❺

Legend:

- ❶ The capstan servo may be modified as well according to the table in the service manual
- ❷ In case Spooling Motor PCB 1.080.383.00 is still installed in the A80, the PCB need to be exchanged by the board 1.80.385.81 to enable the Start Kick mode to prevent loops at Play start!
- ❸ An additional µ metal shield in-between the capstan motor and the tape transport die cast chassis screens the audio electronics since the 2-pole HS Capstan motor has got a higher hum radiation. Even the µ metal sleeve surrounding the capstan motor rotor is doubled shielded.
- ❹ Please note that the phase sift capacitors change as well according to the mains frequency. Note that for the 60 Hz version not only the value of the capacitors needs to be changed, even the wiring has to be matched accordingly.

For details please see the following pdf files:

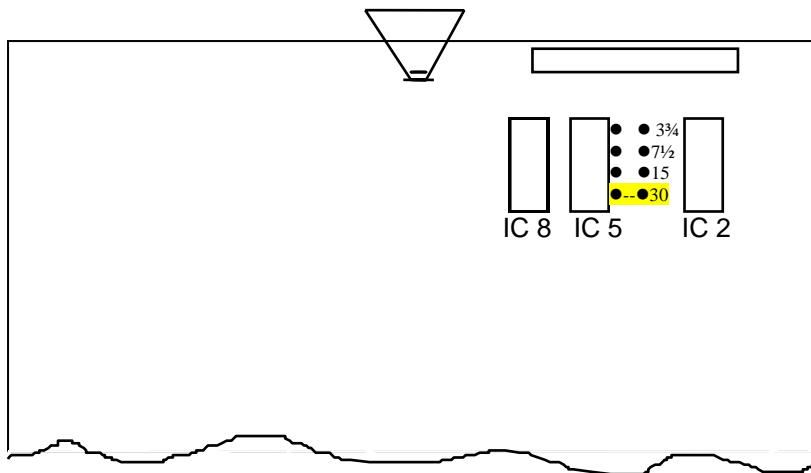
- **A80 RC Phase shift capacitors**
- **A80 Survey of motor supply (blue marked section)**

- ❺ The equalizer could be modified as well, according to the corresponding circuit diagram in the manual.

Necessarily Conversion:

Matching counter for true timing reading:

Below you will find a sketch of the Move Status Evaluation PCB 1.081.396.00. Please remove the small wire bridge at position (15) and insert it at position (30) as shown in the sketch below.



Part of the Move Status Evaluation PCB 1.081.396.00

Enable the start kick for 30 ips:

Pinch Roller Assembly: To enable the start kick mode for Studer A80 RC MK I tape recorders (serial numbers below 20'000), desolder the blue wire from the micro switch of the pinch roller solenoid and solder it to the grey wire of the pressure roller solenoid, as mentioned on the label on the pinch roller die cast assembly.

For details, see the pdf schematic diagram

- **A80 Pinch roller assembly**

Spooling Motor Control: For the general start kick activation, make sure that the Jumper S2 (15/30 ips start) on the Spooling Motor PCB 1.080.385.xx is inserted!

Speed conversion:

Capstan Motor Servo: Modify the Capstan Motor servo PCB (7½ / 15 ips),
1.080.374.00 to 15 / 30 ips (1.080.372.00)

For details, see yellow markings on the pdf file:

- **A80 Capstan servo**

Locate address search mode:

Zero Locator PCB: Put the jumper S1 on the Zero Locator PCB 1.080.395.xx to position B: 15 / 30 ips and realign the locator for minimum search corrections to find the Zero- Position.
For alignment wind tape to centre, reset counter to Zero and align for minimum corrections to find the zero position. Best alignment is achieved, when the tape winds straight to the zero position and stops, in either direction. This may not always be achieved; we allow max. three corrections until the locator finds the zero point at centre area of tape.
If possible mind overshooting the zero point. Overshooting means: the locator sends the stop command too late so that the zero position will be overshoot. For finding the correct park position the locator need to change the wind direction.
In case the above rules may not be reached on any position of the potentiometer, put the jumper back into the 7½ ips position and try the alignment once again.
Please note:
This alignment is rather tricky and time costly. Please take in consideration that the concept of the A80 tape recorder was made while still using mechanical counters and sound engineers dreamed for having locate facilities.

Tape tension unit: Make sure that in-between the two connection wires of the tape tension sensor blocking coil the 15V Zener diodes are soldered in series to the diode 1N 4001 as shown in the corresponding diagram.

For details see yellow marked diodes in the attached pdf file:

- **A80 Tape tension control assembly**

This modification prevents tape loops when entering play mode out of the edit position

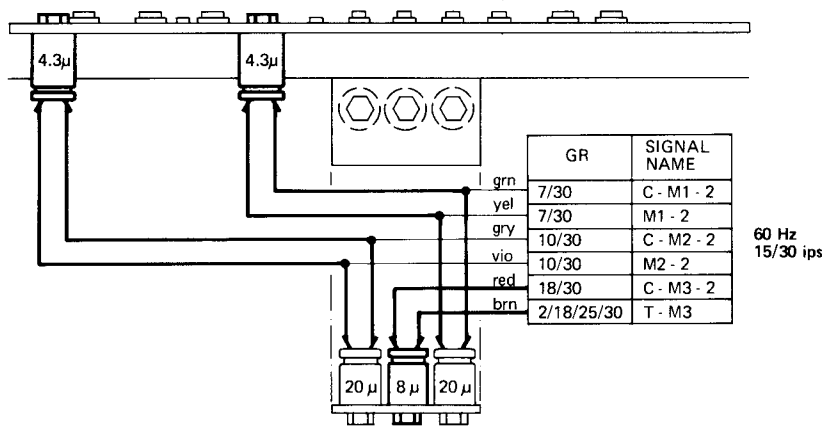
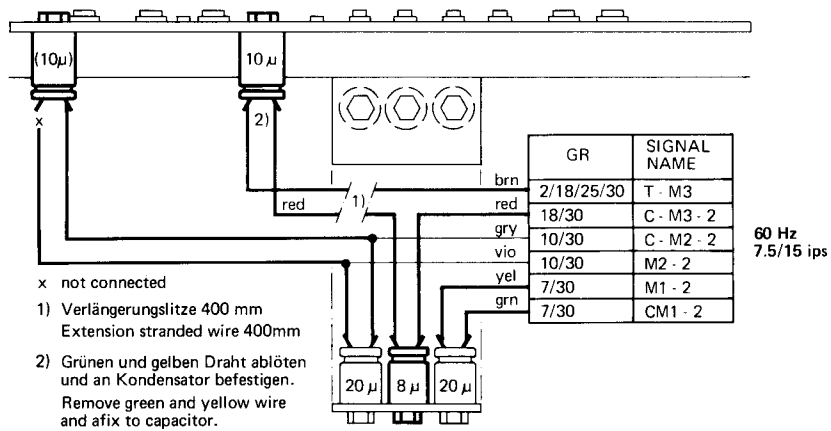
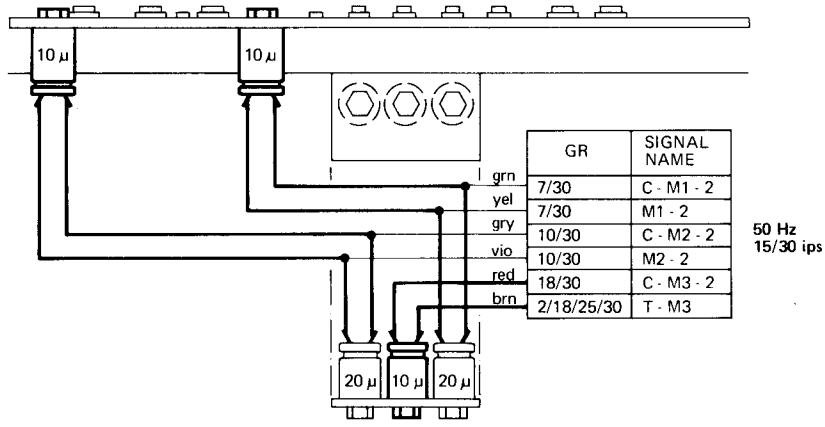
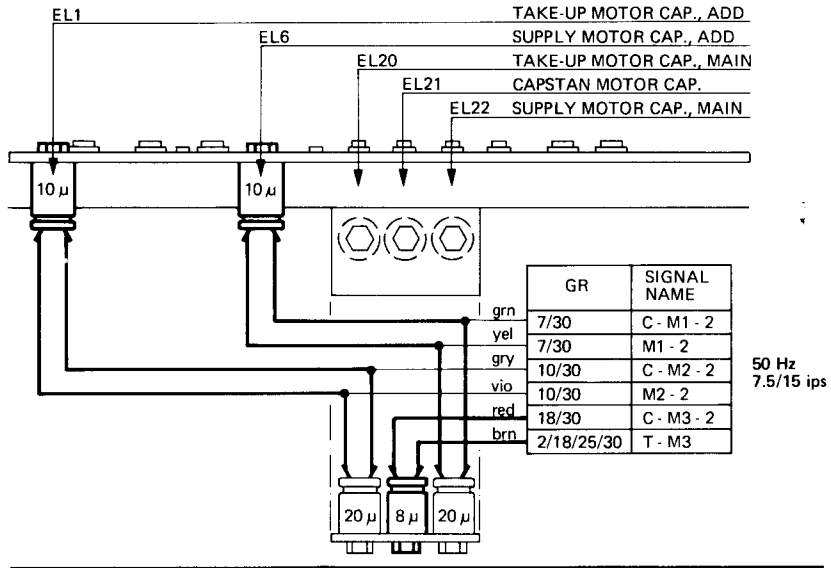
Change phase shift capacitors and additional mu metal screen as mentioned above

Change equalizer PCB on the Record and the Playback amplifiers

Alignments:

- After modifying the Capstan Servo PCB to high speed (1.080.372.00), measure the speed reference frequency on test point TP2, white (ground on TP1, black) with a digital frequency counter and realign with R27 to 1600Hz, \pm 1Hz if necessary.
- Realign tape tensions (Play / Wind / Edit) on spooling motor control PCB 1.080.385.00), as mentioned in the special Service Information (SI 88/84), Title: Modification instructions for oil filled slide able dashpots in A80 Tape Recorders, which you may find on the recordist ftp server.
- Realign the brake control
- Realign the audio section for both speeds (15 / 30 ips)

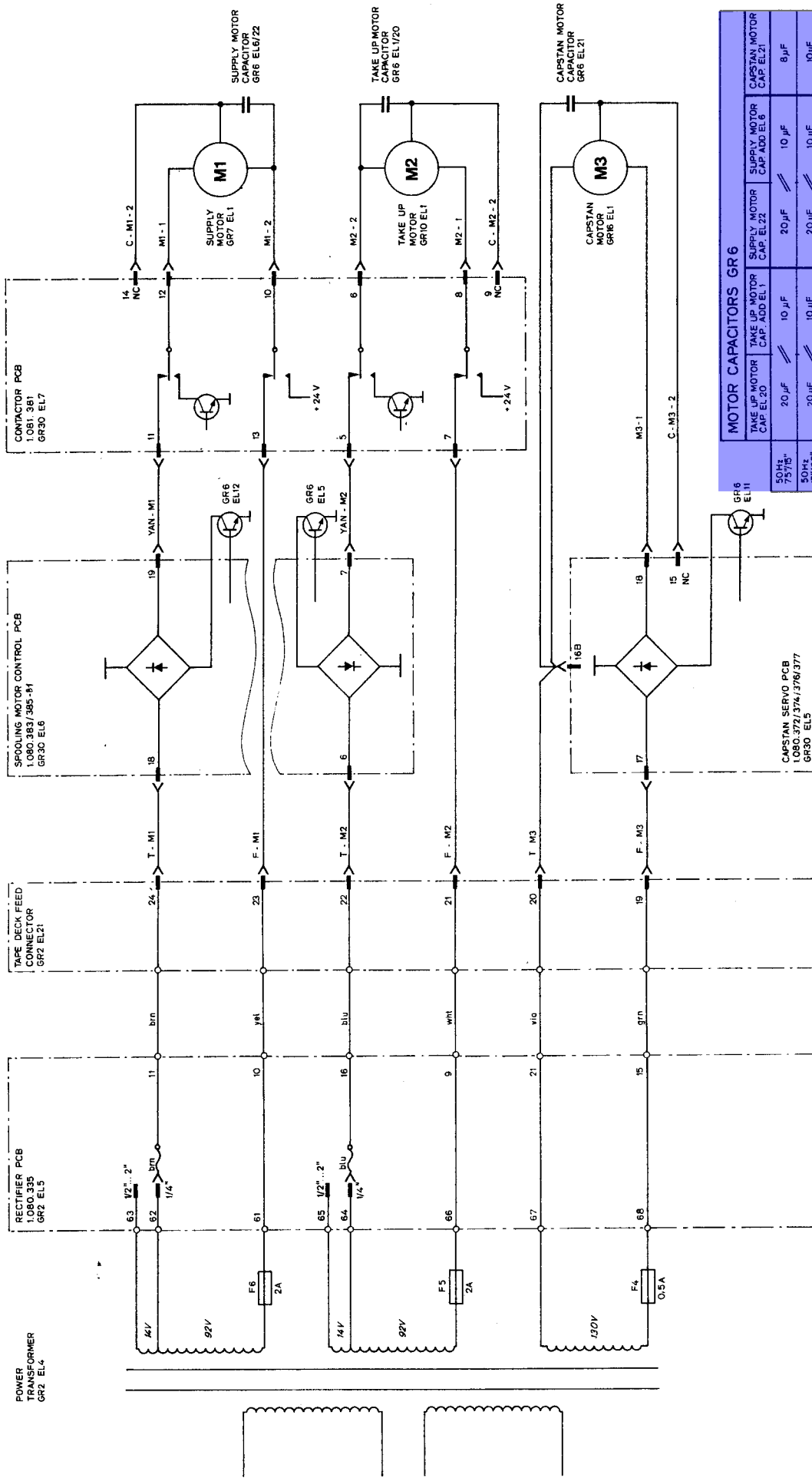
MOTOR CAPACITORS GR6



CAPACITORS

- 4.3 μF : 59.99.0452
- 8 μF : 59.14.3809
- 10 μF : 59.14.1100
- 20 μF : 59.14.1200

SURVEY OF MOTOR SUPPLY



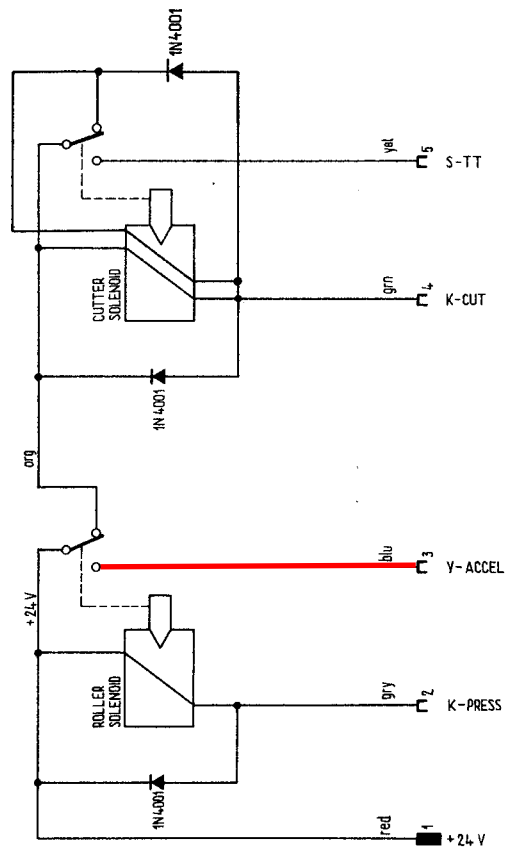
MOTOR CAPACITORS GR 6					
TAKE UP MOTOR CAP. EL20	TAKE UP MOTOR CAP. ADD EL1	SUPPLY MOTOR CAP. EL22	SUPPLY MOTOR CAP. ADD EL6	CAPSTAN MOTOR CAP. EL21	
50Hz - 75/15"	20 µF	10 µF	20 µF	10 µF	8 µF
50Hz - 15/30"	20 µF	10 µF	20 µF	10 µF	10 µF
60Hz - 75/15"	20 µF	(10 µF)	20 µF	10 µF	10 µF + 4.5 µF
60Hz - 15/30"	20 µF	4.3 µF	20 µF	4.3 µF	8 µF

// CONNECTED IN PARALLEL + CONNECTED IN SERIES () NOT CONNECTED

4.3 µF: 59.99.0452
 8 µF: 59.14.3809
 10 µF: 59.14.1100
 20 µF: 59.14.1200

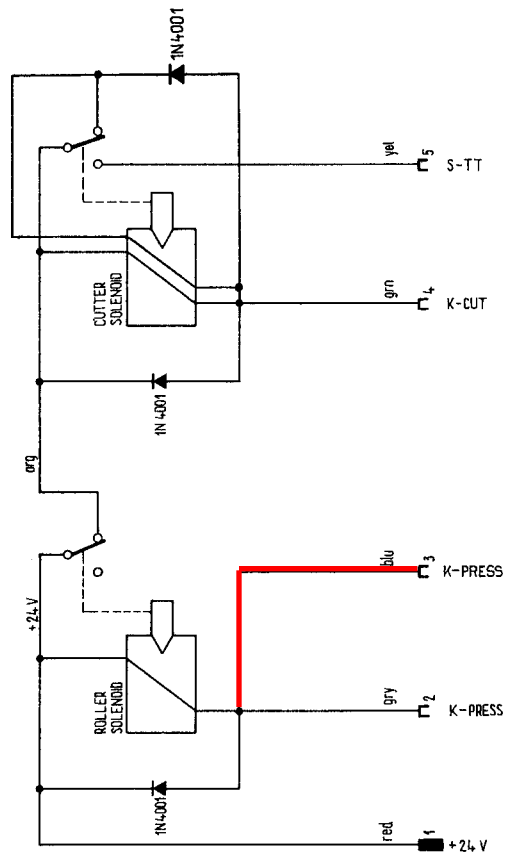
PRESSURE ROLLER ASSEMBLY 1.060.124 GR16 EL1

MK I : 7 5/15ips
MK II : 7 1/2 / 15 / 30ips



MK I: 7½ / 15 ips
MK II: 7½ / 15 / 30 ips

MK I : 15/30ips



MK I: 15 / 30 ips

