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**COMPASS VERSION 3  
REFERENCE MANUAL**

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**CDC® OPERATING SYSTEMS:  
NOS 2  
NOS/BE 1  
SCOPE 2**

# REVISION RECORD

<u>Revision</u>	<u>Description</u>
A (11/01/75)	Original Release.
B (03/05/76)	Manual revised to reflect a new feature and to clarify existing material. The new feature is: CP147, LDSET pseudo instruction. See list of effective pages.
C (03/25/77)	This reflects feature F7540, Model 176 support, feature CP154, Weak Externals, and feature CP161, Fast Dynamic Loader, as well as miscellaneous technical corrections, at PSR level 446.
D (03/31/78)	This revision documents COMPASS Version 3.5. New features include the DEBUG preset option and 8 lines/inch density on the load map.
E (10/31/78)	This revision documents COMPASS Version 3.6, PSR level 485. New features include the PD and PS control statement parameters and common common decks.
F (06/29/79)	This revision reflects the introduction of SEGLOAD common blocks. An error list parameter is added to the COMPASS call. Numerous minor technical corrections are made to section 12.
G (07/07/80)	This revision documents support for CYBER 170 Models 720, 730, 740, 750, and 760. An example program is included. Minor technical corrections are made throughout.
H (04/26/82)	Revised at PSR level 552 to document support of the CYBER 170 models 825, 835, and 855 Computer Systems, and to incorporate minor technical corrections. This is a complete reprint.
J (09/24/82)	Revised at PSR level 577 to document support of the CYBER 170 models 865 and 875 Computer Systems and to incorporate minor technical corrections.
K (10/21/83)	Revised at PSR level 599 to document support of the CYBER 170 Model 845 Computer System, support of PD, PS, and PW listing controls, and to incorporate minor technical corrections.
L (05/25/84)	Revised at PSR level 599 to document support of the CYBER 170 Model 815 and the CYBER 180 Computer Systems.
M (07/31/86)	Revised at PSR level 650 to document support of the CYBER 180 Models 840, 850, 860, and 990, reflects the introduction of changes to character data generation in 16-bit PP binaries, and incorporates minor technical and editorial changes.

REVISION LETTERS I, O, Q, AND X ARE NOT USED

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or use Comment Sheet in the back of this manual

## LIST OF EFFECTIVE PAGES

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## PREFACE

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The CONTROL DATA® COMPASS Version 3.6 Assembler provides the user with a versatile, extensive language for generation of object code to be loaded and executed on the central processor unit (CPU) or a peripheral processor (PP or PPU). The assembler executes on the following computer systems and operating systems:

NOS 2 for the CDC CYBER 180 Computer Systems; CYBER 170 Computer Systems; CYBER 70 Computer System models 71, 72, 73, and 74; and 6000 Computer Systems

NOS/BE 1 for the CDC CYBER 180 Computer Systems; CYBER 170 Computer Systems; CYBER 70 Computer System models 71, 72, 73, and 74; and 6000 Computer Systems

SCOPE 2 for the CDC CYBER 170 Computer System model 176, CYBER 70 Computer System model 76, and 7600 Computer Systems

The CYBER 170 Computer Systems include the following 800 Series models: 815, 825, 835, 845, 855, 865, and 875. The CYBER 180 Computer Systems include the following 800 Series models: 810, 830, 835, 840, 845, 850, 855, 860, and 990. The CYBER 170 models 835, 845, and 855 are the same machines as the CYBER 180 models 835, 845, and 855. References in the text to 800 Series models usually do not distinguish between CYBER 170 and CYBER 180.

The CDC CYBER 170 Computer System models 720 and 730 have unified processors and use the instructions noted in this publication for computer models with a Compare/Move Unit (CMU) such as the CYBER 170 Computer System model 172. Models 810, 825, 830, 835, 845, 850, 855, and 860 also support the compare/move instructions through simulation.

The CDC CYBER 170 Computer System models 740, 750, 760, 865, 875, and 990 have functional units and use instructions noted in this publication for computer models with functional units such as the CYBER 170 Computer System model 175.

The reader is assumed to be familiar with a Control Data computer and operating system, and with assemblers in general.

### NOTE

Avoid continued use of COMPASS in creating application programs when possible. COMPASS and other machine-dependent languages can complicate migration to future hardware and software systems. Software mobility will be restricted by continued use of COMPASS for stand-alone programs, COMPASS subroutines embedded in programs using higher-level languages, and COMPASS owncode routines used with CDC standard products.

In this manual, the acronym ECS refers to all forms of extended memory unless otherwise noted, except in the context of a multiframe environment or distributive data path (DDP) access, in which case, models 176, 810, 815, 825, 830, 835, 840, 845, 850, 855, 860, 865, 875, and 990 are excluded.

Extended memory for the CYBER 170 Model 176, the CYBER 70 Model 76, and the 7600 is large central memory (LCM) or large central memory extended (LCME). Extended memory for models 810, 815, 825, 830, 835, 840, 845, 850, 855, 860, 865, 875, and 990 is unified extended memory (UEM). Extended memory

for models 865 and 875 can also include extended core storage (ECS) or extended semiconductor memory (ESM). Extended memory for all other CYBER 170, CYBER 70, and 6000 Series Computer Systems is extended core storage (ECS) or extended semiconductor memory (ESM).

The CYBER 170 Model 176 supports direct LCM and LCME transfer instructions, as described in chapter 8. LCM and LCME transfers initiate an error exit, not a half exit, as noted in ECS/UEM Instructions, chapter 8.

Hardware descriptions and further programming information for the various forms of extended memory can be found in the appropriate hardware reference manuals.

In this manual, numbers occurring in text are decimal unless otherwise noted. Lowercase letters in formats depict variables. The examples assume that assembler numeric mode is decimal and that character mode is display code unless otherwise noted. In examples, statements generated by the assembler as a result of a call or a substitution are shown in shaded print.

General explanations of COMPASS concepts have been limited to the initial pages of each chapter or section, whenever possible. Subsequent material has been presented in a concise manner to aid in rapid access to reference information. In keeping with this concept, instruction indexes have been included inside the front and back covers.

Additional information essential to programming in the COMPASS environment can be found in the publications listed in this preface. The publications are listed alphabetically within groupings that indicate their approximate importance to readers of this manual. Applicable operating systems are also indicated.

The applications programmer will need the CYBER Record Manager Basic Access Methods and Advanced Access Methods manuals for information about the macros needed to define, access, and manipulate files. Information necessary to create and manipulate program structures can be found in the appropriate Loader reference manual (CYBER Loader for the NOS and NOS/BE operating systems, and the SCOPE 2 Loader for the SCOPE 2 operating system).

In addition to the above, the systems programmer will need the appropriate operating system manual, either the NOS 1 Reference Manual or the NOS 2 Reference Set, Volume 4, Program Interface, to obtain information about system macros.

The Software Publications Release History serves as a guide to the revision level of software documentation which corresponds to the Programming System Report (PSR) level of installed site software.

The following manuals are of primary interest:

<u>Publication</u>	<u>Publication Number</u>	<u>NOS 2</u>	<u>NOS/BE 1</u>	<u>SCOPE 2</u>
COMPASS Version 3 Instant	60492800	X	X	X
CYBER Loader Version 1 Reference Manual	60429800	X		
CYBER Record Manager Advanced Access Methods Version 2 Reference Manual	50499300	X	X	
CYBER Record Manager Basic Access Methods Version 1.5 Reference Manual	60495700	X	X	

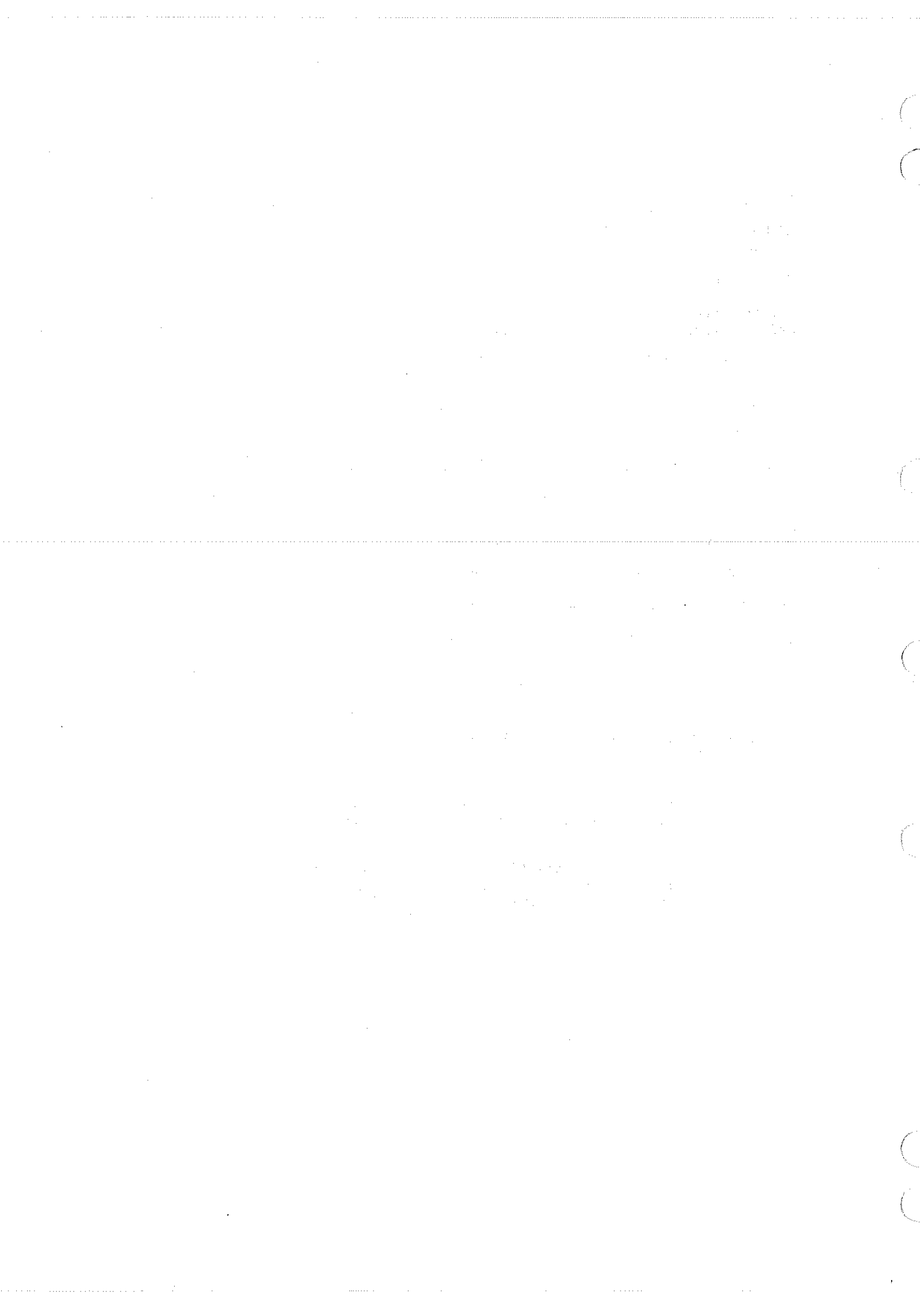
<u>Publication</u>	<u>Publication Number</u>	<u>NOS 2</u>	<u>NOS/BE 1</u>	<u>SCOPE 2</u>
NOS Version 2 Reference Set, Volume 4 Program Interface	60459690	X		
NOS/BE 1 Reference Manual	60493800		X	
SCOPE 2 Loader Version 2 Reference Manual	60454780			X
SCOPE 2 Reference Manual	60342600			X

The following manuals are of secondary interest:

<u>Publication</u>	<u>Publication Number</u>	<u>NOS 2</u>	<u>NOS/BE 1</u>	<u>SCOPE 2</u>
CYBER Interactive Debug Version 1 Reference Manual	60481400	X	X	
Modify Version 1 Reference Manual	60450100		X	
NOS Version 2 Diagnostic Index	60459390	X		
NOS/BE Version 1 Diagnostic Index	60456490		X	
NOS Version 2 Manual Abstracts	60485500	X		
NOS/BE Version 1 Manual Abstracts	84000470		X	
Software Publications Release History	60481000	X	X	X
Update Version 1 Reference Manual	60449900		X	X

CDC manuals can be ordered from Control Data Corporation, Literature and Distribution Services, 308 North Dale Street, St. Paul, Minnesota 55103.

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or parameters.



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