S&S HINGE COMPANY

Continuous Hinge, Inventory and Service Worldwide | **Est. 1932**

Design Engineering *with* Standard Continuous Hinges

A Reference Guide

Call us at 800-332-1227
or email us at info@SandSHinge.com
with your questions throughout your design process. And, fax us at 630-582-8844 with your hinge specifications or blueprints. We look forward to hearing from you.

Dear Design Engineer or Purchasing Agent,

We frequently see blueprints for unnecessarily complex fabricated hinges. Such customized hinges will, inevitably, be more expensive and have longer lead times. Since we know that pre-design evaluation of hinge options can save our customers and potential customers time and money, we developed this Design Engineering Reference Guide. Please take a moment to review it before designing a product that will use continuous hinges.

We manufacture our hinges on fully-automated, high-speed production lines. For the most economical choice with the quickest delivery, select one of our 200 standard hinges from the chart inside. If you require variations or more fabrication, keep in mind that the more we can do within our automated processes or "on line," the quicker our turnaround and the lower your costs. We can cut our hinges to the lengths you specify, punch holes and stake pins within our fully-automated work centers when you order in large quantities. All bending operations, including swaging and offsetting, are completed in our secondary department.

To design products using time- and cost-saving standard continuous hinges, follow these steps:

A. Before designing, take a moment to consider the requirements of your hinge:
What type of metal and finish should it have?
How and where will the hinge be attached to the assembly?
How long and wide does the hinge need to be? How strong?

B. Review the four design parameters in this reference guide:
Gauge, Metal, Width, and Length.

C. Then, develop blueprints and specifications for your product assembly and hinge.

We are here to help every step of the way.

Chris Stevenson

President and Chief Executive Officer

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What is a continuous hinge?

Continuous hinges, commonly known as "piano hinges," are hinges that are at least five inches long. Continuous hinges are:

- strong throughout their entire lengths because each knuckle is a load bearing point
- strengthening, increasing product rigidity by supporting full length of applications
- easier and more precise to align than two or more butt hinges
- attractive and uniform in appearance
- smooth in pivotal action, providing optimal axial rotation
- low-cost and economical, lasting through many swing cycles

"Standard" continuous hinges

Our standard continuous hinges are assembled with pins and leaves of the same metal, leaves of equal widths laying flat in the same plane in an open position and having 275˚ degrees of travel. Our steel, stainless, and aluminum hinges are standard without holes. Attach them to your applications with spot welding, tack welding or drilling holes at assembly. Our brite-annealed, brass pre-plate and nickel pre-plate hinges are standard with holes punched and countersunk on two inch centers.

Continuous hinge parts

Pin the rod, running the length of the hinge, that holds the leaves together.

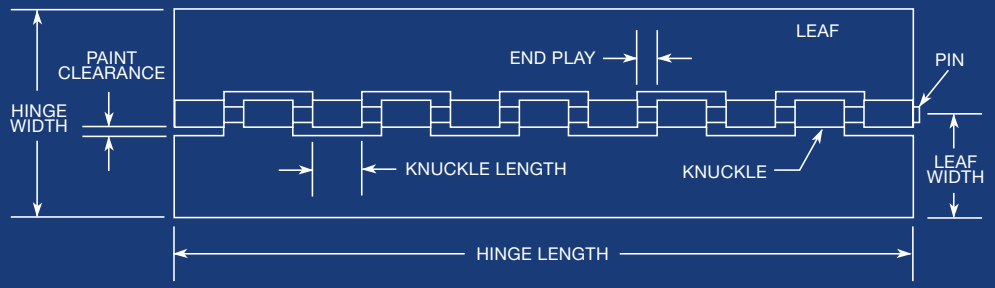
Knuckle the hollow circular part of a hinge that the pin goes through.

Leaf the part of a hinge that extends from the knuckle and revolves around the pin.

Leaf Width the dimension from the center of the pin to the outer edge of the leaf. On hinges with equal leaves, leaf width is half of the hinge width.

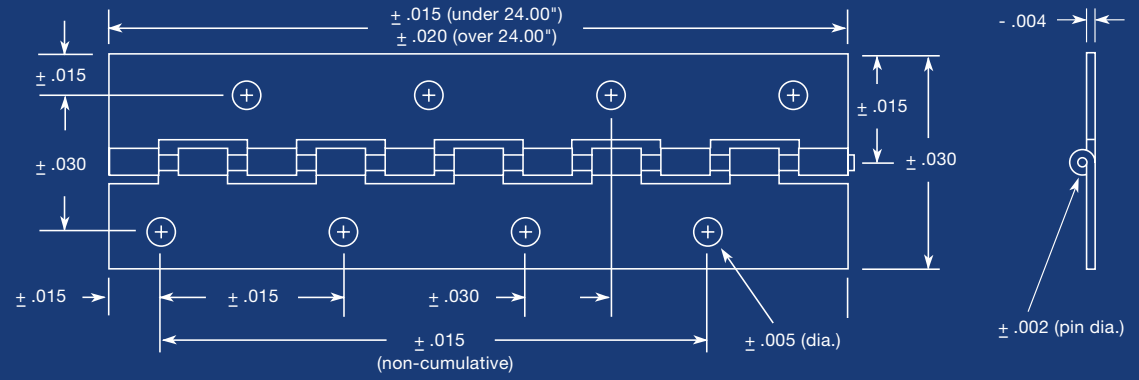
End Play the amount of up and down movement between the leaves as determined by the dimension (of space) between the knuckles.

Paint Clearance the dimension (of space) between the edge of a knuckle and the edge of the adjacent leaf.



Tolerances

S&S manufactures hinges under the standard tolerances shown here.



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To order any of our 320 standard hinges available for immediate shipment, please specify:

1 Gauge

Gauge is the thickness of the metal used to make the hinge leaves. The gauge of a hinge is generally the same gauge as the door or component part to which the hinge is attached. When the width of the door is more than twice its height or if the door carries added loads, you may want to specify a heavier hinge. The metal gauge dictates our knuckle length— the dimension of a knuckle measured parallel to the pin— as well as our pin diameter.

2 Open Width

The open width (or hinge width) is the overall dimension of the leaves measured perpendicular to or across the pin. Consider the mounting surface, the available mounting space, and the hinge strength required when determining the open width. The numbers in the chart refer to the S&S Standard Series numbers. (We can also manufacture hinges with leaves of two different widths. Unequal leaves should have a total open width equal to a standard width below.)

3 Metal & Finish

Hinge metal and finish are generally the same as the parts to which the hinge is attached. To resist corrosion, choose stainless steel or aluminum. We manufacture pre-plated brass and nickel for the furniture industry and brite-annealed stainless for marine applications. (We can also make hinges with special finishes and with pins and leaves of different metals. A plated hinge with a stainless pin may help prevent rust. A stainless pin in a steel or aluminum hinge provides additional strength.)

4 Hinge Length

The length of the hinge is measured parallel to the pin. We highly recommend designing your product to use a hinge that is an even multiple of knuckle length. Partial end knuckles are less attractive, can bind, and may not move as freely. We stock our standard hinges in 6' and 8' lengths. You can use a saw or punch press to cut down hinges to their needed length. (We also manufacture hinges cut to lengths that you specify.)

1 Metal Thickness		1 Pin Diameter		1 Knuckle Length		2 Open Width										3 Metal						4 Hinge Length	
						3/4"	1 1/16"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/2"	3"	3 1/2"	4"	PS	SS	AL	BA	BP	NP	6'	8'
inch	(mm) ga	inch	(mm)	inch	(mm)	19.05mm	26.99mm	31.75mm	38.10mm	44.45mm	50.80mm	63.50mm	76.20mm	88.90mm	101.60mm							1,828.8mm	2,438.4mm
.035	(0.89) 20	.085	(2.16)	1/4	(6.35)	399P	400P	404P	405P		408P					●	●	o				●	●
.040	(1.02) 19	.091	(2.31)	1/2	(12.70)		1001	1002	1003		1004					●	●	●	●	●	●	●	◐
.050	(1.27) 18	.120	(3.05)	1/2	(12.70)		1101	1102	1103	1104	1105	1107	1109		1113	●	●	●				●	●
.060	(1.52) 16	.120	(3.05)	1/2	(12.70)		1151	1152	1153	1154	1155	1157	1159	1161	1163	●	●	●				●	●
.060	(1.52) 16	.120	(3.05)	1	(25.40)				1603		1605	1607	1609	1611	1613	●	●	o				●	●
.060	(1.52) 16	.187	(4.75)	5/8	(15.88)				1203		1205	1207	1209		1213	●	●	o				●	●
.060	(1.52) 16	.187	(4.75)	1	(25.40)				1703		1705	1707	1709	1711	1713	●	●	o				●	●
.060	(1.52) 16	.250	(6.35)	1	(25.40)				1803		1805	1807	1809	1811	1813	●	●	o				●	●
.070	(1.78) 14	.187	(4.75)	1	(25.40)				1903		1905	1907	1909	1911	1913	●	●	o				●	●
.070	(1.78) 14	.250	(6.35)	1	(25.40)				1303		1305	1307	1309	1311	1313	●	●	o				●	●

Legend PS= plain steel | SS= stainless steel | AL= aluminum | BA= brite-annealed stainless
BP= brass pre-plated steel | NP= nickel pre-plated steel | o = special order | ◐ = not available in BA, BP or NP

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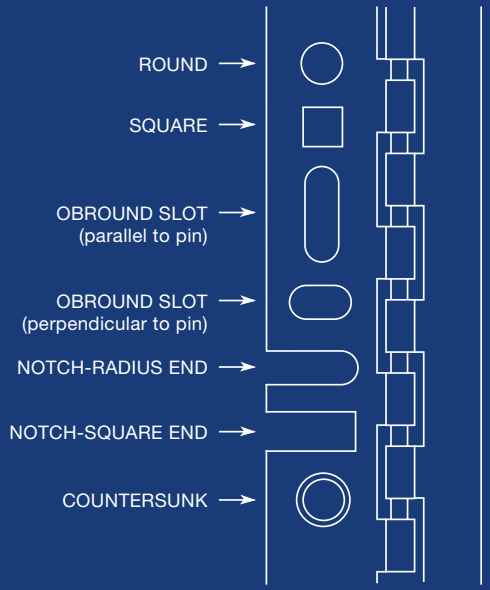
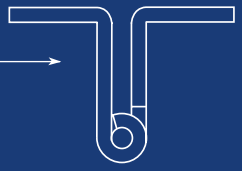
Fabrication options

1. Hole Punching — Attaching a hinge to an assembly with screws, nails or pop rivets requires that holes be pre-punched in the hinge leaves. We are tooled to punch many different hole patterns within our automated work centers and in our secondary department.



2. Bending — Fitting a hinge into the space allotted for it may require various types of bending. We do all bending in our secondary department. Variations include:

Forming
all bending of the leaves other than swaging or offsetting.



Swaging
pushing one or both leaves toward or beyond the center of the pin.

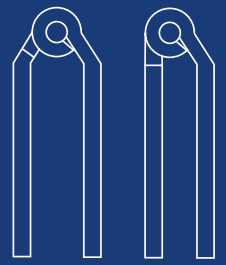
Full swaging
one leaf swaged the full diameter of pin. Leaves are parallel in the closed position.

Half swaging
one leaf swaged one half of pin diameter.

Half swaging of both leaves
both leaves swaged one half of pin diameter, with minimum clearance between hinge leaves when parallel.

Reverse swaging
one leaf swaged to simulate reverse assembly. Leaves will not close to a parallel position.

Offsetting
pushing one or both leaves away from the center of the pin.



3. Staked pin — a pin staked into position by small dents made in a consistent pattern on the bottoms of the knuckles. Recommended for high security applications in which customers want to avoid easy removal of pins. We fabricate on line for no additional charge. Standard on S&S 400 series.

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