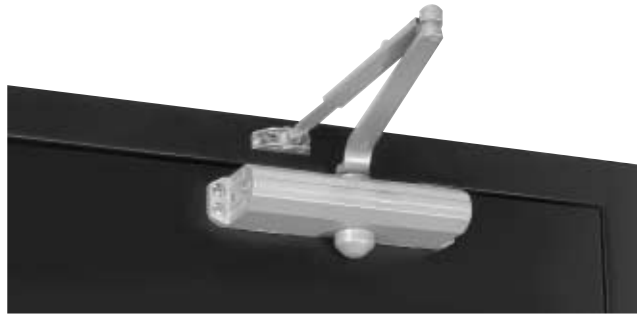


APPLICATIONS

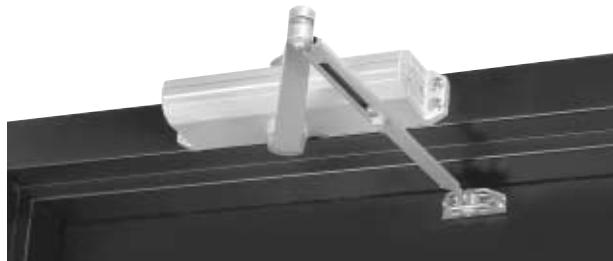


Regular Arm

This is the only pull-side application where a double lever arm is used. It is the most power-efficient application for a door closer. Sufficient frame, door and/or ceiling clearance must be considered.

*Non-hold open arm shown.

Since the arm assembly projects directly out from the frame, this application may present an aesthetics issue or be prone to vandalism.



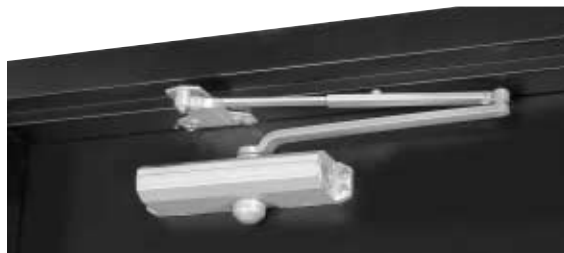
Top Jamb

For efficiency reasons this application provides the best alternative to the regular arm application. There must be sufficient frame face and/or ceiling clearance for this application. It requires a top rail on the door of just 2-1/8" (54mm). This application provides the best door control for doors in exterior walls that swing out of a building.

*Non-hold open arm shown.

The entire door closer and arm assembly project from the frame, similar to the regular arm application, where the matters of appearance and malicious abuse can be of concern.

Consideration must be given to depth of the frame reveal.



Parallel Arm

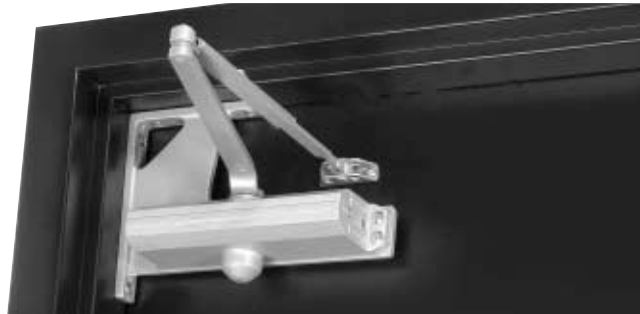
This application provides the most appealing design appearance for a surface-mounted door closer having a double lever arm. This may also be beneficial in vandalism-prone areas. It is on the push side of the door and the arm assembly extends almost parallel to the door. In the closed position, there is very little or no hardware projecting beyond the frame face in most situations.

*Non-hold open arm shown.

Due to the geometry of the arm it is approximately 25% less power-efficient than a regular arm application.

The entire closer and arm assembly are mounted below the frame stop, requiring a top rail clearance on the door of between 5-3/8" (137mm), when using a low-profile arm (1680 series), to 6-3/8" (162mm), when using the hold open arm.

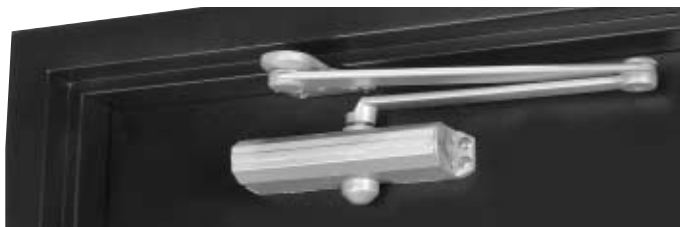
APPLICATIONS



Corner Bracket

This application can be used where top jamb and parallel arm application will not accommodate the door and frame conditions. Requires minimal top rail on the door; however, vertical clearance to the floor within the door opening should be checked to ensure code compliance.

The close proximity, for this application, of the door closer to the door's pivot point reduces the door closer's power efficiency by approximately 25% when compared to a regular arm. The projection of the arm from the door face might pose questions regarding design parameters or environment.

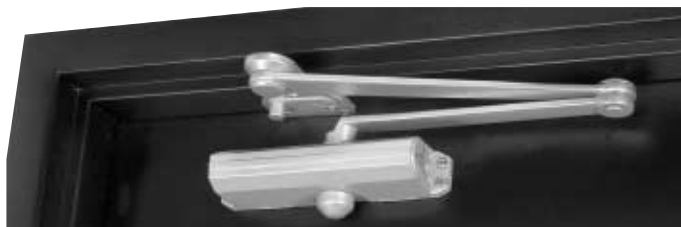


Parallel Rigid Arm

An enhanced variation of the standard parallel arm assembly that is intended for use in heavy traffic areas where auxiliary door stops are installed.

Hold Open arm available - specify hand when ordering

*Non-hold open arm shown.



CloserPlus® Arm

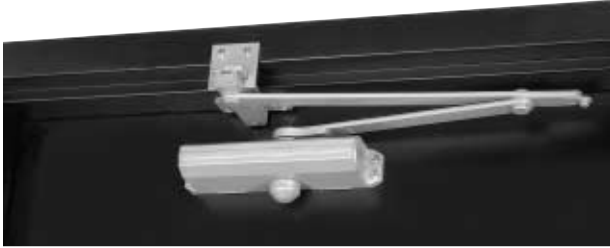
Similar to the Parallel Rigid arm, this arm incorporates a stop at the arm's soffit plate to dead stop the door at a predetermined degree of door swing between 85° and 110°, in 5° increments. Prior to dead stop the door closer's backcheck feature slows the door speed to reduce the impact of the stop action.

CloserPlus Arm is intended for use where an auxiliary door stop cannot be utilized and no more than moderate abuse is anticipated. Where more extreme conditions are expected, use of a Unitrol® arm is recommended.

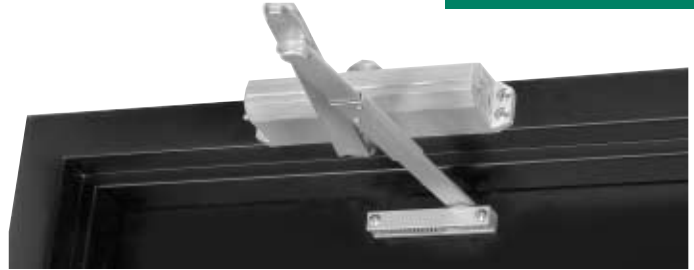
Available with or without hold open. (Hold open is adjustable)

*Non-hold open arm shown.

APPLICATIONS



Parallel

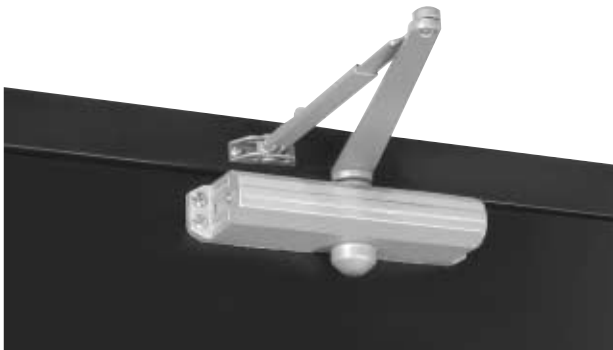


Top Jamb

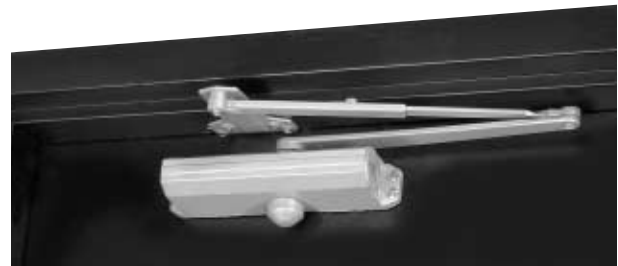
Unitrol® Arm

Can be used for either parallel arm or top jamb applications. *Unitrol* arms combine the features of a double lever arm overhead door stop/holder with the backcheck feature of the door closer to reduce door stopping shock loads to a minimum. They use a compression spring buffer at the soffit plate/arm shoe that will absorb 30 lbs. of force, 5° prior to the door's dead stop. Coupled with the door closer's backcheck feature you can achieve the most controlled stop available with a surface door closer.

For parallel arm applications there are three different length arm assemblies. Each length is designed for a specific range of door widths, to provide precise door control. This further lessens the dead stop impact on the door's hinges/pivots.



Regular Arm



Parallel Arm

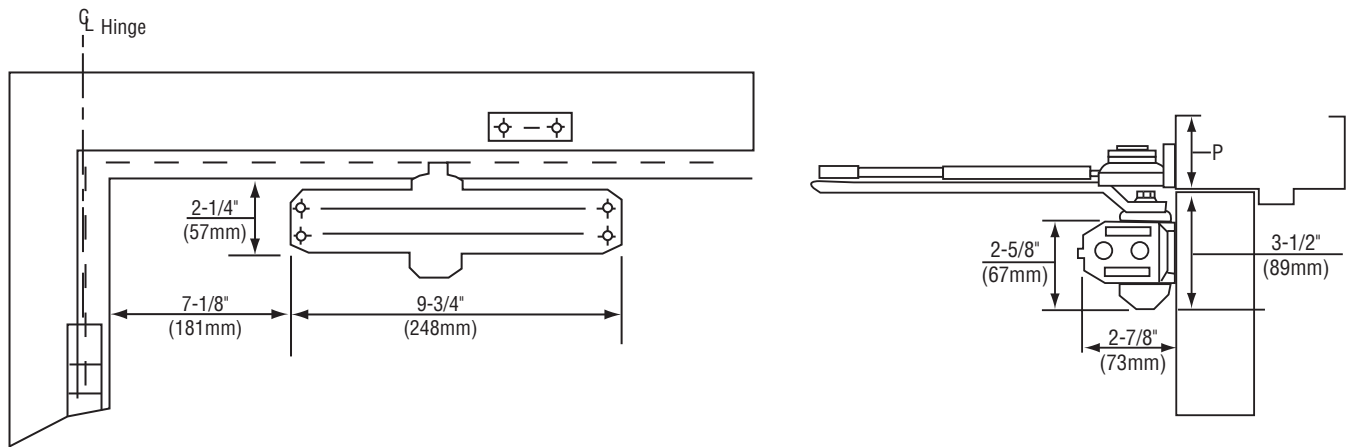
Regular Arm Allows closer to be installed where there is as little as 1" (25mm) of frame face or ceiling clearance.

Parallel Arm Allows closer to be installed 1/2" (13mm) higher up on door than standard parallel arm application.

Low-Profile Arm

Supplied with 1680,1681(BF) series door closers for non-hold open installations only. Low-profile arms have a reduced height elbow joint and a straight main arm. This enables the door closer to be installed in less vertical space.

REGULAR ARM



* For doors opening up to 100°

Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Maximum Door Size Inches (cm)		Catalog Number Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open
32" (81)	-	1602BC	1602BCH
38" (97)	30" (76)	1603BC	1603BCH
42" (107)	36" (91)	1604BC	1604BCH
48" (122)	42" (107)	1605BC	1605BCH
-	48" (122)	1606BC	1606BCH

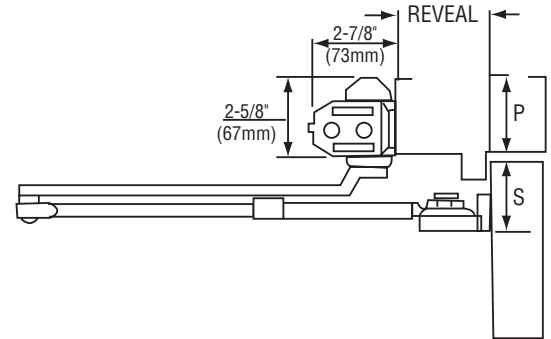
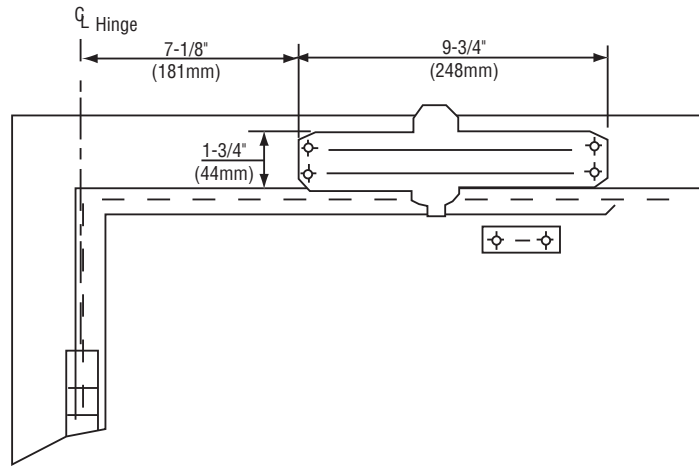
Dimensional Information Shown In Inches/mm		
P Minimum Ceiling Clearance		
Non-Hold Open		Hold Open
1600BC/1601	1680BC/1681	1-5/8" (41)
1-1/2" (38)	1" (25)	

Note:

1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.

TOP JAMB



* For doors opening up to 100°

Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Maximum Door Size Inches (cm)		Catalog Number Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open
32" (81)		1602BC J1602BC J1682BC†	1602BCH J1602BCH
38" (97)	30" (76)	1603BC J1603BC J1683BC†	1603BCH J1603BCH
42" (107)	36" (91)	1604BC J1604BC J1684BC†	1604BCH J1604BCH
48" (122)	42" (107)	1605BC J1605BC J1685BC†	1605BCH J1605BCH
-	48" (122)	1606BC J1606BC J1686BC†	1606BCH J1606BCH

Dimensional Information Shown In Inches/ mm						
P Minimum Ceiling Clearance		S Minimum Top Rail Clearance				
Without Drop Plate	With Drop Plate	Without Drop Plate	With 1687 Drop Plate		With 1688 Drop Plate	
1600BC/ 1601	1600BC/1601 1680BC/1681	1600BC/ 1601	1600BC 1601	1680BC 1681	1600BC/ 1601	1680BC/ 1681
2-5/8" (67)	1-3/4" (44)	1-7/8" (48)	2-3/4" (70)	2-1/4" (57)	3-3/8" (86)	2-7/8" (73)

Note:

1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.

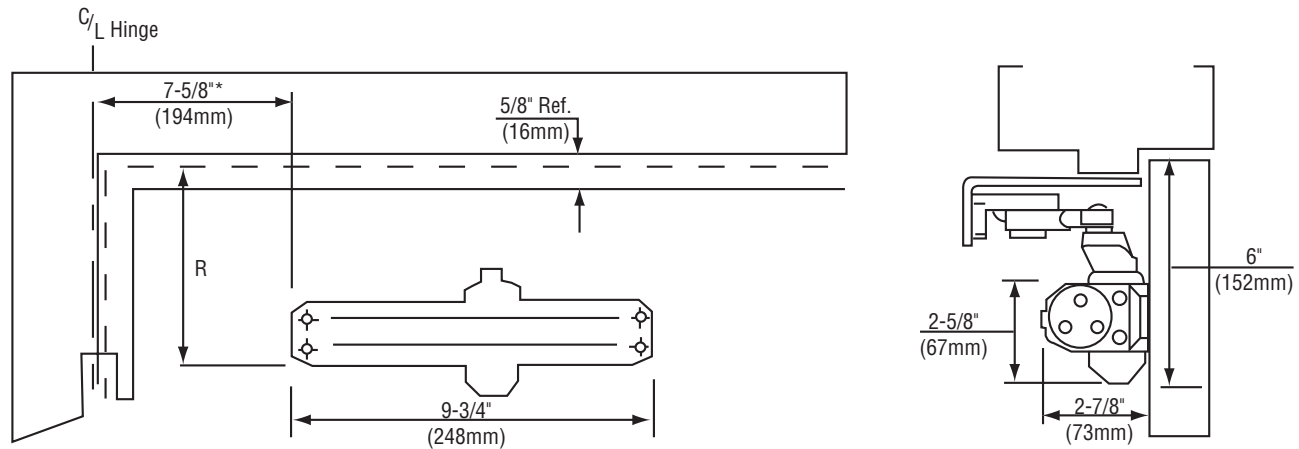
† **Narrow-Profile Arm Closers** can only be installed with 1687/1688 drop plate.

Non-Hold Open- Use standard 1600 closer for frame reveals between 0"- to 3" (0-76mm). Use Top Jamb J1600 closer for frame reveals from 3" to 7" (76 to 178mm).

Hold Open Use standard 1600H closer for frame reveals between 0" to 3" (0-76mm). Use top jamb J1600H closer for frame reveals from 2-3/4" to 6-3/4" (70 to 171mm).

Closer Series	Reveal Inches/mm
1600	0 to 3" (0 to 76)
J1600	2-7/8" to 7" (73 to 178)
1600H	0 to 2-3/4" (0 to 70)
J1600H	2-3/4" to 6-3/4" (70 to 171)

PARALLEL ARM



* For doors opening up to 100°

Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Maximum Door Size Inches (cm)		Catalog Number Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open
30" (76)	-	1602BC	1602BCH
36" (91)	30" (76)	1603BC	1603BCH
42" (107)	36" (91)	1604BC	1604BCH
48" (122)	42" (107)	1605BC	1605BCH
-	48" (122)	1606BC	1606BCH

Minimum Top Rail of Door with 5/8" (16mm) frame stop			
Without Drop Plate Inches(mm)		With Drop Plate Inches(mm)	
1600BC/ 1601	1680BC/ 1681	1600BC/ 1601	1680BC/ 1681
5" (127)	4" (102)	3-1/8" (79)	2-1/8" (54)

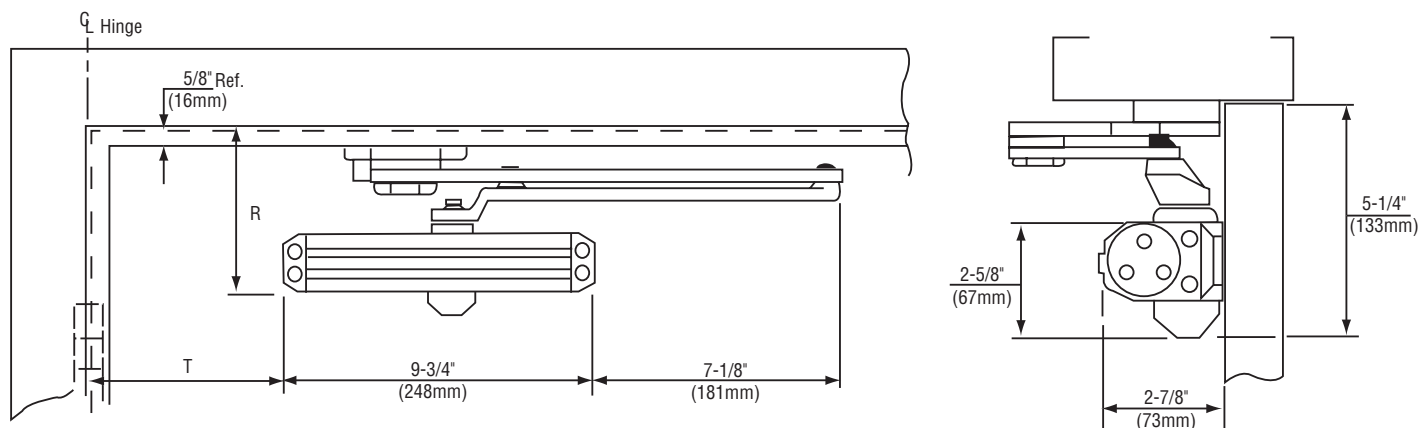
Note:

This door sizing information also applies to corner bracket mounted closers.

1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.

CLOSERPLUS® ARM PARALLEL RIGID ARM



* For doors opening up to 100°
Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Door Size Wood or Metal Inches (cm)		CloserPlus® Catalog Number Sized Closers		Parallel Rigid Catalog Number Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
28"-32" (71-81)	-	CLP1602BC	CLP1602BCT	PR1602BC	PR1602BCH
33"-36" (84-91)	28"-32" (71-81)	CLP1603BC	CLP1603BCT	PR1603BC	PR1603BCH
37"-42" (94-107)	33"-36" (84-91)	CLP1604BC	CLP1604BCT	PR1604BC	PR1604BCH
43"-48" (109-122)	37"-42" (94-107)	CLP1605BC	CLP1605BCT	PR1605BC	PR1605BCH
-	43"-48" (109-122)	CLP1606BC	CLP1606BCT	PR1606BC	PR1606BCH

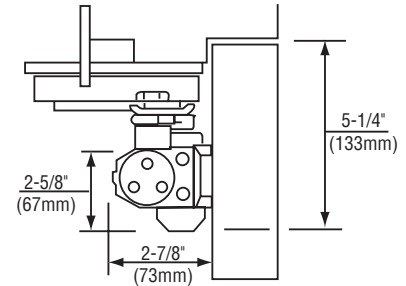
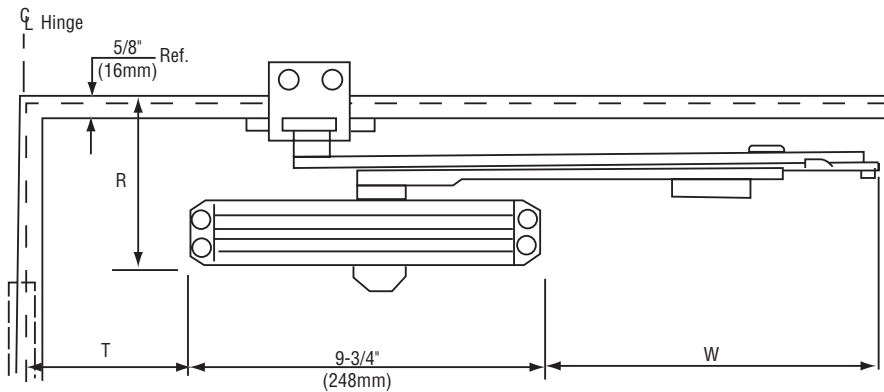
Note:

1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.

R Minimum Top Rail of Door		T Template Position For Hold Open or Stop at listed Angle					
Without Drop Plate(mm)	With Drop Plate(mm)	85°	90°	95°	100°	105°	110°
4-1/2" (114)	2-5/8" (67)	8-3/4" (222)	8" (203)	7-1/4" (184)	6-5/8" (168)	6" (152)	5-3/8" (137)

PARALLEL UNITROL® ARM



* For doors opening up to 100°

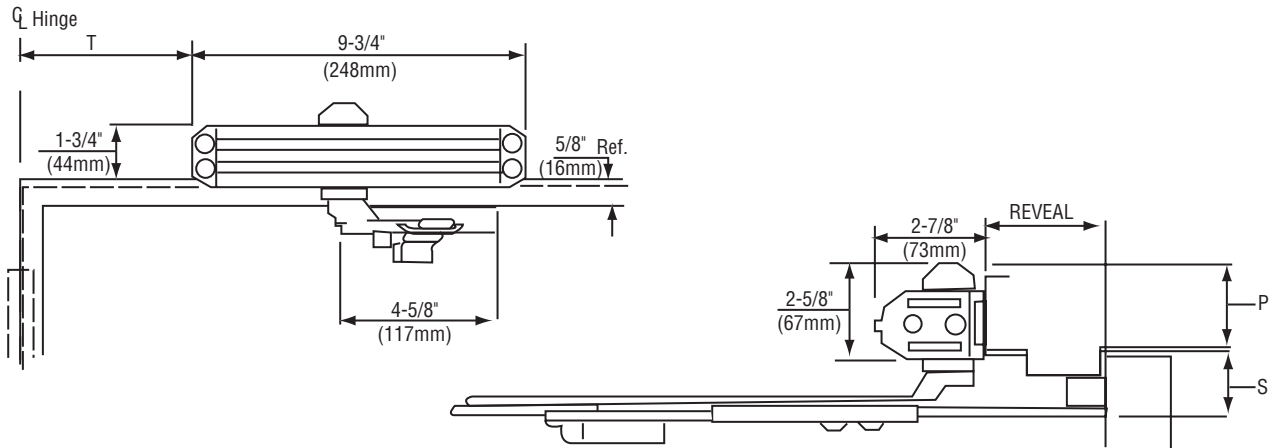
Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Door Width Inches (cm)	R Minimum Top Rail of Door		T Template Position For Hold Open or Stop at listed Angle						W Arm Extension Beyond Closer
	Without Drop Plate(mm)	With Drop Plate(mm)	85°	90°	95°	100°	105°	110°	
28"-32" (71- 81)	4-1/2" (114)	3-1/8" (79)	8-3/8" (213)	7-3/4" (197)	7-1/8" (181)	6-3/4" (171)	6-1/2" (165)	6" (152)	7-1/8" (181)
33"-41" (84- 104)			10-3/4" (273)	10 (254)	9-1/2" (241)	9" (229)	8-1/2" (216)	8" (203)	8-5/8" (219)
42"-48" (107- 122)			13" (330)	12-1/4" (311)	11-1/2" (292)	11" (279)	10-1/2" (267)	10" (254)	10-1/8" (257)

Door Size Wood or Metal Inches (cm)		Unitrol Catalog Number		
Interior	Exterior	Non-Hold Open	Hold Open	x Specify Door Width
28"-32" (71-81)	-	UNI1602BC	UNI1602BCH	
33"-36" (84-91)	28"-32" (71-81)	UNI1603BC	UNI1603BCH	
37"-41" (94- 104)	33"-36" (84-91)	UNI1604BC	UNI1604BCH	
42"-48" (107-122)	37"-41" (94-104)	UNI1605BC	UNI1605BCH	
-	42"-48" (107-122)	UNI1606BC	UNI1606BCH	

Note:
1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.



* For doors opening up to 100°

Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

P Minimum Ceiling Clearance		S Minimum Top Rail Clearance		T Template Position For Hold Open or Stop at Listed Angle					
Without Drop Plate(mm)	With Drop Plate(mm)	Without Drop Plate(mm)	With Drop Plate(mm)	85°	90°	95°	100°	105°	110°
2-5/8" (67)	1-3/4" (44)	2-3/4" (70)	3-5/8" (92)	8-7/8" (225)	8-1/8" (206)	7-1/2" (191)	7-1/8" (181)	6-1/2" (165)	6-1/4" (159)

Note:

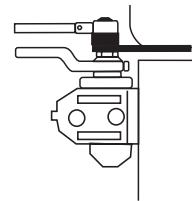
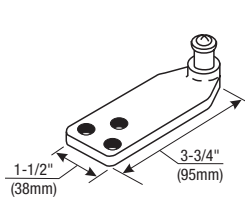
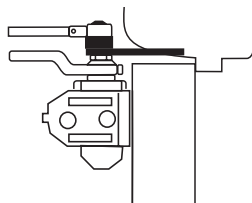
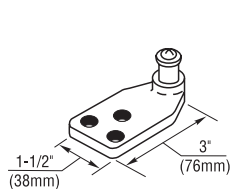
1601 Door Closers are adjustable for sizes 3 through 6, and are shipped set at size 4.

1601BF Door Closers are adjustable for sizes 1 through 4, shipped set at size 2 and can be adjusted to conform to ADA opening force requirements.

Door Size Wood or Metal Inches (cm)		Unitrol Catalog Number		
Interior	Exterior	Non-Hold Open	Hold Open	x Specify Frame Reveal
28"-34" (71-86)	-	UNIJ1602BC	UNIJ1602BCH	
35"-42" (89-107)	28"-32" (71-81)	UNIJ1603BC	UNIJ1603BCH	
37"-41" (94-104)	33"-36" (84-91)	UNIJ1604BC	UNIJ1604BCH	
42"-48" (107-122)	37"-41" (94-104)	UNIJ1605BC	UNIJ1605BCH	
-	42"-48" (107-122)	UNIJ1606BC	UNIJ1606BCH	

REGULAR ARM

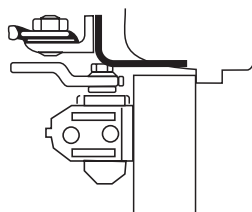
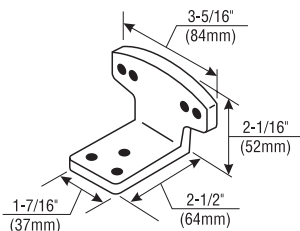
Brackets for Non-Hold Open Arms



Molded/Bull Nose Trim - #2403 Bracket: For use where the door frame has molded or bull nose trim which will not accept a standard non-hold open shoe. The bracket is mortised into the frame rabbet, and projects beyond the face of the frame. It will accommodate a frame rabbet up to 2" (51mm) deep.

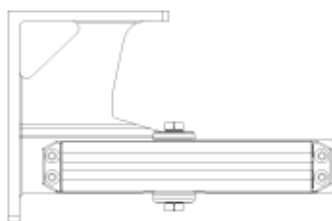
Molded/Bull Nose Trim - #2403-3/4 Bracket: This bracket is similar to-but longer than the 2403 bracket. It is designed to accommodate frame rabbets from 2" to 2-7/8" (51mm to 73mm) deep.

Brackets for Hold Open Arms



Molded/Bull Nose Trim - #80 Bracket: For use where the door frame has molded or bull nose trim which will not accept a standard hold open shoe. It is mortised into the frame rabbet, and projects beyond the face of the frame. It will accommodate a rabbet up to 2" (51mm) deep. This bracket is used in combination with the standard hold open mounting shoe.

Corner Brackets for Closer Mounting

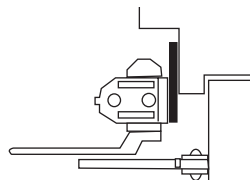
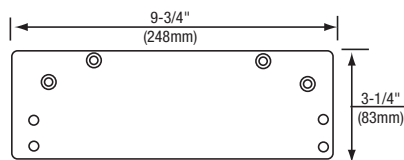


For Closer sizing information, use the Parallel Arm sizing chart on page 14.

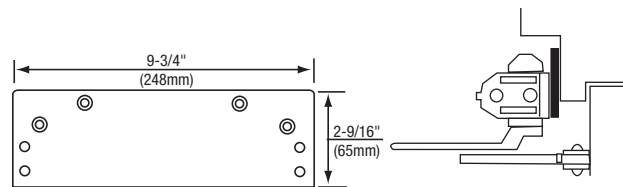
Mounting Opposite Hinge Side - #1647 Corner Bracket: For use where it is desired to mount the closer regular arm on the opposite to hinge side of the door. Can also be used to clear an overhead door holder.

TOP JAMB

Closer Mounting Plates



Overhead Door Holder - #1688 Drop Plate: For use where a overhead door holder prevents normal top jamb mounting. This places the center line of the arm mounting screws at 3-1/2" (89mm) from the top of the door.



Low Ceiling Clearance - Overhead Door Holder - #1687 Drop Plate: For use where the ceiling clearance is between 1-3/4" and 2-5/8" (44mm and 67mm). Or for use where an overhead door holder prevents normal top jamb mounting. This places the centerline of the arm mounting screws at 2-1/8" (54mm) from the top of door.

Closer Mounting Plate

PARALLEL ARM

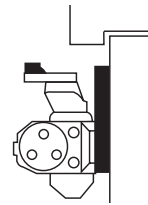
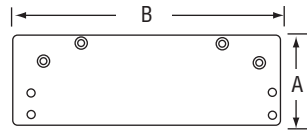
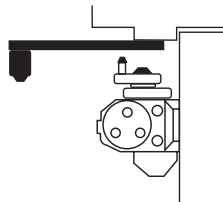
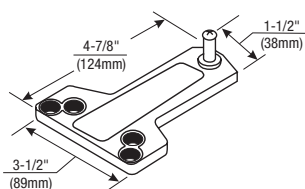


Plate No.	Dimensions	
	A (width)	B (length)
1688	3-1/4" (83mm)	9-3/4" (248mm)
1688C	4-1/8" (105mm)	9-7/8" (251mm)

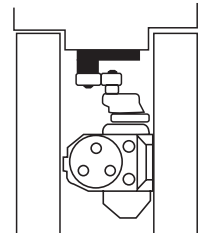
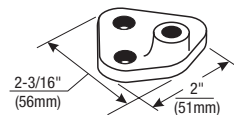
Note: #1688C - To be used when optional cover is specified.

Narrow Top Rail - #1688 Drop Plate: For use where a narrow top rail prevents the closer from being mounted directly to the door surface. This drop plate can be used to mount a closer on a top rail as narrow as 3-1/8" (79mm) in height for 1600BC or 2-1/8" (54mm) for 1680BC.

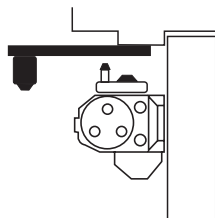
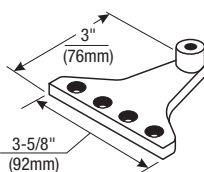
Brackets for Non-Hold Open Arms



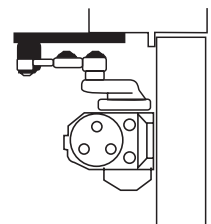
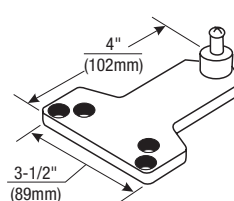
Standard Installation - #1618A Soffit Plate: This soffit plate is supplied standard with parallel arm closers. It can be mounted where the frame soffit is as narrow as 1" (25 mm). **Specify 1618A-SS for stainless steel soffit plate.** With Series P1600SS closers, a 1618A-SS soffit plate fabricated of stainless steel, is supplied standard.



Mounting Between Doors - #2018 Soffit Bracket: For use where insufficient space between companion doors does not permit use of other soffit plates. This bracket permits mounting of the closer between doors with as little as 3" (76mm) of header space. Permits closer arm to clear up to 5/8" (16mm) high stop.



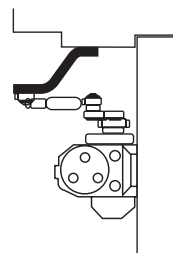
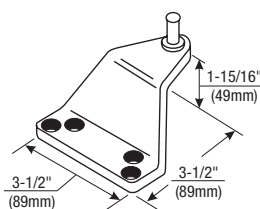
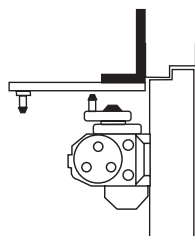
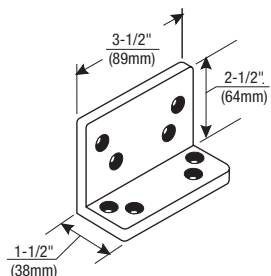
Narrow Frame/Removable Stop - #2018B Soffit Plate: For use where a narrow frame or frame with removable stop does not permit use of the standard soffit plate. This soffit plate may be mounted on the frame soffit or the frame rabbet where the stop does not exceed 5/8" (16mm) in height. All of the screw holes are in a straight line, requiring as little as 1-1/4" (32mm) of frame reveal to mount bracket and maintain good closer arm geometry. Where the frame soffit is as wide as 2" (51mm), this soffit plate may be used to clear weather-stripping that is up to 1-3/8" (35mm) wide and 5/8" (16mm) in height.



Blade/Applied Stop - #2018D Soffit Plate: For use where a blade or applied stop does not permit installation of the standard soffit plate. Mounts to either the frame soffit or rabbet. Since this soffit plate projects 7/8" (22mm) less than a standard soffit plate, it requires a minimum frame reveal of 1-1/2" (38mm). Permits closer to clear up to a 5/8" (16mm) high frame stop.

PARALLEL ARM

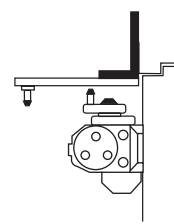
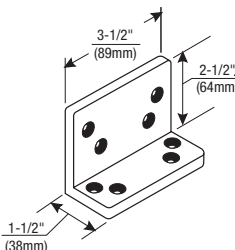
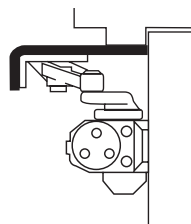
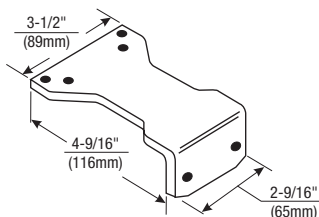
Brackets for Non-Hold Open Arms (continued)



Flush Transom - #2022 Angle Bracket: For use where rabbeted or flush transom conditions prevent installation of a soffit plate. Used in combination with the 1618A soffit plate, or may be used in combination with the 2018S soffit plate when it is necessary for the closer arm to clear a separate overhead door holder.

Extra-clearance - #2018S Offset Soffit Plate: For use where the need for additional clearance prevents use of the standard soffit plate. This plate mounts to the frame soffit to provide up to 2" (51mm) of clearance when a separate overhead door holder is used. Standard mounting requires a 2-5/8" (67mm) wide frame soffit. It may also be used where unusually high frame stops or weather-stripping prevent the use of other soffit plates.

Brackets for Hold Open Arms



Parallel Hold Open - #1628H Adapter Plate: This Adapter Plate is supplied standard with all parallel arm hold open closers. It can also be used to convert regular arm or top jamb hold open arms to parallel arm installation. It can be mounted where the frame soffit is as narrow as 1" (25mm).

Flush Transom Hold Open - #2022 Angle Bracket: For use where rabbeted or flush transom conditions prevent installation of the standard 1628H hold open adapter plate. It is used in combination with the 1628H adapter plate.

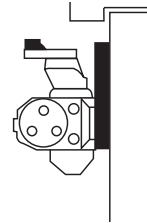
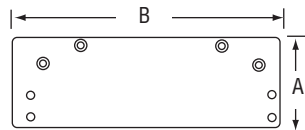
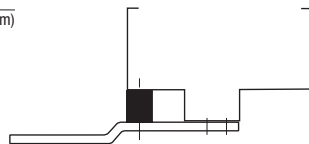
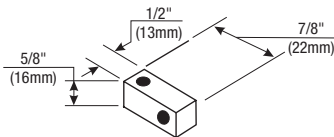
**PARALLEL
RIGID ARM**
Closer Mounting Plate


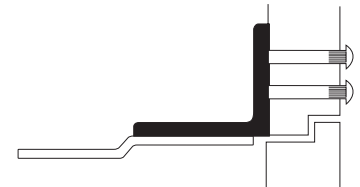
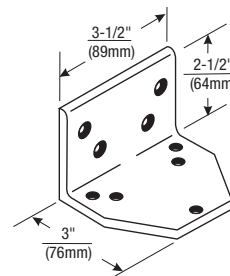
Plate No.	Dimensions	
	A (width)	B (length)
1688	3-1/4" (83mm)	9-3/4" (248mm)
1688C	4-1/8" (105mm)	9-7/8" (251mm)

Note: #1688C - To be used when optional cover is specified.

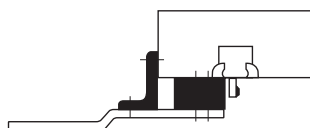
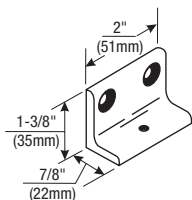
Narrow Top Rail - #1688 Drop Plate: For use where a narrow top rail prevents the closer from being mounted directly to the door surface. This drop plate can be used to mount a closer on a top rail as narrow as 2-5/8" (67mm) in height.

Brackets for Non-Hold Open Arms & Hold Open Arms


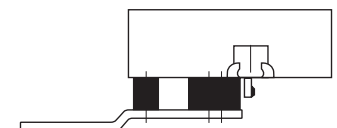
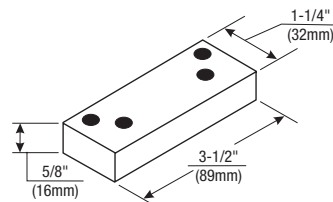
Standard - #2019S Spacer Block: For use where a narrow frame soffit does not provide adequate support for the soffit plate. Supplied as standard with all parallel rigid arm closers. For use on frame with either 1/2" (13mm) or 5/8" (16mm) high frame stop.



Flush Rabbeted Transom - #2019L Angle Bracket: For use where flush transom conditions prevent mounting of the standard soffit plate. This bracket is used in combination with the arm's soffit plate.



Narrow Frame - #6890 Support Bracket: For use where the frame is narrow, and the soffit plate cannot be mounted directly to the frame soffit or rabbet. Used in combination with the #6891 Spacer Block on blade stop frames to provide extra support and needed clearance of the blade stop. Used on frame where frame stop does exceed 5/8" (16mm) in height.



Clearance/Support Blade Stop - #6891 Spacer Block: For use where the door frame has a blade stop and the soffit plate must be mounted on the frame rabbet. This accessory is used in combination with the standard 2019S Spacer Block to provide clearance of the blade stop. For clearance of 5/8" (16mm) high-frame stop.