1208, TFDEN-067-001, 001

NACHI

FD CONTROLLER INSTRUCTION MANUAL FINE MOTION

1st edition

- Before attempting to operate the robot, please read through this operating manual carefully, and comply with all the safety-related items and instructions in the text.
- The installation, operation and maintenance of this robot should be undertaken only by those individuals who have attended one of our robot course.
- When using this robot, observe the low related with industrial robot and with safety issues in each country.
- This operating manual must be given without fail to the individual who will be actually operating the robot.
- Please direct any queries about parts of this operating manual which may not be completely clear or any inquiries concerning the after-sale service of this robot to any of the service centers listed on the back cover.

NACHI-FUJIKOSHI CORP.

1.1 Overview of “Fine Motion”

1.1.1 Outline

Fine Motion Function is optional applications software.

Fine Motion Function performs a function for exercising exact control with precedence over a process among teaching points. The use of Fine Motion Function enables effects to decrease any deviation of traces drawn in fingers of a robot from ideal traces connected among teaching points, thereby improving remarkably their accuracy. And it is most effective if it is applied mainly in such works as sealing where high-speed motions are carried and higher accuracy of traces is requested.

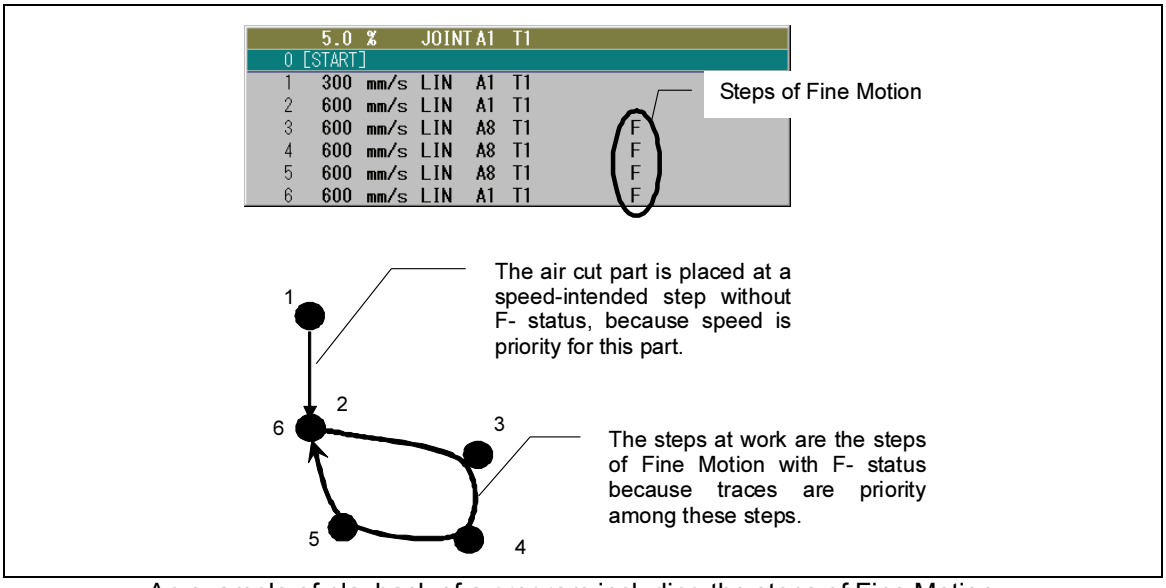
Fine Motion Function, however, gives tracing works higher priority, which has an effect on its running time to a certain extent, therefore it is not expected to be so effective in such applications as spot welding and air cut where high-speed positioning is regarded as important. As the use of Fine Motion Function can be suitably selected at every step, it can be utilized effectively to the utmost in this case if it is switched on in accordance with the need.

1.1.2 General Description

The Fine Motion Function aims at decreasing any deviation of traces drawn in fingers of a robot from ideal traces connected among teaching points so that the accuracy of traces can be improved substantially. And it is most effective if it is applied particularly in such works as sealing where fixed-speed motions are carried and higher accuracy of traces is requested. And it consists of the following functions:

1. Effecting optimum servo-parameters to improve tracing accuracy to the maximum,
2. Keeping a speed control on traces to improve to the maximum in their accuracy, and
3. Providing a compensation of flexure of a robot’s joints through the torque on motions.

Fine Motion Function, if at work, gives tracing works higher priority, which has an effect on its running time, therefore it has to be disabled in such applications as spot welding and air cut where high-speed positioning is regarded as important. For the matter, Fine Motion Function handles steps with the F status such as the steps 3 – 6 shown in following figure, which can be switched to normal motions.



An example of playback of a program including the steps of Fine Motion

1.2 Operation

1.2.1 Setup

Any special preparation is needed for starting-up of fine motion. Set up has been already completed when shipped from the factory.

1.2.2 Assignment of <Fine Motion> Key to soft key

First al all, please assign <Fine Motion> key to the soft key. After finishing this assignment, there is no more need to do this again. (However, this setting is again needed if formatted.)

Soft key number 2018

Please refer to the instruction manual “BASIC OPERATION” “Chapter 7 Useful functions” “Customizing the softkey” for the detail of operation.

1.2.3 Teaching Operation

There are two methods of teaching:
- Switching the record status by <Fine Motion> key and record the move step
- Changing to fine motion step by screen editing

Please refer to the instruction manual “BASIC OPERATION” “Chapter 4 Teaching” for the detail of operation.

■ Switching record Status by <Fine Motion> key and record the move step

1 **Press <Fine Motion> key in Teach Mode.**
>>The f- status is added to the Record status.

Press again <Fine Motion> key, the f- status is deleted.

2 **Operate the robot to desired position and press [O. WRITE/Record] key.**
>>Move step with the f-status is now recorded.

■ Changing to Fine Motion Step by Screen Editing

1 **Press [Edit] key in Teach Mode.**
>>Editing screen of selected program is now displayed.

Numerical Value +

2 **Move the cursor to the position where “Switch enabled/disabled of f-status” is displayed by the arrow key, then input <0> or <1>.**
>>F-status is deleted when 0 is inputted, f-status appears when 1 is inputted.

or

3 **Press <Complete> or press [Edit] key again to finish.**
In case of closing screen editing without reflection of revision, press [Reset /R] key.

NACHI
NACHI-FUJIKOSHI CORP.

http://www.nachi-fujikoshi.co.jp/

JAPAN MAIN OFFICE	Phone: +81-3-5568-5245	Fax: +81-3-5568-5236	Shiodome Sumitomo Bldg. 17F, 1-9-2 Higashi-Shinbashi Minato-ku, TOKYO, 105-0021 JAPAN

NACHI NORTH AMERICA ***http://www.nachirobotics.com/***

North America Headquarters	Phone: 248-305-6545	Fax: 248-305-6542	22285 Roethel Drive, Novi, Michigan 48375 U.S.A.
Greenville Service Office	Use 248-305-6545	Use 248-305-6542	South Carolina, U.S.A.
San Antonio Service Office	Use 248-305-6545	Use 248-305-6542	Texas, U.S.A.
Kentucky Branch Office	Phone: 502-695-4816	Fax: 502-695-4818	116 Collision Center Drive, Suite A, Frankfort, KY 40601 U.S.A
Training Office	Phone: 248-334-8250	Fax: 248-334-8270	22213 Roethel Drive, Novi, Michigan 48375 U.S.A.
Toronto Branch Office	Phone: 905-760-9542	Fax: 905-760-9477	89 Courtland Avenue, Unit 2, Vaughan, Ontario L4K3T4 CANADA
Mexico Branch Office	Phone : +52-555312-6556	Fax: +52-55-5312-7248	Urbina # 54, Parque Industrial Naucalpan, Naucalpan de Juarez, 53370, Estado de México, MEXICO
Saltillo Service Office	Phone : +52-844416-8053	Fax: +52-844416-8053	Canada 544 Privada Luxemburgo C. P. 25230, Saltillo, Coahuila, MEXICO

NACHI ROBOTIC EUROPE

Germany ***http://www.nachi.de/***

Nachi Europe GmbH	Phone: +49-(0)2151-65046-0	Fax: +49-(0)2151-65046-90	Bischofstrasse 99, 47809, Krefeld,GERMANY

United Kingdom ***http://www.nachi.co.uk/***

Nachi U.K. LTD.	Phone: +44-(0)121-250-1895	Fax: +44-(0)121-250-1899	Unit 7, Junction Six Industrial Estate, Electric Avenue, Birmingham B6 7JJ, U.K.

Czech Republic

Nachi Europe	Phone: + 420-255-734-000	Fax: +420-255-734-001	Prague 9, VGP Park, Czech republic

NACHI ROBOTIC ASIA

Korea ***http://www.nachi-korea.co.kr/***

Korea	Phone: +82-(0)2-469-2254	Fax: +82-(0)2-469-2264	2F Dongsan Bldg. 276-4, Sungsu 2GA-3DONG, Sungdong-ku, Seoul 133-123, KOREA

Robot Division
1-1-1, FUJIKOSHIHONMACHI, TOYAMA CITY, JAPAN 930-8511
Phone +81-76-423-5137
Fax +81-76-493-5252

Original manual is written in Japanese.