

Comparison DATAMAX W series – CHESS/64-0x

Overview

The W Class series means the W-6208, the W-6308 and the W-8306. The first digit refers to width of print head, digit 2 and 3 means resolution (i.e. 203 or 300 dpi) and digit 4 is maximum speed in inches/sec.

The W-6308 was the actual printer tested and compared to the CHESS 64-06.

In the W family, the 6308 is a printer with both a 300 dpi resolution and print head width of at least 4". It has a 162.6mm (6.4") print head and runs at 203 mm/sec (8 ips).

Available standard features are: Tear off edge, reflective sensor, serial/parallel interface, 1.5" and 3" media unwind hanger to be specified upon order, fanfold slot, 2MB Flash and 16MB DRAM memory.

Optional interfaces are: RS422 and Ethernet

Optional finishing devices are: Standard cutter (media thickness 0.006"/0.152mm) and Heavy Duty Cutter (0.010"/0.254mm), Cutter Tray, Internal Rewinder, Present Sensor, Peel and Present (in conjunction with internal rewind only i.e. dispenser function), DMX approved PC Cards, additional 4MB Flash memory expansion, general purpose I/O, Real time clock.

Ribbon saver system available – not for W-6208.

External Keyboard Support.

Either Western European, Kanji or simplified Chinese scalable font.

Motor Drives: 1 stepper motor for media and ribbon transport

Short summary: Solid and rugged construction, good access to all components, rich menu of parameters and commands, high speed of first label and average output capabilities, a lot of optional equipment.

Specification Comparison

Reviewing specifications, the W-6308 is very comparable to the CHESS/64-0x 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

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 W-6308 maximum print speed is 8 ips versus 12 ips for the CHESS/64-0x. 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 equal speed of first label, combined with a smaller ribbon capacity (see below) the W-6308 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 W class, with 3 machines, covers widths from 50.8mm to 228.6mm, 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 W 6308 label length ranges from 12.7mm up to 254mm with standard memory, beyond that an optional card is needed. Some length might be gained by reducing available width in favor of length.

The minimum width for the W 6308 is 50.8mm versus 30.0mm for the CHES/64-0x, making the W 6308 less versatile.

The media core range at W 6308 doesn't contain the 4" size.

Ribbon

The larger ribbon capacity of the CHESS/64-0x (600m vs. 460m) means less down time and operator monitoring even at the higher print speeds.

The minimum ribbon width of the W 6308 at 50.8mm versus 30mm for the CHESS/64-0x means higher operating costs for some applications.

Ribbon saver is standard for CHESS/64-0x class (i.e. always available when needed but optional for W series, not available at all for W 6208 and needs to be installed at factory site).

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.

A similar feature is offered for the W series in a fixed routine, checking for failed dots in predefined patterns only.

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 W class is limited to 38.4 Kbaud only.

Options

Rotary knives, rewinder and dispenser, external signal inputs and memory expansion cards are available for both printers. For the W 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 an applicator and a front infeed module. Plus 2 output signals for integration and synchronization with other systems. The W 6308 has no applicator and does not 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 W 6308 housing is quite a bit higher due to the internal rewinder.

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 DATAMAX 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 is 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/64-0x maximum print speed is 12 ips versus 8 ips for the W 6308. 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 W 6308 printer does have a relatively none straight media path, with 2 curvature, that should work with label stock. But as the material thickness increases the print quality will decrease and the speed must be lowered as a lot of friction is coming up giving a high load to the single stepper motor.

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 W 6308 printer can be opened from the side by means of a lever. For different media thickness, the 2 pressure springs need to be adjusted manually to achieve proper head pressure. The adjustments are continuous variable with no markings to repeat settings. Adjustment related to width is done by means of a print head leveling cam manually according to width of media.

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 and platen rollers 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 W 6308 only accepts a 3" core, 1.5 is available if specified in order, and 2" or 4" is not mentioned. There is a small dancer to help accelerate the roll and compensate for slack in the media transport. The registration accuracy is not specified but is supposed due to curvature in paper path considerable.

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

Lateral media guidance for the W 6308 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 W 6308 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). It is designed for 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. It needs to be verified, construction is as on I class and that seems to have a clutch preventing damage.

Surprisingly, the W 6308 printer does have a ribbon saver as a factory side installable option only.

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.

The W 6308 has a ribbon capacity of only 460m. The unwind/rewind torque is dynamic within a certain range, but factory adjusted. 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. Fixing the ribbon leader to the rewind spindle is done by means of a J hook and appears to require more attention rather than a simply adhesive stripe.

With the adjustable unwind and rewind torque at the ribbon drive, the CHESS/64-x printers allow up to a 90mm roll diameter providing a 600m length and minimum width of 30mm or less if the torque is readjusted.

Fonts

9 fixed size fonts plus 1 scalable font are supported as standard on the W class. The 3 smaller fonts do not supply the entire ASCII character set.

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 W 6308, there are more keys including a calibration key which is not necessary on the CHESS/64-0x which has auto calibration. Surprisingly the W 6308 needs a lot of media ie around 3 labels for initializing after power up or clearing of at some error types.

Both printers have a state of the art 16 char / 2 line display with a couple of languages selectable. The display on the W 6308 is vertical and not as easy to read as the inclinor one of 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 is 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 are appreciated by everyone.

The keys on the front panel of both printer series are easy to access and operate.

Media Specifications

Thickness: Both printer classes specify the same thickness range. On the CHESS/64-0x printer there are unique applications with up to 300gr/m², which correspond to appropriate 0.3mm thickness

Length: The W 6308 label/tag minimum length is 12.7mm.

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 W 6308 max label length is only 254mm so memory expansion options may be required more often.

Printing banners (i.e. extra long labels) may be 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 where the W 6308 ends up with 38.4KBaud.

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

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 W 6308 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. And don't forget the longer head life, which results in lower operating costs.

Gap Sensor

For the W 6308 printer the sensors are separated from the media by quite a distance. This affects the registration accuracy and may affect the ability to sense certain materials.

The transmissive and reflex mark sensor is movable half across the web.

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 as on the W 6308. An optional fullsize sensor covers the full web width at CHESS/64-0x.

Options

- Knife:** Standard module and Heavy Duty module with limits of 0.152 resp 0.254mm media thickness are available.
- 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 W 6308 the rewinder has a 200mm diameter capacity, its access is okay, and 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 in both directions. 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 W 6308 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 an applicator unit. This isn't available on the DATAMAX products.

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.

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

What W series 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 not available at W 6208

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

- A catch tray in combination with a knife
- Half size sensor
- Reflex mark sensor as standard
- External keyboard support
- Some special barcodes like: HIBC, KMART, Telepen, Postnet and FIM
- Kanji or simplified Chinese font
- Bi-directional parallel interface
- Print head resistance verification (is supposed to be featured at CHESS/64-0x in 2001)
- Parallel and serial interface are active at same time
- Print head opens wider i.e. better access for cleaning (Near edge head at CHESS/64 0x needs nearly no cleaning)
- Expanding image length by decreasing available width