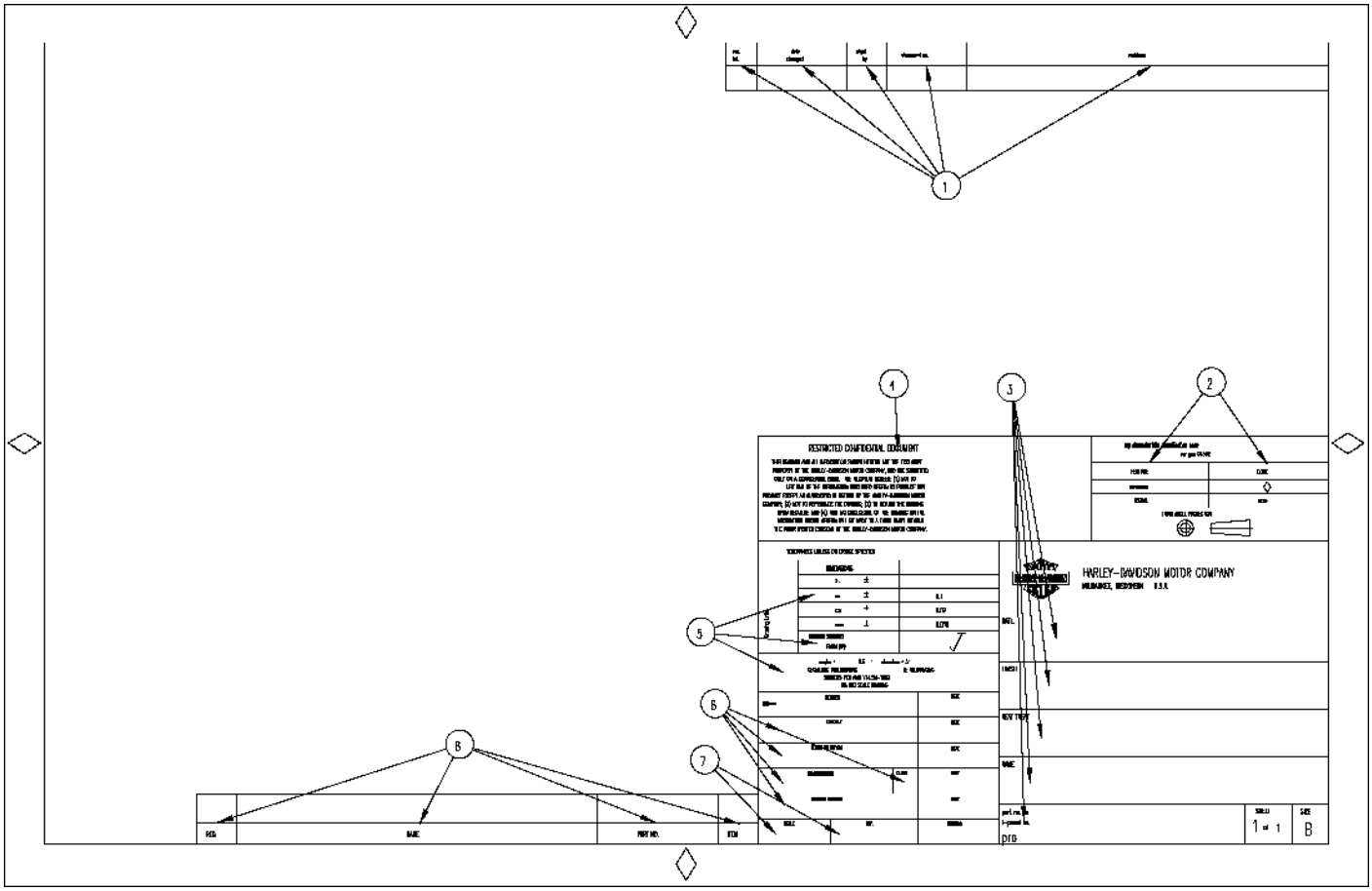
INTERPRETTING HARLEY-DAVIDSON PRINTS

A key to producing products to meet Harley-Davidson's specifications is understanding how to interpret Harley-Davidson prints. This section is not an all encompassing lesson on the interpretation of Harley-Davidson's or anyone else's prints. It should, however, give you a better understanding of the symbols, abbreviations, and hatchings displayed on our prints. This section will also orient you with where information is located on our prints. Some of the symbols, abbreviations, hatchings and locations presented here may be Harley-Davidson specific. The majority of information on our prints meets **ANSI Y14.5M** standards. Should any questions or further clarification be required in regards to this subject, please contact your respective Harley-Davidson purchasing or engineering representative.

DRAWINGS

The goal of the following information is to orient you with the location of specific information on Harley-Davidson prints. We have divided the information into numbered subsections that correspond to the numbered diagram below. Please refer to this diagram as you progress to better understand the positioning of the information being discussed in each subsection.



1. This area is where the record of revisions is displayed. The first bit of information provided in this area is the revision letter (for changes to the actual part) or number (for changes to the drawing, such as the addition of a bolt to the drawing). These revisions will be in sequential order, meaning that the first revision to a drawing or part would be labeled "A" or "1" respectively, whereas the third revision would be labeled "C" or "3". Each revision should be documented on a print in sequential order from top to bottom within this area of the print. If there are too many revisions to list in the space provided, attach a statement such as, "For Revisions A - C See Revision History File." The revision history file is a Harley-Davidson file that contains all previous revisions for a particular part or drawing.

   NOTE: Suppliers should consider the following items after receiving a revised print.

   A. Destroy all old versions of the print. This includes removing them from circulation in the offices and on the plant floor.

   B. Revise process prints to reflect change, if needed.

   Following the revision letter, you will find the date that the revision was made, followed by the initials of the individual responsible for making the revision.

   Next, the print document number is recorded. This number will begin with a letter. Following this letter is a string of numeric characters that increase in sequential order as a drawing for any part is made. This number is used for record keeping purposes. Following the document number is a brief description of what exactly the revision entailed.

2. This area is where drawing characteristic classification codes are displayed. This area is divided into two columns entitled "feature" and "code." Older drawings will contain three feature classifications in this section. These three classifications are Major, Important, and Normal. An inverted delta and a diamond indicate the first two classifications, respectively. A characteristic that is of normal consequence has no code symbol.

NOTE: Effective immediately there will only be two classifications: Important and Normal. The important classification will be indicated by the hollow diamond symbol ( ), as discussed in the Key Product and Key Control Characteristics area. The normal classification still will have no indicator code symbol. Further detail is contained in the Harley-Davidson GES 01501 (old system) or GES 01502 (new system).

3. This area is where a brief description of important information is provided. The first space is where a description of the part's base material is found. The second space describes the surface finish of the part. A description of the heat treatment needed in the production process is found in the third space while the fourth space indicates a reference number. This reference number indicates a similar previously existing part or a part number that may be referenced for further information. The fifth space lists the name, or brief description, of the part detailed on the drawing. Finally, the last space shows the Harley-Davidson part number or T-panel number followed by a letter designation of the size of the original engineering drawing. The lower the alpha-character in the size block, the smaller the physical size of the

original engineering drawing. Please note that prints of the part can be made at any scale and are usually provided to suppliers at a convenient size, not necessarily the original engineering drawing size.

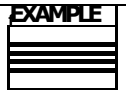
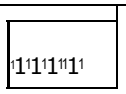
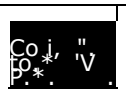
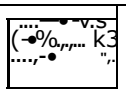
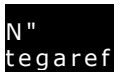
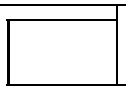
4. This area contains our non-disclosure statement. This statement should be strictly followed. The information contained on our prints is the property of Harley-Davidson and shall not be conveyed to a third party without specific prior written consent from Harley-Davidson. If Harley-Davidson consents to distributing the print to a third party, then the same non-disclosure policy shall apply to that third party. This subject is discussed in more detail in the sections titled, "Non-Disclosure Agreements" and "Master Supply Agreements".

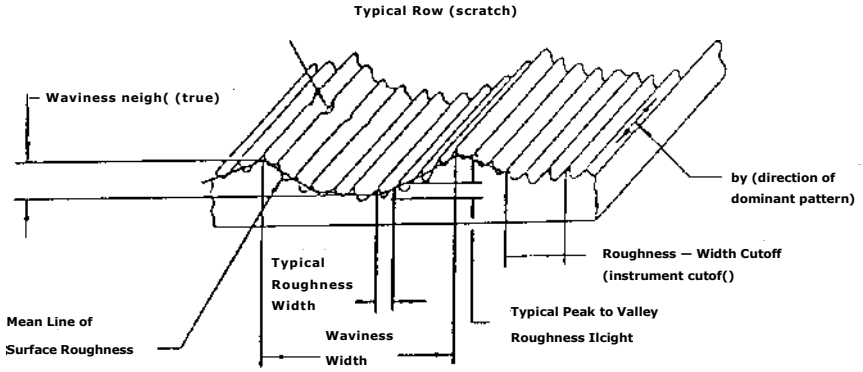
5. This, area lists any "standard" tolerances that are to be used unless otherwise noted on the print. The first part of this area is divided into three columns. The three columns, from left to right include: Dimensions, Inches, and Millimeters. These tolerances are listed in ascending order with the lowest number of decimal places being listed first. The standard tolerance can be specified in either inches or millimeters and will be placed in the corresponding column. A standard tolerance will be used unless a specific tolerance is displayed for the dimension. The number of decimal places contained in the nominal value should match the number of decimal places in the standard tolerance. This convention applies only to dimensions contained in the body of the drawing, not, for instance, to a raw material dimension in the title block. The tolerance on a steel bar diameter, for example, would be per industry standard such as an ASTM specification.

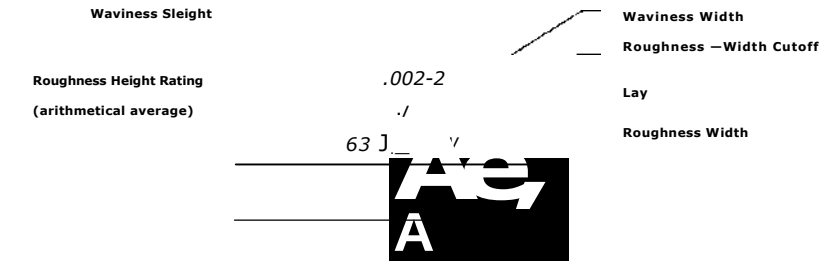
The second part of this area gives the appropriate default specifications for the micro-finish on any machined surface of the part on the print. This default is to be used only if no specific micro-finish is specified in the drawing.

The table on the following page shows the various lay symbols that will be found beside this symbol and an example of their outcome. Below this table, we have provided a diagram that helps provide better understanding of the information surrounding the standard surface finish symbol and the information provided within the symbol.

STANDARD LAY SYMBOLS

SYMBOL	DESIGNATION	EXAMPLE
I i	Lay parallel to the line representing the surface to which the symbol is applied.	
I	Lay perpindicular to the line representing the surface to which the symbol is applied.	
XLay	angular in both directions to the line representing the surface to which the symbol is applied.	
M	Lay multidirectional.	
C	Lay approximately circular relative to the center of the surface to which the symbol is applied.	
R	Lay approximately radial relative to the center of the surface to which the symbol is applied.	
pLay	non—directional, pitted or protuberant.	





The next box in this area shows the standard tolerances for the angles and chamfers on the print. This area also states that the geometric dimensioning and tolerancing symbols are per ANSI Y14.5M - 1982. Finally this section warns the observer of the print not to scale the drawing. The dimensions indicated on the drawing are the dimensions to be used.

6. The next area is where approval or sign off is recorded. This area contains the signatures, and dates of signing, for the detailer, checker, design personnel, manufacturing personnel, and finally the program manager. The manufacturing sign-off also includes a designation of the manufacturing class that the part is classified for inventory purposes. This class designation will appear as an alpha character.

7. This area is where the scale of the drawing and the detail number of the drawing are specified. The detail number refers to any additional notes or drawings that provide further information on a specific feature of the part.

8. The final area specified on the example print is where components are listed if the drawing is of an assembly. This area begins with the indication of the quantity required, followed by the name of the part, the Harley-Davidson part number, and finally the item number that relates to a "balloon" found in the body of the actual drawing.

Other than the numbered area on the diagram, there are also several large areas that are labeled on the diagram at the end of this section according to what information will be located there. Two of these areas have already been discussed; space for revisions (#1) and space for parts lists (#8). The listing of the various revisions and listing of various components that make up the assembly (where applicable) fill these two areas.

One of the other two areas, "drawing field or body," is where the actual drawing of the part is displayed. The final area, "simple notes," is where any additional notes that are relevant to the successful production of the part are located.

SYMBOLS

As previously mentioned, there are certain symbols that will frequently appear on Harley-Davidson prints. The majority of these symbols are common but there may be a few that are Harley-Davidson specific. The following two pages show some common symbols found on Harley-Davidson prints and their interpretations. All other symbols found on Harley-Davidson prints should meet ANSI Y14.5M standards.

HARLEY–DAVIDSON SYMBOLS

SYMBOL	MEANING
&	AND
℄	CENTERLINE
X	TIMES OR BY
▽	MAJOR CHARACTERISTIC (OLD)
◇	MAJOR CHARACTERISTIC (NEW)
[X]	TORQUE REQUIREMENT
⊟ ◎	THIRD ANGLE PROJECTION
⊟ ◎	FIRST ANGLE PROJECTION
ⓧ	REVISION
⌒	REVISION, T–PANEL
⬡W	WEAR SURFACE
✳	REFERENCE TO NOTE
√	MACHINED SURFACE
√	SURFACE FINISH
ℙ	PARTING LINE
SØ	SPHERICAL DIAMETER

HARLEY-DAVIDSON SYMBOLS

SYMBOL	MEANING
SR	SPHERICAL RADIUS
·¯1›¯	CONICAL TAPER
	SLOPE
Ak gar	DATUM TARGET SYMBOL
	DIAMETER SYMBOL
R	RADIUS SYMBOL
(XX)	REFERENCE SYMBOL
ᵁ	COUNTERBORE OR SPOTFACE
\./	COUNTERSINK SYMBOL
	DEPTH SYMBOL
	SQUARE SYMBOL
	DIMENSION ORIGIN SYMBOL
XX	ARC LENGTH

NOTES:

HATCHINGS

Hatchings are different patterns of lines that represent a type of material to be used in producing the part. The diagram below displays Harley-Davidson hatchings and explains what type of material each is used for.