# IBM

## Systems Reference Library

# IBM 1401 and 1460 Bibliography

This bibliography lists available reference literature applicable
to the installation and operation of the IBM 1401 and 1460
Data Processing Systems, as well as other publications of
general interest to the system user. Information about this
literature is current as of January 1, 1970.
Major sections of the bibliography are:

Part 1 — a listing of publications by subject;

Part 2 — a listing by machine type number; and

Part 3 — a listing by publication form number.

Part 1 identifies the current revision level of each publication
and includes the form numbers of applicable Technical
Newsletters. Part 3 contains a brief description of each
publication.

# Systems Reference Library

The Systems Reference Library (SRL) is issued for each major IBM data processing system. The SRL contains reference literature needed to plan, program, install, and operate the system. In addition, the *Bibliography of Data Processing Techniques*, GF20-8172, lists selected IBM technique-oriented publications that are applicable to many systems.

## Bibliography

The bibliography lists applicable publications and related materials by subject, machine type number, and order number, and describes each publication briefly. This bibliography can be useful in selecting items of interest to your installation and in keeping abreast of other items that may be useful in the future.

## File Numbers of Publications

The first page of each SRL publication shows the title, order number, and file number. The file number is in two parts: the first identifies the system or component discussed (usually by machine or system number); the second gives the code number of the subject matter of the publication.

For publications associated with one or two libraries, the first part of the file number is the system type (e.g., 1401/1460-). When the publication is included in more than two libraries, the component type number (e.g., 1311-, 1403-) is used, if applicable. In other cases, GENL-(General) is used.

The second part of the file number is the subject code, which designates the subject category; this code may be useful in designating a filing sequence. Code 15, for example, appears on publications relating to physical planning specifications, code 33 on publications relating to IBM sort and merge programs for the system, and subject code 80 on installation supplies, such as coding forms and physical planning templates.

Other publications of interest to a system user are listed under code 85 (Reference Cards), 90 (Education Literature), and 99 (Supplementary Literature).

In the bibliography, subject codes appear in the subject listing (*Part 1*) and in the upper right corner of each publication description (*Part 3*).

## Technical Newsletters

Additions and other modifications to SRL publications are distributed as Technical Newsletters (TNL's). The file number and order number of the publication to which the TNL applies, as well as previously issued TNL's, are identified on the TNL title page. These TNL's are incorporated into base publications as such publications are reprinted.

## IBM Programming Systems

Information about IBM programming systems available, including ordering information, is found in the *Catalog of Programs* for the system under subject code 20.

This section of *Part 1* lists current ɪʙᴍ 1401 and 1460 marketing publications and associated technical newsletters by subject code. To assist in filing, sʀʟ publications have the subject code on the front cover as part of the file number. Most 1401 machine and programming publications are also applicable to the 1460.

| Subject Code | | Order Number | Technical Newsletter |
|---|---|---|---|
| **00** | **General Information** | | |
| | 1401 and 1460 Bibliography | GA24-1495-6 | |
| | 1401 System Summary | GA24-1401-1 | GN24-0439 |
| | | GA24-1401-2 | |
| | 1401G System Summary | GA24-3165-1 | |
| | 1401H System Summary | GA24-3476-0 | |
| | 1460 System Summary | GA24-1496-1 | GN24-0441 |
| | 1401 Configurator | GA24-1491-2 | |
| | 1401 Model H Configurator | GA24-3494-0 | |

## Machine System

| Subject Code | | Order Number | Technical Newsletter |
|---|---|---|---|
| **01** | **Basic Reference Material** | | |
| | System Operation Reference Manual ɪʙᴍ 1401 and 1460 | GA24-3067-2 | |
| | Miscellaneous Input/Output Instructions ɪʙᴍ 1401 and 1460 | GA24-3068-0 | GN24-0195 |
| | | GA24-3068-1 | GN24-0363 |
| | | GA24-3068-2 | GN24-0393 |
| | | GA24-3068-3 | |
| | Tape Input/Output Instructions | GA24-3069-0 | GN24-0137 |
| | | GA24-3069-1 | |
| | | GA24-3069-2 | |
| | Disk Storage Input/Output Instructions | GA24-3070-1 | |
| | | GA24-3070-2 | |
| | 1401 Data Processing System Operator's Guide | GA24-3144-2 | |
| | 1401 and 1460 Instruction and Timing Summary | GA24-6447-1 | GN24-0284 |
| | | GA24-6447-2 | |
| | 1401 Data Flow | GG24-1447-0 | |
| | Standard BCD Interchange Code | GJ22-6690-2 | |
| **03** | **Input/Output** | | |
| | 1011 Paper Tape Reader | GA26-5754-0 | GN26-0069 |
| | 1012 Tape Punch | GA26-5776-0 | GN26-0059 |
| | | | GN26-0074 |
| | | GA26-5776-1 | |
| | 1219 Reader Sorter, 1419 Magnetic Character Reader | GA24-1499-5 | |
| | 1219 Reader Sorter Model 32, 1419 Magnetic Character Reader Model 32 (World Trade Only) | GA19-0004-0 | |
| | 1231 and 1232 Optical Mark Page Readers | GA21-9012-6 | GN21-0094 |
| | 1285 Optical Reader | GA24-3256-3 | |

| | Order Number | Technical Newsletter |
|---|---|---|
| 1401 Input/Output Control System (on Tape), Specifications and Operating Procedures | GC24-1462-2 GC24-1462-3 | GN24-0268 |
| Input/Output Control System (on Disk) for 1401-1311: Specifications | GC24-1489-2 GC24-1489-3 | GN24-0200 |
| Direct Data Channel IOCS for 1401, 1440, and 1460: Specifications (Communications IOCS) | GC24-3025-3 | |
| IOCS Specifications 1460-1448: Specifications (Communications IOCS) | GC24-3047-2 | |
| Communications IOCS for 1401 and 1460 Operating Procedures (1448/Direct Data Channel) | GC24-3174-1 | |
| Input/Output Control Program Specifications 1401, 1440, and 1460 with 1285 Optical Reader | GC24-3237-1 | GN21-5017 |
| Communication Input/Output Control System Specifications: IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel | GC24-3241-2 | GN21-0057 |
| Input/Output Control System (on Disk) Operating Procedures 1401 and 1460 | GC24-3298-0 | |
| Communications Input/Output Control Operating Procedures: IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel | GC24-3325-3 | |
| On-line Testing: IBM 1401, 1440, and 1460 | GC24-3341-0 | |

## 32    Utility Programs

| | Order Number | Technical Newsletter |
|---|---|---|
| Utility Programs for 1401 Equipped with the 7710 Data Communication Unit | GC22-6777-0 | |
| Disk Utility Programs for 1401-1301/1311: Specifications | GC24-1484-2 GC24-1484-3 | GN21-0054 GN21-5001 GN24-0287 |
| Disk Utility Programs for 1401-1301/1311: Operating Procedures | GC24-3105-2 GC24-3105-3 | GN24-0296 |
| 1401 Hypertape Utility Programs Operating Procedures | GC24-3132-0 | |
| Tape Utility Programs with 120-Character Label Capability for 1401 and 1460: Specifications and Operating Procedures | GC24-3156-1 | GN24-0213 |
| Multiple Tape Utility Program (Incorporating 120-Character Labels) Specifications and Operating Procedures: IBM 1401 and 1460 | GC24-3273-0 | GN24-0215 |
| Programs for 1401 Card Systems Specifications | GJ24-0209-2 | |
| Utility Programs for 1401 Tape Systems: Specifications | GJ24-1411-1 GJ24-1411-2 GJ24-1411-3 | GN21-0030 |
| Multiple Utility Programs for 1401 Tape Systems: Specifications | GJ24-1428-2 | |
| 1401-1009 Utility Program: Preliminary Specifications | GJ24-1463-0 | |
| 1401-1012 Tape Punch Routines | GJ24-1485-0 | |

Disk File Organization Routines Specifications 1401, 1440, and 1460 (1311 and 1301) .......................................... GC24-3185-1     GN24-0252
GC24-3185-2

## 37    Automatic Testing Program

Autotest for 1401 and 1460 with 1311: Specifications and Operating Procedures ................................ GC24-3195-0     GN24-0204
GC24-3195-1     GN24-0272
GC24-3195-2

Autotest for the 1401: Specifications and Operating Procedures ............................................. GF20-0234-1     GN24-0120
GF20-0234-2

## 48    Miscellaneous Programs

Programming for 1418 and 1428 Optical Readers .................... GC24-1091-1
Standard Labeling Procedure for the 1311 Disk Storage Drive ..................................................................... GC24-3012-0
IBM 1401/1460 or 1440 Operating System Computer Assisted Instruction ...................................... GC24-3253-1
1401/1440/1460-1026 and 1440-1448 Operating Systems Computer Assisted Instruction Author and Proctor Manual GC24-3384-1
1401/1440/1460-1026 and 1440-1448 Operating System Computer Assisted Instruction Student Manual .................. GC24-3385-1
1401 Peripheral Integrated Processing System for Use with 7000 Series Data Processing Systems ..................................... GJ28-0238-0

## 80    Installation Supplies

These aids in planning and operating an IBM 1401 or 1460 system do not have subject code (80) printed on the form. These installation supplies are arranged in this section as they relate to the subject code listing in *Part 1*.

*Basic Machine Reference Material (01)*

1401, 1410, 1440, 1460 Storage Layout ..................................... GX24-6438-4
GX24-6438-5
1401 Console Sheet ................................................................. GX24-6587-0
GX24-6587-1
Operating Instruction Sheet — IBM 1401, 1440, and 1460 ...... GX24-6588-1
GX24-6588-2

*Input/Output (03)*

Printer Spacing Chart — 6 Lines per Inch .............................. GX20-1776-0
Printer Spacing Chart — 8 Lines per Inch .............................. GX20-1778-0
1230, 1231, 1232 Spacing Chart (Test Scoring) 5 Words per Inch ................................................................. GX20-8040-0
1230, 1231, 1232 Spacing Chart (Test Scoring) 4 Words per Inch ................................................................. GX20-8041-1
1230, 1231, 1232 Spacing Chart (Test Scoring) 3 Words per Inch ................................................................. GX20-8042-0
1230, 1231, 1232 Spacing Chart (Non Test Scoring) 5 Words per Inch ................................................................. GX20-8043-0

| | Order Number |
|---|---|
| 1230, 1231, 1232 Spacing Chart (Non Test Scoring) 4 Words per Inch | GX20-8044-0 |
| 1230, 1231, 1232 Spacing Chart (Non Test Scoring) 3 Words per Inch | GX20-8045-0 |
| General Purpose Card Punching Form | GX20-8096-0 |
| 1418/1428 Optical Readers Document Design and PDS Timing Chart | GX24-3039-1 |
| 1440, 1460 Console Status Sheet | GX24-3100-0 |
| | GX24-3100-1 |
| 1445 Printer Spacing Chart | GX24-3448-0 |

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*Physical Planning Specifications (15)*

| | |
|---|---|
| Installation Planning Schedule | GX20-8010-0 |
| 7740 Physical Planning Templates | GX22-6795-0 |
| 1460 Physical Planning Template | GX24-3140-1 |
| 1401 Physical Planning Template | GX24-6482-5 |

*General Programming Systems (20)*

| | |
|---|---|
| Proportional Record Layout and Format Form | GX20-1702-0 |
| Scheduling Control Form — Programming Progress Chart | GX20-8011-0 |
| Flowcharting Template | GX20-8020-0 |
| AUTOCHART Flowchart Work Sheet | GX20-8021-2 |
| 1401, 1440, 1460 Program Chart | GX24-6437-2 |
| | GX24-6437-3 |
| 1401 Timing Estimate Sheet | GX24-6562-0 |

*Symbolic Assembly Systems (21)*

| | |
|---|---|
| 1401 Symbolic Programming System Coding Sheet | GX24-1152-3 |
| 7740 Assembly Program Coding Form | GX28-8147-0 |

*Autocoder (22)*

| | |
|---|---|
| 1401, 1410, and 1440 Autocoder Coding Sheet | GX24-1350-6 |
| 1401, 1410, 1440 Library Coding Form | GX24-6568-1 |

*Cobol (24)*

| | |
|---|---|
| Cobol Program Sheet | GX28-1464-1 |

*Fcrtran (25)*

| | |
|---|---|
| Fortran Coding Form | GX28-7327-6 |

*Report Program Generator (28)*

| | |
|---|---|
| 1401 and 1410 Report Program Generator, Input Specifications | GX24-1336-1 |
| 1401 and 1410 Report Program Generator, Data Specifications | GX24-1337-2 |
| 1401 and 1410 Report Program Generator, Calculation Specifications | GX24-1338-3 |
| 1401 and 1410 Report Program Generator, Format Specifications | GX24-1339-1 |

| | | |
|---|---|---|
| Fargo Report Specifications, Phases 4 and 1 .......................... | GX24-6556-0 | |
| Fargo Report Specifications, Phase 1 .................................... | GX24-6557-0 | |
| Fargo Report Specifications, Phase 2 .................................... | GX24-6558-1 | |
| Fargo Report Specifications, Phase 3 .................................... | GX24-6559-1 | |
| Report Program Generator: Data Specifications, | | |
|    1401, 1440, 1460 ......................................................... | GX24-6591-0 | |
| | GX24-6591-1 | |
| Report Program Generator: Calculation Specifications | | |
|    1401, 1440, 1460 ......................................................... | GX24-6592-1 | |
| Report Program Generator: Format Specifications | | |
|    1401, 1440, 1460 ......................................................... | GX24-6593-0 | |
| | GX24-6593-1 | |

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*Sort-Merge (33)*

| | |
|---|---|
| Control Card Formats for Sort 2, Merge 2, Sort 4, | |
|    Sort 7, and Merge 7 with 1401 and 1460 .......................... | GX24-3245-0 |

*Miscellaneous Programs (48)*

| | |
|---|---|
| 1401 Autotest Autocoder Control Card and | |
|    Patch Coding Sheet ................................................. | GX28-1585-0 |
| 1401 Autotest Tape and RAMAC File Generation | |
|    Data Sheet ............................................................... | GX28-1586-0 |
| Decision Logic Coding Form ...................................... | GX20-8024-1 |

**85**    **Reference Cards**

| | |
|---|---|
| 1230, 1231, 1232 Document Marking Instructions .................... | GX21-9021-0 |
| 1401 Report Program Generator ........................................... | GX24-1709-0 |
| COBOL ............................................................................... | GX28-1520-0 |

**90**    **Education Literature**

This section lists publications and materials that are used in educational programs for the IBM 1401 and 1460. See abstract for description and availability.

| | |
|---|---|
| 1401 Programmer's Guide .......................................... | GC24-1494-1 |
| | GC24-1494-2 |
| 1401 Basic Programming Course Description .......................... | GR20-9000-0 |
| | GR20-9000-1 |
| 1401 Accelerated Basic Programming Course Description .... | GR20-9001-1 |
| | GR20-9001-2 |
| 1401 Console Operator — Course Description .......................... | GR20-9010-3 |
| 1401 Fargo Course Description ............................................... | GR20-9012-0 |
| | GR20-9012-1 |

*Subject*
*Code*

*Order*
*Number*

*Technical*
*Newsletter*

| | | |
|---|---|---|
| 1401 System Planning Course Description ................................ | GR20-9013-2 | |
| 1401 Advanced Training Course Description .......................... | GR20-9029-1 | |
| 1401 Autotest Course Description ............................................. | GR20-9030-1 | |
| 1401 Installation Planning Course Description ....................... | GR20-9031-1 | |
| 1401 Programming System Course Description ....................... | GR20-9032-1 | |
| 1401 RPG Course Description ...................................................... | GR20-9033-1 | |
| 1401-1311 Disk Storage Programming Course Description .... | GR20-9034-2 | |
| 1401 Basic SPS Programmed Instruction Course Description | GR20-9054-3 | |
| 1401 Basic Programming Autocoder, Programmed | | |
|     Instruction Course Description .............................................. | GR20-9055-2 | |
| | GR20-9055-3 | |
| 7740 Communication Control Package Course Description .. | GR20-9062-0 | |

## 99    *Supplementary Information*

| | | |
|---|---|---|
| IBM Marketing Publications KWIC Index ................................ | G320-1621-22 | |
| Bibliography of Data Processing Techniques .......................... | GF20-8172-5 | GN20-1002.25 |
| Bibliography of Application Publications Finance Industries | GH20-0507-0 | GN20-1077.1 |
| Bibliography of Application Publications Distribution | | |
|     Industries ....................................................................................... | GH20-0522-0 | GN20-1853 |
| Bibliography of Application Publications Public | | |
|     Utility Industries ...................................................................... | GH20-0530-0 | GN20-1866 |
| Bibliography of Application Publications Printing | | |
|     and Publishing Industries .......................................................... | GH20-0531-0 | GN20-1867 |
| Bibliography and Application Publications | | |
|     Insurance Industries ................................................................ | GH20-0536-0 | GN20-1869 |

This part of the *IBM 1401 and 1460 Bibliography* cross-indexes reference material on specific system components with machine type number or feature name. The *IBM 1401 Systems Summary* (GA24-1401), *IBM 1401G Systems Summary* (GA24-3165), *IBM 1401H Systems Summary* (GA24-3476), and *IBM 1460 Systems Summary* (GA24-1496), which contain summaries of machine units, are not included in this index. Consult the *IBM 1401 Configurators* (GA24-1491 and GA24-3494) for the type number of each machine unit and the name of a special feature.

| Machine | | Subject Code | Order Number |
|---|---|---|---|
| 729 | Magnetic Tape Unit | 01 | GA24-3069 |
| | | 05 | GA22-6589 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA22-6643 |
| | | | |
| 1009 | Data Transmission Unit | 09 | GA24-1039 |
| | | 15 | GA24-1493 |
| | | 19 | GA24-1065 |
| | | | |
| 1011 | Paper Tape Reader | 01 | GA24-3069 |
| | | 03 | GA26-5754 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | | |
| 1012 | Tape Punch | 01 | GA24-3069 |
| | | 03 | GA26-5776 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | | |
| 1026 | Data Transmission Unit | 09 | GA24-3244 |
| | | 15 | GA24-3233 |
| | | | |
| 1231 and 1232 | Optical Mark Page Readers | 01 | GA24-3068 |
| | | 03 | GA21-9012 |
| | | 13 | GA21-9065 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA21-9020 |
| | | | |
| 1285 | Optical Reader | 01 | GA24-3068 |
| | | 03 | GA24-3256 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |

| Machine | | Subject Code | Order Number |
|---|---|---|---|
| 1301 | Disk Storage Models 11, 12, 21, and 22 ................ | 01 | GA24-3070 |
| | | 07 | GA22-6784 |
| | | 07 | GA24-3157 |
| | | 15 | GA24-1493 |
| 1311 | Disk Storage Drive ................................ | 01 | GA24-3070 |
| | | 07 | GA26-5756 |
| | | 07 | GA26-5991 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA26-5713 |
| 1401 | Processing Unit ................................ | 01 | GA24-3067 |
| | | 01 | GA24-3144 |
| | | 01 | GA24-6447 |
| | | 01 | GG24-1477 |
| | | 13 | GA24-3315 |
| | | 15 | GC24-1404 |
| | | 19 | GA24-1424 |
| 1402 | Card Read-Punch ................................ | 01 | GA24-3067 |
| | | 13 | GA24-3071 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA31-1400 |
| 1403 | Printer ................................ | 01 | GA24-3067 |
| | | 03 | GA24-3073 |
| | | 03 | GA24-3205 |
| | | 03 | GA24-3488 |
| | | 13 | GA24-3071 |
| | | 13 | GL24-3102 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA24-1431 |
| 1404 | Printer Model 2 ................................ | 01 | GA24-3067 |
| | | 01 | GA24-3068 |
| | | 03 | GA24-1446 |
| | | 15 | GC24-1404 |
| | | 19 | GA24-3356 |
| 1405 | Disk Storage Unit Models 1 and 2 ................ | 01 | GA24-3070 |
| | | 07 | GA24-3085 |
| | | 15 | GC24-1404 |
| 1406 | Storage Unit Models 1, 2, and 3 ................ | 01 | GA24-3068 |
| | | 15 | GC24-1404 |

| Machine | | *Subject* Code | *Order* Number |
|---|---|---|---|
| 1407 | Console Inquiry Station Model 1 | 01 | GA24-3068 |
| | | 15 | GC24-1404 |
| 1409 | Console Auxiliary | 15 | GC24-1404 |
| 1412 | Magnetic Character Reader Model 1 | 01 | GA24-3068 |
| | | 03 | GA24-1421 |
| | | 13 | GA24-3036 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 1418 | Optical Character Reader Model 1, 2, or 3 | 01 | GA24-3068 |
| | | 03 | GA24-1452 |
| | | 03 | GA24-1473 |
| | | 13 | GA24-3081 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 1419 | Magnetic Character Reader | 01 | GA24-3068 |
| | | 03 | GA19-0004 |
| | | 03 | GA24-1499 |
| | | 03 | GC20-1607 |
| | | 13 | GA24-3036 |
| | | 13 | GA24-3342 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 1428 | Alphameric Optical Reader | 01 | GA24-3068 |
| | | 03 | GA24-1452 |
| | | 03 | GA24-1473 |
| | | 03 | GA24-3059 |
| | | 13 | GA24-3081 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 1441 | Processing Unit Model B | 01 | GA24-3067 |
| | | 13 | GA24-3315 |
| | | 15 | GA24-1493 |
| 1445 | Printer Models 1 and N1 | 01 | GA24-3068 |
| | | 03 | GA24-3120 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 1447 | Console | 01 | GA24-3067 |
| | | 03 | GA24-3031 |
| | | 13 | GA24-3071 |
| | | 15 | GC24-1404 |
| | | 15 | GA24-1493 |
| | Model 3 OEMI | 19 | GA24-3169 |

| Machine | | Subject Code | Order Number |
|---------|---|---|---|
| 1448 | Transmission Control Unit | 09 | GA24-3010 |
| | | 09 | GA24-3030 |
| | | 15 | GA24-3233 |
| | | 19 | GA24-3192 |
| 1460 | Processing Unit | 01 | GA24-3067 |
| | | 01 | GA24-6447 |
| | | 13 | GA24-3315 |
| | | 15 | GA24-1493 |
| | | 19 | GA24-3199 |
| 1461 | Input/Output Control Models 1, 2, and 3 | 01 | GA24-3067 |
| | | 15 | GA24-1493 |
| 1462 | Printer Control Unit | 01 | GA24-3067 |
| | | 15 | GA24-1493 |
| 7330 | Magnetic Tape Unit Model 1 | 01 | GA24-3069 |
| | | 05 | GA22-6589 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| | | 19 | GA22-6619 |
| 7340 | Hypertape Drive Model 2 | 01 | GA24-3069 |
| | | 05 | GA24-1470 |
| | | 15 | GA24-1493 |
| | | 15 | GC22-6674 |
| | | 15 | GC24-1404 |
| 7641 | Hypertape Control | 15 | GA24-1493 |
| | | 15 | GC24-1404 |
| 7710 | Data Communication Unit | 15 | GC24-1404 |
| | | 19 | GA22-6818 |
| 7740 | I/O Instructions for 7740 Communication Control System and 1401, 1440, 1460 | 01 | GA24-3068 |
| | | 09 | GA22-6753 |
| | | 09 | GA27-2705 |
| | | 19 | GA22-6802 |
| 7770 | Audio Response Unit | 01 | GA24-3068 |
| | | 15 | GA24-1493 |
| | | 15 | GC24-1404 |

This part lists the abstracts for the IBM 1401 and 1460 publications and material by order number. In addition to presenting a brief description of an item, an abstract also gives, where applicable, the type of publication and the number of pages.

**G320-1621   IBM Marketing Publications      99**
**KWIC Index**

This keyword index of IBM Marketing Publications is based on publication titles. Each title is shifted to the right, one keyword at a time, and placed in alphabetic and numerical order with all other keywords. (176 pages)

**GA19-0004   IBM 1219 Reader-Sorter, Model 32   03**
**IBM 1419 Magnetic Character**
**Reader, Model 32**
**(For World Trade Use Only)**

Contains detailed information about the keys, lights, switches, mechanical features, and special features of the IBM 1219 Reader Sorter, Model 32 and the IBM 1419 Magnetic Character Reader, Model 32.

On-line and off-line data-flow and operating theory are fully discussed, with step-by-step procedures for each reader operation. Programming notes and error-correction routines are also covered in detail. (In the areas of on-line operation, error-recovery, and programming notes, this manual refers to the 1401 attachment only.)

For additional information readers are referred to: *IBM 1401/1460 Miscellaneous Input/Output Instructions*, GA24-3068. (56 pages)

**GA19-0009   IBM 1401-1419 Expanded Codeline   30**
**Input/Output Control Program**
**(For World Trade Use Only)**

Describes the Input/Output Control Program for the IBM 1419 Magnetic Character Reader with Expanded Codeline Feature used on-line with the IBM 1401 Data Processing System equipped with the Process Overlap Special Feature.

It includes machine requirements, descriptions of the IOCP routines and the user's program, and operating procedures.

This publication should be read in conjunction with *IBM 1219 Reader Sorter, Model 32, IBM 1419 Magnetic Character Reader, Model 32*, GA19-0004.

A knowledge of IBM 1401 Autocoder can be obtained from *Autocoder (on Tape) Language Specifications, and Operating Procedures*, GC24-3319.

**GA21-9012   IBM 1231 and 1232 Optical   03**
**Mark Page Readers**

Describes the functions, controls, principles of operation, data flow, and programming for the IBM 1231 and 1232 Optical Mark Page Readers. Special features available are explained. Also included is a section on the IBM 534 Model 3 Card Punch. (28 pages)

**GA21-9020   1231 Optical Mark Page Reader   19**
**Original Equipment Manufacturers'**
**Information**

Contains information to assist non-IBM engineers who plan to attach the IBM 1231 Optical Mark Page Reader to their equipment. It includes a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (12 pages)

**GA21-9065   IBM 1232 and 534   13**
**Custom Features Descriptions**

Describes the effects of eight RPQ (Request for Price Quotation) features on the operations of the IBM 1232 Optical Mark Page Reader and the IBM 534 Card Punch Model 3. To use this publication effectively, the reader must be familiar with the standard operations of these two machines, as described in the SRL manual, *IBM 1231, 1232 Optical Mark Page Readers*, GA21-9012.

The eight RPQ features described in this publication are: #842023 — Punching Sequence and Code Modification; #F13918 — 1232 Alphabetic Feature; #841-95 — 534 Alphabetic Coding Device; #F15067 — Blank Character Select; #F15704 — Units-Position Overpunching (Numeric Machines); #W18417 — Units-Position Overpunching (Alphabetic Machines); #842042 — 534 Print Feature; #842024 — Printer Output Protection. (12 pages)

**GA22-6589   729, 7330, and 727 Magnetic   05**
**Tape Units Principles of Operation**

This reference publication is a comprehensive reference manual on the use of IBM 727, 729 II, IV, V, VI, and 7330 Magnetic Tape Units. It includes principles of writing and reading coded data on magnetic tape, tape unit load and unload procedures, operating keys and lights, tape handling, organizing tape records, and reels, tape labeling and tape library records, tape error recovery procedures, and associated equipment. (44 pages)

**GA22-6619   7330 Magnetic Tape Unit   19**
**Original Equipment**
**Manufacturers' Information**

Gives specifications for attaching a control unit to the IBM 7330 Magnetic Tape Unit. (12 pages)

**GA22-6643   729 II, IV, V and VI Magnetic   19**
**Tape Units**
**Original Equipment**
**Manufacturers' Information**

Includes information and specifications for use by a manufacturer of original equipment to be attached to 729 II, IV, V and VI Magnetic Tape Units. (40 pages)

**GA22-6752   7740 Communication Control   09**
**System: Systems Summary**

The IBM 7740 Communication Control System with disk storage is a complete, independent, communication control center capable of message accounting, traffic reporting, billing, and other secondary operations.

This summary describes the characteristics of the system, variations possible in its internal makeup, possible communication line configurations, data processing systems with which it may be associated, outstanding features, and suggested appplications. (12 pages)

**GA22-6753   7740 Communication Control   09**
**System: Principles of Operation**

This manual provides descriptions of components and programming basic to the operataion of the IBM 7740 Communication Control System. It acquaints the reader with the binary, character-oriented, odd-parity characteristics of the IBM 7741 Processing Unit and its word formats, registers, and operating modes. It describes some operations of the 7740 that are especially important in message control, such as starting the operation of communication lines with the 7740 and chaining blocks of storage to receive or transmit messages.

Principally, this manual is to provide a detailed description of the instructions used in the 7740 system. The description of each instruction includes the word format, function, and any special programming factors to be considered. Examples and likely applications are included wherever they might be helpful. (56 pages)

**GA22-6776   IBM 7710 Data Communication   20**
**Unit: Principles of Operation**

This publication contains general information about the IBM 7710 Data Communication Unit in conjunction with the IBM 1401 System. It emphasizes two aspects: the principles of operation of the 7710, and the programming of the 7710 with regard to the 1401. In addition, the operating keys, lights, switches, and indicators contained in the operator's panel and the customer engineering panel of the 7710 are described. (2S pages)

**GA22-6784   IBM 1301 and 1302 Disk Storage   07**
**Sequential Data Organization**

Describes a way of storing and retrieving data on IBM 1301 and 1302 Disk Storage that is largely independent of the characteristics of the application. The method enables most users to install and operate disk storage efficiently, with minimum detailed study of the data. A common set of programs and techniques can be used for all data files in disk storage. The approach allows data to be loaded in the most useful sequence, yet allows for random or sequential access to the records. As the data file is loaded, an index is created that associates data identifiers with actual track addresses and permits expansion by an easily used overflow technique. Conversion is accomplished in an orderly and efficient transition from data handling methods presently in use. (27 pages)

**GA22-6802  7740 Communications Control  19
              System, OEMI**

Describes the interface associating the IBM 7740 Communication Control System with communication line data subsets, the IBM 1050 Data Communication System, the IBM 1311 Disk Storage Drive, and the interface to an external data processing system. Each interface is described in terms of line functions and connector configuration.

Detailed information on the IBM equipment in the 7740 System can be found in applicable reference manuals for each unit. *IBM 7740 Communication Control System Principles of Operation*, GA22-6753, contains information on manual operation through console and operator panel, program procedures, loading from disk storage or a data processing system, and other information pertinent to message control. Detailed descriptions of the instructions used in the 7740 are included. (24 pages)

**GA22-6818  7701, 7702, 7710, 7711  19
              Original Equipment Manufacturers'
              Information**

Contains interchange information for connection of the 7701, 7702, 7710, and 7711 to communications-channel equipment and data processing equipment. (20 pages)

**GA24-1039  1009 Data Transmission Unit  09**

Describes functional characteristics of the IBM 1009 Data Transmission Unit in relation to the IBM 1401 and 1410 Data Processing Systems. Discusses 1401 and 1410 instructions along with the console panel and related communications-company equipment. Outlines the operating principles and recommended checking procedures, and illustrates the logic of both 1401 and 1410 transmit and receive subroutines. (44 pages)

**GA24-1065  1009 Data Transmission Unit  19
              Original Equipment Manufacturers'
              Information**

Contains interchange information for the connection of the IBM 1009 Data Transmission Unit to communication channel terminal equipment and data processing equipment. Also included are:
1. Connector drawing
2. Connector reference charts
3. Specifications, and
4. Descriptions of the operator console panel indicators, keys, and switches. (24 pages)

**GA24-1401  1401 System Summary  00**

Contains brief descriptions of the machine features, components, configurations, and special features. Included is a section on programs and programming systems. (52 pages)

**GA24-1421  1412 Magnetic Character Reader  03
              Model 1**

Describes the features and functions of the IBM 1412 Magnetic Character Reader, Model 1. Explains in detail its operating principles, including document feeding, reading, and distribution, as well as control of both on-line and off-line operations. Sections on operating procedures, 1401-1412 stored program instructions, and programming notes are included.

Explains the use and operation of four special features: multiple-column-select — sort-suppress feature, auxiliary-document-counter, self-checking number verification, and electronic-accumulator and sequence-checking feature. (56 pages)

**GA24-1424  1401 Processing Unit  19
              Original Equipment
              Manufacturers' Information**

Provides sufficient data to satisfy the special needs of those who wish to attach their equipment to the IBM 1401 Processing Unit. It contains supplemental tie-in data not readily available in other IBM publications. Charts of cable layouts, connector receptacles, and power-plug pin assignments are included. (28 pages)

**GA24-1431  1403 Printer Original Equipment  19
              Manufacturers' Information**

This reference manual contains information to assist non-IBM engineers to attach their equipment to the IBM 1403 Printers. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (20 pages)

**GA24-1446  1404 Printer  03**

Describes the features, functional characteristics and operations of the IBM 1404 Printer, including sections on card feeding, printing, tape-control carriage operation, and the read-compare special feature. Discusses and illustrates 1404 instructions, and contains charts covering timing details. (24 pages)

**GA24-1452  Print Quality Considerations  03
              IBM 1418 and IBM 1428**

Contains a detailed description of print quality requirements of printing to be read by the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader, and to be used as input to an IBM 1401 or IBM 1460 Data Processing System. Use of print-quality measuring devices is fully explained with examples of the range of acceptable printing produced by the IBM 407 Accounting Machine, IBM 1403 Printer, IBM SELECTRIC® Typewriter and IBM Electric Typewriter. (41 pages)

**GA24-1470  7340 Hypertape Drive Model 2  05**

Describes the attachment of the 7340 Model 2 to the 1401 and 1460. Because the hypertape drive can pack two consecutive numeric characters on tape as one 8-bit character, the speed of the hypertape drive ranges from 34,000 to 68,000 characters a second. As many as four hypertape drives can be connected to a 1401 or 1460 through the IBM 7641 Hypertape Control Unit and the serial I/O adapter feature. The IBM 729 and 7330 Magnetic Tape Units can be connected to the same system for off-line conversion of existing tape libraries to hypertape for large-scale system use. (20 pages)

**GA24-1473  1418 Optical Character Reader  03
              1428 Alphameric Optical Reader**

Describes the operation of the 1418 and the 1428 as input devices to the 1401. Included are a description of character- and mark-reading capabilities, off-line sorting, document-design requirements, and examples of the range of acceptable print quality on the documents to be scanned. The use of the IBM 1418 and 1428 Document Design and PDS Timing Chart and the formulas for calculating document output and maximum character reading per document are also fully discussed as an aid in optimizing the design of documents to be read. (44 pages)

**GA24-1491  1401 Configurator  00**

Presents a schematic representation of the units that can make up an IBM 1401 Data Processing System. Shows the features required to attach these units and the models and special features available for each unit. (2 pages)

**GA24-1493  1460 Data Processing System  15
              Installation Manual — Physical
              Planning**

Contains information needed for physical installation of a 1460 system: physical characteristics; service clearances; cable, electrical power, and environmental requirements. (12 pages)

**GA24-1495  1401 and 1460 Bibliography  00**

(See front cover)

**GA24-1496  1460 System Summary  00**

Contains brief descriptions of machine features, components, configurations, and special features. Also included is a section on programming systems, and programming publications available for the 1460 system. (24 pages)

**GA24-1499  IBM 1219 Reader Sorter  03
              IBM 1419 Magnetic Character
              Reader**

This publication describes the operating characteristics, controls, indicators, and features of the IBM 1219 Reader Sorter and the IBM 1419 Magnetic Character Reader. Operating theory and procedures are given for off-line operation of both machines and on-line operation of the IBM 1419 within the 1400 series and System/360 systems.

Document handling and data flow are discussed fully, and step-by-step procedures and practical examples are given for each machine. Programming notes and error recovery procedures are also given. (96 pages)

**GA24-3010    1448 Transmission Control Unit    09**

This publication includes a description of the IBM 1448 Transmission Control Unit as a link between an IBM 1440 or 1460 Data Processing System and a network of as many as 40 half-duplex communication lines. Each line can have a number of terminals. The description of this IBM teleprocessing system includes appearance, operation, functions, programming aspects and special features. Also discussed are communication codes, communication terminology, and line control.

This publication is for those familiar with the programming and operation of the data processing system to which the 1448 is connected.

Because the 1448 serves the processor, many functions of both are independent. Included here are the scan operation, the interrupt routine, and related programming operations. (40 pages)

**GA24-3030    Message Rates for the IBM 1448    09
               Transmission Control Unit**

The graphs and descriptions in this publication can be used to find the overall message transmission and processing rates for terminals attached to a 1448.

The key with each graph illustrates how to calculate the required unknown, whether it is message length, lines required, process time, or processing rate. (16 pages)

**GA24-3031    1447 Console    03**

Contains a detailed description of all models of the IBM 1447 Console, with sections describing the applicable keys, dials, switches, and indicator lights. It also contains information on the console I/O printer. The required and available special features (including IBM 1050 components) are also described. (32 pages)

**GA24-3036    Endorser Special Features for    13
               IBM Magnetic Character Readers**

Describes the features, functions, operating procedures for the endorser special features for the 1219 Reader-Sorter and IBM 1412 and 1419 Magnetic Character Readers. Setup and operating procedures are explained. Endorser plate specifications are also included. (12 pages)

**GA24-3067    System Operation Reference Manual 01
               IBM 1401 Data Processing System
               IBM 1460 Data Processing System**

This reference publication contains the introduction and basic instruction set for the IBM 1401 and IBM 1460. The operation code for each instruction is given in actual and mnemonic form, with examples of each. The formula for calculating the execution time of each instruction is also included.

In addition, this manual presents the instructions and applicable timings for the IBM 1402, 1403, 1406, and 1447.

This manual is the first of five reference manuals providing the complete instruction set for the IBM 1401 and 1460. The other four manuals are:

*Miscellaneous Input/Output Instructions,* GA24-3068
*Tape Input/Output Instructions,* GA24-3069
*Disk Input/Output Instructions,* GA24-3070
*Special Feature Instructions,* GA24-3071

To accommodate a particular system configuration, any combination of these five manuals can be placed in a single binder for the user's convenience. (74 pages)

**GA24-3068    Miscellaneous Input/Output    01
               Instructions
               IBM 1401 Data Processing System
               IBM 1460 Data Processing System**

This publication contains a description of the instructions used by the IBM 1401 or 1460 to operate these miscellaneous input/output units:

IBM 1009 Data Transmission Unit
IBM 1404 Printer
IBM 1407 Console Inquiry Station
IBM 1418 Optical Character Reader
IBM 1428 Alphameric Optical Reader
IBM 1412 Magnetic Character Reader
IBM 1419 Magnetic Character Reader
IBM 1448 Transmission Control Unit
IBM 1026 Transmission Control Unit
IBM 1231 Optical Mark Page Reader
IBM 1285 Optical Reader
IBM 1445 Printer
IBM 7740 Communication Control System
IBM 7770 Audio Response Unit Model 1

Timing information is included for each unit attached to an IBM 1401 or 1460 Data Processing System. (78 pages)

**GA24-3069    Tape Input/Output Instructions    01**

Contains a description of the instructions used by the data processing system to operate these attached tape units: 729, 1011, 1012, 7330, and 7340. Timing information is included for each I/O device described. (30 pages)

**GA24-3070    Disk Storage Input/Output    01
               Instructions**

Contains a description of the instructions used by the IBM 1401 and 1460 Data Processing System to operate the disk-storage units attached to it.

The instructions and timing for the following disk-storage units are included:

IBM 1405 Disk Storage
IBM 1311 Disk Storage Drive
IBM 1301 Disk Storage

Timing information is also included on each disk-storage unit. (46 pages)

**GA24-3071    Special Features of IBM 1401    13
               and 1460 Data Processing Systems**

The special features described here are available for the 1401 and/or 1460. Each feature is described and identified for the system to which it can be applied. These features offer additional flexibility in applications where special processing requirements exist. Also included are the instructions for the special features on the IBM 1402, 1403, 1447, and 1009 when these units are used with the IBM 1401 or 1460. (72 pages)

**GA24-3072    1402 Card Read-Punch    03**

This publication covers the IBM Models 1, 2, 3, 4, 5, and 6. Included are descriptions of major mechanical units, their functions and operating controls, and special features that can be installed to expand the capabilities of the basic machine. (20 pages)

**GA24-3073    1403 Printer    03**

This reference publication describes the various models of the 1403 Printer used with IBM 1401, 1410, 1440, 1460, 7010, 7040, 7044, and System/360 Models 20 through 85 Data Processing Systems.

The functional and operating characteristics of the printer are presented.

Special features available for the 1403 are included, and timing information is given for printing and paper movement. (56 pages)

**GA24-3081    Mark Read Station (Slanted Mark)    13
               for 1418 and 1428**

This publication describes the Mark Read Station (Slanted Mark) special feature. This feature is available for the IBM 1418 Optical Character Reader and the IBM 1428 Alphameric Optical Reader. A description of the following functional specifications is included.

Document Specifications
Mark Reading
Document Format
Document Corner Cuts
Document Feeding
Description of the Slanted Mark Reading Gage.

This publication is for those familiar with programming and operating the IBM 1418 and 1428 as described in: *Programming for the IBM 1418 and 1428 Optical Readers,* GC24-1091 and *IBM 1418 Optical Character Reader and IBM 1428 Alphameric Optical Reader,* GA24-1473. (12 pages)

**GA24-3085    1405 Disk Storage    07**

Describes the operation of the IBM 1405 Disk Storage with the IBM 1401 Data Processing System. The functional and operating characteristics of the disk storage unit are described as are the special features and timings. (8 pages)

**GA24-3120    IBM 1443 Printer Models 1 to 4    03
               and N1
               IBM 1445 Printer Models 1 and N1**

This reference publication describes the operation of the 1443 and 1445 Printers with the IBM 1240, 1401, 1440, 1450, 1460, 1800, and certain models of the IBM System/360 Data Processing System.

It also discusses timing information for the printer and the tape-controlled carriage as well as their functional and operating characteristics. The speed of the printer using character sets is also described.

The publication also includes command, sense, and status information pertaining to the printers used with System/360 Data Processing Systems. (32 pages)

**GA24-3144    IBM 1401 Data Processing System    01
               Operator's Guide**

Describes the operating features and procedures for each of the units of an IBM 1401 system. Several operations that use two or more units of the system are also described. One section outlines recommended procedures for restarting system operation after an error condition in the 1402 or 1403.

For the operator's convenience, the logic of a 1401 system is discussed briefly. This includes addressing, phases of operation, internal checking, and coding structures. (100 pages)

**GA24-3157    IBM 1301 Disk Storage Models 11,    07
12, 21, and 22**

Describes the operation of an IBM 1301 Disk Storage unit. It explains the uses of the keys and lights on the unit, and it includes timing information. (12 pages)


**GA24-3165    IBM 1401G System Summary    00**

Contains brief descriptions of the machine units, special features, and simultaneous input/output unit operations, called interleaving, on the IBM 1401 Data Processing System, Model G.

Also included are sections on programs and programming systems, and timing on individual and multiple input/output operations (with and without interleaving). (10 pages)


**GA24-3169    IBM 1447 Console Model 3    19
Original Equipment
Manufacturers' Information**

Provides information to assist non-IBM engineers who wish to attach the IBM 1447 Model 3 Console to their equipment. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (14 pages)


**GA24-3192    1448 Transmission Control Unit    19
Original Equipment Manufacturers'
Information**

This manual contains supplemental data to satisfy the special needs of non-IBM engineers who want to attach their equipment to the IBM 1448. General timing and control philosophy are outlined for processor attachment. Line control and message format are covered for data terminal attachment. Interface lines and their requirements are discussed, along with charts of cable layouts and connectors.

Most of this information is of a supplemental nature and is not included in other IBM publications. A current list of available related publications is included for reference. (36 pages)


**GA24-3199    IBM 1460 Original Equipment    19
Manufacturers' Information**

Contains information to assist non-IBM engineers who plan to attach non-IBM equipment to the IBM 1460 Processing Unit. It includes a general description of machine functions, a reference listing of directly related publications and engineering documents, a list of recommended tools and test equipment, cable part numbers and dimensions, and information concerning machine interface not readily available in other publications. (36 pages)


**GA24-3205    1403 Printer Model 3    80**

Describes the Preferred Character Set feature for the IBM 1416 Interchangeable Train Cartridge on the IBM 1403 Printer Model 3. The minimum and maximum lines-per-minute speed that can be achieved with the different level-modes of printing are also included. (4 pages)


**GA24-3233    1448 and 1026 Transmission    15
Control Units Installation Manual —
Physical Planning**

Contains pertinent, detailed physical planning information for the IBM 1026 and 1448 Transmission Control Units. It supplements physical planning publications for the IBM data processing and communication systems with which these units can be used. In addition to physical planning specifications and requirements, information concerning connections to customer-installed and common-carrier communication facilities is included. A brief introduction to communication techniques is also presented. (16 pages)


**GA24-3244    1026 Transmission Control Unit    09**

Describes the IBM 1026 Transmission Control Unit as a link between an IBM 1240, 1401, 1440, or 1460 Data Processing System and the terminal on a single communications line. As many as four 1026 units can be attached to a system. The description of this IBM teleprocessing unit includes appearance, operation, functions, programming aspects, and special features. Also discussed are communication codes, communication terminology, and line control.

This publication is for those familiar with the programming and operation of the data processing system to which the 1026 is connected. (36 pages)


**GA24-3256    IBM 1285 Optical Reader    03**

This publication describes the functional and operating characteristics of the IBM 1285 Optical Reader. Also presented are descriptions of the instructions used to program operations on the 1285 and the input document requirements related to print quality, format, and type of paper. (16 pages)


**GA24-3315    Custom Features for IBM 1401,    13
1440, and 1460 Data Processing
Systems**

Contains brief descriptions of some of the custom features available for the IBM 1401, 1440, or 1460 Data Processing Systems. Availability of these features can be determined by requesting a price quotation from IBM. (24 pages)


**GA24-3342    Batch Numbering Feature for    13
IBM 1241 and 1419 Magnetic Ink
Character Recognition Readers**

Describes the functions and features of the Batch Numbering special feature when used with the IBM 1241 Magnetic Ink Character Recognition Reader and the IBM 1419 Magnetic Character Reader.

The operation of the keys, lights, and switches, as well as the programming information needed to operate the feature, is covered in detail. (16 pages)


**GA24-3356    IBM 1404 Printer Model 2    19
Original Equipment Manufacturers'
Information**

This reference manual contains information to assist non-IBM engineers to attach their equipment to the IBM 1404 Printer Model 2. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publications. (18 pages)


**GA24-3476    IBM 1401H System Summary    00**

Contains brief descriptions of the machine features, components, and special features. Also included is a section on programming systems available for this system. (12 pages)


**GA24-3488    Form-Design Considerations —    03
System Printers**

Contains information to be considered by personnel designing, ordering, or using forms for the IBM 1403, IBM 1443, IBM 2203, IBM 2213 or IBM 5203 Printer. (24 pages)


**GA24-3494    IBM 1401 Model H Configurator    00**

Presents a schematic representation of the units that make up an IBM 1401H Data Processing System. Shows the features required to attach these units and the models and special features available for each unit. (2 pages)


**GA24-6447    IBM 1401/1460 Instruction and    01
Timing Summary**

Summarizes instructions and timings for the 1401 and 1460 systems. Listed for each instruction is: instruction name, operation code, mnemonic, operands, d-character, wordmarks required, address registers after operation, remarks and timings. (28 pages)


**GA26-5713    IBM 1311 Disk Storage Drive    19
Original Equipment Manufacturers'
Information**

Provides information to assist engineers in attaching the IBM 1311 Disk Storage Drive to equipment not manufactured by IBM. Included are lists of applicable publications, engineering documents, and cable interface identification for the 1311, Models 1, 2, 3, 4, and 5. (52 pages)


**GA26-5754    IBM 1011 Paper Tape Reader    03**

Contains information that describes the operating features, components, control panel, and tape handling and loading procedures for the IBM 1011. (24 pages)


**GA26-5756    IBM Disk Pack and Cartridge    07
Handling Procedures**

This manual is a guide for handling IBM Disk Packs and Cartridges. The information contained in this manual applies to IBM 1316 and 2316 Disk Packs and 2315 Disk Cartridges. (12 pages)


**GA26-5776    IBM 1012 Tape Punch    03**

Contains information that describes the operating features, components, tape specifications and tape loading procedures for the IBM 1012. (12 pages)

20

**GA26-5991    IBM 1311 Disk Storage Drive    07**

Describes the operating principles and features of the IBM 1311 Disk Storage Drive and the IBM 1316 Disk Pack as they are used with IBM Systems.

Included in the manual is a description of the operating keys and lights, and of disk pack operating and handling procedures.

The information in this manual supplements the information contained in the System Reference Library manuals for the following IBM Systems: IBM 1240 Bank Data Processing System; IBM 1401 and 1460 Data Processing Systems; IBM 1410 and IBM 7010 Data Processing Systems; IBM 1440 Data Processing System; IBM 1620 Data Processing System; IBM 1710 Control System; IBM 7740 Communication Control System.

Information about *addressing* disk storage, programming considerations, and special features is contained in the respective system reference manuals. (12 pages)

**GA27-2705    Original Equipment Manufacturers'    19
                Information — IBM 7770 Audio
                Response Unit Models 1 and 2**

This manual contains information to assist in designing non-IBM equipment for, and attaching non-IBM equipment to, the IBM 7770 Audio Response Unit, Models 1 and 2. It contains a general description of machine functions, a reference listing of publications and engineering documents, and information concerning machine interface not readily available in other publication. (48 pages)

**GA31-1400    1402 Card Read-Punch    19
                Original Equipment
                Manufacturers' Information**

Provides technical information for those who wish to attach the IBM 1402 Card Read-Punch to their own equipment. Voltage requirements, connector impulses and requirements are included. (16 pages)

**GC20-1601    Catalog of Programs for    20
                IBM 1240, 1401, 1440, 1450, and
                1460 Data Processing Systems**

This catalog contains a complete listing of all programs for the IBM 1240, 1401, 1440, 1450, and 1460 Data Processing Systems available from the Programming Information Department, 40 Saw Mill River Road, Hawthorne, New York 10532.

Instructions for ordering programs are contained in the section of the introduction entitled "How to Order Programs." (80 pages)

**GC20-1607    High-Speed Reader-Sorter    03
                Operations Manual**

This manual is meant primarily for operators of IBM 1419/1401 configurations. It contains: a discussion of recommended machine placements and system operating principles; a description of operating controls; operating, jam-clearing and restart procedures; cleaning and maintenance procedures; operator's tips and supervisor responsibilities; operation and maintenance of special features; a training program outline; and examples of statistical forms and run book pages. (72 pages)

**GC22-6674    IBM 7340 Hypertape Drive Model 2    15
                for IBM 1401/1460, 1410
                Systems — Physical Planning
                Specifications**

Describes specifications of size, environment, cable lengths, power consumption, and weight of the 7340 Hypertape drive and control. (2 pages)

**GC22-6777    Utility Programs for IBM 1401    32
                Equipped with the IBM 7710
                Data Communication Unit**

Describes the utility programs provided for the IBM 1401 equipped with an IBM 7710 Data Communication Unit. These utility programs are:
   1401-7710 Tape Transmit Utility Program
   1401-7710 Tape Receive Utility Program
   1401-7710 Transmit-Receive Utility Program. (8 pages)

**GC24-1091    Programming for the IBM    48
                1418/1428 Optical Readers**

Describes the IBM 1401 and 1460 — 1418/1428 instructions and the factors that contribute to efficient operation of the system. Also included are: a block diagram illustrating the instructions used in a sample program, programming for a non-continuous-feed operation, and a description of a typical batch-balancing procedure at time of conversion.

The readers of this publication should be familiar with the Systems Reference Library publication, *IBM 1418 Optical Character Reader and IBM 1428 Alphameric Optical Reader*, GA24-1473.

**GC24-1404    1401 Data Processing System    15
                Installation Manual — Physical
                Planning**

Contains pertinent, detailed physical-planning information for the IBM 1401 Data Processing System. Dimensions, weights, service clearances, electrical requirements, and environmental specifications are listed separately for each unit of the system. Information on interunit cabling is provided in a cable-diagram and cable-requirements chart. A summary of specifications is included for ready reference. (40 pages)

**GC24-1420    Sort Programs for 1401-1311    33
                and 1460-1311, Specifications
                and Operating Procedures
                Generative Program Sort 6
                Object Program Sort 61, 62, 63, 64**

This reference publication discusses:
   Sort 6 Specifications describes the requirements for generating a sort object program.
   Sort 6 Operating Procedures describes the Sort 6 program deck, preparation of the Autocoder system pack and library for generation, and the operating procedures to be followed when generating a sort object program.
   Sort Object-Program Specifications describes the characteristics of object programs generated by Sort 6 and the requirements for executing the object programs. Sorts 61, 62, 63, and 64 are discussed in this section.
   Sort Object-Program Operating Procedures describes the IBM-supplied generalized object decks (Sort 61, 62, 63, and 64), the insertion of user-prepared control cards in the object deck, the operating procedures to be followed when executing the object program, and the halts and messages that are associated with the sort object programs.

**GC24-1451    Disk File Organization Routines    34
                Specifications
                IBM 1401-1405**

Contains the specifications of the IBM 1401-1405 disk file organization programming system based on the chaining method. Six routines make up three general programs:
   1. Chain-Loading programs
   2. Chain-Addition programs
   3. Chain-Maintenance programs.
   Chaining is an indirect addressing method that offers an efficient, overall solution to the problems of file organization, maintenance, and retrieval of information in an IBM 1401-1405 system.

The programming system described in this publication operates on a 1401-1405 system with a minimum of 4,000 positions of core storage, and it uses no special features. (20 pages)

**GC24-1455    Fortran Specifications and    25
                Operating Procedures
                IBM 1401**

This reference publication contains the language specifications necessary to code a 1401 Fortran source program and the procedures for assembling and running the object program. In addition to describing the 1401 Fortran language, the specifications section also contains descriptions of:
   1. Control card
   2. Phases of the compiler
   3. Arithmetic and input/output routines generated by the compiler
   4. 1401 Fortran facility for linking programs or segments for continuous processing and
   5. Input/output routine option provided in 1401 Fortran.
   In addition to the procedures for assembling and running the object program, the operating procedures section also includes explanations of:
   1. Compiler output
   2. Compiler diagnostics
   3. Object-program storage allocation and
   4. Object-program halts.
   The reader should be familiar with the *Fortran General Information Manual*, GF20-8074, and the IBM 1401 configurations required for the assembly and the execution of the object program. (64 pages)

**GC24-1456    Sort 7 Timing Specifications and    33
                Operating Procedures IBM 1401
                and 1460 Data Processing Systems**

Contains the specifications and operating procedures for the Sort 7 Timing Program, Version 1. The first section discusses the machine requirements, program deck, control cards, and timing charts. The second section describes system preparation, messages, and halts.

Also included are 144 sort-timing comparison tables of the Sort 7 program run on IBM 1401 and 1460 Data Processing Systems. The parameters involved are explained.

The user should be familiar with *Sort 7 Specifications and Operating Procedures for IBM 1401 and 1460*, GC24-3317.

**GC24-1462  1401 Input/Output Control System  30
(on Tape), Specifications and
Operating Procedure**

Describes the programming required to use IOCS to control the input/output of data from card reader, card punch, printer, and tape files. Explains in detail the IOCS descriptive entries (DIOCS and DTF) and macroinstructions. Defines the types of data records and labels handled by IOCS. Includes two sections especially useful to experienced programmers:
1. Summaries — listing storage area considerations, main instructions and processing-overlap.
2. Program Operation — describing IOCS library routines, labels, halts, and error indications.
Assumes a knowledge of 1401 Autocoder. (44 pages)

**GC24-1464  Fargo  28**

Fourteen-o-one Automatic Report Generating Operation (Fargo) is a report generator that does not require expert knowledge of programming techniques. The manual describes the writing of report specifications and the preparing of Fargo control cards to produce the desired report. This programming system requires a card-input 1401 system having at least 4,000 positions of core storage. (50 pages)

**GC24-1480  IBM 1401 Symbolic Programming  21
Systems**

This manual provides programmers with the information necessary to code a 1401 program in SPS language and assemble a machine-language object-program. It is assumed that the programmer has a basic knowledge of 1401 machine language programming.

It describes symbolic programming principles and concepts and gives detailed specifications of the 1401 Symbolic Programming Systems, SPS-1 and SPS-2.

Operating instructions for processing the SPS source program are enumerated. The SPS processor program can assemble a machine language program on configurations of the 1401 Data Processing System equipped with a 1402 Card Read-Punch.

A sample program is included for the convenience of the beginning SPS programmer. Input and output forms, a block diagram of the program procedure, the symbolic program, and SPS output listings of the symbolic and machine-language programs are shown. (48 pages)

**GC24-1484  Disk-Utility Programs for 1401,  32
1440, 1460 — 1301/1311:
Specifications**

This publication contains the specifications of nine disk-storage utility programs for IBM 1401, 1440, and 1460 Systems equipped with either or both 1301 and 1311 disk storage. The programs are:

| | |
|---|---|
| Clear Disk Storage | Copy Disk |
| Disk to Tape | Print Disk |
| Tape to Disk | Disk Record Load |
| Disk to Card | Disk Label. |
| Card to Disk | (36 pages) |

**GC24-1489  Input/Output Control System  30
(on Disk) for IBM 1401/1460-1311:
Specifications**

Describes the programming required to use IOCS to control the input/output of data from card reader, card punch, printer, disk, and tape files. The IOCS descriptive entries (DIOCS and DTF) and macroinstructions are explained in detail. The types of processing and types of records handled by IOCS are defined.

The IBM 1401/1460 IOCS (on Disk) program is a supplement to the IBM 1401/1440/1460 Autocoder (on Disk) program. The reader should be familiar with the specifications for this program, described in the SRL publication, Autocoder (on Disk) Program Specifications and Operating Procedures, IBM 1401, 1440, and 1460, GC24-3259. For a more complete understanding of the organization of records on disk, he should also review the disk file-organization routines. (72 pages)

**GC24-1492  Cobol (on Tape), Specifications,  24
1401**

Describes the specifications for writing a 1401 Cobol program for an IBM 1401 having at least 4,000 positions of core storage. Specific examples and a sample problem demonstrate coding of Cobol statements. This publication assumes a basic knowledge of Cobol programming. (44 pages)

**GC24-1494  1401 Programmers' Guide  90**

Discusses 1401 programming as a text book to help the student learn and apply the operations of the IBM 1401 Data Processing System. (100 pages)

**GC24-3012  Standard Labeling Procedure for  48
IBM 1311 Disk Storage Drive**

Describes the conventions used in labeling files on the pack for the IBM 1311. It also outlines the format specifications for standard labels. (8 pages)

**GC24-3025  Direct Data Channel IOCS for  30
IBM 1401, 1440, and 1460:
Specifications (Communications IOCS)**

Provides additional descriptive entries and macroinstructions, supplementing basic IOCS for the IBM 1401 or 1460 and the IBM 1440, that allow direct-data-channel (system-to-system) connection of 1401, 1440, and 1460 systems. Specifies machine requirements and describes user routines and error procedures. (10 pages)

**GC24-3038  Comparison of Sort 2-Version 2  33
Timing for 1401 and 1460**

Contains 72 sort timing tables of the Sort 2-Version 2 program run on the 1401 and the 1460. This program, when used with the 1460, results in an appreciable savings in sort run time. The various parameters involved are explained in the introduction of the publication. (12 pages)

**GC24-3047  IOCS Specifications  30
IBM 1460 with IBM 1448 (1401
and 1460 Communications IOCS —
1448-DDC)**

Supplements IOCS for IBM 1440-1448, Specifications, GC24-3024, with minor modifications that allow this programming system to be used with IBM 1460-1448 systems. (2 pages)

**GC24-3053  Merge 6 Specifications and  33
Operating Procedures:
IBM 1401 and 1460**

This publication describes the Merge 6 program, its capabilities, phases, and merge object program. The control and parameter cards by which a user can tailor the program to his specific needs are also explained.

This publication is intended for use with Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications, GC24-1489.

The user should also become familiar with: Autocoder (on Disk) Language Specifications for IBM 1401, 1440, and 1460, GC24-3258 and Autocoder (on Disk) Program Specifications and Operating Procedures for IBM 1401, 1440, and 1460, GC24-3259. (42 pages)

**GC24-3057  Sort 3 for IBM 1401: Specifications  33**

Contains a description of the Sort-3 program for the IBM 1401 Data Processing System with IBM 1405 Disk Storage. Sort 3 is a generalized program that can be modified by control-card information supplied by the user. The program uses the 1405 to sort records written either on magnetic tape or in disk storage. The records are sorted and then written on magnetic tape or in disk storage. (8 pages)

**GC24-3060  Sort 4 for IBM 1401:  33
Specifications**

Contains a description of the Sort-4 generalized tape-sorting program. Sort 4 is designed to operate on the IBM 1401 Data Processing System with the processing overlap special feature. (12 pages)

**GC24-3077  Sort 3 for IBM 1401:  33
Operating Procedures**

Contains the operating procedures for the Sort-3 program. Use this publication with the SRL publication Sort 3 for the IBM 1401: Specifications, GC24-3057. Sort 3 is a generalized sorting program designed for use on the 1401 that has an IBM 1405 Disk Storage. The program sorts a file written on magnetic tape or in disk storage into either ascending or descending sequence. The file is sorted according to control data, which can be 193 characters long and can be contained in as many as 10 fields. It is then written in sequence either on magnetic tape or in disk storage. (24 pages)

**GC24-3087  Sort 4 for IBM 1401:  33
             Operating Procedures**

Contains the operating procedures to be used with *Sort 4 for the IBM 1401: Specifications*, GC24-3060. Sort 4 is a generalized program that uses the processing-overlap special feature, and is designed for use on the 1401 with a minimum of four IBM 729 II, 729 IV, 729 V, or 7330 Magnetic Tape Units. The program sorts a file written on magnetic tape into either ascending or descending sequence. The file is sorted according to control data, which can be 999 characters long and can be contained in as many as ten fields, and is then written in sequence on magnetic tape. (28 pages)

**GC24-3105  Disk-Utility Programs for IBM  32
             1401-1301/1311: Operating
             Procedures**

Contains the procedures to follow to operate these disk-utility programs for the 1401-1311: Clear Disk Storage, Disk to Tape, Tape to Disk, Disk to Card, Card to Disk, Copy Disk, Print Disk, Disk Record Load, and Disk Label. The reader should be familiar with the SRL publication, *Disk-Utility Programs for IBM 1401, 1460-1301/1311: Specifications*, GC24-1484. (32 pages)

**GC24-3128  Disk-File Organization Routines  34
             for IBM 1401-1311:
             Operating Procedures**

Contains procedures to be followed to generate and run the IBM 1401-1311 Disk-File Organization Routines. The reader should be familiar with the SRL publication *Disk-File Organization Routines Specifications, IBM 1401, 1440, 1460 (1311 and 1301)*, GC24-3185. (40 pages)

**GC24-3132  IBM 1401 Hypertape Utility  32
             Programs: Operating Procedures**

Contains the operating procedures of five utility programs for use on IBM 1401 systems equipped with the IBM 7340 Hypertape Drive, Model 2. The primary function of these programs is to enable the 1401 to perform certain peripheral functions for large-scale hypertape systems. The operating procedures in this publication are:

Card-to-Hypertape program
Hypertape-to-Card program
Hypertape-to-Printer program
Hypertape-to-½-Inch Tape program
½-Inch-Tape-to-Hypertape program.

This publication is divided into two sections: the first section describes the minimium machine requirements and the special optional cards that are common to all five programs; the second section describes the detailed operating procedures for each of the five programs in the order listed previously.

It is assumed that the user has reference to *IBM 7340 Hypertape Drive, Model 2*, GA24-1470. (38 pages)

**GC24-3146  Cobol (on Tape) Operating  24
             Procedures
             IBM 1401**

Describes the operating procedures used to assemble a machine-language program from a source program written in 1401 *Cobol* language. It also describes the operating procedures for producing and modifying the *Cobol* tapes, the phases that make up the *Cobol* processor program, and lists diagnostic and error messages in detail. (31 pages)

**GC24-3156  Tape Utility Programs with 120-  32
             Character Label Capability for
             IBM 1401 and 1460: Specifications
             and Operating Procedures**

Contains the specifications and operating procedures of IBM 1401 or 1460 Data Processing Systems. The programs are:

Card-to-Tape
Tape-to-Card
Tape-to-Printer.

These programs perform a function similar to that performed by three antecedent programs described in the publication: *Utility Programs for IBM 1401 Tape Systems: Specifications*, GJ24-1411. These three new programs differ from the former in the following ways:

The capability of processing the IBM standard 120-character tape labels, using procedures similar to those available from IOCS.
A simplified exception procedure.
The selective processing of tape files identified by tape header labels.
An end-of-job option providing:
1. No rewind
2. Rewind
3. Rewind and unload.
(28 pages)

**GC24-3166  Basic 4K Report Program  28
             Generator Specifications
             IBM 1401 and 1460**

The IBM 1401 and 1460 Basic 4K Report Program Generator, with *load-and-go* capability, produces programs that write reports of variable format. This publication explains the writing of report specifications and the preparation of source decks, to produce object programs.

The language used for the report specifications is problem-oriented rather than machine-oriented. Therefore, little knowledge of machine-language coding is required. (36 pages)

**GC24-3170  Basic Autocoder 2K Specifications  22
             for IBM 1401/1460**

Contains language specifications for the IBM 1401 Basic Autocoder 2K system. Also included are machine requirements; explanations of the source program, processor program, and the coding sheet; and information requirements necessary to write a Basic Autocoder 2K statement. The coding sheet used with this Basic Autocoder is the *Autocoder Coding Sheet*, GX24-1350.

Descriptions of Basic Autocoder 2K statements are presented in a special format that describes the operation which the statement performs, shows how the statement is written by the programmer, states the action of the processor program during processing of the symbolic program, describes the effect (if any) of the statement on the object program, and shows an example that uses the statement.

The user may find the SRL publication *Basic Autocoder 2K Operating Procedures*, GC24-3262 helpful in planning and organizing his program and in assembling, patching, and running the object program.

**GC24-3174  Communications IOCS Operating  30
             Procedures IBM 1401 and 1460
             (1401/1460 Communications
             IOCS — 1448/DDC)**

This publication provides IOCS (Input/Output Control System) operating procedures for IBM 1401 systems that can include the IBM 729, 1311, 1402, 1403, 7330, and direct data-channel feature, and for IBM 1460 systems that can include these same I/O facilities plus the IBM 1448. It supplements *Autocoder (on Disk) Program Specifications and Operating Procedures for IBM 1401, 1440, and 1460*, GC24-3259.

Specifications for the IOCS programming systems included in these operating procedures are available in:

*Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications*, GC24-1489

*IOCS Specifications for IBM 1460 with IBM 1448 (1401/1460 Communications IOCS — 1448/DDC)*, GC24-3047

*Direct Data Channel IOCS for IBM 1401, 1440 and 1460: Specifications (Communications IOCS)*, GC24-3025.

These operating procedures should be used only for 1401 systems that include the direct data-channel feature and for 1460 systems that include either the IBM 1448 or the direct data-channel feature. (12 pages)

**GC24-3176  Sort 5 and Sort 6 Timing Program  33
             Specifications and Operating
             Procedures IBM 1401 and 1460**

This reference publication presents the specifications and operating procedures for the Sort 5 and Sort 6 Timing Program. An IBM 1401 or 1460 Data Processing System with the required machine configuration can be used to produce Sort 5 timing estimates for disk files to be sorted on any IBM 1440 Data Processing System, and Sort 6 timing estimates for disk files to be sorted on any IBM 1401 or 1460.

The first section of this publication discusses machine requirements, the program deck, timing considerations, and program information requirements. The second section describes system preparation, messages, and halts.

The user should be familiar with *Sort Programs for IBM 1440-1311 Specifications and Operating Procedures*, GC24-3314, and with *Sort Programs for 1401-1311 and 1460-1311, Specifications and Operating Procedures*, GC24-1420. (30 pages)

**GC24-3185**    **Disk File Organization Routines**    **34**
**Specifications**
**IBM 1401, 1440, 1460**
**(1311 and 1301)**

Contains the specifications of four separate but similar packages of disk-file organization routines. The four packages and the system configurations on which they are used are:

    IBM 1401-1311 Disk-File Organization Routines
      (Used also on IBM 1460-1311)
    IBM 1440-1311 Disk-File Organization Routines
    IBM 1440-1301 Disk-File Organization Routines
    IBM 1460-1301 Disk-File Organization Routines.

The following subjects are discussed in this publication.

1. General considerations of disk-file organization.
2. Descriptions of each of the 13 individual object programs.
3. Allowable sizes and formats of input/output files.
4. Program exits and labels useful to user subroutines.
5. Parameter cards used to generate object programs and RDLIN cards used for area definition at object time.
6. Suggested retrieval routines (block diagrams).
7. A complete example of a random file and the programs generated to load and maintain it. (60 pages)

**GC24-3195**    **Autotest for IBM 4101 and 1460**    **37**
**with IBM 1311: Specifications and**
**Operating Procedures**

Describes the specifications and operating procedures for the IBM 1401-1311 Autotest 8K and the 1401-1311 Autotest 16K programs. Included are sections that define the control cards required, specify the arrangement of cards in the test deck, specify the autopatch card format and autopatching procedures, and describe the operating procedures for testing 1401-1311 Autocoder object programs. (40 pages)

**GC24-3209**    **2K Report Program Generator**    **28**
**Specifications**
**IBM 1401**

The IBM 1401 2K Report Program Generator produces programs that write reports of variable format. This publication explains the writing of report specifications and the preparation of source decks to produce object programs.

The language used for the report specifications is problem-oriented rather than machine-oriented. Therefore, little knowledge of machine-language coding is required. (24 pages)

**GC24-3235**    **Cobol (on Disk) Specifications**    **24**
**IBM 1401, 1440, and 1460**

This reference publication is intended for programmers who have a basic knowledge of *Cobol* programming. It includes the additional specifications necessary to write a *Cobol* program for the IBM 1401, 1440, and 1460 Data Processing Systems with disk storage.

Specific examples show how many *Cobol* statements are coded. A general explanation of these statements is also given. A sample problem shows entries for all divisions. (41 pages)

**GC24-3237**    **Input/Output Control Program**    **30**
**Specifications**
**IBM 1401, 1440, and 1460 with**
**IBM 1285 Optical Reader**

Describes the Input/Output Control Program (IOCP) for IBM 1401, 1440, and 1460 with the IBM 1285 Optical Reader. Included is:
1. A description of the functions of the program
2. The user's requirements in coding routines that use the program
3. Information set up by IOCP for use in processing.
The reader should be familiar with the publication, *IBM 1285 Optical Reader*, GA24-3256, and appropriate Autocoder and Basic Autocoder publications associated with 1401 and 1460. (6 pages)

**GC24-3241**    **Communications IOCS Specifications**    **30**
**IBM 1401, 1440, and 1460 with**
**IBM 1026 and Direct Data Channel**

Provides specifications for IBM 1026 Transmission Control Unit operations in programs assembled with either of two processor programs: 1401/1460 Communications IOCS (1026/DDC), or 1440 Communications IOCS (1026/DDC). It includes additional descriptive entries and macroinstructions, supplementing basic 1401/1460 and 1440 IOCS, that allow any of these three systems to be used with the 1026 and:
1. The IBM 1030, 1050, and 1060 remote terminals connected by local customer-provided communication lines or leased common-carrier lines.
2. The IBM 1050 Data Communication System connected by common-carrier lines, with automatic answering and automatic calling facilities.
3. The IBM 1032 Digital Time Unit.
The minimum machine requirements are specified. User routines are described. A section on programming considerations is included. (32 pages)

**GC24-3242**    **Cobol (on Disk) Operating**    **24**
**Procedures**
**IBM 1401, 1440, and 1460**

Contains the operating procedures for building the *Cobol* system using IBM 1311 Disk Storage, modifying the *Cobol* system, and assembling a machine-language object program from a source program written in the *Cobol* language. A description of the phases that make up the *Cobol* system, a list of halts and messages, and a sample program are included. (62 pages)

**GC24-3253**    **IBM 1401/1460 or 1440**    **48**
**Operating System Computer**
**Assisted Instruction**

This reference publication describes the IBM Computer Assisted Instruction (CAI) program for the IBM 1401/1460 or 1440 Data Processing Systems. Included is a general description of CAI as an aid in writing and presenting instruction courses through the IBM 1050 Data Communication System. The flexibility of CAI makes it an ideal program for school, industry, military, or any other institution experimenting with advanced teaching techniques. Used experimentally, it can be evaluated by the educator himself for its proper place in the education picture. (30 pages)

**GC24-3258**    **Autocoder (on Disk) Language**    **22**
**Specifications**
**IBM 1401, 1440, and 1460**

Describes the disk Autocoder programming system for IBM 1401, 1440, and 1460. The first section contains the specifications of the symbolic language of Autocoder (mnemonics, labels, address types), a description of declarative, imperative, and assembler control operations, and the rules for writing the source program. The second section describes macro operations and macroinstructions. Reference charts that list all valid Autocoder mnemonics also are included. (56 pages)

**GC24-3259**    **Autocoder (on Disk) Program**    **22**
**Specifications and Operating**
**Procedures**
**IBM 1401, 1440, and 1460**

Contains the program specifications and operating procedures for the Autocoder (on disk) programming system.

The specifications describe the two programs, System Control and Autocoder Assembler, that make up the Autocoder system. Logical files defined and used by the system, control cards, and results of processing operations are also included.

The operating procedures are divided into two sections. The first section describes assembling and executing object programs, changing logical-file assignments, maintaining an Autocoder library, and revising an object program. The second section describes building and updating an Autocoder system.

A summary of control card formats, phase descriptions, and a listing of a sample program make up the appendix of this publication. (65 pages)

**GC24-3261**    **Report Program Generator**    **28**
**(on Disk) Specifications**
**IBM 1401, 1440, and 1460**

This reference publication contains specifications for IBM 1401/1460 report program generator, on disk, and IBM 1440 report program generator, on disk. The publication explains the writing of report specifications and the preparation of control cards, to produce object programs.

Examples and sample programs illustrate the applications of the report program generator language. (116 pages)

**GC24-3262**    **Basic Autocoder 2K**    **22**
**Operating Procedures**
**IBM 1401**

These operating procedures supplement the *Basic Autocoder 2K Specifications for IBM 1401/1460*, GC24-3170. They include procedures to be followed by the operator when assembling and executing a Basic Autocoder 2K program on an IBM 1401 Data Processing System. This publication also includes a general description of the assembly process, instructions for running the object program, and instructions for patching. (16 pages)

**GC24-3267**   **Basic 4K Report Program**     **28**
**Generator Operating Procedures**
**IBM 1401 and 1460**

Contains operating procedures for IBM 1401 and 1460 Basic 4K RPG, and should be used with the SRL publication *Basic 4K Report Program Generator Specifications for IBM 1401 and 1460,* GC24-3166.

It contains these main sections: a description of the Basic 4K RPG deck, the control card, the input deck, operating instructions for generating as well as for running an object program, the edit listing, and halts and messages. (12 pages)

**GC24-3273**   **Multiple Tape Utility Program**     **32**
**(Incorporating 120-Character Labels)**
**Specifications and Operating**
**Procedures**
**IBM 1401 and 1460**

This publication contains the program specifications and operating procedures for the IBM 1401/1460 Multiple Tape Utility Program with 120-Character Label Capability. Included in the specifications is a description of the program, the operations it performs, the user's file requirements (card and tape), and necessary program-control information.

Tape labels are discussed throughout the specifications. A special section for tape labels is also included.

The operating procedures contain a description of the program deck, the procedures for running the program, and the program halts. (15 pages)

**GC24-3279**   **Sort 14 Specifications, IBM 1460**     **33**

This reference publication, which contains a description of the IBM 1460 Sort 14 program, should be used in conjunction with *Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications,* GC24-1489.

This publication contains the following information:
1. Minimum machine requirements for an IBM 1460 to be used for Sort 14.
2. Program capabilities.
3. A description of the control cards and RDLIN cards that are required to define the users specific sort program.
4. A description of the phases of the program.
5. The formulas needed to determine the size of program-required areas of disk storage.
6. A description of the facilities provided for inserting user-written routines into the program. (30 pages)

**GC24-3289**   **Sort Operating Procedures**     **33**
**IBM 1460**

This reference publication contains the following information.
1. The minimum machine requirements for an IBM 1460 Data Processing System to be used for Sort 14.
2. A description of the program decks.
3. A description of the procedure to follow when modifying the program decks.
4. The instructions for running a Sort 14 program.
5. The programmed halts and messages that can occur while the program is being run.
(23 pages)

**GC24-3298**   **Input/Output Control System**     **30**
**(on Disk) Operating Procedures**
**IBM 1401 and 1460**

Describes the operating procedures for the IBM 1401 and 1460 IOCS (on disk) program, designed for a 1401 system that includes an IBM 1311 Disk Storage Drive, or a 1460 system that includes an IBM 1301 or 1311 Disk Storage Drive. Use this publication in conjunction with the Systems Reference Library publication *Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications,* GC24-1489.

Three main sections are included in this publication: combining IOCS routines with the IBM 1401, 1440 and 1460 Autocoder system; assembling an object program; and running an object program. Because IOCS is actually a set of Autocoder library routines, this publication covers only those functions that are unique to IOCS. The reader should be familiar with the operating procedures described in the Systems Reference Library publication *Autocoder (on Disk) Program Specifications and Operating Procedures: IBM 1401, 1440, and 1460,* GC24-3259. (10 pages)

**GC24-3311**   **Sort 13 and Sort 14 Timing**     **33**
**Program**
**Specifications and Operating**
**Procedures**
**IBM 1401 and 1460**

This reference publication contains the specifications and operating procedures for the Sort 13 and Sort 14 Timing Program. An IBM 1401 or 1460 Data Processing System, with the required machine configuration, can be used to produce Sort 13 timing estimates for disk files to be sorted on any IBM 1440 Data Processing System, and Sort 14 timing estimates for disk files to be sorted on any IBM 1460 Data Processing System.

The first section of this publication contains machine requirements, a description of the program deck, timing considerations, and program information requirements. The second section describes system preparation, messages, and halts.

The user should be familiar with *Sort 14 Specifications, IBM 1460,* GC24-3279 and *Sort 14 Operating Procedures, IBM 1460,* GC24-3289. (24 pages)

**GC24-3317**   **Sort 7**     **33**
**Specifications and Operating**
**Procedures**
**IBM 1401 and 1460**

This reference publication contains the specifications and operating procedures for the Sort 7 program. The *Specifications* section describes the sorting technique, the tape-loadable and user-program features of the program, file requirements and control cards.

The *Operating Procedures* section contains the instruction for transferring Sort 7 to tape and for executing the Sort 7 program. A description of the Sort 7 program deck, system preparation, and a list of halts and messages are also included.

Schematics of Type A and Type B standard tape labels are given in the *Appendix* to this publication. (56 pages)

**GC24-3319**   **Autocoder (on Tape) Language**     **22**
**Specifications and Operating**
**Procedures**
**IBM 1401 and 1460**

This reference publication contains the language specifications and operating procedures for the Autocoder (on Tape) programming system. The IBM 1401 Autocoder processor program produces machine-language object programs for IBM 1401 and IBM 1460 from source programs written in the symbolic language of Autocoder.

The language specifications are divided into two sections. The first section contains the specifications of the symbolic language (mnemonics, labels, address types, and control operations) and the rules for writing the source program. The second section describes macro operations and macroinstructions.

The operating instructions supplement the language specifications section of this publication. Described are the procedures to be performed by the operator when assembling an Autocoder program on an IBM 1401 or 1460 tape system. The phases of the Autocoder processor are explained and system halts and restarts are given. (60 pages)

**GC24-3322**   **Fortran IV Language Specifications,**     **25**
**Program Specifications, and**
**Operating Procedures**
**IBM 1401, 1440, and 1460**

This reference publication contains the language specifications, program specifications, and operating procedures for the Fortran IV Programming System.

The language specifications describe the Fortran IV language that is processed by the Fortran system. The language closely resembles the language of mathematics, and includes various types of arithmetic, control, input/output, and specification statements.

The program specifications describe the two programs, *System Control* and *Fortran Processor,* that make up the Fortran system. Logical files defined and used by the system, control cards, and results of processing operations are also included.

The operating procedures are divided into two parts. The first part describes compiling and executing object programs, changing logical-file assignments, and maintaining a Fortran library of subprograms. The second part describes building and updating a Fortran system.

A summary of processor jobs, control-card formats, phase descriptions, and a listing of a sample program make up the appendix of this publication. Also included in the appendix is a description of the procedures to be followed in building a system that contains both Fortran and Autocoder. (94 pages)

**GC24-3324**   **Merge 7 Specifications and**     **33**
**Operating Procedures**
**IBM 1401 and 1460**

This reference publication contains the specifications and operating procedures for the Merge 7 program. The *Specifications* section describes the merging technique, file requirements, exits for user programming, and control cards.

The *Operating Procedures* section includes a description of the Merge 7 program deck, deck and system preparation, error options, and a list of halts and messages.

Schematics of Type A and Type B standard tape labels are given in the *Appendix.* (25 pages)

**GC24-3325**    **Communications IOCS Operating**    **30**
**Procedures: IBM 1401, 1440, and**
**1460 with IBM 1026 and**
**Direct Data Channel**

This publication describes the IOCS (Input/Output Control System) procedures to use when operating an IBM 1401, 1440, or 1460 Data Processing System with a minimum of one and a maximum of four IBM 1026 Transmission Control Units or the Direct Data Channel Feature. When only IBM 1311, 1402, 1403, 1442, 1443, and 1444 input/output files are to be handled, refer to *Input/Output Control System (on Disk) Operating Procedures, IBM 1401 and 1460*, GC24-3298.

The following operations are explained in this publication.

1. Combining IOCS with Autocoder.

2. Generating an object program.

3. Loading the object program.

In addition, this publication lists the minimum machine requirements for each system, and the programmed halts, accompanied by the corrective procedures for each, that can occur during system operation. (16 pages)

**GC24-3334**    **Report Program Generator (on Disk)**    **28**
**Operating Procedures**
**IBM 1401 and 1460**

This reference publication, which contains operating procedures for IBM 1401 and 1460 Report Program Generator (on Disk), should be used in conjunction with:

*Report Program Generator (on Disk) Specifications, IBM 1401, 1440, and 1460*, GC24-3261.

*Autocoder (on Disk) Program Specifications and Operating Procedures, IBM 1401, 1440, and 1460*, GC24-3259.

*Input/Output Control System (on Disk) Operating Procedures, IBM 1401 and 1460*, GC24-3298.

*Input/Output Control System (on Disk) for IBM 1401/1460-1311: Specifications*, GC24-1489.

This publication contains a description of the RPG program deck, system file preparation, input deck for the RPG run, Autocoder control cards, operating instructions for generating and executing an object program, the edit listing, and halts and messages. (30 pages)

**GC24-3341**    **On-Line Testing**    **30**
**IBM 1401, 1440, and 1460**

This publication presents on-line testing procedures for a communication-oriented IBM 1401, 1440, or 1460 Data Processing System with a remote IBM 1050 Data Communications System and/or IBM 1030 Data Collection System. Use of these procedures reduces the inconvenience caused by malfunctions external to the data processing system and the IBM 1026 or 1448 Transmission Control Unit.

The IOCS options for on-line testing are discussed, and a typical user's diagnostic routine is described. Also, suggestions are given for:

1. Operator testing procedures at the remote terminal;

2. Content of a diagnostic test message; and

3. Types of off-line performance reports.

The reader should be familiar with the following SRL publications, depending on the system he has installed.

*IBM 1050 Data Communications System*, GA24-3020

*IBM 1030 Data Collection System*, GA24-3018.

For a data processing system with an IBM 1448:

*IBM 1448 Transmission Control Unit*, GA24-3010

*IOCS Specifications, IBM 1460 with IBM 1448 (1401/1460 Communications IOCS — 1448/DDC)*, GC24-3047

For a data processing system with an IBM 1026:

*IBM 1026 Transmission Control Unit*, GA24-3244

*Communications IOCS Specifications, IBM 1401, 1440, and 1460 with IBM 1026 and Direct Data Channel*, GC24-3241. (14 pages)

**GC24-3345**    **IBM 1401/1460 Timing Programs**    **33**
**for IBM System/360 Basic**
**Programming Support**
**Sort/Merge Programs (8K Tape)**

This publication contains the specifications and operating procedures for the IBM 1401 and 1460 timing programs used to estimate the amount of time required to sort records with an IBM System/360 Basic Programming Support 1-channel or 2-channel Sort/Merge Program (8K Tape).

The following information is included in this publication.

1. Minimum machine requirements for estimating times with these programs.

2. A description of the user-prepared information cards required to define the proposed sort operation.

3. The procedure to follow for executing the timing programs.

The user of this publication should be familiar with *IBM System/360 Basic Programming Support Sort/Merge Programs (8K Tape)*, GC24-3320.

**GC24-3377**    **IBM 1401/1460 Timing Program**    **33**
**for IBM Basic Operating System/360**
**Sort/Merge Program (8K Disk)**

Contains the specifications and operating procedures for the IBM 1401 and 1460 timing program used to estimate the amount of time required to sort records with the program IBM Basic Operating System/360 8K Disk Sort/Merge.

The following information is included in this publication.

1. Minimum machine requirements for estimating times with this program;

2. A description of the user-prepared information cards required to define the proposed sort operation;

3. The procedure to follow for executing the timing program.

The user of this publication should be familiar with *IBM Basic Operating System/360 Sort/Merge Program (8K Disk)*, GC24-3321.

**GC24-3384**    **IBM 1401/1440/1460-1026 and**    **48**
**1440-1448 Operating Systems**
**Computer Assisted Instruction**
**Author and Proctor Manual**

Describes the IBM Computer Assisted Instruction program (CAI) for the IBM 1401/1440/1460-1026 and 1440-1448 Data Processing Systems. It describes:

1. The capabilities of the CAI program;

2. The minimum machine requirements for CAI;

3. The operating procedures and related information for the proctor to prepare the systems for CAI;

4. The operating instructions and information for the author and proctor to enter material into the computing system via the IBM 1052 Printer-Keyboard.

**GC24-3385**    **IBM 1401/1440/1460-1026 and**    **48**
**1440-1448 Operating Systems**
**Computer Assisted Instruction**
**Student Manual**

This publication describes the IBM 1052 Printer-Keyboard as used with the Computer Assisted Instruction Program (CAI). The publication:

1. Contains the information necessary for the student to use the printer-keyboard to receive course material from the computer.

2. Describes the standard features, operation, and cautions that the student must exercise while using the printer-keyboard. (10 pages)

**GC24-3439  IBM 1401/1460 Timing Program    33**
**for IBM System/360 Disk and**
**Tape Operating Systems**
**Tape Sort/Merge Program**

Contains the specifications and operating procedures
for the IBM 1401 and 1460 timing programs used to
estimate the amount of time required to sort tape rec-
ords with the program IBM System/360 Disk Operating
System Tape Sort/Merge or the IBM System/360 Tape
Operating System Tape Sort/Merge.

The following information is included in this publi-
cation.
1. Minimum machine requirements for estimating
   times with these programs.
2. A description of the user-prepared information
   cards required to define the proposed sort operation.
3. The procedure to follow for executing the timing
   programs.

The user of this publication should be familiar with
*IBM System/360 Disk and Tape Operating Systems
Tape Sort/Merge Program Specifications*, GC24-3438.
(16 pages)

**GC24-3445  IBM 1401/1460 Timing Program    33**
**for IBM System/360 Operating**
**System Disk Sort/Merge Program**

Contains the specifications and operating procedures
for the IBM 1401 and 1460 timing program used to
estimate the amount of time required to sort records
with the program IBM System/360 Disk Operating Sys-
tem Sort/Merge.

The following information is included in this pub-
lication.
1. The minimum machine requirements for estimating
   times with this program.
2. A description of the user-prepared information
   cards required to define the proposed sort opera-
   tion.
3. The procedure to follow for executing the timing
   program.

The user of this publication should be familiar with
*IBM System/360 Disk Operating System, Sort/Merge
Program Specifications*, GC24-3444. (16 pages)

**GF20-0234  Autotest for the IBM 1401:    37**
**Specifications and Operating**
**Procedures**

Describes the specifications, features, forms and dia-
grams required, and operating instructions for using
program autotest. This is an advanced testing program
for the IBM 1401 to aid in testing Autocoder, SPS, and
Fargo programs. Autotest provides the ability to stack
programs and to produce automatically, without oper-
ator intervention, the necessary documents to evaluate
the tested programs. (56 pages)

**GF28-8053  Cobol    24**

The *Common Business Oriented Language (Cobol)*
for programming computers was developed by a com-
mittee of the *Conference On Data Systems Languages
(Codasyl)* as a cooperative effort of computer users in
industry, the Department of Defense and other Federal
Government agencies, and computer manufacturers.
This manual describes the language specified by
*Codasyl* as *Cobol*-1961; that is, the *Cobol* specifications
prescribed in the official government manual for 1961.

The *Cobol* language consists of English nouns, verbs,
and arithmetic and logical expressions describing busi-
ness problems. The *Cobol* processor for a given system
translates *Cobol* programs into actual machine coding.
(172 pages)

**GF28-8074  Fortran    25**

*Fortran* is an automatic coding system developed to
express problems in a symbolic source language similar
to the language of mathematics. This manual describes
*Fortran* and prepares the reader to use its facilities.
(104 pages)

**GF20-8172  Bibliography of Data    99**
**Processing Techniques**

This bibliography and associated classification system
provides a means to identify selected IBM publications
which, either wholly or in part, document data process-
ing *techniques* information. The listing of any given
publication in this bibliography, however, does not
preclude its appearance in other reference bibliogra-
phies.

Part I of this bibliography lists publications by form
number within major subject classification. Part II con-
tains abstracts of the publications in form-number se-
quence only. (12 pages)

**GG24-1477  1401 Data Flow    01**

Describes each internal 1401 operation, plus card
input/output and printer operations, to assist operators,
programmers, and systems engineers in understanding
1401 operations. Presents each operation in the form of
a data-flow diagram. Shows graphically the path data
takes during an operation, along with a written ex-
planation of the steps involved. (64 pages)

**GH20-0507  Bibliography of Application    99**
**Publications Finance Industries**

This bibliography and the associated classification sys-
tem lists and categorizes IBM application publications
that are pertinent to finance industries. Section I lists
these publications by application or industry. Section
II contains an abstract of each publication in order
number sequence.

A periodic newsletter (GN20-1077) is published to
keep the bibliography up to date. The newsletter is
divided into two sections. Section I is an updated list-
ing of application publications by application or in-
dustry. This section also includes any corrections to
the bibliography and a list of superseded publications.
Section II contains an abstract of each publication not
included in the last published bibliography. (26 pages)

**GH20-0522  Bibliography of Application    99**
**Publications Distribution Industries**

This bibliography and the associated classification sys-
tem lists and categorizes IBM application publications
that are pertinent to distribution industries. Section I
lists these publications by application or industry. Sec-
tion II contains an abstract of each publication in
order number sequence.

A periodic newsletter (GN20-1853) is published to
keep the bibliography up to date. The newsletter is
divided into two sections. Section I is an updated list-
ing of application publications by application or in-
dustry. This section also includes any corrections to
the bibliography and a list of superseded publications.
Section II contains an abstract of each publication not
included in the last published bibliography. (26 pages)

**GH20-0530  Bibliography of Application    99**
**Publications Public Utility Industries**

This bibliography and the associated classification sys-
tem lists and categorizes IBM application publications
that are pertinent to public utility industries. Section I
lists these publications by application or industry. Sec-
tion II contains an abstract of each publication in
order number sequence.

A periodic newsletter (GN20-1866) is published to
keep the bibliography up to date. The newsletter is
divided into two sections. Section I is an updated list-
ing of application publications by application or indus-
try. This section also includes any corrections to the
bibliography and a list of superseded publications. Sec-
tion II contains an abstract of each publication not in-
cluded in the last published bibliography. (14 pages)

**GH20-0531  Bibliography of Application    99**
**Publications Printing and**
**Publishing Industries**

This bibliography and the associated classification sys-
tem lists and categorizes IBM application publications
that are pertinent to printing and publishing indus-
tries. Section I lists these publications by application
or industry. Section II contains an abstract of each
publication in order number sequence.

A periodic newsletter (GN20-1867) is published to
keep the bibliography up to date. The newsletter is
divided into two sections. Section I as an updated list-
ing of application publications by application or in-
dustry. This section also includes any corrections to
the bibliography and a list of superseded publications.
Section II contains an abstract of each publication not
included in the last published bibliography. (12 pages)

**GH20-0536  Bibliography of Application    99**
**Publications Insurance Industry**

This bibliography and the associated classification sys-
tems lists and categorizes IBM application publications
that are pertinent to the insurance industry. Section I
lists these publications by application or industry. Sec-
tion II contains an abstract of each publication in
order number sequence.

A periodic newsletter (GN20-1869) is published to
keep the bibliography up to date. The newsletter is
divided into two sections. Section I is an updated list-
ing of application publications by application or in-
dustry. This section also includes any corrections to
the bibliography and a list of superseded publications.
Section II contains an abstract of each publication not
included in the last published bibliography. (22 pages)

**GJ22-6690**  **Standard BCD Interchange Code**  01

Describes the standard BCD interchange code. Discusses the IBM card code, IBM BCD magnetic tape code, correspondence between codes and printed symbols, correspondence between codes and machine controls, collating sequence of code elements, and two subsets of alternate graphics. (4 pages)

**GJ24-0209**  **Programs for IBM 1401 Card**  32
**Systems: Specifications**

Describes five IBM 1401 utility programs, five frequently used subroutines, and four program error-detection aid routines for use in program testing on 1401 systems using card input and card or printed output. Each program is easily adapted to the user's program. Flexibility of the programs provides using either 100 or 132 positions of printing where applicable, and for adapting the programs to 1401 systems with 1400, 2000, or 4000 positions of core storage. (36 pages)

**GJ24-0215**  **Report Program Generator for**  28
**IBM 1401 Card and Tape Systems**

Presents a description of writing the report specifications and preparing a source deck for the report program generator.

The report program generator (RPG) produces programs for writing reports of variable format. When using this program, the user need only supply a set of specifications for the report. Because the language for the specifications is problem-oriented rather than machine-oriented, little knowledge of machine-language coding is required. Specifications of the desired report, after being punched into cards, are used as input to the RPG. The generator then produces a program to write the desired report, using the input data from the user's card or magnetic tape file. The report programs that are generated can include such features as: various classes of headings and totals, input data selection, report format control, arithmetic operations including multiplication and division, half-adjusting and position adjusting, and user's subroutines. The output of report programs generated can be printed, punched in cards, or written on magnetic tape. (76 pages)

**GJ24-1411**  **Utility Programs for IBM 1401**  32
**Tape Systems: Specifications**

Describes three utility programs that facilitate translating data: card-to-tape, tape-to-card, and tape-to-printer. These programs enable 1401 tape systems to perform operations now done off-line by 700 and 7000 series auxiliary equipment. Minimum machine requirements are the 1401 Model C3 and the high-low-equal compare feature. To process binary tape records or column-binary cards requires also the column binary feature. (36 pages)

**GJ24-1422**  **1401 Sort 1 Specifications**  33

Presents specifications for Sort 1, a generalized sorting program for use on an IBM 1401 Data Processing System equipped with a minimum of four IBM 729 II, 729 IV, or 7330 Magnetic Tape Units. The program can modify itself according to information punched in a control card and thus perform a variety of sorting applications. This bullet'¬ also provides information for preparing control cards and estimating the timing of sorting applications. (12 pages)

**GJ24-1428**  **Multiple Utility Programs for**  32
**IBM 1401 Tape Systems:**
**Specifications**

Presents the multiple utility program for IBM 1401 tape systems, which performs concurrently three off-line utility operations: card-to-tape, tape-to-card, and tape-to-printer. This program can accommodate, within limitations, magnetic tapes and card decks prepared on any IBM system.

The program requires an IBM 1401 Model C3 tape system, and the high-low-equal compare and advanced programming special features. To process binary tape-records or column-binary cards requires also the column binary feature. (4 pages)

**GJ24-1463**  **1401-1009 Utility Program:**  32
**Preliminary Specifications**

Presents preliminary specifications of a utility program for operating a 1401-1009 system with a minimum of programming effort. Describes the functional characteristics and the operational control of the program. Gives the minimum machine requirements of one transmission terminal using the program, and lists the various configurations of equipment with which this terminal can communicate.

This 1401 program provides transmit and receive control of the IBM 1009 Data Transmission Unit by six manually-controlled sense switches on the 1401. A 1401-1009 system under control of this program can perform card-to-card, card-to-tape, tape-to-card and tape-to-tape transmissions with various 1401-1009 configurations, or an IBM 7701 Terminal Unit. (8 pages)

**GJ24-1467**  **Report Program Generator for**  28
**IBM RAMAC 1401 Systems:**
**Specifications**

Explains the writing of report specifications, defines the disk input file, describes the preparation of the control card, and gives the minimum system requirements for generating and for executing the object programs.

The report program generator for IBM RAMAC 1401 systems produces object programs that write reports of variable format. The data files to be processed must be contained in the IBM 1405 Disk Storage unit. Because the language used for the report specifications is problem-oriented rather than machine-oriented, little knowledge of machine-language coding is required. (16 pages)

**GJ24-1485**  **1401-1012 Tape Punch Routines**  32

Describes the program routines for punching 5- and 8-track tape on the IBM 1012 Tape Punch. Includes sections on general operation, tape checking and corrections, end-of-reel processing, diagnostic halts, and operating procedures. The routines, as written, are to be incorporated into an Autocoder system library. Two main instructions cause the 1401 Autocoder to generate the necessary instructions. (4 pages)

**GJ28-0238**  **1401 Peripheral Integrated**  48
**Processing System for Use with 7000**
**Series Data Processing Systems**

Describes the IBM 1401 peripheral integrated processing system. This system includes among its supervised peripheral programs the D-programs of the 7000 and 1400 output editing system. (28 pages)

**GL24-3102**  **Modified Character Sets for the**  13
**IBM 1403 Print Chains and**
**Print Trains**

Contains a complete explanation of four modified-character-set IBM 1403 print chains or trains, available on an RPQ (Request for Price Quotation) basis for the IBM 1403 Printer Models 1, 2, and 3. The physical characteristics, BCD codes, card codes, IBM 1401 and 1460 programming considerations, printing speed, and synonym codes are discussed fully for these four print chains: 60-character set (optional format), 80-character set (set format), 80-character set (optional format), and 120-character set (optional format).

This publication also covers the ordering procedures for the four print chains or trains and the prerequisite RPG items.

For a list of related publications and abstracts, see the IBM Bibliography for the associated Data Processing System. (16 pages)

**GR20-9000**  **1401 Basic Programming**  90
**Course Description**

NOTE: Each course description booklet describes the course, its objectives and length, the intended audience, the prerequisites, and the course code. It lists all materials required by the instructor and by the student. Abstracts are included for educational materials created specifically for the course. Also, abstract references are provided for the other materials.

**GR20-9001**  **1401 Accelerated Basic**  90
**Programming Course Description**

**GR20-9010**  **1401 Console Operator —**  90
**Course Description**

**GR20-9012**  **1401 Fargo Course Description**  90

**GR20-9013**  **1401 System Planning Course**  90
**Description**

**GR20-9029**  **1401 Advanced Training Course**  90
**Description**

**GR20-9030**  **1401 Autotest Course Description**  90

**GR20-9031**  **1401 Installation Planning Course**  90
**Description**

**GR20-9032**  **1401 Programming System Course**  90
**Description**

**GR20-9033**  **1401 RPG Course Description**  90

**GR20-9034**  **1401-1311 Disk Storage**  90
**Programming Course Description**

**GR20-9054**  **1401 Basic SPS Programmed**  90
**Instruction Course Description**

**GR20-9055**  **1401 Basic Programming**  90
**Autocoder, Programmed Instruction**
**Course Description**

**GR20-9062**  **7740 Communication Control**  90
**Package Course Description**

**GX20-1702**    **Proportional Record Layout**    80
         **and Format Form**

The front side of this form consists of the Proportional Record Layout form. It is suitable for card, tape, and disk records. Positional markings are 00-99 and 01-100.

The back side of the form is the Record Format form. This form permits record layouts to be prepared without the space limitations of positional markings. Space is also provided for reference data. These forms are general-purpose and may be used for all systems. (25 sheets per pad—11 x 16½)

**GX20-1776**    **Printer Spacing Chart (144 Position**    80
         **Span at 10 Characters per Inch,**
         **and 6 Lines per Vertical Inch)**

This chart is printed in light green ink and provides 144 printing positions (at 10 positions per inch horizontally) for a printer carriage space-setting of 6 lines per inch. The form essentially follows the layout recommended by the SHARE organization. This chart may be reproduced using most standard office copying machines. When the form is to be used as reproduction copy for printing documents and the grid and other preprinted information are to be dropped-out, the printer should be instructed to use a green filter.

Black pen ink or typewritten insertions are recommended. (25 sheets per pad—11 x 18)

**GX20-1778**    **Printer Spacing Chart (144 Position**    80
         **Span at 10 Characters per Inch,**
         **and 8 Lines per Vertical Inch)**

This chart is printed in green ink and provides 144 printing positions (at 10 positions per inch horizontally) for a printer carriage space-setting of 8 lines per inch. The format essentially follows the layout recommended by the SHARE organization. This chart may be reproduced using most standard office copying machines. When the form is to be used as reproduction copy for printing documents and the grid and other preprinted information are to be dropped-out, the printer should be instructed to use a green filter.

Black pen ink or typewriter insertions are recommended. (25 sheets per pad—11 x 18)

**GX20-8010**    **Installation Planning Schedule**    80

This form is for preparing installation planning schedules. Provision is made for entering the planned activities, programs, or functions on the left side, and scheduled dates or time periods on the top of the form. (25 sheets per pad—16½ x 11)

**GX20-8011**    **Scheduling Control Form —**    80
         **Programming**
         **Progress Chart**

This form is a chart for entering scheduled and completion dates for each phase of programming and testing. The reverse side contains a weekly progress chart. '25 sheets per pad—16½ x 11)

**GX20-8020**    **Flowcharting Template**    80

This template provides a convenient means for drawing standard symbols used frequently in flowcharting computer programs.

**GX20-8021**    **Autochart Flowchart**    80
         **Work Sheet**

This work sheet is used for rough layout of flowcharts prior to coding in the IBM AUTOCHART language. (25 sheets per pad—16½ x 11)

**GX20-8024**    **Decision Logic Coding Form**    80

This form is a design logic coding aid for users of the IBM 1401 Design Logic Translator Program.

**GX20-8040**    **1230, 1231, 1232 Spacing Chart**    80
         **(Test Scoring) 5 Words per Inch**

Used to lay out test scoring forms using 5 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8041**    **1230, 1231, 1232 Spacing Chart**    80
         **(Test Scoring) 4 Words per Inch**

Used to lay out test scoring forms using 4 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8042**    **1230, 1231, 1232 Spacing Chart**    80
         **(Test Scoring) 3 Words per Inch**

Used to lay out test scoring forms using 3 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8043**    **1230, 1231, 1232 Spacing Chart**    80
         **(Non Test Scoring) 5 Words per Inch**

Used to lay out non test scoring forms using 5 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8044**    **1230, 1231, 1232 Spacing Chart**    80
         **(Non Test Scoring) 4 Words per Inch**

Used to lay out non test scoring forms using 4 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8045**    **1230, 1231, 1232 Spacing Chart**    80
         **(Non Test Scoring) 3 Words per Inch**

Used to lay out non test scoring forms using 3 words per inch for the 1230, 1231, and 1232. (25 sheets per pad—12 x 17)

**GX20-8096**    **General Purpose Card Punching**    80
         **Form**

A general purpose form for preparing input data, control cards, program patch cards and other card input to IBM equipment. (25 sheets per pad—8½ x 11)

**GX21-9021**    **Reference Card**    85
         **IBM 1230, 1231, 1232**
         **Document Marking Instructions**

This reference card provides, in simple illustrated form, the basic information needed to produce a properly marked document. Marks read from the documents by IBM optical mark readers can be:
1. Transmitted to a data processing system,
2. Scored, as for student test, or
3. Punched into cards for later processing.
It is, therefore, very important that the documents are marked correctly and with care. (Card—7¼ x 3⅝)

**GX22-6795**    **7740 Communication Control**    80
         **System Templates**

Contains scaled equipment templates on acetate sheets (¼ inch equals 1 inch), for planning machine-room layouts. The units are the IBM 1311 Disk Storage, 7904, 7907, 7908, 7909 Data Channels, 7741 Processing Unit, 1051 Control Unit, 1052 Printer-Keyboard, and 1056 Card Reader. (Template—8½ x 11)

**GX24-1152**    **1401 Symbolic Programming**    80
         **System Coding Sheet**

This coding form aids in programming the IBM 1401 using the symbolic programming system. Provides space for all information relevant to the coding and subsequent assembly of the object program. Prenumbered lines sequence each entry. Fields are numbered and ruled to facilitate both programming and card punching. (The cards corresponding to this form can be ordered under Electrotype No. C55369.) (25 sheets per pad—11 x 8½)

**GX24-1336**    **1401 and 1410 Report Program**    80
         **Generator, Input Specifications**

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form (input specifications), the user describes his input file from which the report is to be prepared. (The input-specifications cards corresponding to this form can be ordered under Electrotype No. N12836.) (25 sheets per pad—11 x 8½)

**GX24-1337**    **1401 and 1410 Report Program**    80
         **Generator, Data Specifications**

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form, the user describes the data fields that appear in the output and those used in processing. (The data-specifications cards corresponding to this form can be ordered under Electrotype No. N12837.) (25 sheets per pad—11 x 8½)

**GX24-1338    1401 and 1410 Report Program    80
              Generator, Calculation Specifications**

This is one of four Report Program Generator (RPG) specifications forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. The user can specify on this form calculations that are more extensive than those that can be defined on the data specifications sheet. Some examples are comparison, multiplication, and division, as well as subsequent computations using the results from data specifications and prior entries on the calculation sheet. (The calculation-specifications card corresponding to this form can be ordered under Electrotype No. N12835.) (25 sheets per pad—11 x 8½)

**GX24-1339    1401 and 1410 Report Program    80
              Generator, Format Specifications**

This is one of four Report Program Generator (RPG) specification forms. The four forms apply for card, IBM 1405 Disk Storage, and magnetic-tape applications of RPG for both the IBM 1401 and the 1410. On this form the user describes the lines and the fields constituting the output. (The format-specification cards corresponding to this form can be ordered under Electrotype No. N12834.) (25 sheets per pad—11 x 8½)

**GX24-1350    1401, 1410, and 1440 Autocoder    80
              Coding Sheet**

This coding sheet is designed for use in programming the IBM 1401 using 1401 Autocoder, the IBM 1410 using 1410 Autocoder or Basic Autocoder, and the IBM 1440 using 1440 Autocoder. The columns and lines of the sheet are numbered to facilitate both programming and card punching. (Autocoder source-input cards corresponding to this form can be ordered under Electrotype No. A36199. Autocoder condensed-output cards can be ordered under Electrotype No. C59503.) (50 sheets per pad—11 x 8½)

**GX24-1709    1401 RPG Program Reference Card    85**

This reference card presents the report specification parameters and the control card to assist users of the IBM 1401 Report Program Generator (1401 RPG) in preparing the input, data, calculation, and format report specifications (GX24-1336 to GX24-1339, inclusive). The entries acceptable to 1401 RPG, as well as a brief explanation of them, are included, together with the 1401 RPG control-card contents and format. (Card—15¼ x 8½)

**GX24-3039    1418 and 1428 Optical Readers    80
              Document Design and
              PDS Timing Chart**

This chart is an aid for designing documents to be read by the 1418 or 1428 optical reader.

The full-size drawing of the transport path shows exact location of read stations and photo document sensors. Moving a document across this chart simulates actual operation. (25 sheets per pad—22 x 11)

**GX24-3100    1440/1460 Console Status Sheet    80**

This sheet is a representation of the IBM 1447 Console. It aids in preparing the 1440 or 1460 for operation and in testing programs. The status of console lights, registers, and switches can be recorded. (25 sheets per pad—8½ x 11)

**GX24-3140    IBM 1460 Physical Planning    80
              Template**

This template provides a ¼″ = 1 foot scale drawing of units for the 1460 system and is to be used for the floor planning of an installation. (clear plastic sheet—8½ x 11)

**GX24-3245    Control Card Formats for Sort 2,    80
              Merge 2, Sort 4, Sort 7, and
              Merge 7 with 1401/1460**

This form is designed to assist the user in preparing control cards and documentation for 1401 and 1460 tape-sorting and tape-merging programs. For each of the five control-card formats, a brief description of the information to be specified is provided. To the left of each description are column numbers and spaces in which to write the information to be punched. (25 sheets per pad—17½ x 11)

**GX24-3448    IBM 1445 Printer Spacing Chart    80**

This chart, scaled in nonphotographic blue, provides 113 printing positions at 8 characters per inch for carriage spacing of 6 lines per inch. Vertical rulings are shown for each inch, or every 8 characters apart, to assist in printing layout. A carriage-control tape facilitates planning for tape punching. Space is available on the top of the form to indicate miscellaneous print line formats. (25 sheets per pad—11 x 16½)

**GX24-6437    1240, 1401, 1440, and 1460    80
              Program Chart**

This form is a program planning chart with columns provided for step number, instruction address, machine instruction, remarks and effective number of characters in instruction and data. (25 sheets per pad—8½ x 11)

**GX24-6438    1240, 1401, 1410, 1440, and    80
              1460 Storage Layout**

This sheet provides storage positions for assigning data, symbolic notations, and wordmarks. The chart is arranged in ten rows of 100 positions each, with space provided in the upper left corner of each row to enter the hundred's address.

The reverse side contains a pre-numbered schematic for allocating 2000 positions of storage. Pre-assigned standard input/output storage areas are indicated by light shading. Pre-assigned output print area for the expanded-print feature, and the read-in area for the IBM 1404 read-compare feature are indicated by dark shading. (25 sheets per pad—16½ x 11)

**GX24-6482    1401 Physical Planning Template    80**

Contains equipment templates printed on acetate sheets (scale: ¼″ = 1′) for planning machine-room layouts for the 1401 system. (clear plastic sheets—8½ x 11)

**GX24-6556    Fargo Report Specifications,    80
              Phases 4 and 1**

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in report and field-headings control cards (phase 4) and in master report and control-break control cards (phase 1). (25 sheets per pad—11 x 8½)

**GX24-6557    Fargo Report Specifications,    80
              Phase 1**

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in constants control cards (phase 1). (25 sheets per pad—11 x 8½)

**GX24-6558    Fargo Report Specifications,    80
              Phase 2**

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in total control cards (phase 2). (25 sheets per pad—11 x 8½)

**GX24-6559    Fargo Report Specifications,    80
              Phase 3**

This is one of four forms used with *Fargo*. The programmer uses this form to record report specifications to be punched in detail control cards (phase 3). (25 sheets per pad—11 x 8½)

**GX24-6562    1401 Timing Estimate Sheet    80**

This form facilitates job timing, and can show timing justifications for 1401 sales proposals. (25 sheets per pad—11 x 8½)

**GX24-6568    1401, 1410, 1440, and 1460    80
              Library Coding Form**

This form is used in coding library routines for the IBM 1401, 1410, and 1440 Autocoder macroinstructions. Space is provided for information that must be included in the library entries. Fields are numbered and ruled to facilitate coding and card punching. (25 sheets per pad—11 x 8½)

**GX24-6587    1401 Console Sheet    80**

This sheet is a representation of the IBM 1401 Processing Unit console. The form can aid in preparing the 1401 system for operation or for indicating the status of console lights, registers, and switches when program testing. (25 sheets per pad—8½ x 11)

**GX24-6588    Operating Instruction Sheet    80
              IBM 1401, 1440, and 1460**

This form can be used as a guide for preparing the system for a program run. The form has areas for indicating: input and output files from card, disk or tape, switch settings, program halts, and forms to be used with the punch and printer. (25 sheets per pad—8½ x 11)

**GX24-6591**    **Report Program Generator:**    **80**
             **Data Specifications**
             **IBM 1401, 1440, 1460**

This is one of four forms provided for use in connection with the Report Program Generator for the IBM 1401 and 1460. The forms of this set are numbered GX24-6591 through GX24-6593. (25 sheets per pad—11 x 8½)

**GX28-1464**    **Cobol Program Sheet**    **80**

This sheet aids the programmer in writing the entries of a *Cobol* source program. The sheet is designed according to the principles governing the *Cobol* reference format (see *Cobol*, GF28-8053). The form provides for recording the entries for the four divisions of a *Cobol* program: identification, environments, data, and procedure. (*Cobol* source-program cards corresponding to this form can be ordered under Electrotype No. C61897.) (25 sheets per pad—11 x 8½)

**GX28-1520**    **Cobol Reference Card**    **85**

This card provides a convenient reference to material frequently used by the *Cobol* programmer. Included are a *Cobol* word list, basic *Cobol* formats, and the following tables:
     Special characters used in *Cobol*
     Arithmetic expressions—sequence of symbols
     Conditional expressions—sequence of symbols
     Arithmetic operators
     Relational operators
     Data-items pictorial characters.
(folded card—7⅜ x 3¼)

**GX28-1585**    **1401 Autotest Autocoder Control**    **80**
             **Card and Patch Card Coding Sheet**

This is one of three forms used with the 1401 autotest program. This form facilitates Autocoder coding and card punching of Autocoder program control, tape control and patch cards. (Patch cards corresponding to this form can be ordered under Electrotype No. L18557; and program and tape-control cards, under Electrotype No. L18558.) (25 sheets per pad—13¼ x 9½)

**GX28-1586**    **1401 Autotest Tape and**    **80**
             **RAMAC File Generation Data Sheet**

This is one of three forms used with the 1401 autotest program. This form facilitates coding and card punching of file-generation control and data cards for tape and RAMAC files. (25 sheets per pad—13¼ x 9½)

**GX28-7327**    **Fortran Coding Form**    **80**

This form is used when programming in the *Fortran* language. Columns and lines are ruled and numbered to facilitate both programming and card punching. (Cards corresponding to this form can be ordered under Electrotype No. 888157.) (50 sheets per pad—11 x 8½)

**GX22-6795**    **7740 Communication Control**    **80**
             **System Templates**

Contains scaled equipment templates on acetate sheets (¼ inch equals 1 inch), for planning machine-room layouts. The units are the IBM 1311 Disk Storage, 7904, 7907, 7908, 7909 Data Channels, 7741 Processing Unit, 1051 Control Unit, 1052 Printer-Keyboard, and 1056 Card Reader. (Template—8½ x 11)

**GX28-8147**    **7740 Assembly Program**    **80**
             **Coding Form**

This form is for coding 7740 source-program statements that are assembled by the 7740 assembly program, which uses the IBM 1401. (25 sheets per pad—8½ x 11)

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