

```

11      7777777  555555  0000000
111     77      55      00  000
11      77      55555  00  0 00
11      77      55      00  0 00
11      77      55      00  0 00
11      77      55      000  00
1111   77      55555  0000000

```

```

RRRRRR  EEEEE  LL      EEEEE  A      SSSSS  EEEEE
RR  RR  EE      LL      EE      AAA    SS  SS  EE
RR  RR  EE      LL      EE      AA  AA  SS      EE
RRRRRR  EEEEE  LL      EEEEE  AA  AA  SSSSS  EEEEE
RR  RR  EE      LL      EE      AAAAAA  SS      EE
RR  RR  EE      LL      EE      AA  AA  SS  SS  EE
RR  RR  EEEEE  LLLLLL  EEEEE  AA  AA  SSSSS  EEEEE

```

```

DDDDDD  000000  CCCC  UU      UU  MM      MM  EEEEE  NN      NN  TTTTTTTT
DD  DD  00      00  CC  CC  UU      UU  MMM  MMM  EE      NNN  NN  TT
DD  DD  00      00  CC      UU      UU  MM  MMM  MM  EE      NNNN  NN  TT
DD  DD  00      00  CC      UU      UU  MM  M  MM  EEEEE  NN  NN  NN  TT
DD  DD  00      00  CC  CC  UU      UU  MM      MM  EE      NN  NNN  TT
DDDDDD  000000  CCCC  UUUUUU  MM      MM  EEEEE  NN      NN  TT

```

```

0000000  0000000
00      000  00      000
00  0 00  00  0 00
00  0 00  00  0 00  ----
00  0 00  00  0 00
000      00  000      00
0000000  0000000

```

```

0000000  0000000  0000000  444  3333  A      0000000  2222
00      000  00      000  00      000  4444  33  33  AAA  00      000  22  22
00  0 00  00  0 00  00  0 00  44  44      33  AA  AA  00  0 00  22
00  0 00  00  0 00  00  0 00  44  44      3333  AA  AA  00  0 00  22
00  0 00  00  0 00  00  0 00  4444444  33  AAAAAA  00  0 00  22
000      00  000      00  000      00  44  33  33  AA  AA  000      00  22
0000000  0000000  0000000  44  3333  AA  AA  0000000  222222

```

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LIST OF DOCUMENTS FOR 1750 RELEASE

NAME	NO. PAGES*
DISCLAIMER	1
DOCUMENT LIST	1
1750 RELEASE DOCUMENT	7
HOW TO LOAD SOFTWARE	2
HOW TO REPRODUCE SOFTWARE	4

*NO. PAGES assumes 60 lines per page

1750 RELEASE NOTES

The Zebra 1750 is a high performance, multiuser business computer. It supersedes the Zebra Model 750, memory and the number of ports are expandable. Certain 1750 configurations can have up to 120MB of disk; others can have both cartridge tape and cartridge disk backup.

The 1750 software is compatible with both the 1750 and the 750 and replaces the 3.0 version of the 750 software currently released. On 1750s with multiple disks the operating system is designed to distribute data across all disks in order to maximize throughput.

The remainder of this document concentrates on differences between the 1750 and the 750 and will be directed toward the reader already familiar with the 750 Zebra/Pick system.

DIFFERENCES BETWEEN THE ZEBRA 1750 AND 750 MODELS

1. The RESET button is located at the lower right of the front panel. It is recessed to protect it from being bumped accidentally and will require an instrument about the size of the end of a pen or pencil to press the button. When pressed, the 1750 comes up under the control of the Firmware Executive PROMs. The functions of the 1750 PROMs are essentially the same as those of the 750.

2. The 1750 supports both 1/4" tape and cartridge disk as removable media on the same system. Therefore, the user must use the SET-CT or SET-CD verb to attach the correct device before executing tape verbs. Tape verbs will attach the last device used during the current logon period. Or, if no SET-CT or SET-CD command was issued during the current logon period, an attempt is made to attach the default device which is 1/4" tape. If an attempt is made to attach the 1/4" tape and that device is not available on the system, the system will hang and the user must Break and END to get back to TCL. To avoid this problem the user must do a SET-CD or SET-CT before executing other tape commands.

Either Cartridge Tape or Cartridge Disk may be used to load the Pick Operating System software onto the 1750. The operating system is supplied in a SYSGEN format, as with the 750, and not a disk image burst tape or cartridge disk.

The 1/4" tape cartridge is inserted into the Archive tape drive with the metal plate on the bottom and the safe switch on the left toward the front of the machine. Once the cartridge is inserted all the way into the slot, slide the latch to the right to engage the heads. To retract the heads and eject the cartridge, slide the latch to the left.

The disk cartridge is physically inserted into the horizontal slot. If the latch is closed and the system power is on, press the button on the top of the disk cartridge drive, and it will open. Insert the cartridge oriented with the sliding opening at the top. Do not try to slide the plastic door back yourself as you may damage the magnetic disk inside. The cartridge drive will open the cartridge as it is inserted. After seating the cartridge fully into the drive, shut the latch by pressing downward until the latch

catches. When the drive is ready to read or write to the cartridge, the light above the latch will flash three times in rapid succession. When ready to remove the cartridge, press the button at the top of the drive and the latch will be released after the disk stops spinning. If the disk has been accessed in the last few minutes, it will take a few seconds for the latch to open. The cartridge is write protected when the switch on top of the cartridge is aligned with the circle. It should be noted that when the disk is inserted into the drive, the disk heads are not repositioned to the first sector. It is important to remember to use the T-REW command before beginning any read or write operation.

3. The 1750 may have from one to three fixed disk drives. If more than one disk is available, data will be distributed over the disks using a "flat loading" method. This means that the first disk will NOT be filled up before the second disk is utilized. Therefore, when executing a binary backup using the Firmware Executive PROMs, the user is required to BACKUP each system disk to insure that all data is saved (See Number 4 below). Data backups using the Pick Operating System verbs FILE-SAVE, ACCOUNT-SAVE, T-DUMP, etc., are transparent to the user.

4. The 1750 Firmware Executive PROMs make use of all available memory when executing the BACKUP and RESTORE functions. Therefore, the more memory available on a system the faster BACKUP and RESTOREs stores will be. The data is moved from disk to memory and then to tape. Since memory is used a BOOT should be executed after a BACKUP or RESTORE operation. The 1750 will not rewind the tape after a single disk has been backed up or restored. This allows complete utilization of the tape by allowing more than one disk to be saved to a tape. However, it should be noted that if the first disk is restored and a problem occurs during restoration of the second disk from the same tape, the user must restart the RESTORE process with the first disk.

The following examples of two methods of BACKUP and RESTORE of two ZOMB disks to tape assumes the system has been RESET and is at the "Ok," prompt with the correct tape inserted. Items underlined are user response and <cr> indicates a carriage return.

Example 1

BACKUP 2 disks to 1 tape

Ok, REWIND<cr> Rewinds the tape to load point

Ok, BACKUP DISK 0 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the first disk will be saved and then system will return to the Ok, prompt.

Ok, BACKUP DISK 1 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the second disk will be saved and then system will return

to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tap to load point

Data from both disks is now on one tape. Remove cartridge and set to the SAFE position. Make sure tape is labeled correctly.

RESTORE 2 disks from 1 tape

Ok, REWIND<cr> Rewinds the tape to load point

Ok, RESTORE DISK 0 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the first disk will be restored and then system will return to the Ok, prompt.

Ok, RESTORE DISK 1 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the second disk will be restored and then system will return to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tap to load point

Example 2

BACKUP 2 disks to 2 tapes

Ok, REWIND<cr> Rewinds the tape to load point

Ok, BACKUP DISK 0 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the first disk will be saved and then system will return to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tape to load point

Remove tape, set it to the SAFE position and insert a new tape. Make sure tape is labeled correctly as to which disk was saved.

Ok, REWIND<cr> Rewinds the tape to load point

Ok, BACKUP DISK 1 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the second disk will be saved and then system will return to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tap to load point

Remove cartridge, set to the SAFE position and label tape. Data from both disks is now on two separate tapes.

RESTORE 2 disks from separate tapes

Ok, REWIND<cr> Rewinds the tape to load point

Ok, RESTORE DISK 0 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the first disk will be restored and then system will return to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tape to load point

Remove tape and insert second tape.

Ok, RESTORE DISK 1 CT<cr>

Mount Cartridge 1 (y/n): Y<cr>

Data on the second disk will be restored and then system will return to the Ok, prompt.

Ok, REWIND<cr> Rewinds the tap to load point

Remove cartridge.

NOTE: In Example 1, if either the BACKUP or RESTORE fail at any point, the process must be started from the beginning for ALL disks. In Example 2, if the BACKUP or RESTORE fails, the process need be repeated only for the disk that was being backed up or restored. BACKUP and RESTORE of disks may be done in any order, therefore, the tapes must be carefully labeled to insure the correct data is restored to the correct disk.

5. The 1750 RS232 serial ports have nine-pin connectors on all ports except port 5 which has a 25-pin connector. The 25-pin connector is intended for use with a modem but may be used with a CRT or printer as well. Cabling to this port requires the wires connected to pins 2 and 3 be reversed.

Ports 4 and 5 are handled by a separate driver than the other ports and allow three additional BAUD rates, the Baud rates are as follows:

Ports 0-3 and 6-n	Ports 4-5
--	50
75	75
110	110
134.5	134.5
150	150
300	300
600	600
1200	1200
1800	1800
2000	2000
2400	2400
--	3600
4800	4800
---	7200
9600	9600
19,200	19,200

This is the same configuration as the 750, but the 1750 can be expanded to 12 ports.

6. COM.SYS cable hookups for direct lines on all 9-pin connection ports require a cable with pins two and three reversed and pin 7 straight through. Port 5, a 25-pin connection, requires a modem type cable with pins 2, 3 and 7 straight through. This is the same 9-pin cable hookup used for the 750 only there are more ports available including port 5.

7. With the addition of battery backup and powerfail logic to the 1750, it is possible to shutdown the system in an orderly manner when there is a power outage. For powerfail logic to work correctly, the CPU power cord and the signal cable must be plugged into the battery backup unit. When the power is off and the system is running on battery backup, the SYSTEM will send a message to all terminals "POWER FAIL, SYSTEM SHUTDOWN IMMINENT, LOGOFF NOW!". When the power to the battery backup unit is off for 5 minutes, the system will send the message "SYSTEM SHUTDOWN" to port 0, flush memory and secure the disk(s). If power is restored within 5 minutes the system will not shutdown. If power is restored and then fails again, the 5 minute countdown is restarted.

8. With the addition of powerfail logic an orderly shutdown procedure has been added for the 1750 and is compatible with the Zebra/Pick multibus models. Explanation and PROC dialogue is as follows:

The :SHUTDOWN proc was designed to allow an orderly shutdown of the system, thereby, insuring against possible GFES, loss

of data and disk errors. It is recommended that this proc be called whenever the system is to be powered off, when an ABS load is to be executed, or any other time the system manager requires all system processes to stop. This proc will LISTU, send a message to all ports, prevent users from logging on, log off ports, create Spooler hold files, delete printers, flush memory and secure the disk. :SHUTDOWN may be executed by the SYSPROG account on Port 0 only. Proc dialogue is as follows:

THIS IS THE SHUTDOWN PROCEDURE TO FLUSH MEMORY...
...AND SEQUENCE DOWN THE DISK

DO YOU WISH TO CONTINUE (<Y>,N):

WOULD YOU LIKE TO DISPLAY THE USERS CURRENTLY LOGGED ON (<Y>,N,X):

where:

Y = LISTUSERS and continue
N = Continue toward shutdown
X = Exit to TCL

DO YOU WISH FOR A SHUTDOWN MESSAGE TO BE SENT TO ALL TERMINALS (<Y>,N,X)?

where:

Y = Send Message and continue
N = Do not send message, but continue
X = Exit to TCL

DO YOU WISH TO LOG OFF ALL USERS (<Y>,N,X):

where:

Y = Prevent ports from logging on and LOGOFF
all ports that are still logged on
N = Go to beginning of proc
X = Exit to TCL

...NOW LOGGING OFF PORTS...

DO YOU WISH ALL PRINT JOBS TO BECOME HOLD FILES (<Y>,N):

...NOW CREATING HOLD FILES FOR PRINT ENTRIES...

...NOW DELETING PRINTERS...

SEQUENCE DOWN DISK (<Y>,N):

where:

Y = Sequence down the disk -- generally used
when the system is to be powered off.
N = Do not sequence down the disk -- generally used
to prepare the system for an ABS Load.

...NOW FLUSHING MEMORY AND SHUTTING DOWN SYSTEM...

SYSTEM SHUTDOWN

GENERAL AUTOMATION EXECUTIVE- Ver x. x, P/N 1563-x
xxxKBYTES RAM

Enter BOOT, BACKUP, or RESTORE
Ok,

Sometimes a Processor Exception message may appear instead of the Ok, prompt. This occurs when the Executive prom is in an unknown state. When this occurs the system is still shutdown correctly.

9. All the documents attached to the 1750 Release Notes are contained in an account called 1750DOCS. When the account is logged on, all documents are spooled to a hold file that may be directed by another account to the correct form number for 8 1/2 by 11 paper. If only an upper case printer is available, refer to Spooler documentation to reformat the print file. When all documents have been spooled to the hold file the account will log off. The account may be deleted from the system by logging to SYSPROG and using the DELETE-ACCOUNT verb. Do an ACCOUNT-SAVE before deleting the account.

HOW TO LOAD PICK OPERATING SYSTEM ON TO THE 1750

Your 1750, as delivered from the factory, should have the latest software and necessary files to begin operation already loaded onto the disk. Should it become necessary to reload the PICK Operating System and files, the following instructions may be used to load from either 1/4-inch Cartridge Tape or Cartridge Disk.

1. RESET 1750
2. INSERT 3.0 RELEASE 1750 SYSGEN Cartridge and close the gate.
3. At Ok, prompt type:

BOOT CD <cr> or BOOT CT <cr>

For Cartridge Disk or Cartridge Tape

System responds with:
Mount Cartridge (y/n):

Enter Y <cr>

System responds with:
ZEBRA 1750 SYSGEN LOADER

RESTORE SYSTEM - R
RESTORE ABS - A

ENTER OPTION ->

Enter R <cr>

System responds with:
LOADING AND VERIFYING PICK MONITOR

PICK MONITOR LOADED AND VERIFIED

LOADING AND VERIFYING ABS

LOADING ABS FRAME -> xxxx

When Monitor and ABS loaded, system responds:

ABS LOADED AND VERIFIED

xxxK MEMORY
xx COMM LINES

(C)artridge tape, or (D)isk cartridge?

Enter: C<cr> or D<cr>

SPOOLER STARTED

MOUNT CARTRIDGE AND PRESS RETURN

Enter <cr>

When File Restore is finished, system will begin automatic COLDSTART.

4. A new Proc, ADD-ACCOUNTS, is available that will automatically restore accounts not already resident on the system from a FILE-SAVE or multi ACCOUNT-SAVE media. Mount FILE-SAVE cartridge, log to SYSPROG and enter ADD-ACCOUNTS at TCL. If all accounts are not needed, then individual ACCOUNT-RESTORES may be faster. If ADD ACCOUNTS proc is not used to restore accounts, DO NOT restore SYSPROG as a new SYSPROG was loaded with the system. *** DO NOT DO A FILE RESTORE (F option or :FILELOAD) OF OLD DATA ***
5. Log to SYSPROG and run ADD.UPDATE.MD on all accounts.
6. Remove any items from each account's Master Dictionary that do not apply to the Zebra/Pick Operating System.

INSTRUCTIONS TO REPRODUCE
1750 PICK OPERATING SYSTEM CARTRIDGE

Before attempting to reproduce cartridges for the end user, the dealer should read the release notes and instructions for loading the 3.0 release software.

There are now two methods available to reproduce a cartridge disk. The first method is to duplicate the original cartridge using the firmware executive. This requires total dedication of the 1750. The second is to use the SYSGEN account. Although slower, it has several advantages: 1) SYSGEN cartridge disks can be made on Multibus systems with a conversion box, 2) the dealer can customize the SYSGEN cartridge to include his own user-modes and accounts, and 3) cartridges can be made while other PICK operations are running. However, accounts and files that are to be put on the SYSGEN cartridge should not be updated while SYSGEN is in progress.

The 3.0 release is contained on two cartridge disks. The first cartridge disk contains the operating system and required system files and accounts. The second cartridge contains the SYSGEN Account and the COM.SYS Account

With either the firmware executive or SYSGEN method, the cartridge disks must be formatted first. To do this:

1. RESET 1750
2. INSERT blank cartridge and close the gate
3. FORMAT CARTRIDGE DISK
At Ok, prompt type:

FORMAT CD MODEL 0

The system responds with
Disk Configured, Proceed With Format (y/<n>):

Enter Y <cr>

The system responds with
Initializing ...
Checking ...

Add Defect (Head, Cylinder):

If Defects are 0 or less than 6

Enter <cr>

If there are sectors to reassign, they will be done automatically.

If there are 6 or more Defects the map is full and the cartridge is unusable. Before discarding the

cartridge, remove the cartridge, re-insert and try the Format again. If it still fails, use another Cartridge.

Remove Cartridge

Repeat this step until enough cartridges have been formatted for the number of systems you intend to duplicate.

TO DUPLICATE CARTRIDGE DISKS USING THE FIRMWARE EXECUTIVE

1. INSERT 1750 MASTER SYSGEN Cartridge and close the gate

At Ok, prompt type:

RESTORE CD <cr>

System responds with:

Mount Cartridge 1 (y,n):

Enter Y <cr>

When Mount Cartridge 2 (y,n): appears again

Enter N <cr>

Remove 1750 MASTER SYSGEN Cartridge

2. INSERT FORMATTED Cartridge and close the gate

At Ok, prompt type:

BACKUP CD <cr>

System responds with:

Mount Cartridge 1 (y,n):

Enter Y <cr>

When Mount Cartridge 2 (y,n): appears again

Enter N <cr>

Remove newly created 1750 SYSGEN Cartridge and slide write-protect switch to the left

Repeat this step as many times as required.

3. Repeat steps 1 and 2 using the cartridge containing the ACCOUNT-SAVES of SYSGEN and COM. SYS.

4. After the desired number of cartridges have been duplicated, the user must do a SYSTEM RESTORE of

the operating system before the 1750 is operational.

TO CUSTOMIZE AND/OR DUPLICATE 3.0 CARTRIDGE TAPE OR DISK
USING THE SYSGEN ACCOUNT METHOD

Addition of new user-modes or accounts may require more than one cartridge disk for SYSGEN. When doing a SYSGEN to cartridge disk, be sure that the disks have been previously formatted.

The SYSGEN account consists of the following four files:

1. STRAP.SO, which contains the bootstrap object code
2. MON.SO, which contains the monitor object code
3. SYS-OBJ, which contains the ABS object code, and
4. PROCS, which contains the program that creates the SYSGEN cartridge tape or disk.

The item-ids of the SYS-OBJ file are in the format FRMxxx where xxx is a decimal frame number. The ABS frames are loaded from a list which resides in the dictionary of the SYS-OBJ file and is called FRMN.LIST. You may add to or replace this list to tailor the abs frames to your own applications. The item-ids you use may be in other than FRMxxx format. Just add them to FRMN.LIST using the editor. Note that FRMN.LIST will dump the ABS section in numerical order, although this is not a requirement. If you have item-ids with duplicate frame numbers, the last one on the SYSGEN media will overwrite all previous versions of that frame on disk.

If you have changed an ABS frame that will cause the CHECK-SUM item to differ from the one supplied on the SYSGEN account, you must edit the item CHECK-SUM in the dictionary of the SYS-OBJ file with the correct check-sum for that frame.

The format of the SYSGEN cartridge is as follows:

```
BOT --->  LOADER
           MONITOR
           ABS
           SYSTEM ACCOUNTS
```

The SYSGEN program performs the SAVE of the system accounts in the same way as a FILE-SAVE except that there is no T-DUMP of the STAT-FILE because this file is not generated. Therefore, if you wish to select which accounts are to be placed on the SYSGEN tape, you must edit the SYSTEM file and change the code for the account pointers in attribute 1 to "DX" for those accounts which you do not want on the tape. Be sure that all accounts you wish on the tape do not have "DX" pointers.

1. LOGTO the SYSGEN account
The system will respond:

(C)artridge tape or (D)isk cartridge (C,D,X)?

Enter X.

2. Edit SYSTEM file and enter DX into attribute 1 of any account you do not wish to be included in the SYSGEN process.
3. Enter new object code to be included in the SYSGEN to the SYS-OBJ file. NOTE: Unauthorized modification of any existing object code in the SYS-OBJ file will cancel all support of the operating system software from General Automation.
4. Edit the item FRMN.LIST in the dictionary of the SYS-OBJ file to include the new frame IDs.
5. Edit the item CHECK-SUM in the dictionary of the SYS-OBJ file if the new ABS frames will cause the CHECK-SUM item to differ from the one supplied on the SYSGEN account.
6. At TCL, Enter SYS-GEN
The system will again respond:

(C)artridge tape or (D)isk cartridge (C,D,X)?

Enter C or D to create a tape or cartridge disk

The system will respond:

Do you wish to update the CHECK-SUM item in the ERRMSG file (Y,N,X)?

Answer Y(es) if the ABS on your system will cause the CHECK-SUM item to differ from the one supplied on the SYSGEN account and you have updated the item CHECK-SUM in the dictionary of the SYS-OBJ file. If there is no change enter N(o). Enter X to terminate the SYSGEN Proc and exit to TCL.