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Gilson FC 204
Fraction Collector
Quick Reference Guide

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FC 204 Quick Reference Guide
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This *Quick Reference Guide* provides a concise overview of the operating features of the FC 204. In most cases, this is the only documentation you will need to operate your fraction collector.

Note: This *Guide* does not detail installation procedures! Before operating the fraction collector, refer to ***Section 2, Installation*** in the *User's Guide* to make all necessary plumbing and electrical connections.

Use the *Quick Reference Guide* to find out about:

- control keys
- operating modes
- programming
- available racks
- input/output control

For more detailed information, refer to the *User's Guide*. It contains instructions about:

- choosing run parameters
- making plumbing and electrical connections
- setting collection windows to selectively save or discard effluent
- programming the fraction collector to control another device
- using hidden function keys to set parameter values and to monitor performance
- maintaining and troubleshooting your unit

If you need assistance, please contact your Gilson-authorized representative. Specific contact information can be found on the Gilson website at www.gilson.com.

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Notable Features of the 204

How the 204 collects

You can choose from several collection modes: time, drop, peak plus time, peak plus drop, or manual. See **Collection Modes** for more.

Racks

You can choose from a variety of racks. Each rack has a code number. Tell the fraction collector which racks you are using by entering the rack code number. When you change racks, simply enter the new code. See **Racks** for more.

How to operate

The fraction collector has two kinds of controls:

- "hard" keys, such as START, END, YES, NO. The functions of these keys do not vary.
- "soft" keys, the four white keys below the display. The functions of the soft keys vary depending on the current display. The current function of each soft key appears on the display directly above the key.

See **Key Controls** for more.

Memory

The fraction collector remembers your last set of instructions (e.g., the operating mode and the numerical values you assigned to the various options) even if the power has been turned off. It always "wakes up" ready to do exactly what it did the last time.

At each start-up, you should check the list of current values, to make sure they fit your needs. To check the values in the current mode, press *List*.

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HELP

This hard key provides on-line instruction during setup or during a run. Whenever you're in doubt or need assistance, press the HELP key.

Cycle Collection

The fraction collector enables you to collect fractions from each sample into the same set of tubes or into a new set of tubes. See **Cycle Collection** for more.

Collection Windows

Collection windows allow you to collect only the effluent you want and to discard the rest. You can build up to ten collection windows. Collection windows are useful for:

- excluding void volumes
- excluding equilibration or washing volumes
- aiding in selective peak collection

Remember four key points about collection windows:

- You can always collect from *start* to *end*, designating the entire collection period as one collection window.
- Whenever the fraction collector is outside a collection window, it automatically diverts the effluent to drain.
- At the start of each collection window, the dispense head automatically advances to the next tube.
- The collection windows are not mode specific. Windows that you create in one mode are active in all other modes.

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Key Controls

"Hard" keys

START Key used to start collection. This key has the same function as the *Start* soft key. You can also start the fraction collector remotely; see your *User's Guide*.

END A manual override key that ends the collection and returns the dispense head to the "home" position at the left and rear of the unit. Typically, the dispense head will return to "home" after collecting into the last tube.

When using the multiple column option, you must press END after the last fraction has been collected.

If you press END while viewing any display, the ready-to-run display of the current mode will appear. You can then begin to collect fractions.

EDIT Key that calls up the display you use to select or change collection modes. To access advanced technical and service options, press EDIT 1, 2 or 3. See ***Appendices B, C*** and ***D*** in the *User's Guide* for more information about those options.

HELP Displays information and instructions to simplify operation during setup or during a run. There are many help messages. Each gives specific information about your current options.

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ADV Manually advances the number of the current collection vessel. The current tube number is always shown on the display. For instance, if tube 1 is the current collection vessel, pressing ADV makes tube 2 the current collection vessel. When using the multiple column option, the current fraction number, rather than tube number, is displayed.

Typically, tube advance is automatic, but you can always manually initiate an advance by pressing ADV.

You can also advance remotely, as described in your *User's Guide*.

To understand the interaction between the ADV and DRAIN keys, see **DRAIN**.

DRAIN Diverts effluent to drain. DRAIN is a two-state key. Press it once, its light goes on and effluent is diverted to drain. Press it a second time, the light goes off and the fraction collector collects into the current vessel.

Whenever the dispense head of the fraction collector travels from a vessel to the drain trough or back again, it avoids passing over any vessel into which you have collected, to prevent contamination of collected fractions.

While the fraction collector is draining, pressing ADV does not resume collection. Instead it advances the number of the current tube, which is always displayed during a run. When DRAIN is pressed a second time, the fraction collector collects into the vessel shown on the display. This gives you maximum flexibility: after draining, you could resume collection in the last vessel, the next one, or the first vessel in the next row.

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0 - 9 Press number keys to enter numerical values. The decimal point, where applicable, does not have to be entered.

One easy way to enter a new number is to press the NO key to clear the current number; then enter the new number in the same order you would write it on a piece of paper. Numbers appear on the display at the far right, and move to the left with each successive entry.

YES Press YES when you want the instructions shown on the top line of the display to apply. The YES key has the same function as the *Ok* soft key.

NO Press NO to clear the numerical value from the display. Also used to choose alternate options (e.g., programmable output 2).

"Soft" Keys

The following functions are controlled by the four white keys on the fraction collector front panel. Directly above a soft key you'll see its current function. If the display above a key is blank, that key is inactive.

Add Press to begin building a collection window. After you press *Add*, specify the start and end times of the window. When the fraction collector is outside a window, all effluent will be discarded.

Collection windows are optional. You may add up to ten windows. See **Collection Windows** in the *User's Guide* for detailed instructions.

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Collect Press to collect the non-peak effluent in peak modes. Collection of non-peak material is optional. You can set a different time/tube or drop/tube value for collection of non-peak effluent than for collection of peak effluent. See **Discard**.

Cycle Identifies the next set of tubes to be used for collection. This soft key appears instead of the *Start* soft key if the *Tubes per cycle* parameter was set to a number greater than 0 (zero). See ***Section 3*** in the *User's Guide* for detailed instructions.

Del Press to delete the collection window currently shown on the top line of the display. To collect from *Start* to *End*, delete all collection windows. See **Collection Windows** in the *User's Guide* for detailed instructions.

Delayed Adv In Manual mode, this key functions like ADV, except tube advance is delayed to account for the time it takes effluent to pass from the detector to the fraction collector.

Discard Press to divert the non-peak effluent to the drain, in Peak modes.

Drop Specifies collection in Drop mode. See **Collection Modes** for more.

Back After viewing a HELP message, press this key to return to the point at which you requested HELP.

List Press to display a listing of each option and its current value, in the selected collection mode.

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Manl Specifies collection in manual mode. See **Collection Modes** for more.

More Press this key to see the next display of a HELP message. See **Back**.

Ok Indicates you want the instructions shown on the top line of the display to apply. Works in the same way as the YES hard key.

Peak Specifies collection in one of the two peak modes. After making this selection, you'll be asked if you want to subfractionate peaks by time or by drop. See **Collection Modes** for more.

Quit Press to return to the previous display.

Rack Press to tell the fraction collector which racks you will use. You can change the rack code simply by entering a new number. Also calls up a description of the rack code that currently appears on the display. See **Racks** for more.

Start Press to start the collection. The START hard key has the same function.

Time Specifies collection in time mode. See **Collection Modes** for more.

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Cycle Collection

The fraction collector enables you to collect fractions two different ways:

- Collect each sample, or full collection cycle, into the same set of tubes. During the run, each cycle begins at tube 1.

- Collect each sample, or full collection cycle, into a new set of tubes. During the run, each cycle begins at the tube following the last tube of the previous cycle.

The *Tubes per cycle* parameter in the technical menu (press EDIT 2) enables you to indicate which way you want the fractions collected.

To collect each sample into the same set of tubes, set the *Tubes per cycle* parameter to 0 (zero).

To collect each sample into a new set of tubes, set the *Tubes per cycle* parameter to a value other than 0 (zero). Using the tubes per cycle and the total tube capacity for the four racks, the number of cycles is calculated.

If the number of tubes can't be divided into the tube capacity evenly, the number of cycles is the whole-number quotient; the remaining tubes are not used.

Also note that collection will continue between racks for a cycle. Therefore, the number of tubes per cycle doesn't have to be evenly divisible by the number of tubes on one rack.

See ***Chapter 3*** in the *User's Guide* for more information.

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Collection Modes

Time Mode

For collection of timed fractions; from 0.01 to 99.99 minutes per tube, in 0.01 minute increments.

Parameters:

_ _ . _ _ min/tube

Collect: _ _ _ . _ to _ _ _ . _ (collection windows)

You can change min/tube value during the run. Enter new numbers; then press YES.

Drop Mode

For collection of fractions by drop count, from 1 to 9999 drops per tube.

Parameters:

_ _ _ _ drops/tube

Collect: _ _ _ . _ to _ _ _ . _ (collection windows)

You can change drop/tube values during the run. Enter new numbers; then press YES.

Manual Mode

For manual collection. Use the START, ADV, DRAIN and END keys. A delayed advance soft key advances the dispense head only after waiting until the effluent passes from your detector to the fraction collector. See the *User's Guide* for more information about when to activate the delayed advance function.

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Parameters:

Delay time: _ . _ _ min

Collect: _ _ _ . _ to _ _ _ . _ (collection windows)

Peak Modes

For collecting peak and/or non-peak fractions. To detect peaks, the fraction collector must be connected to an analog output of a detector. The fraction collector can interpret the detector data to distinguish peaks from non-peaks. See the *User's Guide* to connect the detector to the fraction collector multipurpose Input/Output port.

Gilson strongly recommends that you install the 3-way valve, supplied with the fraction collector, when operating in a peak mode. Refer to ***Chapter 2, Installation*** in the *User's Guide*.

There is no peak-only mode. Peak or non-peak effluent must be subdivided either:

- by time (from 0.01 to 99.99 min/tube) or
- by drops (from 1 to 9999 drops/tube)

In peak modes, the fraction collector needs the following information:

- the width of a typical peak in your run at half of its maximum height, measured in minutes

- the height of the shortest peak of interest, measured in millivolts (this number is easily determined from the full scale voltage deflection of your detector and recorder)

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- the time it takes for the effluent to pass from the detector flow cell to the dispense head of the fraction collector. This aids in the collection of purer peaks. Your *User's Guide* shows you how to calculate the delay time based on your setup

You can collect the non-peak effluent at a different time/tube or drop/tube than the peak effluent.

To discard non-peak effluent to waste, choose the *Discard* soft key.

Parameters:

Peak: _ _ . _ _ min/tube
or
Peak: _ _ _ _ drops/tube

Non-peak: _ . _ _ min/tube
or
Non-peak: _ _ _ _ drops/tube

N**ote**: The "Non-peak" displays will not appear if you choose to discard non-peak fractions.

Peak width: _ . _ _ min

Peak height: _ _ . _ mV

Delay time: _ . _ _ min

Collect: _ _ _ . _ to _ _ _ . _ (collection windows)

You can change time/tube or drop/tube values during a run. Enter numbers; then press YES.

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Racks

The fraction collector "knows" the collection patterns for all of the following racks, according to their code numbers. When you enter the code number of the racks you intend to use, the fraction collector describes the racks to you. To change rack codes, simply enter the code of the new racks.

The fraction collector will accept up to four test tube racks of the same code. The following test tube racks can be used. Available microplate racks are described following the test tube rack descriptions.

Rack Code	*Tube Size (mm)*	*Tube Capacity (mL)*	*Tubes per Rack*	*Total Number of Tubes*
20	10 x 100	4.5	108	432
21	13 x 100	9	60	240
22	18 x 150	25	44	176
	or 18 x 180	32		176
23	17 x 55	6.8	44	176
	or 17 x 65	8		176
23W	15 x 45	4	44	176
24	28 x 57	20	14	56
28	10 x 65	3	108	432
	or 10 x 75	3.5		432
29	12 x 65	5	60	240
	or 12 x 75	6		240
29 LE	11 x 40	1.5	60	240
29 SE	7 x 30	0.5	60	240

Notes: Rack Code 22 doesn't require tray platform.
Rack Code 23W accepts Waters WISP vials.
Rack Code 24 accepts scintillation vials.

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The fraction collector will accomodate up to four 96-well standard microplates using the Code 16 Rack. Choose the Code 16D Rack for using four deep-well microplates (96-well, 2 mL capacity).

It will accomodate up to eight Whatman/Polyfiltronics microplates (2 mL, 5 mL, and 10 mL) using the Code 17 Rack and the Code 17 Rack Heightener.

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Input/Output Control

Provides inputs for:

- remote start/advance and end, by contact closure
- analog signal from detector for peak detection and quantification

Provides outputs for:

- event mark on tube advance
- programmable on/off control of pump, recorder, etc., by contact closure

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Your *User's Guide* describes how to make the input and output connections and how to set the programmable output. The following table lists the functions of each pair of contacts.

1 - 2 Analog input from detector. Used in peak modes. Pin 1 is signal (10 - 100 mV); Pin 2 is ground reference.

3 - 4 Input A. When activated by contact closure, fraction collector will start a run or, if already in run, will advance to the next tube.

5 - 6 Input B. When activated, collection will end and indexing head will return to home.

7 - 8 Output 1. Sends a 0.1 second contact closure at each tube advance. Used to indicate an event on your recorder/data device.

9 - 10 Output 2. User programmable contact closure. Timing of this contact closure is set in the technical menu (press EDIT 2). See your *User's Guide* to learn how to set this option. The factory default setting is "On after wait 1".

Also, Gilson Serial I/O Channel (GSIOC) port allows full-function computer control of the fraction collector. See your *User's Guide* for details.

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