

Comparison Zebra Xill series – CHESS/64 0x

Overview

The Xill series includes the 140 and 220Xill with 8 dot/mm (203 dpi) and the 90 and 170Xill with 12 dot/mm (300 dpi). The model number roughly corresponds to the width of the print head in mm. The series of printers have print speeds from 203 to 300 mm/sec (8 to 12 ips).

The 170Xill was the actual printer tested and compared to the CHESS 06/64-06.

In the Xill family, the 170Xill is the only printer with both a 300 dpi resolution and print head width of at least 4" (the 90Xill only has a 87mm (3.4") head). The 170 Xill has a 168mm (6.6") print head and runs at 203 mm/sec (8 ips).

Available standard features are: Tear off edge, reflective sensor, PCMCIA slot, serial/parallel interface.

Optional interfaces are: Twinax/Coax and Ethernet

Optional finishing devices are: Rotary knife, internal rewinder, dispenser, applicator interface, OLV (On Line Verifier)

No ribbon saver system available.

Motor Drives: 1 stepper motor for media and ribbon transport

Short summary: Very solid and rugged construction, good access to all components, rich menu of parameters and commands, average speed of first label and average output capabilities.

Specification Comparison

Reviewing specifications, the 170Xill is very comparable to the CHESS 06/64-06 in many respects.

But after a detailed evaluation clear differences appear with reference to:

- Print quality at higher speeds, especially on cardboard and heavy labels

- Equally durable at 8 ips but the CHESS/64-0x can print 25 - 50% faster without sacrificing durability

- Ribbon saver

- Range of available print widths with the same print head resolution

Speed of First Label

Printing using printer resident fonts and barcodes or huge graphics or multiple labels across the web, from small to big labels – the CHESS/64-0x printers are up to 50% faster.

Print Speed

The 170Xill maximum print speed is 8 ips versus 10 ips for the CHESS 06/64-06. And the Near Edge print head of the CHESS/64-0x allows this maximum print speed in a wider variety of applications. With a lower print speed and slower speed of first label, combined with a smaller ribbon capacity (see below) the 170 Xill is not as competitive.

Media Size Range

The CHESS/64-0x class with 4 machines covers all widths from 25.4mm to 254mm with the same 300 dpi resolution. The length ranges from 5mm up to 2m independent of the finishing device. And even 15 m with an optional card is possible!

The Xill class, with 4 machines, covers widths from 20mm to 216mm represents a mixed series of printers in regards to resolution. Given the two different resolutions, output compatibility will be an issue for some applications.

For the 170 Xill label length ranges from 6mm up to 254mm with 1MB of memory, beyond that an optional card is needed. Finishing devices increase the minimum length of label and non-imprintable area in 1:1 mode considerably (ex. up to 38mm with the knife).

The minimum width for the 170Xill is 51mm versus 30 for the CHESS 06/64-06, making the 170Xill less versatile.

Ribbon

The larger ribbon capacity of the CHESS/64-0x (600m vs. 450m) means less down time and operator monitoring even at the higher print speeds.

The minimum ribbon width of the 170Xill at 51mm versus 30mm for the CHESS 06/64-06 means higher operating costs for some applications.

Ribbon saver is standard for CHESS/64-0x class but not available for the Xill series.

Print Head Check

The CHESS/64-0x will soon have a print head check feature available. It will monitor the head elements and, if a problem develops, try to automatically shift the format image so the bad element corresponds to a non-print position. If this is not possible the printer will stop and alert the operator. The check can be performed at the start and end of each job as well as at operator specified intervals. This will provide improved security for print quality and potentially extend print head life.

This feature is not offered for the Xill series.

Connectivity

Centronics, RS 232/485 are standard for both printers. The CHESS/64-0x class runs a serial transmission speed of 115.2Kbaud for modern industrial requirements. The XP class is limited to 57.6 Kbaud only.

Options

Rotary knife, rewinder and dispenser, external signal inputs and memory expansion cards are available for both printers. For the Xill series the media handling options increase the minimum length requirements but for the CHESS/64 0x this has no impact.

CHESS/64-0x class can be equipped as well with a scanner, an applicator and a front infeed module. Plus 2 output signals for integration and synchronization with other systems. The 170Xill has no applicator but does have the interface for it.

Physical Construction

Both brands have a steel case and a rugged construction design. For the CHESS/64-0x class there are bigger and more bearings, but both printer series match very well compared to the competition.

Dimensions

The 170Xill housing is quite a bit higher due to the internal rewinder. But internal access is not as easy compared to CHESS/64-0x series.

Design

CHESS/64-0x series has nice contours with curves, smooth edges, inclined surfaces and more attention to design details – a much more attractive piece of equipment, industrial isn't necessarily boring. The Zebra is of a more simple design with straight contours, even on the front side.

User Friendliness

The procedures required to operate the unit, including insertion of media are easier with the CHESS/64-0x class. Adjustment of parameters are pretty much the same.

Price and Maintenance Costs

On a total cost of ownership basis the CHESS/64-0x is expected to provide a better value. The higher print speed and supplies capacity, with no sacrifice in durability, should provide higher productivity and throughput.

Detail Comparison

Print Quality at High Speed

The CHESS 06/64-06 maximum print speed is 10 ips versus 8 ips for the 170Xill. Both are specified to print on the same types of materials but the CHESS/64-0x, with its Near Edge print head, can run at its

maximum print speed with higher print quality in a wider variety of applications.

One of the most relevant factors effecting print quality and print speed is media density (or thickness); the thicker the media, the worse the quality and the higher the abrasion with flat heads due to bending of the media underneath the head. The 170 Xill printer does have a relatively straight media path, with little curvature, that should help with both label and tag printing. But as the material thickness increases the print quality will decrease and the speed must be lowered.

The CHESS/64-0x Near Edge head allows for a very straight paper path with no media curvature. Also both sides of the print head mechanism are rigidly supported which gives added stability and optimum alignment under all operating conditions. Combined this provides the highest print quality independent of speed and material thickness.

Also the CHESS/64-0x print heads require less head pressure. This means reduced print head abrasion and less wear and tear on the mechanism. The end result is longer head life and improved reliability.

Media Insertion, Width Adjustments and Media/Ribbon Transport Performance

For insertion of paper/ribbon the print engine of the 170 Xill printer can be opened from the side by means of a lever. For different media, the 2 pressure springs need to be adjusted manually to achieve proper head pressure and balance. The adjustments are continuous variable with no markings to repeat settings.

For the CHESS/64-0x, the opening and closing of the head is done automatically as part of the basic operating modes. Plus the media can be conveniently fed through or removed from the print engine by pressing 2 keys on the operator's panel. Also the head does not require adjustments for different media widths and the head pressure is quickly and easily changed using marked (repeatable) settings.

There are 5 advantages provided by this concept:

- No risk of forgetting to set the head offset adjustment for different paper widths and creating badly imprinted labels.
- Adjustments are repeatable and less prone to operator errors.
- No risk of prematurely worn down print heads due to wrong paper width adjustment.
- No risk of a flat spot on the print roller from leaving the head closed for a long period of time.
- No need to open/close the head mechanism by means of a lever, i.e. one less operation and the printer is always ready.

The media spindle of the 170 Xill only accepts a 3" core, 1.5 or 2" is not possible due to construction, and the spindle is fixed, i.e. not turning. There is no dancer to help accelerate the roll and compensate for slack in the media transport. The registration accuracy is specified with +/- 1.5mm only.

For the CHESS/64-0x the spindle sizes 1.5, 3 and 4" are standard. It has a long traveling dancer and a rotating spindle thus leading to high registration accuracy at any speed even with slippery label liner material.

Lateral media guidance for the 170 Xill is quite distant from the head and has a very short guide length. With the CHESS/64-0x the guides are long and close to the head. A high registration accuracy of +/- 0.5mm is guaranteed.

The ribbon transport system is quite solid for both printer series. The differences are in versatility and effectiveness.

The 170 Xill printer has a spring-loaded back feed for the ribbon (needed to provide on demand output i.e. back feed of label from tear off point to print line). The design allows only one direction of rotation – ink side out ribbon. At higher speeds with back feed, the ribbon may drag on the media, leading to unintended gray marks on labels with a sensitive surface. Plus there is additional print head wear, as the head remains closed during back feed. Furthermore, running the printer with the wrong ribbon unwind direction can result in defective printing and possible printer damage.

The CHESS/64-0x uses a stepper motor supported, maintenance free system that doesn't have these kinds of limitations and provides enhanced reliability. There are no restrictions on unwind direction – either ribbon ink side in or out be used. Also, the extra ribbon transport shaft between the head and ribbon rewinder provides consistent separation of the ribbon from the media resulting in excellent print quality and reliable operation and prevention of ribbon wrinkles.

This design also uses a dual roller media feed system – one roller feeds material, the other is in use during the print process only. During ribbon save the head is lifted so there are no problems with ribbon wrinkles or head wear.

Surprisingly, the 170 Xill printer doesn't have a ribbon saver, either as a standard feature or an option.

The 170 Xill has a ribbon capacity of only 450m. The Xill has a factory adjusted, fixed ribbon torque system so using thin and/or narrow ribbon with large print areas may lead to ribbon breakage as the torque can't be lowered. The minimum ribbon width is specified as 51mm which can add to operating costs for

narrow printing applications.

The CHESS/64-0x printers have adjustable ribbon unwind and rewind torque. This allows a minimum width of 30mm, or less if the torque is readjusted. The ribbon capacity is also significantly larger with a 90mm roll diameter providing a 600m length.

Fonts

7 fixed size fonts plus 1 scalable font are supported as standard on the Xill class.

CHESS/64-0x supports 2 scalable fonts (serif and sans serif) along with rotation in steps of 1 degree, plus bold and italic font styles. The capability to download True Type Font typefaces by the user will also be implemented soon.

Additionally, the CHESS/64-0x printers have, as standard, 17 fixed size fonts on board as well as 4 x 2D barcodes plus 12 x 1D bar codes. These internal fonts allow use of simple and quick format commands.

All of this allows the CHESS/64-0x to do the same job and even better!

Display, Menu and Operator Control

With the 170Xill, there are more keys, including a calibration key, which is not necessary on the CHESS/64-0x which has auto calibration. Surprisingly the 170Xill needs a lot of media ie around 3 to 4 labels for initializing after power up.

Both printers have a state of the art 16 char/2 line display with several languages selectable. The display on the 170Xill is nearly vertical and not as easy to read as the CHESS/64-0x.

For the CHESS/64-0x printers the menu of parameters is more extensive to cover a wider variety of label printing applications. Some distributors with long lasting relationships with competitive brands sell CHESS/64-0x printers in special applications.

The versatility of command sequences are very good with both brands.

The CHESS/64-0x printer's comprehensive list of error messages helps the operator with set-up and basic machine functions and allows the supporter to analyze problems via the phone, saving both time and money.

And the choice of format and/or manual control of the menu parameters is appreciated by everyone.

As well, the keys on the front panel of the CHESS/64-0x printers are easy to access and operate. The keys on the 170Xill use membrane switches, and do not offer good tactile feel, making it slower and more difficult to operate.

Media Specifications

Thickness: Both printer classes specify the same thickness range

Length: The 170Xill label/tag minimum length is 6mm. With finishing devices like a knife are used it increases to 38mm – the writer leaves it up to the readers to determine if this is a problem. At the moment the customer asks, it may become one! The maximum label length of 254mm seems to be sufficient for standard applications, it can be expanded by means of optional memory cards if required.

CHESS/64-0x printers offer a standard minimum length of 5mm and this can be lowered if required. The minimum length is independent of what finishing device is attached. Neither cutter, dispenser nor tear off edge will raise this value due to its highly functional back feed system.

Standard max length for the CHESS/64-0x exceeds 2 meters, which is more than adequate for most any application. No memory extension is normally required. The 170Xill max label length is only 246mm so memory expansion options may be required more often.

Printing banners, i.e. extra long labels (maybe your next new sales opportunity) the CHESS/64-0x printers can be equipped with up to 32MB. Labels of up to 15 meter at 4 inch width can be printed in short time.

Connectivity

Both printers have a parallel and serial interface as standard. CHESS/64-0x printers have a serial interface with max speed of 115.2KBaud were the 170Xill ends up with 57.6KBaud.

The optional internal Twinax and Coax of the 170Xill are easy to overcome by external converters for the

CHESS/64-0x printers.

Ethernet is optional for both printers (will be internal in a later release of the CHESS/64-0x).

Maintenance

Print Head - The print heads are supposed to be easy to replace on both systems, but the CHESS/64-0x requires no tools.

For the 170Xill there are no procedures to precisely adjust the head position. For the CHESS/64-0x the heads are pre-adjusted with high precision and do not need realignment. But if required the position can be readjusted for special applications. Also worth mentioning, is that the Near Edge head on the CHESS/64-0x has a "self cleaning" characteristic. This provides better uptime and more consistent, high quality print even after long term use. Also, don't forget the longer head life, which results in lower operating costs.

Gap Sensor

For the 170Xill printer the sensors are separated by quite a distance from the media. This affects the registration accuracy and may affect the ability to sense certain materials.

The transmissive sensor is more or less stationary and not movable across the web. The standard reflective sensor is moveable across half the web by fumbling a cable around.

The CHESS/64-0x series offers a 15mm adjustment range for both sensors. Positioning is done via an adjustment knob at the front of the printer and is easy to access. An optional full-size sensor covers the full web width.

Options

Knife:

A rotary knife is easy to install without tools but is limited to a maximum material thickness of only 0.18mm. It sits approx. 38mm from the print line which may lead to limitations in 1:1 demand mode.

The CHESS/64-0x has a fast and powerful modular knife and is only 20mm from the print line. The back feed system is very accurate and allows a fully imprintable label in 1:1 demand mode. The knife is capable of cutting media up to 0.25mm thick and 4 inches wide making it appropriate even for tags. An average life of more than 1.5 million cuts even on critical TYVEK material can be expected.

Rewinder:

The 170Xill the rewinder has a 200mm diameter capacity, its access is ok, availability of different core sizes is not specified.

The CHESS/64-0x rewinder module is:

- mounted externally for easy access and rewinds up to a diameter of 210mm. This saves operator time or the need for an additional separate rewinder,
- available in different core sizes so it matches the next step of the application,
- self-adjusting to print speed so no loose rolls or other mismatches.

Dispenser:

The 170Xill printer pulls the backing paper directly from the internal rewinder roll which leads to inconsistent performance depending on the varying diameter of the roll. For regular paper labels with good die cut quality the performance is probably good enough.

For the CHESS/64-0x a separate feed roller/pressure roller combination pulls the backing paper around the dispense edge. This provides consistent performance for dispensing and excellent registration accuracy on most any label material.

Simply try to dispense a thin plastic label on a heavy backing paper and the difference will show up clearly. Or even more often, the die cut at the label isn't perfect. Even in these cases your customer will see a reliability of performance probably never experienced before.

The dispenser of the CHESS/64-0x printers can be combined with our applicator unit. This isn't available on the Zebra products, which can only be interfaced to apply through a third party product.

Memory Cards: For the CHESS/64-0x the new ATA card slot is standard and provides options up to 48MB of additional memory. This allows an incredible expansion of functions like selectable “auto-start” files, look up tables, an enormous quantity of additional fonts and graphics and an extremely large image buffer for extremely large labels.

Zebra competes very well, except for the maximum achievable print length.

What 170Xill printers don't have compared to CHESS/64-0x printers?

- Automatic print head dot check that can shift the image in case a dot fails. Provides more security for bar code readability, extends print head life and increases uptime.
- Rotation of scalable fonts in steps of 1 degree
- Good print quality at higher speeds
- Heavy duty drivers for the stepper motors that have reserve capacity even at the highest speeds
- High capacity power supply for high density printing even at 12 ips
- Modular boards for peripheral devices
- Ribbon Saver

What CHESS/64-0x printers don't have compared to 170Xill printer?

- A catch tray in combination with a knife
- PC 470 print controller for stand alone applications – is planed for CHESS/64-0x in 2001
- Ribbon path is not straight but guided around some axles to stabilize it, i.e. prevent wrinkles
- Connectors to interface, power and other devices are recessed in the rear to prevent damage
- Lots of tiny little stickers with information on what to do and how to do, even on the carton how to repack the printer