4 APPLICATIONS OF THE D-20

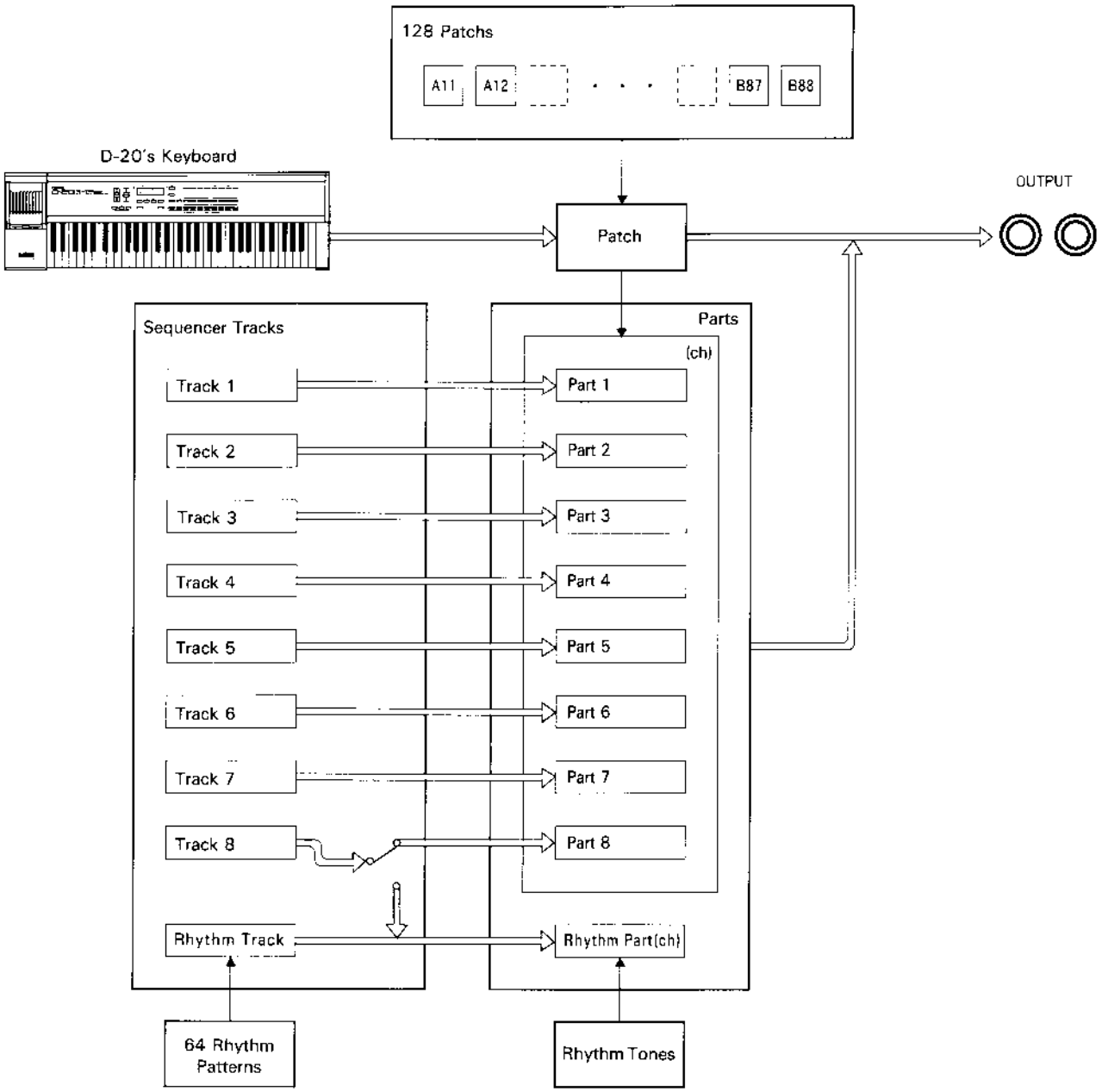
1. Performance Mode

This sections describes how to use the built-in Sequencer in the Performance Mode, and MIDI devices.

a. Using the Sequencer

1) Structure of the Sequencer

The following diagram shows how performance messages run in the Performance mode.



[Part]

Each of the 9 Parts can be used as an independent MIDI sound module. However, in the Performance mode, the same Patch is assigned to Parts 1 to 8, in other words, all these 8 modules are the exactly the same.

[Sequencer]

The D-20's sequencer features 9 Tracks for recording your performance data, each Track playing the corresponding Part with the recorded performance data. Track 8 can be used as a rhythm track for recording rhythm a performance in real time.

● Track Mute

The Sequencer is provided with a Track Mute function that can mute the Track you select. The performance data of the muted Track is transmitted through the MIDI OUT, therefore, can play an external MIDI device.

***The Bender, Modulation, Volume, Hold and Program Change messages recorded in the muted Track is transmitted in every MIDI function.**

2) How to use the Sequencer

In the Performance mode, the same Patch is assigned to all the 8 Parts. This means that it is of no use to play more than one Track using only this unit. When using the Sequencer in the Performance mode, use only one of the Tracks 1 to 8, and the Rhythm Track, muting all the other Tracks.

In the Performance Mode, you may use the Sequencer as shown below.

☞Using the Rhythm Track

Play the keyboard to the rhythm performance recorded in the Rhythm Track or Track 8.

☞Easy Recording

You may record a short phrase in the Sequencer, like a memo.

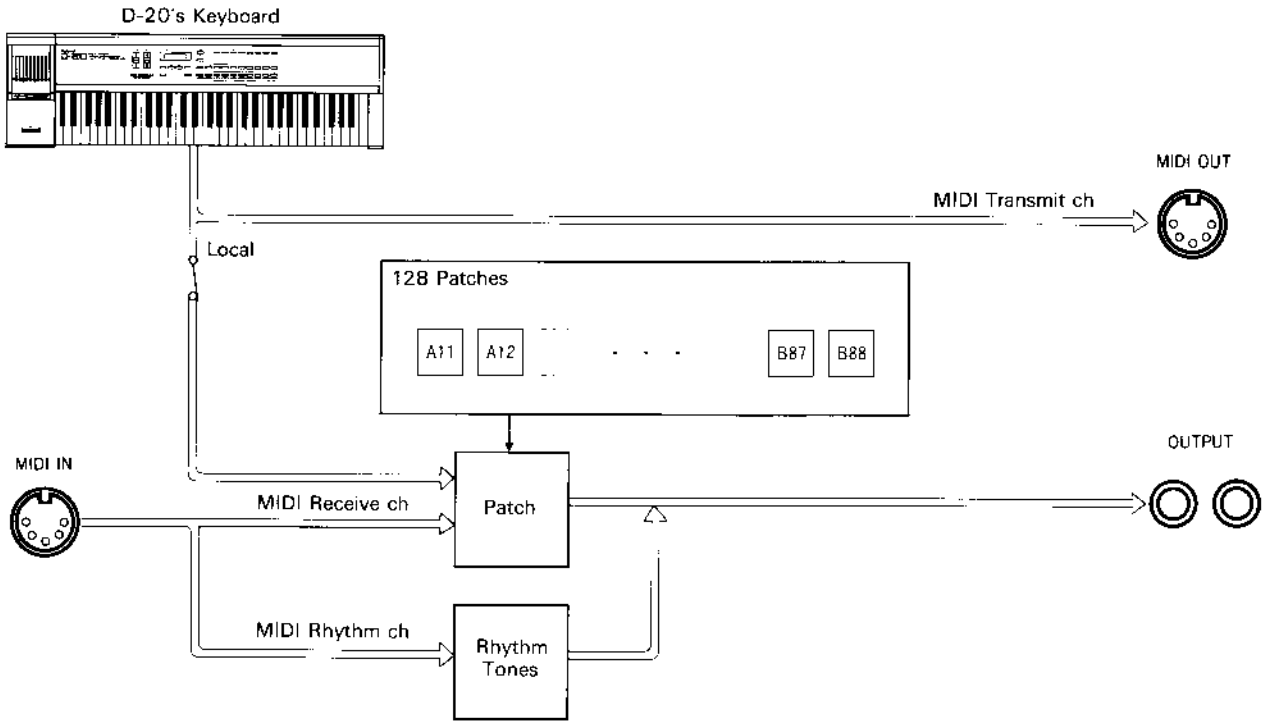
☞Using another MIDI sound module

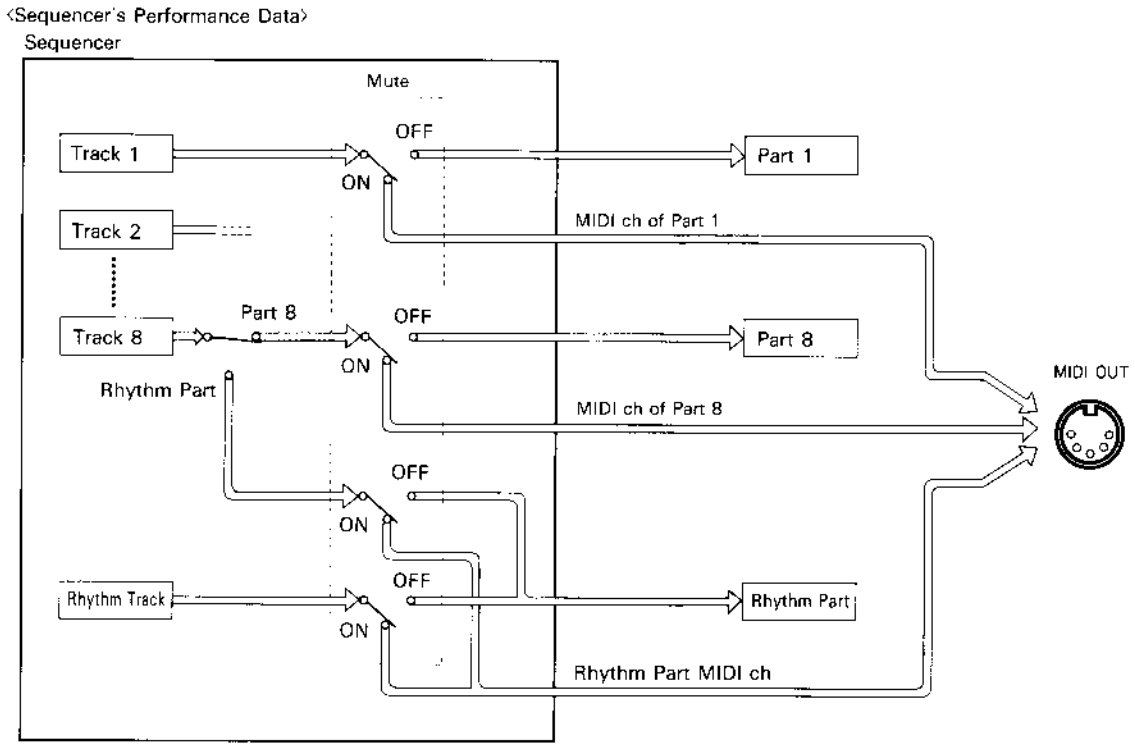
Using the fact that the muted Track's performance data is transmitted through the MIDI OUT, you can create ensemble effects with the D-20 and a MIDI sound moudle.
(See the next chapter "Using MIDI Devices".)

b. Using MIDI Devices

1) How MIDI Messages run

The following diagram shows how performance messages run in the Performance mode.





○The keyboard's performance messages are sent through MIDI OUT on the set MIDI transmit channel.

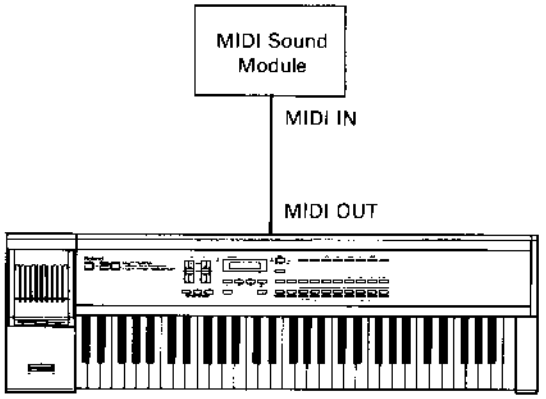
○Performance messages received on a MIDI receive channel play the synthesizer sound module, and those received on the MIDI Rhythm channel play Rhythm sounds.

○Regarding performance data in the Sequencer, only the performance data of the muted Tracks are transmitted from the MIDI OUT (on the MIDI channel of the relevant Parts respectively).

2) Examples

[Using an external MIDI device]

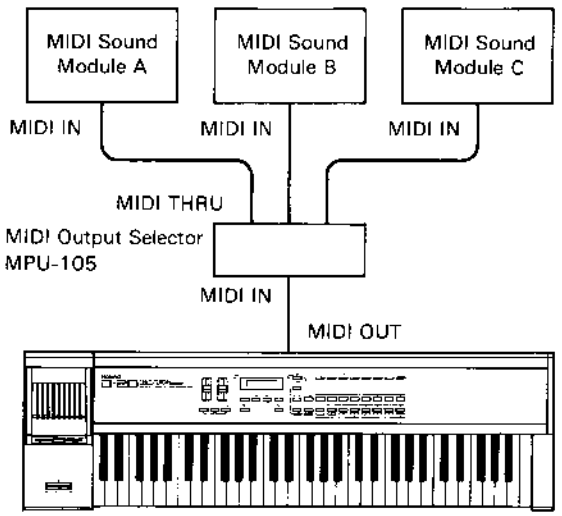
○Unison performance of the D-20 and the MIDI sound module by playing the keyboard.



Channel Setting Example:

D-20		MIDI Sound Module
Transmit Channel ch1	⟶	ch1

○Ensemble performance of more than one MIDI sound module by using the built-in sequencer.

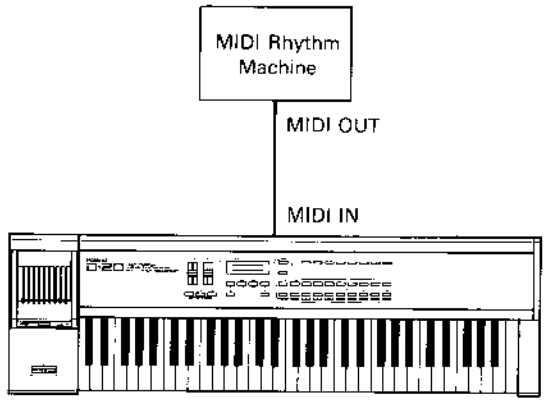


Channel Setting Example:

D-20		MIDI Sound Module
Sequencer Track 1 (Part ch1)	⟶	A ch1
Track 2 (Part ch2)	⟶	B ch2
Track 3 (Part ch3)	⟶	C ch3

[Using the D-20 as a MIDI sound module]

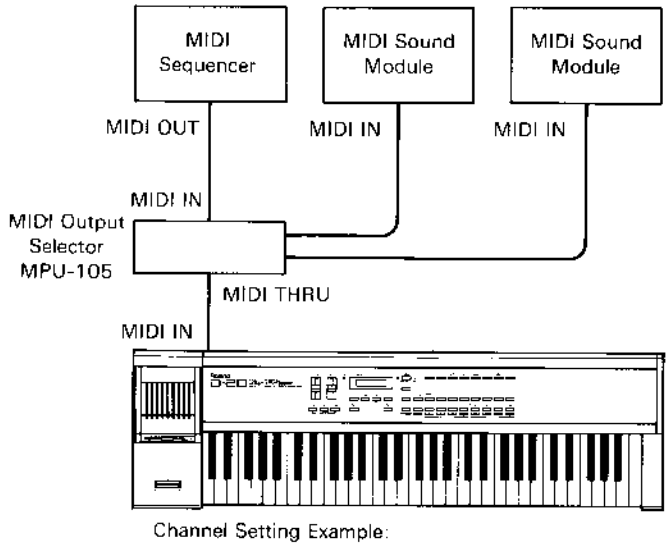
○Playing the rhythm sounds of the D-20 by using a programmable rhythm machine.



Channel Setting Example:

	D-20		Rhythm Machine
Rhythm Channel	ch10	←	ch10

○Playing the sound source of the D-20 by using a MIDI sequencer.



Channel Setting Example:

	D-20		Sequencer	
Receive Channel	ch1	←	Performance Data	ch1
Rhythm Channel	ch10	←	Rhythm Performance Data	ch10

3) MIDI Function Setting

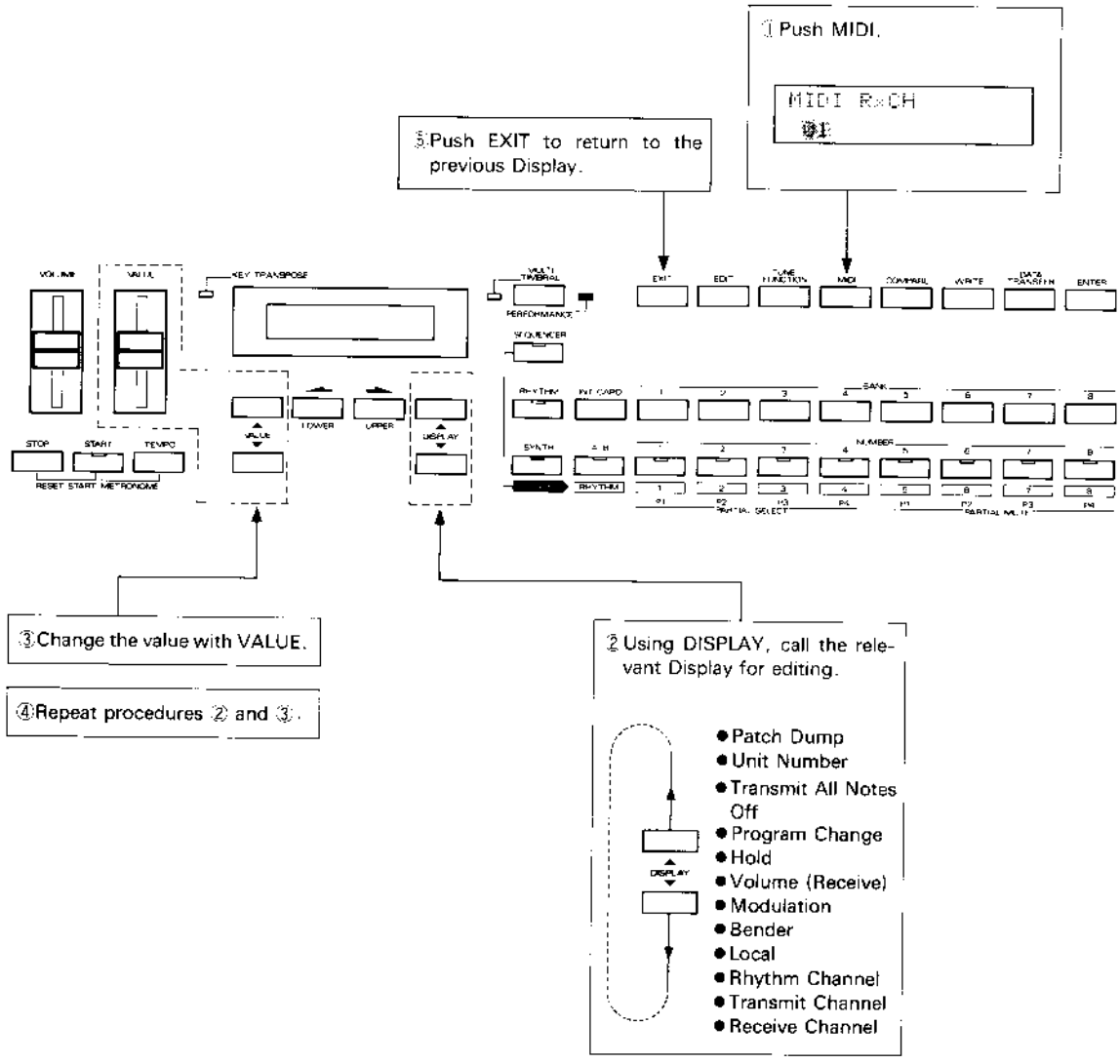
This section describes how to set the MIDI functions in the Performance mode.

First, make sure that the Performance Indicator is lit, then do as follows.

***The edited value will be retained in memory except for a few functions.**

***For setting MIDI channels in each Part, see the next chapter "MIDI Channel Setting for each Part".**

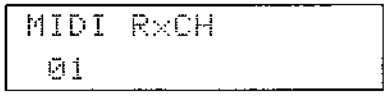
【Editing Procedure】



***When the performance data in the Sequencer is transmitted with the Track muted, recorded Bender, Module, Volume, Hold and Program Change messages is transmitted in every MIDI function.**

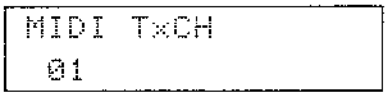
[MIDI Functions]

● MIDI Receive Channel



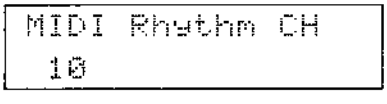
This is the MIDI channel on which the performance messages for the synthesizer sound source are received. 1 to 16 are valid.

● MIDI Transmit Channel



This sets the MIDI channel on which the keyboard performance messages are sent. 1 to 16 are valid.

● MIDI Rhythm Channel

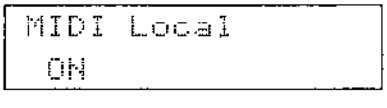


This sets the MIDI channel on which the rhythm performance messages are transmited or received. 1 to 16 are valid.

***Changing Rhythm channels here will automatically change the Rhythm Part channel in the Multi Timbral mode.**

***Rhythm performance data cannot be transmitted unless the Clock mode (see page 165) is set to INTERNAL.**

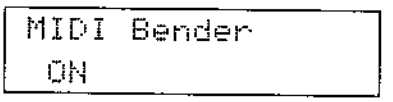
● Local



This selects whether to divide the keyboard (or panel controls) and sound module sections or not. When OFF, the keyboard performance messages are sent through MIDI OUT, muting the synthesizer sound source in the D-20 completely. However, this does not prevent the performance messages received through MIDI IN from controlling the D-20's synthesizer section.

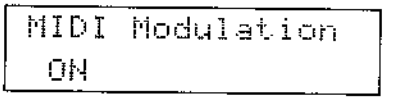
***The Local will be automatically set to ON when the unit is turned off.**

● **Bender**



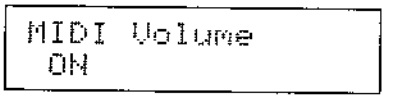
Set this to ON to receive or transmit Bender messages.

● **Modulation**



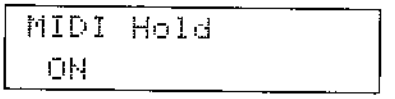
To receive or transmit Modulation messages, set this to ON.

● **Volume (Receive)**



Set this to ON to receive Volume messages.

● **Hold**



Set this to ON to receive or transmit Hold messages.

● **Program Change**

```
MIDI Prog.Change
 ON
```

Set this to ON to receive or transmit Program Change messages.

Program Change numbers correspond to the D-20's Patches as shown below.
(The Internal and Memory Card memories have the same Patch numbers in common.)

Group	Number / Bank	1	2	3	4	5	6	7	8
A	1	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15	16
	3	17	18	19	20	21	22	23	24
	4	25	26	27	28	29	30	31	32
	5	33	34	35	36	37	38	39	40
	6	41	42	43	44	45	46	47	48
	7	49	50	51	52	53	54	55	56
	8	57	58	59	60	61	62	63	64
B	1	65	66	67	68	69	70	71	72
	2	73	74	75	76	77	78	79	80
	3	81	82	83	84	85	86	87	88
	4	89	90	91	92	93	94	95	96
	5	97	98	99	100	101	102	103	104
	6	105	106	107	108	109	110	111	112
	7	113	114	115	116	117	118	119	120
	8	121	122	123	124	125	126	127	128

**Number 0 to 127 are used as Program Change Messages in the actual MIDI Format.

***The Program Change messages cannot switch the Internal and Memory Card modes.**

● **Tramsmit All Notes Off**

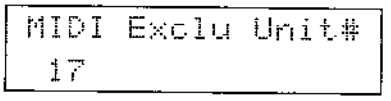
```
MIDI TxAll N-Off
ON
```

Set this to OFF if you do not wish to transmit All Notes Off messages.

***The Transmit All Notes Off setting is available for the muted prformance data for the Sequencer and is also available in the Multi Timbral Mode.**

***The Transmit All Notes Off setting will be automatically set to ON when the unit is turned off.**

● Unit Number



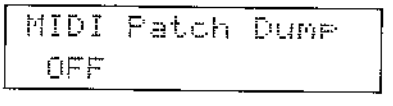
A Unit Number is a number used to identify an external device instead of the MIDI channel number, when data is received or transmitted using Exclusive messages (only for Roland ID number). So, it is possible to send or receive Exclusive messages by matching the Unit numbers of two devices. OFF and 17 to 32 are valid, and at OFF, the Exclusive messages cannot be communicated. When using a programmer, be sure not to select OFF.

***Even when sending or receiving Exclusive messages on a MIDI channel, do not set this to OFF but any number from 17 to 32.**

***The Unit Number you have set is retained even in the the Multi Timbral mode.**

***The Unit Number you have set will be automatically returned to 17 when the unit is turned off.**

● Patch Dump



The Patch Dump function transmits the sound data of a certain Patch using Exclusive messages. Using this function, sound data can be recorded in an external sequencer together with performance data. In this way, the original Patch will always be retrieved even after it is edited on the D-20. The Patch Dump function transmit the Exclusive messages with Unit Number.

***The Patch Dump function transmits the data only when changing the Patch with panel operation.**

***If you change the value of the Patch Dump, the Timbre Dump setting (see page 11) in the Multi Timbral mode will also be changed automatically.**

***The Patch Dump you have set will be automatically returned to OFF when the unit is turned off.**

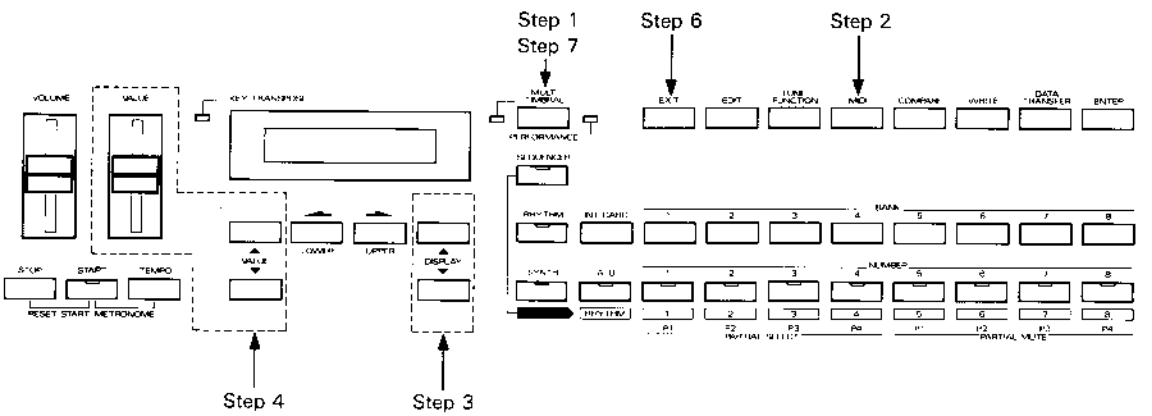
4) MIDI Channel Settting for each Part

When playing an external MIDI sound module using the Track Mute function, it is required to set the MIDI channel of the Part assigned to the relevant Track and the MIDI channel of each external sound module to the same number.

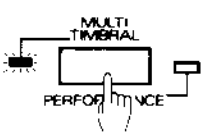
***The MIDI channel setting in each Part is retained even after the unit is turned off.**

MIDI channel of each Part is preprogrammed by the manufacturer as shown below.

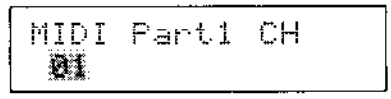
Part 1	–	ch 1
Part 2	–	ch 2
Part 3	–	ch 3
Part 4	–	ch 4
Part 5	–	ch 5
Part 6	–	ch 6
Part 7	–	ch 7
Part 8	–	ch 8
Rhythm Part	–	ch 10



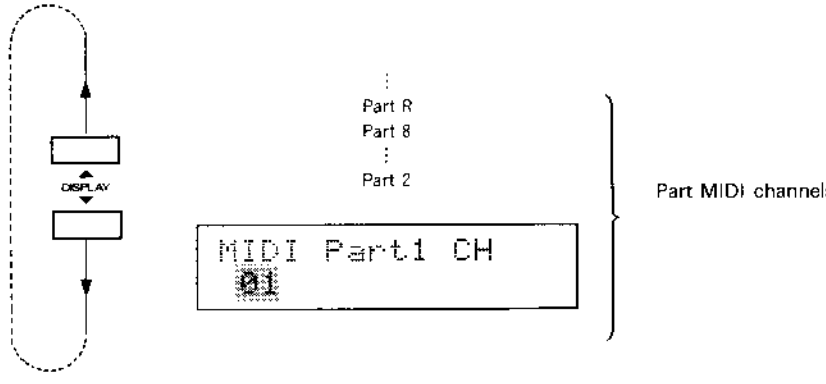
Step 1 **Push the Mode Button to select the Multi Timbral mode.**



Step 2 Push the MIDI button.



Step 3 Call the MIDI Channel Display of the relevant Part using the DISPLAY button.



*The MIDI channel of the Rhythm Part is the same number as that in the Performance mode.

Step 4 Change the MIDI channel with the Value Control Knob.

Step 5 To continue to change MIDI channels of other Parts, repeat Steps 3 and 4.

Step 6 Push the EXIT button.

Step 7 Push the Mode Button to return to the Performance mode.

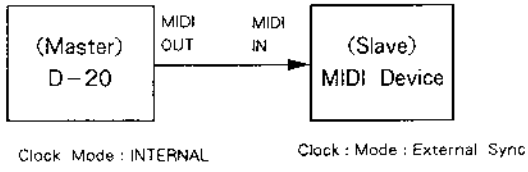
5) Sync

When performing ensemble pieces using a MIDI sequencer's data and the D-20's sequencer data, the tempo of the two devices should be the same speed. That is, one of the two devices should become a slave device to synchronize to the other (=master device).

***Sync signals can be received or transmitted regardless of the MIDI channel setting.**

[Using the D-20 as a Master]

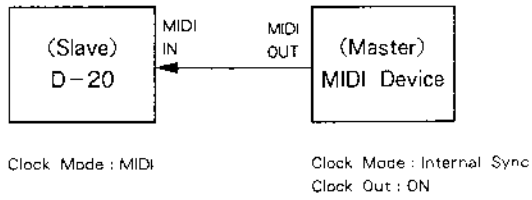
Set the external device (=slave) so that it can receive the sync signals sent from the D-20 (=master).



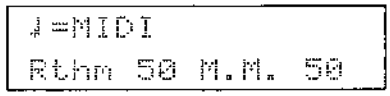
***The D-20 is normally set to the Internal mode.**

[Using the D-20 as a Slave]

Set the D-20 (=slave) so that it can receive the sync signal sent from the external device (=master).

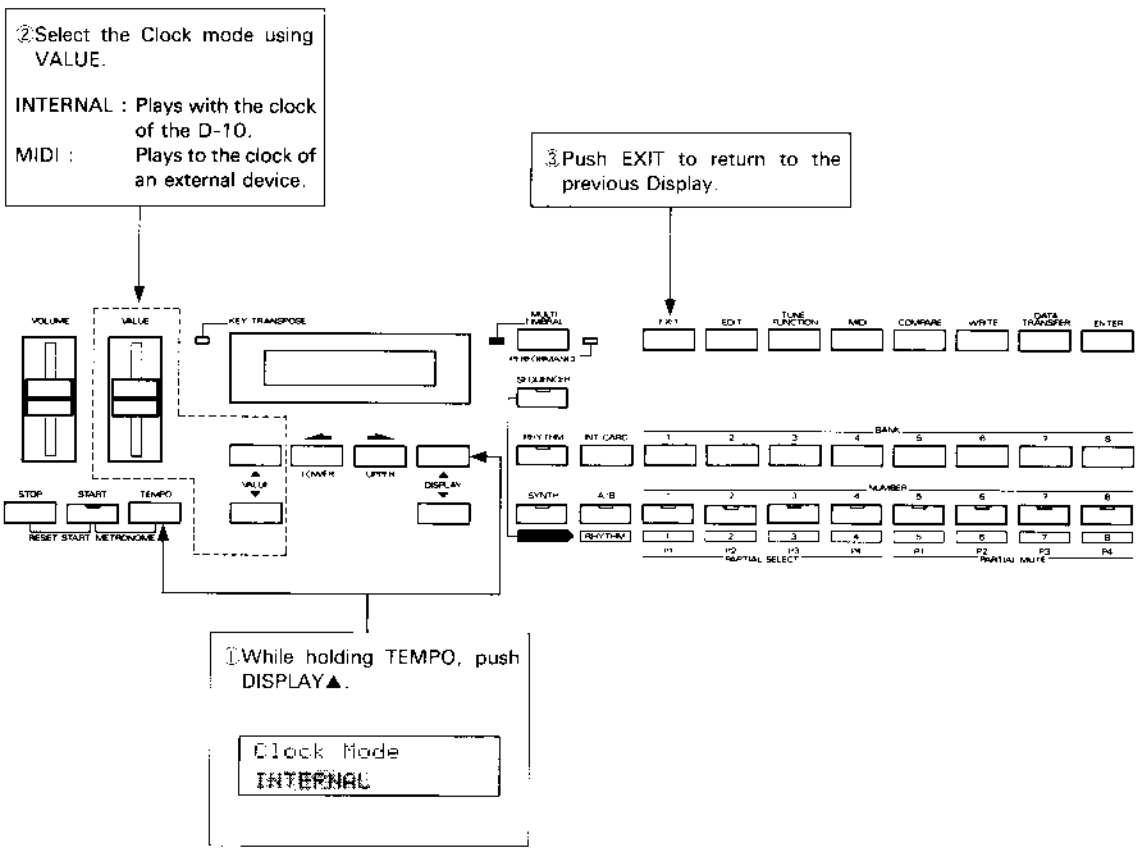


When the D-20 is set to the MIDI mode, [tempo] will be shown as below, and the D-20 can no longer control the tempo.



【Clock Mode Setting】

To enter the Clock mode, do as follows.



*The Clock mode you have set will be retained even after the unit is turned off.

*If you do not wish to use the D-20 but use it as a MIDI sound module, be sure to set the D-20 to the Internal mode. This is to prevent the built-in sequencer from playing in sync with the signal from the external device.

*When the Stop message is received while setting the Clock mode to MIDI, a performance will stop at the end of the bar receiving the Stop message.

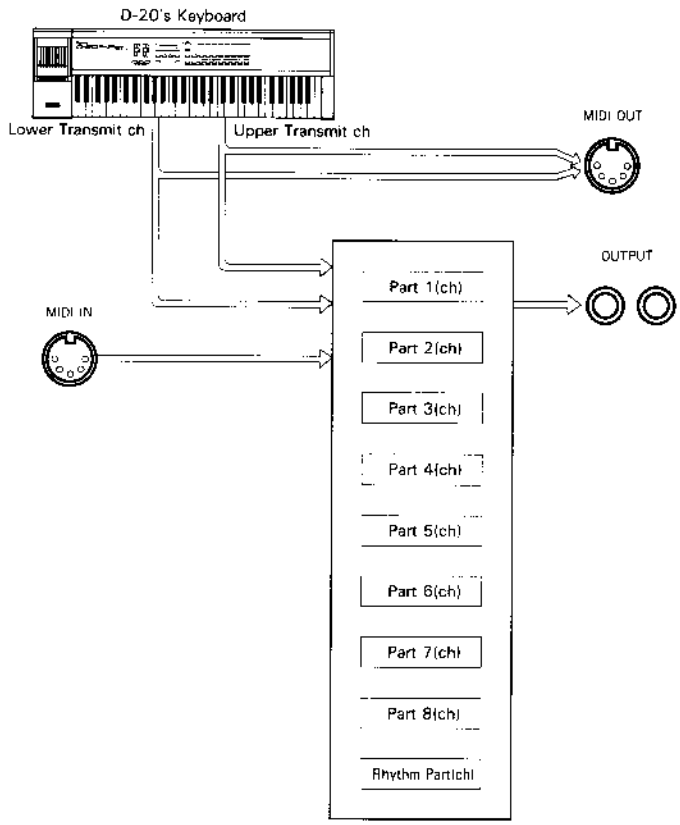
2. Multi Timbral Mode

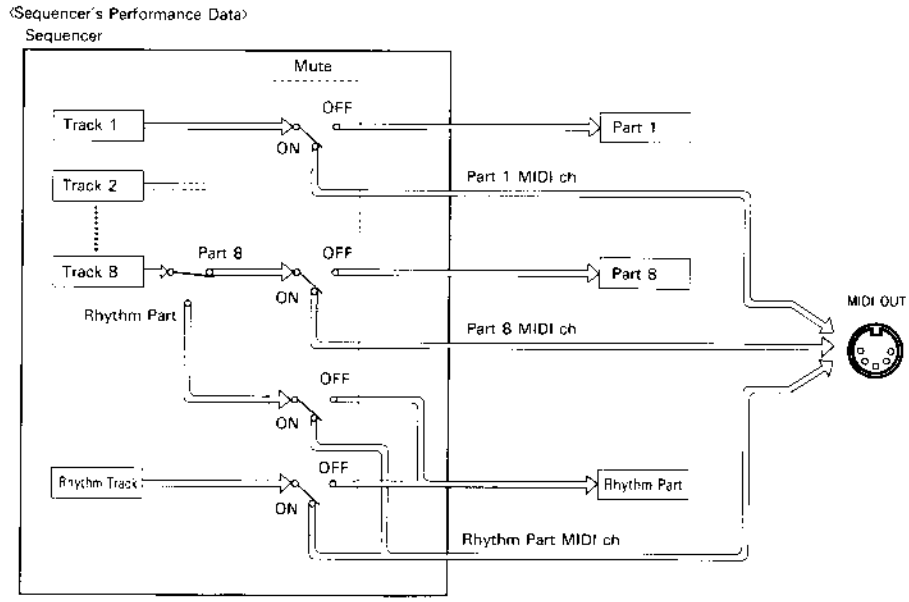
a. Using MIDI Devices

The following are examples for using the Multi Timbral mode effectively.

1) How MIDI Messages run

The following shows how MIDI messages run in the Multi Timbral mode.





○Keyboard performance messages are transmitted on each MIDI transmit channels, the Upper and Lower.

○Performance messages fed into MIDI IN play the relevant Part which the same MIDI channel is assigned to.

○Regarding the Sequencer data, only the performance data of the muted Tracks are transmitted through MIDI OUT (on the MIDI channel of the corresponding Part).

○Timbre selection messages on the D-20 (=Program Change) messages are transmitted from the MIDI OUT using the MIDI transmit channel of keyboard.

[Program Change]

Program Change numbers correspond to the Timbres of the D-20 as shown below. (Timbres in the Internal memory share the same numbers with the Timbres on a memory card.)

Group	Number / Bank	1	2	3	4	5	6	7	8
A	1	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15	16
	3	17	18	19	20	21	22	23	24
	4	25	26	27	28	29	30	31	32
	5	33	34	35	36	37	38	39	40
	6	41	42	43	44	45	46	47	48
	7	49	50	51	52	53	54	55	56
	8	57	58	59	60	61	62	63	64
B	1	65	66	67	68	69	70	71	72
	2	73	74	75	76	77	78	79	80
	3	81	82	83	84	85	86	87	88
	4	89	90	91	92	93	94	95	96
	5	97	98	99	100	101	102	103	104
	6	105	106	107	108	109	110	111	112
	7	113	114	115	116	117	118	119	120
	8	121	122	123	124	125	126	127	128

*Number 0 to 127 are used as Program Change Messages in the actual MIDI Format.

*Program Change messages are transmitted only when a Timbre is selected in the Keyboard Display using the MIDI transmit channel of the keyboard in the Display.

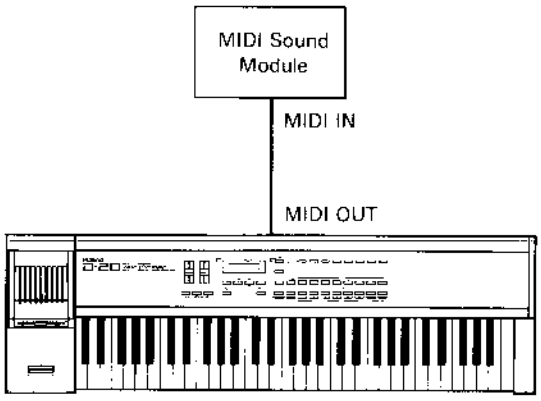
*Program Change messages cannot switch the Internal and Memory Card Modes.

2) Examples

The following are examples for using the Multi Timbral mode effectively.

[Using an external MIDI sound module]

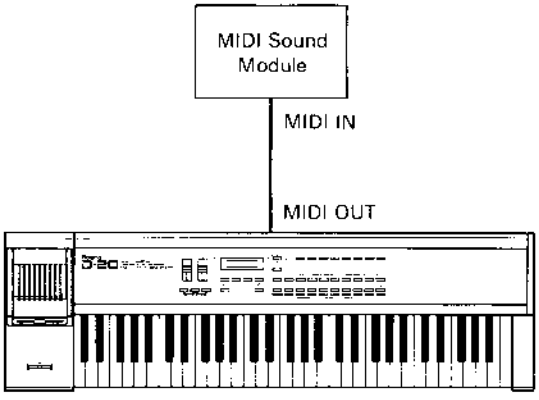
○Playing the D-20 and the MIDI sound module from the keyboard and playing other parts with the built-in sequencer.



Channel Setting Example:

● Keyboard Transmit Channel	● Receive Channel of the MIDI Device
Lower ch1 →	→ ch1 ch
Upper ch1 →	
● Sequencer Data	● Part MIDI Channel
Track 1 →	→ Part 1 ch1
Track 2 →	→ Part 2 ch2
Track 3 →	→ Part 3 ch3
Track 4 →	→ Part 4 ch4
Track 5 →	→ Part 5 ch5
Track 6 →	→ Part 6 ch6
Track 7 →	→ Part 7 ch7
Track 8 →	→ Part 8 ch8
Rhythm Track →	→ Rhythm Part ch10

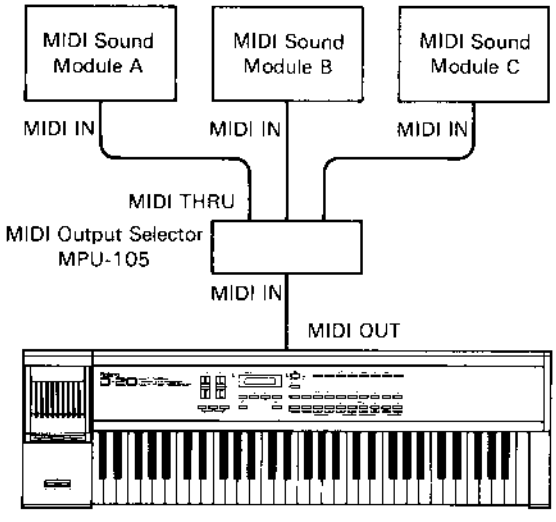
○Playing the MIDI sound module from the keyboard and each part with the built-in sequencer.



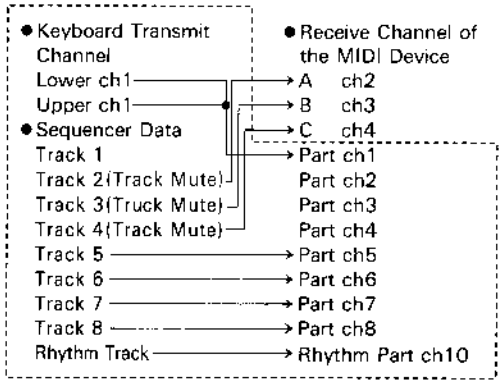
Channel Setting Example:

● Keyboard Transmit Channel	● Receive Channel of the MIDI Device
Lower ch11 →	→ ch 11
Upper ch11 →	
● Sequencer Data	● Part MIDI Channel
Track 1 →	→ Part 1 ch1
Track 2 →	→ Part 2 ch2
Track 3 →	→ Part 3 ch3
Track 4 →	→ Part 4 ch4
Track 5 →	→ Part5 ch5
Track 6 →	→ Part 6 ch6
Track 7 →	→ Part 7 ch7
Track 8 →	→ Part 8 ch8
Rhythm Track →	→ Rhythm Part ch10

○**Playing more than several MIDI sound modules with the built-in sequencer.**

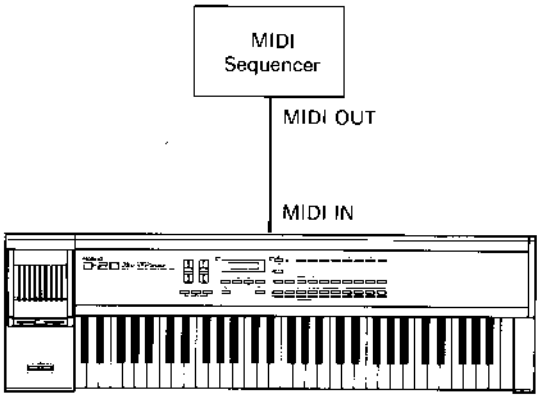


Channel Setting Example:

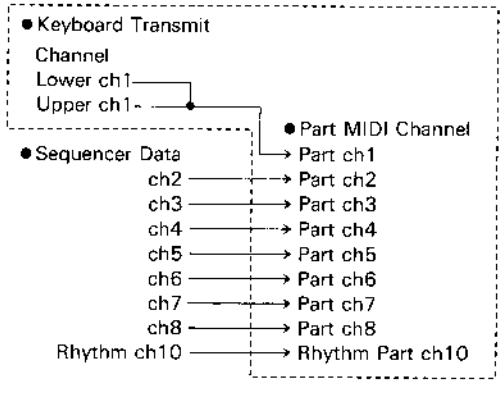


[**Using the D-20 as a MIDI sound module**]

○**Playing the D-20's sound module with an external MIDI sequencer.**



Channel Setting Example:



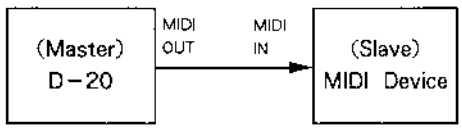
3) Sync

When performing ensemble pieces using a MIDI sequencer's data and the D-20's sequencer data, the tempo of the two devices should be the same speed. That is, one of the two devices should become a slave device to synchronize to the other (=master device).

***Sync signals can be received or transmitted regardless of the MIDI channel setting.**

[Using the D-20 as a Master]

Set the external device (=slave) so that it can receive the sync signals sent from the D-20 (=master).



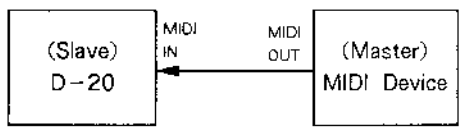
Clock Mode : INTERNAL

Clock : Mode : External Sync

***The D-20 is normally set to the Internal mode.**

[Using the D-20 as a Slave]

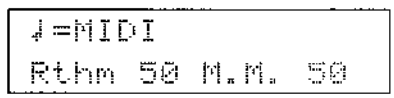
Set the D-20 (=slave) so that it can receive the sync signal sent from the external device (=master).



Clock Mode : MIDI

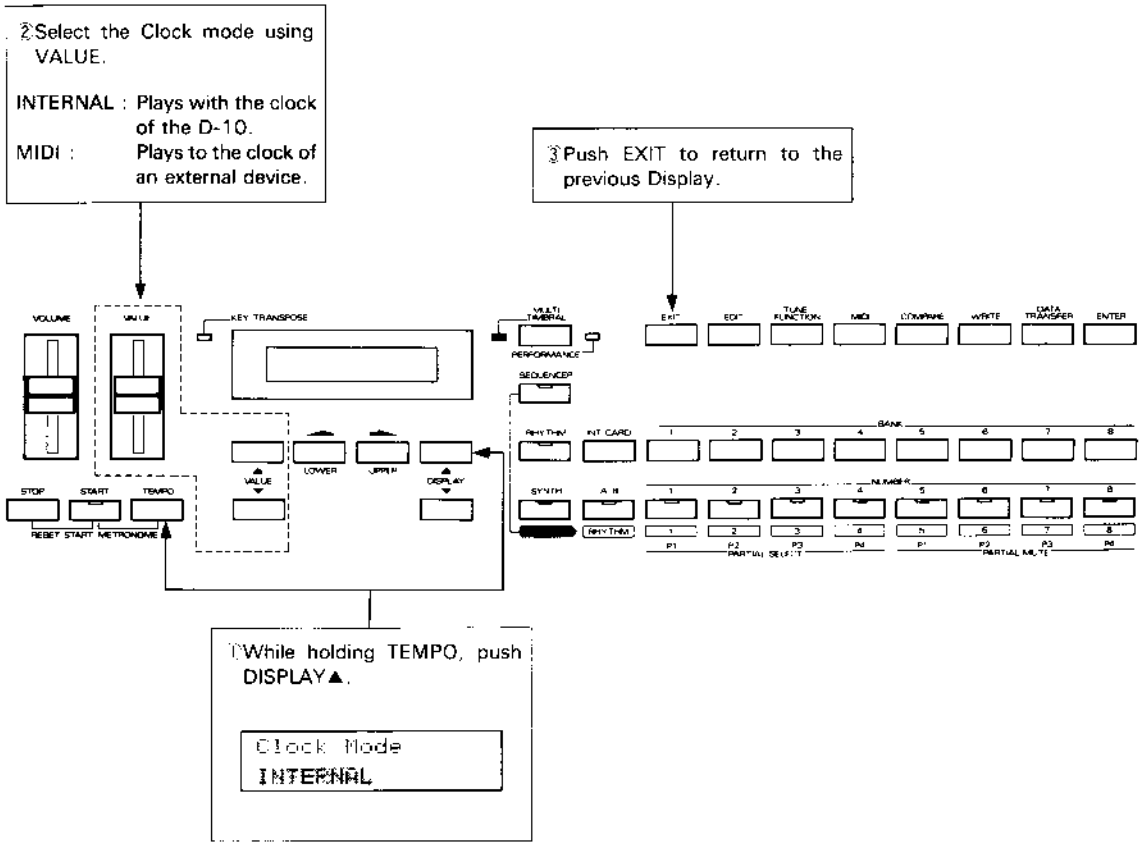
Clock Mode : Internal Sync
Clock Out : ON

When the D-20 is set to the MIDI mode, [tempo] will be shown as below, and the D-20 can no longer control the tempo.



【Clock Mode Setting】

To enter the Clock mode, do as follows.



*The Clock mode you have set will be retained even after the unit is turned off.

*If you do not wish to use the D-20 but use it as a MIDI sound module, be sure to set the D-20 to the Internal mode. This is to prevent the built-in sequencer from playing in sync with the signal from the external device.

*When the Stop message is received while setting the Clock mode to MIDI, a performance will stop at the end of the bar receiving the Stop message.

b. Recording from an external sequencer

When the D-20 is set to the Multi Timbral mode, you can record the entire performance data programmed with an external sequencer into the built-in sequencer.

[Notes]

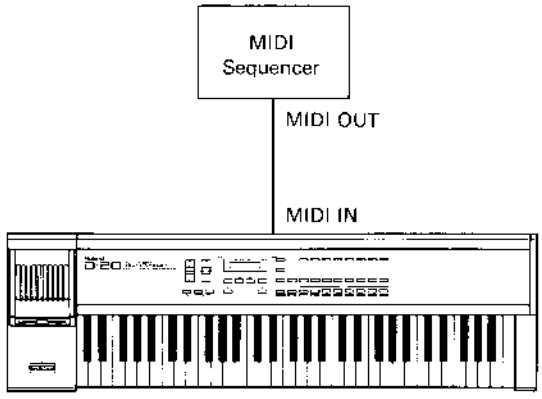
○When the D-20 is set to the Performance mode, the data cannot be recorded from an external sequencer.

○Before recording, set the MIDI channel of each performance data on the external sequencer to the MIDI channel of the Part that corresponds to each Track of the D-20's sequencer unit to the same number. (If the MIDI channel is not properly set, the performance data cannot be recorded.)

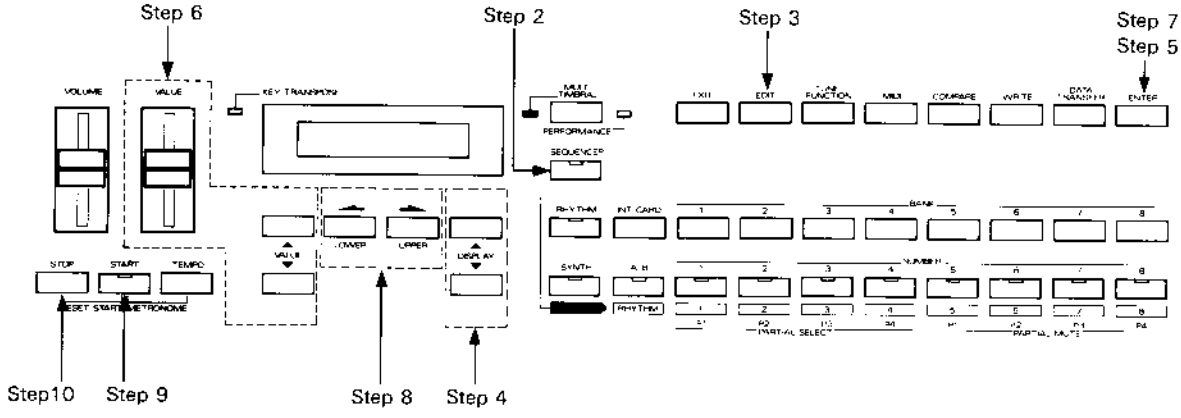
○The Rhythm performance data can be recorded in Track 8. When recording rhythm performance data at the same time, set the MIDI channel of the rhythm performance data, and the MIDI channel of the Rhythm Part to the same number.

○Selecting this "external sequencer's recording mode" will erase the entire performace data recorded in the D-20.

[Connection]



【Operation】



Step 1 Set the external sequencer ready for playing.

Step 2 Push the **SEQUENCER** button. (The indicator lights up.)

Step 3 Push the **EDIT** button.

Step 4 Call the following Display using the **DISPLAY** buttons.

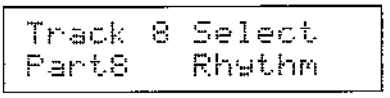
```
External REC
Sure?      Enter
```

Step 5 Push the **ENTER** button.

```
REC
Time  4x4    Enter
```

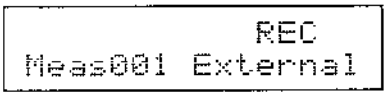
Step 6 Set the beat (1/4 to 8/4) using the Value Control Knob.

Step 7 **Push the ENTER button.**



Step 8 **To record rhythm data in Track 8, push the right Cursor Button. If not, push the left Cursor Button.**

The Display responds as below, and meanwhile, all the Track (NUMBER) Indicators flash (red).



Step 9 **Start recording.**

When using the D-20 as a master device, push the START button on the D-20. When using the external sequencer as a master, start the external sequencer.

The indicator of the Track where performance data has been recorded stops flashing and remains alight.

Step 10 **When finished recording, push the STOP button on the master device.**

When using the D-20 as a master device, push the STOP button on the D-20. When using the external sequencer as a master, stop the external sequencer.

The indicator of the recorded Track flashes (green), and the unit is returned to the Sequencer mode.