



GE Fanuc Automation

Computer Numerical Control Products

*Open CNC
DNC Operation Management Package*

Operator's Manual

GFZ-63214EN/01

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Warnings, Cautions, and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all hardware and software systems. GE Fanuc Automation assumes no obligation of notice to holders of this document with respect to changes subsequently made.

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SAFETY PRECAUTIONS

This manual includes safety precautions for protecting the user and preventing damage to the machine. Precautions are classified into Warnings and Cautions according to their bearing on safety. Also, supplementary information is described as Notes. Read the Warnings, Cautions, and Notes thoroughly before attempting to use the machine.

WARNING

Applied when there is a danger of the user being injured or when there is a danger of both the user being injured and the equipment being damaged if the approved procedure is not observed.

CAUTION

Applied when there is a danger of the equipment being damaged, if the approved procedure is not observed.

NOTE

Notes is used to indicate supplementary information other than Warnings and Cautions.

- Read this manual carefully, and store it in a safe place.

General Warnings and Cautions

WARNING

1. Never attempt to machine a workpiece without first checking the operation of the machine. Before starting a production run, ensure that the machine is operating correctly by performing a trial run using, for example, the single block, feedrate override, or machine lock function, or by operating the machine with neither a tool nor workpiece mounted. Failure to confirm the correct operation of the machine may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.
2. Before operating the machine, thoroughly check the entered data. Operating the machine with incorrectly specified data may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.
3. Ensure that the specified feedrate is appropriate for the intended operation. Generally, for each machine, there is a maximum allowable feedrate. The appropriate feedrate varies with the intended operation. Refer to the manual provided with the machine to determine the maximum allowable feedrate. If a machine is run at other than the correct speed, it may behave unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.
4. When using a tool compensation function, thoroughly check the direction and amount of compensation.
Operating the machine with incorrectly specified data may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.
5. The parameters for the CNC and PMC are factory-set. Usually, there is no need to change them. When, however, there is no alternative other than to change a parameter, ensure that you fully understand the function of the parameter before making any change.

Failure to set a parameter correctly may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.

CAUTION

1. The operator's manual for DNC Operation Management Package describes all the basic functions of the CNC, including the optional functions. The selected optional functions vary with the machine. Some functions described in this manual may not, therefore, be supported by your machine. Check the machine specifications before using DNC Operation Management Package.
2. Some machine operations and screen functions are implemented by the machine tool builder. For an explanation of their usage and related notes, refer to the manual provided by the machine tool builder.

For example:

- On some machines, executing a tool function causes the tool change unit to operate. When executing a tool function on such a machine, stand well clear of the tool change unit. Otherwise, there is a danger of injury to the operator.
- Many auxiliary functions trigger physical operations, such as rotation of the spindle. Before attempting to use an auxiliary function, therefore, ensure that you are fully aware of the operation to be triggered by that function.

NOTE

- Command programs, parameters, and variables are stored in nonvolatile memory in the CNC. Generally, the contents of memory are not lost by a power on/off operation. However, the contents of memory may be erased by mistake, or important data in nonvolatile memory may have to be erased upon recovering from a failure. To enable the restoration of data as soon as possible if such a situation arises, always make a backup of the data in advance.

Warnings and Cautions Relating to DNC Operation Management Package

Warnings and cautions relating to DNC Operation Management Package are explained in this manual. Before using the function, read this manual thoroughly to become familiar with the provided Warnings, Cautions, and Notes.

On the next page, the points to be noted when DNC Operation Management Package is used are summarized. These points are not explained in Chapter 1 and the subsequent chapters of this manual. Read this part before attempting to use the function.

Important Notice

The following summarizes the points to be noted when the DNC Operation Management Package is used. Before attempting to use the DNC Operation Management Package, read the following:

CAUTION

- This manual does not explain in detail those operations and parameters that vary from one CNC model to another and which vary with options. For an explanation of such operations and parameters, refer to the relevant CNC manual and the manual supplied by the machine tool builder.
- This manual describes as many reasonable variations in usage as possible. It cannot address every combination of features, options, and commands that should not be attempted. If a particular combination of operations is not described, it should not be attempted.

PREFACE

Thank you for purchasing the **DNC Operation Management Package**.

DNC Operation Management Package implements DNC operation in an open CNC environment, thus allowing NC programs to be sent directly from a personal computer to the NC.

DNC Operation Management Package is supported by Microsoft® Windows®. This manual does not explain the basic common operations of Windows.

Users who are using Windows for the first time should read the manuals on Windows first to become familiar with the basic operation of Windows.

Read this manual thoroughly to ensure the correct use of. DNC Operation Management Package

NOTE

The purchased software product can be copied within the plant, as required. The machine tool builder should ship machines together with a backup copy of the software product.

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DNC Operation Management Package Features and Restrictions

DNC Operation Management Package has the following features:

Features

- Implements DNC operation in an open CNC environment, thus allowing NC programs to be sent directly from a personal computer to the NC.
- The function of Basic Operation Package 1 can be extended further by incorporating DNC Operation Management Package in the Basic Operation Package 1.

- Offers operability such that current users of FANUC CNCs can quickly become familiar with the system.
- Allows customization to improve operability, such as modifying the screen settings or adding or deleting a screen.
- Provides each screen as an ActiveX component, such that it can be embedded into a program developed with Visual Basic 4.0/5.0.

The following restrictions are imposed on DNC Operation Management Package:

Restrictions

- This software is designed to be used with a personal computer connected to High Speed Serial Bus Type 2, the FS160i/180i/210i having personal computer functions, a personal computer in which the NC Board has been installed, or Intelligent Terminal Type 2. It cannot be used with the MMC-IV, a personal computer connected to High Speed Serial Bus Type 1, or Intelligent Terminal Type 1.
For an HSSB multi-connection, this software can only be used with a single CNC.
- This software supports the following CNCs:
 - CNC connected to Intelligent Terminal Type 2
FS150-MB/TB (for systems having only up to 15 axes)
FS160-MC/TC/MMC/TTC, FS180-MC/TC/TTC
FS160i-MA/TA, FS180i-MA/TA, FS210i-MA/TA
- CNC connected to a personal computer via High Speed Serial Bus Type 2
 - FS15-MB/TB (for systems having only up to 15 axes)
FS16-MC/TC/MMC/TTC, FS18-MC/TC/TTC
FS16i-MA/TA, FS18i-MA/TA, FS21i-MA/TA
- CNC having personal computer functions
FS160i-MA/TA, FS180i-MA/TA, FS210i-MA/TA

Contents of the Product Package

This product package consists of the following:

- Floppy disks
DNC Operation Management Package (A02B-0207-K750#ZZ07)

NOTE

Read the Release Note (README.TXT), provided on the first floppy disk of the product package. It provides detailed information on this product package and information not described in the operator's manual.

Organization of This Manual

This manual is organized as follows:

SAFETY PRECAUTIONS

Explains the general precautions which must be observed to ensure safety when DNC Operation Management Package is used.

PREFACE

Briefly explains the features of DNC Operation Management Package. Also explains how to use information on the usage of DNC Operation Management Package, including this manual.

1. SETUP

Explains how to set up the environment for operating DNC Operation Management Package and how to prepare DNC Operation Management Package for use.

2. BASIC KNOWLEDGE

Provides basic information with which the user should be familiar before attempting to use DNC Operation Management Package.

3. SCHEDULED OPERATION

Describes how to set and perform scheduled operation.

4. SUBPROGRAM CALL OPERATION

Describes how to set and perform subprogram call operation.

5. MONITORING THE PROGRESS OF DNC OPERATION

Describes how to monitor the progress of DNC operation.

6. CUSTOMIZATION

Describes how to customize DNC Operation Management Package.

APPENDIX

Provides supplementary information to be read as required, such as how to back up the setting file.

Notation Conventions

The following explains the notation conventions used in this manual:

- Menu, command, and screen notations

Example	Explanation
[File] menu	Menu names are enclosed in brackets [].
[Setting...]	Command names are enclosed in brackets [].
[Program Edit] screen	Screen names (displayed on the title bars) are enclosed in brackets [].
<OK> button	Command buttons on the display are enclosed in angle brackets < >.

- Key notations and operation

Example	Explanation
[Enter] key	Key names are enclosed in brackets [].
[Ctrl]+[Tab] keys	When keys are to be pressed and held down sequentially, the keys are indicated by connecting them with +, as shown on the left.
Direction keys	The [→], [←], [↑], and [↓] keys are collectively called the direction keys.

- Mouse operations

Example	Explanation
Click	Press a mouse button, then release it immediately.
Double-click	Click a mouse button twice in quick succession.
Drag	Move the mouse while holding down a mouse button, then release the button at a desired location.

- Folders

This manual refers to directories and folders collectively as folders.

- Sample screens

The screens shown in this manual are examples of the standard system supplied by FANUC. Note that the screen layouts and displayed file names may vary with the equipment being used and according to customization.

Soft keys or screens are not displayed if the equipment being used does not support the corresponding functions (for example, some functions are supported only by machining center systems) or if the CNC options for the corresponding functions are not installed.

- CNC units

Unless otherwise specified, FS16/18/21 refers to FS16/18-MC/TC/MMC/TTC, FS160/180-MC/TC/MMC/TTC, FS16i/18i/21i-MA/TA, and FS160i/180i/210i-MA/TA, while FS15 refers to FS15-MB/TB and FS150-MB/TB.

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1 SETUP

This chapter explains how to set up the environment for operating DNC Operation Management Package and how to prepare DNC Operation Management Package for use.

1.1 Operating Environment

The software operating environment for DNC Operation Management Package is described below.

◆ Computer

A personal computer connected to High Speed Serial Bus Type 2, the FS160i/180i/210i having personal computer functions, or Intelligent Terminal Type 2

● Operating system

Windows 95, Windows 98, or Windows NT 4.0

NOTE

FANUC recommends that DNC Operation Management Package be operated under Windows NT 4.0.

When this software is used under Windows 95 or Windows 98, either pressing the [Ctrl]+[Alt]+[Delete] keys or the status of another application running simultaneously may cause Windows multitasking to stop. If this occurs, the transfer speed of NC programs is unpredictable. Before using the software under Windows 95 or Windows 98, thoroughly check its operation with regard to the above point.

● Environmental requirements

Windows 95 or Windows 98

- Pentium processor with clock frequency of 120 MHz or higher
- At least 32MB of memory

Windows NT 4.0

- Pentium processor with clock frequency of 166 MHz or higher
- At least 48MB of memory

● Recommended operating environment

Windows 95 or Windows 98

- Pentium processor with clock frequency of 166 MHz or higher
- At least 48MB of memory

Windows NT 4.0

- Pentium processor with clock frequency of 200 MHz or higher
- At least 64MB of memory

NOTE

If the environmental requirements are not satisfied, the transfer speed of NC programs is unpredictable.

In an environment less than the recommended environment, NC programs may be transferred more slowly. Before using the software, adjust the transfer thread carefully. (See Section 6.1.5, "Setting the NC program transfer options.")

- Required free space on hard disk
At least 30MB

1.2 Installing DNC Operation Management Package

This section describes how to install DNC Operation Management Package.

NOTE

Before DNC Operation Management Package can be installed, operations such as driver installation and setup must be performed. For details, refer to either of the following documents:

- Release Note (README.TXT) on FANUC Open CNC Drivers and Libraries for Windows[®] 95 Environment (A02B-0207-K730#ZZ07-1)
- Release Note (README.TXT) on FANUC Open CNC Drivers Disk (A02B-0207-K791#ZZ07-1)

Procedure

• Installing DNC Operation Management Package

1. Insert the disk (A02B-0207-K760#ZZ07-1) into the floppy disk drive.
2. Click the [Start] button, then choose [Run].
3. In "Open:", enter <drive-name>:SETUP, then click the <OK> button. (<drive-name> is the name of the 3.5-inch floppy disk drive.)
4. Perform installation according to the displayed messages.
5. Upon the completion of installation, restart the personal computer.
6. Set the CNC parameters as described in Section 1.3, "Setting the CNC Parameters."

The setup program of DNC Operation Management Package installs the English version by default. To display non-English messages (Japanese, German, French, Italian, or Spanish), subsequently install the non-English message environment, as follows.

NOTE

Before installing the non-English message environment, start and terminate DNC Operation Management Package at least once.

For an explanation of how to start and terminate DNC Operation Management Package, see Section 2.2, "Starting and Terminating DNC Operation Management Package."

Non-English messages can be displayed only under Windows of the target language version. For example, Japanese messages can be displayed only under Japanese Windows and German messages can be displayed only under German

- **Installing the non-English message environment**

1. Insert the disk (A02B-0207-K760#ZZ07-5) into the floppy disk drive.
2. Click the [Start] button, then choose [Run].
3. In "Open:", enter the command corresponding to the target language as listed below, then click the <OK> button.

Japanese	<drive-name>: \JPN\ADDLANG
German	<drive-name>: \GER\ADDLANG
French	<drive-name>: \FRE\ADDLANG
Italian	<drive-name>: \ITA\ADDLANG
Spanish	<drive-name>: \SPA\ADDLANG

<drive-name> is the name of the 3.5-inch floppy disk drive.

4. Perform installation according to the displayed messages.

1.3 Setting the CNC Parameters

This section describes how to set the CNC parameters required to use DNC Operation Management Package.

NOTE

If the CNC parameters are not set, screen display and DNC operation cannot be performed normally.

The CNC parameters can be set either by using Basic Operation Package 1 or directly with the CNC.

For an explanation of how to set the CNC parameters using Basic Operation Package 1, refer to the Basic Operation Package 1 operator's manual. For an explanation of how to set the parameters directly with the CNC, refer to the CNC operator's manual.

Set the following CNC parameters:

- FS15

Description	Set value
Use position display	No. 2204 bit 1 → 1
Use dynamic data display	No. 7613 bit 0 → 1
Use actual speed display	No. 7613 bit 1 → 1
Use spindle speed display	No. 7613 bit 2 → 1
Use program check	No. 7710 bit 7 → 1
Use new DNC functions	No. 7713 bit 0 → 1

Also, set the following parameters as necessary:

- For subprogram call operation

Description	Set value
Number of M code digits	No. 2030 → 0, or 3 or greater
Use subprograms in external memory	No. 7616 bit 3 → 1

- FS16/18/21

Description	Set value
Use new DNC functions	No. 8706 bit 1 → 1

Also, set the following parameters as necessary:

- For high-speed operation

Description	Set value
40KB buffer transfer	No. 8706 bit 0 → 1

- For subprogram call operation

Description	Set value
Number of M code digits	No. 3030 → 0, or 3 or greater

1.4 Integration with Basic Operation Package 1

This section describes how to integrate DNC Operation Management Package with Basic Operation Package 1.

When DNC Operation Management Package is integrated with Basic Operation Package 1, the DNC Operation Management Package functions can be used on the Basic Operation Package 1.

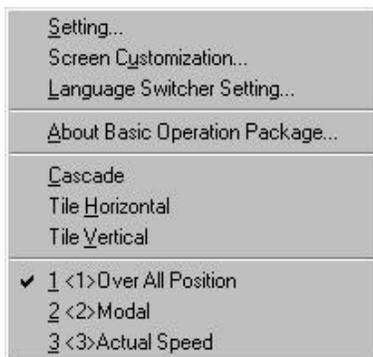
NOTE

When DNC Operation Management Package and Basic Operation Package 1 are to be installed on the same personal computer, Basic Operation Package 1 version 1.4 or later should be used, regardless of whether these two packages are to be integrated.

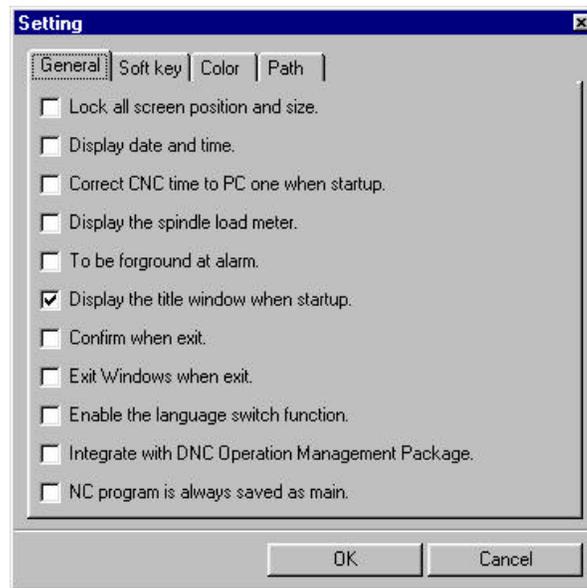
Procedure (for Basic Operation Package 1)

1. Start Basic Operation Package 1.
2. Right-click the soft key area on the Basic Operation Package 1 screen. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.



3. Choose [Setting...].
The [Setting] screen appears.



4. Select the "General" tab and then check "Integrate with DNC Operation Management Package".
5. Exit and restart Basic Operation Package 1.

NOTE

When DNC Operation Management Package is integrated with Basic Operation Package 1, Basic Operation Package 1 is started by the procedure that starts DNC Operation Management Package.

1.5 Uninstalling DNC Operation Management Package

This section describes how to uninstall DNC Operation Management Package.

Procedure

1. Exit DNC Operation Management Package.
2. Click the [Start] button.
3. Point to [Settings...], then choose [Control Panel].
4. Execute [Add/Remove Programs].

The [Add/Remove Programs Properties] screen appears.



5. Select "FANUC DNC Operation Management Package".
6. Click the <Add/Remove...> button.

The uninstall function starts, asking you whether you really want to uninstall DNC Operation Management Package.



7. To uninstall DNC Operation Management Package, click the <Yes> button.

Subsequently, the uninstall function will ask several questions, such as whether to delete shared files. Perform uninstallation by clicking <Yes> or <No> as required.

2

BASIC KNOWLEDGE

This chapter provides basic information with which the user should be familiar before attempting to use DNC Operation Management Package.

2.1 DNC Operation

This section provides the basics of DNC operation.

In ordinary DNC operation, a CNC operates directly based on NC programs loaded into it from an external device such as a reader/puncher interface, remote buffer, or data server. With DNC Operation Management Package, NC programs can be stored on the personal computer hard disk for an open CNC, then sent directly from the personal computer to the CNC.

There are two DNC operation modes, described below. Both are supported by this software.

- Scheduled operation

NC programs should be stored on the personal computer in advance. The name and the repeat count of each NC program that will be executed should be listed in a schedule file. When a cycle start is performed for the NC, a program supply request is sent to the personal computer. In response, the personal computer sends the specified NC programs to the NC in succession.

- Subprogram call operation

Main programs and subprograms should be stored in advance on the NC and personal computer, respectively. During NC memory operation, when subprogram call block M198Pxxxx is executed, a program supply request is sent to the personal computer. In response, the personal computer sends subprogram xxxx.TXT to the NC.

2.2 Starting and Terminating DNC Operation Management Package

This section describes how to start and terminate DNC Operation Management Package.

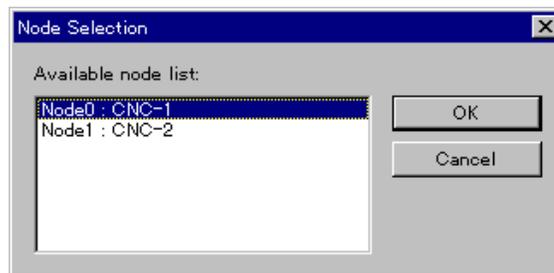
2.2.1 Starting DNC Operation Management Package

This section describes how to start DNC Operation Management Package.

Procedure

1. Click the [Start] button.
2. Select [Program] and then [DNC Operation Management Package].

When High Speed Serial Bus multiconnection is being used, the node selection screen appears if a node number has not been specified for an argument for DNC Operation Management Package.



NOTE

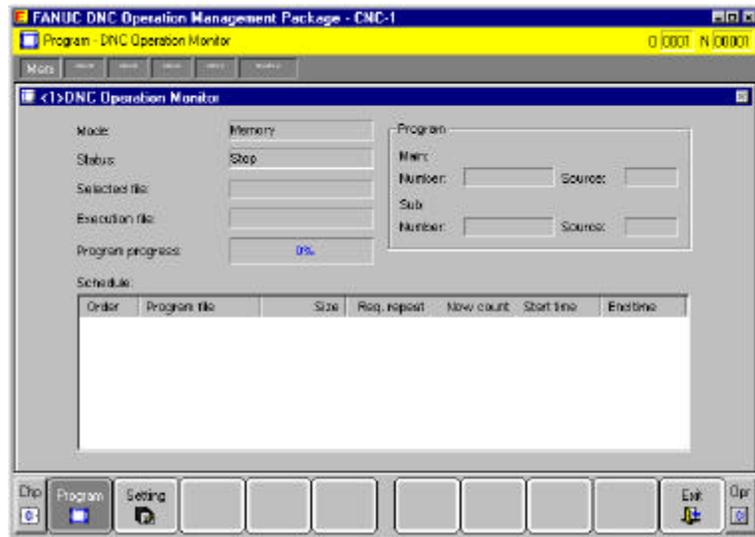
When a node number has been specified as an argument for DNC Operation Management Package, the node selection screen does not appear.

The argument format is as follows:

WINDNC32 /NODE=<node-number>

<node-number> should be the number specified during installation of the driver for the High Speed Serial Bus.

3. Select the CNC to be connected, then click the <OK> button.
The DNC Operation Management Package screen appears.



NOTE

When Basic Operation Package 1 (A02B-0207-K750#ZZ07) version 1.4 or later is used, and the function for integration with DNC Operation Management Package is enabled, Basic Operation Package 1 is started instead of DNC Operation Management Package. (See Section 1.4, "Integration with Basic Operation Package 1.")

The DNC Operation Management Package screen can be displayed by using the following procedure:

Procedure

1. If the  soft key is currently not displayed, press the  function selection key.
2. Press the  soft key.
3. Press the chapter selection key .
4. If the  soft keys are not currently displayed, press .
5. Press the , , or  soft key.

2.2.2 Terminating DNC Operation Management Package

How to terminate DNC Operation Management Package is described below.

Procedure

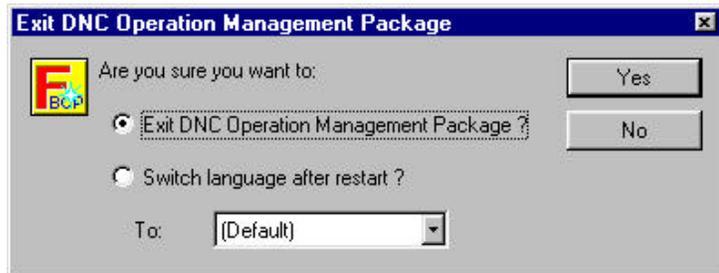
1. If the  soft key is currently not displayed, press the function

selection key 

2. Press the  soft key.

If a check mark is not placed against "Enable the language switch function" in the customization setting, DNC Operation Management Package is terminated.

If a check mark is placed against "Enable the language switch function" in the customization setting, the [Exit DNC Operation Management Package] screen appears.



NOTE

For details of the language switching settings, see Section 6.1.1, "Setting general options for DNC Operation Management Package."

3. Select [Exit DNC Operation Management Package?], then click the <Yes> button.
DNC Operation Management Package is terminated.

If [Switch language after restart?] is selected, clicking the <Yes> button restarts DNC Operation Management Package using the selected language.

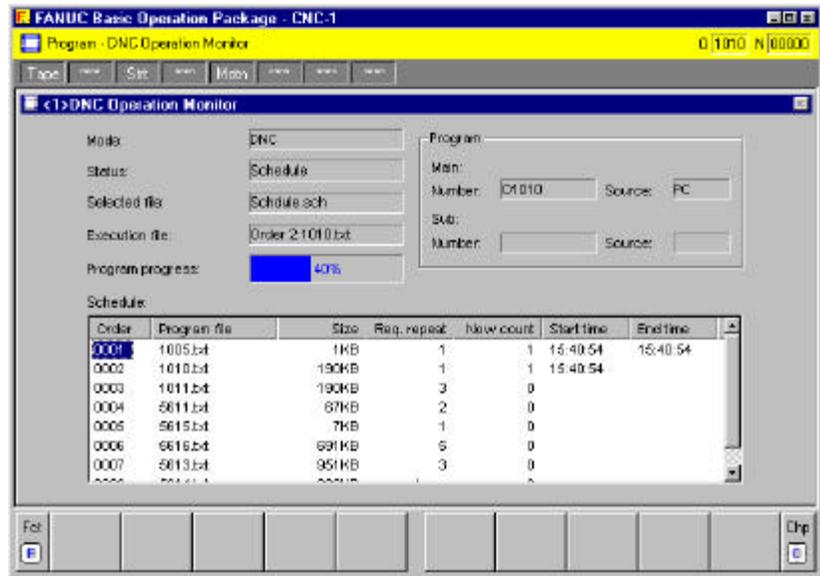
2.3 Screens

This section describes the DNC Operation Management Package screens.

DNC Operation Management Package has the three types of screens shown below.

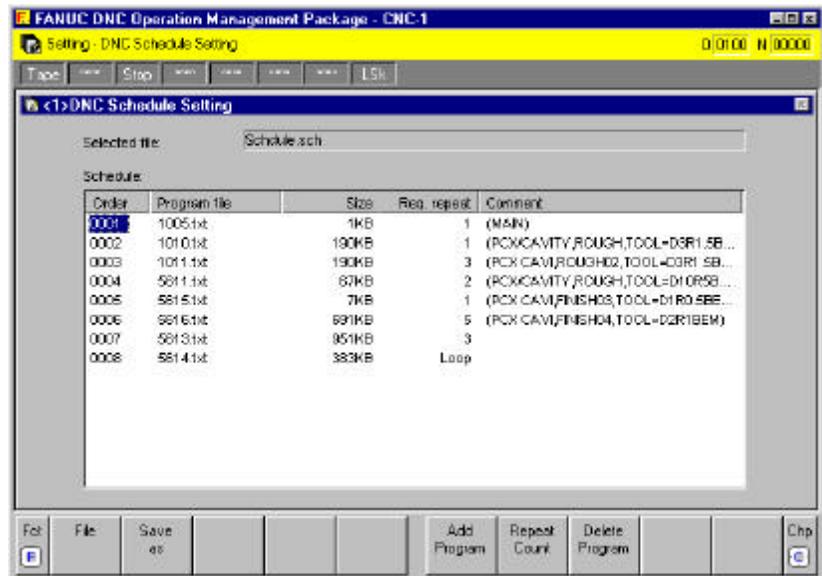
- **[DNC Operation Monitor] screen**

This screen is used to monitor the progress of DNC operation.



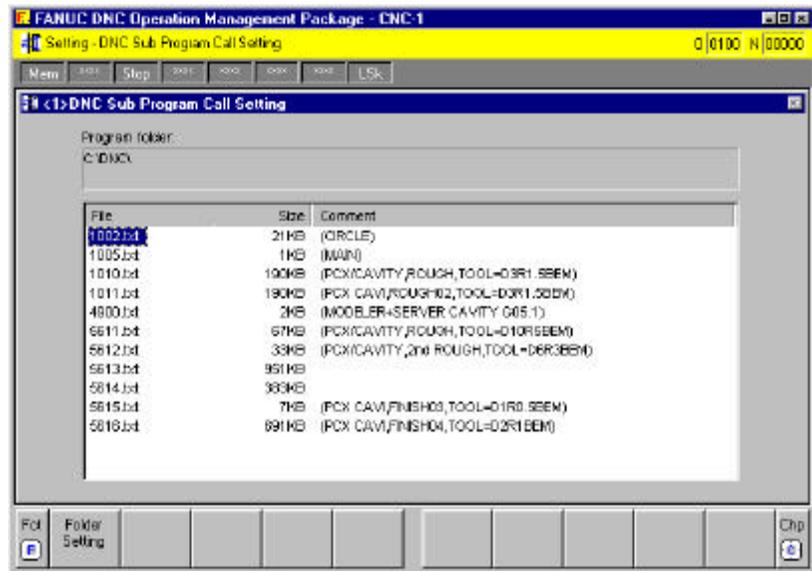
- **[DNC Schedule Setting] screen**

This screen is used to set the file name, processing order, and repeat count of each NC program used for scheduled operation.



- [DNC Sub Program Call Setting] screen

This screen is used to select the folder containing the subprogram files that will be used to subprogram calling.



2.4 Window Names and Functions

This section describes the name and functions of each window displayed by DNC Operation Management Package.

DNC Operation Management Package displays a parent window which consists of one or more child windows. Each child window has setting, display, and other functions.



Explanation

- Parent window
 - Main window of DNC Operation Management Package
 - Selecting a soft key at the bottom of the parent window displays the corresponding child window within the parent window.
 - Multiple child windows can be displayed within the parent window.
 - The top of the parent window indicates the function name corresponding to the child window which is currently active and statuses such as the CNC mode. The displayed statuses and their meanings are as follows:

FS15

(1) Automatic operation mode selection

Status	Meaning
****	Not selected
MDI	MDI mode
Tape	TAPE mode
Mem	MEMORY mode
Edit	EDIT mode
Thin	TEACH in mode

(2) Manual operation mode selection

Status	Meaning
****	Not selected
Ref	REFERENCE mode
Inc	INCREMENTAL mode
Hndl	HANDLE mode
Jog	JOG mode
AngJ	ANGULAR JOG mode
IHnd	INCREMENTAL + HANDLE mode
JHnd	JOG + HANDLE mode

(3) Automatic operation status

Status	Meaning
Stop	Stopped
Hold	Halted
Strt	Starting
MStr	Numeric JOG mode
Rstr	Restarting a block
PRsr	Restarting a program
NSrc	Searching for a sequence number
Rset	Resetting
HPCC	RISC operation

(4) Program editing status

Status	Meaning
****	No editing
Edit	Editing
Srch	Searching
Vrfy	Verifying
Cond	Condensing
Read	Inputting data
Pnch	Outputting data

(5) Axial movement and dwell status

Status	Meaning
****	Others
Motn	Moving along an axis
Dwel	Dwelling
Wait	Waiting (only for 2-path lathe systems)

(6) M, S, T, and B function status

Status	Meaning
Fin	Waiting for processing

(7) Emergency stop status

Status	Meaning
Emg	Emergency stop

(8) Nonvolatile memory write status

Status	Meaning
****	No write
Writ	Writing

(9) Label skip status

Status	Meaning
****	Label skip disabled
LSk	Label skip enabled

(10) Alarm status

Status	Meaning
Alam	Alarm issued

(11) Warning message status

Status	Meaning
Warn	Warning issued

(12) Battery status

Status	Meaning
Batt	Battery of nonvolatile memory and absolute position detector requires replacement

FS16/18/21

(1) Automatic/manual mode selection (Cont'd)

Status	Meaning
****	Not selected
MDI	MDI mode
Mem	MEMORY mode
Edit	EDIT mode
Hndl	HANDLE mode
Jog	JOG mode
TJog	TEACH in JOG mode
THnd	TEACH in HANDLE mode

Automatic/manual mode selection (Cont'd)

Status	Meaning
Inc	INCREMENTAL mode
Ref	REFERENCE mode
Rmot	SCHEDULE mode
Test	TEST operation mode

(2) Automatic operation mode

Status	Meaning
****	Resetting
Stop	Stopped
Hold	Halted
Strt	Starting
MStr	Returning (tool retract and return), repositioning, or operating based on a manual numeric command

(3) Program editing status

Status	Meaning
*****	No editing
Edit	Editing
Search	Searching
Output	Outputting data
Input	Inputting data
Compare	Comparing
LblSkp	Label skip enabled
Restrt	Restarting a program
PTRR	Tool retract and return mode
HPCC	RISC operation (only for machining center systems)
Revers	Reverse movement during retrace (only for machining center systems)
Retry	Re-forward movement during retrace (only for machining center systems)
RvEnd	Reverse movement completed during retrace (only for machining center systems)
Handle	Handle interruption applied (only for machining center systems)
WrkOfs	Workpiece origin offset measurement mode (only for machining center systems)
SHGCC	Simple high-precision contour control applied (only for machining center systems)
WrkSft	Work shift write mode (only for lathe systems)
Offset	Tool length offset measurement mode (for machining center systems)/Tool length offset write mode (for lathe systems)

(4) Axial movement and dwell status

Status	Meaning
****	Others
Motn	Moving along an axis
Dwel	Dwelling

(5) M, S, T, and B function status

Status	Meaning
Fin	Waiting for processing

(6) Emergency stop status

Status	Meaning
Emg	Emergency stop
Rset	Reset

(7) Alarm status

Status	Meaning
Alam	Alarm issued
Batt	Battery of nonvolatile memory and absolute position detector requires replacement

For details of each status, refer to the operator's manual provided with the CNC being used.

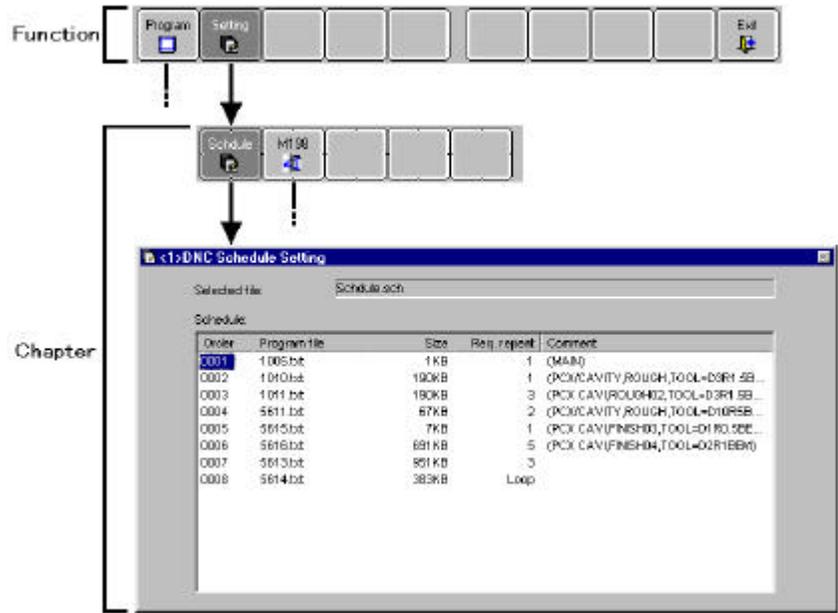
- Child window

- Window which has the setting, progress display, and other functions for DNC operation
- Chapter and function

A collection of child windows is called a chapter.

A collection of chapters is called a function.

DNC Operation Management Package is configured with the function and chapter hierarchy shown below.



Functions and chapters can be selected using the soft keys at the bottom of the parent window.

NOTE

This section describes the soft keys that are used with DNC Operation Management Package. When DNC Operation Management Package is integrated with Basic Operation Package 1, the soft key layout differs from that shown in this section.

For an explanation of how to integrate DNC Operation Management Package with Basic Operation Package 1, see Section 1.4, "Integration with Basic Operation Package 1."

● Soft key

- Key-like field used to display a child window. A soft key can be selected either by clicking the image on the screen or pressing the corresponding key on the keyboard.

In the standard state, where no soft key customization has been performed, the soft keys are assigned to the following keyboard keys. The subsequent descriptions in this manual assume the standard soft key assignment.

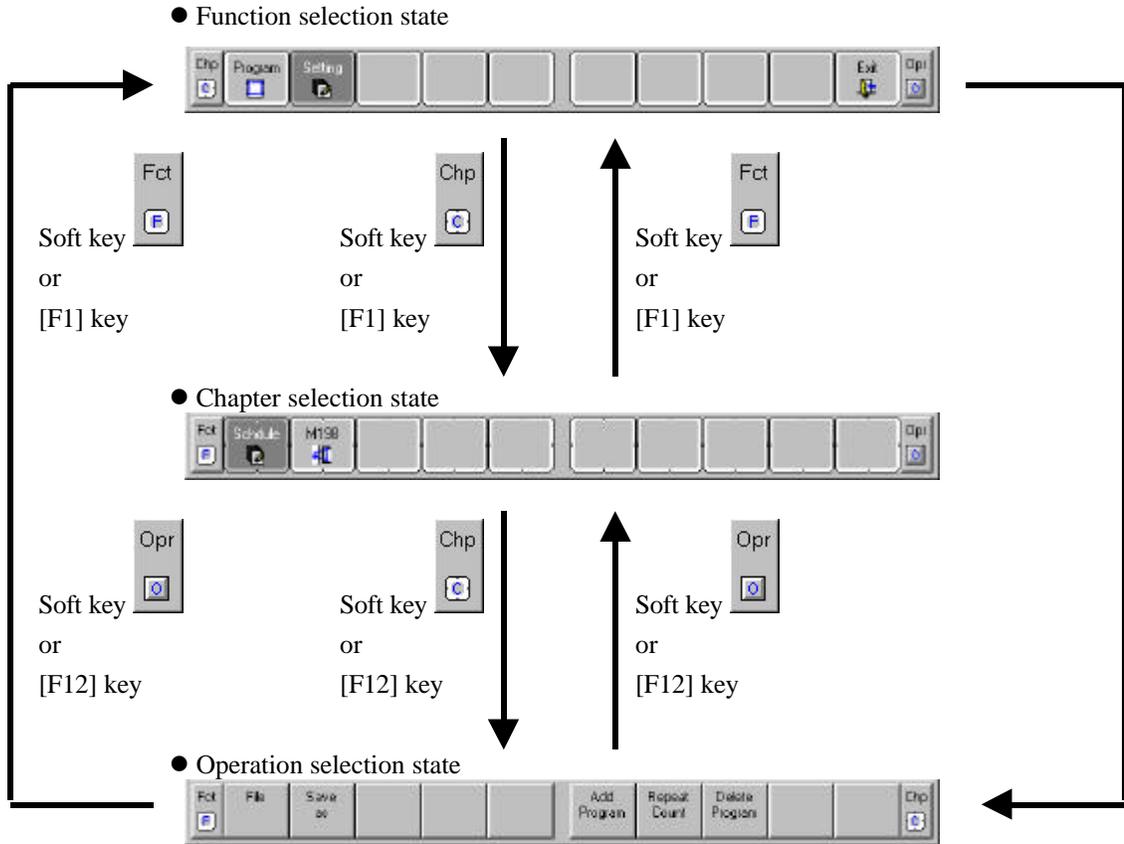


NOTE

The soft keys can be customized. For details, see Section 6.1.2, "Setting soft keys."

- There are the following three types of soft key states: "Function selection," "chapter selection," and "operation selection."

For example, the soft keys used for [Setting] are switched as follows:



The displayed soft keys are for the currently active child window.

NOTE

The subsequent descriptions in this manual refer to the selection of a soft key as simply "pressing a soft key," meaning either clicking the soft key image on the screen or pressing the corresponding key on the keyboard.

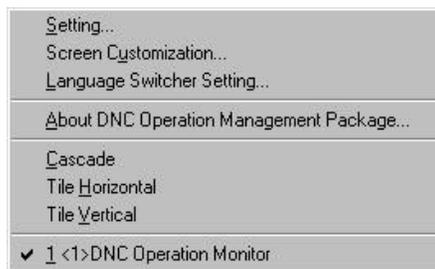
2.5 Displaying Version Information

This section describes how to display the version information for DNC Operation Management Package, for maintenance and other purposes.

Procedure

1. Right-click the soft key area. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.



2. Choose [About DNC Operation Management Package...].
The [About DNC Operation Management Package] screen appears.



The following information is displayed:

- Version information for DNC Operation Management Package
- CNC type
- CNC software series
- CNC software version
- Number of controlled axes

3 SCHEDULED OPERATION

This chapter describes how to set and perform scheduled operation.

3.1 Performing Scheduled Operation

This section describes how to perform scheduled operation.

Scheduled operation

NC programs should be prepared on the personal computer hard disk in advance. The name, processing order, and repeat count of each NC program should be listed in a schedule file. A start signal from the NC causes the personal computer to send the NC programs to the NC in the sequence defined by the schedule.

Procedure

1. Prepare NC programs for scheduled operation on the personal computer hard disk. (See Section 3.2, "NC Programs for Scheduled Operation.")
2. On the [DNC Schedule Setting] screen, create a new schedule file. List the file name, processing order, and repeat count of each NC program in the new file. Alternatively, select an existing schedule file. (See Section 3.3 "Setting Scheduled Operation.")

NOTE

Before starting the machine, ensure that the file name, processing order, and repeat count of each NC program that will be used for DNC operation are set correctly on the [DNC Schedule Setting] screen.

3. Start the machine.
 - FS15
 - <1> Set parameter No. 0020 to 15.
 - <2> Set TAPE mode.
 - <3> Perform a cycle start.
 - FS16/18/21
 - <1> Set MEM mode.
 - <2> Set bit 7 of signal G42 (DMMC signal) to 1.
 - <3> Perform a cycle start.

NOTE

The procedure for starting scheduled operation depends on the machine model. For details, refer to the operator's manual provided with the machine being used.

4. Monitor the progress of operation on the [DNC Operation Monitor] screen. (See Section 5.1, "Monitoring the Progress of DNC Operation.")

3.2 NC Programs for Scheduled Operation

This section describes the format of NC programs for scheduled operation. These programs must have already been prepared on the personal computer hard disk before scheduled operation can be started.

Explanation

The following are the requirements for NC programs for scheduled operation, which should be prepared on the personal computer in advance.

- File name

Each file name must consist of either of the following, depending on whether the NC uses 4-digit or 8-digit program numbers.

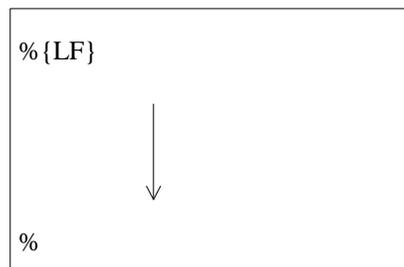
4-digit number + extension TXT

8-digit number + extension TXT

- File format

- Each NC program must start with {LF}, or % + {LF}.
- The body of each program can start with a program code other than its program number and can contain binary code.
- Provided that the program is not the last program in the schedule, miscellaneous function codes M02 and M30 contained in a program may be replaced with space characters so that scheduled operation can continue without interruption. (See Section 6.1.5, "Setting the NC program transfer options.")

Example)



{LF} is the line feed character.

3.3 Setting Scheduled Operation

This section describes how to set scheduled operation.

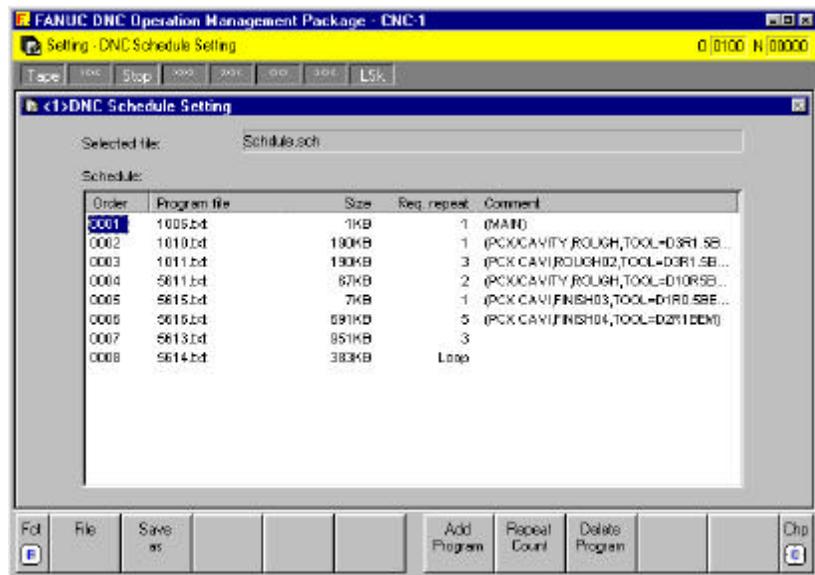
Procedure

- When Basic Operation Package 1 is not used

- If the  soft key is not currently displayed, press the function selection key .
- Press the  soft key.
- If the [DNC Schedule Setting] screen is currently not displayed, press the chapter selection key .
- Press the  soft key.
The [DNC Schedule Setting] screen appears.

- When DNC Operation Management Package is integrated with Basic Operation Package 1

- If the  soft key is not currently displayed, press the function selection key .
- Press the  soft key.
- If the [DNC Schedule Setting] screen is not currently displayed, press the chapter selection key . If the  soft key does not appear, press .
- Press the  soft key.
The [DNC Schedule Setting] screen appears.



Explanation

- [DNC Schedule Setting] screen

This screen is used to list the file name, processing order, and repeat count of each NC program that will be used for scheduled operation in a schedule file.



To set a schedule file, press the operation selection key

The operation soft keys appear.



For details of each function, see the description below.

NOTE

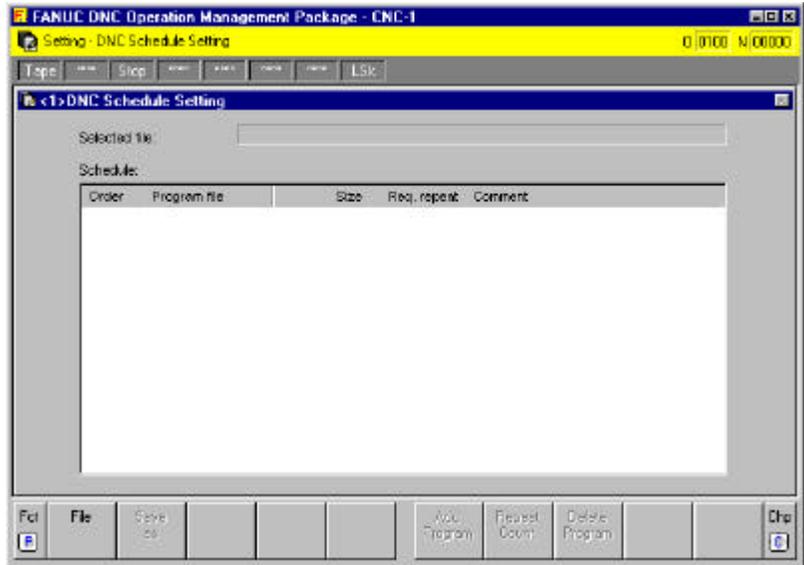
During DNC operation, the schedule setting screen cannot be used.

3.3.1 Creating a new schedule file

This section describes how to create a new schedule file that lists the file name, processing order, and repeat count of each NC program that will be used for scheduled operation.

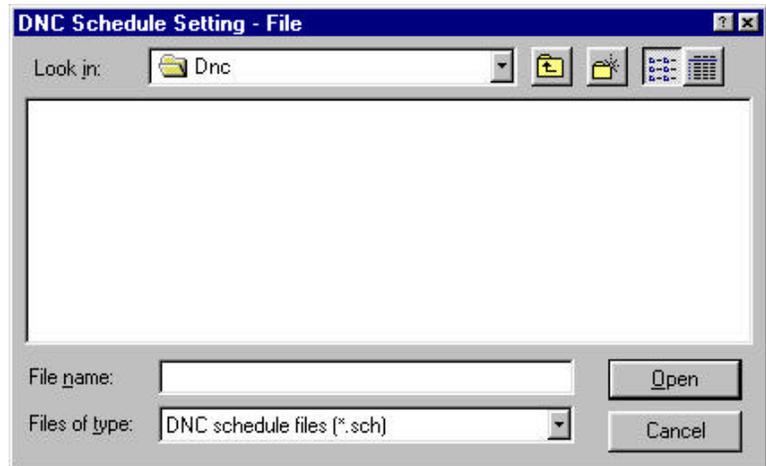
Procedure

1. If the [DNC Schedule Setting] screen is currently not displayed, follow the procedure described in Section 3.3, "Setting Scheduled Operation" to display the [DNC Schedule Setting] screen.



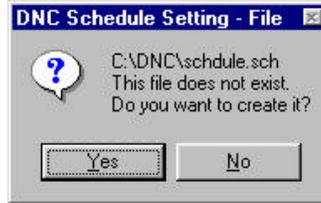
2. Press the  soft key.

The [DNC Schedule Setting - File] screen appears.



3. Enter a new schedule file name in "File name:", then click the <Open> button.

The following screen appears.



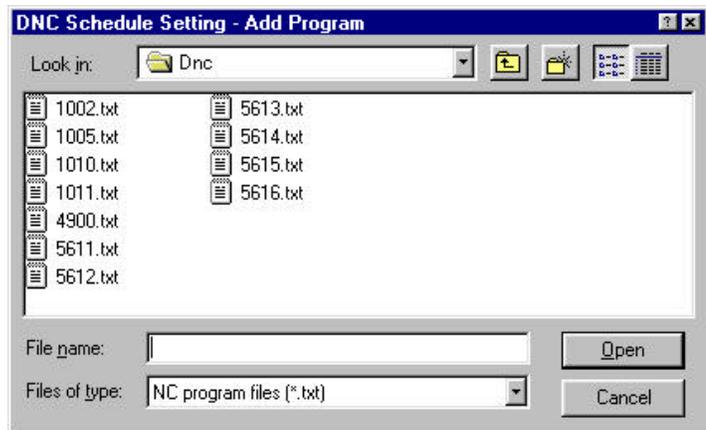
4. Click the <Yes> button.

A new schedule file is created.



5. Press the  soft key.

The [DNC Schedule Setting - Add Program] screen appears.



6. Select an NC program that will be used for scheduled operation, then click the <Open> button.

The program is added to the schedule file.

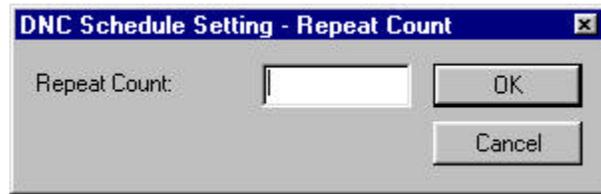


- Click to highlight the "Order" of the NC program, then press the



soft key.

The [DNC Schedule Setting - Repeat Count] screen appears.



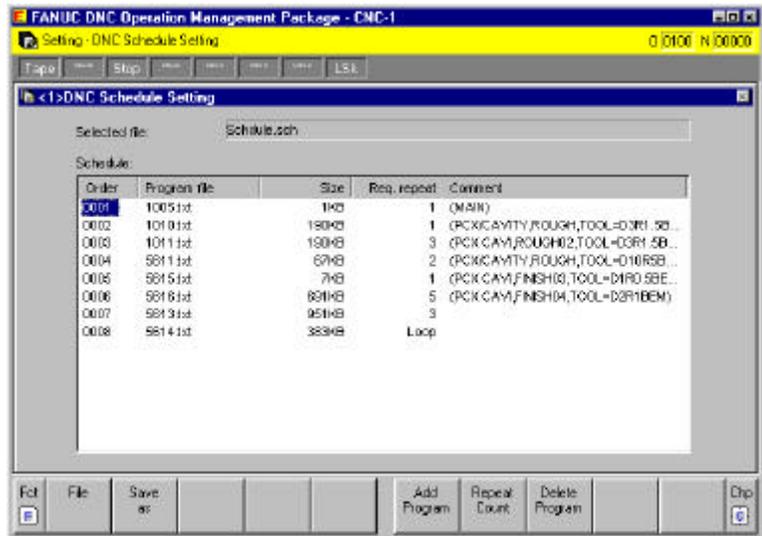
- Enter the execution count in "Repeat Count:", then click the <OK> button.

NOTE

If 0 is entered in "Repeat Count:", the NC program is not executed.

If a negative value is entered in "Repeat Count:", the NC program is executed endlessly. (In "Req. repeat" of the program list, "Loop" is displayed.)

- Repeat steps 5 to 8 until the schedule file is completed.



- To delete an unnecessary NC program, click to highlight the



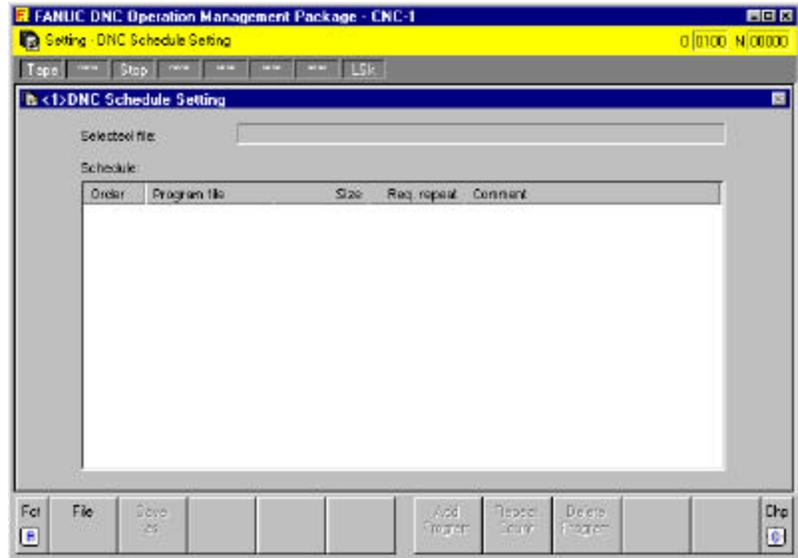
"Order" of the program, then press the soft key.

3.3.2 Opening an existing schedule file

This section describes how to open an existing schedule file.

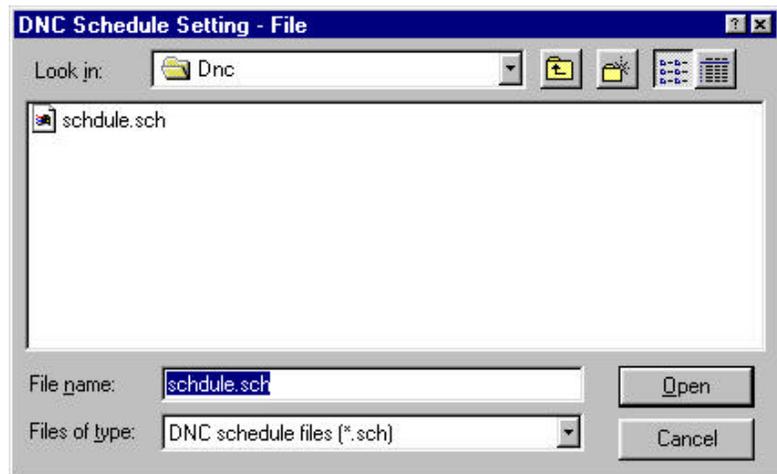
Procedure

1. If the [DNC Schedule Setting] screen is currently not displayed, follow the procedure described in Section 3.3, "Setting Scheduled Operation" to display the [DNC Schedule Setting] screen.



2. Press the  soft key.

The [DNC Schedule Setting - File] screen appears.



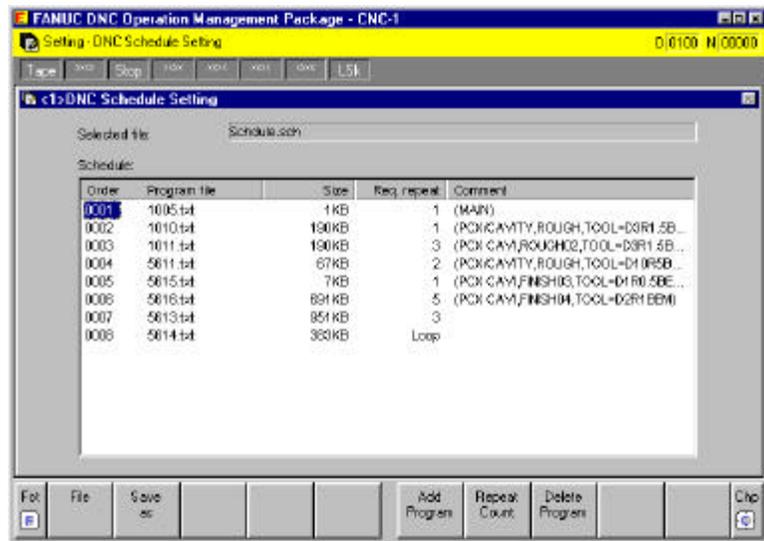
3. Select a schedule file from "Look in:", then click the <Open> button.
4. Edit the schedule file as necessary. For an explanation of how to edit files, see Section 3.3.1, "Creating a new schedule file."

3.3.3 Saving a schedule file under a new name

This section describes how to save an existing schedule file under a new name.

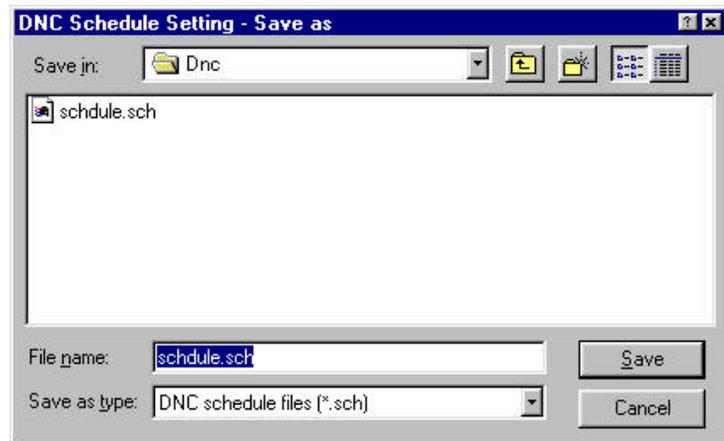
Procedure

1. If the [DNC Schedule Setting] screen is not currently displayed, follow the procedure described in Section 3.3, "Setting Scheduled Operation" to display the [DNC Schedule Setting] screen.
2. Follow the procedure described in Section 3.3.2, "Opening an existing schedule file" to open a schedule file.



3. Press the  soft key.

The [DNC Schedule Setting - Save as] screen appears.



4. Enter a new file name in "File name:", then click the <Save> button.

4 SUBPROGRAM CALL OPERATION

This chapter describes how to set and perform subprogram call operation.

4.1 Performing Subprogram Call Operation

This section describes how to perform subprogram call operation.

Subprogram call operation

Main programs and subprograms should be stored in advance on the NC and personal computer, respectively. During NC memory operation, when subprogram call block M198Pxxxx is executed, the personal computer sends subprogram xxxx.TXT to the NC.

Procedure

1. Prepare NC programs for subprogram call operation on the personal computer hard disk. (See Section 4.2, "NC Programs for Subprogram Call Operation.")
2. On the [DNC Sub Program Call Setting] screen, select the folder containing the NC programs that will be used for subprogram call operation. (See Section 4.3 "Setting Subprogram Call Operation.")

NOTE

Before starting the machine, ensure that the subprograms to be called from the main programs are displayed on the [DNC Sub Program Call Setting] screen.

3. Start the machine.
 - FS15
 - <1> Set parameter No. 0020 to 15.
 - <2> Set MEM mode.
 - <3> Perform a cycle start.
 - FS16/18/21
 - <1> Set parameter No. 0020 to 15.
 - <2> Set MEM mode.
 - <3> Set bit 7 of signal G42 (DMMC signal) to 0.
 - <4> Perform a cycle start.

NOTE

The procedure for starting subprogram call operation depends on the machine model. For details, refer to the operator's manual provided with the machine being used.

4. Monitor the progress of operation on the [DNC Operation Monitor] screen. (See Section 5.1, "Monitoring the Progress of DNC Operation.")

4.2 NC Programs for Subprogram Call Operation

This section describes the format of NC programs for subprogram call operation. These programs must have already been prepared on the personal computer hard disk before subprogram call operation can be started.

Explanation

The following are the requirements for NC programs for subprogram call operation, which should be prepared on the personal computer in advance.

- File name

Each file name must consist of either of the following, depending on whether the NC uses 4-digit or 8-digit program numbers.

4-digit number + extension TXT

8-digit number + extension TXT

- File format

- Each NC program must start with % + {LF}.
- The body of a NC program must start with its program number, which is identical to the file name (O1234 or O12345678, for example).
- Each NC program must end with M99 + {LF} + %.
- The body of any NC program can contain binary code.

Example)

<pre>% {LF} O0001(COMMENT) {LF} ↓ M99{LF} %</pre>



{LF} is the line feed character.

4.3 Setting Subprogram Call Operation

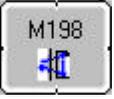
This section describes how to set subprogram call operation.

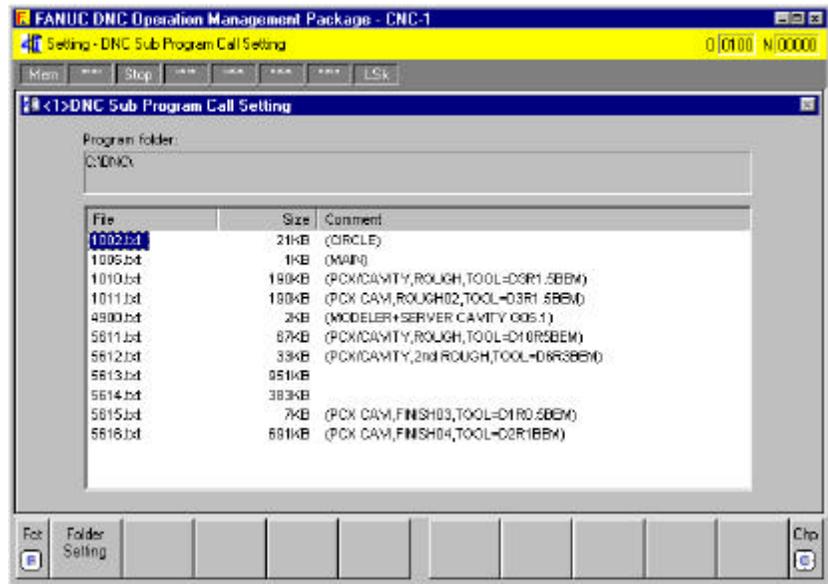
Procedure

- When Basic Operation Package 1 is not used

1. If the  soft key is not currently displayed, press the function selection key .
2. Press the  soft key.
3. If the [DNC Sub Program Call Setting] screen is not currently displayed, press the chapter selection key .
4. Press the  soft key.
The [DNC Sub Program Call Setting] screen appears.

- When DNC Operation Management Package is integrated with Basic Operation Package 1

1. If the  soft key is not currently displayed, press the function selection key .
2. Press the  soft key.
3. If the [DNC Sub Program Call Setting] screen is not currently displayed, press the chapter selection key . If the  soft key does not appear, press .
4. Press the  soft key.
The [DNC Sub Program Call Setting] screen appears.



Explanation

- [DNC Sub Program Call Setting] screen

This screen is used to specify the folder containing the NC programs that be used for subprogram call operation, and to display a list of the NC programs within the specified folder.

To set subprogram call operation, press the operation selection key



The operation soft key appears.



For details of the function, see the description below.

NOTE

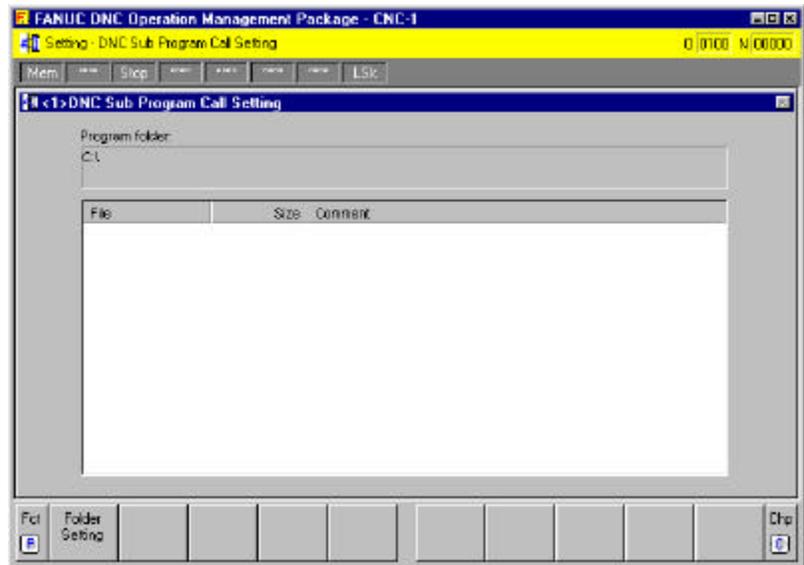
During DNC operation, the subprogram call setting screen cannot be used.

4.3.1 Specifying a folder containing subprograms

Specify the folder containing the NC program files that will be used for subprogram call operation.

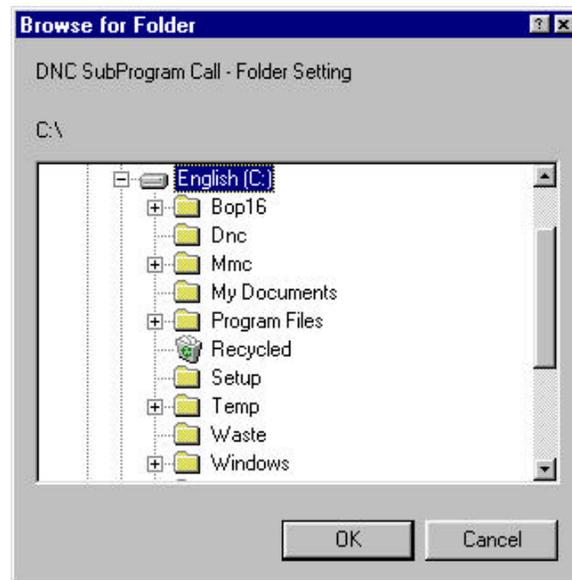
Procedure

1. If the [DNC Sub Program Call Setting] screen is not currently displayed, follow the procedure described in Section 4.3, "Setting Subprogram Call Operation" to display the [DNC Sub Program Call Setting] screen.



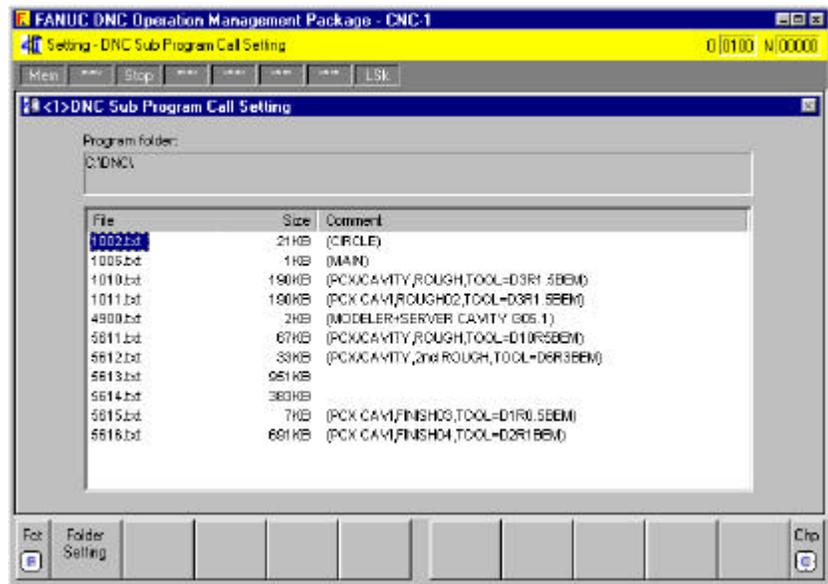
2. Press the  soft key.

The [DNC Sub Program Call - Folder Setting] screen appears.



3. Select a folder containing NC programs, then click the <OK> button.

A list of the files with the TXT extension in the specified folder is displayed.



5

MONITORING THE PROGRESS OF DNC OPERATION

This chapter describes how to monitor the progress of DNC operation.

5.1 Monitoring the Progress of DNC Operation

This section describes the [DNC Operation Monitor] screen, which is used to monitor the progress of DNC operation.

Once scheduled operation or subprogram call operation has started, the [DNC Operation Monitor] screen can be used to monitor the progress of DNC operation.

Procedure

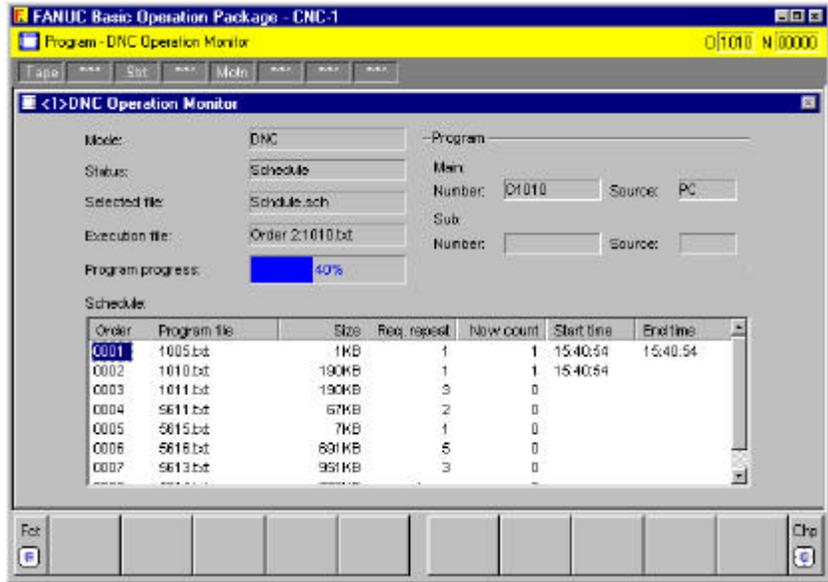
- When Basic Operation Package 1 is not used

1. If the  soft key is not currently displayed, press the  function selection key.
2. Press the  soft key.
The [DNC Operation Monitor] screen appears.

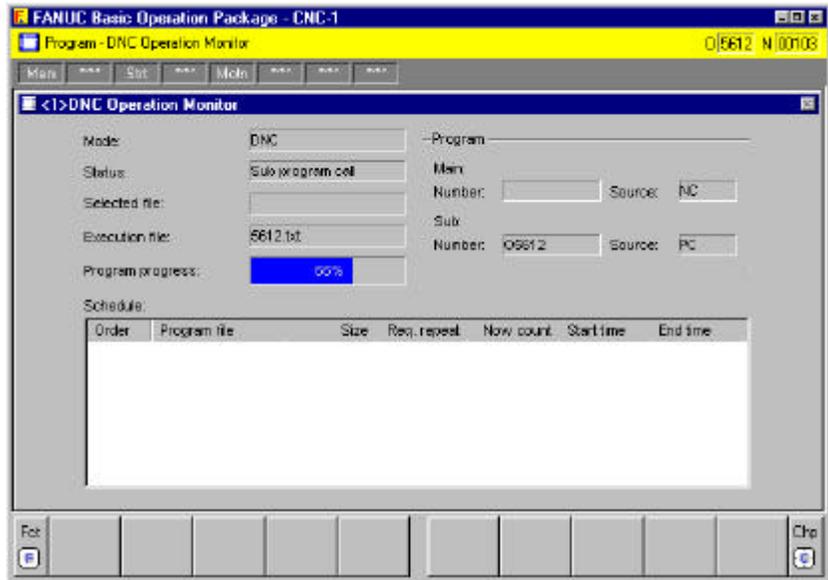
- When DNC Operation Management Package is integrated with Basic Operation Package 1

1. If the  soft key is not currently displayed, press the  function selection key.
2. Press the  soft key.
3. If the [DNC Operation Monitor] screen is not currently displayed, press the chapter selection key . If the  soft key does not appear, press .
4. Press the  soft key.
The [DNC Operation Monitor] screen appears.

Example of the screen during scheduled operation



Example of the screen during subprogram call operation



Explanation

- Displayed data
- Mode:

The mode of automatic operation is indicated.

Displayed value	Meaning
DNC	Indicates that DNC operation mode is set.
Memory	Indicates that NC memory operation mode is set.

- Status:

The status of automatic operation is indicated.

Displayed value	Meaning
Stop	Indicates that the NC has stopped.
Schedule	Indicates that scheduled operation is being performed.
Sub program call	Indicates that subprogram call operation is being performed.
(Blank)	Indicates that the system is in a status other than the above.

- Selected file:

During scheduled operation, the name of the currently selected schedule file is displayed.

- Execution file:

During scheduled operation, the file name and processing order of the currently running NC program are displayed.

During subprogram call operation, the file name of the currently running NC program is displayed.

- Program progress:

The percentage of data transferred for the currently running NC program is displayed.

- Number: (Main Number, Sub Number)

For the "Main:" item, the number of the currently running main program is displayed. For the "Sub:" item, the number of the currently running subprogram is displayed.

- Source:

For the "Main:" item, the location of the currently running main program is displayed. For the "Sub:" item, the location of the currently running subprogram is displayed.

Displayed value	Meaning
NC	Indicates that the currently running program is stored in the program memory of the NC.
PC	Indicates that the currently running program is stored on the personal computer hard disk.

- Schedule:

During scheduled operation, a list of the NC programs that will be used is displayed. When the repeat count of an NC program is set as endless (loop), the displayed current count value ranges from 1 to 9999. If the repeat count goes beyond this range, - is displayed.

NOTE

- On the [DNC Operation Monitor] screen, the progress of NC program transfer to the NC by this software is indicated, not the progress of DNC operation of the NC.
- Once all NC programs have been transferred to the buffer of the NC, "Source:" changes from PC to NC and "Mode:" changes from DNC to Memory. This occurs even during NC DNC operation.
- The values in "Main Number", "Sub Number", and "Source:" are estimated based on the statuses of the NC and this software, and are not always correct.

6 CUSTOMIZATION

This chapter describes how to customize DNC Operation Management Package.

6.1 Customizing General Settings for DNC Operation Management Package

This section explains the basic customization of DNC Operation Management Package.

NOTE

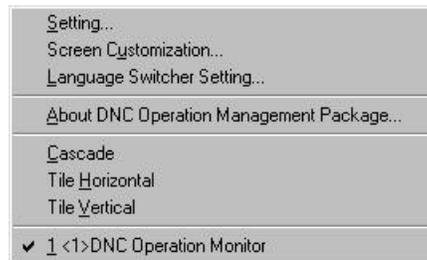
Customization results are stored in the setting file. It is recommended that a backup of the setting file be made to guard against possible data loss.

For details of the setting file, see Appendix 1, "BACKING UP THE SETTING FILE."

Procedure

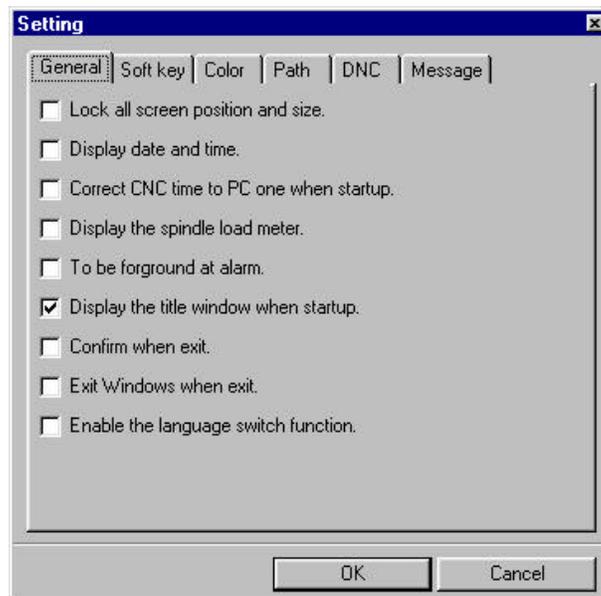
1. Right-click the soft key area. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.



2. Choose [Setting...].

The [Setting] screen appears.



Explanation

Select the "General", "Soft key", "Color", "Path", "DNC", or "Message" tab to make the desired settings.

- General

Sets general options for DNC Operation Management Package.

- Soft key

Sets soft keys.

- Color

Sets the background color of each area within a parent window.

- Path

Sets the path number output option.

- DNC

Sets the NC program transfer options.

- Message

Sets the option for messaging during DNC operation.

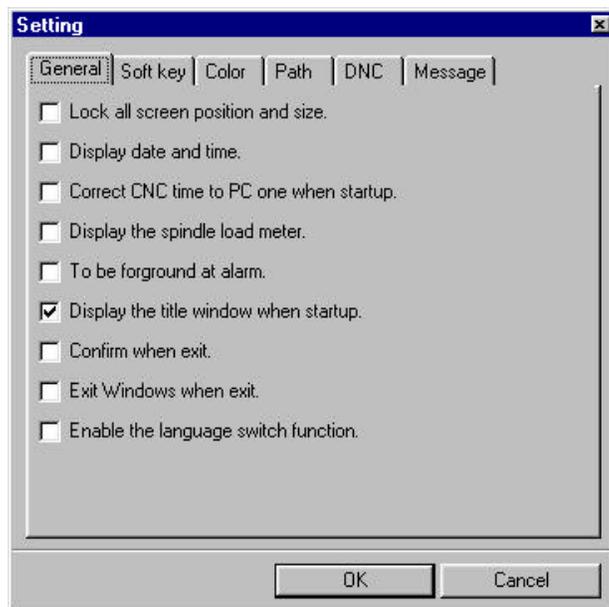
For details, see the description below.

6.1.1 Setting general options for DNC Operation Management Package

This section describes how to set the general options for DNC Operation Management Package.

Procedure

1. If the [Setting] screen is currently not displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "General" tab.



Explanation

The setting items are as follows:

- Lock all screen position and size.
Selecting this item prevents the changing of the position and size of a window.
- Display date and time.
Selecting this item causes the date and time to be displayed in the upper-right corner of a parent window.
- Correct CNC time to PC one when startup.
Selecting this item causes the CNC time to be synchronized with the personal computer time when the operator starts DNC Operation Management Package.
For the FS15 CNC, this item is disabled.

- Display the spindle load meter.
Selecting this item causes the spindle load meter to be displayed in the middle of a parent window.

- To be foreground at alarm.
Selecting this item causes the alarm message screen to appear in the foreground when an alarm condition occurs.

- Display the title window when startup.
Selecting this item causes the title to be displayed when the operator starts DNC Operation Management Package.

- Confirm when exit.
Selecting this item causes the confirmation screen to appear when the operator exits from DNC Operation Management Package.

- Exit Windows when exit.
Selecting this item enables the operator to terminate Windows when exiting from DNC Operation Management Package.

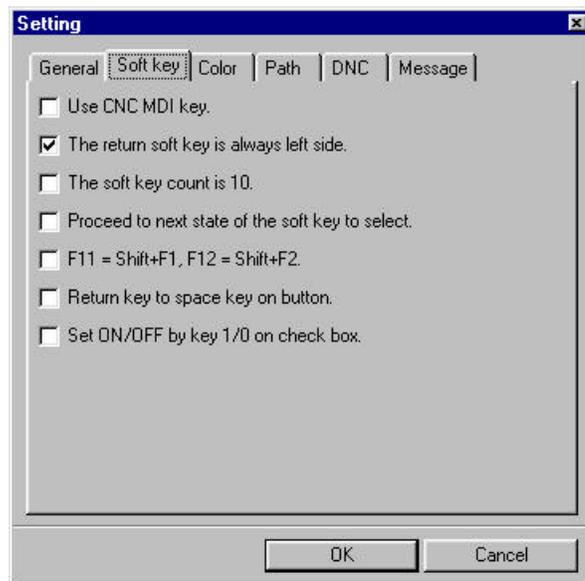
- Enable the language switch function.
Selecting this item enables the language switching option when the operator exits DNC Operation Management Package.
For details of how to switch between languages, see Section 6.4.2, "Switching the message language."

6.1.2 Setting soft keys

This section describes how to set the soft keys.

Procedure

1. If the [Setting] screen is currently not displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "Soft key" tab.



Explanation

The setting items are as follows:

- Use CNC MDI key.

Selecting this item enables a function soft key to be selected using the MDI keys that generate the equivalent key codes of [0] to [9] keys on the numeric keypad of the full keyboard. The correspondence between the soft keys and keypad keys is as follows:



The correspondence between the soft keys and keyboard function keys is switched to that shown below:



- The return soft key is always left side.

Clearing this item enables the soft keys to be switched as follows:

- Function soft keys



Pressing the  soft key or [F1] key switches to the chapter soft keys.



Pressing the  soft key or [F12] key switches to the operation soft keys.

- Chapter soft keys



Pressing the  soft key or [F1] key switches to the function soft keys.



Pressing the  soft key or [F12] key switches to the operation soft keys.

- Operation soft keys



Pressing the  soft key or [F1] key switches to the chapter soft keys.



Pressing the  soft key or [F12] key switches to the function soft keys.

- The soft key count is 10.

Selecting this item sets the soft key count to 10.



Use the keyboard function keys to switch between the function, chapter, and operation soft keys.

Standard switching mode is as follows:

- Function soft keys
Pressing the [F12] key switches to the chapter soft keys.
- Chapter soft keys
Pressing the [F11] key switches to the function soft keys.
Pressing the [F12] key switches to the operation soft keys.
- Operation soft keys
Pressing the [F11] key switches to the chapter soft keys.
- Proceed to next state of the soft key to select.
Selecting this item causes, for example, the operation soft keys to appear automatically when a chapter soft key is selected.
- F11 = Shift+F1, F12 = Shift+F2
Selecting this item defines the following key combinations:

Key combination	Equivalent
[Shift] + [F1]	[F11]
[Shift] + [F2]	[F12]

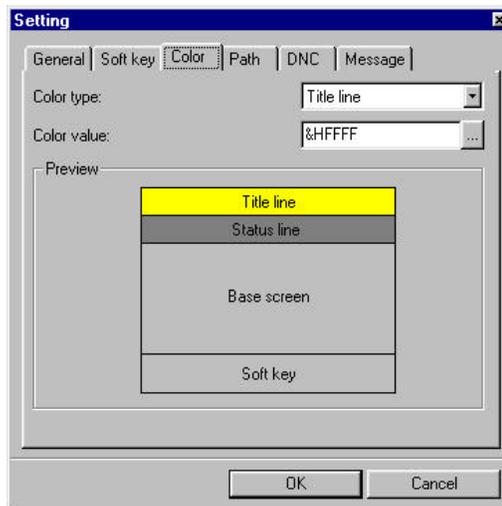
- Return key to space key on button.
Selecting this item enables the return key to act as the space key when the buttons are used.
- Set ON/OFF by key 1/0 on check box.
Selecting this item enables a check box to be selected or cleared using the [1] or [0] key, respectively. Note that this function is disabled on the [Setting] screen.

6.1.3 Setting screen colors

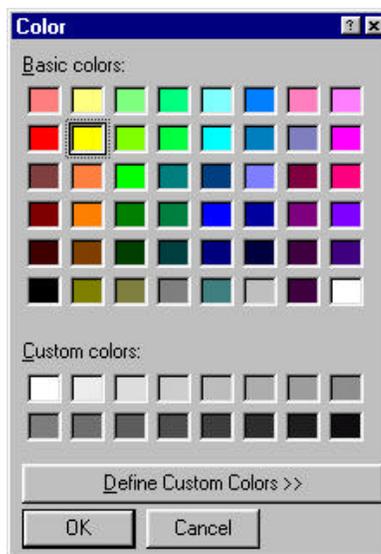
This section describes how to set the background color of each area within a parent window.

Procedure

1. If the [Setting] screen is currently not displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "Color" tab.



3. From the "Color type:" list, select an area in which the background color is to be changed.
Alternatively, click the text in an area within the preview display.
4. Enter a hexadecimal RGB value in "Color value:"
Alternatively, press , then select a color from the [Color] screen, as shown below.



Explanation

The background colors of the following areas within a parent window can be set:

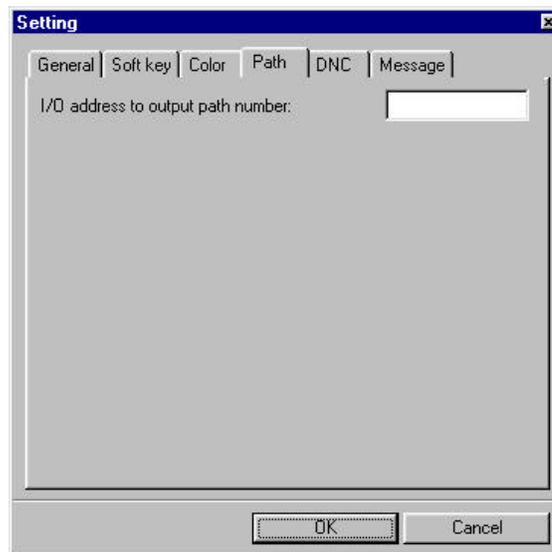
- Title line
- Status line
- Parent window base screen
- Soft key area

6.1.4 Setting the path number output option

This section describes how to set the path number output option.

Procedure

1. If the [Setting] screen is not currently displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "Path" tab.

**Explanation**

The setting item is as follows:

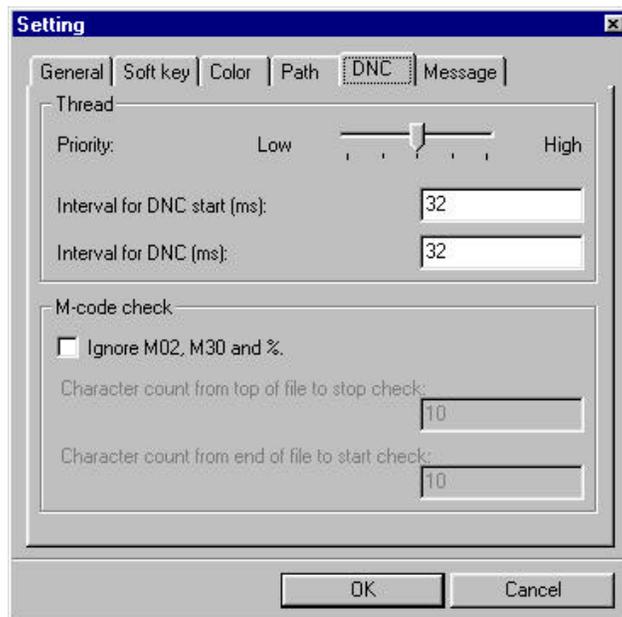
- I/O address to output path number:
Set the I/O address used to output a path number in a bit pattern.

6.1.5 Setting the NC program transfer options

This section describes how to set the NC program transfer options.

Procedure

1. If the [Setting] screen is not currently displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "DNC" tab.



Explanation

The setting items are as follows:

- Priority:

During DNC operation, NC programs are transferred by the corresponding Windows subthread. Use this item to specify the priority of the Windows thread in round robin scheduling.

Moving the slider to the left sets a shorter execution time for the transfer thread, but does not have any detrimental effect on responses from the user interface. Moving the slider to the right sets a longer execution time for the transfer thread, but results in slower responses from the user interface.

- Interval for DNC start (ms):

Specify an interval between checks of DNC operation requests from the NC to the personal computer. After a DNC operation request has been checked, the thread sleeps for the time specified here (ms) until the next DNC operation request is checked.

The smaller this value, the faster the responses to DNC operation requests from the NC, but the slower the responses from the user interface.
- Interval for DNC (ms):

Specify an interval between transfers of NC program. After an NC program has been transferred, filling the operation buffer, the thread sleeps for the time specified here (ms) until the next NC program is transferred.

The smaller this value, the faster the NC program transfer (depending on the NC programs), but the slower the responses from the user interface.
- Ignore M02, M30 and %:

Some CAD systems may create an NC program such that M02 or the like is automatically set at the end of the program. This item is used to enable scheduled operation without modifying such NC programs.

When this item is selected, NC programs are transferred to the NC during scheduled operation, with their M02, M30 and % converted to space characters. After the last program in a schedule has been transferred, the M code identical to the one that was last converted to a space character is transferred. The range within a program in which conversion to space characters is performed should be specified in "Character count from top of file to stop check:" and "Character count from end of file to start check:", which are described below.

This setting does not affect subprogram call operation.
- Character count from top of file to stop check:

When "Ignore M02, M30 and %:" is selected, specify the number of characters, from the start of a program, for which M02, M30, and % are converted to space characters. This setting is used to prevent % at the start of the program from being sent.

This setting does not affect subprogram call operation.
- Character count from end of file to start check:

When "Ignore M02, M30 and %:" is selected, specify the number of characters, from the end of a program, for which M02, M30, and % are converted to space characters. This setting is used to prevent a miscellaneous function code and % at the end of the program from being sent.

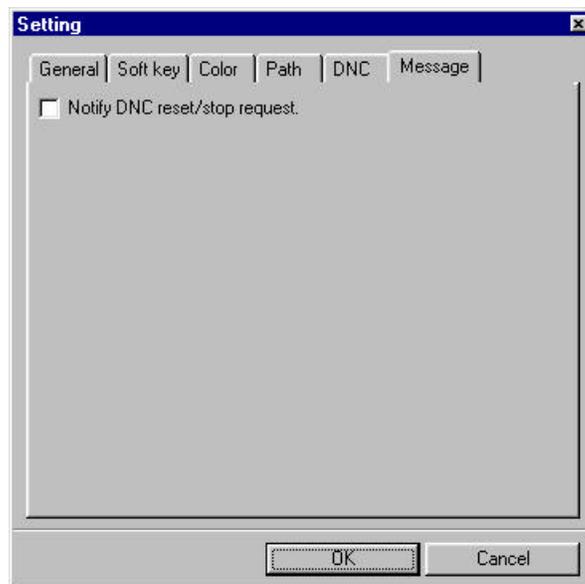
This setting does not affect subprogram call operation.

6.1.6 Setting the messaging option

This section describes how to set the option for messaging during DNC operation.

Procedure

1. If the [Setting] screen is not currently displayed, follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.
2. Click the "Message" tab.



Explanation

The setting item is as follows:

- Notify DNC reset/stop request.

Selecting this item causes the following screen to appear when the NC makes a reset or stop request during DNC transfer.



6.2 Customizing Screens

This section explains screen customization, including the creation of custom chapters.

The subsequent screen customization descriptions apply to a system in which DNC Operation Management Package is integrated with Basic Operation Package 1. Screen customization for a system in which only DNC Operation Management Package is used is basically the same as that described below.

NOTE

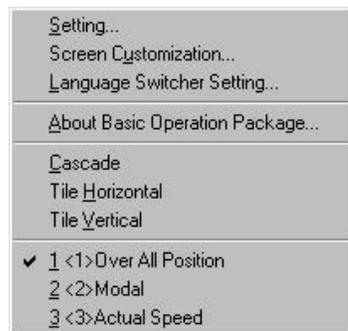
Customization results are stored in the setting file. It is recommended that a backup of the setting file be made to guard against possible data loss.

For details of the setting file, see Appendix 1, "BACKING UP THE SETTING FILE."

Procedure

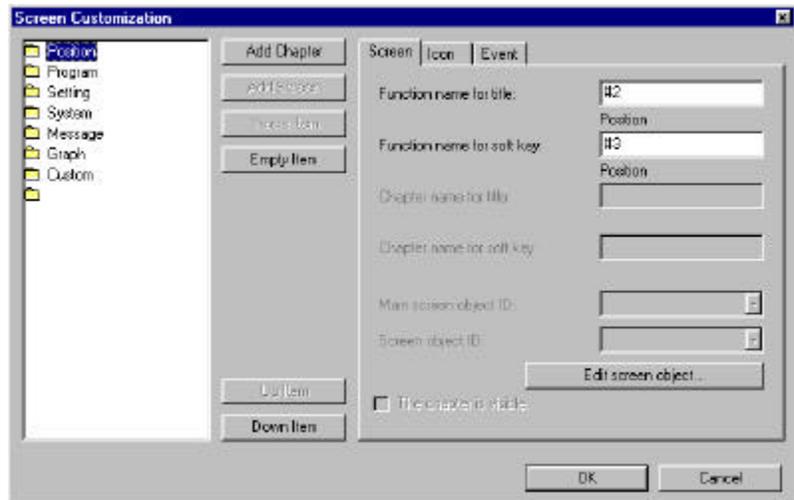
1. Start DNC Operation Management Package or Basic Operation Package 1.
2. Right-click the soft key area. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.



3. Choose [Screen Customization...].

The [Screen Customization] screen appears.



Explanation

The following types of screen customization can be performed:

- Creating custom screens
- Changing the order in which screens appear
- Deleting screens
- Showing or hiding chapters
- Setting soft keys as empty

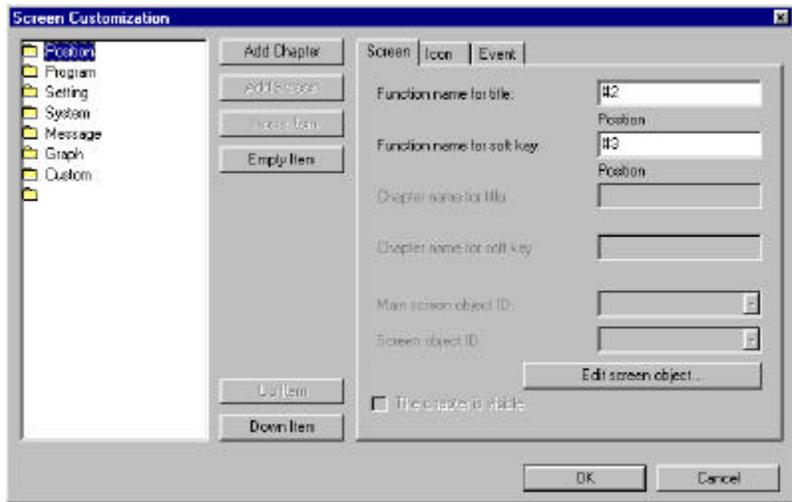
For details, see the description below.

6.2.1 Creating custom screens

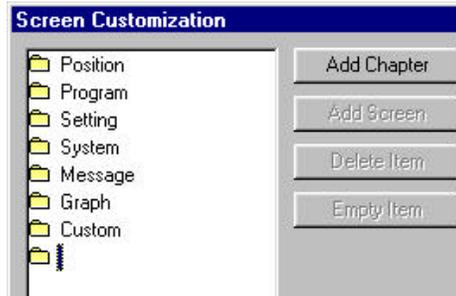
This section describes how to combine screens to create a custom chapter.

Procedure

1. If the [Screen Customization] screen is currently not displayed, follow the procedure described in Section 6.2, "Customizing Screens" to display the [Screen Customization] screen.



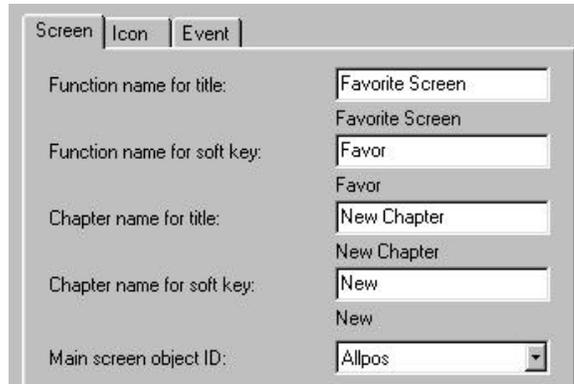
2. In the screen layout tree, select the icon for an unused function.



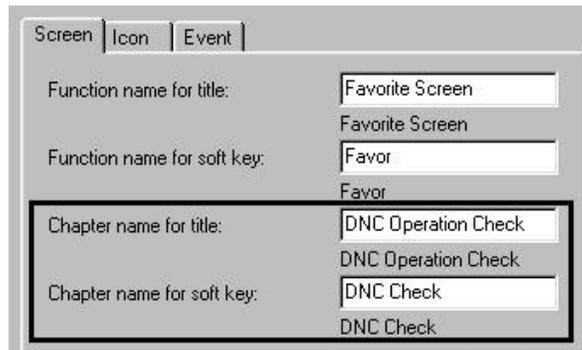
3. In "Function name for title:", enter the text to be displayed on the title bar of a parent window. In "Function name for soft key:", enter the text to be displayed on a function soft key.



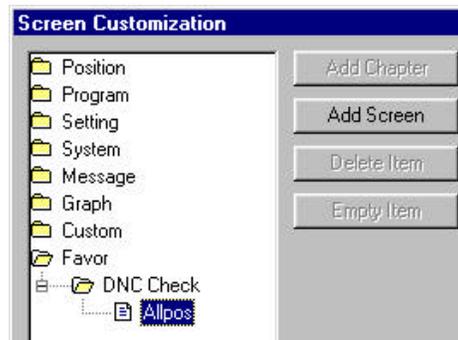
4. Click the **Add Chapter** button.
A chapter is added to the selected function.



5. In "Chapter name for title:", enter the text to be displayed on the title bar of a child window. In "Chapter name for soft key:", enter the text to be displayed on a chapter soft key.

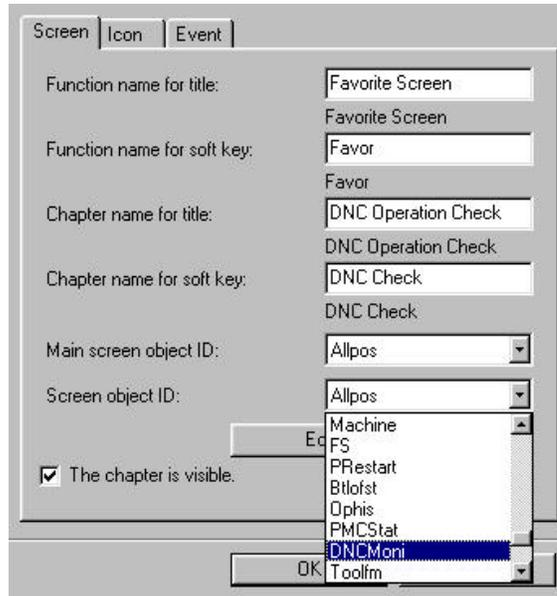


6. Double-click the folder icon to view the screen to be added. Then, click the + sign to view the name of the child window to be displayed.



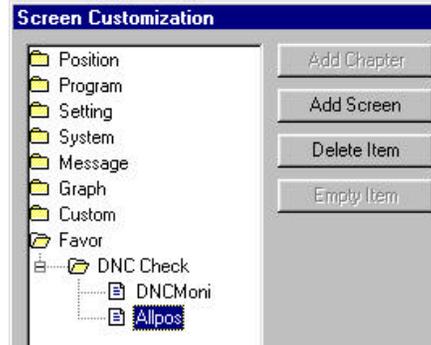
When a new chapter is added, the name of a child window is set automatically.

7. Click the child window. Then, from the "Screen object ID:" list, select a screen object to be displayed in the child window.

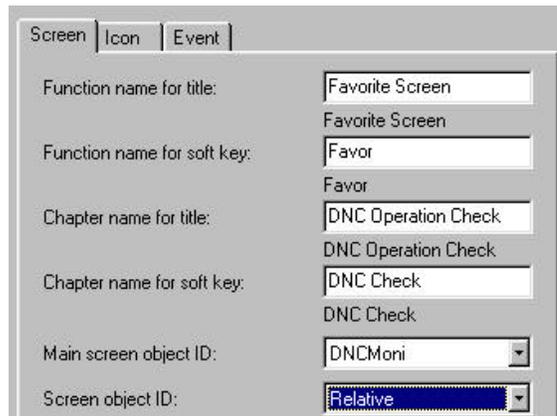


In this example, the [DNC Operation Monitor] screen is selected.

8. To add another child window, click the **Add Screen** button.



9. From the "Screen object ID:" list, select a screen object to be displayed in the child window in the same way as in step 7.



10. From the "Main screen object ID:" list, select the main screen for the chapter.

Screen | Icon | Event

Function name for title: Favorite Screen
Favorite Screen

Function name for soft key: Favor
Favor

Chapter name for title: DNC Operation Check
DNC Operation Check

Chapter name for soft key: DNC Check
DNC Check

Main screen object ID: DNCMoni
DNCMoni
Relative
FS
Edit screen object...

The chapter is visible.

NOTE

If the feature specified for the main screen is unavailable on the CNC side, the chapter is not displayed.

11. To set a chapter display option, select the "Event" tab.

Screen | Icon | Event

Change the chapter at alarm.

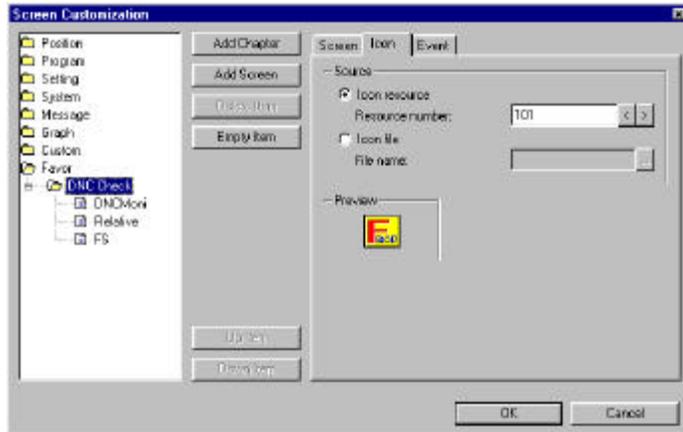
Change the chapter at operator message.

Change the chapter at PMC alarm.

12. Select an item or items to be set. The following items can be set:

- Change the chapter at alarm.
Selecting this item causes automatic switching to this chapter when a CNC alarm condition occurs.
- Change the chapter at operator message.
Selecting this item causes automatic switching to this chapter when an operator message is issued.
- Change the chapter at PMC alarm.
Selecting this item causes automatic switching to this chapter when a PMC alarm condition occurs.

13. Select the newly created chapter in the screen layout tree, then select the "Icon" tab.



14. Specify an icon to be displayed on the function soft key.
The resource number of a built-in icon or the name of a file containing an icon can be specified.

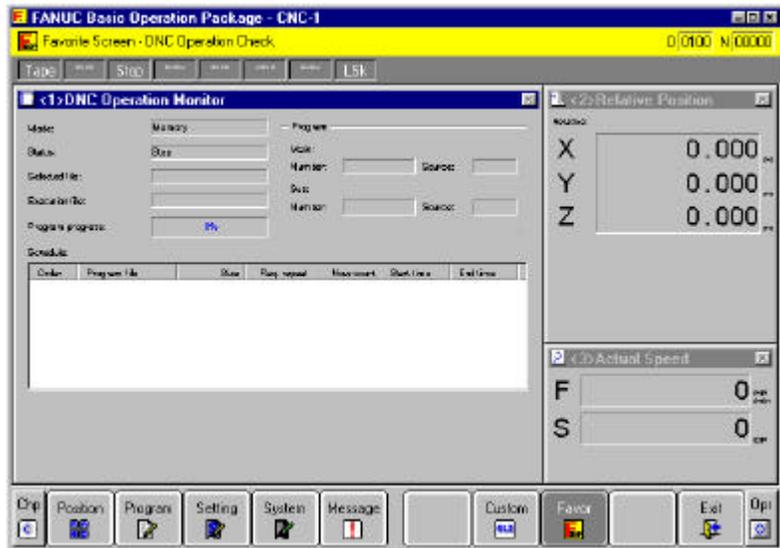
NOTE

A file that can be used for an icon is referred to as an icon file (file with the .ICO extension). Icon files can be created using a tool such as the icon editor supplied with Windows.

15. Click the <OK> button on the [Screen Customization] screen.



Pressing the Favor soft key shows the added screens.

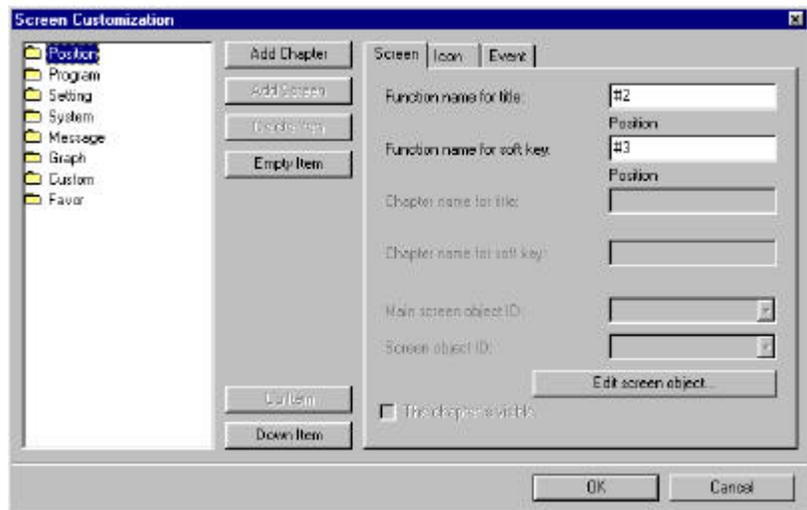


6.2.2 Changing the order in which screens appear

This section describes how to change the order in which the function, chapter, or child window screens appear.

Procedure

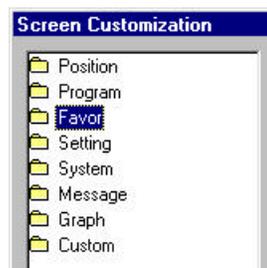
1. If the [Screen Customization] screen is currently not displayed, follow the procedure described in Section 6.2, "Customizing Screens" to display the [Screen Customization] screen.



2. In the screen layout tree, select a function, chapter, or child window object to be moved to another position.



3. Click the **Up Item** or **Down Item** button to move the selected object to the desired position.



- Click the <OK> button on the [Screen Customization] screen.

NOTE

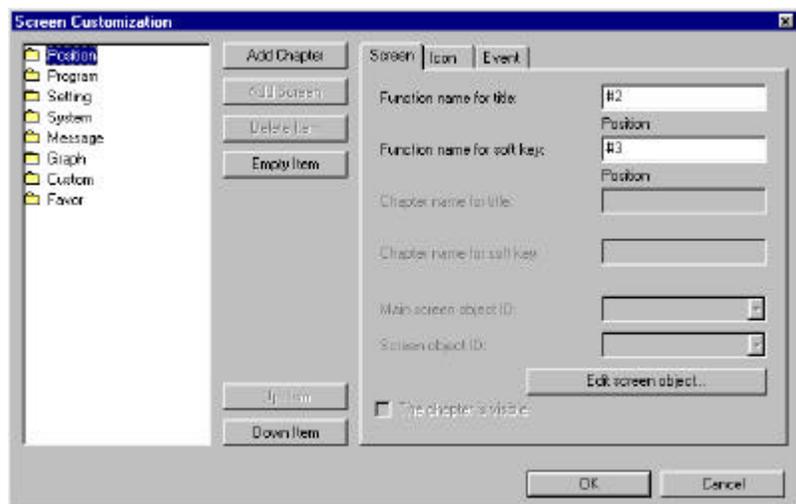
If a chapter is selected, it cannot be moved to another function.
If an object displayed in a child window is selected, it cannot be moved across chapters.

6.2.3 Deleting screens

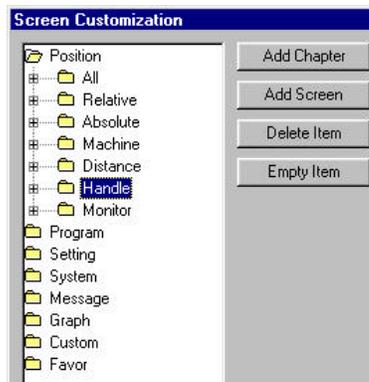
This section describes how to delete chapter or child window screens.

Procedure

- If the [Screen Customization] screen is currently not displayed, follow the procedure described in Section 6.2, "Customizing Screens" to display the [Screen Customization] screen.



- In the screen layout tree, select a chapter or child window object to be deleted.



3. Click the  button.
4. Click the <OK> button on the [Screen Customization] screen.

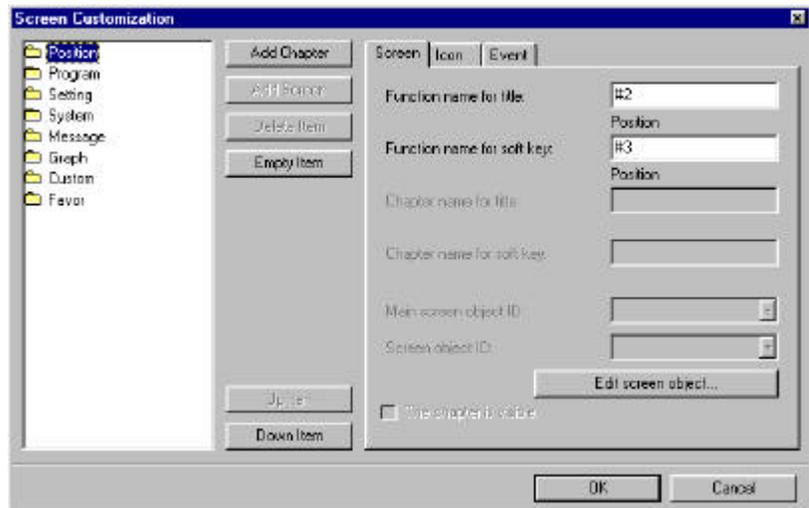
The selected chapter or child window object is deleted.

6.2.4 Showing or hiding chapters

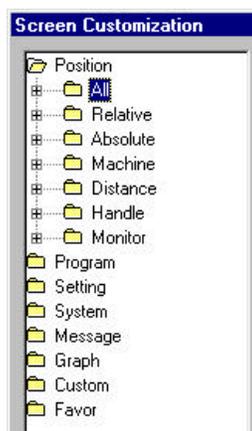
This section describes how to show or hide chapters.

Procedure

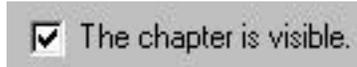
1. If the [Screen Customization] screen is currently not displayed, follow the procedure described in Section 6.2, "Customizing Screens" to display the [Screen Customization] screen.



2. In the screen layout tree, select a chapter object to be shown or hidden.



The check box for showing or hiding a chapter is enabled.



Explanation

Whether a chapter is shown can be determined using the following item:

- The chapter is visible.

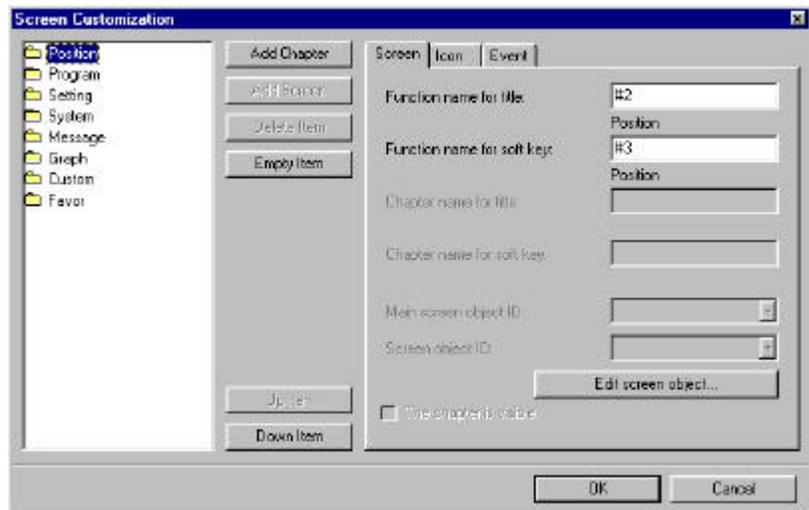
Clearing this item hides a specified chapter. Those screens that are not normally used, such as the maintenance screen, can be erased temporarily.

6.2.5 Setting soft keys as empty

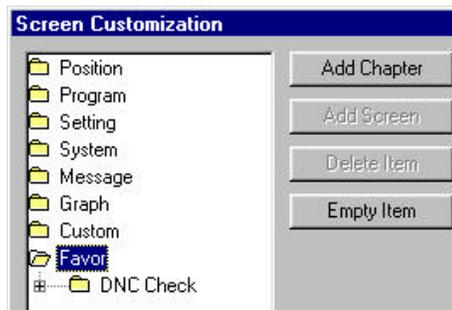
This section describes how to set function or chapter soft keys as empty.

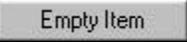
Procedure

1. If the [Screen Customization] screen is currently not displayed, follow the procedure described in Section 6.2, "Customizing Screens" to display the [Screen Customization] screen.

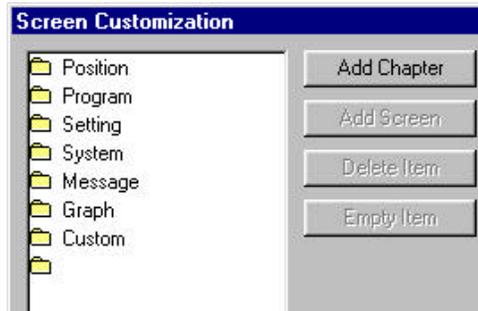


2. In the screen layout tree, select a function or chapter to be set as empty.



3. Click the  button.

The selected function or chapter is set as empty.



6.3 Customizing Screen Objects

This section describes how to customize screen objects.

NOTE

Customization results are stored in the setting file. It is recommended that a backup of the setting file be made to guard against possible data loss.

For details of the setting file, see Appendix 1, "BACKING UP THE SETTING FILE."

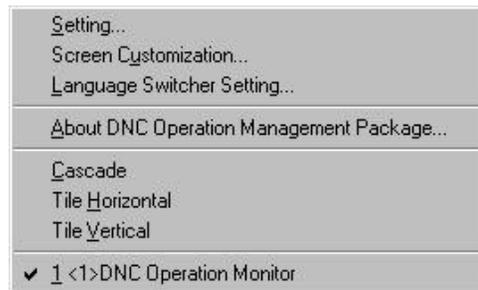
NOTE

When customizing screen objects, the operator must be familiar with Windows and OLE automation.

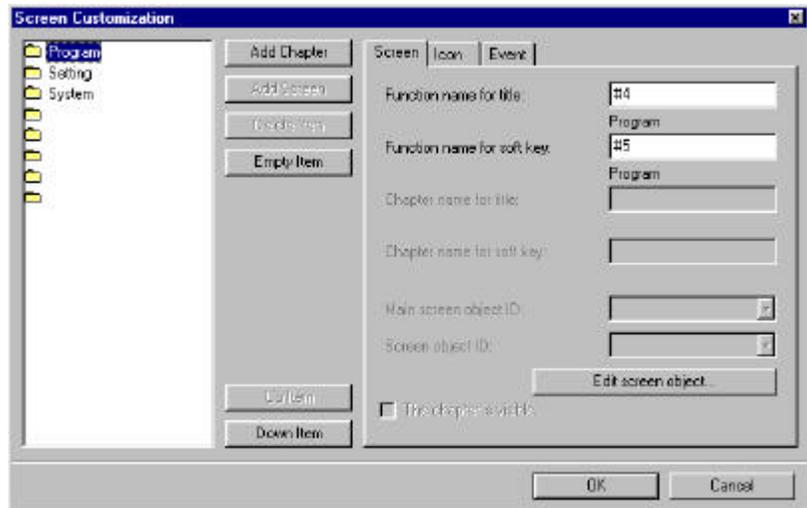
Procedure

1. Right-click the soft key area. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.

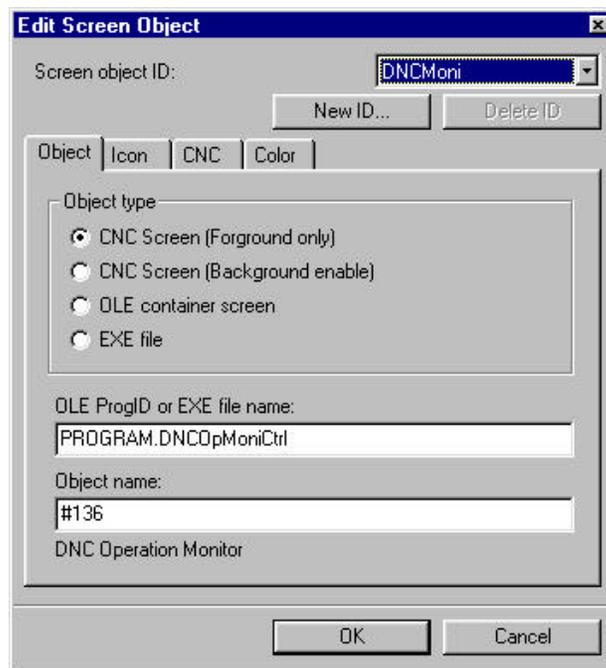


2. Choose [Screen Customization...].
The [Screen Customization] screen appears.



3. Click the **Edit screen object...** button.

The [Edit Screen Object] screen appears.



Explanation

The following types of screen object customization can be performed:

- Creating custom screen objects
- Changing settings for screen objects
- Deleting screen objects

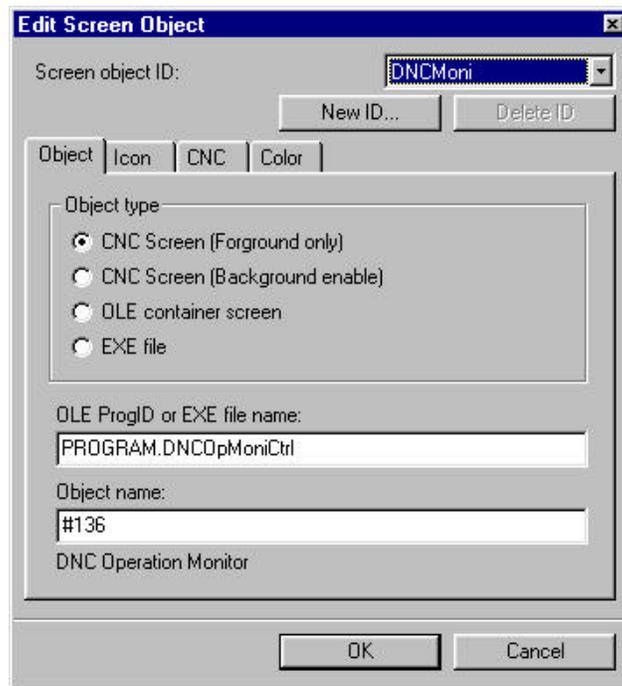
For details, see the description below.

6.3.1 Creating custom screen objects

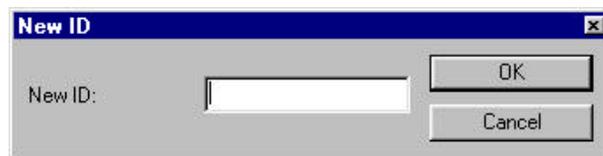
This section describes how to create custom screen objects.

Procedure

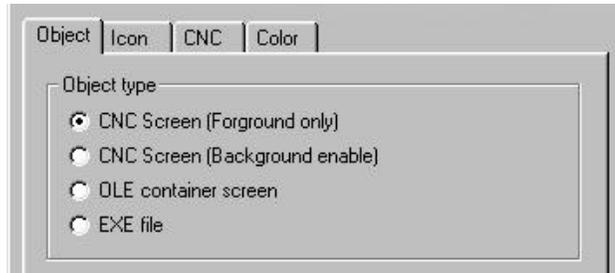
1. If the [Edit Screen Object] screen is currently not displayed, follow the procedure described in Section 6.3, "Customizing Screen Objects" to display the [Edit Screen Object] screen.



2. Click the **New ID...** button.
The [New ID] screen appears.



3. Enter a unique ID in "New ID:".
Click the <OK> button.
4. Specify an object type.



One of the following object types can be specified:

- CNC Screen

A CNC screen is an OLE object. Normally, FANUC provides objects of this type.

CNC screens are classified as follows:

Screen that is executable only when it is in the foreground.

Screen that is also executable even when it is in the background.

Those screens that are set as "foreground only" are loaded or unloaded upon each screen switching. The cursor position and other information is not maintained.

Those screens that are set as "background enable" are not unloaded upon screen switching, and therefore remain in memory. The cursor position and other information is maintained.

(Examples are screens for tool offset data or custom macro variables.)

NOTE

To prevent excessive memory or resource consumption, the number of screens to be set as "background enable" must be kept to a minimum.

- OLE container screen

An OLE container screen is used to display or edit general OLE objects.

Select an OLE container screen for those operations that involve OLE objects for which an appropriate menu or tool bar is to be displayed in a parent window, such as visual editing using Microsoft Word, Microsoft Excel, or other OLE-enabled application.

- EXE file

An EXE file is a general Windows application such as Notepad.

This type of application is not displayed in a child window, and runs independently of DNC Operation Management Package.

5. Enter a value in "OLE ProgID or EXE file name:".

The screenshot shows a dialog box with four tabs: 'Object', 'Icon', 'CNC', and 'Color'. The 'Object' tab is selected. Inside the dialog, there is a section for 'Object type' with four radio button options: 'CNC Screen (Foreground only)' (selected), 'CNC Screen (Background enable)', 'OLE container screen', and 'EXE file'. Below this, there is a text input field labeled 'OLE ProgID or EXE file name:' containing the text 'PROGRAM.DNCOpMoniCtrl'. This field is highlighted with a thick black border. Below it is another text input field labeled 'Object name:' containing the text '#136'. At the bottom of the dialog, the text 'DNC Operation Monitor' is displayed.

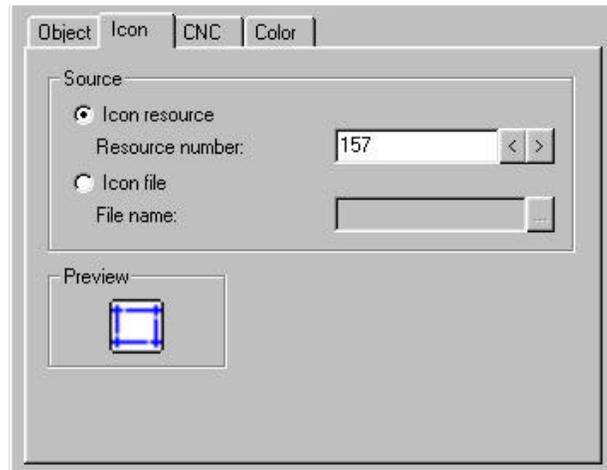
When "CNC Screen" or "OLE container screen" is selected for the object type, enter OLE ProgID of the OLE object to be used. If a null string is entered as OLE ProgID, no information is displayed in the child window.

When "EXE file" is selected for the object type, enter the EXE file name (preferably the full path name).

6. In "Object name:", enter text to be displayed on the title bar of the child window.

This screenshot is identical to the one above, showing the same dialog box configuration. However, in this image, the 'Object name:' text input field, which contains the text '#136', is highlighted with a thick black border instead of the 'OLE ProgID or EXE file name:' field.

7. Select the "Icon" tab.

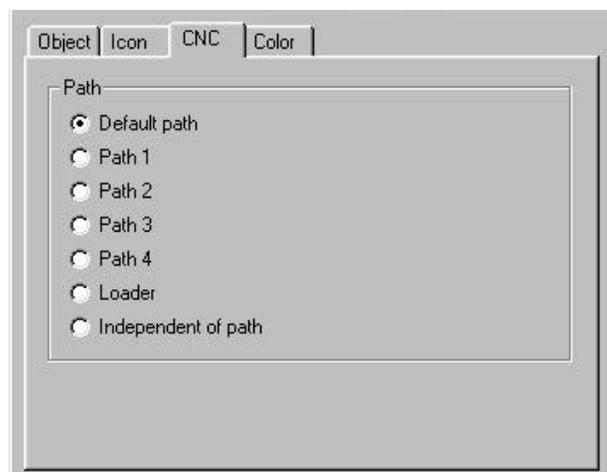


8. Specify an icon to be displayed on the title bar of the child window.
The resource number of a built-in icon or the name of a file containing an icon can be specified.

NOTE

A file that can be used for an icon is referred to as an icon file (file with the .ICO extension). Icon files can be created using a tool such as the icon editor supplied with Windows.

9. Select the "CNC" tab.



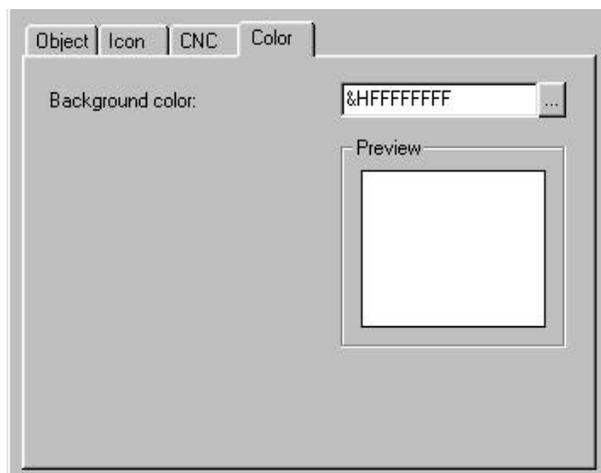
10. Select a CNC path to be processed on the screen.

One of the following items can be selected:

- Default path
Sets the screen for the path displayed on the status line.
- Path 1
Sets the screen for CNC path 1.
- Path 2
Sets the screen for CNC path 2.
- Path 3
Sets the screen for CNC path 3.
- Path 4
Sets the screen for CNC path 4.
- Loader
Sets the screen for the loader control.
- Independent of path
Sets the screen as the path-independent screen.

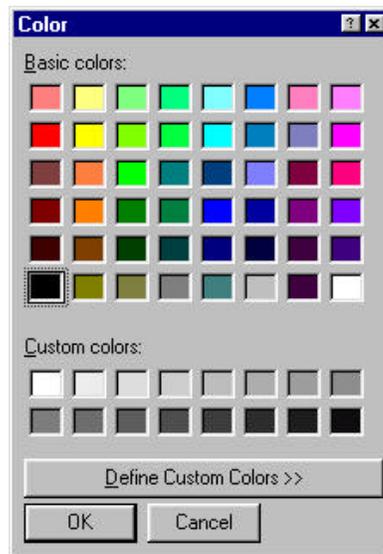
NOTE

When "EXE file" is selected for the object type, this item need not be set.

11. Select the "Color" tab.**12.** Specify the background color of a screen.

Enter a hexadecimal RGB value in "Background color:".

Alternatively, press , then select a color from the [Color] screen, as shown below.

**NOTE**

- When "EXE file" is selected for the object type, this item need not be set.
- The background color can be changed only for those screen objects that have the BackColor property. Currently, not all CNC screens have the BackColor property. (Determine whether the specified screen object has the BackColor property by using the Visual Basic property window or by some other method.)
- When &HFFFFFFF is specified for the background color, the default background color is set.

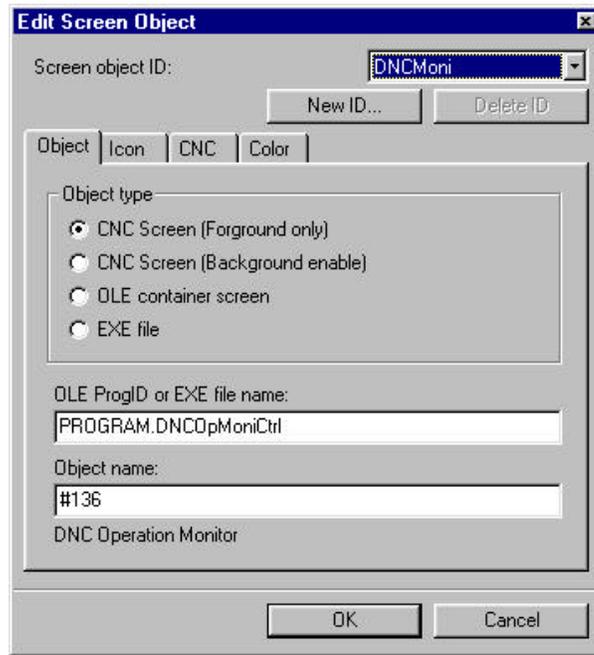
13. Click the <OK> button on the [Edit Screen Object] screen.
A screen object is created.

6.3.2 Changing settings for screen objects

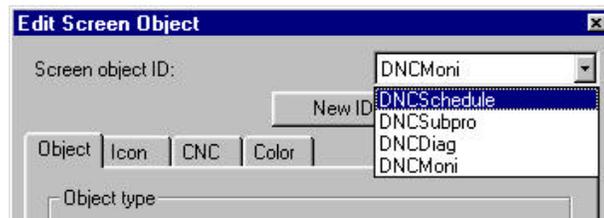
This section describes how to change the settings of screen objects.

Procedure

1. If the [Edit Screen Object] screen is currently not displayed, follow the procedure described in Section 6.3, "Customizing Screen Objects" to display the [Edit Screen Object] screen.



2. From the "Screen object ID:" combo box, select the ID of a screen to be edited.



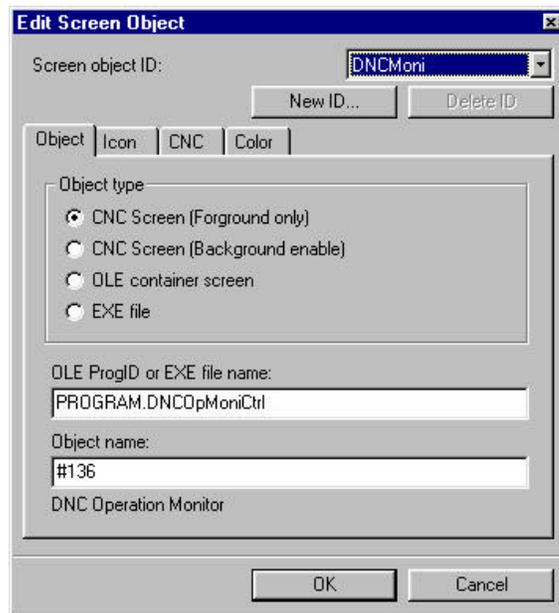
3. Change the desired setting items.
For details of the setting items, see Section 6.3.1, "Creating custom screen objects."
4. Click the <OK> button on the [Edit Screen Object] screen.
This completes the editing of the screen object.

6.3.3 Deleting screen objects

This section describes how to delete screen objects.

Procedure

1. If the [Edit Screen Object] screen is currently not displayed, follow the procedure described in Section 6.3, "Customizing Screen Objects" to display the [Edit Screen Object] screen.



2. From the "Screen object ID:" combo box, select the ID of the screen to be deleted.



NOTE

If a selected screen object is currently selected in a chapter, the <Delete ID> button is disabled, and therefore the object cannot be deleted.

3. Click the  button.
4. Click the <OK> button on the [Edit Screen Object] screen.
This completes the editing of the screen object.

6.4 Customizing Message Languages

This section describes message language customization, including the installation of two or more message languages in DNC Operation Management Package.

NOTE

Before installing a new language environment, message files and subfolders must be created.

For an explanation of how to create message files and subfolders, see Appendix 2, "SWITCHING THE MESSAGE LANGUAGE" and Appendix 3, "MESSAGE FILE GENERATOR."

NOTE

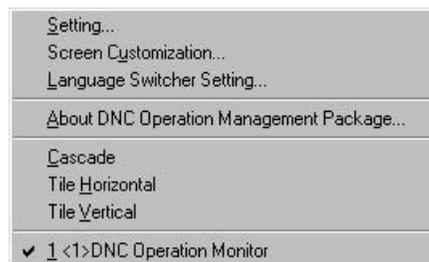
Before installing a language environment, the operator must start and terminate DNC Operation Management Package at least once.

For an explanation of how to start and terminate DNC Operation Management Package, see Section 2.2, "Starting and Terminating DNC Operation Management Package."

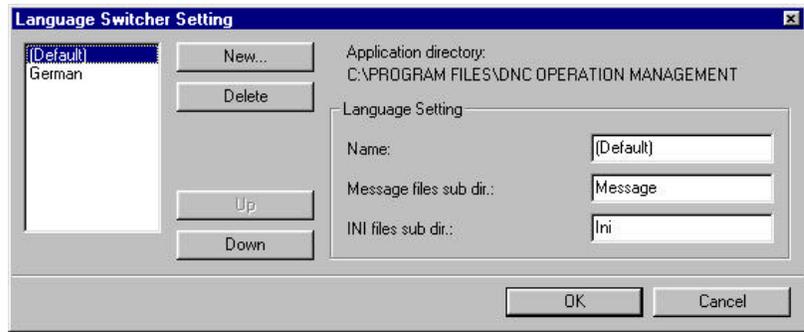
Procedure

1. Right-click the soft key area. Alternatively, press the [Application] key on the keyboard (such as the Microsoft Natural keyboard or 109 keyboard). Alternatively, press [Shift]+[F10].

The following pop-up menu appears.



2. Choose [Language Switcher Setting...].
The [Language Switcher Setting] screen appears.



Explanation

The following types of message language customization can be performed:

- Installing new message languages
- Changing the order in which message languages are listed
- Uninstalling message languages

For details, see the description below.

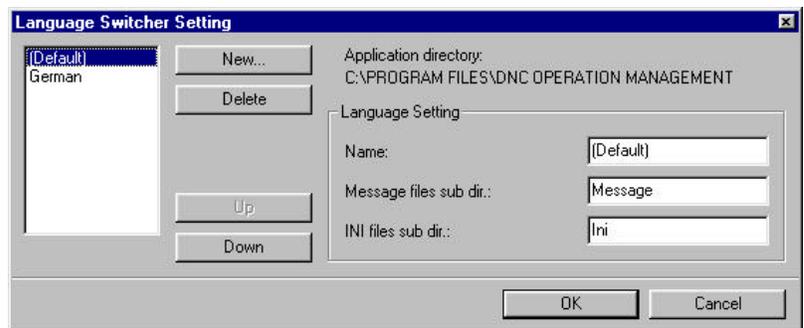
6.4.1 Installing message languages

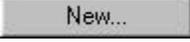
This section describes how to install message languages in DNC Operation Management Package.

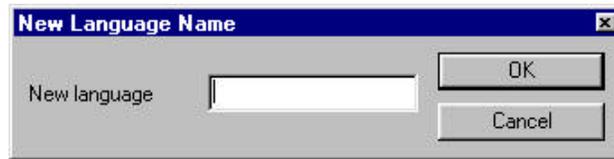
Once two or more message languages have been installed in DNC Operation Management Package, switching between these languages is enabled.

Procedure

1. If the [Language Switcher Setting] screen is currently not displayed, follow the procedure described in Section 6.4, "Customizing Message Languages" to display the [Language Switcher Setting] screen.



2. Click the  button.
The [New Language Name] screen appears.



3. Enter the name of a language to be installed, then click the <OK> button.

The new language is added to the message language list.



4. Specify a subfolder in which message files are to be installed, and a subfolder in which INI files are to be installed.

Click the <OK> button.

The message language is installed.

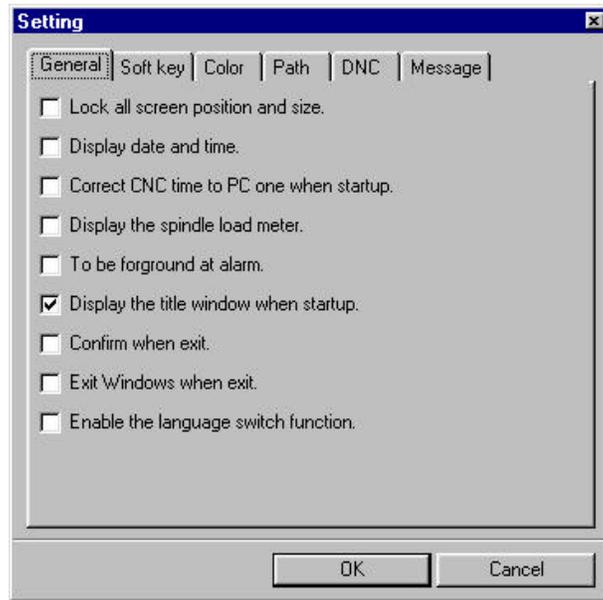
6.4.2 Switching the message language

This section describes how to switch the message language.

Once two or more message languages have been installed in DNC Operation Management Package, switching between these languages is enabled.

Procedure

1. Follow the procedure described in Section 6.1, "Customizing General Settings for DNC Operation Management Package" to display the [Setting] screen.



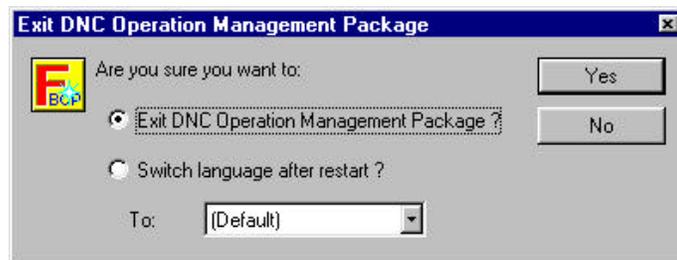
2. Select the "Enable the language switch function." check box.
Click the <OK> button.



3. If the  soft key is currently not displayed, press the  function selection key.



4. Press the  soft key.
The [Exit DNC Operation Management Package] screen appears.



5. Select "Switch language after restart?".
Select the desired language, then click the <Yes> button.

DNC Operation Management Package is restarted automatically, then the language is switched to the selected language.

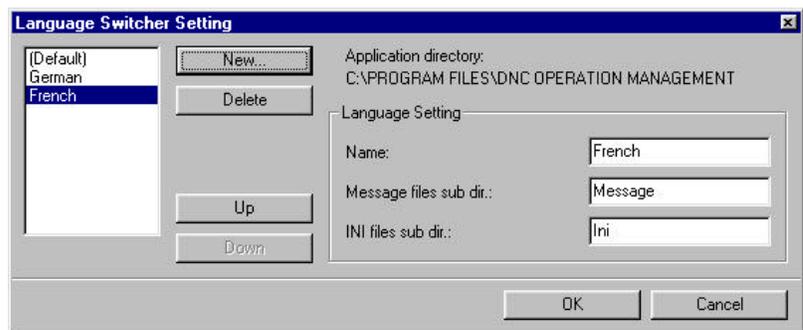
6.4.3 Changing the order in which message languages are listed

This section describes how to change the order in which message languages are listed.

For switching between message languages, these languages are usually listed in the order in which they were installed. If many message languages have been installed, those which are used most frequently can be placed at the top of the list to enable their easy selection.

Procedure

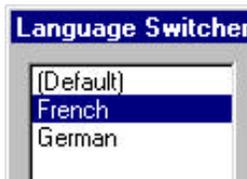
1. If the [Language Switcher Setting] screen is currently not displayed, follow the procedure described in Section 6.4, "Customizing Message Languages" to display the [Language Switcher Setting] screen.



2. Select a language to be moved to another position.



3. Click the  or  button to move the selected language to the desired position.



4. Click the <OK> button.

6.4.4 Uninstalling message languages

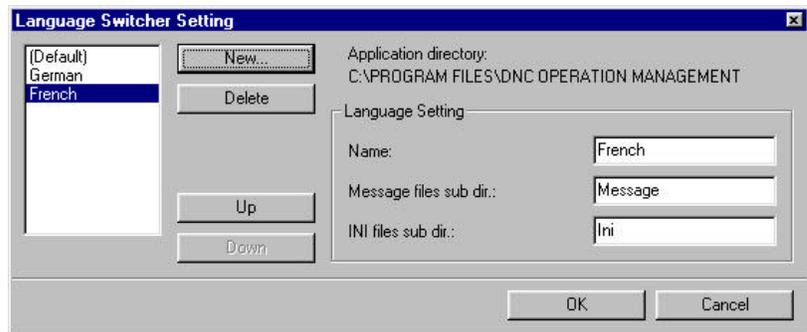
This section describes how to uninstall message languages from DNC Operation Management Package.

NOTE

When a message language is uninstalled, the language is deleted from the message language list, but its message files and INI files are not deleted.

Procedure

1. If the [Language Switcher Setting] screen is currently not displayed, follow the procedure described in Section 6.4, "Customizing Message Languages" to display the [Language Switcher Setting] screen.



2. Select a language to be uninstalled.



3. Click the  button.
The selected language is deleted from the list.



4. Click the <OK> button.
The language is uninstalled.

APPENDIX 1 BACKING UP THE SETTING FILE

This section describes the setting file.

The settings for DNC Operation Management Package are stored at the location indicated below. A backup copy of the original information should be kept to guard against errors.

[HKEY_CURRENT_USER\Software\VB and VBA Program Settings\WinDNC?] key of the registry (? represents a numeric or blank character.)

The registry file can be saved by choosing [Registry] and [Export Registry File ...] of the registry editor (REGEDIT.EXE) in the Windows directory.

APPENDIX **2** SWITCHING THE MESSAGE LANGUAGE

This section describes the switching of the language in which messages are displayed.

- **Switching the language**

DNC Operation Management Package can be installed with multiple language environments, allowing screens to be displayed in any desired language. This, however, does not mean that any language environment can be used with Windows of any version. For example, the Japanese environment can be used only on a system on which the Japanese version of Windows is running. IME is needed to input Japanese and Japanese fonts are needed to display Japanese characters. The caret must be placed appropriately.

DNC Operation Management Package is initially installed with the English-language environment. If DNC Operation Management Package is placed in the C:\Program Files\DNC Operation Management Package folder, the English-language message files are set in the C:\Program Files\DNC Operation Management Package\Message folder and the English INI files in the C:\Program Files\DNC Operation Management Package\Ini folder, as indicated below:

```
C:\Program Files\DNC Operation Management Package
├── \Message (English message files)
└── \Ini     (English INI files)
```

A new language environment can be created by creating new subfolders for message files and INI files in C:\Program Files\DNC Operation Management Package. To create the Japanese-language environment, for example, create the following subfolders:

```
C:\Program Files\DNC Operation Management Package
├── \Message (English message files)
├── \Ini     (English INI files)
├── \Jpnmsg (Japanese message files)
└── \Jpnini (Japanese INI files)
```

Copy the message files and INI files and set the subfolder information in DNC Operation Management Package. Then, the Japanese-language

environment can be used.

NOTE

- The message files and INI files can be placed in a single folder.
- The folders containing the English message files and English INI files can neither be deleted nor renamed.

- **Message file**

This binary file stores the messages that can be displayed.

The message file can be created by the message file generator provided with DNC Operation Management Package.

For an explanation of the procedure for creating the message file, see Appendix 3, "MESSAGE FILE GENERATOR."

- **INI file**

This text file stores the messages that can be displayed on the parameter screen and diagnosis screen of Basic Operation Package 1. By default, DNC Operation Management Package contains no INI files.

The messages can be displayed in the desired language by replacing that part enclosed by a pair of double quotation marks (") with the desired language.

- **Adding a desired language environment**

A desired language environment can be added to DNC Operation Management Package either manually or by using ADDLANG.EXE, an installer.

NOTE

Before adding a desired language environment, start and terminate DNC Operation Management Package at least once.

For an explanation of how to start and terminate DNC Operation Management Package, see Section 2.2, "Starting and Terminating DNC Operation Management Package."

This appendix describes the general procedure for adding a language environment. For an explanation of the specific procedure for adding a Japanese, German, French, Italian, or Spanish environment, see Section 1.2, "Installing DNC Operation Management Package."

- Manually adding a language environment
 1. Create the message files and INI files for the desired language.
 2. Create subfolders for storing the message files and INI files within the folder of DNC Operation Management Package.
 3. Copy the message files and INI files into the subfolders created in step 2, above.
 4. Start DNC Operation Management Package, then display the [Language Switcher Setting] screen.
(For details of this operation, see Section 6.4, "Customizing Message Languages.")
 5. Click the <New...> button, enter the language name, then click the <OK> button.
 6. Specify the names of the subfolders created in step 2, above, for "Message files sub dir." and "INI files sub dir." To place the message files in the C:\Program Files\DNC Operation Management Package\Message folder, which is in the C:\Program Files\DNC Operation Management Package folder of DNC Operation Management Package, for example, specify MESSAGE.
 7. Click the <OK> button.

- Using the installer to add a language environment

The manual procedure described above can be simplified by using the installer (ADDLANG.EXE).

1. Create the message files and INI files for the desired language.
2. Copy ADDLANG.EXE and its setting file SETUP.LST. Copy the contents of the \JPN\ folder on the disk (A02B-0207-K760#ZZ07-5).
3. Edit SETUP.LST as described below.

- Substitute the character strings of the [Message] section.

This section contains the following items:

[Message]

"key" = "character-string"

Substitute only the "character-string" part, leaving the "key" part as is.

- Edit the [Setup] section.

The list below indicates the contents of the [Setup] section.

Item	Description
App	Application name (This must not be edited.)
Name	Specifies a language name.
MsgDir	Specifies the subfolder into which message files are copied.
IniDir	Specifies the subfolder into which the INI files are copied.

To place the message files in the C:\Program Files\DNC Operation Management Package\Message folder included in DNC Operation Management Package folder C:\Program Files\DNC Operation Management Package, specify MsgDir = MESSAGE.

- Edit the [Files] section.

In the [Files] section, specify the files to be added, in the following format:

Filex=filename

Each file specification line must begin with the keyword File. As the argument x, specify a number. From the beginning of this section, specify the numbers in ascending order, starting from 1. Numbers cannot be skipped.

(Example) [Files]
 File1=msg_bop.msg
 File2=msg_menu.msg
 File3=param16m.ini

The file name extension indicates the destination folder to which the file is added.

Extension	Destination folder
MSG	Message file folder specified in the [Setup] section
INI	INI file folder specified in the [Setup] section
DLL	Windows system folder

4. Copy ADDLANG.EXE, SETUP.LST, and other files to be added into the same folder on the same disk.

When ADDLANG.EXE is executed, the files of the desired language are installed.

● Referencing a message file when customizing the screen

A message ID in a message file can be input using the dialog box of the screen customize function. Input the message ID in the following format, in the text box displayed for character string specification.

#[decimal] (Example: #1234)

When the input value is smaller than 10000, the corresponding message ID is referenced in the ID MSG_MENU group (MSG_MENU.MSG file). When the input value is greater than or equal to 10000, the message ID of the input number minus 10000 is referenced in the ID MSG_USER group (MSG_USER.MSG file).

NOTE

- FANUC does not provide message file MSG_USER.MSG of group ID MSG_USER.
- No message ID can be input for the character string of the following items:
 - Screen object ID
 - OLE ProgID

APPENDIX **3** MESSAGE FILE GENERATOR

This section describes how to create a message file.

DNC Operation Management Package manages the messages to be displayed in a binary file. The messages are stored in message files. These message files are usually stored in the Message folder included in the folder in which DNC Operation Management Package is installed.

With DNC Operation Management Package, the user can change the message to be displayed by replacing the message files.

This section describes how to create a message file using the message file generator (MSGGEN32.EXE).

For an explanation of how to change the message to be displayed, see Appendix 2, "SWITCHING THE MESSAGE LANGUAGE."

- Files related to the message file generator

The MSG folder on the disk (A02B-0207-K760#ZZ07-5) contains the following files that are required by the message generator.

MSGPRM.DAT : Sample message generator parameter file.
This text file contains the correspondence between languages, paths, group IDs, and file names. The file format is described below under "File Format."

*.TXT : Message text file.
This text file contains message IDs and messages (in different languages). The file format is described below under "File Format."

MSGGEN32.EXE: Message generator.
This program automatically creates a message file and message ID header file from the message generator parameter file and message text file.

● File format

The message generator parameter file and message text file have the following formats:

* Message generator parameter file (MSGPRM.DAT)

In this text file, the correspondence between languages, paths, group IDs, and file names is specified.

The data in this file has the following format:

```
! Folders to save translated message files (Binary).
#LANG !Language name & path (max 20 group)
eng C:\Bop\Eng !English _____
jpn C:\Bop\Jpn !Japanese _____
ger C:\Bop\Ger !German _____ <1>
fre C:\Bop\Fre !French _____
spa C:\Bop\Spa !Spanish _____
ita C:\Bop\Ita !Italian _____
#END
```

```
! Folders to save message files (ASCII).
#TEXT_PATH
C:\Bop\Msgfile _____ <2>
#END
```

```
! Folders to save headers file which are made by translating message
files.
#HEADER_PATH
C:\Bop\Include _____ <3>
#END
```

```
! Define symbols which is defined in the header files.
#GID !Group-ID name : message file name
MSG_GID_BOP msg_bop _____
MSG_GID_BOPUTL m_chkio _____
MSG_GID_CNCERR m_cncerr _____ <4>
MSG_GID_MENU msg_menu _____
MSG_GID_DNCOP m_dncop _____
#END
```

Explanation

<1> Message file path

A language name and the path of the message file of the language are specified.

The full path name must be specified. Different paths must be specified for different languages.

The language name is used as a language ID in the message file.

When adding a new language, specify the language name and path here.

<2> Message text file path

The path of the message text files is specified.

The full path name must be specified.

<3> Message ID header file path

The path of the message ID header files is specified.

The full path name must be specified.

<4> Group ID and message text file name

A group ID and the corresponding message text file name (without the path and extension) are specified.

Usually, this part need not be changed. When adding a new screen, for example, add the corresponding group ID and message text file name here.

NOTE

The path specified in the message generator parameter file must be created in advance.

If the specified path cannot be found, the following error occurs when the message generator is executed:

Error No2: Can't open file_name

Note the following restrictions:

- A character string following an exclamation mark (!) is assumed to be a comment.
- Any intervening blanks or tabs are ignored.
- Each language name must be specified using three characters. Up to 20 languages can be entered.
- Each path name can be specified using up to 256 characters.
- Each group ID can be specified using up to 16 characters.
- Each message text file name can be specified using up to eight characters.
- Any number of groups can be specified.

* Message text file (The extension is always .txt.)

In this text file, message IDs and messages (in different languages) are specified.

The data in this file is of the following format:

```

ID: MSG_ORDER _____ <1>
eng: "Order" _____
jpn: "順序" _____
ger: "Reihenfolge" _____ <2>
fre: "Ordre"
spa: "Orden"
ita: "Ordine" _____

ID: MSG_SAMPLE
eng: "111" , "222" "333\"
    , "SECOND LINE "
    "THIRD LINE\" , "END" _____ <3>
jpn: ...
...
    
```

<1> Message ID

Unique name assigned to each message.

The message ID must be specified using up to 16 characters.

<2> Language ID and messages in different languages

The language IDs specified in the message generator parameter file and the messages written in the corresponding languages are specified.

Note the following restrictions:

- A character string following an exclamation mark (!), except for any within a character string, is assumed to be a comment.
- An intervening blank or tab, except for any within a character string, is ignored.
- A single character string must be enclosed by a pair of double quotation marks.
- A single character string enclosed by a pair of double quotation marks can be coded over multiple lines. Two or more character strings can be coded on a single line.

For example, the message in <3> above, is displayed as follows:

```
111222333"SECOND LINE THIRD LINE" END
```

- The length of a single message is not limited. Each line can be up to 512 characters long.

- A double quotation mark (") is coded as \", \ as \\, a line feed character as \n, and a tab character as \t.

"AB\"CD\"EF" → AB"CD"EF

"\\10,000" → \\10,000

- The messages for all the languages specified in the parameter file must be included.

* Message file (The extension is always .msg.)

This file is automatically created by the message generator.

The file name is the same as that of the message text file, but with the extension changed to .msg. The message files of different languages are identified by their paths alone.

* Message ID header file (The extension is always .h.)

This file is automatically created by the message generator.

The file name is the same as that of the message text file, but with the extension changed to .h.

This file contains group IDs and message IDs.

The data in this file is of the following format:

```
// Group ID definition
#define MSG_GID_DNCOP "m_dncop"
// Message ID definition
#define MSG_STOP          0
#define MSG_SCHEDULE     1
#define MSG_SUBPROGCALL  2
...
```

● Creating a message file

To create a message file, follow the procedure given below:

1. Create a parameter file (MSGPRM.DAT).



The MSG folder on the disk (A02B-0207-K760#ZZ07-5) contains the parameter file that is used to develop DNC Operation Management Package.

2. Create a message text file (M_DNCOP.TXT, for example).



The MSG folder on the disk (A02B-0207-K760#ZZ07-5) contains the message text file that is used to develop DNC Operation Management Package.

3. Execute the message generator (MSGGEN32.EXE), and create message ID header files (M_DNCOP.H, for example) and message files of different languages (M_DNCOP.MSG, for example).

When executing the message generator, use the following format:

```
msggen32 prm_file_name group_ID
```

prm_file_name: Parameter file name (full path name)

group_ID : ID of the group to be created (When all is specified, all groups are generated.)

The message files of all languages and message ID header files are created for the group specified as group_ID. group_ID must be specified in the parameter file.

When all is specified, the files for all specified groups are created.

Example)

```
msggen32 msgprm.dat MSG_GID_DNCOP
```

→ Creates the messages to be displayed on the DNC
Operation Management Package screen.

```
msggen32 msgprm.dat all
```

→ Creates all messages.

When the message generator terminates, one of the following messages is displayed to show the result of the execution.

Error No.0 : Normal end.

The message generator has terminated normally.

Error No.1 : Internal error in file_name line #####

An internal error occurred.

Error No.2 : Can't open file_name

The file cannot be opened.

Error No.3 : Illegal parameter file format in file_name line #####

The parameter file is of an illegal format.

Error No.4 : Too many languages in file_name line #####

The number of languages has exceeded 20.

Error No.5 : Too short/long language name in file_name line
#####

A language name consists of other than three
characters.

Error No.6 : Too long group-ID name (max 16 char) in
file_name line #####

A group ID is longer than 16 characters.

- Error No.7 : Too long file name in file_name line #####
A file name is longer than eight characters.
- Error No.8 : Too long path name in file_name line #####
A path name is longer than 80 characters.
- Error No.9 : Not found group-ID
The specified group ID is not found in the parameter file.
- Error No.10 : Illegal message in file_name line #####
An illegal message has been found. (An unpaired double quotation mark is used, for example.)
- Error No.11 : Illegal text file format in file_name line #####
The format of the message text file is illegal.
- Error No.12 : Lack of language in file_name line #####
A message of a language is missing. (The messages of all languages specified in the parameter file must be included.)
- Error No.13 : Double message definition in file_name line #####
Two or more messages are defined in a single language for a single message.
- Error No.14 : Too long message-ID name (max 16 char) in file_name line #####
A message ID is longer than 16 characters.

NOTE

Double definition of an ID (group ID, message ID) is not checked and will not cause any error.

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