YAMAHA

DISK RECORDER
DRC-20

Owner's Manual
Bedienungsanleitung
Manuel d'instructions
Manual del Propietario

FOR USE WITH CLAVINOVA
POUR ETRE EMPLOYÉ AVEC CLAVINOVA

Congratulations!

Your DRC-20 is a high-performance MIDI disk recorder that can be used in conjunction with a Yamaha Clavinova or other MIDI keyboard (and an external MIDI tone generator unit, if desired) to independently record up to ten separate parts of a single musical composition — plus a rhythm track if your keyboard features Keyboard Percussion. Depending on your system, you can simply enjoy recording and playing back simple one-voice performances, or create complex multi-track compositions that use a number of different voices.
In order to make the most of the many features and fine performance provided by your DRC-20, we urge you to read this owner's manual thoroughly while trying out the features and functions described. Keep the owner's guide in a safe place for later reference.

CONTENTS

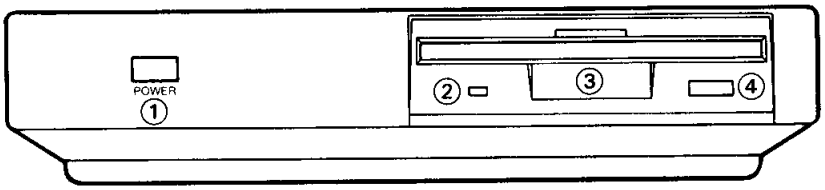
TAKING CARE OF YOUR DRC-20

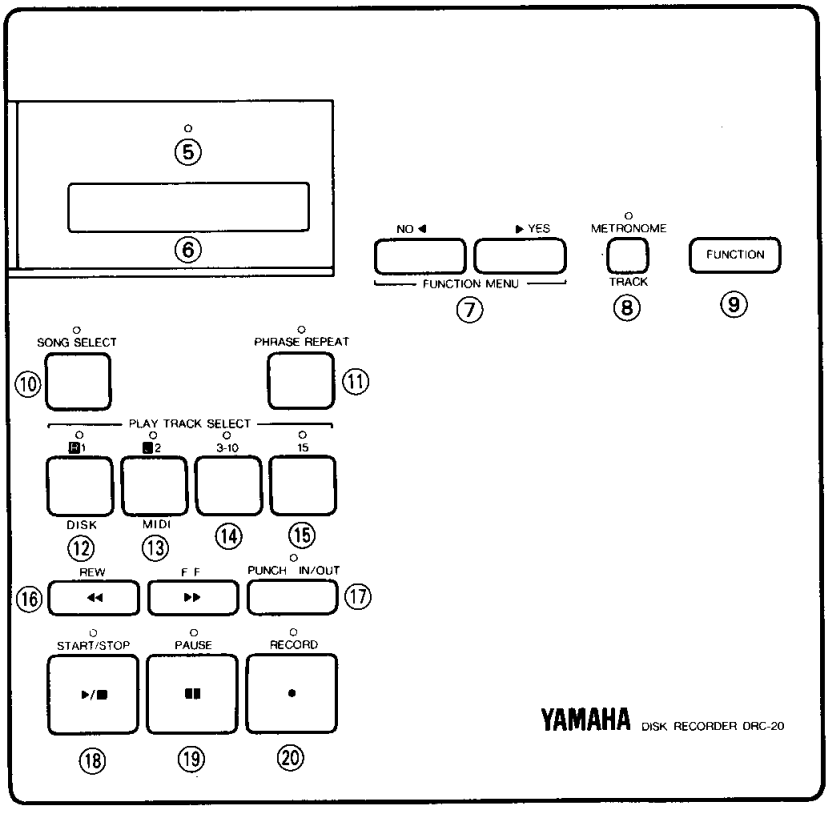
— Prevent Damage and Keep Your DRC-20 in Perfect Condition —

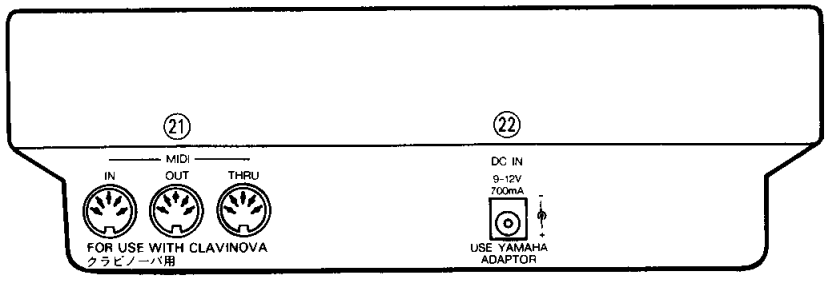
Your DRC-20 is a precision musical device, and deserves the most careful treatment. Observe the following points and your DRC-20 will perform flawlessly for many years.

1. Never open the case and touch or tamper with the internal circuitry.
2. Always turn the POWER switch OFF after use, and unplug the AC adapter unit from the AC mains outlet.
3. Clean the unit only with a clean, slightly damp cloth. A neutral cleanser may be used if desired. Never use abrasive cleansers, waxes, solvents or chemical dust cloths since these can dull or damage the finish.
4. Use your DRC-20 in a place that is away from direct sunlight, excessive humidity or heat, dust, or strong vibration.
5. Never apply excessive force to the controls, connectors or other parts of your DRC-20, and avoid scratching or bumping it with hard objects.
6. Never spill water, beverages or other liquids on the unit or floppy disks it uses.
7. The DRC-20 contains digital circuitry and may cause interference if placed too close to radio receivers, television sets or similar radio-frequency reception equipment. If such a problem occurs, move the DRC-20 further away from the affected equipment.
8. **IMPORTANT!:** Check your power supply!
The DRC-20 should be powered from a Yamaha PA-3, PA-4/PA-40 or PA-5 AC Adapter. Attempting to use other power supplies could result in serious damage to the DRC-20.
Make sure that your local AC mains voltage matches the voltage specified on your AC adapter. In some areas a voltage selector may be provided on the AC adapter unit. Make sure that the voltage selector is set for the voltage in your area.

1 NOMENCLATURE







① **Power Switch**
② **Disk Drive Lamp** *[details on page 5]*
③ **3.5" Floppy Disk Drive** *[details on page 5]*
④ **Disk Eject Button** *[details on page 5]*
⑤ **Beat Indicator** *[details on page 5]*
⑥ **Liquid Crystal Display Panel**
⑦ **NO ◀ and ▶ YES/FUNCTION MENU Buttons**
⑧ **METRONOME/TRACK Button** *[details on page 7, 13]*
⑨ **FUNCTION Button**
⑩ **SONG SELECT Button and Indicator** *[details on page 7, 11]*
⑪ **PHRASE REPEAT Button and Indicator** *[details on page 12]*
⑫ **PLAY TRACK SELECT R1/DISK Button and Indicator** *[details on page 6, 8, 11, 13]*
⑬ **PLAY TRACK SELECT L2/MIDI Button and Indicator** *[details on page 8, 11, 15]*
⑭ **PLAY TRACK SELECT 3-10 Button and Indicator** *[details on page 8, 11]*
⑮ **PLAY TRACK SELECT 15 Button and Indicator** *[details on page 10, 11]*
⑯ **REW and FF Buttons** *[details on page 11]*
⑰ **PUNCH IN/OUT Button and Indicator** *[details on page 9]*
⑱ **START/STOP Button and Indicator** *[details on page 6, 8, 9, 11]*
⑲ **PAUSE Button and Indicator** *[details on page 11]*
⑳ **RECORD Button and Indicator** *[details on page 7]*
㉑ **MIDI IN, OUT and THRU Connectors** *[details on page 5]*
㉒ **DC-IN Connector**

The DRC-20 can be powered from a Yamaha PA-3, PA-4/PA-40 or PA-5 AC Adapter. First plug the DC output cable from the adapter into the DRC-20 DC-IN jack, then plug the AC power plug into a convenient AC wall outlet.

2 QUICK OPERATION GUIDE

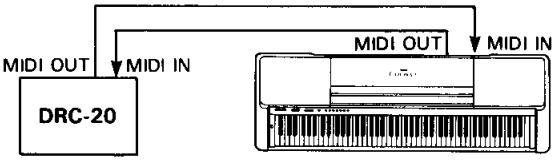
— For Clavinova Users Who Want to Get Started Right Away —

This section provides brief instructions on using the DRC-20 with a Clavinova in two different ways: separately recording left- and right-hand parts and playing them back, and playing back some pre-recorded Disklavier disks (PianoSoft) — refer to the Yamaha Disk Orchestra Collection catalogue for details.

The brief instructions given here are intended to allow Clavinova users to quickly try out the DRC-20, and are by no means complete. Be sure to read the entire manual thoroughly before attempting to use the DRC-20 for serious recording.

2-1 Separately Recording Left- and Right-hand Parts using the DRC-20 and a Clavinova

1. Connect the DRC-20 to the Clavinova with 2 MIDI cables: one connected from the Clavinova MIDI OUT to the DRC-20 MIDI IN, and the other connected from the DRC-20 MIDI OUT to the Clavinova MIDI IN. *[Detailed instructions on page 5]*



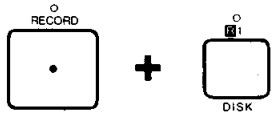
2. Turn the Clavinova ON.

3. Plug the DC output cable from the AC adapter (PA-3, PA-4/PA-40 or PA-5) into the DRC-20 DC-IN jack, then plug the adapter's AC plug into a convenient AC outlet. Turn the DRC-20 power switch ON. *[Detailed instructions on page 5]*

4. Format a new disk (for this step, follow the instructions in "3-2: Formatting a New Disk" on page 5).

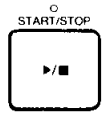
5. Press the METRONOME/TRACK button (for now, use the default tempo of 120). *[Detailed instructions on page 7]*

6. Hold the RECORD button and press the PLAY TRACK SELECT R1 button to select record track 01. *[Detailed instructions on page 7]*

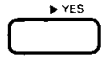


7. Play the right-hand part on the Clavinova — here's a short 4-measure example:

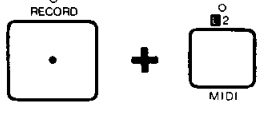
8. Press the STOP button when you've finished playing the right-hand part.



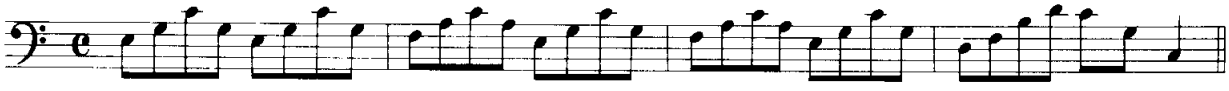
9. Press the ▶ YES button to store the data you just recorded, and wait for the "NOW Working" display to disappear before going on to the next step. *[Detailed instructions on page 9]*



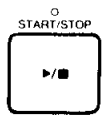
10. Hold the RECORD button and press the PLAY TRACK SELECT L2 button to select record track 02.



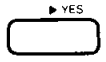
11. Play the left-hand part on the Clavinova — here's the matching left-hand part for the above right-hand part example:



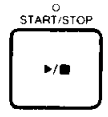
12. Press the STOP button when you've finished playing the left-hand part.



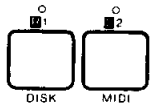
13. Press the ▶ YES button to store the data you just recorded, and wait for the "NOW Working" display to disappear before going on to the next step.



14. Press the START button to hear both parts played back together. *[Detailed instructions on page 11]*

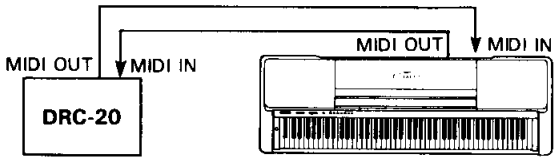


15. The PLAY TRACK SELECT R1 and L2 buttons can be used to cancel the left- and right-hand parts as required.



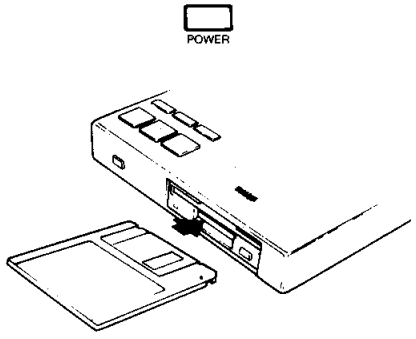
2-2 Playing Back a Pre-recorded Disklavier Disk (PianoSoft) using the DRC-20 and a Clavinova

1. Connect the DRC-20 to the Clavinova with 2 MIDI cables: one connected from the Clavinova MIDI OUT to the DRC-20 MIDI IN, and the other connected from the DRC-20 MIDI OUT to the Clavinova MIDI IN. *[Detailed instructions on page 5]*



2. Turn the Clavinova ON.

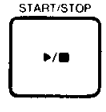
3. Plug the DC output cable from the AC adapter (PA-3, PA-4/PA-40 or PA-5) into the DRC-20 DC-IN jack, then plug the adapter's AC plug into a convenient AC outlet. Turn the DRC-20 power switch ON. If you are using a CLP-20/30/50/100/200/300/500 or CVP-3/5/6/7/8/10, turn the DRC-20 power switch ON while holding the FUNCTION button (this automatically activates a special Touch Change function that provides the best sound when Disklavier software is played back using these models). *[Detailed instructions on page 5]*



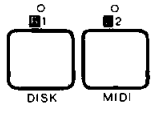
4. Insert the pre-recorded Disklavier disk into the DRC-20 disk drive.

5. Use the NO ◀ and ▶ YES buttons to select the SONG NUMBER you want to hear. *[Detailed instructions on page 11]*

6. Press the START button to begin playback. *[Detailed instructions on page 11]*



7. If the song being played has separate left- and right-hand parts, you can use the PLAY TRACK SELECT R1 and L2 buttons to independently cancel each part as required. *[Detailed instructions on page 11]*



Note: Some Disklavier disks (PianoSoft) do not contain separate left and right-hand data. If the L2 indicator does not light when one of these disks is loaded, the performance data for both hands is recorded on the RIGHT track. In this case, the left and right hand parts can not be individually cancelled.

3 ESSENTIAL PREPARATIONS

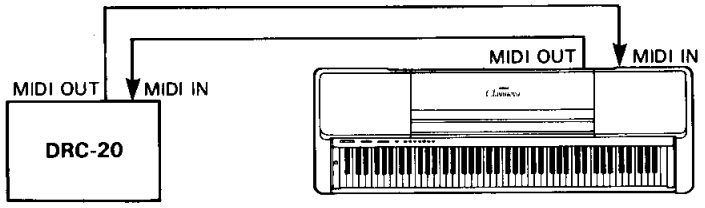
— System Connections, Formatting Disks and MIDI Channel Matching —

3-1 System Connections

SYSTEM 1: DRC-20 + Clavinova

This is about the simplest system you can create with the DRC-20. The MIDI OUT terminal of the Clavinova is connected to the MIDI IN terminal of the DRC-20, and the MIDI OUT terminal of the DRC-20 is connected back to the MIDI IN terminal of the Clavinova.

If your keyboard has Multi-Timbre capability — i.e. it allows a number of voices to be played simultaneously via external MIDI control — this simple system will let you record up to ten different parts using different voices, plus rhythm, and play them back all together for a full orchestra sound. If your keyboard does not have Multi-Timbre capability, however, you will still be able to record ten tracks independently and play them back using any single voice you select on the keyboard.



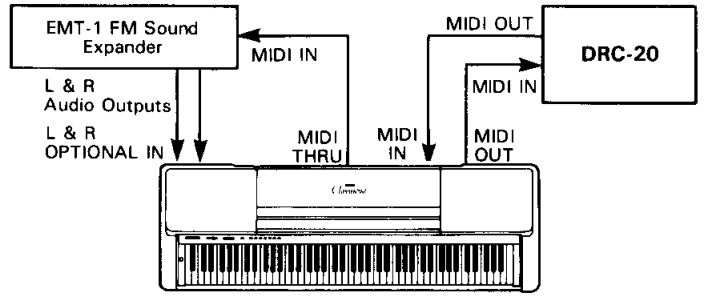
SYSTEM 2: DRC-20 + MIDI Keyboard + Tone Generator Module

If your keyboard does not have Multi-Timbre capability and you want to be able to play a number of voices simultaneously using the DRC-20, you might want to add an external tone generator module (such as the Yamaha EMT-1 FM Sound Expander) to your system.

As shown in the system diagram below, the connections between the keyboard and the DRC-20 are exactly the same as in SYSTEM 1, above. The difference is that the MIDI THRU terminal of the keyboard is connected to the MIDI IN terminal of the EMT-1. This means that the output from the DRC-20 reaches both the keyboard and the EMT-1.

Although the audio outputs from the EMT-1 are shown connected back to the OPTIONAL IN (or AUX IN) jacks of the keyboard so that both the sound of the keyboard and that of the EMT-1 can be heard via the keyboard's speakers, they could also be routed to the inputs of a separate instrument amplifier or audio mixer. OPTIONAL IN jacks are provided on most MIDI-equipped Yamaha CVP, CLP and PSR-series keyboards that feature built-in amplifiers and speakers.

Tone Generator Module



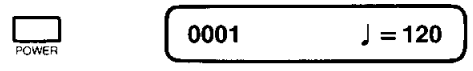
Note: Always use high-quality MIDI cables to connect MIDI OUT and MIDI IN terminals. Never use MIDI cables longer than about 15 meters, since cables longer than this can pick up noise which can cause data errors.

3-2 Formatting a New Disk

The music data that you record using the DRC-20 is stored on a 3.5" floppy disk loaded into the DRC-20 disk drive unit. The DRC-20 uses only 3.5" 2DD type floppy disks. We recommend that you use Yamaha 2DD disks. Before you can use a new disk for recording, the disk must be "formatted" so that the DRC-20 can recognize it and correctly write the music data onto it.

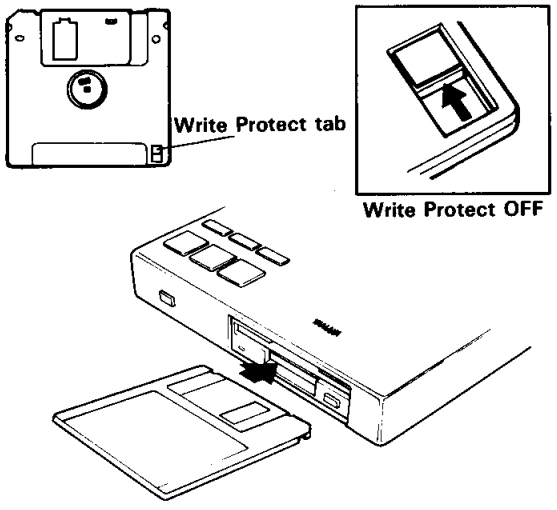
1. Turn the Power ON

First plug the DC output cable from the AC adapter unit into the DRC-20 DC-IN jack, then plug the AC adapter's AC plug into a convenient AC outlet. After the AC adapter has been properly connected, turn the DRC-20 power switch ON. The LED above the LCD display will begin to flash and the following display will appear on the LCD panel:



2. Insert a New Blank Disk

Make sure that the disk's write protect tab is set to the "write" position (tab closed), and insert the new disk into the disk drive unit with the metallic door facing the drive slot and the label side of the disk facing upward. The disk should click securely into place, and the disk drive lamp should light briefly.

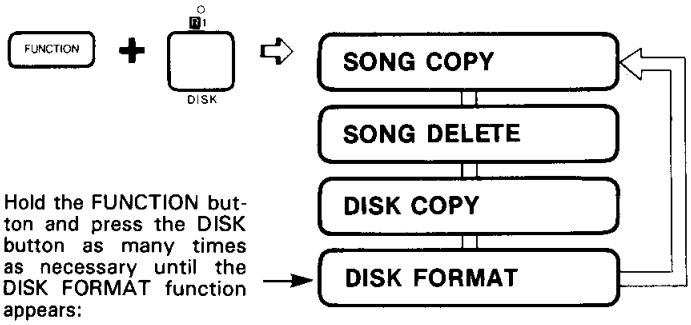


Every time you insert a brand new unformatted disk, the "Unformat DISK!!" message will appear on the DRC-20 display. This informs you that the DRC-20 cannot identify the disk you have inserted and must be formatted before it can be used with the DRC-20.

Note: Disks can be ejected from the drive by pressing the button near the disk drive door. NEVER eject a disk, however, while the disk drive lamp is lit.

3. Select the DISK FORMAT Function

The DISK FORMAT function is one of the DRC-20's DISK CONTROL functions. It can be accessed by holding down the FUNCTION button and pressing the DISK (PLAY TRACK SELECT 2) button a few times until the DISK FORMAT display appears.



Hold the FUNCTION button and press the DISK button as many times as necessary until the DISK FORMAT function appears:

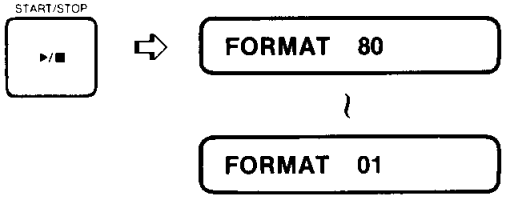
Note: If the "PROTECT!!" display appears, this usually means that the loaded disk's write protect tab is ON. Remove the disk (by pushing the button on the disk drive) and slide the write protect tab to the OFF position, then start again from the beginning of the format operation. (Pre-recorded "Disk Orchestra Collection" disks and disks recorded on a Yamaha Disklavier are specially protected and cannot be formatted).

4. Start the Format Operation

Once the DISK FORMAT function has been selected and you release the FUNCTION and DISK buttons, the DRC-20 will ask you to confirm the format operation with the "FORMAT START?" display.

Press the YES button to confirm the format operation. The DRC-20 will then ask you to press the START button.

Press the START button and the formatting operation will actually begin. The display will then count down from 80 to 1 as the format operation progresses (the disk is formatted with 80 "tracks" — which are not related to the DRC-20 record tracks).



After the last disk track has been formatted ("FORMAT 01"), the format operation ends and the DRC-20 switches automatically to the SONG SELECT mode.

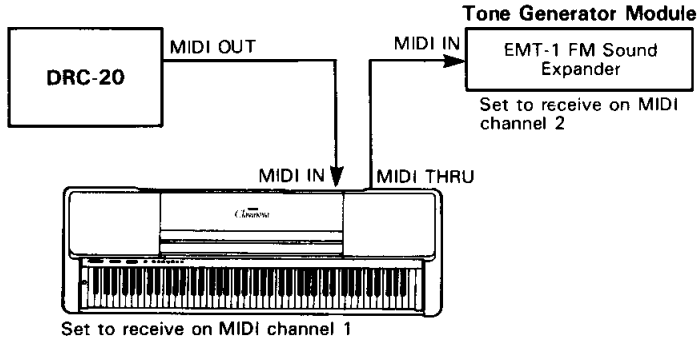
3-3 MIDI & Channel Matching

A Brief Introduction to MIDI

MIDI, the Musical Instrument Digital Interface, is a world-standard communication interface that allows MIDI-compatible musical instruments and equipment to share musical information and control one another. This makes it possible to create "systems" of MIDI instruments and equipment that offer far greater versatility and control than is available with isolated instruments. For example, most MIDI keyboards transmit note and velocity (touch response) information via the MIDI OUT connector whenever a note is played on the keyboard. This MIDI data can be conveniently recorded and then played back by a device such as the DRC-20 Disk Recorder. When the recorded data is played back, the MIDI keyboard (and/or MIDI tone generator module) connected to the MIDI OUT terminal of the DRC-20 automatically "plays" the recorded performance in precise detail.

Multiple MIDI Channels for Extended Versatility

The MIDI system allows transmission and reception of MIDI data on 16 different channels (the DRC-20 actually handles channels 1 through 10 and 15). Multiple channels have been implemented to allow selective control of certain instruments or devices connected in series. For example, a single MIDI disk recorder like the DRC-20 can be used to "play" two different instruments or tone generators. One of the instruments or tone generators could be set to receive only on channel 1, while the other is set to receive on channel 2. In this situation the first instrument or tone generator will respond only to channel-1 information transmitted by the DRC-20, while the second instrument or tone generator will respond only to channel-2 information. This allows the DRC-20 to "play" several completely different parts on the receiving instruments or tone generators.



Channel Matching and the DRC-20

In any MIDI setup, the MIDI channels of the transmitting and receiving equipment must be matched for proper data transfer. An "OMNI" receive mode is also available, which allows reception on all 16 MIDI channels. In the OMNI mode it is not necessary to match the receive channel of the receiving device to the transmit channel of the transmitting device.

If you are about to make your first recording on the DRC-20, there is no need to make any special settings since the DRC-20 is automatically set to receive in the OMNI mode when the power is first turned ON. It therefore doesn't matter what channel your keyboard is set to transmit on.

When your recording is played back, however, the DRC-20 will transmit the data from each track on the correspondingly numbered MIDI channel. Material recorded on track 1 will be transmitted on MIDI channel 1, material on track 2 will be transmitted on MIDI channel 2, and so on. To reproduce all tracks when they are played back, your keyboard should be set to receive in the OMNI mode. Otherwise, the various voices on your keyboard (and external tone generator unit, if used) should be independently set to receive on the appropriate MIDI channels. Refer to your keyboard/tone generator operation manual for details on MIDI channel selection. Refer to the "8. MIDI CONTROL" section of this manual for more important information on setting the DRC-20 MIDI receive mode and receive channel.

4 RECORDING

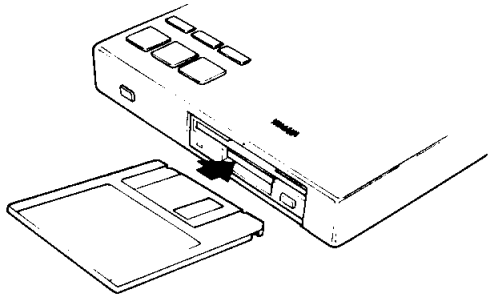
— Recording Musical Data Using the DRC-20 —

IMPORTANT NOTE: *If you haven't read the previous section — "ESSENTIAL PREPARATIONS" — please go back and do so before attempting to record.*

4-1 Basic Recording/The First Track

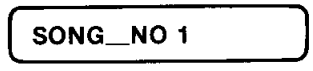
1. Load a Formatted Disk

If you haven't already done so, make sure that a properly formatted disk is loaded into the DRC-20 disk drive, and that the disk's write protect tab is set to the "write" position (tab closed).

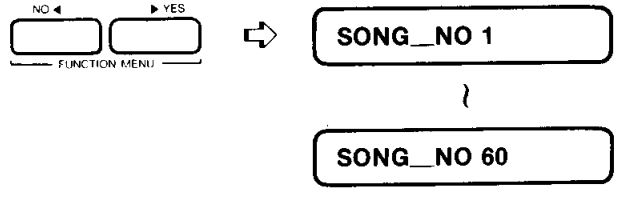


2. Select a Song Number

When a properly formatted disk is loaded into the DRC-20, the SONG SELECT mode will be automatically selected (this will also happen if the power is turned ON when a formatted disk is already in the drive).



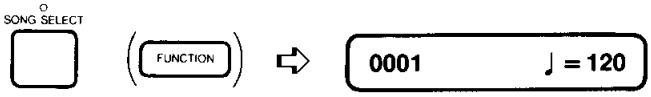
If the "SONG_NO" display is not showing (i.e. a different mode has been selected), the SONG SELECT mode can be selected simply by pressing the SONG SELECT button. Use the NO ◀ and ▶ YES buttons to select a SONG NUMBER between 1 and 60 for the piece you are about to record (up to 60 different songs, each with a different song number, can be recorded on a single disk). Make sure the song number you select has not already been used for a song previously recorded on the disk you are using.



Note: There is also a "SONG ALL" display which can be selected at this time. This mode is only available for playback, and can not be used for recording.

3. Turn On the Metronome Sound

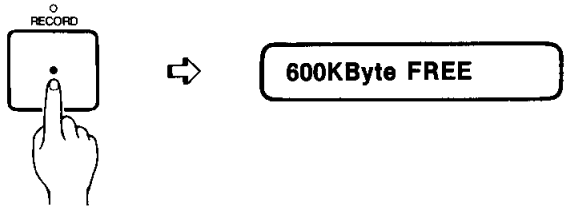
After selecting the desired song number, press the FUNCTION button or SONG SELECT button to return to the normal tempo display.



Now press the METRONOME/TRACK button to turn the metronome sound on so that it will be easy to set the required tempo. The METRONOME/TRACK button indicator will light, and the metronome will sound on each beat. Pressing the METRONOME/TRACK button alternately turns the metronome sound ON and OFF

4. Press the RECORD Button

If you press and hold the RECORD button, the amount of free space on the currently loaded disk will be shown on the display.

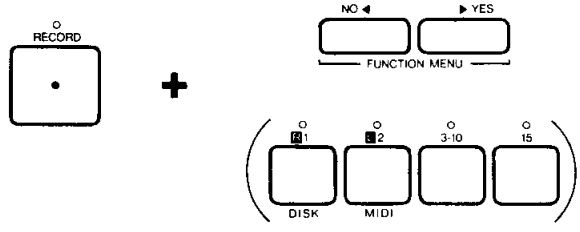


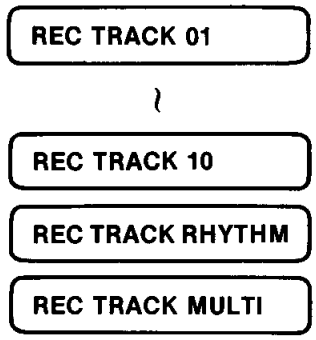
A single disk can record a total of approximately 700 kilobytes (a kilobyte is 1,024 bytes) of data — sufficient for many long and complicated performances. In terms of notes, approximately 50,000 notes can be recorded continuously. This number will vary, however, depending on the number of pedal operations performed, volume changes, etc.

Note: Pre-recorded "Disk Orchestra Collection" disks and disks recorded on a Yamaha Disklavier are specially protected and cannot be recorded using the DRC-20. If you attempt to record on one of these disks, the "PROTECT!!" message will appear and recording will not be possible.

5. Select a Record Track

While still holding the RECORD button, use the NO ◀ and ▶ YES buttons to selected the desired record track number (1, 2, 3, 4, 5, 6, 7, 8, 9, or 10). It is also possible to select track numbers by pressing the PLAY TRACK SELECT buttons: "1" selects track 1, "2" selects track 2, and "3-10" select a track between 3 and 10 (press the 3-10 button a few times until the desired track number appears on the display).

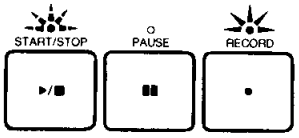




Note that you can also select "REC TRACK RHYTHM" (PLAY TRACK SELECT "15" button) or "REC TRACK MULTI" at this stage. These functions will be described in the "Recording a Rhythm Track" and "Multi-Timbre Recording" sections on page 10.
Obviously, the most logical approach to track selection is to start with the accompaniment tracks (bass, chords, rhythm, etc.) which should be recorded on track 3 and above. Record the melody (piano) part last on tracks 1 and 2.

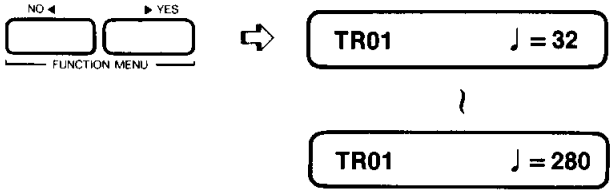
6. Release the RECORD Button to Activate RECORD READY

When you release the RECORD button the DRC-20 will enter the RECORD READY mode — The REC button indicator will be lit and the START/STOP button indicator will be flashing.



7. Set the Desired Tempo

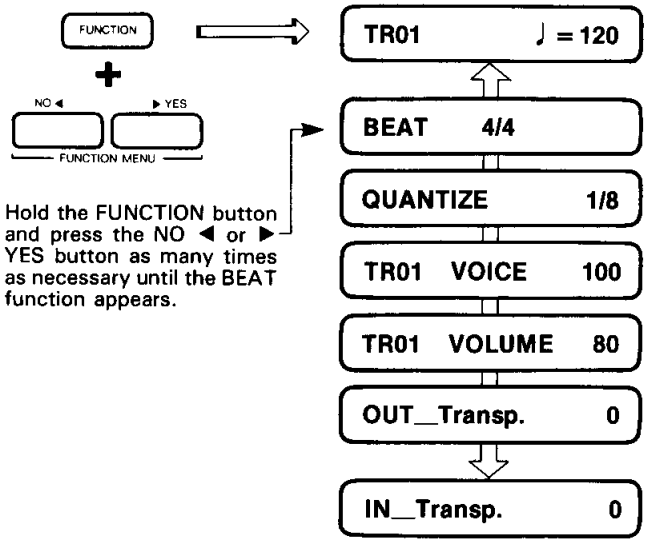
Use the NO ◀ and ▶ YES buttons to set the desired tempo. The selected tempo will be displayed on the LCD panel in beats per minute (the range is from 32 to 280 beats per minute), and the metronome will sound at the corresponding tempo.



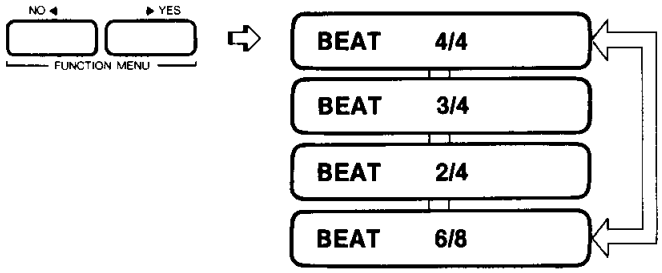
Note: The "standard" tempo of 120 beats per minute can be recalled at any time when the tempo display is showing by pressing both the NO ◀ and ▶ YES buttons at the same time. If one or more tracks of the current song have already been recorded, pressing the NO ◀ and ▶ YES buttons recalls the original tempo of the song.

8. Select the Desired Time Signature

If you want to record in standard 4/4 time you can skip this step since the DRC-20 is automatically set to 4/4 time whenever it is turned ON. If you want to record in 3/4, 2/4 or 6/8 time, however, the "BEAT" function will have to be set as follows. First, find the BEAT function by holding down the FUNCTION button and pressing either the NO ◀ or ▶ YES button until the BEAT display appears.



Then, use the NO ◀ and ▶ YES buttons to select the desired time signature.

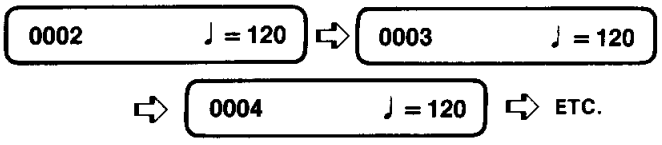


Note: The BEAT function (time signature) can only be set before recording the first track in a new song.

Note: If you have any special settings you need to make on your keyboard before recording — volume, effects, etc. — make them after activating the DRC-20 RECORD READY mode. This causes settings which are also transmitted as MIDI messages to be recorded so that these same settings are automatically reinstated when the recording is played back.

9. Play

Recording will begin automatically as soon as the first note is played on the keyboard.* You can also start recording by pressing the START/STOP button. Both the RECORD and START/STOP button indicators will be lit continuously while recording. The current measure number will be shown on the LCD display as you record.



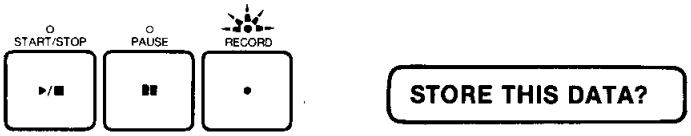
There are no special recording requirements. Simply play on the keyboard as you normally do.

* **MIDI Information:** If you're familiar with MIDI, you might be interested to know that this is because the DRC-20 is set up to start recording the instant a MIDI KEY ON message is received. Recording also starts if a MIDI START command (FA in hexadecimal) is received, but this function can be turned on or off as desired — see the "REMOTE IN" function in the "MIDI CONTROL" section on page 15.

Note: If the rhythm accompaniment of a Clavinova connected to the DRC-20 MIDI OUT connector starts playback at the same time, set the REMOTE OUT function described on page 15 to "Off."

10. Stop Recording

Press the RECORD button or the START/STOP button to stop recording.* At this point the RECORD button indicator will flash and the DRC-20 will ask you whether you want to store the data you just recorded to the floppy disk.



If you think the recording went OK and you do want to store the data, press the ▶ YES button. The "NOW Working" display will appear while the data is being written to the disk. If want to cancel the recording, simply press the NO ◀ button (if you press NO ◀ any previous data on the current track will be left untouched).

When the "NOW Working" display disappears and the RECORD button indicator goes out your data has been safely stored to disk and the recording (this track, at least) is complete. Please note that any previous data on the current track (1 through 10) will be erased when newly recorded data is stored.

* **MIDI Information:** Recording will also stop if a MIDI STOP message (FC hexadecimal) is received. This function can be turned on or off as required — see the "REMOTE IN" function in the "MIDI CONTROL" section on page 15.

Note: Recording will stop automatically if the disk memory capacity is reached, and the "DISK FULL" message will appear on the LCD. If this occurs the data you are currently recording will be erased. You can either delete one or more unwanted SONGs to make more room on the disk (see "SONG DELETE" on page 14) or copy some songs to a new disk ("SONG COPY" on page 13).

4-2 Recording a New Track

When you've finished recording the first track, you can simply play it back as described in "5. PLAYBACK," on page 11, or record a new track. To record a new track, select a record track that has not been used yet (if you record to the same track again, the previously recorded material will be erased and the new material will be recorded in its place), and record in the same way as described in the previous section.
Previously recorded tracks are automatically set to the playback mode when you select a new record track, so you'll be able to record the new track while listening to the previously recorded material. You could also use the PLAY TRACK SELECT buttons to turn playback of any previously recorded track or tracks off if desired (see "2. Turn OFF Specific Tracks if Desired" in the "5. PLAYBACK" section on page 11).

4-3 Changing the Initial Tempo, Voice and Volume

It is possible to change the tempo of a previously-recorded song, as well as the voices and volume of each track.

1. Select the Song To Be Modified

2. Select the Track To Be Modified

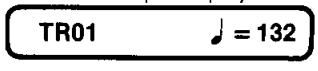
Select the track for which the voice or volume is to be changed by holding the RECORD button and using the NO ◀ and ▶ YES or PLAY TRACK SELECT buttons.
Although it is not necessary to select a track in order to change the tempo, the above procedure must be carried out in order to activate the record ready mode.

Caution: Do not press the START button. If you do, the recorded data will be erased.

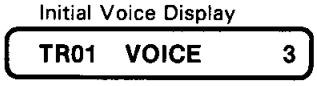
3. Select the Function To Be Modified

Select the function to be changed by pressing the NO ◀ or ▶ YES button as many times as necessary while holding the FUNCTION button (the VOICE and VOLUME functions are described in detail on page 13).

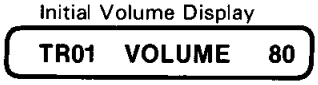
Initial Tempo Display



Initial Voice Display



Initial Volume Display



4. Change the Initial Setting

Use the NO ◀ and ▶ YES buttons to change the initial setting as required.

5. Press the Record Button To Enter the Stop Mode

The "ARE YOU SURE?" display will appear when you press the RECORD button — press the NO ◀ or ▶ YES button as required. If you press ▶ YES, the data will be stored and the STOP mode will be activated after a few seconds.

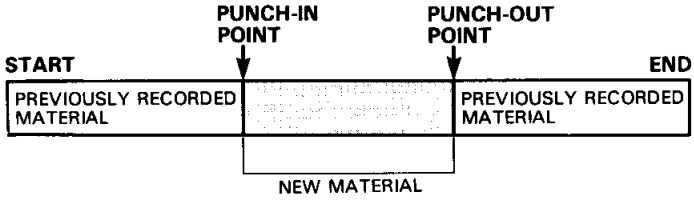
Note: If the receiving MIDI device (Clavinova, etc.) is not set to receive MIDI volume messages (multi-timbre mode ON, for example) volume changes will not occur.

4-4 The TEMPO CHANGE Function

You'll notice that if some data has already been recorded in a song, a "TEMPO CHANGE" display will appear following "REC TRACK 10" when selecting a record track using the RECORD button and PLAY TRACK SELECT/3-10 button, or following "REC TRACK RHYTHM" when using the NO ◀ and ▶ YES buttons to select a record track. If you choose this function and then begin recording, you can use the NO ◀ and ▶ YES buttons to change the tempo of the recorded material as it plays. This allows you to add ritardando, rubato and other tempo-related effects to your recordings.

4-5 Punch-in Recording

Punch-in recording is an extremely handy feature that lets you re-record a section of a previously recorded track — one measure, several measures or many — without having to re-record the entire track.
The point at which you begin recording the new material within the recorded track is called the "punch-in point," and the point at which you finish recording is called the "punch-out point."



To use the DRC-20 punch-in recording function, you must first specify the punch-in and punch-out points and then record, as follows:

1. Set the PUNCH-IN Point

Play back the recording (see instructions in the "5. PLAYBACK" section) and press the PUNCH IN/OUT button at the point at which you want to begin recording. The PUNCH IN/OUT button indicator will begin to flash.

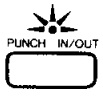
Note: It is also possible to set the punch-in point by pressing the PUNCH IN/OUT button while playback is PAUSEd at the desired location. The REW and FF buttons can be used to precisely locate the beginning of any measure while in the PAUSE mode.

2. Set the PUNCH-OUT Point

With the recording still playing, press the PUNCH IN/OUT button a second time at the point at which you want to finish recording. The PUNCH IN/OUT button indicator will now light continuously to indicate that both the PUNCH-IN and PUNCH-OUT points have been selected.

If you do not set the punch-out point and allow the song to play through all the way to the end, the PUNCH-IN/OUT indicator will light continuously when the end is reached. In this case punch-in recording will continue until the START/STOP button is pressed, making it possible to extend the length of the recording.

Note: Fast forward and rewind operations cannot be carried out while the PUNCH IN/OUT indicator is lit.



Note: As with the punch-in point, it is also possible to set the punch-out point by pressing the PUNCH IN/OUT button while playback is PAUSEd at the desired location (using the REW and FF buttons to locate the beginning of the desired measure, if necessary).

3. Record

If you now record in the normal way while the PUNCH IN/OUT button indicator is lit (with the record track you want to punch into selected, of course), actual recording will begin at the selected punch-in point and end at the punch-out point. Previously recorded material prior to the punch-in point and following the punch-out point will be left untouched. The PUNCH IN/OUT button indicator will flash during recording between the punch-in and punch-out points, and will light continuously again following the punch-out point.

At this point the punch-in and punch-out points are still memorized and the punch-in recording mode is still active so you can run the punch-in operation again immediately on the same or a different track.

4. Turn Off the PUNCH-IN RECORD Mode

Press the PUNCH IN/OUT button to turn off its indicator and disengage the punch-in recording mode.

4-6 Recording a Rhythm Track

Note: The DRC-20 RHYTHM track can only be recorded using a keyboard that features Keyboard Percussion.

As you've already seen, the DRC-20 has tracks numbered 1 through 10 and a RHYTHM track numbered 15. The reason for this track number is that the RHYTHM track is used to record percussion instruments from a Yamaha Clavinova or other MIDI keyboard* that features Keyboard Percussion capability — keyboard percussion voices are transmitted and received by such keyboards on MIDI channel 15.

To record a rhythm track, simply select "REC TRACK RHYTHM" at the record track selection stage, set your keyboard to the Keyboard Percussion mode, and record in the normal way.

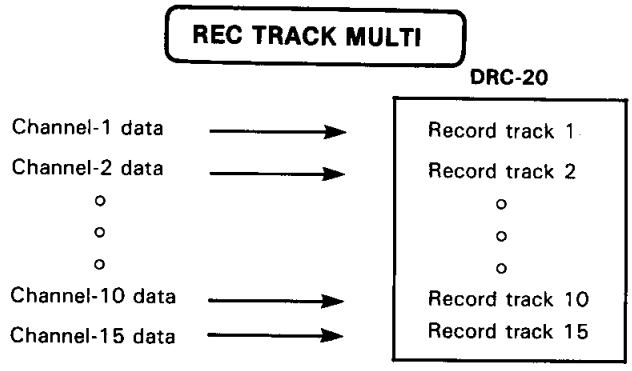
You can record on the RHYTHM track over and over again without erasing previously recorded material, so you can easily build up complex rhythm patterns. If previous material exists on the rhythm track when you enter the record mode, the "OVER DUBBING?" display will appear, asking you if you want to leave the previous material as it is ("overdubbing" means to recorded over previous material without erasing it). Press the ▶ YES button if you want to overdub, or the NO ◀ button if you want to erase the previous data.

Previously recorded tracks are automatically set to the playback mode when you record the rhythm track, so you'll be able to record the rhythm track while listening to the previously recorded material. You could also use the PLAY TRACK SELECT buttons to turn playback of any previously recorded track or tracks off if desired (see "2. Turn OFF Specific Tracks if Desired" in the "5. PLAYBACK" section on page 11).

* Examples of instruments that have this capability are Yamaha CVP-series Clavinovas and PSR-series keyboards that feature the "Multi-Timbre Mode" and allow rhythm voices to be assigned to MIDI channel 15.

4-7 Multi-Timbre Recording

If you select the "REC TRACK MULTI" display when selecting a record track, the DRC-20 is set to record in the "Multi-Timbre" mode. This means that all tracks can be recorded simultaneously via the corresponding MIDI channels. In other words, data received on MIDI channel 1 will be recorded on DRC-20 track 1, data received on channel 2 will be recorded on track 2, etc. As usual, the data will then be transmitted on the corresponding MIDI channels when the recording is played back.



Note: The DRC-20 records data received on all 16 MIDI channels (1 through 16), and plays the data back on the same channels in this mode only.

One way to take advantage of this feature is to record the left- and right-hand parts from a Clavinova simultaneously on tracks 1 and 2. The Clavinova should be set up so that the bass (left-hand) part is transmitted on MIDI channel 2, and the melody (right-hand) part is transmitted on MIDI channel 1 (split send mode). Then if you record using the "REC TRACK MULTI" mode, the bass part and melody part will be simultaneously recorded on tracks 2 and 1, respectively. Then, when you play the recording back, the DRC-20 "R1" and "L2" PLAY TRACK SELECT buttons can be used to turn the left- or right-hand parts on or off so you can conveniently practice either part.

The "REC TRACK MULTI" mode can be used to record data from any other MIDI instrument or device that transmits several channels at once.

Note: Previous data on all tracks will be erased when new data is recorded using the MULTI mode.

5 PLAYBACK

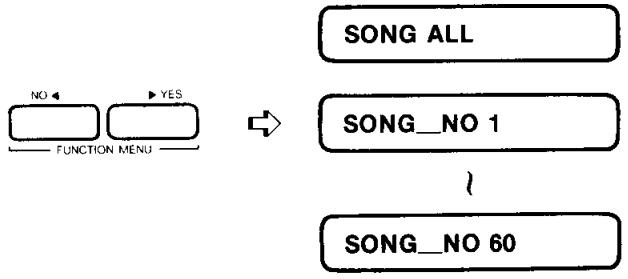
— Play, Pause, Rewind & Fast Forward —

5-1 Basic Playback

1. Select the Desired Song Number

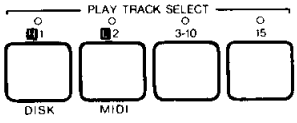
Make sure that the disk containing the song you wish to play is properly loaded in the DRC-20 disk drive. If the SONG SELECT display is not already showing, press the SONG SELECT button and use the NO ◀ and ▶ YES buttons to select the song number (1—60) you wish to play. You can also select "SONG ALL" by pressing the NO ◀ button once from the "SONG_NO 1" display. In this case the DRC-20 will play back all songs on the disk in sequence, and then start again from the first song.

When any SONG number is selected, the PLAY TRACK SELECT button indicators corresponding to tracks that contain data will light, and those tracks will be automatically set to the playback mode.

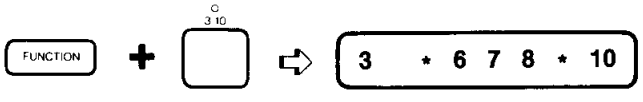


2. Turn OFF Specific Tracks if Desired

Press the PLAY TRACK SELECT buttons corresponding to the track or tracks you want to turn OFF — the "de-selected" track indicators will go out. If the 3-10 button is pressed so that its indicator goes out, all material that was recorded on tracks 3 through 10 will be OFF. Press the "15" button if you have recorded a rhythm track but do not want to play it back (see "Recording a Rhythm Track" on page 10). In all cases, the playback tracks can be alternately turned ON or OFF by pressing the appropriate PLAY TRACK SELECT button.



It is also possible to selectively turn tracks 3 through 10 off or on. Hold down the FUNCTION button and press the 3-10 button to call the following display.



The numbers "3" through "10" on the display are the track numbers. An asterisk (*) in place of a track number means that no data is recorded on that track. Use the REW ◀◀ and ▶▶ FF buttons to select the desired track number (the selected track number will blink alternately with a "+" symbol), then use the NO ◀ or ▶ YES button to turn the track OFF (the track number will disappear), or ON if the track is already OFF.

When the tracks have been turned on or off as required, press the FUNCTION button to return to the normal tempo display.

3. Adjust the Tempo if Necessary

With the normal tempo display showing, use the NO ◀ and ▶ YES buttons to set the desired tempo. If this step is skipped the playback tempo will be the same as that at which the piece was recorded.

4. Press the START/STOP Button

Playback of the selected tracks begins as soon as the START button is pressed.

MIDI Information: Playback also starts if a MIDI START command (FA hexadecimal) is received. This function can be turned on or off as desired — see the "REMOTE IN" function in the "MIDI CONTROL" section on page 15.

Note: If the rhythm accompaniment of a Clavinova connected to the DRC-20 MIDI OUT connector starts playback at the same time, set the REMOTE OUT function described on page 15 to "Off."

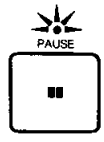
5. Stop Playback

Press the START/STOP button to stop playback. Playback will stop automatically when the end of the recording is reached.

MIDI Information: Playback will also stop if a MIDI STOP message (FC hexadecimal) is received. This function can be turned on or off as required — see the "REMOTE IN" function in the "MIDI CONTROL" section on page 15.

5-2 The PAUSE Button

The DRC-20 PAUSE button functions just like the PAUSE button on a tape recorder, temporarily stopping playback when it is pressed. The PAUSE button indicator will light to indicate that the PAUSE mode is active. Playback resumes from the same point when the PAUSE button is pressed a second time.



5-3 Rewind and Fast Forward

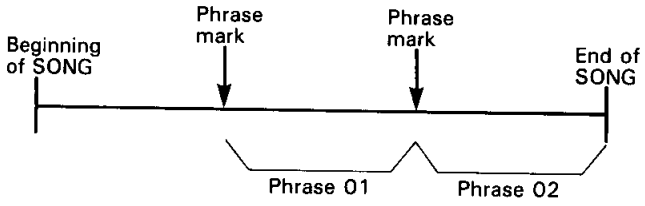
When the normal tempo display is showing or when the PAUSE mode is active, the REW ◀◀ and ▶▶ FF buttons can be used to select any measure in the current song. The REW ◀◀ button steps backwards through the measures and the ▶▶ FF button steps forward. Hold either button down for continuous stepping in the specified direction.

When the START/STOP button is pressed, playback will begin from the selected measure.

During playback the REW ◀◀ and ▶▶ FF buttons act as rewind and fast forward controls. Normal playback resumes from the point at which the button is released. For convenient cueing, the playback sound can be heard during fast forward operation.

5-4 Phrase Repeat

The DRC-20 Phrase Repeat function makes it possible to place "Phrase Marks" at any desired location within a song to define a number of "phrases." Any of the defined phrases can then be selected and repeated automatically.



1. Placing Phrase Marks

Hold down the FUNCTION button and press the PHRASE REPEAT button during playback, or with playback PAUSEd at the desired point in the song, to place a phrase mark at that location. The REW and FF buttons can be used to precisely locate the beginning of any measure while in the PAUSE mode.

Note: This operation can not be carried out if the PHRASE REPEAT indicator is lit. If the indicator is lit, press the PHRASE REPEAT button to extinguish it before proceeding.

2. Phrase Repeat Playback

Press the PHRASE REPEAT button while the DRC-20 is STOPped — the PHRASE REPEAT button indicator will light, the START/STOP button indicator will flash, and the following display will appear:

Use the NO ◀ and ▶ YES buttons to select the desired phrase number, then press the START/STOP button to begin repeat playback of the selected phrase. The normal playback display appears during phrase repeat playback.

When you stop phrase repeat playback by pressing the STOP button, the "PHRASE_REP." display reappears so you can immediately select a different phrase.

To return to the normal playback mode, press the PHRASE REPEAT button so that its indicator goes out.

Note: If you press the PHRASE REPEAT button during phrase repeat playback, the normal playback mode will be activated and the song will continue to play through to the end.

3. Erasing All Phrase Marks

All phrase marks can be erased by holding the FUNCTION button and pressing the PHRASE REPEAT button for longer than about three seconds. After the FUNCTION and PHRASE REPEAT buttons have been held for more than three seconds, the "MARK ERASE OK?" confirmation display will appear. Press ▶ YES to erase the phrase marks or NO ◀ to cancel the erase operation.

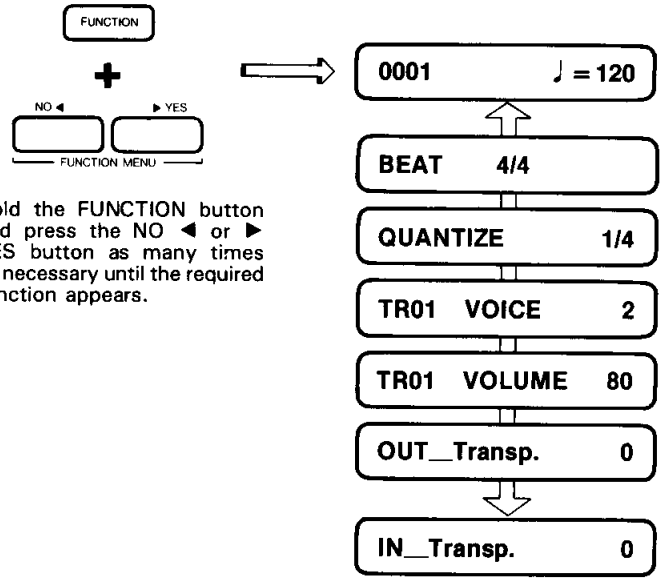
Note: This operation can not be carried out if the PHRASE REPEAT indicator is lit. If the indicator is lit, press the PHRASE REPEAT button to extinguish it before proceeding.

Note: All phrase marks are automatically erased when a new SONG is selected.

6 OTHER RECORD/PLAY FUNCTIONS

Quantization, Voice/Volume Changes & Transposition

This section will describe the record and playback functions accessed by the FUNCTION and NO ◀/▶YES buttons that have not been previously covered. The normal track and tempo display is described in both the "4. RECORDING" and "5. PLAYBACK" sections. The BEAT function is described in detail in "8. Select the Desired Time Signature" on page 8 of the "4. RECORDING" section.



Hold the FUNCTION button and press the NO ◀ or ▶ YES button as many times as necessary until the required function appears.

6-1 QUANTIZE

The QUANTIZE function makes it simple to achieve perfect note timing by automatically aligning notes in a recorded track to a specific timing that you specify. You can specify quantization to 1/4 notes, 1/8th notes, 1/8th note triplets, 16th notes, 16th note triplets or 1/32nd notes. All notes in the selected track will be shifted so that they line up precisely with the nearest beat of the specified length.

Call the QUANTIZE function, use the NO ◀ and ▶ YES buttons to select the desired QUANTIZE value (see chart below), and press the START/STOP button. The DRC-20 will then ask you which track you want to quantize. Select the desired track using the NO ◀ and ▶ YES buttons, then press the START/STOP button to execute the QUANTIZE operation.

QUANTIZE	NOTE VALUE
1/4	1/4 notes
1/8	1/8th notes
1/12	1/8th note triplets
1/16	1/16th notes
1/24	1/16th note triplets
1/32	1/32nd notes

Note: So you have a backup in case QUANTIZE dose not produce the results you require, it is a good idea to use the SONG COPY function to make a copy of the song to be quantized prior to using the QUANTIZE function.

6. OTHER RECORD/PLAY FUNCTIONS

6-2 VOICE

TR01 VOICE	2

This function makes it possible to change the voice played by the currently selected track.
With the appropriate track selected, call the VOICE function and use the NO ◀ and ▶ YES button to select the desired voice number. The voice corresponding to the voice number you select will depend on the particular keyboard and/or tone generator unit you are using. A different track can be selected while the VOICE function is selected by holding the FUNCTION button and pressing the METRONOME/TRACK button a few times until the desired track number appears.

Note: If nothing has been recorded on the track, or this function was not set when the track was recorded, the voice number will appear as "---" on the display.

6-3 VOLUME

TR01 VOLUME	80

With this function you can easily change the playback volume of the currently selected track. The VOLUME function can be used to achieve the desired volume balance between different tracks.
With the appropriate track selected, call the VOLUME function and use the NO ◀ and ▶ YES button to select the desired volume level. A setting of "0" produces minimum volume while a setting of "100" produces maximum volume. A different track can be selected while the VOLUME function is selected by holding the FUNCTION button and pressing the METRONOME/TRACK button a few times until the desired track number appears.

Note: If nothing has been recorded on the track, or this function was not set when the track was recorded, the volume value will appear as "---" on the display.

6-4 OUT TRANSPOSE

OUT_Transp.	0

The OUT TRANSPOSE function makes it possible to transpose the pitch of all notes played back by the DRC-20 (except for the RHYTHM track) up or down in semitone steps by a maximum of plus or minus six semitones. A setting of +4, for example, raises the overall playback pitch by an interval of a major third (four semitones). This function does not affect the recorded data.
Use the NO ◀ and ▶ YES buttons to select the desired degree of transposition.

6-5 IN TRANSPOSE

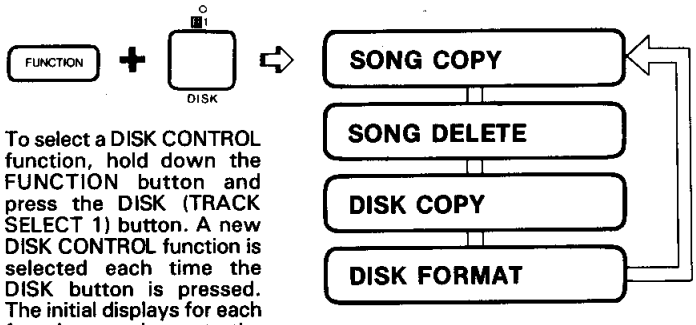
IN_Transp.	0

IN TRANSPOSE allows musical data to be transposed as it is being recorded, so that the transposed data is actually recorded by the DRC-20 (except for the RHYTHM track). The transposition range is the same as for the OUT TRANSPOSE function: a maximum of plus or minus six semitones in semitone steps. A setting of -6, for example, lowers the recorded pitch by an interval of a diminished fifth (six semitones).
Use the NO ◀ and ▶ YES buttons to select the desired degree of transposition.

7 DISK CONTROL

— Copying & Deleting Songs, Copying Disks —

The DRC-20 DISK CONTROL functions allow copying and deleting songs, copying entire disks, and formatting new disks. The DISK FORMAT operation has been described in detail in "Formatting a New Disk" on page 5. The remaining DISK CONTROL functions are described below.



To select a DISK CONTROL function, hold down the FUNCTION button and press the DISK (TRACK SELECT 1) button. A new DISK CONTROL function is selected each time the DISK button is pressed. The initial displays for each function are shown to the right. Details are given in the following pages.

7-1 Copying Songs

Song data can "backed up" by copying to a new song number or a different disk, as follows:

1. Select the SONG COPY Function
Hold down the FUNCTION button and press the DISK button a few times until the SONG COPY display appears.

SONG COPY

2. Select the "Source" Song
When you release the FUNCTION button after selecting the SONG COPY function, the following display will appear:

FROM 1 TO 1

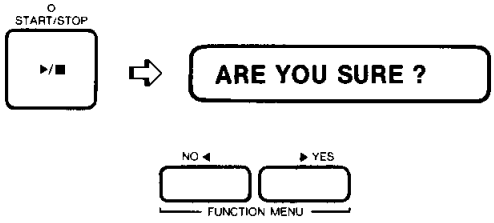
Use the NO ◀ and ▶ YES buttons to select the number of the source song (i.e. the song which is to be copied to a new song number or disk).

3. Select the "Target" Song Number.
After selecting the source song number, press the START/STOP button and select the target song number* (the new song number to which the source song is to be copied).

* A target song number between 101 and 160 causes the copy to be made to a different disk. For example, if you select "106" as the target song number, the source song will be copied to song number "6" on a different disk. When you START the copy operation, the DRC-20 will tell you when to insert the "TARGET DISK" (the disk to which the song is being copied) or the "SOURCE DISK" (the disk from which the song is being copied) as necessary. When copying to a new disk, make sure your target disk has been properly formatted by the DRC-20, and that its write protect tab is set to the write-enable position.

4. Start the Copy Operation

Press the START/STOP to actually begin the copy operation. If you copy to a song number that already contains data, that data will be overwritten by the new song data. To prevent accidental erasure of previous material, the DRC-20 will ask "ARE YOU SURE ?" if you have picked a target song number that already contains data. Press the ▶ YES button if you want to go ahead with the copy operation, or the NO ◀ button to cancel.



Note: When copying to a different disk, the source and target disks may have to be exchanged several times until the entire copy is complete. Follow the DRC-20's "INSERT SOURCE!" and "INSERT TARGET!" instructions until the entire song has been copied.

Note: If you incorrectly insert the source or target disk, or insert a completely different disk, the "CHANGE DISK!!" message will appear prompting you to insert the correct disk.

7-2 Deleting a Song

You can delete any song from a loaded disk as follows:

1. Select the SONG DELETE Function

Hold down the FUNCTION button and press the DISK button a few times until the SONG DELETE display appears.

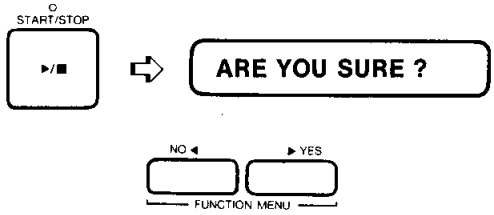
2. Select the Song to Delete.

When you release the FUNCTION button after selecting the SONG DELETE function, the following display will appear:

Use the NO ◀ and ▶ YES buttons to select the song number you wish to delete.

3. Start the Delete Operation.

Press the START/STOP button to actually delete the selected song. To prevent accidental erasure, the DRC-20 will ask "ARE YOU SURE ?" at this point. Press the ▶ YES button if you want to go ahead with the delete operation, or the NO ◀ button to cancel.



7-3 Copying Disks

1. Insert the disk to be copied.

2. Select the DISK COPY Function

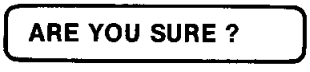
Hold down the FUNCTION button and press the DISK button a few times until the DISK COPY display appears.

When you release the FUNCTION button after selecting the DISK COPY function, the "NOW READING..." display will appear while the DRC-20 reads the source disk.

Then, after the DRC-20 has read as much material as will fit in its internal memory, the "INSERT TARGET!" display will appear.

3. Insert the TARGET Disk

Insert the target disk (the new disk to which you want to copy the material from the source disk). The "ARE YOU SURE?" display will appear, asking you to confirm that you want to write to the loaded disk (thereby erasing any previous material that may be on it). Press the ▶ YES button to continue, or the NO ◀ button to cancel the disk copy operation. The "NOW WRITING..." display will appear while the DRC-20 writes to the new disk.
The normal Tempo display reappears when the copy is complete.



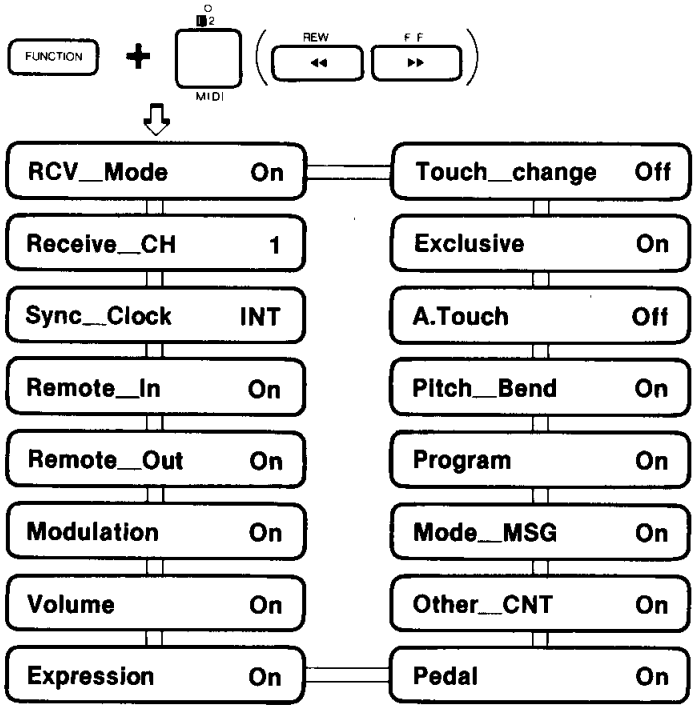
Note: The source and target disks may have to be exchanged several times until the entire copy is complete. Follow the DRC-20's "INSERT SOURCE" and "INSERT TARGET" instructions until the entire disk has been copied.

Note: If you incorrectly insert the source or target disk, or insert a completely different disk, the "CHANGE DISK!!" message will appear prompting you to insert the correct disk.

8 MIDI CONTROL

— Mode/Channel Selection, Synchronization & Data Filters —

The DRC-20 MIDI CONTROL functions include important functions for matching the DRC-20 MIDI channels with those of your keyboard/tone generator system, and for determining what MIDI information will or will not be recorded.
For all MIDI CONTROL functions described in this section, the functions are selected by holding the FUNCTION button and pressing the MIDI button as many times as necessary until the desired function appears (the REW and FF buttons can also be used while the FUNCTION button is held). The NO ◀ and ▶ YES buttons are then used to set the selected function as required.



8-1 RECEIVE MODE

RCV_Mode On

Settings: On, Off, Multi
Default: On

The "On" setting (OMNI ON) turns the OMNI receive mode on, allowing MIDI voice messages received on any MIDI channel (1 through 16) to be recorded on any track of the DRC-20. When the data is played back, it is transmitted on the corresponding track number (e.g. data recorded on track 3 is transmitted on MIDI channel 3).

The "Off" setting (OMNI OFF) turns the OMNI receive mode off so that only MIDI voice messages received on the MIDI channel specified by the RECEIVE CHANNEL function (described below) can be recorded. The received data can be recorded to any DRC-20 record track. When the data is played back, it is transmitted on the corresponding track number (e.g. data recorded on track 3 is transmitted on MIDI channel 3).

When the "Multi" setting is selected, only MIDI voice messages received on the MIDI channel number corresponding to the current DRC-20 record track number (1 through 10, or 15) will be recorded, regardless of the setting of the RECEIVE CHANNEL function (below). For example, in the Multi receive mode if record track 5 is selected, only MIDI voice messages received on MIDI channel 5 will be recorded.

8-2 RECEIVE CHANNEL

Receive_CH 1

Settings: 1 — 16
Default: 1

This function sets the DRC-20 MIDI receive channel to any channel between 1 and 16. The RECEIVE CHANNEL setting is only effective when the OMNI OFF ("Off") RECEIVE MODE (see the RECEIVE MODE function, above) is selected.

8-3 SYNC CLOCK

Sync_Clock INT

Settings: INT, EXT
Default: INT

Determines whether the DRC-20 is driven by its own internal clock or an external MIDI clock received via the MIDI IN connector. The default INT (INTERNAL) setting is appropriate for most applications.
If you want to synchronize the timing of the DRC-20 to a second MIDI disk recorder, drum machine or other device that does transmit MIDI clock information, the controlling device must be connected to the DRC-20 MIDI IN connector and the SYNC CLOCK function should be set to EXT (EXTERNAL).

8-4 REMOTE IN

Remote_In On

Settings: On, Off
Default: On

Determines whether MIDI START, STOP, CONTINUE, SONG POSITION, and SONG SELECT messages are received by the DRC-20. All these messages are received when this function is "On," but are ignored by the DRC-20 when the setting is "Off."

8-5 REMOTE OUT

Remote_Out On

Settings: On, Off
Default: On

Determines whether MIDI START, STOP, CONTINUE, SONG POSITION, SONG SELECT, and TIMING CLOCK messages are transmitted by the DRC-20. All these messages are transmitted when this function is "On." None are transmitted when the setting is "Off."

Note: START, STOP and CONTINUE messages are not sent during Disklavier disks (PianoSoft) even if this function is turned "On".

8-6 MODULATION FILTER

Modulation	On

Settings: On, Off
Default: On

Determines whether MIDI modulation data (01 and 21 hexadecimal) are received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."
Modulation data contains information on keyboard modulation wheel, controller or breath controller operations. If you don't want the DRC-20 to record or reproduce any modulation effects, turn this function "Off."

8-7 VOLUME FILTER

Volume	On

Settings: On, Off
Default: On

Determines whether MIDI volume data (07 and 27 hexadecimal) are received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."
Volume data contains information on keyboard volume control operations. If you don't want the DRC-20 to record or reproduce any volume changes, turn this function "Off."

8-8 EXPRESSION FILTER

Expression	On

Settings: On, Off
Default: On

Determines whether MIDI expression data (0B and 2B hexadecimal) is received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."
Expression data contains information on expression pedal or controller operations. If you don't want the DRC-20 to record or reproduce any expression pedal operations, turn this function "Off."

8-9 PEDAL FILTER

Pedal	On

Settings: On, Off
Default: On

Determines whether MIDI pedal data (40, 42 and 43 hexadecimal) is received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."
Pedal data contains information on keyboard pedal operations (damper, soft, sostenuto). If you don't want the DRC-20 to record or reproduce any pedal operations, turn this function "Off."

8-10 OTHER CONTROL CHANGE FILTER

Other_CNT	On

Settings: On, Off
Default: On

Determines whether MIDI control change data other than that described in 8-6, 8-7, 8-8 and 8-9 above is received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."

8-11 MODE MESSAGE FILTER

Mode_MSG	On

Settings: On, Off
Default: On

Determines whether MIDI mode messages are received and transmitted by the DRC-20. These messages are handled when this function is "On," but are neither transmitted or received when the setting is "Off."
Mode messages affect the MIDI OMNI On/Off status, mono/poly mode switching and related settings. If you don't want the DRC-20 to record or reproduce this type of data, turn this function "Off."

8-12 PROGRAM CHANGE FILTER

Program	On

Settings: On, Off
Default: On

Determines whether MIDI program change messages are received and transmitted by the DRC-20. These messages are handled when this function is "On," but are neither transmitted or received when the setting is "Off."
Program change messages primarily deal with voice selection. If you don't want the DRC-20 to record or reproduce any voice selection changes, turn this function "Off."

8-13 PITCH BEND CHANGE FILTER

Pitch_Bend	On

Settings: On, Off
Default: On

Determines whether MIDI pitch bend change messages are received and transmitted by the DRC-20. These messages are handled when this function is "On," but are neither transmitted or received when the setting is "Off."
Pitch bend change messages obviously deal with pitch-bend control. If you don't want the DRC-20 to record or reproduce any pitch bends, turn this function "Off."

8-14 AFTER TOUCH FILTER

A.Touch	Off

Settings: Off, Key, Ch, Both
Default: Off

Determines whether MIDI after touch messages are received and transmitted by the DRC-20, and the particular type of after touch data handled when after touch reception and transmission is on. No after touch data is received or transmitted when this function is "Off."
The "Key" setting allows reception of polyphonic key pressure type after touch data.
The "Ch" setting allows reception and transmission of channel pressure type after touch data.
The "Both" setting allows reception and transmission of both of the above-mentioned after touch data types.

8-15 EXCLUSIVE FILTER

Exclusive	On

Settings: On, Off
Default: On

Determines whether MIDI system exclusive data (keyboard panel settings, etc) is received and transmitted by the DRC-20. This data is handled when this function is "On," but is neither transmitted or received when the setting is "Off."
System exclusive messages generally contain information relating to panel control settings, voice data, etc. If you don't want the DRC-20 to record or reproduce this type of data, turn this function "Off."

8-16 TOUCH CHANGE

Touch_change	Off

Settings: On, Off
Default: Off

This is a special function which modifies the note velocity values of data played back from pre-recorded Disklavier disks to match the velocity response of older Clavinova models.
Turn this function "On" to achieve the best response with Disklavier disks and the following Clavinova models:
CLP-20, CLP-30, CLP-50, CLP-100, CLP-200, CLP-300, CLP-500
CVP-3, CVP-5, CVP-6, CVP-7, CVP-8, CVP-10

Note: The Touch Change function can also be turned ON by holding down the FUNCTION button while switching the power ON.

9 MIDI DATA FORMAT

If you're already very familiar with MIDI, or are using a computer to control your music hardware with computer-generated MIDI messages, the data provided in this section can help you to control the DRC-20.

1. NOTE ON/OFF
Data format: [9nH] → [kk] → [vv]

9nH = Note ON/OFF event (n = channel number)
kk = Note number (0 ~ 127 = C-2 ~ G8)
vv = Velocity (Key ON = 1 ~ 127. Key OFF = 0)

* Note OFF event format [8nH] → [kk] → [vv] also recognized.

2. POLYPHONIC KEY PRESSURE (AFTER TOUCH)
Data format: [AnH] → [kk] → [vv]

AnH = Polyphonic After Touch event (n = channel number)
kk = Note number (0 ~ 127 = C-2 ~ G8)
vv = Pressure value (0 ~ 127)

* Reception/transmission of this data can be turned ON or OFF using the MIDI CONTROL mode AFTER TOUCH FILTER function.

3. CONTROL CHANGE & MODE MESSAGES
Data format: [BnH] → [cc] → [dd]

BnH = Control event (n = channel number)
cc = Control number
dd = Control value

(1) Control Change
If the byte format is correct, all control change message can be recorded.

(2) Mode Message

cc	PARAMETER	dd
79H	Reset all controllers	0
7AH	Local ON/OFF	0 = OFF; 7FH = ON
7BH	All notes OFF	0
7CH	OMNI OFF/All notes OFF	0
7DH	OMNI ON/All notes OFF	0
7EH	Mono mode ON/All notes OFF	0
7FH	Mono mode OFF/All notes OFF	0

* "Reset All Controllers" and "All Notes Off" not recorded when the receive mode is set to OMNI ON.

** DRC-20 receive mode not affected by [7CH] or [7DH] messages.

*** Reception/transmission of this data can be turned ON or OFF using the MIDI CONTROL mode MODE MESSAGE FILTER function.

4. PROGRAM CHANGE
Data format: [CnH] → [dd]

CnH = program event (n = channel number)
dd = Program number

* Reception/transmission of this data can be turned ON or OFF using the MIDI CONTROL mode PROGRAM CHANGE FILTER function.

5. CHANNEL PRESSURE (AFTER TOUCH)
Data format: [DnH] → [vv]

DnH = Polyphonic After Touch event (n = channel number)
vv = Pressure value (0 ~ 127)

* Reception/transmission of this data can be turned ON or OFF using the MIDI CONTROL mode AFTER TOUCH FILTER function.

6. PITCH BENDER DATA
Data format: [EnH] → [cc] → [dd]

EnH = Pitch Bender event (n = channel number)
cc = Least significant byte
dd = Most significant byte

* Reception/transmission of this data can be turned ON or OFF using the MIDI CONTROL mode PITCH BEND CHANGE FILTER function.

7. SYSTEM COMMON MESSAGES

(1) Song Position Pointer

Data format: [F2H] → [11H] → [hhH]

F2H = Song Position Pointer
11H = Least significant byte
hhH = Most significant byte
1 beat = 6 MIDI clocks

* Transmitted when the REW or FF buttons are used during STOP or PAUSE.

** When received during STOP, the internal pointer is moved to the corresponding position and playback will start from that point when the START/STOP button is pressed.

(2) Song Select

Data format: [F3H] → [ddH]

F3H = Song Select
ddH = Song number

* Transmitted whenever a DRC-20 SONG NUMBER is selected.

** If received during STOP, the corresponding SONG NUMBER will be selected.

8. SYSTEM REALTIME MESSAGES

(1) Timing Clock (F8H)

Transmitted during all run modes. Used as 1/96th-beat timing clock when DRC sync mode set to EXT (external).

(2) Start (FAH)

Transmitted when run started from beginning of song. Causes run from beginning of song when received.

(3) Continue (FBH)

Transmitted when a "continue start" occurs. Reception causes a continue start.

(4) Stop/Pause (FCH)

Transmitted when a stop/pause occurs. Causes stop/pause when received.

(5) Active Sensing (FEH)

Transmitted every 200 milliseconds. If not received for more than 400 milliseconds a NOTE OFF occurs.

9. SYSTEM EXCLUSIVE MESSAGES

All system exclusive messages recorded during RECORD. Blocks greater than 1Kbyte, however, can only be recorded as initial data during REC READY mode.

(1) Name Data/Bulk Data Request

Name data is transmitted when this data is received.

Status	11110000(F0H)	"System Exclusive"
ID No.	01000011(43H)	"Yamaha"
Substatus	0010nnnn(2nH)	n = 0(channel 1)-15(channel 16)
Format No.	01111101(7DH)	
EOX	11110111(F7H)	

(2) Name data

This data is transmitted when a Name Data/Bulk Data request is received.

Status	11110000(F0H)	"System Exclusive"
ID No.	01000011(43H)	"Yamaha"
Substatus	0000nnnn(0nH)	n = 0(channel 1)-15(channel 16)
Format No.	01111101(7DH)	
Byte Count (MSB)	00000000(00H)	
Byte Count (LSB)	00010000(10H)	
	01010011(53H)	"S"
	01001011(48H)	"K"
	00100000(20H)	"space"
	00100000(20H)	"space"
	00110010(32H)	"2"
	00110001(31H)	"1"
	00110111(37H)	"7"
	00110110(36H)	"6"
	00100000(20H)	"space"
	00100000(20H)	"space"
Version No.	0bbbbbbb	
	0bbbbbbb	
	00100000(20H)	"space"
	00100000(20H)	"space"
	00100000(20H)	"space"
	00100000(20H)	"space"
Checksum	0eeeeeee	
EOX	11110111(F7H)	

• The above covers all MIDI data available for general use.

10 SPECIFICATIONS

- **Recording Media:** 3.5 inch microfloppy disks (2DD)
- **Memory Capacity:** 700K bytes/60 songs maximum
- **Controls:** SONG SELECT, PLAY TRACK SELECT (R1/DISK, L2/MIDI, 3-10, 15), START/STOP, PAUSE, RECORD, REW, FF, PUNCH IN/OUT, PHRASE REPEAT, NO ◀/▶ YES (FUNCTION MENU), METRONOME/TRACK, FUNCTION
- **Display:** 16-character Liquid Crystal Display
- **Other Components:** POWER switch, disk drive, eject button
- **Connectors:** MIDI (IN/OUT/THRU), DC IN
- **Power Supply:** DC IN (9-12V) Power Adapter (PA-3, PA-4/PA-40 or PA-5)
- **Maximum Current:** 700mA
- **Dimensions (W × H × D):** 218 × 76 × 220mm (8-3/5" × 3" × 8-2/3")
- **Weight:** 1.3kg (2.8lbs)
- **Supplied Accessories:** 3.5 inch microfloppy disk × 1, MIDI cable × 2
- **Option:** Power adapter (PA-3, PA-4/PA-40 or PA-5) (The PA-3 AC Adapter is supplied with the DRC-20 in some areas.)

* *Specifications subject to change without notice.*

YAMAHA [Digital Sequence Recorder] Date : 09/26 1989
Model DRC-20 MIDI Implementation Chart Version : 1.0

Function		Transmitted	Recognized	Remarks
Basic	Default	all channel	1	
Channel	Changed	X	1-16	
Mode	Default			
	Messages	OMNIon,OMNIoff	OMNIon,OMNIoff	*1 *2
		POLY,MONO	POLY,MONO	*1 *2
Note Number		0-127	0-127	*1
	True voice	**********		
Velocity	Note on	0 9nH v=1-127	0	*1
	Note off	0 9nH v=0, 8nH	0	*1
After Touch	Key's	0	0	*1 *2
	Ch's	0	0	*1 *2
Pitch Bender		0	0	*1 *2
Control Change	0-120	0	0	*1 *2
	121	0	0	*3 Reset All Controllers *1 *2
Program Change		0	0 0-127	*1 *2
	True #	**********		
System Exclusive		0	0	*1 *2
System Common	Song Pos	0	0	*2
	Song Sel	0	0	*2
	Tune	X	X	
System Real Time	Clock	0	0	*2
	Commands	0	0	*2
Aux Mes-sages	Local ON/OFF	0	0	*1 *2
	All Notes OFF	0	0	*3 *1 *2
	Active Sense	0	0	
	Reset	X	X	

Notes
*1 Recognized and transmitted as record data.
*2 Enabled or disabled by command.
*3 Recognized if Recieve Mode is off.

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO X : No

FCC INFORMATION (U.S.A.)

1. **IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!**
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. **NOTE:** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

   Relocate either this product or the device that is being affected by the interference.

   Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.
   In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

   If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park, CA90620
   The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

CANADA

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA "CLASSE B" PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

- This applies only to products distributed by Yamaha Canada Music Ltd.
- Ceci ne s'applique qu'aux produits distribués par Yamaha Canada Musique Ltée.

Wichtiger Hinweis für die Benutzung in der Bundesrepublik Deutschland.

Bescheinigung des Importeurs

Hiermit wird bescheinigt, daß der/die/das

Disk Recorder Typ: DRC-20

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der
VERFÜGUNG 1046/84

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Yamaha Europa GmbH

Name des Importeurs

- Dies bezieht sich nur auf die von der YAMAHA EUROPA GmbH vertriebenen Produkte.

YAMAHA

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