



The MS 541 Connector permits the following signals and remote control functions to be connected to the VMS 80 Lathe:

### 1.1 .GROOVE SPACING AND DEPTH CONTROL SIGNALS

Preview LEFT	Hi, Low and shield	} Balanced and floating audio inputs.
Preview RIGHT	Hi, Low and shield	

### 1.2. GROOVE SPACING AND DEPTH CONTROL REMOTE CONTROL OPERATIONS

It is possible to remote control the following functions: "Lateral Offset", "Vertical Offset" and "Land Economy". For this one may either remove the PC board STO 80 from the VMS 80 (MS) and use it at a remot location or one may order a special plug-in module (size A2B) SKA 22561 for this purpose, in which case the STO 80 must be removed from the VMS 80 Lathe.

The remote control is effected by means of 2-bit and 4-bit codes which bear the following designations:

$A_L, B_L, C_L, D_L$  = Lateral Offset

$A_V, B_V, C_V, D_V$  = Vertical Offset

$A_E, B_E$  = Land Economy

### 2.1. Remote control of the VMS 80 lathe functions

The push button commands START, STOP, FAST, MARKER\* and ADD LAND may all be remote controlled. The remote control momentary closure buttons may be wired in parallel to the identical buttons on the BE 80 Operating Panel (normally open contacts to 0 Volts), allowing operation both from the remote point and the BE 80 Panel.

When using lighted remote push buttons, it is possible to obtain true tally indication. The lamp should be a 12 V/ 40 mA type. One pole of each lamp will be connected to the + 15 V supply on the MS 541 connector, while the other is connected at the connector through a 75 ohm, 1/8 W resistor to the corresponding lamp connection for the function intended.

\* MARKER button or TIME/SPIRAL resp.



## 2.2. AUTOMATIC BANDING UNIT USING A LIGHT BARRIER

In order to avail oneself of the automatic banding function triggered by leader tape on the master tape, the VMS 80 offers the following light barrier connections:

LS RCV            (Light barrier receiver)  
LS 0 V            (Light barrier 0 volt )    For the connection of a phototransistor

The light source may be powered, depending on the type of lamp used, either from the +15 V operating voltage found on the MS 541 connector, or the power supply associated with the tape machine itself.

If it is desired that the light source only light when a tape-to-disk transfer is taking place, it is possible to connect one of its leads to a suitable powering voltage and the other to a control point provided for this purpose:

LS EMT (Emitter).

For the case where the light source is powered from the supply of the tape machine, the 0 volt potential of that supply is to be connected to the 0 volt connection of the MS 541 connector. When doing this, it is important that the shields of modulation and preview signal lines be grounded only at one end -- either the console or the tape machine -- to prevent ground loops.

## 3.1. AUTOMATIC START AND STOP OF THE TAPE PLAYBACK MACHINE

To start the master tape automatically (end of the LEAD-IN groove), or to stop it (start of the LEAD-OUT), the VMS 80 provides voltage-free relay contacts connected to the MS 541 connector as follows:

TAPE STOP 1        (transfer contact)  
TAPE STOP 2        (normally open contact)  
TAPE STOP 3        (normally closed contact)

TAPE START 1  
TAPE START 2        (normally open contacts)

## 3.2. DIGITAL CONTROL OUTPUTS FOR RADIUS DEPENDENT SWITCHING FUNCTIONS

The VMS 80 produces digital 4-bit binary encoded signals which change in decreasing steps starting at the lacquer blank outside diameter and going towards the center. A 12" LP's usable recorded radius is divided into 15 steps. These steps permit level, equalization or tracing compensating functions to be made radius dependent.



Four outputs are available, which count backwards in binary steps from 15 at the outside diameter. A HIGH signal equals +14 V at the output; a LOW signal is 0 volt. These outputs are to be terminated in a high impedance (approx. 100 kohms). They are designated as follows:

$A_R$  (Least significant bit)

$B_R$  " " "

$C_R$  " " "

$D_R$  (Most significant bit)

Limits of the control range:

	$A_R$	$B_R$	$C_R$	$D_R$
$\geq 14"$	H	H	H	H
dia. 374 mm (14.7")	L	H	H	H
"	H	L	H	H
"	H	L	H	H
dia. 112 mm (4.4")	L	L	L	L

### 3.3. SPIRAL DEPENDENT CONTROL OUTPUT

The output "MARKER EXTERN H" reports the appearance of a SPIRAL groove between cuts by supplying a logic HIGH signal (+14 V into 100 kohm load). It may be used for the alternate switching between two level and equalization channels, as are provided on many NEUMANN Tape-to-Disk Transfer Consoles, or it may be combined with suitable circuitry to provide spirals of differing length according to a prearranged program, etc.

\*MARKER or TIME/SPIRAL resp.



#### 4. SIGNAL OUTPUTS FOR SPECIAL USES

"ADD LAND EN H": Control input which for a HIGH input (+14 V) and an open ADD LAND potentiometer (BE 80), provides for increased lead screw speed for the suppression of preview echo, or for a LOW input, blocks this same increased lead screw function. (CAUTION: only to be injected via series resistor since the potentiometer ADD LAND also forces this function in its counterclockwise position! (priority).

SYNC START COM H: Dual path signal lead to provide for a sync start of two VMS 80 Lathes operated in parallel. That Lathe which first reaches the lead-in diameter waits there with its cutterhead in the READY position until the second machine has reached that same point. They both begin to cut simultaneously.

16 f<sub>D</sub>: Digital output for the control of rpm synchronous functions. (16 pulses per revolution; +14 V<sub>p-p</sub>).

That equals, for  $33 \frac{1}{3} \text{ rpm} \approx 0.55 \text{ rps} \times 16 = 8.8 \text{ Hz}$ .

2.17 Hz: Digital output for the synchronizing of time dependent functions +14 V<sub>p-p</sub>). Is also used as the blinking frequency for certain push button lamps.



## PIN CONNECTIONS OF THE MS 541 CONNECTOR

1 a, b, c	= 0 V	10 a	= A <sub>R</sub>
2 a	= START BUTTON	10 b	= A <sub>L</sub>
2 b	= MARKER BUTTON*	10 c	= A <sub>V</sub>
2 c	= FAST BUTTON	11 a	= B <sub>R</sub>
3 a	= STOP BUTTON	11 b	= B <sub>L</sub>
3 b	= ADD LAND BUTTON	11 c	= B <sub>V</sub>
4 a	= START LAMP	12 a	= C <sub>R</sub>
4 b	= *MARKER LAMP	12 b	= C <sub>L</sub>
4 c	= FAST LAMP	12 c	= C <sub>V</sub>
5 a	= STOP LAMP	13 a	= D <sub>R</sub>
5 b	= ADD LAND LAMP	13 b	= D <sub>L</sub>
5 c	= ADD LAND EN H	13 c	= D <sub>V</sub>
6 a	= LS RCV	14 a	= 16 f <sub>D</sub>
6 b	= LS 0 V	14 b	= 2.17 Hz
6 c	= LS EMT	14 c	= SYNC STRT COM H
7 a	= TAPE STOP 1	15 a	= PREV L A
7 b	= TAPE STOP 2	15 b	= PREV L B
7 c	= TAPE STOP 3	15 c	= SHIELD
8 a	= TAPE START 1	16 a	= PREV R A
8 b	= TAPE START 2	16 b	= PREV R B
8 c	= *MARKER EXT H	16 c	= SHIELD
9 a, b, c	= + 15 V	17 a	= A <sub>E</sub>
		17 b	= B <sub>E</sub>
		18 a, b, c	= 0 V

\* MARKER or TIME/SPIRAL resp.