



NATURAL

Natural

NATUNLD/NATLOAD Utilities

Version 3.1.6 for Mainframes

Version 5.1.1 for UNIX and OpenVMS



This document applies to Natural Version 3.1.6 for Mainframes, Version 5.1.1 for UNIX and OpenVMS, and to all subsequent releases. Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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NATUNLD/NATLOAD Utilities - Overview

The library SYSUNLD contains two utilities: NATUNLD and NATLOAD.

The utilities NATUNLD and NATLOAD are available with Natural on mainframes, OpenVMS and UNIX. The description in this section applies to NATUNLD and NATLOAD on any of these platforms.

The usage of NATUNLD and NATLOAD can be controlled with Natural Security, so that some NATUNLD/NATLOAD functions may not be available to you.

If you have specified MENU as startup program, set the parameter "Batch execution" to **N** in the Natural Security library profile of the library SYSUNLD.

This documentation covers the following topics:

- Introduction General Information on the use of NATUNLD/NATLOAD. Invoking SYSUNLD.
- NATUNLD Utility Unloading Natural programming objects, error messages and DDMs from system files to a work file.
- NATLOAD Utility Loading Natural programming objects, error messages and DDMs from a work file to system files.

NATUNLD/NATLOAD - Introduction

- General Information
 - Invoking SYSUNLD
 - Options and Specifications
-

General Information

The utilities NATUNLD and NATLOAD are contained in the library SYSUNLD.

- NATUNLD is used to unload Natural programming objects, error messages and DDMs from system files to a work file.
- NATLOAD is used to load Natural programming objects, error messages and DDMs from a work file into system files.

The unloaded/loaded programming objects can be saved objects, cataloged objects and stowed objects. The programming objects to be unloaded can also be objects defined in a Predict set.

The unloaded/loaded error messages can be Natural system messages or user-written messages.

The DDMs unloaded or loaded can be saved, cataloged or stowed DDMs.

NATUNLD unloads from the following system files:

- Programming objects are unloaded from the Natural system files FNAT and FUSER. For objects defined in a Predict set, the corresponding set information is read from the Predict system file FDIC.
- Error messages are unloaded from the error messages subdirectories in the Natural system files FNAT and FUSER.
- DDMs are unloaded from the Natural system files FNAT and FUSER.

NATUNLD generates variable-length records with a maximum of 252 characters per record. These records are written to Natural Work File 1 in a format which can be used for loading with NATLOAD.

NATLOAD reads the records from Natural Work File 1. NATLOAD can only load work files created by NATUNLD.

NATLOAD loads into the following system files:

- Programming objects are loaded into the Natural system files FNAT and FUSER: Objects in libraries whose names begin with SYS (except for the library SYSTEM) are loaded into the FNAT file; objects in all other libraries are loaded into the FUSER file. If the library SYSTEM is loaded from a Software AG installation dataset, it is loaded into the FNAT file, otherwise it is loaded into the FUSER file.
- Error messages are loaded into the error messages subdirectories in the Natural system files FNAT and FUSER.
- DDMs are loaded like programming objects as described above.

In addition, NATUNLD allows you to write delete instructions for specific objects to the work file. When the work file is read with NATLOAD, these instructions cause the objects concerned to be deleted (see the delete instructions in the section NATUNLD Utility) from the target environment.

The utilities NATUNLD and NATLOAD can be used online as well as in batch mode.

Note:

If you enter a Natural system command in a command line within NATUNLD or NATLOAD, you have to specify two slashes (//) before the command to identify it as a system command.

Invoking NATUNLD or NATLOAD

▶ To invoke NATUNLD/NATLOAD from the SYSUNLD Main Menu

1. Enter the system command SYSUNLD.
The SYSUNLD Main Menu is displayed.
2. Select the Unload or Load/Scan function.
The main menu of NATUNLD or NATLOAD is displayed.

▶ To invoke NATUNLD/NATLOAD directly

See the relevant sections in NATUNLD and NATLOAD.

Options and Specifications

This section provides explanations and instructions on recurring options and specifications used in the NATUNLD/NATLOAD documentation. Be aware that there are exceptions which are documented separately in the particular sections.

Below is information on:

- Names and Ranges
- Dates and Ranges
- Work File Name and Type
- File Assignments

Names and Ranges

To select Natural libraries, programming objects and DDMs, specify a name or a range of names. Options are:

	<i>value</i> is any combination of one or more characters.
<i>value</i>	Select a single item.
*	Select all items.
<i>value</i> <	Select all items whose names are less/equal <i>value</i> .
<i>value</i> >	Select all items whose names are greater/equal <i>value</i> .
<i>value</i> *	Select all items whose names begin with <i>value</i> .

Dates and Ranges

To select Natural programming objects, specify a date on which or a date range within which an object was saved.

The date has to be specified according to the setting of the DTFORM profile parameter as described in your Natural Operations documentation; the time has to be specified in the format HH:II (HH = hours, II = minutes).

As abbreviations for special dates or date ranges, the following strings can be entered:

String	Explanation
<u>T</u> ODAY	The date of the current day. The day can be followed by +nnnn or -nnnn (where <i>nnnn</i> are numeric digits). The resulting date is computed as the date of the current day plus or minus <i>nnnn</i> days.
<u>Y</u> ESTERDAY	The date of the day before the current day.
<u>M</u> ONTH	The date range of the current month.
<u>Y</u> EAR	The date range of the current year.

Work File Name and Type

Specify or change the name of Work File 1 in NATUNLD or NATLOAD. To do so, either enter the command WORKFILE in the command line or press PF9 (Work).

Work File 1 must be of binary format. To achieve this, omit the file extension or use the file extension ".sag".

In addition, you can specify whether the work file is a portable work file (Type P) or a default binary work file (Type D). See also Work File Type in the section Define Work File in the Natural Statements documentation).

File Assignments

To unload or load from an FUSER or FDIC file other than the current one, either enter the command FILES in the command line or press PF10 (Files). The "File Assignments for NATUNLD/NATLOAD" window will then be displayed. In this window, you can specify a different FUSER and FDIC file.

The database ID (DBID) and file number (FNR) of the system file from or to which a programming object/DDM is unloaded or loaded is determined as follows:

- Under Natural Security, for each library, the DBID/FNR specified in the corresponding library security profile is always used.
- Without Natural Security, and for libraries in whose security profiles no DBID/FNR is specified, the DBIDs/FNRs from your current system files are used when you invoke NATUNLD or NATLOAD.

NATUNLD Utility

- Invoking NATUNLD
 - Programming Objects
 - DDMs
 - Error Messages
 - Delete Instructions for Programming Objects
 - Delete Instructions for DDMs
 - Delete Instructions for Error Messages
 - Executing NATUNLD in Batch Mode
 - NATUNLD Direct Command Syntax
 - NATUNLD Report
-

Invoking NATUNLD

To invoke the NATUNLD utility

- In batch mode (see also Executing NATUNLD in Batch Mode), enter a direct command.
- Online, enter the system command NATUNLD.
The Unload Programming Objects menu of the NATUNLD utility is displayed.

Programming Objects

When you invoke NATUNLD online, the Unload Programming Objects screen is displayed. For unloading in batch mode, see Executing NATUNLD in Batch Mode.

Below is information on:

- Functions for Programming Objects
- Parameters for Programming Objects
- Work File Name and Type
(see the section Introduction)

Functions for Programming Objects

From the Unload Programming Objects screen, you can invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key	Function	Explanation
	Command		
A		Unload All/Individual Objects	Unloads objects which exist in any form: in saved form, or cataloged form or both.
S		Unload only Saved Objects	Unloads only objects which exist in saved form.
C		Unload only Cataloged Objects	Unloads objects which exist in cataloged form.
W		Unload Saved and Cataloged Objects	Unloads objects which exist in both saved and cataloged form. (*)
B		Unload Stowed Objects	Unloads objects which exist in both saved and cataloged form and which were saved and cataloged at the same time. The check that the saving and cataloging of an object occurred at the same time ensures that the saved and cataloged form of an object actually belong together. (*)
	PF4 (E-Msg) ERROR	Unload Error Messages	See the section Error Messages.
	PF5 (DDMs) DDM	Unload DDMs	See the section DDMs.
	PF7 (Del.) DELETE	Unload Delete Instructions	See the section Delete Instructions for Programming Objects.
	PF10 (Files) FILES	File Assignments for NATUNLD	See File Assignments in the section Introduction.

* Objects of type copycode, text and recording - although they can exist only in saved, but not in cataloged form - are also processed by these functions.

If you want to unload DDMs, you press PF5 (DDMs) on the Unload Programming Objects screen to invoke the function Unload DDMs, as described in the section DDMs.

If you want to write delete instructions to the work file, you press PF7 (Del.) on the Unload Programming Objects screen to invoke the function Unload Delete Instructions, as described in the section Delete Instructions for Programming Objects.

Each of the above functions unloads Natural programming objects from one or more libraries on the system files FNAT or FUSER. Libraries whose names begin with SYS (except for the library SYSTEM) are, by default, unloaded from the FNAT file; all other libraries are unloaded from the FUSER file. See also File Assignments in the section Introduction.

To execute one of the functions on the Unload Programming Objects screen, enter the corresponding function code and, if required, the parameters described below.

Parameters for Programming Objects

The Unload Programming Objects screen provides the following parameters:

Field	Explanation
From Library	<p>The name of the library from which the objects are to be unloaded. By default, the library is selected from which NATUNLD was called. To select multiple libraries, see Names and Ranges in the section Introduction.</p> <p>Note: Under Natural Security, the setting of the NATUNLD utility profile or the Utility option in the corresponding library profile determines whether you are authorized to unload objects from a selected library. If the Natural Security option Transition Period Logon is set to Y, objects from libraries which have not been defined to Natural Security can also be unloaded.</p>
To Library	<p>The name of the library into which the unloaded objects are to be loaded with NATLOAD. If you leave this field blank or enter an asterisk (*), the name of the library specified in the From Library field is used.</p> <p>Note: If you have specified a range as library in the From Library field, the specification in the To Library field name may be a range too, but the number of characters before the asterisk (*) must not exceed the number of characters before the asterisk in the From Library field.</p>
Object Name	<p>The name of the object to be unloaded. If you leave this field blank or enter an asterisk (*), all objects in the library (or libraries) specified under From Library are unloaded.</p> <p>Within the object name, you can specify any combination of asterisk notation (*) and wildcard notation (?) — in the same manner as described for the system command LIST in the Natural User’s Guide — to unload a specific range of objects.</p> <p>See also Names and Ranges in the section Introduction.</p>
User ID	<p>If you enter a user ID in this field, only those objects are unloaded which were saved or cataloged under this user ID. To specify a range of user IDs, see Names and Ranges in the section Introduction.</p>
Symbol Table	Function not implemented.
PC Download	Function not implemented.
Set Number	Function not implemented.
Xref Data	<p>Only applies with Predict Version 2.3 or above and if the Predict Active References feature is installed.</p> <p>In this field, you specify whether the corresponding cross-reference data are to be unloaded with the objects:</p> <p>Y If a cataloged object has cross-reference data, these are unloaded with the object. N Only the cataloged object is unloaded, but any cross-reference data are ignored (this is the default).</p>
Object Type	<p>The type of objects to be unloaded.</p> <p>If you leave this field blank or enter an asterisk (*), all objects with the names specified under Object Name are unloaded regardless of their types. For a selection list of possible object types, either enter a question mark (?) in this field or press PF1 (Help).</p> <p>Note: You can specify several object types at the same time and in any sequence; for example, specifying PAM unloads programs, parameter data areas and maps.</p>

Field	Explanation
Date/Time From	Only those objects are unloaded which were saved or cataloged on or after/before this date and time.
Date/Time To	See Dates and Ranges in the section Introduction for further details.

DDMs

To invoke the Unload DDMs function

- Enter the command DDM in the command line.
Or press PF5 (DDMs) on the Unload Programming Objects or Unload Error Messages screen.
The Unload DDMs screen is displayed.

For unloading in batch mode, see Executing NATUNLD in Batch Mode.

Below is information on:

- Functions for DDMs
- Parameters for DDMs
- Work File Name and Type
(see the section Introduction)

Functions for DDMs

Each of the functions below unloads DDMs from one or more libraries on the system files FNAT or FUSER on OpenVMS and UNIX; libraries whose names begin with SYS (except the library SYSTEM) are, by default, unloaded from the FNAT file; all other libraries are unloaded from the FUSER file. See also File Assignments in the section Introduction.

From the Unload DDMs screen, invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key	Function	Explanation
	Command		
A		Unload All/Individual DDMs	Unloads DDMs which exist in any form: in saved form, or cataloged form or both.
S		Unload only Saved DDMs	Unloads only DDMs which exist in saved form.
C		Unload only Cataloged DDMs	Unloads only DDMs which exist in cataloged form.
W		Unload Saved and Cataloged DDMs	Unloads DDMs which exist in both saved and cataloged form.
B		Unload Stowed DDMs	Unloads DDMs which exist in both saved and cataloged form and which were saved and cataloged at the same time. The check that the saving and cataloging of a DDM occurred at the same time ensures that the saved and cataloged form of a DDM actually belong together.
	PF4 (E-Msg) ERROR	Unload Error Messages	See the section Error Messages.
	PF5 (Objct) OBJECTS	Unload Programming Objects	See the section Programming Objects.
	PF7 (Del.) DELETE	Unload Delete Instructions for DDMs	See the section Delete Instructions for DDMs.
	PF10 (Files) FILES	File Assignments for NATUNLD	See File Assignments in the section Introduction.

Parameters for DDMs

To execute one of the functions on the Unload DDMs screen, enter the corresponding function code and, if required, the following parameters:

Field	Explanation
From Library	The name of the library from which the DDMs are to be unloaded. Here the same applies as described for From Library in Parameters for Programming Objects.
To Library	The name of the library into which the DDMs are to be loaded with NATLOAD. Here the same applies as described for To Library in Parameters for Programming Objects.
DDM Name	The name of the DDM to be unloaded. To unload all DDMs from the system file, leave this field blank or enter an asterisk (*). To unload multiple DDMs, use the same range notations as described for Object Name in Parameters for Programming Objects.
DDM DBID	To unload only DDMs which have a specific database ID, enter that database ID in this field. Database ID is the ID of the physical database file of which the DDM is the logical representation.
DDM FNR	To unload only DDMs which have a specific file number, enter that file number in this field. File number is the number of the physical database file of which the DDM is the logical representation.
PC Download	Function not implemented.

Error Messages

Each of the functions below unloads Natural system error messages from the system file FNAT, and user-defined error messages from one or more libraries on the system files FNAT or FUSER; libraries whose names begin with SYS (except for the library SYSTEM) are, by default, unloaded from the FNAT file; all other libraries are unloaded from the FUSER file. See also File Assignments in the section Introduction.

To invoke the Unload Error Message function

- Enter the command ERROR in the command line.
Or press PF4 (E-Msg) on the Unload Programming Objects or Unload DDMs screen.
The Unload Error Messages screen is displayed.

For unloading in batch mode, see Executing NATUNLD in Batch Mode.

Below is information on:

- Functions for Error Messages
- Parameters for Error Messages
- Work File Name and Type
(see the section Introduction)

Functions for Error Messages

From the Unload Error Messages screen, invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key Command	Function	Explanation
A		Unload Short and Long Error Messages	Unloads error messages which exist in short and/or long form.
S		Unload only Short Error Messages	Unloads only error messages which exist in short form.
L		Unload only Long Error Messages	Unloads only error messages which exist in long form.
H		Unload Natural Help Texts	Function not implemented.
	PF4 (Objct) OBJECTS	Unload Programming Objects	See the section Programming Objects.
	PF5 (DDMs) DDM	Unload DDMs	See the section DDMs.
	PF7 (Del.) DELETE	Unload Delete Instructions for Error Messages	See the section Delete Instructions for Error Messages.
	PF10 (Files) FILES	File Assignments for NATUNLD	See the section File Assignments in the Introduction.

Parameters for Error Messages

To execute one of the functions on the Unload Error Messages screen, enter the corresponding function code and, if required, the following parameters (the function Unload Natural Help Texts requires no parameters):

Field	Explanation
User/Natural	Type of message to be unloaded: U user-defined error messages, N Natural system messages.
From Library	Only applies to user-defined error messages. The name of the library from which the user-defined error messages are to be unloaded. Here the same applies as described for From Library in Parameters for Programming Objects.
To Library	Only applies to user-defined error messages. The name of the library into which the user-defined error messages are to be loaded with NATLOAD. Here the same applies as described for To Library in Parameters for Programming Objects.
Error Number	The range of error message numbers to be unloaded.
Language Codes	The language code(s) of the error messages to be unloaded. For valid language codes, see the system variable *LANGUAGE in the Natural Reference documentation. By default (*), messages in any language are unloaded.
PC Download	Function not implemented.

Delete Instructions for Programming Objects

Use this function to write delete instructions for specific programming objects to the work file. When these instructions are loaded with NATLOAD into the target environment, they cause the specified objects to be deleted from the target environment.

To invoke the Unload Delete Instructions function

- Enter the command DELETE in the command line.
Or press PF7 (Del.) on the Unload Programming Objects screen.
The Unload Delete Instructions screen is displayed.

Below is information on:

- Functions for Delete Instructions - Programming Objects
- Parameters for Delete Instructions - Programming Objects
- Work File Name and Type
(see the section Introduction)

Functions for Delete Instructions - Programming Objects

From the Unload Delete Instructions screen, you can invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key	Function	Explanation
	Command		
A		Delete All/Individual Objects	Delete instructions for objects which exist in any form: in saved form, or cataloged form or both.
S		Delete only Saved Objects	Delete instructions for objects which exist in saved form.
C		Delete only Cataloged Objects	Delete instructions for objects which exist in cataloged form.
	PF4 (E-Msg) ERROR	Unload Delete Instructions for Error Messages	See the section Delete Instructions for Error Messages.
	PF5 (DDMs) DDM	Unload Delete Instructions for DDMs	See the section Delete Instructions for DDMs.
	PF7 (Unld) UNLOAD	Unload Programming Objects	See the section Programming Objects.
	PF10 (Files) FILES	File Assignments for NATUNLD	See File Assignments in the section Introduction.

Parameters for Delete Instructions - Programming Objects

To execute one of the functions, enter the appropriate function code and the following parameters:

Field	Explanation
Library	The name of the library from which the objects are to be deleted. You can only specify the name of a single library; a range of multiple libraries cannot be specified. By default, the library is selected from which NATUNLD was called.
Object Name	The name of the object to be deleted. If you leave this field blank or enter an asterisk (*), all objects in the specified library will be deleted. To delete multiple objects, see Names and Ranges in the section Introduction.
PC Download	Function not implemented.

Delete Instructions for DDMs

Use this function to write delete instructions for specific DDMs to the work file. When these instructions are loaded with NATLOAD into the target environment, they cause the specified DDMs to be deleted from the target environment.

To invoke the Unload Delete Instructions for DDMs function

- Enter the command DELETE in the command line.
Or press PF7 (Del.) on the Unload DDMs screen.
The "Unload Delete Instructions for DDMs" screen is displayed.

Below is information on:

- Functions for Delete Instructions - DDMs
- Parameters for Delete Instructions - DDMs
- Work File Name and Type
(see the section Introduction)

Functions for Delete Instructions - DDMs

From the Unload Delete Instructions for DDMs screen, invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key Command	Function	Explanation
A		Delete All/Individual DDMs	Delete instructions for DDMs which exist in any form: in saved form, or cataloged form or both.
S		Delete only Saved DDMs	Delete instructions for DDMs which exist in saved form.
C		Delete only Cataloged DDMs	Delete instructions for DDMs which exist in cataloged form.
	PF4 (E-Msg) ERROR	Unload Delete Instructions for Error Messages	See the section Delete Instructions for Error Messages.
	PF5 (Objct) OBJECTS	Unload Delete Instructions for Programming Object	See the section Delete Instructions for Programming Objects.
	PF7 (Unld) UNLOAD	Unload DDMs	See the section DDMs.
	PF10 (Files) FILES	File Assignments	See File Assignments in the section Introduction.

Parameters for Delete Instructions - DDMs

To execute one of the functions, enter the appropriate function code and the following parameters:

Field	Explanation
Library	The name of the library from which the DDMs are to be deleted. You can only specify the name of a single library; a range of multiple libraries cannot be specified. By default, the library from which NATUNLD was called is selected.
DDM Name	The name of the DDM to be deleted. If you leave this field blank or enter an asterisk (*), all DDMs will be deleted from the target system file. To delete multiple objects, see Names and Ranges in the section Introduction.
PC Download	Function not implemented.

Delete Instructions for Error Messages

Use this function to write delete instructions for specific error messages to the work file. When these instructions are loaded with NATLOAD into the target environment, they cause the specified error messages be deleted from the target environment.

To invoke the Unload Delete Instructions function for error messages

- Enter the command DELETE in the command line.
Or press PF7 (Del.) on the Unload Error Messages screen.
The Unload Delete Instructions screen for error messages is displayed.

Below is information on:

- Functions for Delete Instructions - Error Messages
- Parameters for Delete Instructions - Error Messages
- Work File Name and Type
(see the section Introduction)

Functions for Delete Instructions - Error Messages

From the Unload Delete Instructions screen for error messages you invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key	Function	Explanation
	Command		
A		Delete Short and Long Error Messages	Delete instructions for error messages which exist in short and/or long form.
L		Delete only Long Error Messages	Delete instructions for error messages which exist in long form.
	PF4 (Objct) OBJECTS	Unload Delete Instructions for Programming Objects	See the section Delete Instructions for Programming Objects.
	PF5 (DDMs) DDM	Unload Delete Instructions for DDMs	See the section Delete Instructions for DDMs.
	PF7 (Unld) UNLOAD	Unload Error Messages	See the section Error Messages.
	PF10 (Files) FILES	File Assignments for NATUNLD	See File Assignments in the section Introduction.

Parameters for Delete Instructions - Error Messages

To execute one of the functions, enter the appropriate function code and the following parameters:

Field	Explanation
User/Natural	Type of message to be deleted: U user-defined error messages, N Natural system messages.
Library	Applies to user-defined error messages only. The name of the library from which the messages are to be deleted. You can only specify the name of a single library; a range of multiple libraries cannot be specified. By default, the library is selected from which NATUNLD was called.
Error Number	The range of error message numbers to be deleted.
Language Codes	The language code(s) of the error messages to be deleted. For valid language codes, see the system variable *LANGUAGE in the Natural Reference documentation. By default (*), messages in any language are deleted.
PC Download	Function not implemented.

Executing NATUNLD in Batch Mode

For the execution of NATUNLD in batch mode, use direct commands.

When you use a direct command, observe the following rules:

- The profile parameters PS and LS should be set to at least PS=78 and LS=220.
- The keyword NATUNLD can be placed in a line by itself.
- To separate the individual parameters of a direct command from one another, use either blanks or the input delimiter character as defined by the session parameter ID; the default is comma.
- If the string of parameters is longer than a single line, you have to specify the character defined with the session parameter CF (default is %) at the end of the line to indicate that the specification of parameters continues on the next line.
This is only possible if the keyword NATUNLD is placed in a line by itself and the input delimiter character is used to separate the individual parameters from one another.
- To indicate the end of the command input, specify a line containing the keyword END or one of its synonyms.

The syntax of the direct commands is shown in the section NATUNLD Direct Command Syntax.

Condition Codes and User Exits in Batch Mode

NATUNLD processing in batch mode terminates with one of the following condition codes:

Code	Explanation
0	Unloading executed successfully.
37	The objects requested for unloading could not be found. With Condition Code 37, the user exit UNLDEX01 (*), if available, will be invoked during processing and you will be prompted whether to continue or terminate unloading.
38	Unloading request rejected by Natural Security: If you attempt to unload objects from a library you are not allowed to access due to Natural Security definitions, NATUNLD terminates with Condition Code 38. If available, user exit UNLDEX02 will be invoked. Here you can specify whether to continue unloading without that library or terminate NATUNLD with Condition Code 38. The source code of that user exit UNLDEX02 is provided under the name U-S-EX02 in library SYSUNLD. To make it available, you have to stow it under the name UNLDEX02, either in the library SYSUNLD or in one of its steplibs.
40	An error occurred; unloading terminated. With Condition Code 40, the user exit UNLDEX01 (*), if available, will be invoked at the termination of processing.

* The source code of the user exit UNLDEX01 is provided under the name U-S-EX01 in the library SYSUNLD. To make it available, you have to stow it under the name UNLDEX01, either in the library SYSUNLD or in one of its steplibs.

Note:

The names of the user exits' sources and objects are different to ensure that the overwriting of the sources by an update installation does not affect the objects.

NATUNLD Direct Command Syntax

- General Information
- NATUNLD Syntax Diagrams
- Examples of Direct Commands for NATUNLD in Batch Mode

General Information

The direct commands are available in batch mode and online. When you enter a direct command online, the entire command must fit into one command input line. After the execution of the direct command, you can enter another NATUNLD direct command, or END to leave NATUNLD, on the Input Command Data screen.

The individual items within each "with-...-clause" and "where-...-clause" can be specified in any sequence.

If you specify the parameters WORKFILE and WORKFILETYPE, specify them only once (as it applies to the entire work file); you have to specify it in the first possible "with-...-clause" or "delete-...-clause".

For error messages, the parameters FROM LIBRARY and TO LIBRARY are only valid for user-defined messages, not for Natural system messages.

The values following the keyword DIC in the "object-with-clause" must be separated by commas. The commas must also be specified for omitted values.

For example: DIC (10,,SECRET,12)

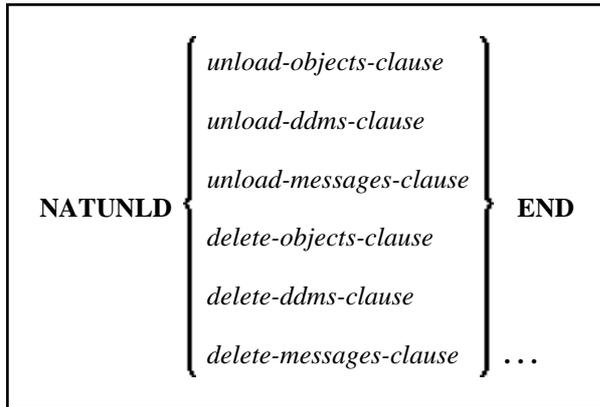
If the session parameter ID has been set to comma, use slashes (/) instead of commas as separators.

For better readability, synonymous keywords are omitted from the syntax diagrams below. An underlined portion of a keyword represents an acceptable abbreviation.

Valid synonyms are:

Keyword	Synonym
DDM	<u>V</u> IEW
END	STOP
	QUIT
	FIN
	.
FROM	FM
PASSWORD	PSW
UNLOAD	UNLD
WORKFILETPYE	<u>WFT</u> YPE

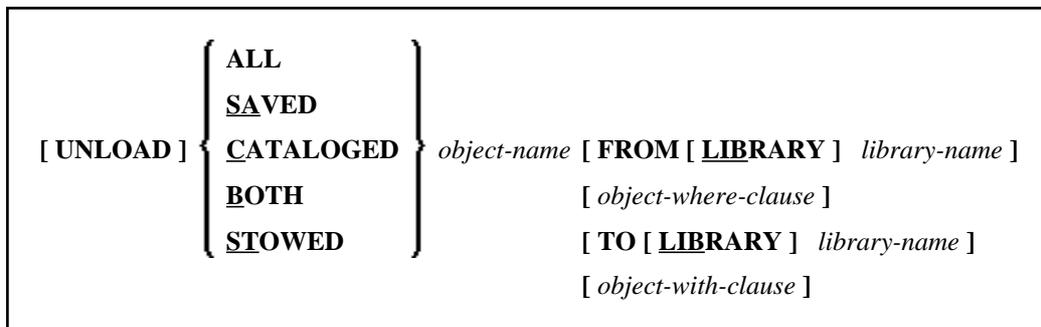
NATUNLD Syntax Diagrams



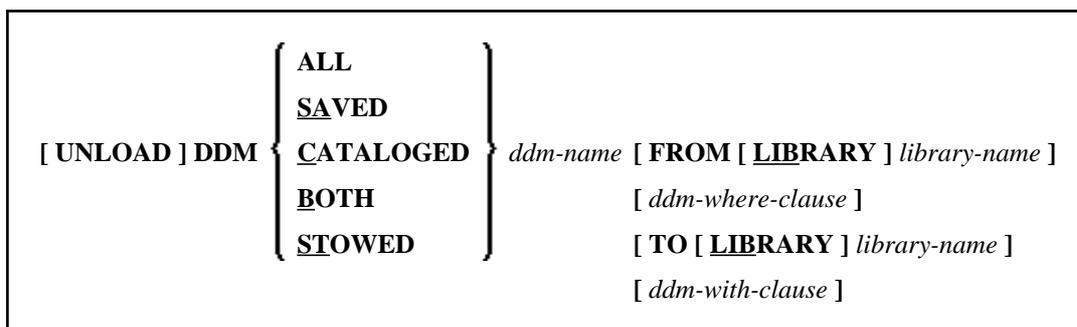
Below is information on:

- *unload-objects-clause*
- *unload-ddms-clause*
- *unload-messages-clause*
- *object-where-clause*
- *object-with-clause*
- *ddm-where-clause*
- *ddm-with-clause*
- *message-with-clause*
- *delete-objects-clause*
- *delete-ddms-clause*
- *delete-messages-clause*

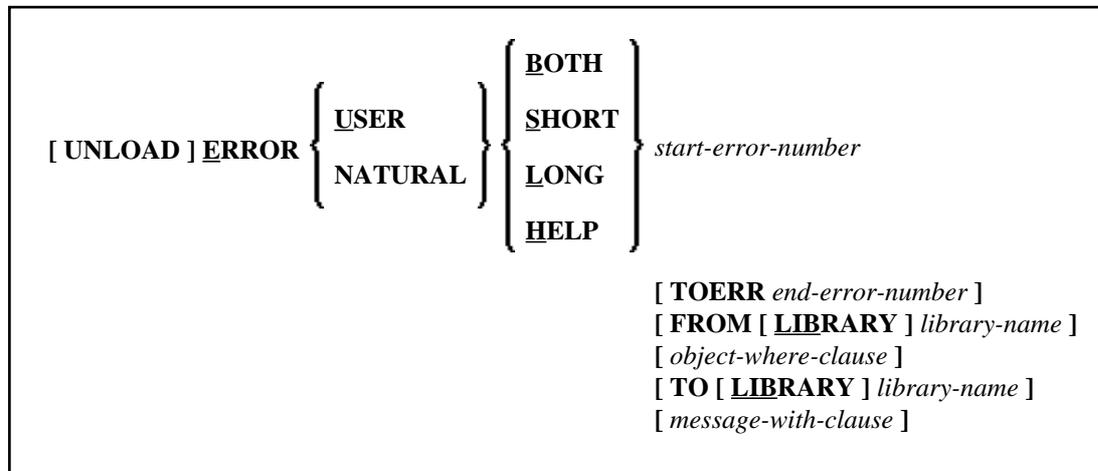
unload-objects-clause - for Programming Objects



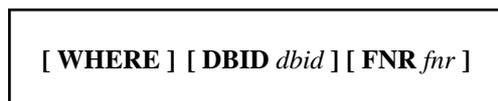
unload-ddms-clause - for DDMs



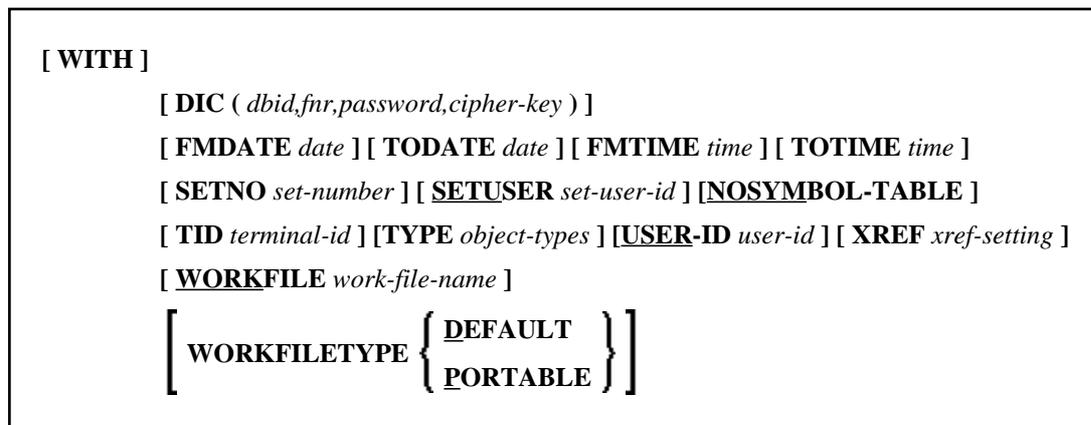
unload-messages-clause - for Error Messages



object-where-clause - for Programming Objects and Error Messages



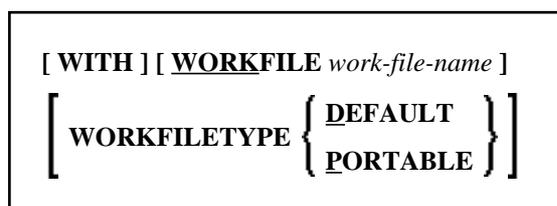
object-with-clause - for Programming Objects



ddm-where-clause



ddm-with-clause



message-with-clause

```
[ WITH ] [ LANGUAGE language-codes ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
[ WORKFILETYPE { PORTABLE } ]
```

delete-objects-clause - Delete Instructions for Programming Objects

```
DELETE { ALL
        SAVED
        CATALOGED } object-name FROM [ LIBRARY ] library-name
        [ WITH ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
[ WORKFILETYPE { PORTABLE } ]
```

delete-ddms-clause - Delete Instructions for DDMs

```
DELETE DDM { ALL
            SAVED
            CATALOGED } ddm-name FROM [ LIBRARY ] library-name
            [ WITH ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
[ WORKFILETYPE { PORTABLE } ]
```

delete-messages-clause - Delete Instructions for Error Messages

```
DELETE ERROR { USER } { BOTH
                       SHORT } start-error-number
                       [ LONG ]
[ TOERR end-error-number ]
[ FROM [ LIBRARY ] library-name ]
[ message-with-clause ]
```

Examples of Direct Commands for NATUNLD in Batch Mode

In this example, all saved and/or cataloged programming objects of type program whose names start with PGM are unloaded from the library TESTLIB.

```
NATUNLD
ALL PGM* FROM TESTLIB WITH TYPE P
END
```

In this example, NATUNLD is placed in a separate line, and commas instead of blanks are used as separator characters. Apart from that, the example is identical to the previous one.

```
NATUNLD
ALL,PGM*,FROM,TESTLIB,WITH,TYPE,P
END
```

In this example, all programming objects saved on or after the 1st May 2000 are unloaded from the library OLDLIB, which is located on Database 100 in File Number 160. The objects are to be loaded into the library NEWLIB.

This example also shows the use of the continuation indicator (%) for a parameter string that is longer than a single line.

```
NATUNLD
SAVED,*,FROM,OLDLIB,WHERE,DBID,100,FNR,160,%
FMDATE,00-05-01,TO,NEWLIB
END
```

In this example, all programming objects are unloaded from the library OLDLIB - together with their corresponding cross-reference data which are located on an FDIC file with File Number 20 on Database 10. The objects are to be loaded into the library NEWLIB.

```
NATUNLD
ALL,*,FROM,OLDLIB,DIC,(10/20//),TO,NEWLIB,%
WITH,XREF,Y
END
```

This example shows the specification of multiple unloading instructions in one command.

```
NATUNLD
ALL,PROG1,FROM,TESTORD,DBID,1,FNR,6,PSW,PASSWD,TO,ORDERSMAIN
CATALOGED,PGM*,FROM,TESTLIB,TO,PRODLIB,WITH,TYPE,PNS
SAVED,PROG1,TO,NEWLIB
END
```

NATUNLD Report

The NATUNLD utility generates (online and in batch mode) a report containing a list of the objects that were unloaded.

When you leave NATUNLD after the report has been displayed, a statistical report will be displayed listing the number of objects processed.

NATLOAD Utility

- Invoking NATLOAD
 - Functions
 - Parameters
 - Verifying Subroutines and Classes
 - Work File Name and Type
(see the section Introduction)
 - Executing NATLOAD in Batch Mode
 - NATLOAD Direct Command Syntax
 - NATLOAD Report
-

Invoking NATLOAD

 **To invoke the NATLOAD utility**

- In batch mode, enter a direct command (see also Executing NATLOAD in Batch Mode).
- Online, enter the system command NATLOAD.
The Load Functions menu is displayed.

Functions

From the Load Functions menu, invoke the following functions by entering a code, or a command in the command line, or by pressing a PF key:

Code	PF Key	Function	Explanation
A		Load All Objects, DDMs and Error Messages	Loads programming objects, DDMs and error messages.
L		Load Objects	Loads programming objects only.
D		Load DDMs	Loads DDMs only.
E		Load Error Messages	Loads error messages only.
S		Scan All Objects, DDMs and Error Messages	Scans programming objects, DDMs and error messages.
O		Scan Objects	Scans programming objects only.
V		Scan DDMs	Scans DDMs only.
M		Scan Error Messages	Scans error messages only
	PF10 (Files)	File Assignments for NATLOAD	See File Assignments in the section Introduction.

Below is information on:

- Scan
- Load

Scan

With the four Scan functions listed above, you can scan the work file to be loaded to find out what it contains, before you actually start to load its contents.

The range of programming objects, DDMs and/or error messages to be scanned can be narrowed down by the parameters you can specify on the Scan screens. The parameters for the Scan functions correspond to those of the Load functions, as described below.

Load

With the four Load functions listed above, you load Natural programming objects, error messages (and help texts), DDMs and delete instructions from a work file created by NATUNLD into system files:

- Programming objects are loaded into the Natural system files FNAT and FUSER. Objects in libraries whose names begin with SYS (except for the library SYSTEM) are loaded into the FNAT file; objects in all other libraries are loaded into the FUSER file. If the library SYSTEM is loaded from a Software AG installation dataset, it is loaded into the FNAT file, otherwise it is loaded into the FUSER file. See also File Assignments in the section Introduction.
- Natural error messages are loaded into the error messages subdirectories in the system files FNAT or FUSER. See also File Assignments in the section Introduction.
- DDMs are loaded like programming objects (see above). See also File Assignments in the section Introduction.

When you select a load function from the Load Functions menu, the processing screen for that function will be displayed.

On that processing screen, enter a function code and, if required, the parameters described below to start the loading process.

Note:

Some of the parameters apply only to programming objects or DDMs or error messages, and, therefore, do not appear on all processing screens.

Parameters

The Load Functions screen provides the following parameters:

Field	Explanation
Load Except	<p>N This field is not used (this is the default).</p> <p>Y Field specifications are negated and all programming objects/DDMs/error messages except the specified ones are loaded. This applies to the following fields:</p> <p style="padding-left: 40px;">DDM Name Date/Time From DDM DBID Date/Time To DDM FNR User ID Library Error Number from/to Object Name Language Codes Object Type</p> <p>Examples:</p> <p style="padding-left: 40px;">Load Except: Y All programming objects in all libraries except those in the Object Name: * library RPD are loaded. Library ...: RPD</p> <p style="padding-left: 40px;">Load Except: Y All DDMs except those whose names begin with AA are DDM Name ..: AA* loaded.</p> <p>Warning: For delete instructions, the Load Except field is ignored. See also the field Allow Delete below.</p>
Object Name	<p>The name of the programming object which is to be loaded. If you leave this field blank or enter an asterisk (*), all objects in the libraries specified under Library are loaded. To load a specific range of multiple objects, you can use the same range notations as described for Object Name in the section NATUNLD Utility.</p>
Number	<p>The maximum number of objects to be loaded. Every programming object, error message and DDM that meets the selection criteria is counted against this limit. If a saved object and a cataloged object of the same name are loaded one immediately after the other, they are counted as one object. If a short error message and a long error message of the same number and language code are loaded one immediately after the other, they are counted as one object. A delete instruction is counted as one object. When the specified number is reached, loading is terminated with an appropriate message.</p>
Library	<p>The name of the library to be loaded. If you leave this field blank or enter an asterisk (*), all libraries are loaded. To select a specific range of multiple libraries for loading, see Names and Ranges in the section Introduction.</p>

Field	Explanation
New Library	<p>If you leave this field empty, the programming objects are loaded into the target library as specified with the NATUNLD utility when the objects are unloaded. If you want the object to be loaded into a different library, you specify the name of that library in this field.</p> <p>Attention: If you have specified a range as library to be loaded, the new library name may be a range too, but the number of characters before the asterisk (*) must not exceed the number of characters before the asterisk in the Library field.</p>
Object Type	<p>The type(s) of programming objects to be loaded. If you leave this field blank or enter an asterisk (*), all object types of the object with the name specified under Object Name are loaded. For a selection list of possible object types, you either enter a question mark (?) in this field or press PF1 (Help).</p> <p>Note: Several programming object types can be specified at the same time and in any sequence. For example, specifying PAM loads programs, parameter data areas and maps.</p>
Xref Data	<p>Only applies with Predict Version 2.3 or above and if the Predict Active References feature is installed.</p> <p>In this field, you specify whether cataloged objects are to be loaded together with their corresponding cross-reference data:</p> <p>N Ignores any existing cross-reference data for the cataloged object being loaded. S Loads cataloged object and its cross-reference data (if any). Y Loads cataloged object and its cross-reference data only if cross-reference data exist. F Loads cataloged object and its cross-reference data only if cross-reference data exist and if the object is documented in Predict.</p> <p>Under Natural Security, the Cross-Reference option in the respective library profile determines whether objects without cross-reference data can be loaded at all: If the Cross-Reference option is set to YES or FORCE, objects without cross-reference data are ignored by NATLOAD, regardless of the setting of the Xref data field (see also the XREF system command in your Natural User's Guide).</p>
S/C Type	<p>The form of programming objects to be loaded:</p> <p>A Both saved and/or cataloged objects (this is the default). S Saved objects only. C Cataloged objects only.</p>
User ID	<p>If you enter a user ID in this field, only those objects are loaded which were saved under this user ID. To specify a range of user IDs, see Names and Ranges in the section Introduction.</p>
Date/Time From	<p>Only those objects are loaded which were saved or cataloged on or after/before this date and time.</p>
Date/Time To	<p>See Dates and Ranges in the section Introduction for further details.</p>

Field	Explanation
DDM Name	The name of the DDM to be loaded. If you leave this field blank or enter an asterisk (*), all DDMs are loaded. To load multiple DDMs, you can use the same range notations as described for Object Name in the section NATUNLD.
DDM DBID	Only DDMs with a specific database ID. Here the same applies as described for DDM DBID in the section NATUNLD Utility.
DDM FNR	Only DDMs with a specific file number. Here the same applies as described for DDM FNR in the section NATUNLD Utility.
Error Msg Type	The types of error messages to be loaded: N Natural system error messages. U User-defined error messages. A All (Natural and user-defined) error messages.
Short/Long/All	The types of error message texts to be loaded: A All (that is, short and long) error message texts. S Short message texts only. L Long message texts only. If you specify L, for each long error message, the corresponding short error message must be available. Otherwise, the long error message cannot be loaded.
Error Number	The first and last numbers of the error message range to be loaded.
Language Codes	The language code(s) of the error messages to be loaded. For valid language codes, see the system variable *LANGUAGE in the Natural Reference documentation.
Allow Delete	This field is a safeguard against the accidental deletion of programming objects/error messages/ DDMs in the target system files. If the work file contains delete instructions (see Delete Instructions for Programming Objects, Delete Instructions for DDMs and Delete Instructions for Error Messages in the section NATUNLD Utility), this field determines whether the delete instructions are to be processed or not: N Delete instructions are not processed (this is the default). Y Delete instructions are processed and the objects concerned will be deleted from the target system files. If this field is set to Y, the entries in the fields Load Except and New Library are ignored; all other fields are evaluated to determine the range of objects to be deleted.
PC Upload	Function not implemented.
Replace	Y Programming objects/error messages/DDMs which are already present on the Natural system file, are replaced by the newly loaded ones of the same names. N Programming objects/error messages/DDMs which are already present on the Natural system file are not replaced (this is the default).

Field	Explanation
Check Date	<p>Only applies, if Replace is set to Y. It allows you to replace only "old" objects:</p> <p>N All existing objects will be overwritten (this is the default).</p> <p>Y Existing objects will be overwritten depending on their time stamps: only objects which were saved/cataloged before the objects of the same names to be loaded will be overwritten.</p>

Verifying Subroutines and Classes

- Subroutine Names

Subroutine Names

When a cataloged object of type subroutine is loaded, NATLOAD also verifies the name of the subroutine it contains, that is, the name used in the DEFINE SUBROUTINE statement. The cataloged subroutine cannot be loaded if an object of type subroutine which contains a subroutine of the same name, already exists in the target library. The subroutine will then not be loaded; however, NATLOAD processing will continue.

Executing NATLOAD in Batch Mode

For the execution of NATLOAD in batch mode, use direct commands.

When you use a direct command, observe the following rules:

- The keyword NATLOAD can be placed in a line by itself.
- To separate the individual parameters of a direct command from one another, use either blanks or the input delimiter character (as defined by the session parameter ID; the default is comma).
- If the string of parameters is longer than a single line, you have to specify the character defined with the session parameter CF (default is %) at the end of the line to indicate continuation on the next line. This is only possible if the keyword NATLOAD is placed in a line by itself and the input delimiter character is used to separate the individual parameters from one another.

The syntax of the direct commands for loading/scanning is shown in the section NATLOAD Direct Command Syntax.

Condition Codes and User Exit in Batch Mode

NATLOAD processing in batch mode terminates with one of the following condition codes:

Code	Explanation
0	Loading executed successfully.
33	An object to be replaced could not be deleted from the buffer pool: If "Replace=Y" was specified, an object to be replaced will, if necessary, also be deleted from the buffer pool. If the object cannot be deleted from the buffer pool, the new object will be loaded anyway and NATLOAD processing will continue.
35	Duplicate subroutine names or class names/GUIDs were found.
37	Objects requested for loading could not be found on work file.
38	Natural Security error occurred. With Condition Code 38, the user exit LOADEX02 (source code L-S-EX02) will be invoked. It allows you to stop processing when a Natural Security error occurs during the LOAD function. To make it available, you have to stow it under the name LOADEX02, either in the library SYSUNLD or in one of its steplibs.
40	An error occurred; loading terminated.

With any condition code except 0 and 38, the user exit LOADEX01 will be invoked, if available. The source code of that user exit is provided under the name L-S-EX01 in the library SYSUNLD. To make it available, you have to stow it under the name LOADEX01, either in the library SYSUNLD or in one of its steplibs.

Note:

The names of the user exit's source and object are different to ensure that the overwriting of the source by an update installation does not affect the object.

NATLOAD Direct Command Syntax

- General Information
- Syntax Diagrams
- Examples of Direct Commands for NATLOAD in Batch Mode

General Information

The direct commands are available in batch mode and online. When you enter a direct command online, the entire command must fit into one command input line.

The individual items within a "with-...-clause" or "where-...-clause" can be specified in any sequence.

The values following the keyword DIC in the "object-with-clause" must be separated by commas. The commas must also be specified for omitted values; for example: DIC (10,,SECRET,12).

If the session parameter ID has been set to comma, use slashes (/) instead of commas as separators.

For error messages, the parameters FROM LIBRARY and NEWLIBRARY are only valid for user-defined messages, but not for Natural system messages.

For error messages, the default range of numbers is 1 to 9999.

For better readability, synonymous keywords are omitted from the syntax diagrams below. An underlined portion of a keyword represents an acceptable abbreviation.

Valid synonyms are:

Keyword	Synonym
DDM	<u>V</u> IEW
END	STOP
	QUIT
	FIN
	.
FROM	FM
WORKFILETPYE	<u>W</u> FTYPE

Syntax Diagrams

Below is information on:

- Loading/Scanning the Entire Work File
- Loading/Scanning Programming Objects only
- Loading/Scanning DDMs only
- Loading/Scanning Error Messages only
- Loading/Scanning Programming Objects, DDMs and Error Messages
- object-where-clause
- object-with-clause
- ddm-where-clause
- ddm-with-clause
- message-where-clause
- message-with-clause

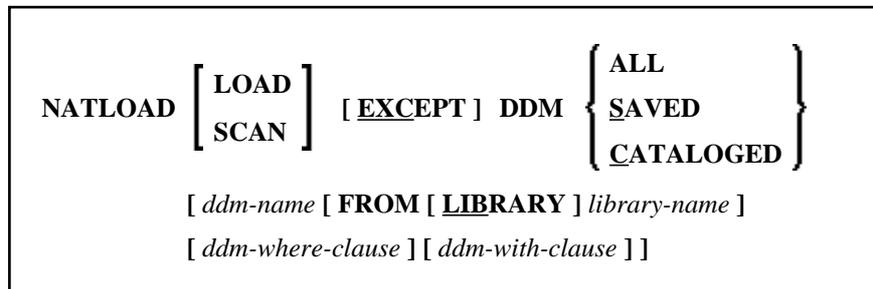
Loading/Scanning the Entire Work File

$\text{NATLOAD } \left\{ \begin{array}{l} \text{LOAD} \\ \text{SCAN} \end{array} \right\} [\text{REPLACE}] [\text{DELETE-ALLOWED}] [\text{WORKFILE } \textit{work-file-name}]$ $\left[\text{WORKFILETYPE } \left\{ \begin{array}{l} \text{DEFAULT} \\ \text{PORTABLE} \end{array} \right\} \right]$
--

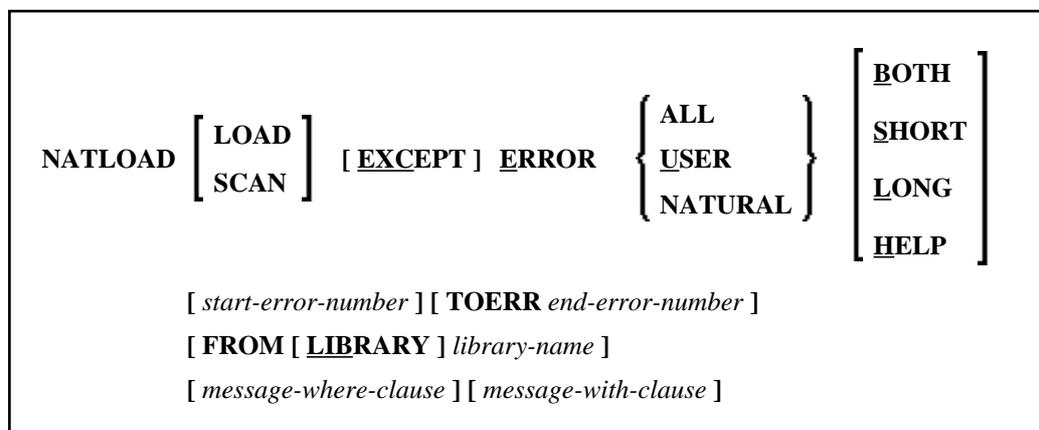
Loading/Scanning Programming Objects only

$\text{NATLOAD } \left[\begin{array}{l} \text{LOAD} \\ \text{SCAN} \end{array} \right] [\text{EXCEPT}] \left\{ \begin{array}{l} \text{ALL} \\ \text{SAVED} \\ \text{CATALOGED} \end{array} \right\}$ $[\textit{object-name} [\text{FROM} [\text{LIBRARY}] \textit{library-name}]$ $[\textit{object-where-clause}] [\textit{object-with-clause}]]$
--

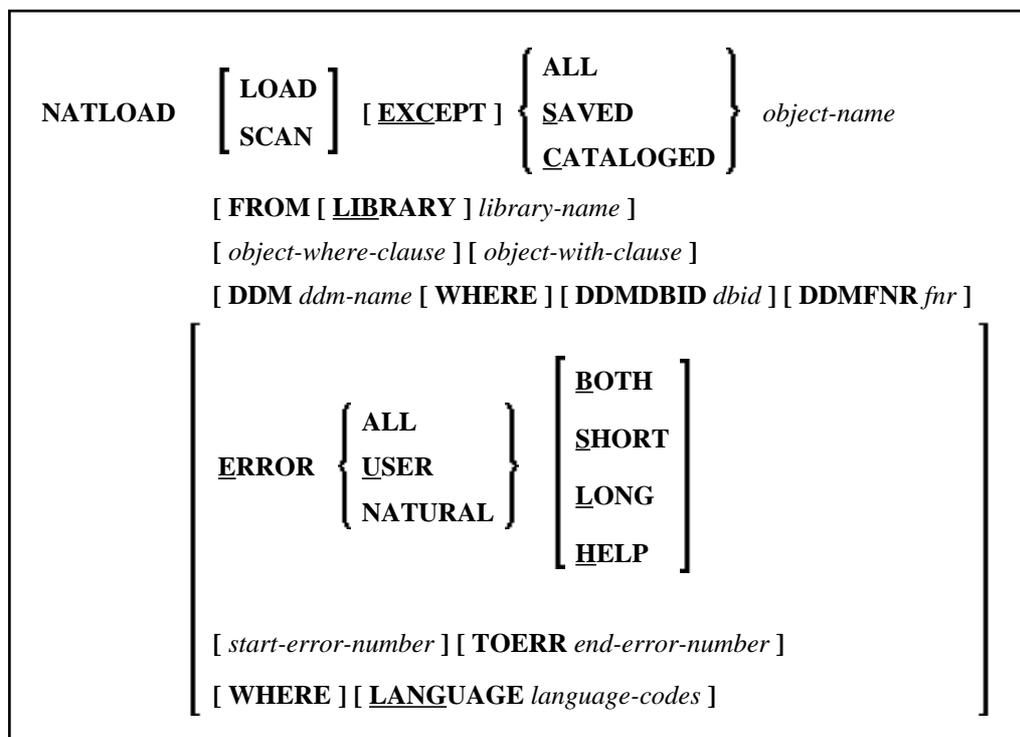
Loading/Scanning DDMs only



Loading/Scanning Error Messages only



Loading/Scanning Programming Objects, DDMs and Error Messages



object-where-clause

```
[ WHERE ] [ DBID dbid ] [ FNR fnr ]
      [ NEWLIBRARY library-name ]
```

object-with-clause

```
[ WITH ]
[ DELETE-ALLOWED ] [ DIC ( dbid, fnr, password, cipher-key ) ] [ NUMBER number ]
[ FMDATE date ] [ TODATE date ] [ FMTIME time ] [ TOTIME time ]
[ TID terminal-id ] [ TYPE object-types ] [ USER-ID user-id ] [ XREF xref-setting ]
[ REPLACE ] [ CHECK-DATE ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
[ WORKFILETYPE { PORTABLE } ]
```

ddm-where-clause

```
[ WHERE ] [ DDMDBID dbid ] [ DDMFNR fnr ]
```

ddm-with-clause

```
[ WITH ] [ DELETE-ALLOWED ]
[ NUMBER number ] [ REPLACE ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
[ WORKFILETYPE { PORTABLE } ]
```

message-where-clause

```
[ WHERE ]
[ DBID dbid ] [ FNR fnr ]
[ LANGUAGE language-codes ]
[ NEWLIBRARY library-name ]
```

message-with-clause

```
[ WITH ]
[ DELETE-ALLOWED ][ REPLACE ] [ WORKFILE work-file-name ]
[ WORKFILETYPE { DEFAULT } ]
                { PORTABLE }
```

Examples of Direct Commands for NATLOAD in Batch Mode

In this example, all programming objects with target library LIB1 are loaded from the work file.

```
NATLOAD
ALL * FM LIB LIB1
```

In this example, NATLOAD is placed in a separate line, and commas instead of blanks are used as separator characters. Apart from that, the example is identical to the previous one.

```
NATLOAD
ALL , * , FROM , LIB , LIB1
```

In this example, all programming objects whose names begin with MAINEX and with target library SYSEXT are loaded from the work file and into File Number 10 on Database 32.

```
NATLOAD
ALL , MAINEX * , FROM , LIBRARY , SYSEXT , WHERE%
FNR , 10 , DBID , 32
```

In this example, all programming objects whose names begin with A and all DDMs are loaded from the work file. Older programming objects/DDMs of the same names will be replaced in the target system files.

```
NATLOAD LOAD ALL A* REPLACE CHECK-DATE DDM *
```

In this example, all DDMs on the work file are scanned.

```
NATLOAD SCAN DDM
```

NATLOAD Report

The NATLOAD utility generates (online and in batch mode) a report containing information on the objects loaded.

When you leave NATLOAD after the report has been displayed, a statistical report will be displayed, listing the number of objects processed.

After that, another screen will be displayed, showing the parameters used for processing.