

Roton Continuous Geared Hinges



You design and build structures that need to withstand the realities of daily use. Hager's engineers and product development team understand how building entrances and exits are used in the real world. That's why we design our Roton continuous geared hinges to provide superior performance you can rely on in high-traffic areas. Hager Roton hinges use unique geared hinges to minimize lateral wear on the hinge while evenly distributing door weight along the full length of the frame. Roton hinges are ideal for new construction and retrofit applications.



ROTON CONTINUOUS GEARED HINGES

DOOR AND FRAME PREPARATION

All Roton continuous geared hinges are surface applied. Cutout design and spacing coordination is thereby eliminated in both new construction and restoration work. Reinforcement plates are not required in doors or frames except where the gauge is too thin for the fasteners in relation to the door weight or where abusive operation is anticipated.

Blank frames may be ordered with strike prep only or with a strike prep furnished on both sides to eliminate handing with any Roton model that will cover the frame rabbet. Doors should always be ordered without cutouts except for use in labeled openings in which the tested door assembly may have manufacturing restrictions. Continuous frame mortar guards are desirable for masonry walls to avoid screw fastener interference with the mortar. An effective mortar guard made from an ordinary 1" (25 mm) x 2" (51 mm) stud, fastened to the back side of the frame can also be used. Check with both the frame supplier and the contractor for the best method.

The main cause of door and frame breakdown is "kickback shock" transferred to conventional butt hinges or pivots. Roton bonds the door frame into a single, integrated unit, dissipating impact loads harmlessly.

DOOR CLOSERS

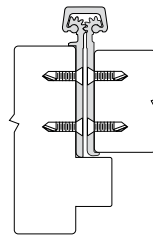
Conventional surface or concealed sliding closers may be used with Roton. (Note: Pivot type floor closers with a fixed, conflicting pivot point may not be used.) Closers will last considerably longer, adjust to operating requirements more readily and show consistent settings due to the reduced operating forces of Roton hinging.

PROCESS FOR CHOOSING THE CORRECT ROTON MODEL

Determine	Select
Door and frame application (flush door and frame, inset door, door thickness, door height, etc.)	Roton model
Frequency of door cycling and weight of door	Light, standard, heavy or extra heavy duty, lead lined
Door and frame material	Fasteners
Door opening finish	Roton finish
Fire rating requirements, if needed	With stud or without stud

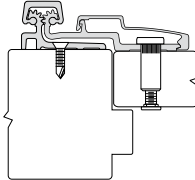
ROTON TYPES

Concealed



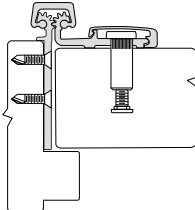
These models have leaves that are concealed between the rabbet of the frame and the hinge edge of the door. Models available include 500-048, 750-134, 750-138, 780-041, 780-041HD, 780-041LL, 780-110, 780-110HD, 780-111, 780-111HD, 780-111LL, 780-112, 780-112HD, 780-112LL, 780-224, 780-224HD, 780-224LL, 780-226, 780-226HD, 780-226LL, 1200-600XHD, 1200-650XHD

Full Surface



These models have the frame leaf mounted to the face of the frame. The door leaf is mounted to the face of the door with sex bolts (thru-bolts). Models available include 500-220, 780-057, 780-057HD, 780-157, 780-157HD, 780-210, 780-210HD, 780-257HD

Half Surface



These models have the frame leaf concealed between the rabbet of the frame and the edge of the door. The door leaf is mounted to the face of the door with sex bolts (thru-bolts) or screws. Models available include 500-200, 780-045, 780-045HD, 780-046, 780-046HD, 780-053, 780-053HD, 780-054, 780-054HD, 780-211HD, 780-300HD

Checking the Load

To assist in the selection of an appropriate Roton hinge series, divide the door weight including the weight of the hardware by the number of bearings in the Roton hinge under consideration, then use the following guideline, with a maximum 4'0" wide door:

750 Series: 5-1/8" Centers (Typical 7' door: 16 bearings)
 780 Series: 5-1/8" Centers (Typical 7' door: 16 bearings)
 780 HD & LL: 2-9/16" Centers (Typical 7' door: 32 bearings)

Frequency	Load
Low frequency interior doors	20 lbs per bearing
Low frequency, very heavy doors (lead lined x-ray doors, ballistics doors, high security doors) with double rows of fasteners	30 lbs per bearing
Medium frequency interior doors	15 lbs per bearing
Medium frequency exterior doors	10 lbs per bearing
High frequency exterior doors	7.5 lbs per bearing
Very high frequency doors	5 lbs per bearing



ROTON CONTINUOUS GEARED HINGES



FIRE RATINGS - UNDERWRITERS LABORATORY FIRE RATING FILE #A14627



780 Series Roton continuous geared hinges with stainless steel studs are approved for use on 4'x10' metal or wood swing type doors. 780 Series Roton continuous geared hinges without stainless steel studs are approved for use on 4'x8' single swing metal doors and 4'x10' single swing wood doors used without stainless steel studs limited to 20 minute fire rating without hose stream.

- Hollow metal, tin-clad, sheet-metal and steel covered composite type rated up to and including 3 hours
- Wood composite doors rated up to and including 1-1/2 hours
- Wood core doors rated up to 20 minutes without hose stream, non-studded
- 780 Series Roton Continuous Geared Hinges meet requirements for positive pressure UL10C, UL10B and UBC7-2 Part 1

FULLY CONCEALED WITH STUD

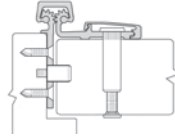
Fully Concealed



These models are concealed between the frame and the hinge edge of the door. Models available include 780-041, 780-041HD, 780-041LL, 780-111, 780-111HD, 780-111LL, 780-112, 780-112HD, 780-112LL, 780-224, 780-224HD, 780-224LL, 780-226, 780-226HD, 780-226LL, and 780-235HD.

HALF SURFACE WITH STUD

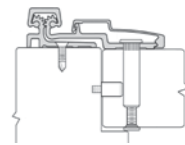
Half Surface



These models have the frame leaf concealed between the frame and the edge of the door. The door leaf is mounted to the door with thru-bolts or screws. Models available include 780-045, 780-045HD, 780-046, 780-046HD, 780-053, 780-053HD, 780-054, 780-054HD, and 780-211HD.

FULL SURFACE WITH STUD

Full Surface



These models have the frame leaf mounted to the face of the frame and the face of the door. The door leaf is mounted to the face of the door with thru-bolts. Models available include 780-057, 780-057HD, 780-157, 780-157HD, 780-210, 780-210HD, and 780-257HD.

ANSI STANDARDS

- 780 Series Roton continuous geared hinges are approved per ANSI A156.26 Grade 1 for 150 lb. doors
- 780 Series Roton heavy duty hinges are approved per ANSI A156.26 Grade 1 for 300 lb. doors
- 780-111, 780-112, 780-224, 780-226 standard duty and heavy duty Roton continuous geared hinges are Warnock-Hersey certified in accordance with ANSI A250.13 2003 Standard Severe Windstorm Resistant Components

UL10C Fire Rated Roton	Fully Concealed	Full Surface	Half Surface
20 Minute Fire Rated Wood Core Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
20 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
30 Minute Fire Rated Wood Composite Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
30 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
45 Minute Fire Rated Wood Composite Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
45 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
60 Minute Fire Rated Wood Door x Hollow Metal Frame	UL — FF	UL — FF	UL — FF
60 Minute Fire Rated Metal Door x Hollow Metal Frame	UL — FF	UL — FF	UL — FF
90 Minute Fire Rated Wood Composite Door x Fire Rated Hollow Metal Frame	UL — Stud	UL — Stud	UL — Stud
90 Minute Fire Rated Metal Door x Fire Rated Hollow Metal Frame	UL — FF	UL — FF	UL — FF
3 Hour Fire Rated Metal Door x Fire Rated Hollow Metal Frame	UL — Stud	UL — Stud	UL — Stud

NOTES:

1. Models for which studs are not required (UL-FF) are no extra charge.
2. **Please specify if UL stamp is required.** For example:
780-112LL 83" Clear U/L— FF
780-211HD 95" DB U/L— Stud
3. Four studs are required for UL stud hinges.



ROTON CONTINUOUS GEARED HINGES

STANDARD LENGTHS

Roton hinge standard lengths are for 6'8" doors - 79", for 7' doors - 83", for 7'2" doors - 85", for 8' doors - 95" and for 10' doors - 119", for convenience in application to nominal doors. This provides for threshold clearance, head clearance and door height allowances for carpeting. Other lengths may be ordered as non-standard items.

Roton hinges are always installed flush with the top edge of the door. Recommended 1/8" (3 mm) for head clearance.

Where many net heights are likely to appear on the same job, group the sizes to 1/2" (13 mm) increments to be consistent in appearance. Generally, up to 1/2" (13 mm) of door heel exposure is acceptable, but all Roton hinges should be within 1" (25 mm) of the net door height.

FIELD MODIFICATIONS

While Roton hinges can be cut in the field, any product modifications may void all warranties. Should in-the-field modifications be required, cut only from the bottom of the hinge. Do not cut through bearings or screw holes. When cutting electric hinges it is extremely important to clamp both hinge leaves securely to prevent hinge "chatter" which can damage the hinge's internal wiring. Consult Hager Technical Service before proceeding.

TEMPLATE HINGES

Hager Companies has developed templated hole patterns for Roton hinge models in standard lengths. Drawings are available upon request by contacting Hager Companies Customer Service or accessing the Hager website at www.hagerco.com. Due to normal variances inherent in the manufacturing process, Roton custom length hinges are deemed by Hager to be non-templated.

STANDARD FINISHES

Roton hinges are available in either satin etched, clear anodized aluminum (similar to US28), or dark bronze exterior anodized coating.

SPECIAL ANODIZING

Roton hinges are available in various colors, including black, and gold, as well as other anodized finishes with fasteners to match. Hager requires that final assembly be completed by Hager because of special non-removable metal coatings applied to all hinges during assembly. Users are cautioned against attempting to refinish any Roton product. All hinges ordered in special colors should be ordered at the same time to guarantee finish uniformity. Supply color chip for best match.

PAINTED HINGES

Hager can supply unfinished materials to selected finishers for special projects which require unusual colors or coatings, but will require that final assembly be completed by Hager. Because of special non-removable metal coatings applied to all hinges during assembly, users are cautioned against attempting to refinish any Roton product.

PAINTED COVER CHANNELS

Painted Roton cover channels in bone white are offered as a standard stock color option. This is only available on the standard Roton cover channel.

POLISHED COVER CHANNELS

Any Roton hinge may be ordered with a polished clear cover channel (similar to US26) to complement clear anodized hinge leaves or a polished gold cover channel (similar to US3) to complement satin gold anodized hinge leaves.

SPECIAL COVER CHANNELS

Special covers for rounded, fluted or decorative effects may be ordered. Not available for hinges with electrical modifications.

Decorative Back (DBCC) for 1/2" Insert

(Decorative insert not available through Hager)



Fluted Back (FLCC)



Rounded Back (RBCC)



Roton Cover Channel Compatibility				
Hinge Model	Flat FBCC	Round RBCC	Fluted FLCC	Decorative DBCC
750-134	•	•	•	•
750-138	•	•	•	•
780-041	•	•		
780-045	•	•		
780-046	•	•		
780-053	•	•		
780-054	•	•		
780-057	•	•		
780-110	•	•	•	•
780-111	•	•	•	•
780-112	•	•	•	•
780-113	•	•	•	•
780-114	•	•		
780-155	•	•		
780-157	•			
780-208	•		•	•
780-210	•	•		
780-211	•	•		
780-213	•	•		
780-224	•	•	•	•
780-226	•	•	•	•
780-235	•	•	•	•
780-257	•			
780-259	•	•		
780-300	•			
1200-600	•			
1200-650	•			



ROTON CONTINUOUS GEARED HINGES



EXTRA LONG HINGES

Hager Companies manufactures hinges over 119" (3023 mm) long as two separate lengths with a staggered joint for onsite connection. Hager will select hinge segment lengths from standard sizes for best economics in relation to quantity required. Handing specifications are required to position the cuts inconspicuously and to finish symmetrical pairs in double door applications.

BEARING AT TOP

This application allows for the bearing to be set at the very top of the cover channel. The cover channel is flush with the top of the geared hinge, preventing any obstructions or debris to be inserted in the top channel.

BEARING ON TOP

This application allows for the bearing to be set at the very top of the extended cover channel. The cover channel projects beyond the top edge of the hinge by the height of the bearing. This modification prevents any obstructions or debris from being inserted in the top of the channel.

HOSPITAL TIP

Concealed models only can be prepared with a cover channel tapered at 45° angle at the top of the hinge. These are ideal for use in hospitals and correctional facilities to help provide a clean and safe environment. Please consult the sales office for available models.

TAMPER RESISTANT HINGE

This application is intended for use in hospital psychiatric areas and places of high security. The hinge is prepared with a hospital tip (concealed models only) and every other bearing is supplied with a set screw to lock against the inside of the cover channel for additional security.

DUTCH DOOR HINGES

Hager Companies will prepare any of its hinge models for a dutch door application. The frame leaf is furnished as a continuous extrusion and the door leaf is cut to fit the dutch door heights specified. Upper and lower door leaves are prepped for extra screws. Handing, overall net door height, amount of clearance between the top and bottom doors, their individual heights and door and frame materials should be clearly specified.

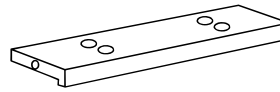
SPECIAL HOLES

Any hinge may be ordered with special hole locations for unusual frame or door conditions. Please provide specifications for each leaf.

BEARING REPLACEMENT KITS

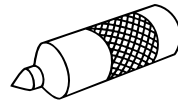
Available in standard or heavy duty and in Clear Anodized or Dark Bronze Anodized finish for 780 and 1200 Series Roton.

MARKING JIGS



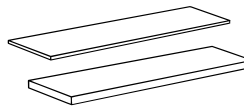
Marking jigs are available to locate the centers of the top end frame screws. These jigs must be ordered at the same time as the hinges to ensure fabrication accuracy.

CENTER PUNCHES



Self-Centering punches are available for #12 countersunk screws that are supplied. To make sure screw heads seat properly, accurate center punching is required.

SHIM STOCK



For clearance between the door and frame that may be excessive, a continuous shim is helpful (applied behind the frame leaf only). Anodized aluminum extrusions are supplied with no holes.

ITEM MARKING

Marking and special packaging for job-site identification.

REPLACEMENT MOLDINGS

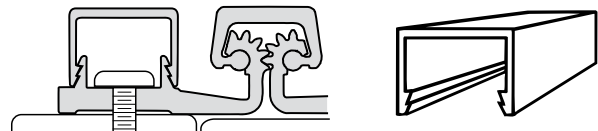
780-210M

Replacement door leaf molding for 780-210, 780-210HD, 780-211, 780-211HD, 780-213, 780-213HD, 780-045, 780-045HD, 780-046, 780-046HD. Furnished with Allen head set screw and wrench. Shipped in standard lengths for trimming in the field.



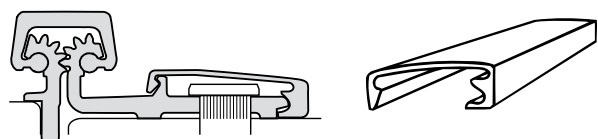
780-247M

Replacement frame leaf molding for 780-157, 780-157HD, 780-257, 780-257HD. Shipped in standard lengths for trimming in the field.



780-052M

Replacement door leaf molding for 780-053, 780-053HD, 780-054, 780-054HD, 780-155, 780-155HD, 780-057, 780-057HD, 780-157, 780-157HD, 780-257, 780-257HD, 780-259, 780-259HD. Furnished with Allen head screw and wrench. Shipped in standard lengths for trimming in the field.





ROTON CONTINUOUS GEARED HINGES

FASTENERS

Hager Companies uses custom made, carefully engineered, and thoroughly tested fasteners exclusively. Each fastener is designed for ease of use as well as durability. Appropriate fasteners are furnished with each hinge, together with installation instructions for typical metal or wood doors and frames. The standard screw pack includes self-drilling screws. If wood screws are required, please specify on order and wood screws will be substituted.

FASTENERS FOR USE WITH HINGES IN THE 500 SERIES

8 - 18 X 3/4" Truss Phillips head screw

FASTENERS FOR USE WITH HINGES IN THE 750 AND 780 SERIES

Metal Doors or Frames (Undercut Head Phillips Countersunk Screws):

Two types of screws are available for metal doors and frames: the Drill Kwik® screw (with drill point tip) and the thread forming screw (no tapping necessary). The #12-24 x 11/16" self-drilling screw has a machine thread in the screw shank. The #12-24 x 13/32" thread-forming screw has a machine thread in the screw shank.

The standard screw pack contains #12-24 Drill Kwik® self-drilling machine thread. This screw has a hardened steel drill point built into the end of the screw, allowing it to be installed without a pre-drilled hole if the metal thickness is no more than 1/8" (3.2 mm). It forms its own threads as the screw is drilled into the door or frame. It is longer than most screws of the type because of the built-in drill point.

When installing the self-drilling screw, make certain that the installer is familiar with the proper use and torque settings of a screw gun. Proper center-punching is extremely important with self-drilling screws. If center-punching is omitted or incorrectly done, the screw will "walk" in the same way as a drill bit, resulting in cocked screw heads and improperly closing hinge leaves.

The optional self-threading screw is typically used on grout filled frames to prevent bowing of the frame. This screw has a short tapered section at the tip. A drilled pilot hole (range: 0.173" to 0.185") is required prior to tapping.

Either of these screws may be used for the attachment of Roton hinges to metal doors or frames, generally without reinforcement except in thin aluminum or with doors of very heavy weight or anticipated abuse. Both types require center-punching to ensure that the screw sits properly in the hinge leaf. Self-centering countersinking center-punches are available.

In all cases, care should be taken to ensure that no drill chips build up behind the hinge. It is best to premark the holes and drill for self-threading screws with the hinge removed, or hold the hinge very tightly against the door or frame when using the self-drilling screws.

Hinges normally requiring sex bolts will be furnished with suitable mounting holes. Blank leaves, special countersinking, or door fastening with pan-head screws are available upon request.

If special fasteners are required, customers must supply them except upon prior agreement. Please consult the factory for alternate fastener recommendations.

FASTENERS FOR USE WITH HINGES IN THE 1200 SERIES

1/4" - 20 x 1" Undercut Flat Phillips Head Screw

SEX BOLTS (THRU-BOLTS)

On all applicable surface-mounted hinges, sex bolt sets are furnished in the hardware package together with a transfer punch for accurate marking of the 3/8" (10 mm) drilled holes required. The 1/4"-20 bolt has a 3/8" (10 mm) shoulder under a 9/16" (14 mm) pan head so that it can be reversed for exterior in-swing doors or for additional security.

Roton sex bolts are intentionally designed to be shorter than the door thickness for proper clamping action with doors of slightly varying thickness and gauge in the 1" (25 mm) - 2-1/2" (63.5 mm) range. Unless otherwise requested, bolts suitable for the 1-3/8" (35 mm) - 1-3/4" (45 mm) range will be shipped. Shorter or longer bolts may be requested. Bolts that are outside the door thickness range of 1" (25 mm) - 2-1/2" (63.5 mm) must be provided by the installer.



ROTON CONTINUOUS GEARED HINGES



DOOR AND FRAME DIMENSIONING

Half Surface Models

780-045, 780-045HD, 780-046, 780-046HD, 780-053, 780-053HD, 780-054, 780-054HD, 780-155, 780-155HD, 780-211HD, 780-213, 780-213HD, 780-259, 780-259HD, 780-300HD (leaf thickness clearance not required for 780-300HD)

Designed primarily for work involving new doors and frames, one leaf concealed and one leaf surface mounted. They can also be used on retrofit work where a new door can be ordered to fit an existing frame if the existing door is made of wood and can be reduced in size to accommodate the 1/8" (3.2 mm) leaf thickness, or the frame is to be replaced and can be furnished with an oversized header.

Clearance required as follows:

Single Doors (Square and Beveled Edge)

A. Leaf thickness	1/8" (3.2 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
Total	9/32" (7.2 mm)

Pairs of Doors (Square and Beveled Edge)

A. Leaf thickness	1/8" (3.2 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. Second leaf thickness	1/8" (3.2 mm)
Total	1/2" (12.8 mm)

Full Surface Models

780-057, 780-057HD, 780-157, 780-157HD, 780-210, 780-210HD, 780-257HD

The above models are designed for retrofit applications and require no special dimensioning. Full surface models are designed to be mounted to the exposed surface of the door and frame. No additional clearance is required except for door and frame painting.

Clearance required as follows:

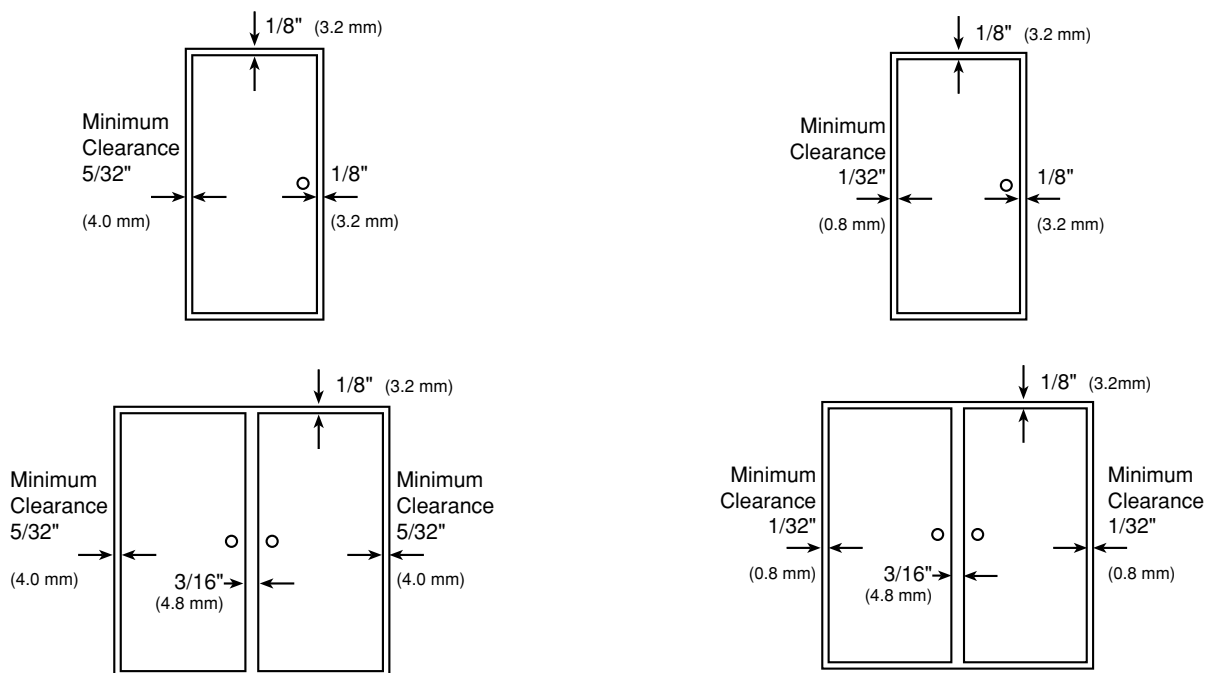
Single Doors (Square and Beveled Edge)

A. Additional allowance for frame irregularities	1/32" (0.8 mm)
B. Lockside clearance for single door	1/8" (3.2 mm)
Total	5/32" (4.0 mm)

Pairs of Doors (Square and Beveled Edge)

A. Additional allowance for frame irregularities	1/32" (0.8 mm)
B. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
C. Second allowance for frame irregularities	1/32" (0.8 mm)
Total	1/4" (6.4 mm)

*For fire rated doors, please refer to door manufacturer's requirement for edge to edge clearance to maintain compliance with NFPA requirements.





ROTON CONTINUOUS GEARED HINGES

DOOR AND FRAME DIMENSIONING (CONTINUED)

Concealed Models

750-134, 750-138, 780-110, 780-110HD, 780-111, 780-111HD, 780-111LL, 780-112, 780-112HD, 780-112LL, 780-224, 780-224HD, 780-224LL, 780-226, 780-226HD, 780-226LL, 780-235HD. The following are not recommended for doors with beveled edged applications – 780-041, 780-041HD and 780-041LL.

Designed primarily for work involving new doors and frames, these models have parallel, fully concealed leaves. They can also be used on retrofit work where a new door can be ordered to fit an existing frame if the existing door is made of wood and can be reduced in size to accommodate the 5/16" (7.9 mm) hinge thickness, or the frame is to be replaced and can be furnished with an oversized header.

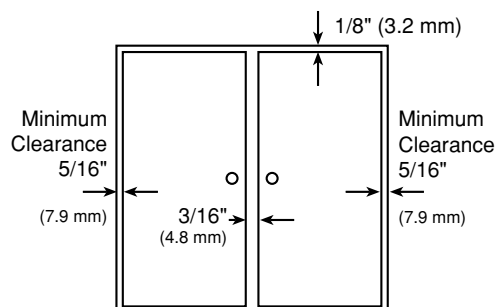
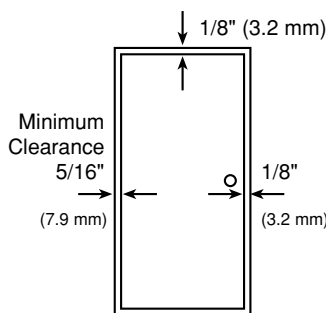
Clearance required as follows:

Single Doors (Square Edged)

A. Hinge thickness	5/16" (7.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
Total	15/32" (11.9 mm)

Single Doors (Beveled Edged)

A. Hinge thickness	5/16" (7.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
D. Allowance for beveled edge	1/32" (0.8 mm)
Total	1/2" (12.7 mm)



Pairs of Doors (Square Edged)

A. Hinge thickness	5/16" (7.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. Second hinge thickness	5/16" (7.9 mm)
Total	7/8" (22.2 mm)

Pairs of Doors (Beveled Edged)

A. Hinge thickness	5/16" (7.9 mm)
B. Allowance for beveled edge	1/32" (0.8 mm)
C. Additional allowance for frame irregularities	1/32" (0.8 mm)
D. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
E. Second allowance for frame irregularities	1/32" (0.8 mm)
F. Second allowance for beveled edge	1/32" (0.8 mm)
G. Second hinge thickness	5/16" (7.9 mm)
Total	15/16" (23.8 mm)

Concealed Model Exceptions - 780-113, 780-113HD Single Doors (Square Edged)

A. Hinge thickness	13/16" (20.6 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
Total	31/32" (24.6 mm)

Single Doors (Beveled Edged)

A. Hinge thickness	13/16" (20.6 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
D. Allowance for beveled edge	1/32" (0.8 mm)
Total	1" (25.4 mm)

Pairs of Doors (Square Edged)

A. Hinge thickness	13/16" (20.6 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. Second hinge thickness	13/16" (20.6 mm)
Total	1-7/8" (47.6 mm)

Pairs of Doors (Beveled Edged)

A. Hinge thickness	13/16" (20.6 mm)
B. Allowance for beveled edge	1/32" (0.8 mm)
C. Additional allowance for frame irregularities	1/32" (0.8 mm)
D. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
E. Second allowance for frame irregularities	1/32" (0.8 mm)
F. Second allowance for beveled edge	1/32" (0.8 mm)
G. Second hinge thickness	13/16" (20.6 mm)
Total	1-15/16" (49.2 mm)

*For fire rated doors, please refer to door manufacturer's requirement for edge to edge clearance to maintain compliance with NFPA requirements.



ROTON CONTINUOUS GEARED HINGES



DOOR AND FRAME DIMENSIONING (CONTINUED)

Concealed Model Exceptions - 780-114, 780-114HD

Single Doors (Square Edged)

A. Hinge thickness	15/16" (23.8 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. <u>Lockside clearance for single door</u>	1/8" (3.2 mm)
Total	1-3/32" (27.8 mm)

Pair of Doors (Square Edged)

A. Hinge thickness	15/16" (23.8 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. <u>Second hinge thickness</u>	15/16" (23.8 mm)
Total	2-1/8" (54.0 mm)

1200-600XHD, 1200-650XHD

Single Doors (Square Edged)

A. Hinge thickness	15/32" (11.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. <u>Lockside clearance</u>	1/8" (3.2 mm)
Total	5/8" (15.9 mm)

Single Doors (Beveled Edged)

A. Hinge thickness	15/32" (11.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
D. <u>Allowance for beveled edge</u>	1/32" (0.8 mm)
Total	21/32" (16.7 mm)

Pair of Doors (Square Edged)

A. Hinge thickness	15/32" (11.9 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. <u>Second hinge thickness</u>	15/32" (11.9 mm)
Total	1-3/16" (30.2 mm)

Pair of Doors (Beveled Edged)

A. Hinge thickness	15/32" (11.9 mm)
B. Allowance for beveled edge	1/32" (0.8 mm)
C. Additional allowance for frame irregularities	1/32" (0.8 mm)
D. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
E. Second allowance for frame irregularities	1/32" (0.8 mm)
F. Second allowance for beveled edge	1/32" (0.8 mm)
G. <u>Second hinge thickness</u>	15/32" (11.9 mm)
Total	1-1/4" (31.8 mm)

780-208, 780-208HD

Single Doors (Square Edged)

A. Hinge thickness	1/2" (12.7 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. <u>Lockside clearance for single door</u>	1/8" (3.2 mm)
Total	21/32" (16.7 mm)

Single Doors (Beveled Edged)

A. Hinge thickness	1/2" (12.7 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Lockside clearance for single door	1/8" (3.2 mm)
D. <u>Allowance for beveled edge</u>	1/32" (0.8 mm)
Total	11/16" (17.5 mm)

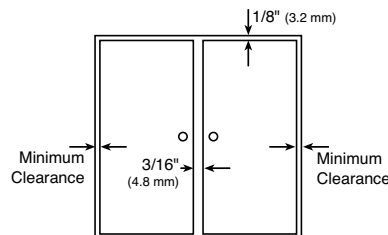
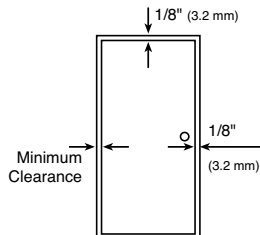
Pair of Doors (Square Edged)

A. Hinge thickness	1/2" (12.7 mm)
B. Additional allowance for frame irregularities	1/32" (0.8 mm)
C. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
D. Second allowance for frame irregularities	1/32" (0.8 mm)
E. <u>Second hinge thickness</u>	1/2" (12.7 mm)
Total	11/4" (31.8 mm)

Pair of Doors (Beveled Edged)

A. Hinge thickness	1/2" (12.7 mm)
B. Allowance for beveled edge	1/32" (0.8 mm)
C. Additional allowance for frame irregularities	1/32" (0.8 mm)
D. Edge to edge clearance (recommended)*	3/16" (4.8 mm)
E. Second allowance for frame irregularities	1/32" (0.8 mm)
F. Second allowance for beveled edge	1/32" (0.8 mm)
G. <u>Second hinge thickness</u>	1/2" (12.7 mm)
Total	1-5/16" (33.3 mm)

780-208/780-208HD = 1/2" (12.7mm)
 780-113/780-113HD = 13/16" (20.6mm)
 780-114/780-114HD = 15/16" (23.8mm)
 1200-600XHD/1200-650XHD = 15/32" (12mm)



780-208/780-208HD = 1/2" (12.7mm)
 780-113/780-113HD = 13/16" (20.6mm)
 780-114/780-114HD = 15/16" (23.8mm)
 1200-600XHD/1200-650XHD = 15/32" (12mm)

*For fire rated doors, please refer to door manufacturer's requirement for edge to edge clearance to maintain compliance with NFPA requirements.



ROTON CONTINUOUS GEARED HINGES

ELECTRIC HINGE MODIFICATIONS

Exposed Electric Contacts

- Transfers power to door in closed position
- Must have at least two contacts to transfer power
- Specify handing and the dimension from the top edge of the door to the centerline of the electric contact location
- Templates regarding location of contacts available upon request
- To order, use symbol "E" plus the number of contacts required as a suffix
- Example: 780-112HD 85" Clear E4

Exposed Electric Switches

- Miniature push button switch is incorporated in the hinge frame leaf to monitor position of the door
- Three 12" wire leads
- Each monitoring hinge only needs one E1S switch
- Specify handing and the dimension from the top edge of the door to the centerline of the electric switch location
- Templates regarding location of contact switch available upon request
- To order, use symbol "E1S" as a suffix
- Example: 780-112HD 85" Clear E1S

Concealed Electric Through-Wire

- Transfers power discreetly from building to door hardware
- Four, six, eight or ten wire continuous electric conductors
- Specify handing and the dimension from the top edge of the door to the centerline of electric through-wire location
- Templates regarding location of through-wires available upon request
- To order, use symbol "ETW" plus the number of wire leads, 12" per side required as a suffix
- Example: 780-112HD 85" Clear ETW - 4

Removable Electric Through-Wire

- Transfers power discreetly from building to door hardware
- 4" removable 10 wire ETW module can easily be removed for adjustment or service
- Available on heavy duty models only
- Specify handing and the dimension from the top edge of the door to the centerline of electric monitoring location
- To order 4" removable module only, use component number 7-102-1860 Clear and 7-112-1870 Dark Bronze
- Templates regarding location of module available upon request
- To order, use symbol "RETW"
- Example: 780-112HD 85" Clear RETW

Concealed Electric Monitoring

- Miniature switch is incorporated into the frame leaf
- Three 12" wire leads
- Specify handing and the dimension from the top edge of the door to the centerline of electric monitoring location
- Templates regarding location of monitoring switch available upon request
- To order, use symbol "EMN", as a suffix
- Example: 780-224HD 119" Bronze EMN

Concealed Electric Through-Wire and Monitoring:

- This combines the continuous electric conductors and the miniature switch to provide both power transfer and monitoring
- Four, six, eight or ten continuous electric conductors
- Miniature switch is incorporated into the frame leaf
- Specify handing and the dimension from the top edge of the door to the centerline of each electric modification location
- Templates regarding location of monitoring switch, available upon request
- To order, use symbol "ETM" plus the number of wires required as a suffix
- Example: 780-224LL 85" Bronze ETM - 4

Von Duprin EPT 2 or EPT 10 Electric Power Transfer Preparation

- Hinge leaf cutout to accommodate power transfer device
- Specify handing and the dimension from the top edge of the door to the centerline of the power transfer location

Special Electric Modifications and EPT locations may require additional charges if screw holes have to be moved. Contact Hager Companies Customer Service for charges. Please feel free to contact the Hager Companies technical team for further information pertaining to electric modifications.

Mortar Box - 430

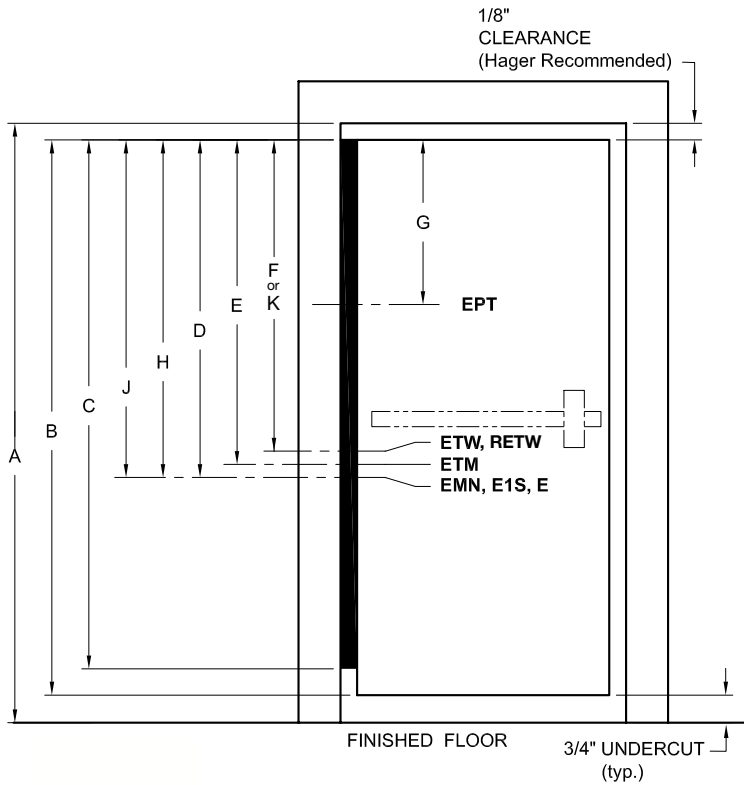
- Serves as a mortar shield
- Overall dimensions: 9" (229 mm) length with tabs, 7" (178 mm) inside, 1-3/4" x 1-3/4" (45 mm x 45 mm) inside dimension
- Galvanized steel 0.040" (1 mm)
- Top and bottom knockouts for standard conduit fittings



ROTON CONTINUOUS GEARED HINGES



ELECTRICAL MODIFICATIONS (CONTINUED)



- A = Opening
- B = Door height
- C = Actual hinge length
- D = C.L. of EMN (electric monitor)
- E = C.L. of ETM (electric through-wires & monitor)
- F = C.L. of ETW (electric through-wires)
- G = C.L. of EPT (electric power transfer)
- H = C.L. of E1S (exposed switch)
- J = C.L. of E (exposed contact)
- K = C.L. of RETW (removable electric through-wires)

For ease of ordering, Hager Companies has established standard locations for power transfer cutouts. All standard location dimensions are referenced from the top edge of the door to the centerline of the power transfer cutout. Please specify handing.

NOTE: Full surface hinges are not available with preps.

	A	B	C	D	E	F	G	H	J	K
79 SD	80"	79-1/8"	78-11/16"	42-12"	41-1/4"	40"	24-1/2"	42-1/2"	42-1/2"	-
79 HD	80"	79-1/8"	78-11/16"	42-1/2"	40-5/8"	38-3/4"	24-1/2"	42-1/2"	42-1/2"	41-7/8"
83 SD	84"	83-18"	83"	46-1/2"	44-5/8"	42-3/4"	28-7/16"	46-1/2"	46-1/2"	-
83 HD	84"	83-1/8"	83"	46-1/2"	45-1/4"	44"	28-7/16"	46-1/2"	46-1/2"	44-1/16"
85 SD	86"	85-1/8"	85"	48-1/2"	47-1/4"	46"	30-7/16"	48-1/2"	48-1/2"	-
85 HD	86"	85-1/8"	85"	48-1/2"	46-5/8"	44-3/4"	30-7/16"	48-1/2"	48-1/2"	45-1/16"
95 SD	96"	95-1/8"	95-1/16"	59-3/4"	57-7/8"	56"	40-1/2"	59-3/4"	59-3/4"	-
95 HD	96"	95-1/8"	95-1/16"	59-3/4"	57-7/8"	56"	40-1/2"	59-3/4"	59-3/4"	56-1/2"
119 SD	120"	119-1/8"	119"	83-3/4"	81-7/8"	80"	64-3/8"	83-3/4"	83-3/4"	-
119 HD	120"	119-1/8"	119"	83-3/4"	81-7/8"	80"	64-3/8"	83-3/4"	83-3/4"	80"

SD = Standard Duty

HD = Heavy Duty



ROTON CONTINUOUS GEARED HINGES

ELECTRICAL MODIFICATIONS (CONTINUED)

Part Number	Von Duprin EPT 2 or EPT 10 Power Transfer Preparation	Exposed Electric Contacts	Exposed Electric Switches	Concealed Electric Through-Wire	Concealed Electric Monitoring	Concealed Electric Through-Wire and Monitoring	Removable Electric Through-Wire
Part Number	EPT	E	E1S	ETW	EMN	ETM	RETW
750-134							
750-138							
780-041							
780-041HD							
780-041LL							
780-045	•						
780-045HD	•						
780-046	•						
780-046HD	•						
780-053	•						
780-053HD	•						
780-054	•						
780-054HD	•						
780-110			•	•			
780-110HD	•		•	•			
780-111	•	•	•	•	•	•	
780-111HD	•	•	•	•	•	•	•
780-111LL	•	•	•	•	•	•	
780-112	•	•	•	•	•	•	
780-112HD	•	•	•	•	•	•	•
780-112LL	•	•	•	•	•	•	
780-155							
780-155HD							
780-211HD							
780-224	•	•	•	•	•	•	
780-224HD	•	•	•	•	•	•	•
780-224LL	•	•	•	•	•	•	
780-226	•	•	•	•	•	•	
780-226HD	•	•	•	•	•	•	•
780-226LL	•	•	•	•	•	•	
780-235HD		•	•	•	•		
1200-600	•			•			
1200-650	•			•			



ROTON CONTINUOUS GEARED HINGES

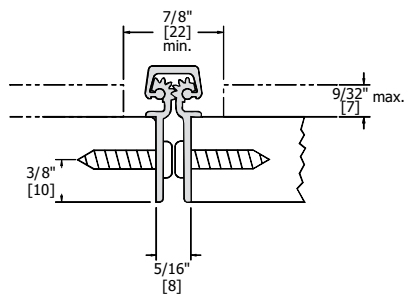


500-048

Light Duty, Conceal Leaf Hinge

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

- Material:** Aluminum 6063-T6 - 1/16" (1.5 mm) leaf thickness
- Clearance:** 5/16" (8 mm)
- Fasteners:** #8-18 x 3/4" truss head Phillips tapping AB zinc plated steel. Painted to match. For sheet metal or wood applications.
- Length Options:**
- Standard sizes include 24" (610 mm), 36" (914 mm), 48" (1219 mm), 72" (1829 mm)
 - Custom lengths available
- Special Features:**
- Bearings spaced to distribute door weight evenly up to 50 lbs
 - Can be used for vertical or horizontal applications
 - Alignment ribs for easy installation and proper hinge location
 - Optional nylon end plugs provide a seal for marine applications



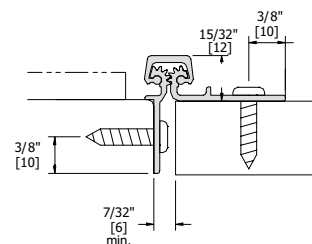
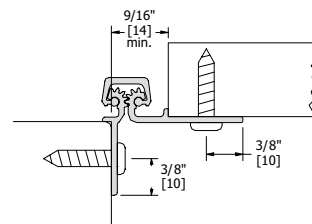
500-200

Light Duty, Half Surface Hinge

(Left hand shown)

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

- Material:** Aluminum 6063-T6 - 1/16" (1.5 mm) leaf thickness
- Clearance:** 7/32" (5.6 mm) minimum
- Fasteners:** #8-18 x 3/4" truss head Phillips tapping AB zinc plated steel. Painted to match. For sheet metal or wood applications. Shorter screws required for openings past 90° when applied as shown in 'A' (not provided).
- Length Options:**
- Standard sizes include 24" (610 mm), 36" (914 mm), 48" (1219 mm), 72" (1829 mm)
 - Custom lengths available
- Special Features:**
- Bearings spaced to distribute door weight evenly up to 50 lbs
 - Can be used for vertical or horizontal applications
 - Alignment ribs for easy installation and proper hinge location
 - Optional nylon end plugs provide a seal for marine applications





ROTON CONTINUOUS GEARED HINGES

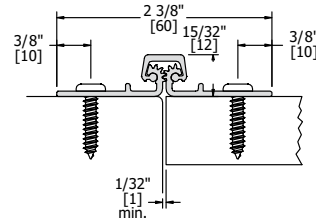


500-220

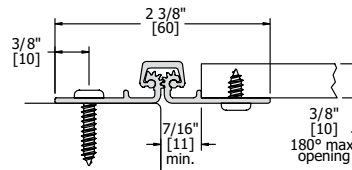
Light Duty, Full Surface Hinge

Universal hinge used for a wide variety of applications including marine applications, wood cabinet construction, medical equipment, portable exhibits and displays, electronic cabinets, switchboxes, etc.

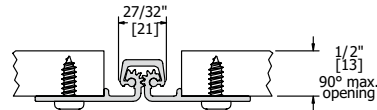
- Material:** Aluminum 6063-T6 - 1/16" (1.5 mm) nominal leaf thickness
- Clearance:** 1/32" (1 mm) minimum
- Fasteners:** #8-18 x 3/4" truss head Phillips tapping AB zinc plated steel. Painted to match. For sheet metal or wood applications. Shorter screws required for 90° and 180° openings when applied as shown in "B" (not provided). Shorter screws required for openings past 90° when applied as shown in "C" (not provided).
- Length Options:**
- Standard sizes include 24" (610 mm) 36" (914 mm) 48" (1219 mm) 72" (1829 mm)
 - Custom lengths available
- Special Features:**
- Allows either inset or outset applications for recessed or surface mounting
 - Bearings spaced to distribute door weight evenly up to 50 lbs
 - Can be used for vertical or horizontal applications
 - Alignment ribs for easy installation and proper hinge location
 - Optional nylon end plugs provide a seal for marine applications



A



B



C



ROTON CONTINUOUS GEARED HINGES



750-134

Standard Duty, Concealed Leaf Hinge

For medium frequency, 1-3/4" (44 mm) thick solid core wood interior doors up to 100 pounds.

Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® and wood screws

Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

Door/Frame

Reinforcement: None required

Special Features:

- Door edge protection lip
- Offset joint to clear casing
- Frame leaf alignment rib for proper hinge location



750-138

Standard Duty, Concealed Leaf Hinge

For medium frequency, 1-3/8" (35 mm) thick solid core wood interior doors up to 100 pounds.

Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® and wood screws

Length Options:

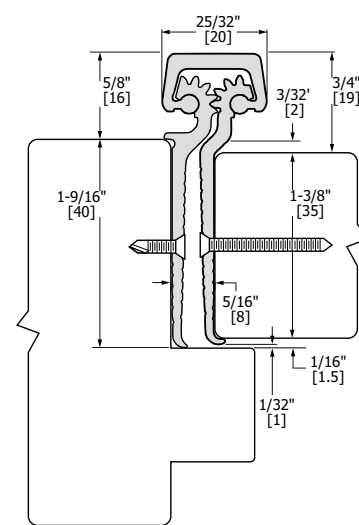
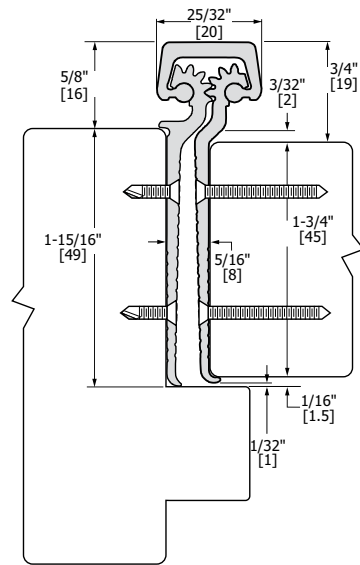
- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

Door/Frame

Reinforcement: None required

Special Features:

- Door edge protection lip
- Offset joint to clear casing
- Frame leaf alignment rib for proper hinge location





ROTON CONTINUOUS GEARED HINGES

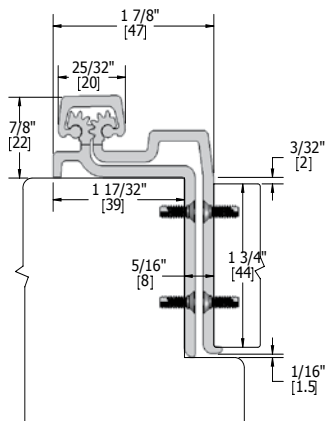


780-041 | 780-041HD | 780-041LL Standard Duty, Heavy Duty, or Lead Lined Concealed Leaf Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors. For wood or metal doors 1-3/4" (44 mm) thick.



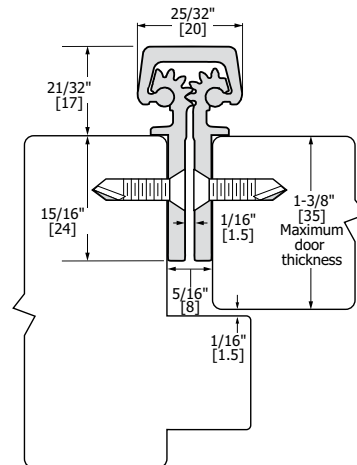
- Material:** Aluminum 6063-T6
- Clearance:** 5/16" (8 mm) hinge side plus standard lockside clearance
- Fasteners:** Dril-Kwik® screws
- LL Fasteners:** 1/2 Dril-Kwik® screws, 1/2 wood screws
- Length Options:**
- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
 - Custom lengths available
- Door/Frame Reinforcement:** None required to 200 lbs, heavier weight use 16 gauge channel
- Optional Fire Rating:** Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:**
- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (specify "LL")
 - Door edge protection lip
 - Swing-clear action and ADA compliant for classroom or patient room doors
 - Not recommended for doors with a beveled edge on the hinge side
- Notes:** See additional fire rating details on page 3



780-110 | 780-110HD Standard Duty or Heavy Duty Concealed Leaf Hinge

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors. For doors 1" (25 mm) to 1-3/8" (35 mm) thick.

- Material:** Aluminum 6063-T6
- Clearance:** 5/16" (8 mm) hinge side plus standard lockside clearance
- Fasteners:** Dril-Kwik® screws
- Length Options:**
- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
 - Custom lengths available
- Door/Frame Reinforcement:** None required to 200 lbs, heavier weight use 16 gauge channel
- Optional Fire Rating:** Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:** Frame and door leaf alignment ribs for proper hinge and door location
- Notes:** See additional fire rating details on page 3



ROTON CONTINUOUS GEARED HINGES



780-111* | 780-111HD* | 780-111LL

Standard Duty, Heavy Duty, or Lead Lined Concealed Leaf Hinge

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors.



Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® screws
LL Fasteners: 1/2 Dril-Kwik® screws, 1/2 wood screws

Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

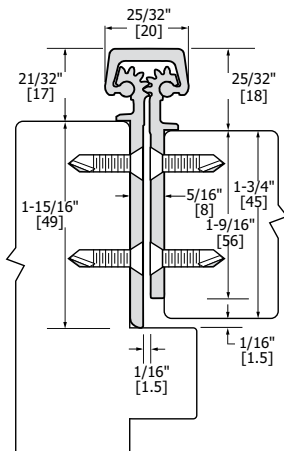
Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
- Frame and door leaf alignment ribs for proper hinge and door location
- 1/8" (3 mm) inset

Notes: See additional fire rating details on page 3



780-112* | 780-112HD* | 780-112LL

Standard Duty, Heavy Duty, or Lead Lined Concealed Leaf Hinge

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors.



Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® screws
LL Fasteners: 1/2 Dril-Kwik® screws, 1/2 wood screws

Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

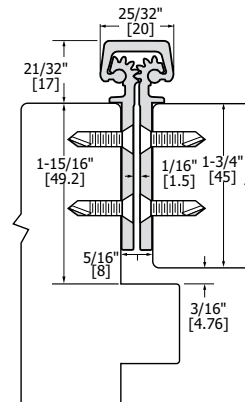
Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Optional Fire Rating: Not available for applications requiring fire studs

Special Features:

- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
- Frame and door leaf alignment ribs for proper hinge and door location

Notes: See additional fire rating details on page 3





ROTON CONTINUOUS GEARED HINGES



780-113 | 780-113HD Standard Duty or Heavy Duty Concealed Leaf Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 13/16" (21 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® screws

Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Special Features:

- "Safety Hinge" for early education centers, nursing homes, etc. (when used without frame stop)
- Door leaf alignment rib for proper door location
- 1/16" (1.5 mm) inset



780-114 | 780-114HD Standard Duty or Heavy Duty Concealed Leaf Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 15/16" (24 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® screws

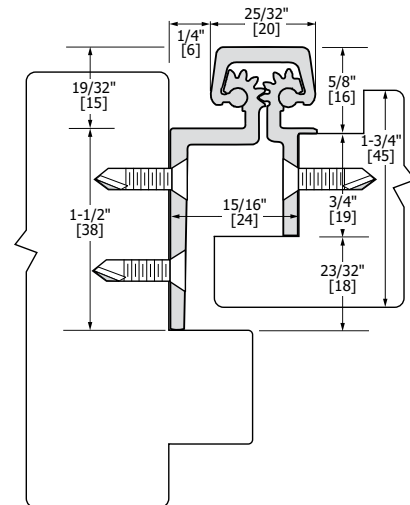
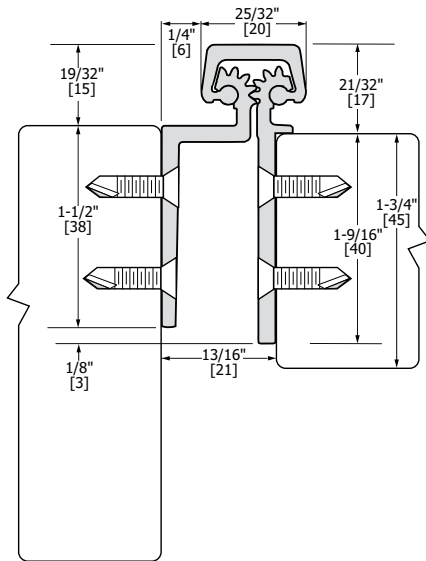
Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Special Features:

- For deep inset or flush-with-frame (when using rabbeted frames) applications, center hung doors, heavy cabinets
- For square edged doors on hinge side



ROTON CONTINUOUS GEARED HINGES



780-208 | 780-208HD Standard Duty or Heavy Duty Concealed Leaf Hinge

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 1/2" (13 mm) hinge side plus standard lockside clearance

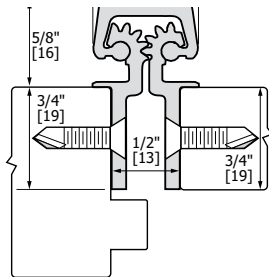
Fasteners: Dril-Kwik® screws
Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Special Features:

- For millwork, toilet stall doors, windows, and rabbeted bi-fold doors
- Frame and door leaf alignment ribs for proper hinge and door location



780-224* | 780-224HD* | 780-224LL Standard Duty, Heavy Duty, or Lead Lined Concealed Leaf Hinge

(Left Hand Shown)

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy, medium frequency doors. All for doors 1-3/4" (44 mm) thick.



Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance

Fasteners: Dril-Kwik® screws
LL Fasteners: 1/2 Dril-Kwik® screws, 1/2 wood screws

Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

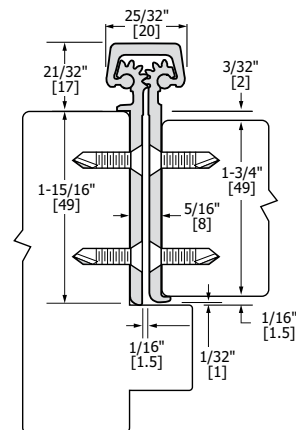
Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
- Door edge protection lip
- Frame leaf alignment rib for proper hinge and door location
- 3/32" (2 mm) inset

Notes: See additional fire rating details on page 3





ROTON CONTINUOUS GEARED HINGES



780-226* | 780-226HD* | 780-226LL

Standard Duty, Heavy Duty, or Lead Lined Concealed Leaf Hinge

Standard duty for medium frequency doors. Heavy duty for high frequency doors or heavy, medium frequency doors. All for doors 2" (51 mm) thick or greater.



Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus standard lockside clearance
Fasteners: Dril-Kwik® screws
LL Fasteners: 1/2 Dril-Kwik® screws, 1/2 wood screws
Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

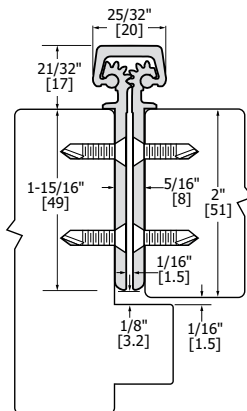
Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL")
- Frame and door leaf alignment ribs for proper hinge and door location

Notes: See additional fire rating details on page 3



780-235HD

Heavy Duty Concealed Leaf Hinge

Heavy duty for high frequency doors or heavy, medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 5/16" (8 mm) hinge side plus allow an additional 1/32" to the standard lockside clearance

Fasteners: Dril-Kwik® screws
Length Options:

- Standard sizes include 79" (2007 mm), 83" (2108 mm), 85" (2159 mm), 95" (2413 mm), 119" (3023 mm)
- Custom lengths available

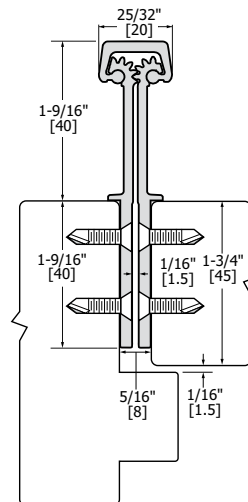
Door/Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

Special Features:

- Wide Throw for applications that require extra clearance for door or frame
- Frame and door leaf alignment ribs for proper hinge and door location
- For square edged doors on hinge side

Notes: See additional fire rating details on page 3



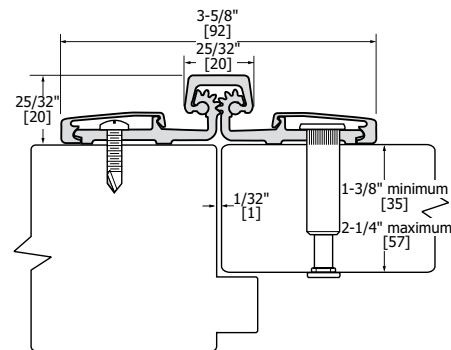
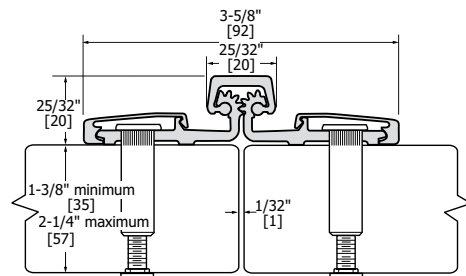
ROTON CONTINUOUS GEARED HINGES



780-057 | 780-057HD Standard Duty or Heavy Duty Full Surface Hinge

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

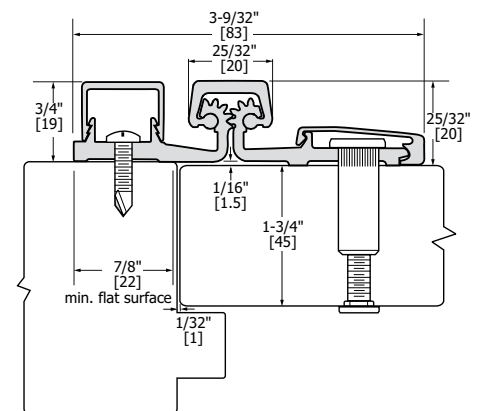
- Material: Aluminum 6063-T6
Clearance: 1/32" (1 mm) minimum recommended between doors
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
 - Custom lengths available
- Door Reinforcement: None required
- Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - Bi-fold applications
 - Security moldings
- Notes: See additional fire rating details on page 3



780-157 | 780-157HD Standard Duty or Heavy Duty Full Surface Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

- Material: Aluminum 6063-T6
Clearance: 1/32" (1 mm) minimum recommended for hinge side plus standard lockside clearance
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
 - Custom lengths available
- Door Reinforcement: None required
- Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel
- Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - For surface applications where frame face dimension is limited
 - Security moldings
- Notes: See additional fire rating details on page 3





ROTON CONTINUOUS GEARED HINGES

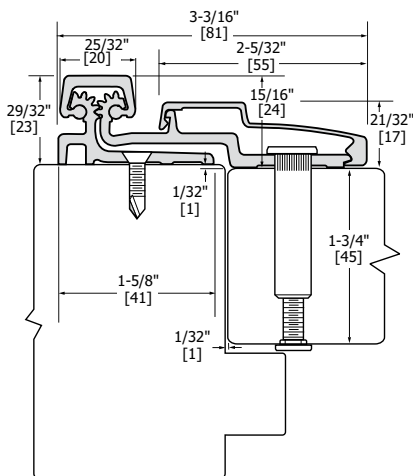


780-210 | 780-210HD Standard Duty or Heavy Duty Full Surface Hinge

(Left Hand Shown)

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

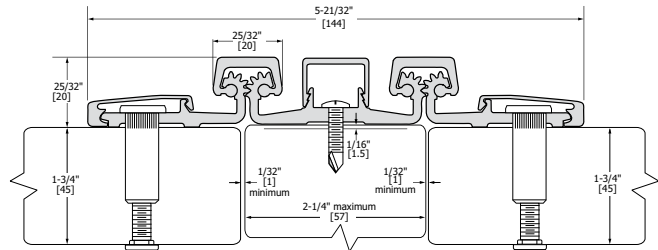
Material:	Aluminum 6063-T6
Clearance:	1/32" (1 mm) minimum recommended for hinge side plus standard lockside clearance. 1-5/8" (41 mm) minimum frame face required plus 3/16" (5 mm) rotational clearance.
Fasteners:	Dril-Kwik® screws and sex bolts
Length Options:	<ul style="list-style-type: none"> Standard sizes include <ul style="list-style-type: none"> 79" (2007 mm) 83" (2108 mm) 85" (2159 mm) 95" (2413 mm) 119" (3023 mm) Custom lengths available
Door Reinforcement:	None required
Frame Reinforcement:	None required to 200 lbs, heavier weight use 16 gauge channel
Optional Fire Rating:	Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:	<ul style="list-style-type: none"> Can be used with any door and frame material Security molding 1/32" (1 mm) inset
Notes:	See additional fire rating details on page 3



780-257HD Heavy Duty Full Surface Hinge

Heavy duty for high frequency doors or heavy,
medium frequency doors.

Material:	Aluminum 6063-T6
Clearance:	1/32" (1 mm) minimum recommended between mullion and door plus standard lockside clearance. 7/8" (22 mm) to 21/4" (57 mm) mullion width.
Fasteners:	Dril-Kwik® screws and sex bolts
Length Options:	<ul style="list-style-type: none"> Standard sizes include <ul style="list-style-type: none"> 79" (2007 mm) 83" (2108 mm) 85" (2159 mm) 95" (2413 mm) 119" (3023 mm) Custom lengths available
Door Reinforcement:	None required
Frame Reinforcement:	None required to 200 lbs, heavier weight use 16 gauge channel
Optional Fire Rating:	Up to 3 hr. metal and 90 min. wood composite (with studs)
Special Features:	<ul style="list-style-type: none"> Double hinge for hanging two entrance doors from a fixed mullion Security moldings 1/16" (1.5 mm) inset
Notes:	See additional fire rating details on page 3



ROTON CONTINUOUS GEARED HINGES



780-045 | 780-045HD Standard Duty or Heavy Duty Half Surface Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

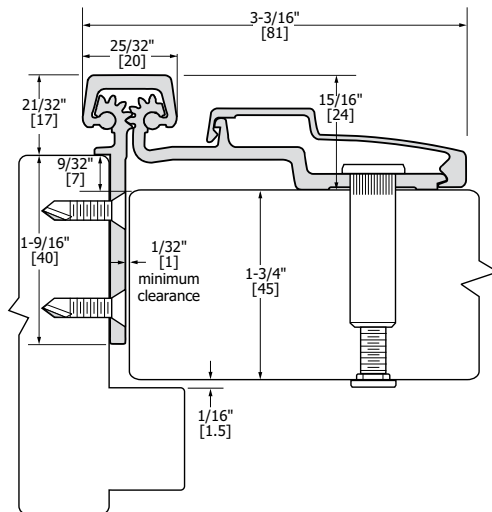
- Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
 - Custom lengths available

- Door Reinforcement: None required
Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

- Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
 - Frame leaf alignment rib for proper hinge location
 - Security molding
 - 9/32" (7 mm) inset

- Notes: See additional fire rating details on page 3



780-046 | 780-046HD Standard Duty or Heavy Duty Half Surface Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

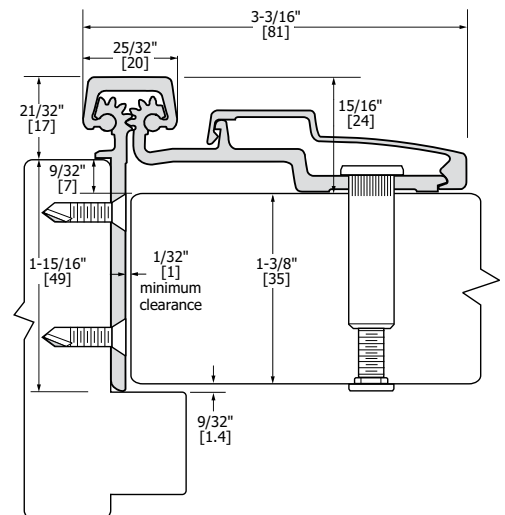
- Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
 - Custom lengths available

- Door Reinforcement: None required
Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel

- Optional Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)

- Special Features:
 - Complete frame rabbet coverage for 1-3/4" (45 mm) frames, with 1-3/8" (35 mm) doors
 - Frame leaf alignment rib for proper hinge location
 - Security molding
 - 9/32" (7 mm) inset

- Notes: See additional fire rating details on page 3





ROTON CONTINUOUS GEARED HINGES



780-053 | 780-053HD Standard Duty or Heavy Duty Half Surface Hinge

(Left Hand Shown)

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum
recommended hinge side
plus standard lockside
clearance

Fasteners: Dril-Kwik® screws and
sex bolts

Length Options:

- Standard sizes include
79" (2007 mm)
83" (2108 mm)
85" (2159 mm)
95" (2413 mm)
119" (3023 mm)
- Custom lengths
available

Door
Reinforcement: None required

Frame
Reinforcement: None required to 200 lbs,
heavier weight use 16
gauge channel

Optional
Fire Rating: Up to 3 hr. metal and 90
min. wood composite
(with studs)

Special Features:

- Frame leaf alignment rib
for proper hinge location
- Security molding
- 1/8" (3 mm) inset

Notes: See additional fire rating
details on page 3



780-054 | 780-054HD Standard Duty or Heavy Duty Half Surface Hinge

(Left Hand Shown)

Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum
recommended hinge side
plus standard
lockside clearance

Fasteners: Dril-Kwik® screws and
sex bolts

Length Options:

- Standard sizes include
79" (2007 mm)
83" (2108 mm)
85" (2159 mm)
95" (2413 mm)
119" (3023 mm)
- Custom lengths
available

Door
Reinforcement: None required

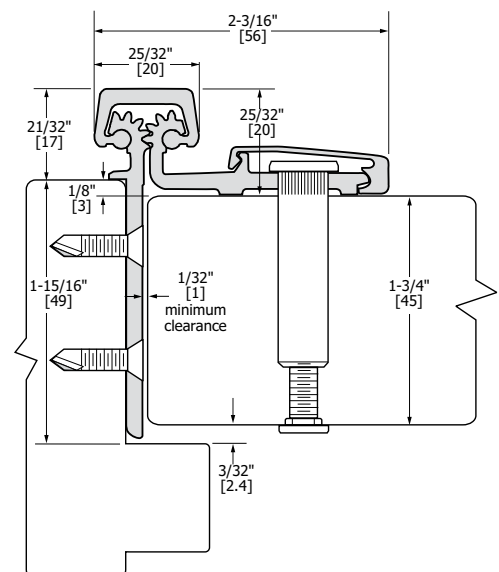
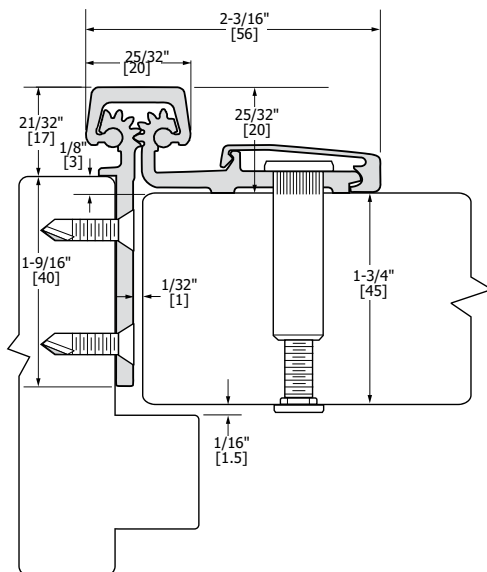
Frame
Reinforcement: None required to 200 lbs,
heavier weight use 16
gauge channel

Optional
Fire Rating: Up to 3 hr. metal and 90
min. wood composite
(with studs)

Special Features:

- Frame leaf alignment rib
for proper hinge location
- Security molding
- 1/8" (3 mm) inset

Notes: See additional fire rating
details on page 3



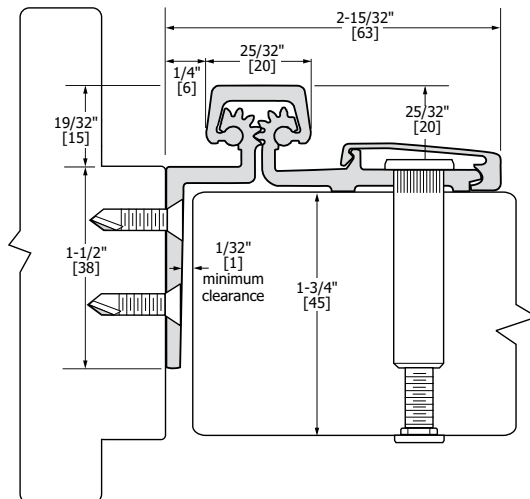
ROTON CONTINUOUS GEARED HINGES



780-155 | 780-155HD Standard Duty or Heavy Duty Half Surface Hinge

(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

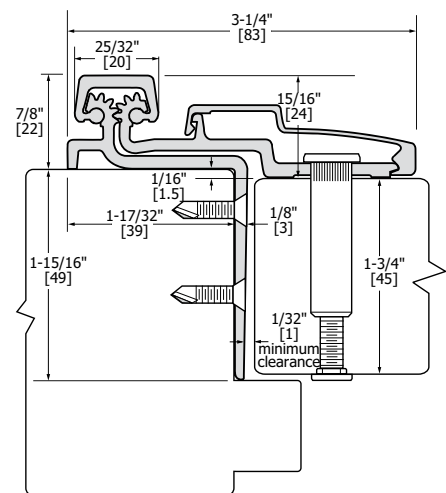
- Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include 79" (2007 mm) 83" (2108 mm) 85" (2159 mm) 95" (2413 mm) 119" (3023 mm)
 - Custom lengths available
- Door Reinforcement: None required
Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel
- Special Features:
 - For center hung and double egress conversions
 - Security molding



780-211HD Heavy Duty Half Surface Hinge

(Left Hand Shown)
Heavy duty for high frequency doors or heavy,
medium frequency doors.

- Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum recommended hinge side plus standard lockside clearance
- Fasteners: Dril-Kwik® screws and sex bolts
- Length Options:
 - Standard sizes include 79" (2007 mm) 83" (2108 mm) 85" (2159 mm) 95" (2413 mm) 119" (3023 mm)
 - Custom lengths available
- Door Reinforcement: None required
Frame Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel
- Fire Rating: Up to 3 hr. metal and 90 min. wood composite (with studs)
- Special Features:
 - Frame leaf wrap-around reinforcement for damaged frames
 - Security molding
 - 1/16" (1.5 mm) inset





ROTON CONTINUOUS GEARED HINGES



780-213 | 780-213HD Standard Duty or Heavy Duty Half Surface Hinge

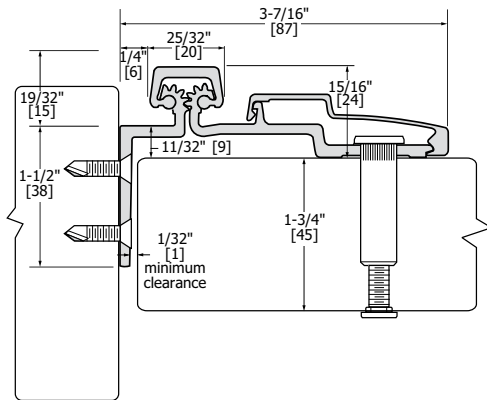
(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum
recommended hinge side
plus standard
lockside clearance
Fasteners: Dril-Kwik® screws and
sex bolts
Length Options:

- Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
- Custom lengths
available

Door
Reinforcement: None required
Frame
Reinforcement: None required to 200 lbs,
heavier weight use 16
gauge channel
Special Features:

- For center hung door
where large edge radii
or finger guards require
a long reach
- Security molding



780-259 | 780-259HD Standard Duty or Heavy Duty Half Surface Hinge

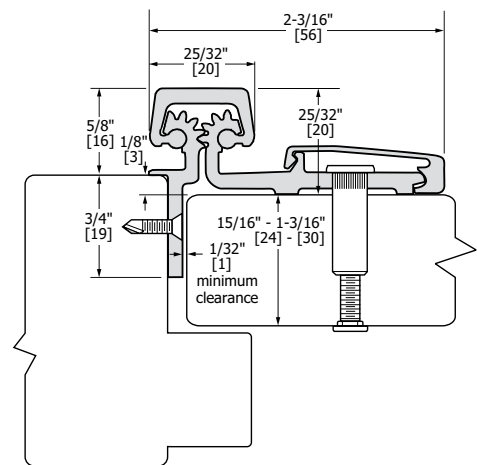
(Left Hand Shown)
Standard duty for medium frequency doors.
Heavy duty for high frequency doors or heavy,
medium frequency doors.

Material: Aluminum 6063-T6
Clearance: 5/32" (4 mm) minimum
recommended hinge side
plus standard
lockside clearance
Fasteners: Dril-Kwik® screws and
sex bolts
Length Options:

- Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
- Custom lengths
available

Door
Reinforcement: None required
Frame
Reinforcement: None required to 200 lbs,
heavier weight use 16
gauge channel
Special Features:

- Frame leaf alignment rib
for proper hinge location
- For custom applications
with thinner doors
- Security molding
- 1/8" (3 mm) inset





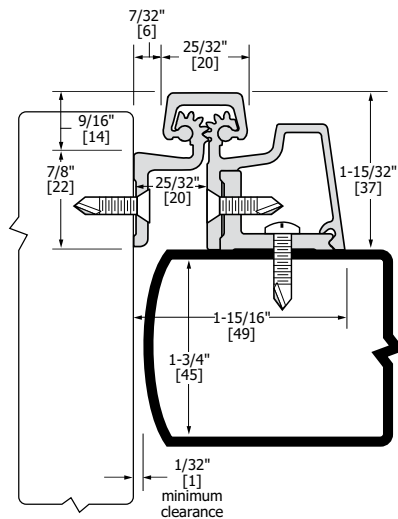
780-300HD

Heavy Duty Half Surface Hinge

(Left Hand Shown)

Heavy duty for high frequency, center hung doors or heavy, medium frequency, center hung doors.

- Material: Aluminum 6063-T6
- Clearance: 1/32" (1 mm) minimum recommended between door and frame
- Fasteners: Dril-Kwik® screws
- Length Options:
- Standard sizes include
 - 79" (2007 mm)
 - 83" (2108 mm)
 - 85" (2159 mm)
 - 95" (2413 mm)
 - 119" (3023 mm)
 - Custom lengths available
- Door Reinforcement: None required to 200 lbs, heavier weight use 16 gauge channel
- Special Features:
- For center hung door application
 - 3/4" (19 mm) minimum inset





ROTON CONTINUOUS GEARED HINGES

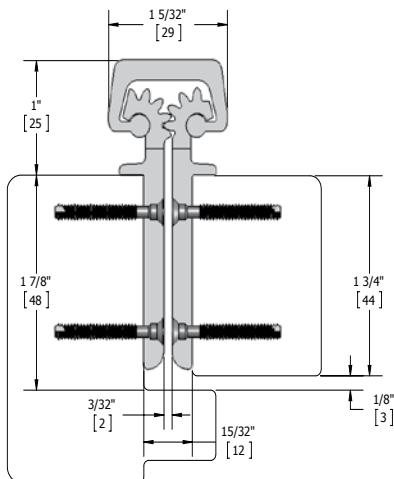


1200-600XHD

Extra Heavy Duty Concealed Leaf Hinge

Strong enough to swing doors heavier than 600 lbs, wider than four feet, and taller than ten feet. Extra heavy duty for heavy, high frequency doors or extremely heavy, low frequency doors. For doors 1-3/4" (45 mm) to 2-3/8" (60 mm) thick.

Material:	Aluminum 6063-T6
Clearance:	15/32" (12 mm) hinge side plus standard lockside clearance
Fasteners:	1/4"-20 Dril-Kwik® screws or optional 1/4-14 x 11/2" wood screws
Length Options:	<ul style="list-style-type: none"> • Standard sizes include 83" (2108 mm) • 95" (2413 mm) • 119" (3023 mm) • Custom lengths available
Door Reinforcement:	None required to 200 lbs, use 16 gauge channel at higher weight
Frame Reinforcement:	Frame reinforcement recommended for doors in excess of 200 lbs and 3 feet in width
Special Features:	<ul style="list-style-type: none"> • Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL") • Frame and door leaf alignment ribs for proper hinge and door location



1200-650XHD

Extra Heavy Duty Concealed Leaf Hinge

Strong enough to swing doors heavier than 600 lbs, wider than four feet, and taller than ten feet. Extra heavy duty for heavy, high frequency doors or extremely heavy, low frequency doors. For doors thicker than 2-3/8" (60 mm).

Material:	Aluminum 6063-T6
Clearance:	15/32" (12 mm) hinge side plus standard lockside clearance
Fasteners:	1/4"-20 Dril-Kwik® screws or optional 1/4-14 x 11/2" wood screws
Length Options:	<ul style="list-style-type: none"> • Standard sizes include 83" (2108 mm) • 95" (2413 mm) • 119" (3023 mm) • Custom lengths available
Door Reinforcement:	None required to 200 lbs, use 16 gauge channel at higher weight
Frame Reinforcement:	Frame reinforcement recommended for doors in excess of 200 lbs and 3 feet in width
Special Features:	<ul style="list-style-type: none"> • Lead lined model for hospital x-ray room doors with double row of screws to straddle lead (Specify "LL") • Frame and door leaf alignment ribs for proper hinge and door location

