Burroughs B 700 Series

MANAGEMENT SUMMARY

The B 700 systems are certainly not new, but Burroughs has managed to keep the line alive and successful by means of astute announcements of enhancements, new models, and packaged systems. The latest entries, the B 730 and the B 776, are Burroughs' Bicentennial gifts to the data processing community.

The B 700 systems, introduced by Burroughs in March 1973, fit snugly into the gap between the company's low-cost B 80 systems and the more expensive, batch-oriented B 1700 and B 1800 systems. First customer shipments of the B 700 line, consisting of the B 705 and B 711, were made in May 1973.

The B 700 represented an excellent design compromise between the then-existing L 8000 and B 1700 system installations by combining the keyboard and forms handler so familiar to the thousands of users of the Burroughs L and TC Series systems with many of the general-purpose computer characteristics of the larger Burroughs systems.

Along with the B 700 systems, Burroughs announced the AE 301 Audit Entry computer—a stand-alone, key-to-casette data entry device intended for off-line data collection. The AE 301 and its successors, the AE 306 and AE 501, prepare a line-by-line journal listing of all input transactions for audit trail purposes and provide basic user storage for edit criteria and data validity checking. Input transactions are also recorded on a standard tape cassette for data transfer to the main B 700 console. At the time of its introduction, the AE 301 added a welcome data preparation/audit entry capability to Burroughs' ➢

The B 700 systems fall between the B 80 and the B 1800 Series in Burroughs' broad line of small business computers. Current sales emphasis is on the B 730 Series, which features the new B 9347-2 Direct Data Entry System and includes packaged configurations at prices ranging from $30,400 to $48,900.

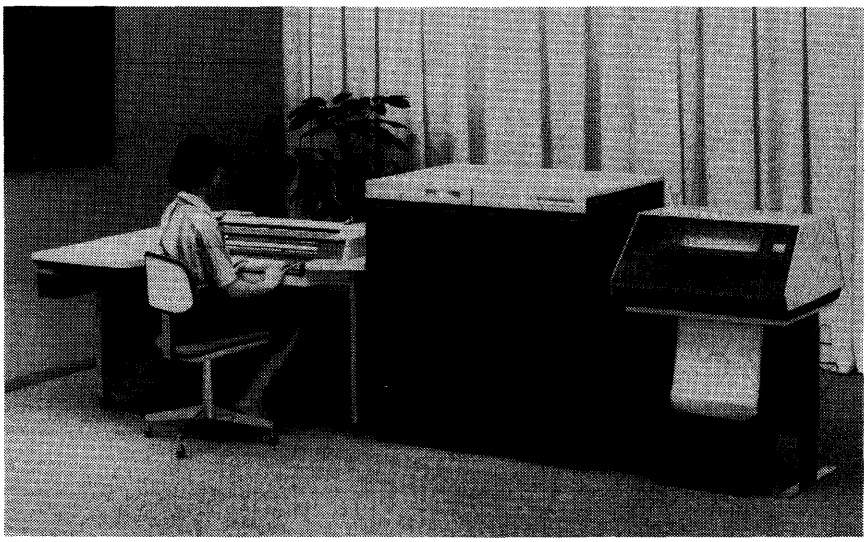
CHARACTERISTICS

MANUFACTURER: Burroughs Corporation, Burroughs Place, Detroit, Michigan 48232. Telephone (313) 972-7000.

Burroughs is considered to be one of the strongest competitors in the data processing marketplace, with a broad line of computer equipment spanning the range from small, entry-level systems to very large, multi-user, multiprocessor systems. In addition to data processing equipment, Burroughs also markets magnetic media; business forms and supplies; document counting, encoding, signing, protecting, and disbursing equipment; programmable and nonprogrammable desktop calculators; specialized banking equipment; word processing equipment; facsimile devices; and other related products. Burroughs is international in scope and employs some 50,000 people in more than 120 countries around the globe.

MODELS: B 705, B 711, B 721, B 738, and B 741 processors; B 711, B 720, and B 730 packaged systems; B 761 packaged RJE systems; and B 771, B 772, and B 776 systems and communications processors. (A B 774 "front-end" system for large-scale Burroughs Systems is also available; however, it is beyond the scope of this report.)

DATE ANNOUNCED: March 1973 through March 1976. ➢



This small B 730 configuration includes (from left to right) the system console, processor module, dual cartridge disk drive unit, and an 85-lpm printer. The system can be augmented with a variety of additional peripheral equipment.

REFERENCE EDITION. This is a mature product line, and no significant further developments are anticipated. Because of its importance, coverage is being continued, but no future update is planned.

Burroughs B 700 Series

CHARACTERISTICS OF THE B 700 PROCESSORS

	B 705 Series	B 711 Series	B 720 Series	B 730 Series	B 741	B 761 Series	B 771 & B 772	B 776
CENTRAL PROCESSORS								
Word size, bits	64	64	64	64	64	16	16	16
Maximum number of I/O controls	8	8	8	8	8	8	8	9
MAIN MEMORY								
Minimum capacity, bytes	32,768	32,768	32,768	32,768	32,768	16,384	32,768	8,192*
Maximum capacity, bytes	40,960	49,152	98,304	81,920	98,304	24,576	49,152	65,536*
Cycle time, microseconds	1	1	1	1	1	1	1	1
Access time, microseconds	—	—	—	—	—	0.46	0.46	0.632
Bits fetched per cycle	16	16	16	16	16	16	16	16
Increment, bytes	8192	8192	8192	8192	8192	8192	8192	8192
Type	Core	Core	MOS	MOS	MOS	Core/MOS	Core/MOS	MOS
Parity	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
CONTROL MEMORY								
Size	—	—	512 x 56 bits	512 x 56 bits	512 x 56 bits	—	—	1024 x 56 bits
Access time, microseconds	—	—	0.80	0.50	0.80	—	—	—
Bits fetched per cycle	—	—	56	56	56	—	—	—

*Standard 32K-byte memory for system residence is not included in these figures.

small-scale computers, at a per-station cost that was competitive with large-configuration key-to-disk and key-to-diskette systems. The Burroughs Audit Entry technique is easy to use from a file standpoint, has a relatively fast transfer rate, and can be configured with on-line capability. The AE 301 is now priced at $6,900.

In October 1973, Burroughs added communications capabilities to the B 700's, a move that had been promised at the time of the system's initial release six months earlier. The initial comunications-oriented member of the family, the B 771 System and Communications Processor, was first shipped in the first quarter of 1974. The B 771 uses many of the same peripherals as other B 700 systems, is subject to similar configuration rules, and is based upon the B 711 central processor. Memory for the B 711 starts at a minimum of 32K bytes and can be expanded to 48K bytes.

The B 771 was the first in a series of communications-oriented products that are intended to supersede Burroughs' long-lived DC 1000 series of communications products. The B 771 is specifically a replacement for the DC 1100, a remote peripheral controller based on the Varian 520/i minicomputer. The single-line data communications control program provided with the B 771 facilitates communication with larger Burroughs computer systems; it also supports operation in stand-alone B 700 series mode. Primary communications applications include remote job entry and transmission of information from a central Burroughs host system to the B 771 for printing.

Companion to the B 771 is the B 772, which is effectively a B 771 with disk storage capability added. Packaged versions of the B 771 are numbered B 761-X, where X = 4, 6, 8, or 10. The price for a packaged B 771 system ranges from $27,719 to $36,360.

DATE FIRST INSTALLED: May 1973.

NUMBER INSTALLED TO DATE: Approximately 3000.

DATA FORMATS

BASIC UNIT: 64-bit word in all B 700's except the B 77X Series and B 761 packaged systems, where the word length is 16 bits. Each word in memory may be thought of as eight 8-bit characters or hexadecimal bytes, 16 4-bit decimal digits or hexadecmal digits, one 4-bit sign plus 15 4-digit decimal numbers, or two 32-bit halfwords each containing four 8-bit characters or eight 4-bit digits. Memory capacities are usually expressed in 8-bit bytes.

INSTRUCTIONS: The B 700 is an interpreter-based system using variable micrologic to produce a machine-level language which Burroughs calls S-Language. The user does not have an assembler-type language available to him. The S-Language code requires an interpreter for further breakdown so that it can be executed. S-Language consists of instructions which are 2, 3, 4, or 5 bytes long. In all cases the operation code is one byte in length and resides in the rightmost byte of the instruction. Instructions are stored and read from right to left. There are 216 S-Language instructions defined on machines such as the B 720. A maximum of 256 such instructions can be defined. A single instruction can address from 4 bits to 64 bits. Up to 16 bits can be transferred in parallel between main memory and the processor.

INTERNAL CODE: ASCII; other media codes, such as EBCDIC, can be translated.

MAIN STORAGE

TYPE: MOS RAM or core; MOS refresh is not required. For specific B 700 models, refer to the table on page M11-112-402.

CYCLE TIME: Refer to the table on page M11-112-402.

CAPACITY: Refer to the table on page M11-112-402.

CHECKING: One parity bit is associated with each 16 bits of memory. Correct parity is generated when writing and

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PERIPHERALS/TERMINALS TABLE

DEVICE	DESCRIPTION AND SPEED	MANUFACTURER
MAGNETIC TAPE EQUIPMENT		
A/B 9491-2	Reel-to-Reel; 9-track, 800 bpi, 7-inch reels, 12.5 ips, 50 ips rewind, read-after-write, NRZI; 10 KBS	Burroughs
A/B 9490-25	Cassette; 2-track, one track for clocking, 800 bpi, 282 feet, 10 ips, 60 ips rewind, read-after-write, NRZI, bit-serial encoding using 8-bit ASCII code; 3 KBS	Burroughs
PRINTERS		
A/B 9249-1	Chain; 132 positions, 48- (64 or 96 optional) character set, 3- to 17-inch paper, 8.3-ips slew rate, 10 characters per inch, 2-channel VFU (12 optional); 85 lpm	Burroughs
A/B 9249-2	Chain; 132 positions, 48- (64 or 96 optional) character set, 3- to 17-inch paper, 8.3-ips slew rate, 10 characters per inch, 2-channel VFU (12 optional); 160 lpm	Burroughs
A/B 9249-3	Chain; 132 positons, 48- (64 or 96 optional) character set, 3- to 17-inch paper, 8.3-ips slew rate, 10 characters per inch, 2-channel VFU (12 optional); 250 lpm	Burroughs
A/B 9247-2 & A/B 9247-12*	Train; 132 positons; 48- (16, 64, or 96 optional) EBCDIC or ASCII character sets, 4- to 20-inch paper, 20-ips slew rate, 12-channel VFU; 400 lpm	Burroughs
B 9247-3 & B 9247-13* (B 770 Series)	Train; 132 positons; 48- (16, 64, or 96 optional) EBCDIC or ASCII character sets, 4- to 20-inch paper, 20-ips slew rate, 12-channel VFU; 750 lpm	Burroughs
PUNCHED CARD EQUIPMENT		
A 9114-1	Reader; serial, 80-column, 350-card input stacker, 350-card output hopper; 200 cpm	Burroughs
A/B 9115	Reader; 80-column, 51-column optional, 1000-card input stacker, 1000-card output hopper; 300 cpm	Burroughs
A/B 9116	Reader; 80-column, 51-column optional, 1000-card input hopper, 1000-card output stacker; 600 cpm	Burroughs
B 9117 (B 770 Series)	Reader; 80-column, 51-column optional, 1000-card input hopper, 1000-card output stacker; 800 cpm	Burroughs
A/B 9418-2	Reader/Punch/Data Recorder; 80-column, 600-card primary & 400-card secondary input hoppers, three 80-character buffers, two 400-card output stackers; 200/45/45 cpm	Burroughs
A 9119-1	Reader; 96-column, 600-card input hopper, 600-card output stacker; 300 cpm	Burroughs
A 9419-2	Reader/Punch/Data Recorder; 96-column, 600-card primary & 400-card secondary input hoppers, three 96-character buffers, two 400-card output stackers; 300/60/60 cpm	Burroughs
A 9419-6	Reader/Punch/Data Recorder/Sorter; 96-column, 600-card primary & 400-card secondary input hoppers, three 96-character buffers, six 400-card output stackers; 300/60/60 cpm	Burroughs
PAPER TAPE EQUIPMENT		
A 9122-1	Reader; 5- to 8-level, fanfold, strips or 5- to 8-inch reels; 40 cps	Burroughs
A 9222-1	Punch; 5- to 8-level, combined 8-inch supply/take-up reel; also accepts strips, fanfold, or edge-punched cards; 40 cps	Burroughs
MICR READER/SORTER		
A 9135-2, 3	Reader/Sorter; processes documents of intermixed weight, width, & length; 17.5-inch deep input hopper, 8 (12 in the A 9135-3) 3.5-inch deep output pockets; 4-pocket increments up to 32 pockets may be added; MICR E-13B font character recognition system; 900 dpm	Burroughs

*The 9247-12 & -13 are improved versions of the 9247-2 & 3. Improvements are in horizontal and vertical forms alignment and forms stacking.

On February 4, 1975, exactly four weeks after IBM introduced the System/32, Burroughs responded to the new marketing challenge with four low-cost B 700 system models based on the B 711 processor and two new B 720 Series system models based on the new B 721 processor. The new systems were all available for immediate delivery. In the entry-level B 700 Series, the B 702, B 704, B 709, and B 713 were introduced. Each of these systems was designed with a special approach to data entry in mind. Expanded capabilities were made available through the two B 720 Series models, the general-purpose B 721 and the financially configured B 723.

checked when reading. See the table on page M11-112-402 for a more definitive breakdown of models.

STORAGE PROTECTION: Main storage write operations by user programs are permitted only within the limits defined by the concatenation of the memory address register and one of the base registers.

RESERVED STORAGE: A variable portion is reserved for microinstructions. This portion of memory is called the Micro Program Memory (MPM) and consists of three elements. The resident area contains certain registers used by interpreter-generated programs, the loader, the I/O manager, basic micro-subroutines, common housekeeping subroutines, instruction fetch and decode routines, disk and console

Burroughs B 700 Series

PERIPHERALS/TERMINALS TABLE (Continued)

DEVICE	DESCRIPTION AND SPEED	MANUFACTURER
TERMINALS		
TD 700	Self-Scan display/keyboard; 256 characters, 8 lines by 32 characters, 64 ASCII character set, 5 x 7 dot matrix, red phosphor illumination, detachable typewriter-style keyboard; 150 to 1800 bps asynchronous, 2400 to 4800 bps synchronous, 9600 bps via two-wire direct interface (TDI), 64,000 bps via Burroughs direct interface (BDI)	Burroughs
TD 701/TD 73X	Self-scan display/keyboard; 256 or 480 characters, 8 lines by 32 or 12 lines by 40 characters, 128 ASCII character set, 5 x 7 dot matrix, red phosphor illumination, extended memory options, various keyboards & peripherals; same data transfer rates as TD 700	Burroughs
TD 801/TD 802	CRT display/keyboard; 960 or 1920 characters, 12 lines by 80 or 24 lines by 80 characters, 64 ASCII character set, 5 x 7 dot matrix, extended memory options, detachable keyboard; 75 to 1800 bps asynchronous, 2400 or 4800 bps synchronous, 9600 bps via TDI, 64,000 bps via BDI	Burroughs
TD 820	CRT display/keyboard; 960 or 1920 characters, 12 lines by 80 or 24 lines by 80 characters, 96 ASCII character set, 5 x 7 dot matrix, detachable keyboard, extended memory options, various peripherals including cassette drive, floppy disk, line printer, and magnetic card reader; and features such as negative, reverse, blink and blank video; same date transfer rates as TD 801/TD 802	Burroughs
TD 83X	CRT display/keyboard; 1920 characters plus 80-character system status line, 24 lines (plus system line) by 80 characters, 128-ASCII character set, 5 x 7 dot matrix, various keyboards & peripherals including serial line printers, cassette drive, magnetic badge readers; and features such as negative, reverse, blink and blank video; same data transfer rates as TD 801/TD 802	Burroughs
TC 4001	Printing terminal; serial impact, 7 x 7 dot matrix, 150 positons, 64-ASCII character set, 3- to 16.75-inch paper, 10 characters per inch, forms compose feature with 5-ips slew rate optional, up to 1536-character buffer, 6 lines per inch; 60 cps; transmission of 75 to 1800 bps asynchronous, 2400 to 9600 bps synchronous, 9600 bps via TDI or BDI	Burroughs
TC 5110-5115	Intelligent terminals; built-in keyboard, same processor as B 80, same printer as TC 4001, one or two 9490 cassette drives or 9481 ICMD floppy disk drives, 256-character Self-Scan display optional; same data transfer rates as TC 4001	Burroughs

The B 720 models at the time of announcement were the only B 700 systems offering the following capabilities: twice as much main memory as the earlier B 700's (up to 98,304 bytes, versus a previous maximum of 49,152 bytes), MOS memory rather than core, industry-compatible mini-disk storage (Burroughs parlance for diskette storage), a new disk controller that reduces processor loading, industry-standard magnetic tape I/O, a 400-line-per-minute printer, an electronic keyboard for system/operator communications with an attached console printer, MICR document input, and a new independent and simultaneous data communictions processor with the ability to handle four lines concurrently. (The other B 700's are limited to a single-line controller.)

The four packaged systems using the B 711 processor are designed to accept data from specific sources. In the B 702, data can be entered only via the single operator's keyboard; then it is processed by a Burroughs-supplied application program product.

The B 704 system can be configured with up to four TD 700 Input and Display Terminals (Burroughs Self-Scan panel displays) for both keyboarded input with visual verification and inquiry into the system's on-line data files.

controller routines, and common code. The overlap area is used for such functions as trace operations or residence for search, keyboard, or console print operators. Finally, the variable area is used for peripheral device controllers, disk address calculation, numeric editing in both COBOL and RPG, and some of the more complex instructions.

CENTRAL PROCESSORS

GENERAL: The B 700 processors feature dynamically variable microprogrammed logic, in which the processor has a minimal predefined structure. Under this design, a fundamental systems control program resides in a high-speed bipolar read-only-memory (ROM) called the "nano-memory." A second "shared" main memory is provided for use by both the applications program being executed and a microprogram system called the "Interpreter." The Interpreter consists of the detailed logic required to convert or interpret the object-language version of an application program into the basic, Boolean-type manipulations or I/O operations that are directly executable by the B 700 processor.

The amount of shared memory used by the Interpreter is variable, with only those specific portions of the Interpreter present in the system during program execution that are required by a given program. This capability is referred to as Dynamic Interpreter Configurability. It is also known as run-time, or simply late, "binding." It results in a dynamic boundary line in the shared memory between the Interpreter and the application program that permits reducing of system software memory overhead to a minimum.

Burroughs B 700 Series

PERIPHERALS CONFIGURATOR

	B 702-85	B 702-160	B 703-85	B 704-85	B 704-160	B 705	B 709-85	B 709-160	B 711	B 713	B 721	B 723-35	B 731-100	B 731-102	B 731-104	B 731-304	B 731-404	B 731-704	B 738	B 741	B 771-3	B 772-3	B 761-4	B 761-6	B 761-8	B 761-10	B 776
Diskettes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							1
A/B 9489-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	0
Cartridge Disks						1			1		4		4	4	4	4	4	4	4	4							4
A/B 9481-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	0	-	-	-	-	0
A/B 9480-22	S	S	S	S	S	0	S	S	0	0	0	0	S	0	S	S	S	S	0	0	—	0	—	—	—	—	0
A/B 9480-12	0	0	0	0	0	0	0	0	0	S	0	S	0	S	0	0	0	0	0	0	—	0	—	—	—	—	0
Magnetic Tape						1			1										4	4							1
A/B 9491-2	—	—	—	—	—	0	—	—	0	0	0	0	—	—	—	—	—	—	0	0	0	0	0	0	0	0	0
Cassette Tape						4			4		*		4	4	4	4	4	4	4	*							
A 9490-21	—	—	—	—	—	—	—	—	—	—	S	S	—	—	—	—	—	—	—	S	—	—	—	—	—	—	—
A/B 9490-25	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Printers											1		1	1	1	1	1	1	1	1	#	#					1
A/B 9249-1	S	0	S	S	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/B 9249-2	0	S	0	0	S	0	0	S	0	S	0	S	0	0	S	S	S	S	0	0	0	0	S	0	0	0	0
A/B 9249-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0
A/B 9247-2, 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0
B 9247-3, 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	0	0	0	0	S	0
80-Column Card						2			2		2		2	2	2	2	2	2	2	2	#	#					1
A 9114-1	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—	—	—	—	—
A/B 9115	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	S	S	0
A/B 9116	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—	—	—
B 9116-7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	0	0	0	—
B 9117	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	0	—	—	—	—	0
A/B 9418-2	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96-Column Card						2			2		2		2	2	2	2	2	2	2	2							
A 9119-1	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	9	—	—	—	—	—
A 9419-2	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	0	—	—	—	—	—
A 9419-6	—	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0	0	0	—	0	—	—	—	—	—
Punched Tape						2			2		2								2	2							
A 9X22-1	—	—	—	—	—	0	—	—	0	0	0	0	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—
Terminals						9			9		9		9	9	9	9	9	9		9							
TD 700 Series	0	0	S	S	S	0	0	0	0	0	0	0	0	0	0	S	0	0	—	0	—	—	—	—	—	—	—
TD 800 Series	—	—	—	—	—	—	—	—	—	0	0	0	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—
Data Entry													4	4	4	4	4	4	4								
B 9347-2	—	—	—	—	—	—	—	—	—	—	—	—	0	0	0	0	S	0	0	—	—	—	—	—	—	—	—
AE Series	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	—	—	—	—	—	—	—
B 934X-X	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	0
MICR											1	1								1							
A/B 9135-X	—	—	—	—	—	—	—	—	—	—	0	S	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—

LEGEND: S denotes that a device is standard, O indicates that it is optionally available, and a dash means that it cannot be used. Figures indicate the maximum number of devices of each class that can be connected.

* 1 drive standard, 3 optional.

One required.

The B 709 accepts data that has been recorded on magnetic tape cassettes using the Burroughs AE 300 Series of Audit Entry Data Preparation Systems. (The AE 300 units are off-line Burroughs machines that can be programmed in COBOL.)

The B 713 can accept Audit Entry cassettes as well as conventional punched card input, and can be expanded to the full range of previously released B 700 I/O cofigurations.

The B 720 systems can also use Audit Entry techniques, and offer a full range of peripherals. All of these systems are completely code-compatible, and programs can be freely transported from model to model without recompiling or reprogramming.

Each object program has a directory or catalog appended to it that enumerates the specific instruction types, buffer requirements, and I/O devices used by that program. When the application program is loaded into the system, the directory or catalog is matched against the complete repertoire of functions supported by the full Interpreter, and unused functions are deleted.

The Interpreter itself is designed to facilitate execution of the S-Language or machine-level language for a virtual machine best suited to a particular high-level language. For the B 700 systems, COBOL and RPG are both supported by the same Interpreter. The logical structure of a B 700 system, including instruction repertoire, I/O configuration, and buffer requirements, is "bound" at a run time so that the B 700 system looks as if it were custom-developed to execute a specific program.

Each S-Language instruction is implemented by a string of microinstructions which interpretively execute the functions

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Purchase prices of the four low-end packaged B 700 systems range from $34,300 for the B 702 to $54,900 for the B 713, with corresponding one-year lease rates of $980 to $1,515 per month. The low-end leases range down into the IBM System/32's realm. The lease prices include maintenance, and there are one-year, three-year, and five-year plans available. A special lease is now available for the unbundled Burroughs Business Management Systems (BMS) library of applications packages, but it will usually be less costly to purchase the packages.

The purchase price of the B 721 processor is $24,500, with a one-year monthy rental of $651. The B 723 system sells for $85,900 and rents for $2,454 per month on a one-year lease, the higher prices reflecting the cost of the MICR unit used in the B 723 system.

The B 776, announced in June 1975, and the B 730 Series, announced in March 1976, are the two newest entries in the B 700 line. The B 776 is the latest member of the B 770 Series of Systems and Communications Processors. At present, it is not available as a packaged system but rather as a configured system only. Purchase price for the B 776 processor is $23,500 with a one-year lease rate of $540 per month. The B 776 is unique among the B 770 Series members in that it has a separate 32K-byte system memory and options for up to two Data Communications Processors (DCP's). Each DCP is capable of servicing up to 16 lines concurrently in either full- or half-duplex mode in a multipoint and/or point-to-point network. Like its predecessors, the B 776 has stand-alone processing capability and a peripherals complement similar to those of other members of the B 700 line. User memory can be increased to a maximum of 64K bytes.

The B 730 Series consists of the B 738 processor and six packaged systems with the B 731 prefix. Purchase prices for the B 731 systems range from $30,400 to $48,900, with one-year lease prices ranging from $968 to $1,397 per month. The B 738 processor has a purchase price of $20,990 and a one-year lease price of $598 per month.

The B 730 is a series of business data processing systems with 32K to 80K bytes of MOS memory, the full range of B 700 peripherals, a system/operator console with 60-cps printer and electronic keyboard, and a variety of data entry devices, including the AE 501 and the B 9347-2 Direct Data Entry System (DDES). The B 9347-2 shares the same announcement date as the B 730 and is priced at $4,950 or $125 per month on a one-year lease. Up to four DDES units can be configured on a B 730, performing on-line data entry concurrently with batch processing without significant degradation of the batch job.

At the time of the B 730 announcement, Burroughs also released the B 741, a renumbered B 721 with an electronic keyboard and 60-cps console printer.

specified by the S-instruction. Because the S-instructions are software-defined by the microprograms, the functions they specify can be quite complex. In most cases, S-instructions specify an operation to be performed, one or more operand addresses, data field lengths, and units of data. Because the S-language and its Interpreter are oriented toward the characteristics of each programming language, Burroughs states that on the average only about one-tenth as many S-instructions need to be executed to perform a given function as in typical machine-level computer programs.

An interrupt/resume or checkpout/restart function, which rolls out the present status of the machine and its processing onto disk to allow a high-priority job to be loaded into the system, is utilized on the B 700. Following completion of the high-priority run, the first program can be restored and processed.

If a batch program is run concurrently with transaction input from DDES, a slight degradation will occur due to the employment of the interrupt/resume facility used by the batch job(s). This form of concurrency between a batch job and transaction in/out is the only multiprogramming capability offered on the B 720, B 730, and B 740 Series.

User memory consists of variable buffers A, B, D, and E; a scratch-pad memory (SPM) consisting of a maximum of 256 64-bit words; and an area for user program residence. Many of the B 700's feature a memory loader consisting of a self-threading, 100-cps paper tape cartridge reader.

CONTROL STORAGE: See the table on page M11-112-402.

REGISTERS: The B 700 contains both hardware and software registers. Listed below is a brief summary of the register complement.

Hardware Registers:

- **BSW—a matrix of gates used to shift a parallel input data word left or right a number of places.**
- **A1, A2, and A3—16-bit registers used for the temporary storage of data being transferred from the BSW to the adder.**
- **B Register—a 16-bit register which provides the primary interface between S-level (user) memory and the I/O controls. The B Register is also a secondary input to the adder.**
- **Memory Information Register—a 16-bit register utilized as a buffer for data written in memory or sent to a device.**
- **Microprogram Count Register—a 14-bit register used to store the address for jumps and subroutine returns within microprograms.**
- **Memory Address Register—holds the eight low-order bits of a memory address.**
- **BR1 and BR2—8-bit registers used to hold a device address or the base address of a 256-word block of data.**
- **Counter—an 8-bit register whose function is primarily loop control.**
- **Literal Register—an 8-bit register used to temporarily store literals in the microprogram.**
- **Control Register—stores all control signals from ROM and is 40 bits long.**

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Burroughs insists on calling its diskettes "industry-compatible mini-disks"—lest someone develop the idea that the company is following IBM's lead. And Burroughs doesn't say much about what its "floppy" disks can be used for. One "audit entry technique" on the B 700's is to accept diskettes prepared on IBM 3741 Data Entry Stations for input to the Burroughs systems. But input data can also be collected on diskettes using Burroughs equipment.

The B 700 systems can use applications programs written in COBOL or RPG from Burroughs' BMS library of program products. Some of these have been in use for more than three years. The BMS applications support includes programs for financial institutions and credit unions, manufacturers, wholesalers and distributors, contractors, hospitals, government, and motor freight companies. These applications support a full range of peripherals including MICR.

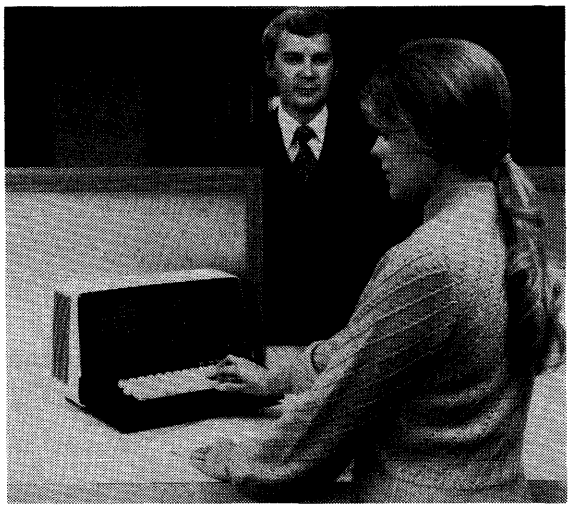
All of these applications systems are supported by Burroughs's System Control Program operating system for the B 700 Series, which features built-in capability to interrupt and resume jobs. Multiprogramming is allowed on the B 730 through its facility to run one batch job and up to four DDES units with their associated Audit Entry Language programs. The B 720 Series Data Communications Processor and the B 770 Series systems are supported by the same Network Definition Language (NDL) that is used with the data communications processors in larger Burroughs computer systems.

The system software for the B 700 Series is noteworthy in one respect. When a program is brought into memory to be executed, an interrogation technique enables the required interpreter to be configured with only the necessary microcode to operate and execute that particular user program. Burroughs terms this facility the Dynamic Interpreter Configuraor (DIC). In conjunction with the "soft" controllers utilized by Burroughs, the DIC enables an extensive list of peripherals to be available to the B 700. In addition, the efficient use of memory is dramatically increased.

Maintenance service and technical support for the B 700 systems are provided worldwide by Burroughs' own support personnel.

The overall competitive position of the B 700 systems is a strong one. Burroughs overcame the principal weakness of the series early in 1975 by introducing a COBOL compiler that runs on the B 700 systems themselves. (Previously, it was necessary to use a larger Burroughs computer, such as a B 3500 or B 4700, to compile COBOL programs for execution on a B 700.)

The B 700 adds strength to Burroughs' broad line of offerings in the small business computer market, and is especially well suited for Burroughs L and TC Series users who need more power than is offered by the B 80. Burroughs points to the B 700's Business Management



The Self-Scan display panel is an integral part of many peripherals provided by Burroughs, including the new TD 730 display/keyboard. The panel provides 8 lines of 32 characters or 12 lines of 40 characters. Each character is presented in the form of a 5-by-7 dot matrix. In the TD 730, a memory of up to 4080 characters permits paging operations.

- **Condition Register—functions as a 6-bit unit where individual bits can be tested by the ROM-resident microcode.**
- **Shift Amount Register—utilized in conjunction with the BSW to control the loading of shift amounts and the sequencing of shift operations.**

Software Registers:

There are approximately 20 software registers. The least important of these are the 8-bit left Platen Forms Count and Forms Limit Registers; their right counterparts; the 16-bit Program Key Table and Numeric Print Mask Address Registers; the 8-bit Desired Print Position Register; the 1-bit Ribbon Register; and the 16-bit Inquiry Terminal Identifier Register. Other software registers include:

- **Acum—a 64-bit register which serves functions of arithmetic, shifting, field isolation, communication-width system control, logicl arithmetic, and console input.**
- **DBT—a 16-bit register which stores the I/O descriptor table base address.**
- **IX1, IX2, IX3, and IX4—16-bit index registers.**
- **BCPR Register—provides communications from the system control program to the user program.**
- **REM—a 64-bit register which holds a remainder after division and scaled-off digits after multiplication.**
- **SR Register—controls scaling and/or rounding for multiplication and division and is five bits long.**
- **SRJE Register—points to the latest entry in an 8-level, 16-bit-wide circular subroutine return-to stack and is 16 bits in length.**
- **SRJS Register—a 16-bit register that points to the latest entry in a 4-level, 16-bit-wide circular subroutine return-from stack.**

INTERRUPTS: The B 700 Series processors use a "soft" interrupt system, meaning that interrupt conditions do not

Burroughs B 700 Series

Systems applications programs, convenient interrupt/resume function, and certain peripheral subsystems as advantages over IBM's popular System/32. A particular advantage of the B 700 systems is the availability of much faster line printers, card I/O units, and the capabilities of the new B 730 DDES. First-time users, as well as current computer users facing decentralized processing requirements, will be well advised to give serious consideration to the B 700 Series and its soon-to-be-announced successors.

USER REACTION

Detailed below are the results of Datapro's survey of 19 B 700 users with 19 installed systems. Among the companies represented in the survey were a steel products manufacturer, an automobile dealer, a candy manufacturer, a city government, a copper products manufacturer, a credit union, a bank, and a service bureau. Twelve of the systems were purchased from the manufacturer, five were on lease from Burroughs, and the remaining two systems were on third-party lease. All applications were in the general area of business accounting. Eight of the users were actively involved in programming their own systems, five were utilizing ready-made software packages, and five had purchased proprietary programs to use along with their own programming efforts. At least two users had engaged outside talent to write programs for their systems. The shortest period of installation was 4 months, the longest was more than 3 years, and the average was about 13 months. Memory capacities ranged from 28K to 56K bytes, with an average of 35K bytes.

Tabulated below are the ratings assigned by the 19 users.

	Excellent	Good	Fair	Poor	1976 WA*	1975 WA*
Ease of operation	13	6	0	0	3.7	3.6
Reliability of mainframe	10	9	0	0	3.5	3.6
Reliability of peripherals	5	11	3	0	3.1	3.0
Maintenance service:						
Responsiveness	10	6	3	0	3.4	3.4
Effectiveness	8	8	2	1	3.2	3.7
Technical support	3	8	5	2	2.7	3.4
Manufacturer's software:						
Operating system	7	10	2	0	3.3	2.7
Compilers and assemblers	8	5	3	1	3.2	3.0
Application programs	6	8	1	1	3.2	3.0
Ease of programming	3	10	1	0	3.2	Not rated
Ease of conversion	1	9	2	0	2.9	Not rated
Overall satisfaction	8	10	1	0	3.4	3.1

*Weighted average on a scale of 4.0 for Excellent.

For comparative purposes, the weighted average user ratings compiled by the B 700 systems in Datapro's 1975 survey are shown alongside the current ratings. In comparing the 1976 users ratings with those of last year's survey, it appears that Burroughs has improved in ease of operation, reliability of peripherals, operating system, compilers and assemblers, application programs, and the

cause any automatic hardware actions. Instead, the recognition of interrupt conditions and initiation of the appropriate actions is completely under software control. Interrupts are handled on the basis of the highest-priority device being serviced first.

PHYSICAL SPEIFICATIONS: The processor unit is 22.5 to 45 inches wide, 29.25 inches deep, 44 inches high, and weighs 335 to 565 pounds.

Power requirements are 120/208 or 120/240 VAC +5, -10 percent at 60 Hertz ± 1 Hertz. The system requires 3.9 to 5.9 KVA. The operating environment is from 60 to 100 degrees Fahrenheit with a humidity tolerance ranging from 10 to 80 pecent noncondensing. Additional air conditioning above normal office levels is not required except in extreme operating environments. The system dissipates about 2730 BTU's of heat per hour. General machine requirements indicate the need for a floor area of 10 by 4 feet exclusive of operator and service requirements. Configurations involving tape and disk will affect operating temperature and humidity ranges.

INPUT/OUTPUT CONTROL

I/O CHANNELS: Direct memory access channels are provided for disk and programmable data communications subsystems. For each data/control word transferred, one cycle of processor time is stolen. The maximum I/O data transfer rate is 2 million bytes per second. See the table on page M11-112-402 for more details.

SIMULTANEOUS OPERATIONS: All I/O controls are buffered to permit overlapped read/write/compute operations.

CONFIGURATION RULES: Each device or subsystem attached to the B 700 requires one I/O channel except the single-line controller, which requires two. Some assignments to particular I/O ports are standard. These fixed assignments vary from model to model. Please refer to the peripherals configurator on page M11-112-405 for more details as to the type and quantity of each unit allowable.

MASS STORAGE

B 9489-15 INDUSTRY-COMPATIBLE MINI-DISK (ICMD) DRIVE: This floppy disk drive is available only as a free-standing unit. A subsystem is composed of a controller and one ICMD drive. The ICMD drive reads only one side of the diskette. Each diskette stores 243K bytes of data, with 128 bytes per sector, 26 sectors per track, and 77 tracks per diskette, including three alternates. Track-to-track access time is 20 milliseconds per single step, and settling time is 10 milliseconds. Average access time is 343 milliseconds, and the data transfer rate is 31K bytes per second. The ICMD is manufactured by Burroughs.

A 9480/A 9481 DUAL CARTRIDGE DISK SUBSYSTEM: Provides low-cost random-access data storage on removable single-platter cartridges. Three dual-drive models are available:

Model	Capacity, bytes	Avg. Access Time
9480-12	4.6 million	80 milliseconds
9480-22	4.6 million	145 milliseconds
9481-12	9.2 million	100 milliseconds

Each cabinet houses two drives.

Each drive accommodates one disk cartridge and has two read/write heads, one serving the top and one the bottom recording surface of the cartridge. The disk cartridge is 15 inches in diameter, 1.5 inches high, and weighs 5 pounds.

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users' overall satisfaction. That is certainly a creditable performance, but there is still room for improvement.

Two areas in which the ratings fell from last year's survey are technical support and effectiveness of maintenance service. These are extremely important areas that demand considerable attention from any vendor desiring to maintain a satisfied customer base.

Individual users expressed principal strengths of the B 700 systems as follows: "Good operating system and simplicity of use," "Low-cost stand-alone machine compatible with the B 4700," "The finest thing to come along for the small business," and "Flexible, sufficient memory to add new programs."

Disadvantages of the systems expressed by individual users included "Poor maintenance," "Burroughs people support," "Field support at remote locations," and "Poor documentation." Burroughs has taken some positive steps to overcome these criticisms, but it appears that stronger efforts in several directions are still needed.□

The two drives are "stacked" so that the unit occupies less than five square feet of floor space. Data is recored in 180-byte segments.

For the 9480-12, average head positioning time is 60 milliseconds, average rotational delay is 20 milliseconds, and data transfer rate is 193K bytes per second. The 9480-22 has an average head positioning time of 125 milliseconds, an average rotational delay of 20 milliseconds, and a data transfer rate of 193K bytes per second. The 9481-12 has an average rotational delay of 20 milliseconds, and a data transfer rate of 193K bytes per second. The controller is similar to the one utilized on the ICMD drives and contains two 200-character buffers. The A 9480/A 9481 subsystem is manufactured by Burroughs.

INPUT/OUTPUT UNITS

See the Peripherals/Terminals table on page M11-112-403 for units other than the AE 501 and B 9347-2, which are described below.

AE 501 AUDIT ENTRY DATA PREPARATION SYSTEM: The AE 501 was announced by Burroughs in September 1975. Consisting of a processor with up to 28K bytes of semiconductor memory, one or two magnetic tape cassette drives, an electronic keyboard, a serial matrix printer, and one asynchronous or synchronous data communications line, the AE 501 is designed for use with the Burroughs Business Management Systems (BMS) library. The system edits, validates, and captures ready-to-process data on magnetic tape cassettes for batch transmission to the computer. Errors are detected and corrected at the point of original entry. The AE 501 simultaneously prints an audit journal to assist the operator and to permit subsequent auditing.

The processor is implemented in large- and medium-scale integrated circuits. Data movement is byte-serial, 8-bit parallel and is moved one byte at a time from the processor to one of four dedicated I/O channels. One byte of information can be moved within the processor between the processor, the memory, and the I/O channels in 1 microsecond. The memory is modular in 4K-byte increments and consists of 4K bytes of ROM (read-only memory) used for interpreter bootstrap (cold start) and permanent customer confidence programs, plus up to 28K bytes of RAM (random-access memory) available for interpreter and user storage.

Up to two magnetic tape cassette stations can be housed in the AE 501 system. Storage capacity per 300-foot cassette is 204,800 charaters. Read/write speed is 10 inches/second, search speed is 30 inches/second, and rewind speed is 60 inches/second. Approximate time to load the full memory capacity is 60 seconds.

The electronic keyboard consists of an alphanumeric typewriter keyboard, a separate 10-key numeric keyboard, and special function keys. The keyboard includes an upper row of 16 Program Select Keys to implement various program options. The AE 501 contains 34 indicator lights for operator communications. The unit printer uses an interchangeable 64-character set and prints at 60 characters/second. A 150-position print line is standard, and spacing is 6 lines per inch. The unit is equipped with a single pin-feed device for handling forms from 3 to 16.75 inches wide. It is capable of handling fanfold, single, or multiple-part forms with folds from 3.5 to 12 inches apart.

The AE 501 can communicate in either the asynchronous mode at 75 to 1800 bps or synchronous mode at 2400 to 9600 bps with a central computer or another terminal over leased or switched lines, via a Two-wire Direct Interface (TDI) at up to 1000 feet, or via a Burroughs Direct Interface (BDI) at up to 15,000 feet. Both the TDI and BDI operate at up to 9600 bps. The line protocols available with the AE 501 include Burroughs Basic Mode, Point-to-Point Batch, and the new bit-oriented Burroughs Data Link Control procedures.

A selection of Audit Entry Program Products is available from the BMS library. Also available are the Audit Entry Program Generator (Parsel), the "On Board" Program Generator, and permanently resident maintenance test routines. The On Board Program Generator describes the input/output parameters for AE 501 programs and generates the programs for both the AE 501 and B 700.

B 9347-2 DIRECT DATA ENTRY SYSTEM (DDES): Announced concurrently with the B 730, the B 9347-2 DDES is an operator-oriented data capture system that is used exclusively with the B 730. The DDES is designed as an on-line, high-speed data entry and inquiry facility directly connected to the B 730. Up to four DDES units can be configured in a B 730 system.

The B 9347-2 DDES is composed of four integral subsystems: display, keyboard and keyboard indicator assembly, power supply, and electronics assembly. The display is the same 256-character Self-Scan panel used in the Burroughs TD 700, TC 800, and TC 5100 Series. The keyboard and keyboard indicator assembly is a version of the one used in the AE 501. Program select keys have increased in number from 16 to 24, while keyboard indicator lights have increased from 29 to 30.

Several DDES environments have been defined. Their requirements are given in the following table. The table is based on up to four DDES units on-line with an average requirement of 2K bytes for each AEL (Audit Entry Language) program.

Batch Job	Number DDES Units	Required B 730 Memory Capacity
No batch	4	40K bytes
Small batch (8K)	4	48K bytes
Medium batch (14K)	1	48K bytes
Large batch (16K)	4	56K bytes

Unlike other AE devices, the B 9347-2 has no peripherals of its own, but rather relies solely on the direct interfaces of the

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B 730. This is particularly important in consideration of the mass storage requirements of the B 730 with DDES.

The DDES has six machine states: ready, accept, load, operation, unload, error. In each state, the DDES can accept only certain program signals via the keyboard. All others are either ignored or cause error procedures to be initiated. Operator communications include prompting messages, an audible alarm, program control indicators, and error message display.

The Audit Entry Language (AEL), developed for the DDES, is a simplified language with strong editing capability. AEL is designed to be used by customers with no programming experience and a minimum of training. At the moment of input, AEL interacts with selected B 730 disk files for verification of valid account numbers and visual display of related alpha descriptions. A complete audit trail is provided by line printer listings of all entered data.

DATA COMMUNICATIONS

The B 700 Series permits single-line data communications on the B 771, B 711, B 720, B 730, and B 740 Series models, two lines on the B 772, and up to four concurrent lines using the B 352 Data Communications Processor for the B 741, B 721, and B 723 models.

The single-line data communications feature enables synchronous or asynchronous data transmission at rates up to 9600 bits per second. It can be used to transmit data to another B 700, to a B 700 from a TD series terminal, to a larger Burroughs or other vendor's host mainframe, or to accept data from a host processor for printing at the local site. The B 700 can also be made to look like an IBM 3780 for communications to an IBM 360 or 370.

The B 352 Data Communications Processor operates independently of the CPU to permit simultaneous handling of four concurrent lines, which can be asynchronous or synchronous at rates from 75 to 9600 bits per second. It is programmed on a host B 720 or larger Burroughs mainframe, using the Network Definition Language (NDL) that is used in data communications networks supported on the entire Burroughs B Series computer family.

One or two data communications processors (DCP) can be attached to the B 776. Each of these processor is capable of servicing up to 16 lines concurrently in either a full- or half-duplex mode in a multipoint or point-to-point network. The DCP is a microprocessor with 6144 12-bit words of memory. The DCP memory contains the NDL interpreter and communicates with the main B 776 memory at speeds up to 2 megabytes per second via a direct memory access channel. The DCP is capable of operating concurrently with the main processor Data communications line characteristics are fully controlled by the NCP. NDL offers full programmability for each line.

Line characteristics include odd, even, or no parity; 5-, 6-, 7-, or 8-bit characters; asynchronous transmission to 1800 bps; synchronous transmission to 9600 bps; two-wire direct connect to 9600 bps; Burroughs direct connect to 19,200 bps; and broad-band transmission to 50,000 bps. Up to 14 different asynchronus clock rates can be accommodated by the DCP.

DC 140: To provide more efficient communications with a central site, Burroughs also offers the DC 140 Series System Processor. The DC 140 has its own peripheral capabilities including up to four magnetic tape cassette drives, reel-to-reel magnetic tape drives, punched paper tape units, 80- and 96-column card units, 85 to 250 lpm printers, and data entry and display units. Present in the DC 140 is a 64K-byte MOS memory with a 1.5-microsecond cycle time and a 1.2-microsecond access time. Approximately 14K bytes of memory are dedicated to microcode, with the remainder available for user programs. Word length is 64 bits. Transmit and receive buffers can be programmed to be as large as 4096 characters. Half-duplex operations are standard, with an asynchronous speed of 1200 bps (75, 100, 110, 150, 200, 300, 600, 1800, 4800, and 9600 bps optional) and a synchronous speed of 2400 bps (2000, 4800, and 9600 bps optional). Each DC 140 can have up to two independent data communications channels, permitting two different speeds at the same time, and two different speeds at the same time, and two different line connectors. Line control procedures may be Burroughs standard Poll/Select or Point-to-Point, IBM 2260 procedures for four-wire leased line, IBM Binary Synchronous, Burroughs Central Terminal Controller, Burroughs Data Link Control, and auto-answer/auto-call switched lines.

REMOTE TERMINAL PROGRAM 3780 LOOK-ALIKE: A firmware set designed to make the B 700 function as an IBM 3780 remote batch terminal. The set consists of the 3780 Look-Alike Monitor and the 3780 Look-Alike Program. Both the monitor and program require a configuration which includes a B 700 with 32K bytes of memory, a single-line control, a system console, and a cartridge disk subsystem. The 3780 Look-Alike Monitor also requires a line printer, and an 80-column card reader/punch is optional. The 3780 Look-Alike Program has options to handle a line printer, an 80-column card reader, and an 80-column card reader/punch.

SOFTWARE

OPERATING SYSTEMS: The Burroughs Systems and Communications Processors, including the B 771, B 772, and B 761 packaged systems and the B 776, operate under the Communications Control Program (CCP). All other models of the B 700 operate under the System Control Program (SCP).

Communications Control Program (CCP) is the operating system for the B 761 and B 77X series of Systems and Communications Processors. CCP is similar in concept to SCP (see below), with some important exceptions. CCP allows re-entrant code techniques, permitting multiple programs to use a set of common code. CCP detects and attempts to correct memory thrashing by program based upon a priority scheme. CCP also provides for the concurrent operation of up to six programs, one of which may be a batch job.

For proper operation, CCP requires a processor with a minimum of 16K bytes of main storage. In the B 776, the processor is constructed with a separate 32K-byte memory for system programs.

System Control Program (SCP) is the central component of Burroughs software support for the B 711, B 720, B 730, and B 740 series systems. It includes the Interpreter, a highly modular microcoded system that implements all of the functions of the B 700 system, and an I/O manager and "soft" controllers for B 700 I/O processes to handle most of the functions ordinarily performed by hardware controllers.

The I/O manager has the capability of handling automatic I/O error retries. SCP also contains trace and dump facilities, as well as operational recovery procedures. Code segmentation of user programs enables the use of overlays, with resultant efficient utilization of memory.

The system control program controls the maintenance of a system log which uses the B 700's split platen to produce a journal record on one side of the carriage.

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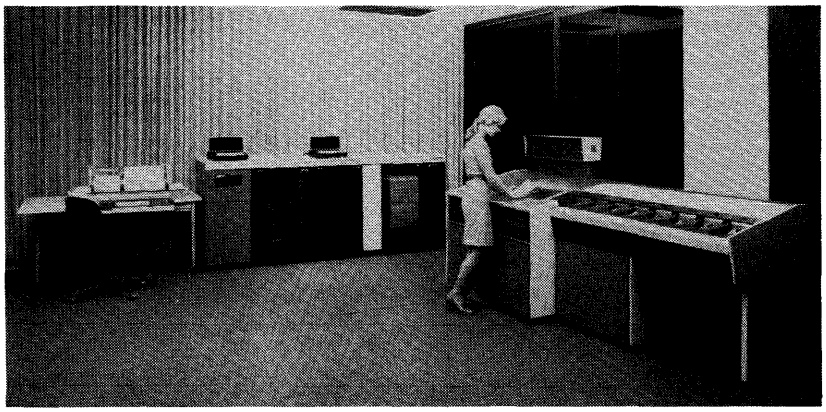

The B 723 is a packaged system oriented toward banking and other financial applications. The system includes a system console, a dual-cartridge disk drive, a line printer, and a MICR reader/sorter (at right).

The full size of the Interpreter is generally about 16,000 bytes. The main memory requirements for the Interpreter will vary from 5K to 32K bytes depending upon the peripheral requirements of the program. The system's DIC (Dynamic Interpreter Configurability) will configure only the microcode that is required to execute each particular application program. Various other nonresident segments of the Interpreter are brought into main memory as they are needed for each program.

The recommended minimum-size B 700 for efficient use of SCP is a processor with 32K bytes of memory.

On the B 730, an enhanced version of the System Control Program, SCP II, is operational. SCP II has the ability to handle up to four B 9347-2 DDES units. When the DDES option is operational, SCP II checks for the presence of a character from the attached B 9347-2 station(s) at the end of each S-level instruction or every 500 microseconds (whichever occurs first). The appropriate Audit Entry program is given control if a character is found. The character is then processed according to the proper format specification, and the batch job is resumed until another character from a DDES is found.

A DDES manager, resident with SCP II, interacts to provide for concurrent execution of the up to four Audit Entry programs and the batch job. Through DDES management, the batch and DDE programs can be initiated or ended in any sequence.

SCP II also provides "breakout/resume" to permit inquiry and/or inquiry/update from the system console, a TD Series terminal, or a DDES station. SCP II requires a minimum of 32K bytes of memory. If the DDES units are utilized in a multiprogramming environment, the memory size should be increased to 48K bytes.

The intent of DDES is not to replace batch editing routines. The audit entry language for use with DDES does not permit transaction input with interactive master file updating, but rather builds disk transaction files for subsequent batch processing.

LANGUAGES: Under SCP or CCP, both COBOL and RPG are supported. For the B 720 Series, SCP also supports a Pocket Select Language for MICR readers. SCP supports both a standard and augmented Audit Entry Language for several models of the B 700. For data communications environments, the Network Definition Language and Message Processing Language are supported.

The *B 700 COBOL* language is an essentially complete implementation of full American National Standard COBOL 74, except that the Report Writer module is not implemented. COBOL object programs are regarded as a collection of logical segments which can be loaded and executed individually or in groups, meaning that programs can be written without the usual limiations imposed by the computer's memory capacity.

The COBOL compiler runs on any B 700 processor with at least 32K bytes of main memory (16K bytes of user memory on the B 77X), line printer, and disk drive. Object programs generated by the COBOL compiler are expressed in an S-language that is oriented toward efficient handling of 4-bit digits are 8-bit characters.

The *B 700 Report Program Generator (RPG)* is a compiler-driven language. The compiler converts source programs written in the widely used RPG language into object programs that can be executed by B 700 systems. The compiler permits programs written in IBM RPG or RPG II, or in most other versions of the RPG language, to be compiled and run with little or no change. RPG programs are automatically segmented during compilation, so programs can be written without the usual limitations imposed by the computer's memory capacity. The RPG compiler runs on any B 700 processor with at least 32K bytes of main memory (16K bytes of user memory on the 776), plus a line printer and disk drive.

The *B 700 Pocket Select Language (PSL)* is specifically designed to produce a PSL code file in S-Language that allows the user to determine the formats of documents and to pocket-select them based on format or field values. The file built by PSL resides on disk and is utilized by the PSL Interpreter. Pocket Select Language is operational on a B 720 with a minimum of 32K ytes of memory, a cartridge disk drive, a line printer and a MICR Reader/Sorter. PSL bears some resemblance to COBOL in both concept and use. A Pocket Select Language Generator is also available to create a PSL source program from PSGEN input parameter cards.

The *B 700 Audit Entry Language (AEL)* consists chiefly of record names and field descriptions. Its function is to provide control over the formats of input data records. No logical control beyond format considerations is inherent in the language. AEL permits sequencing of input data to fit the sequence of the source document and to write the data to disk in the format required for batch interfacing. All defined fields fall into one of six categories. Alpha fields place alphanumeric data into a record and may be tested for existence in a tag file. Constant fields place either an operator message on the screen or constant strings in a record. Increment fields function to add constants to accumulators. Numeric fields, which may be 4-bit packed digits or 8-bit bytes (with or without sign), may be range-checked, check-digit verified, searched for in a tag file, or added to or subtracted from an accumulator. Blank fields may clear the screen or blank part of a record, while accumulator display fields display the contents of an accumulator on the screen.

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There are several extensions to standard AEL for the B 730, including a program information format giving information about the data file to be created, such as data file name, disk drive number, and number of records in a file, alone with the blocking factor, record size, and the size of the intermediate work file. Also, blanks may be used in AEL source programs for spacing, but will be ignored by the compiler. Comments may be inserted in AEL source programs, but will also be ignored by the compiler. Leading zeroes of all integers will also be ignored by the compiler.

AEL features include the following: up to 100 accumulators may be utilized and incremented or decremented; up to 10 error messages or warnings may be printed for each AEL source line, directly below the line; accumulators may be checked for non-clear conditions; and numeric data to be displayed on the screen may be edited by a picture specification. All error messages may be defined by the programmer and displayed any place on the screen at the programmer's option.

The DDES program generated will vary from a minimum of 486 bytes of a maximum of 6480 bytes. An average program will be 2K bytes. During operations with DDES, approximately 16K bytes are required by the SCP II Interpreter and 16K bytes by the DDES manager. For further details see the B 9347-2 in the INPUT/OUTPUT UNITS section of this report.

Network Definition Language (NDL) is a special-purpose, parameter-driven programming tool that enables users to define and generate customized Network Controller programs for data communications applications. These programs are executed when required by the NDL Interpreter. The Network Controller program handles line disciplines, buffer management, message queuing, character translation, and automatic retries, and supervises the flow of messages between user-coded programs and remote terminals. This enables the user's application programs to deal with remote terminals in the same manner as conventional on-site peripheral devices.

After the programmer defines his custom Network Controller in the NDL syntax, the source statements are processed by the NDL Compiler and converted into the necessary object code and tables. Various line disciplines may be programmed in NDL and are stored as reusable library routines, known as request sets. Standard request sets for many line procedures are available from Burroughs. NDL runs under SCP on the B 720 and B 740, utilizing the B 352 Communications Processor. NDL requires at least 32K bytes of memory above the requirements for SCP. A console printer and disk subsystem are also required. On the System and Communications Processors, NDL runs under CCP. On the B 776, a minimum of 16K bytes of user memory is required.

Message Processing Language (MPL) is a high-level, parameter-driven language for generating installation-tailored Message Control Programs. The Message Control Program provides the interface between the Network Controller and the user application programs by decoding, validating, and directing incoming messages to the appropriate user program for processing. This program can also record all processed messages on secondary storage for audit purposes and place messages intended for terminals out of service in temporary storage on disk.

The *B 700 Report Creation System* consists of three programs designed to retrieve and display information in a report format. The File Generation program interactively accepts and edits both file and record specifications entered from the console keyboard. The Report Specification Generator program functions to input the specifications of a desired report. The Report Writer program utilizes the parameter file from the report specification generator to produce the desired report. Up to five variables may be loaded at run time. Allowable operations include addition, subtraction, multiplication, and division; record selection; comparison testing; and listing. The system requires a B 700 with a minimum of 32K bytes of memory, a system console, and a cartridge disk subsystem. COBOL is required for compilation.

UTILITIES: Burroughs offers 24 programs and microcoded routines to the B 700 user. Basic requirements are a B 700 processor with a minimum of 32K bytes of memory and a cartridge disk subsystem. The utilities include the Check Digit Table Generator; Card List; Card Load to Disk; Cold Start from 80-column cards, 96-column cards, magnetic tape, or tape cassette; Disk Director List; Disk File List; Dump/Purge File; Disk Primer Cold Start; Dump Disk Files to Tape; Create Cold Start Tape/Cassette; Object Program-Disk to 80-column card, or to 96-column card; 80 to 96 Object Program Conversion; Paper Tape Copy; Restart; Generalized Sort; Disk Squash; Tape/Cassette Copy; Tape/Cassette to Disk; Tape/Cassette List; and Warm Start.

APPLICATION SOFTWARE: Burroughs presently offers application programs either by the module or by the package. Currently available packages include the B 700 Bank Business Management System, B 700 Thrift Business Management System, B 700 Credit Union Business Management System, B 700 Contractor Business Management System, B 700 Fuel Oil Business Management System, B 700 Production Control System 1, B 700 Manufacturing Job Cost System, B 700 Hospital Business Management System, B 700 Public Utility Billing System, B 700 Wholesale Business Management System, B 700 Wholesale/Distribution BMS On-Line Order Entry and Inquiry System, B 700 TBA Business Management System, B 700 Motor Freight Business Management System, and B 700 Commercial Business Management System (Keyboard Entry). For a detailed listing of the individual modules that comprise these systems, please refer to the price list at the end of this report.

PRICING

POLICY: Burroughs offers the B 700 systems for purchase or lease. In addition to the basic one-year lease, Burroughs offers three-year and five-year leases at a discount of approximately five percent.

The standard equipment lease agreement includes equipment maintenance and permits use of the equipment during one 8-hour period per day. Additional extra-shift charges are billable for maintenance coverage on a 24 hours/day, 7 days/week basis. Individual monthly maintenance charges are detailed in the price list; not all of these charges were available at press time. Burroughs software technical assistance, for installation support and beyond, is available to B 700 users at a price of $225 per day. Hardware installation support for purchased systems is billable at $225 per day. Two days are usually the maximum requirement.

Application software prices quoted in the price list are for an unlimited-time license plan for each designated CPU. Besides this plan, two limited-time (3-to-5-year) plans are available. The first involves an initial payment and an annual fee, while the second involves the same annual fee but divides the initial fee into 12 monthly installments.

Customer education for application programs is charged at the rate of $100 per day. Some modules require one day, while complete systems may require up to 17 days. Courses on the B 700 hardware and software include subjects from Introduction to Computers (2 days) through B 700 COBOL (10 days). All cost $100 per day.

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Training is available at many Burroughs centers throughout the United Staes, including Philadelphia, Syracuse, Detroit, Atlanta, Chicago, Dallas, Los Angeles, San Francisco, and Pasadena. Other major centers offering worldwide training include London, Paris, Rio de Janeiro, Sydney, Tokyo, Toronto, Amsterdam, Johannesburg, Stockholm, and Mexico City.

EQUIPMENT: Representative configurations are best shown by the packaged systems offered by Burroughs. These can be evaluated in detail in the price list that follows.■

EQUIPMENT PRICES

PACKAGED SYSTEMS		Purchase Price	Monthly Maint. (metro area)	Rental (1-year lease)*	Rental (3-5-year lease)*
	Each of the B 730 packaged systems includes a minimum of 32K bytes of main memory, six I/O ports, a B 9343-61 Console Printer, a B 346-3 Console Control, a B 489-5 Disk Drive Control, and memory expansion capability to 80K bytes.				
B 731-100	Specified system with an A 9480-22 Disk Drive	$30,400	$189.00	$ 968	$ 20
B 731-102	Specified system with an A 9480-12 Disk Drive an A 9249-1 85-lpm Printer, and a B 243 Printer Control	34,900	225.00	997	947
B 731-104	Specified system with an A 9480-22 Disk Drive, an A 9249-2 160-lpm Printer, and a B 243-1 Printer Control	37,900	251.00	1,083	1,028
B 731-304	Specified system with 16K bytes of additional memory, an A 9480-22 Disk Drive, an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, a B 351-1 Single Line Control, and a TD 701 Self-Scan Keyboard Display including direct connect, poll/select, and extended memory	44,900	303.00	1,283	1,219
B 731-404	Specified system with 16K bytes of additional memory, an A 9480-22 Disk Drive, an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, a B 9347-2 DDE Station and a B 354 DDE Control	45,900	298.00	1,311	1,245
B 731-704	Specified system with an A 9480-22 Disk Drive an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, an A 9490-25 Tape Cassette Drive, a B 392 Tape Cassette Control, and an AE 501 Audit Entry System	48,900	314.00	1,397	1,329
	The B 711 packaged systems are not in new production, but are warehouse stocks subject to availability. Each includes a minimum of 32K bytes of main memory, eight I/O ports, a B 9343-22 Console Printer (B 9343-21 for the B 713), a B 489 Disk Drive Control, and an A 9480-22 Disk Drive (A 9480-12 for the B 713).				
B 702-85	Specified system with an A 9249-1 85-lpm Printer and a B 243 Printer Control	34,300	—	980	931
B 702-160	Specified system with an A 9249-2 160-lpm Printer and a B 243-1 Printer Control	37,800	—	1,080	1,026
B 703-85	Specified system with an A 9249-1 85-lpm Printer, a B 243 Printer Control, a B 351-1 Single Line Control, and a TD 701 Self-Scan Keyboard Display including direct connect, poll/select, and extended memory	39,900	—	1,140	1,083
B 704-85	Specified system with 16K bytes of additional memory, an A 9249-1 85-lpm Printer, a B 243 Printer Control, a B 351-1 Single Line Control, and two TD 701 Self-Scan Keyboard Displays including direct connect, poll/select, and extended memory	45,600	—	1,303	1,238
B 704-160	Specified system with 16K bytes of additional memory, an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, a B 351-1 Single Line Control, and two TD 701 Self-Scan Keyboard Displays including direct connect, poll/select, and extended memory	47,900	—	1,369	1,301
B 709-85	Specified system with an A 9249-1 85-lpm Printer, a B 243 Printer Control, an A 9420-25 Tape Cassette Drive, a B 392 Tape Cassette Control, and an Audit Entry System	44,900	—	1,283	1,219
B 709-160	Specified system with an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, an A 9490-25 Tape Cassette Drive, a B 392 Tape Cassette Control, and an Audit Entry System	47,900	—	1,369	1,301
B 713	Specified system with an A 9249 160-lpm Printer and a B 243-1 Printer Control	54,900	—	1,515	1,439
	The B 720 packaged systems are not in new production, but are warehouse stocks subject to availability. Each includes a minimum of 32K bytes of main memory, expandable to 96K bytes, and 11 I/O controls.				
B 723-35	Specified system with a B 9343-22 Printer Console, a B 346 Console Control, an A 9480-12 Disk Drive, a B 489-2 Disk Drive Control, an A 9249-2 160-lpm Printer, a B 243-1 Printer Control, a B 9135-2 MICR Reader/Sorter, and a B 131 Reader/Sorter Control	85,900	—	2,454	2,305
	Each of the B 771 systems and communications packaged systems includes 16K bytes of main memory, a B 44 Console Control, a console work table, a B 9344 Console Printer Keyboard, a B 9115 Card Reader, a B 115 Card Reader Control, and a B 351-1 Single Line Control				
B 761-4	Specified system with a B 9249-2 160-lpm Printer and a B 243-1 Printer Control	27,719	—	713	—
B 761-6	Specified system with a B 9249-3 250-lpm Printer and a B 243-1 Printer Control	29,492	—	756	—
B 761-8	Specified system with a B 9247-1 400-lpm Printer and a B 244 Printer Control	33,330	—	854	—
B 761-10	Specified system with a B 9247-3 750-lpm Printer and a B 244 Printer Control	36,360	—	1,134	—

*Lease price includes monthly maintenance charge.

Burroughs B 700 Series

EQUIPMENT PRICES

		Purchase Price	Monthly Maint. (metro (area)	Rental (1-year lease)*	Rental (3-5-year lease)*
PROCESSORS					
B 738	A 32K-byte processor with six I/O ports, a B 9343-61 Console, a B 346-3 Console Control, a B 489-5 Disk Drive Control, and memory expansion capability to 80K bytes	20,990	168.65	598	568
B 741	A 32K-byte processor with eight I/O ports, a B 9343-61 Console, a B 346-3 Console Control, a B 489-2 Disk Drive, and memory expansion capability to 96K bytes	22,900	162.75	654	21
B 771-3	A 32K-byte systems and communications processor which includes a console table, a B 44 Console Printer Keyboard Control, and a B 351-1 Single Line Control	17,600	—	454	—
B 772-3	A 32K-byte systems and communications processor which includes a console table, a B 44 Console Printer Keyboard Control, a B 351-1 Line Control, and a B 489 Disk Cartridge Control	19,600	—	531	—
B 776	A systems and communications processor with 32K bytes of control memory, nine I/O ports, real-time clock, direct memory access control, and bootstrap loader	23,500	—	540	—
	The following processors are not in new production, but are warehouse stocks subject to availabilty.				
B 705	A 16K-byte processor with eight I/O ports, Console Control, and memory expansion capability to 40K bytes	15,425	—	427	406
B 711	A 16K-byte processor with eight I/O ports, console control, and memory expansion capability to 48K bytes	20,605		608	578
B 721	A 32K-byte processor with 11 I/O ports and memory expansion capability to 96K bytes	24,500		651	618
PROCESSOR OPTIONS					
B 306-2	I/O Expansion feature for the B 776	3,300	—	76	—
B 312-3	I/O Expansion feature for the B 730	1,990	9.80	57	54
B 312	I/O Expansion feature for the B 741	1,500	9.80	40	38
PF 27	Single synchronous 26-inch front feed for the B 730 and B 740 Series System Console	250	—	8	8
PF 28	Single asynchronous instead of synchronous feed	250	—	8	8
PF 29	Dual feed	500	—	15	14
B 9340	System Console Printer Keyboard for B 771 and B 72	2,750	19.30	58	54
B 9343-21	System Console Printer for the B 705 and B 711	7,500	—	160	152
B 9343-22	System Console Printer for the B 721	5,500	—	126	120
B 9344	System Console Printer Keyboard for the B 770 Series	2,640	—	58	—
B 9346-2	System Console Printer Keyboard for the B 776	5,100	—	133	—
B 346	Control for the B 9343-22	2,000	—	50	48
B 44	Control for the B 9344	560	—	15	—
B 346-2	Control for the B 9346-2	680	—	17	—
MEMORY					
B 31-8	8K bytes of main memory	2,280	9.40	60	57
B 11-32	32K bytes of main memory	5,300	19.00	126	120
B 11-40	40K bytes of main memory	9,000	—	183	171
B 11-48	48K bytes of main memory	10,600	—	209	195
B 11-24	24K bytes of main memory; for the B 761-X	3,200	—	93	—
B 6-8	8K bytes of main memory; for the B 776	2,280	—	62	—
B 6-16	16K bytes of main memory; for the B 776	4,560	—	124	—
B 6-24	24K bytes of main memory; for the B 776	6,840	—	186	—
B 6-32	32K bytes of main memory; for the B 776	9,120		248	
B 6-40	40K bytes of main memory; for the B 776	11,400		311	
B 6-49	48K bytes of main memory; for the B 776	13,680		373	
B 6-57	56K bytes of main memory; for the B 776	15,960	—	435	—
B 6-65	64K bytes of main memory; for the B 776	18,240	—	497	—
B 21-40	40K bytes of main memory; for the B 721	2,280	—	60	57
B 21-49	48K bytes of main memory; for the B 721	4,560	—	120	114
B 21-57	56K bytes of main memory; for the B 721	6,840	—	180	171
B 21-65	64K bytes of main memory; for the B 721	9,120	—	240	228
B 21-73	72K bytes of main memory; for the B 721	11,400	—	300	285
B 21-82	80K bytes of main memory; for the B 721	13,680	—	360	342
B 21-90	88K bytes of main memory; for the B 721	15,960	—	420	399
B 21-98	96K bytes of main memory; for the B 721	18,240	—	480	456
MASS STORAGE					
A/B 9489-15	Industry-Compatible Mini-Disk (ICMD); 243K bytes	3,950	—	114	108
A/B 9480-12	Dual Disk Cartridge Drive; 4.6 megabytes, 80 ms	11,900	69.50	342	325
A/B 9481-12	Dual Disk Cartridge Drive; 9.2 megabytes, 100 ms	14,900	94.40	502	477
A/B 9480-22	Dual Disk Cartridge Drive; 4.6 megabytes, 145 ms	9,500	65.50	274	260
B 379	Control Unit for the ICMD	920	4.60	23	22
B 489	Control Unit for 4.6-megabyte cartridge disk drives on the B 70X Series and B 772	675	17.90	21	18
B 489-1	Control Unit for 9.2-megabyte cartridge disk drives on the B 70X Series and B 772	1,200	17.90	40	36
B 489-2	Control Unit for 4.6- or 9.2-megabyte cartridge disk drives on the B 720 and B 740 Series	2,100	11.10	70	67

*Lease price includes monthly maintenance charge.

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EQUIPMENT PRICES

		Purchase Price	Monthly Maint. (metro area)	Rental (1-year lease)*	Rental (3-5-year lease)*
MASS STORAGE (Continued)					
B 489-4	Disk Exchange for the B 720, B 740 Series, and B 772 only	1,120	4.90	29	27
B 489-5	Control Unit for 4.6- or 9.2-megabyte cartridge disk drives on the B 730 Series	675	17.90	25	24
B 480-1	Control Unit for 4.6- or 9.2-megabyte cartridge disk drives on the B 776	1,600		41	—
MAGNETIC TAPE EQUIPMENT					
A/B 9491-2	9-track, 800-bpi, 12.5-ips Magnetic Tape Drive	8,900	25.10	226	204
A/B 9490-25	Magnetic Tape Cassette Drive; 10 ips	1,640	8.05	55	53
A 9490-21	Built-in Magnetic Tape Cassette Drive; 10 ips	1,640	8.05	55	52
B 391	Control Unit for Magnetic tape drive	1,250	12.20	31	29
B 392	Control Unit for magnetic tape cassette drive	800	4.00	24	23
B 392-1	Control Unit for built-in cassette drive	800	4.00	24	23
PRINTERS					
A/B 9249-1	Line Printer; 85 lpm, 132 positions	8,500	75.10	252	239
A/B 9249-2	Line Printer; 160 lpm, 132 positions	9,900	87.60	293	278
A/B 9249-3	Line Printer; 250 lpm, 132 positions	13,400	118.00	392	372
	Line Printer; 400 lpm, 132 positions, 12-channel VFU:				
A/B 9247-2	Standard version	20,550	150.00	587	539
A/B 9247-12	Improved version	21,550	173.00	613	562
	Line printer, 750 lpm, 132 positons, 12-channel VFU:				
B 9247-3	Standard version; for the B 77X Series	34,050	—	849	—
B 9247-13	Improved version; for the B 77X Series	35,000	—	968	—
B 243	Control Unit for the 85-lpm printer	625	6.50	17	15
B 243-1	Control Unit for the 160- & 250-lpm printers	1,600	6.50	37	34
	Control Unit for the 400- & 750-lpm printers:				
B 244	For ASCII character set	2,000	6.50	46	43
B 244-1	For EBCDIC character set	2,000		46	43
B 9948-1	12-channel format tape reader for the 85-, 160-, and 250-lpm printers	1,200	—	32	—
B 9942-9	Additional train module for the 400- & 750-lpm printers	3,500	—	68	63
PUNCHED CARD EQUIPMENT					
A 9114-1	80-column Card Reader; 200 cpm	1,990	25.50	82	78
A/B 9115	80-column Card Reader; 300 cpm	5,075	39.20	135	124
A/B 9116	80-column Card Reader; 600 cpm	7,135	54.90	213	196
B 9116-7	Option for the 300-cpm card reader to increase speed to 600 cpm; for B 761-X	1,990	—	76	—
B 9117	80-column Card Reader; 800 cpm; for the B 77X Series	9,875	—	274	—
B 111	Control Unit for the 200-cpm card reader	500	6.50	22	21
B 115	Control Unit for the 300- & 600-cpm card readers	880	9.10	23	21
A/B 9418-2	80-column Reader/Punch/Data Recorder, 200/45/45 cpm	12,060	109.00	321	305
A/B 9418-5	Four added program levels for 80-column Reader/Punch/Data Recorder	500		10	10
A 9119-1	96-column Card Reader; 300 cpm	4,420	32.80	110	93
A 9419-2	96-column Reader/Punch/Data Recorder; 300/60/60 cpm	8,750	93.10	274	260
A 9419-6	96-column Reader/Punch/Sorter/Data Recorder; 300/60/60 cpm	9,250	111.00	326	310
B 311	Control Unit for all 96-column card equipment and the 80-column reader/punch/data recorder	850	2.60	25	24
PUNCHED TAPE EQUIPMENT					
A 9122-1	Paper Tape Reader; 40 cps	1,590	11.75	43	41
A 9222-1	Paper Tape Punch; 40 cps	1,990	15.00	54	51
B 121-1	Control Unit for paper tape reader	750	2.60	22	21
B 221	Control Unit for paper tape punch	750	2.60	22	21
MICR READER/SORTER					
A 9135-2	Reader/Sorter; eight pockets; 900 dpm	48,230	565.00	1,097	1,007
A 9135-3	Reader/Sorter; twelve pockets; 900 dpm	59,250	612.00	1,428	1,311
B 131	Control Unit for MICR Reader/Sorters	750	—	22	21
TERMINALS					
	All TD Series terminals except the TD 730 & 830 are not in new production but are warehouse stocks subject to availability.				
TD 700	Self-Scan 256-character Display/Keyboard; 64-character set	4,150	—	115	—
TD 701	Self-Scan 256-character Display/Keyboard; 128-character set	2,300	—	85	—
	Self-Scan II 480-character Display/Keyboard; 128-character set:	—	—	—	—
TD 731	With control for async. data sets & direct-connect communications interface	3,200	—	100	—
TD 732	Unit with peripheral capability added	3,550	—	110	—
TD 733	With control for sync. data set communications	3,200	—	100	—
TD 734	Unit with peripheral capability added	3,550	—	110	—

*Lease price includes monthly maintenance charge.

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EQUIPMENT PRICES

		Purchase Price	Monthly Maint. (metro area)	Rental (1-year lease)*	Rental (3-5-year lease)*
TERMINALS (Continued)					
TD 801	CRT; 960-character display/keyboard	2,880	—	100	—
TD 802	CRT/ 1920-character display/keyboard	3,150	—	110	—
TD 821	CRT; 960-character display/keyboard; peripheral capability	3,400	—	125	—
TD 822	CRT; 1920-character display/keyboard with 80-character system status line; 128-character set	3,655	—	135	—
TD 831	With control for async data sets & direct-connect communications interface	3,850	—	120	—
TD 832	Unit with peripheral capability added	4,200	—	130	—
TD 833	With control for sync. data set communications	3,850	—	120	—
TD 834	Unit with peripheral capability added	4,200	—	130	—
	Options for TD 700, TD 701, TD 801, & TD 802:				
TD 011	Typewriter-style keyboard	340	—	13	—
TD 011-1	Same as TD 11, but used with TD 052	340	—	13	—
TD 012	Keypunch-style keyboard	340	—	13	—
TD 012-1	Same as TD 012, but used with TD 052	340	—	13	—
TD 013	Numeric keyboard	335	—	13	—
TD 013-1	Same as TD 013 but used with TD 052	335	—	13	—
TD 052	Expanded (1024-character) memory for TD 700	300	—	11	—
TD 054	"Y" cable for concatenation, per unit	50	—	4	—
TD 070	Upper/lower case character set for TD 800	255	—	9	—
TD 072	Field upgrade; TD 801 to TD 802	500	—	15	—
	Options for TD 700, TD 701, TD 801, TD 802, & TD 820:				
TD 074	Interface for B 9354-6 Printer	130	—	5	—
B 9354-6	Printer	—	—	—	—
	Options for TD 820:				
TD 015	A/N typewriter keyboard (includes 6-foot separation cable)	400	—	13	—
TD 072-1	TD 821 field upgrade to 1920-character screen	500	—	15	—
TD 075-1	A 9249 printer interface	210	—	8	—
TD 055-1	TD/A 9249 interface cable	100	—	5	—
TD 054-1	Shared A 9249 connection cable	75	—	4	—
TD 078	Magnetic card reader	1,225	—	41	—
TD 076	Cassette controller (includes one A 9490-25 drive)	3,160	—	105	—
TD 080	Cassette interface	350	—	12	—
	Options for TD 730, TD 820, & TD 830:				
TD 016	A/N source data keyboard (includes 6-foot separation cable)	400	—	13	—
TD 017	Ten-key auxiliary keyboard (includes 2-foot separation cable)	200	—	7	—
	Options for TD 730 & TD 830 Series:				
TD 015-A	Alphanumeric typewriter keyboard	400	—	13	—
TD 019	Expanded alphanumeric keyboard	1,000	—	30	—
TD 019-1	Expanded alphanumeric keyboard with built-in magnetic card reader	1,400	—	45	—
TD 100	Expanded memory (expands TD 730 and TD 830 display memory from a standard 2000 to 4080 characters and data communications buffer from 1200 to 3000 characters)	500	—	20	—
TD 105	No-display of control characters (the display of control characters, such as form delimiters, is inhibited—feature is available on a special factory order basis only)	200	—	10	—
	Peripherals for TD X32 & TD X34:				
TD 078-1	Auxiliary magnetic card reader for TD 015	1,225	—	41	—
TD 076	Cassette controller (includes one A 9490-25 driver—can be shared by up to four TD's); other peripherals include the A 9249 series of printers and the A 9490-25 additional cassette tape drive	3,160	—	105	—
	Options for all TD Series terminals (except 730 and 830):				
TD 021	Asynchronous 75 to 1800 bps communications interface	130	—	5	—
TD 022	Synchronous 2400 or 4800 bps communications interface	130	—	5	—
TD 023	Two-wire direct connect to 9600 bps (includes TD 077 TD1 connection)	170	—	7	—
TD 024	BDI (Burroughs Direct-connect Interface) to 64,000 bps (includes BDI connection kit)	255	—	9	—
TD 031	Poll and Select (includes modified connection, fast select, broadcast and group select) Communications Procedure	130	—	5	—
TD 032	Poll and Select with Group Poll (includes modified contention, fast select, broadcast and group select) Communications Procedure	130	—	5	—
TD 034	IBM 2260 Communications Procedure	380	—	14	—
TD 035	IBM 3270 Communications Procedure	500	—	19	—
TD 053	Data rate selection dial (75/150/200/300/600/1200/1800 bps)	50	—	4	—
TC 4001	Printing Terminal; 60 cps				
TC 5110	Intelligent Terminal with TC 4001 Printing Unit: With one cassette drive	13,900	—	430	—

*Lease price includes monthly maintenance charge.

Burroughs B 700 Series

EQUIPMENT PRICES

		Purchase Price	Monthly Maint. (metro area)	Rental (1-year lease)*	Rental (3-5-year lease)*
TERMINALS (Continued)					
TC 5113	With two cassette drives	16,900	—	528	—
TC 5114	With one floppy drive	17,900	—	555	—
TC 5115	With two floppy drives	21,900	—	680	—
	Self-Scan Display	1,900	—	55	—
DATA ENTRY SUBSYSTEMS					
AE 501	Audit Entry Data Preparation System	9,940	—	295	—
B 9347-2	Direct Data Entry System for the B 730	4,990	—	125	119
B 354	Direct Data Entry Control	1,050	—	26	—
COMMUNICATIONS EQUIPMENT					
B 351-1	Single Line Control—direct connect; for the B 77X (except B 776), B 711, B 720, B 740 Series	1,000	12.90	23	22
B 351	Single Line Control—data set connect; for the B 730	2,800	18.60	70	67
B 351-3	Single Line Control for B 771 and B 772	1,500	11.90	40	38
For the B 720 & B 740 Series:					
B 352	Data Communications Processor	6,200	40.50	205	195
B 352-6	Indicator Lights	300	1.30	10	10
B 353-1	Half-Duplex Line Control	350	1.30	12	11
B 353-3	Add-On Memory for dial-in and dial-out	1,500	7.60	40	38
B 651	Line Adapter	650	2.50	18	17
B 652	Auto Call Unit	375	1.30	12	11
DC 140	System Processor for TD Series terminals	—	—	—	—
For the B 776:					
B 357-1	Data Communications Processor for up to 16 lines	5,500	—	124	—
B 357-3	Four Line Base, half-duplex	480	—	12	—
B 357-4	Four Line Base, full- and half-duplex	1,400	—	36	—
B 357-5	Line Group Expander Card	220	—	5	—
B 657-1	Line Adapter	650	—	18	—
B 657-2	Line Adapter for Burroughs Data Link Control (to 9600 bps)	840	—	21	—
B 657-3	Line Adapter for Burroughs Direct Interface (to 19,200 bps)	660	—	15	—
B 657-5	Broadband Line Adapter (to 50,000 bps)	2,600	—	66	—
B 657-6	Dual Auto Dial-Out Adapter (interface to Bell 801A)	480	—	12	—

*Lease price includes monthly maintenance charge.

SOFTWARE PRICES

		Single Payment	12 Monthly Payments	Annual Maint. Charge	Monthly Fee (3-Year Plan)	Down Payment
B 700 BANK BUSINESS MANAGEMENT SYSTEM						
B721 BP1	Proof and Transit MICR Module	$ 1,000	$ 92	$ 150	$ 34	$ 400
B721 BP2	Module with training and technical support	2,095	193	150	58	838
B700 BD1	Demand Deposit Module	2,500	230	150	66	1,000
B700 BD2	Module with training and technical support	3,565	327	150	90	1,426
B700 BS1	Savings Module	1,500	138	150	45	600
B700 BS2	Module with training and technical support	2,400	220	150	65	960
B700 BC1	Certificate of Deposit Module	750	69	150	29	300
B700 BC2	Module with training and technical support	1,570	144	150	47	628
B721 BO3	MICR Entry Module	7,250	665	363	187	2,900
B721 BO4	Module with training and technical support	9,475	869	363	235	3,790
B700 BG1	General Ledger Module	500	46	150	24	200
B700 BG2	Module with training and technical support	1,510	139	150	46	604
B700 BO1	Complete package of all modules	6,250	573	313	161	2,500
B700 BO2	Package with training and technical support	8,500	780	313	210	3,400
B 700 THRIFT BUSINESS MANAGEMENT SYSTEM						
B700 TS1	Time Deposits Module	2,250	206	150	61	900
B700 TS2	Module with training and technical support	3,150	289	150	81	1,260
B700 TM1	Mortgage Loan Module	2,400	220	150	65	960
B700 TM2	Module with training and technical support	3,250	298	150	83	1,300
B700 TG1	General Ledger Module	500	46	150	23	200
B700 TG2	Module with training and technical support	1,510	139	150	45	604
B700 TO1	Complete package of all modules	5,150	473	258	133	2,060
B700 TO2	Package with training and technical support	6,800	624	258	169	2,720
B 700 CREDIT UNION BUSINESS MANAGEMENT SYSTEM						
B700 CU1	Complete package with training and technical support	6,500	596	250	162	2,600

Burroughs B 700 Series

SOFTWARE PRICES

		Single Payment	12 Monthly Payments	Annual Maint. Charge	Monthly Fee (3-Year Plan)	Down Payment
B 700 CONTRACTOR BUSINESS MANAGEMENT SYSTEM						
B700 CP2	Payroll and Labor Cost Module	2,510	230	150	67	1,004
B700 CA2	Accounts Payable and Material Cost Module	2,510	230	150	67	1,004
B700 CE2	Equipment Cost Module	1,510	138	150	45	604
B700 CJ2	Job Cost Reporting Module	1,995	183	150	56	798
B700 CG2	General Ledger and Financial Statement Module	3,175	291	150	81	1,270
B700 CO8	Complete package	8,100	743	310	201	3,240
B 700 PRODUCTION CONTROL SYSTEM 1						
B700 MC1	Bill of Material Module	2,100	192	150	58	840
B700 MC2	Module with training and technical support	3,300	302	150	84	1,320
B700 ME1	Work Center and Routing Module	2,100	192	150	58	840
B700 ME2	Module with training and technical support	3,300	302	150	84	1,320
B700 MG1	Stock Status Module	1,300	119	150	41	520
B700 MG2	Module with training and technical support	2,100	192	150	58	840
B700 MJ1	Costing Module	1,500	137	150	45	600
B700 MJ2	Module with training and technical support	2,300	210	150	63	920
B700 MA1	Complete package of all modules	6,500	595	325	168	2,600
B700 MA2	Package with training and technical support	8,200	750	325	205	3,280
B 700 MANUFACTURING JOB COST SYSTEM						
B700 JO2	Complete package	2,500	229	150	67	1,000
B 700 HOSPITAL BUSINESS MANAGEMENT SYSTEM						
B700 HAH	Patient Accounting System Module with training and technical support	4,250	389	150	105	1,700
B700 HAJ	Hospital Payroll System Module	1,200	110	150	39	480
B700 HAK	Module with training and technical support	2,350	215	150	63	940
B700 HAL	Hospital General Ledger System Module	900	83	150	32	360
B700 HAM	Module with training and technical support	2,100	193	150	58	840
B700 HAN	Hospital Accounts Payable System Module	1,000	92	150	34	400
B700 HAP	Module with training and technical support	2,150	197	150	59	860
B700 HAA	Patient Accounting, Payroll, General Ledger, A/P	5,200	477	260	134	2,080
B700 HAB	Module with training and technical support	8,000	733	260	195	3,200
B700 HAC	Module with terminal entry	5,600	513	280	145	2,240
B700 HAD	B700 HAC with training and technical support	8,500	779	280	208	3,400
B700 HAE	BHAS II Patient Accounting Keyboard Entry	2,500	229	150	67	1,000
B700 HAF	Module with training and technical support	3,750	344	150	94	1,500
B700 HAG	BHAS II Patient Accounting Terminal Entry	3,000	275	150	78	1,200
B 700 PUBLIC UTILITY BILLING SYSTEM						
B700 UT1	Customer Billing Package	3,000	275	150	78	1,200
B700 UT2	Package with training and technical support	4,250	390	150	105	1,700
B 700 WHOLESALE BUSINESS MANAGEMENT SYSTEM						
Invoicing, Accounts Receivable, & Inventory Control Module:						
B700 RKN	Systems keyboard input	2,600	236	150	69	1,040
B700 RAN	Automated input	3,200	290	160	83	1,280
B700 RMN	Magnetic tape cassette input	800	75	40	NA	NA
B700 RCN	Punched card input	800	75	40	NA	NA
B700 RPN	Punched paper tape input	800	75	40	NA	NA
B700 RXL	Systems printer output	500	45	25	NA	NA
B700 RXC	Line printer output	500	45	25	NA	NA
B700 RAE	Module with training and technical support	4,470	400	224	116	1,788
Accounts Payable Module:						
B700 AKN	Systems keyboard input	1,100	102	150	30	440
B700 AAN	Automated input	1,400	128	150	43	560
B700 AMN	Magnetic tape cassette input	350	32	18	NA	NA
B700 ACN	Punched card input	350	32	18	NA	NA
B700 APN	Punched paper tape input	350	32	18	NA	NA
B700 AXL	Systems printer output	200	21	10	NA	NA
B700 AXC	Line printer output	200	21	10	NA	NA
B700 AAE	Module with training and technical support	2,445	224	150	65	978
Payroll Module:						
B700 PKN	Systems keyboard input	1,400	128	150	43	560
B700 PAN	Automated inupt	1,800	165	150	52	720
B700 PMN	Magnetic tape cassette input	450	42	23	NA	NA
B700 PCN	Punched card input	450	42	23	NA	NA
B700 PPN	Punched paper tape input	450	42	23	NA	NA
B700 PXL	Systems printer output	300	28	15	NA	NA
B700 PXC	Line printer output	300	28	15	NA	NA
B700 PAE	Module with training and technical support	2,790	255	150	1,116	73
General Ledger Module:						
B700 GKN	Systems keyboard input	1,100	102	150	36	440
B700 GAN	Automated input	1,400	128	150	43	560
B700 GMN	Magnetic tape cassette input	350	32	18	NA	NA
B700 GCN	Punched card input	350	32	18	NA	NA
B700 GPN	Punched paper tape input	350	32	18	NA	NA
B700 GXL	Systems printer output	200	21	10	NA	NA

Burroughs B 700 Series

SOFTWARE PRICES

		Single Payment	12 Monthly Payments	Annual Maint. Charge	Monthly Fee (3-Year Plan)	Down Payment
B 700 WHOLESALE BUSINESS MANAGEMENT SYSTEM (Continued)						
B700 GXC	Line printer output	200	21	10	NA	NA
B700 GAE	Module with training and technical support	2,445	224	150	65	978
B700 BAN	Complete package	7,100	650	360	184	2,840
B700 BAE	Complete package with training and technical support	9,500	857	360	236	3,800
B 700 WHOLESALE/DISTRIBUTION BMS ON-LINE ORDER ENTRY & INQUIRY SYSTEM						
B700 WOG	Complete package	5,970	547	220	142	2,388
B 700 COMMERCIAL BUSINESS MANAGEMENT SYSTEM (KEYBOARD ENTRY)						
B700 WJ2	Invoicing, Accounts Receivable, & Inventory Update	2,450	225	150	66	980
B700 WB2	Accounts Payable System	1,875	172	150	53	750
B700 WD2	Payroll System	2,150	198	150	59	860
B700 WG2	General Ledger System	1,750	161	150	50	700
B700 WO2	Complete package	5,500	506	220	138	2,200
B 700 FUEL OIL BUSINESS MANAGEMENT SYSTEM						
B700 FS1	Mainline Delivery Scheduling & A/R	3,000	275	150	78	1,200
B700 FS2	Module with training and technical support	3,800	345	150	95	1,520
B700 FM1	Complete package	6,600	607	330	171	2,640
B700 FM2	Package with training and technical support	9,500	871	330	233	3,800
B 700 TBA BUSINESS MANAGEMENT SYSTEM						
B700 WA3	TBA module	400	37	50	NA	NA
B700 WO3	Complete Package	7,500	687	380	194	3,000
B700 WO4	Package with training and technical support	9,900	907	380	246	3,960
B 700 MOTOR FREIGHT BUSINESS MANAGEMENT SYSTEM						
B700 MT1	G/L & Reporting with training and technical support	4,560	418	180	114	1,824
B700 MT2	Vehicle Maintenance & Asset Control with training and technical support	4,560	418	180	114	1,824
B700 MT3	A/R & Billing with training and technical support	3,760	345	150	94	1,504
B700 MT4	Payroll with training and technical support	2,480	227	150	66	992
B700 MT5	A/P with training and technical support	2,480	227	150	66	992
B700 MTO	Complete package with training and technical support	15,000	1,375	590	374	6,000

		Monthly License Fee
B 700 PROGRAM PRODUCTS		
B700 RPG	RPG II	$50
B700 COB	COBOL	50
B700 INT	System Control Program	0
B700 UTL	Utility Program	0
B700 SRT	System Sort	0
B700 NDL	Network Definition Language	50
B770 R37	Remote Terminal 3780 Lookalike	35