Alpine GR75S620 Cassette tape mechanism

The Alpine GR75S620 mechanism is used in the Jaguar XJ8 head unit. It is a self contained module which connects to the main board of the head unit via a 20 pin SIL connector, with pin spacing of 2mm. The module is then secured in place with 4 screws. The connections on the 20 pin connector are as follows;

PIN No.	SIGNAL NAME	DIRECTION	DESCRIPTION
1	+5V	IN	Power for sensor LED's
2	Pause Switch	OUT	Signal to HU when tape paused
3	Forward Run Detect	OUT	Pulse train when tape running forward
4	Mode Switch	OUT	Tells HU what position mechanism is in
5	Rewind Run Detect	OUT	Pulse train when tape running in reverse
6	N/C		
7	F-IN	IN	Forward control line from HU
8	R-IN	IN	Reverse control line from HU
9	O.Motor	IN	Tape drive motor on
10	Power ground		
11	B+	IN	Battery permanent
12	Pack in switch	OUT	Tells HU if cassette loaded or not H = Loaded, L = Unloaded
13	Audio B+ 8.3V	IN	B+ to head select electronics
14	For/Rew	IN	Forward / Rewind signal
15	Metal switch	OUT	Metal tape detect
16	R. Out	OUT	Right channel audio out
17	L. Out	OUT	Left channel audio out
18	Audio Ground	OUT	
19	O.Fast	IN	Fast cue control signal H = Fast L = Play
20	Music detect	OUT	Detects start of music on tape

NOTE The pin connections on the JAGUAR unit are the opposite of an ALPINE unit. i.e. 1 =20. 20 =1

The mechanism has four operating positions;

Position 1	Fast Forward
Position 2	Fast Rewind
Position 3	Play Side 2
Position 4	Play Side 1

Each of these positions is indicated by the MODE SWITCH closing.

When a cassette is inserted the pack in switch in switch opens and pin 12 goes high, the HU sees this and takes pin 7 (F-IN) HIGH while leaving pin 8 (R-IN) LOW, this causes the load motor to turn in the forward direction and loads the cassette, shortly after the cassette is fully loaded, the mechanism reaches position 1 (FF) and the mode switch closes taking pin 4 LOW, then position 2, then position 3 and finally position 4 (side one play), at each position the mode switch closes providing feed back to the HU so it knows where the tape mechanism is. The HU then raises pin 9 (O.Motor) and the tape drive motor starts.

The pause line goes high and a pulse train is generated on pins 3 and 5 by reed switches activated by small magnets on the supply and take up reel spindles. The HU uses these pulses to determine if the tape is moving.

If side 2 is selected, while playing side one, the mechanism moves back one position by taking pin 8 (R-IN) HIGH and leaving pin 7 (F-IN) LOW, this reverses the load motor, which runs until the mode switch closes at position 3 (Play side 2). Similarly if FAST REWIND or FAST FORWARD is selected the load motor runs in reverse until the mode switch closes in position 2 or position 1 .

Truth table for F-IN and R-IN.

LOAD MOTOR	F-IN	R-IN
Forward	H	L
Braked	H	H
Stopped	L	L
Reverse	L	H