

INTRODUCTION

The 1600 Series door closers offer proven quality, performance and reliability unmatched by the competition. A staple in the industry, these ANSI/BHMA Grade 1 closers are designed for exterior or interior doors. A full complement of regular and heavy-duty arms, brackets and options make the 1600 Series closers ideal for virtually any medium traffic, commercial application.

FEATURES

- » Exceeds 25 million cycles based on internal cycle testing
- » Non-handed for installation on either right- or left-hand swing doors
- » Rack-and-pinion design
- » Cast aluminum body
- » 2-7/8" (73mm) projection
- » 1-3/8" (35mm) diameter piston
- » 5/8" (16mm) diameter pinion journals
- » Tri-Style® packaging (regular arm, top jamb and parallel arm mounting)
- » All standard arm applications allow doors to swing 180°, conditions permitting
- » Staked valves
- » 15-year limited warranty
- » Corrosion-resistant model (non-hold open only) – specify 1601SS (Not tri-packed)
- » Molded plastic cover – specify suffix P
- » Heavy-duty arms: Parallel Rigid, CloserPlus®, CloserPlus Spring™, and Unitrol®
- » Standard, separate and independent, latch, sweep and backcheck intensity valves

Features	1600BC	1601
Sized springs 3 or 4 with no power adjustment	X	
Adjustable spring sizes 1 through 6		X

TABLE OF CONTENTS

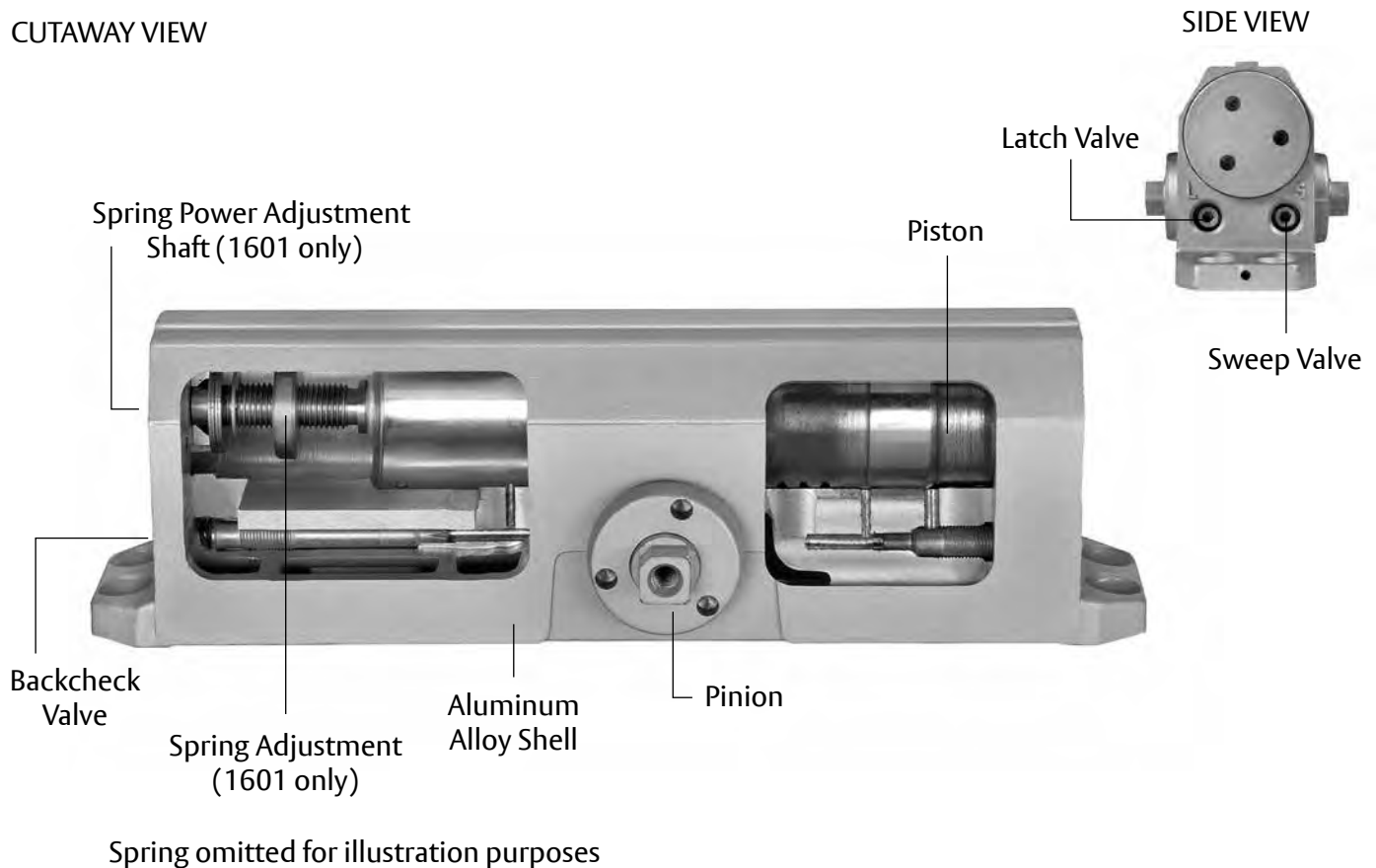
Introduction, Features, Overview and Certifications.....	2-3
Explanation of Features.....	4
Specifications	5
Applications	6-8
Sizing Diagrams.....	9-17
Brackets and Mounting Plates	18-24
Parts	25
Assemblies.....	26-34
Fasteners and Finishes.....	35
How to Order	36

1600 SERIES


ALUMINUM STOREFRONT DOOR CLOSERS

OVERVIEW

CUTAWAY VIEW



CERTIFICATIONS

- » ANSI/BHMA A156.4, Grade 1 certified 
- » UL / cUL listed for use on fire rated doors 
- » UL10C listed for positive pressure fire test
- » Manufactured in an ISO 9001 and ISO 14001 certified facility
- » 1601 door closers are designed to comply with requirements for the Americans with Disabilities Act (A.D.A) and ANSI standard A117.1 

CAUTION: Door Closers for Low Opening Force Applications:

Door closers installed in openings required to meet the requirements of the Americans with Disabilities Act or ANSI Standard A117.1, when adjusted to meet those requirements, may not provide adequate closing power to dependably close and latch the door.

EXPLANATION OF FEATURES

Aluminum Alloy Housing

Closer bodies are constructed of a special aluminum alloy, carefully selected to accommodate interaction with steel components and operating conditions.

Rack & Pinion Operation

Provides a smooth constant control of the door through its full opening and closing cycle. 180° door swing can be achieved when door, frame, hardware and arm function do not limit door swing.

Non-Handed

With few exceptions, all series 1600BC and series 1601 door closers are non-handed and can be installed on either right- or left- hand swing doors. Pinion shaft extends vertically through the closer body in both directions. Some options (such as Parallel Rigid hold open arms) will require that the hand of the closer be specified.

Tri-Style®

1600BC/1601 closers come with screws, brackets & soffit plate to allow for regular, top jamb, & parallel arm installations.

Sweep Speed Control Valve

Allows adjustment of door speed from the door's full open position down to approximately 10° from the closed position.

Latch Speed Control Value

Allows adjustment of door speed from approximately 10° down to the door's fully closed position.

Adjustable Backcheck Cushion Valve

Provides control of the door in the opening cycle, beginning at approximately 75° of door opening. It slows/cushions the door opening, when the door is forcibly opened beyond its pre-adjusted opening speed limits.

Warranty

These closers carry a limited 15-year warranty against defects and a limited lifetime warranty on the aluminum housing.

Closer Fluid

NorGlide® door closer fluid is a specially formulated hydraulic fluid that contains lubricity and anti oxidation agents that provide optimum performance and efficiency. This fluid complements the interaction of the door closer's aluminum housing with its steel and zinc components, while maintaining stable viscosity to allow the door closer to perform in temperatures ranging from extremely high to as low as -40° F.

Door Closer Power Options

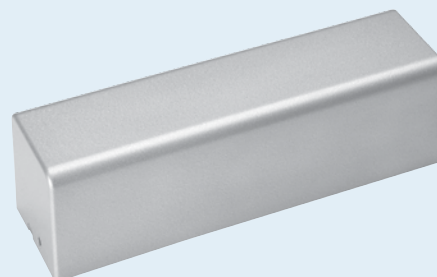
Sized Door Closer: 1600BC

Available in power sizes 3 or 4. Outlined in ANSI specification A156.4. Spring power is not adjustable.

Multi-Sized Door Closer: 1601

Adjustable through the power range of sizes 1 through 6 to comply with the opening force requirements as outlined in the Americans with Disabilities Act (A.D.A.) and ANSI A117.1 for interior doors. Outlined in ANSI specification A156.4.

OPTIONAL FEATURES



Optional Molded Cover - 1600P

Molded of high-impact U.L. listed material that covers the entire closer body assembly. This cover is non-handed for regular and parallel arm applications. Suffix "P" to catalog number. Not designed for top jamb applications.

Corrosion Resistant Door Closer

The series 1601SS door closers are available for use where corrosive conditions exist. This series is provided with zinc diecast adjustment valves, a 440 grade stainless steel pinion shaft, an all-aluminum body and bronze closer arm bushings; all other components and fasteners are of 302/303 grade stainless steel. This product is available for standard regular arm, top jamb and parallel arm, non-hold open, applications only. Not Tri-Style packed. "P" or "J" prefix required for parallel arm and top jamb applications.

Non-Hold Open

Self-closes door every time door is opened. Auxiliary stop (by others) required except when using the CloserPlus®, CloserPlus Spring™ or Unitrol® Arms.

Hold Open

Achieved by means of friction or ball and detent/roller. Friction hold open has a range of 90° to 180° using template location and mechanical adjustment. Ball and detent or roller hold open is effective in a range of 85° to 110°.

Hold open arm door closers are not permitted to be used on fire door assemblies.

1600 SERIES

ALUMINUM STOREFRONT DOOR CLOSERS

Door Opening Degrees

Arm Function	Regular Arm, Top Jamb Parallel Arm	Parallel Rigid Arm	CloserPlus Parallel Arm	CloserPlus Spring Parallel Arm	Unitrol Parallel Arm	Unitrol Top Jamb	Low Profile Regular, Parallel	Cushion Stop Arm
Non-Hold Open	✓	✓	85° to 110°	85° to 110°	85° to 110°	85° to 110°	✓	85° to 110°
Hold Open	90° to 180°	85° to 180°	85° to 110°	85° to 110°	85° to 110°	85° to 110°	N/A	N/A

✓ = 180° trim and template permitting

SPECIFICATIONS

1601 Series

Closers for interior and exterior doors shall be full rack-and-pinion type with cast aluminum alloy shell. Closers shall be surface mounted and shall project no more than 2-7/8" from the surface of the door. Closers shall be non-handed to permit installation on doors of either hand. Closer fluid shall contain lubricity and anti-oxidation agents. Closer fluid shall maintain stable viscosity to allow door closer to perform in temperatures ranging from extremely high to as low as -40°F. Closers shall have multi-size spring power adjustment to permit setting of spring from (1 through 6). Closers shall have two non-critical valves, hex key adjusted, to independently regulate sweep and latch speed. Closers shall have adjustable backcheck cushioning controlled by a hex key adjusted valve.

[Closer body shall be enclosed in/concealed with a full molded cover.]

[Closers shall be highly corrosion resistant and shall have all external body components of aluminum, zinc alloy or stainless steel material and all stainless steel fasteners.]

Regular arm and top jamb closers shall have a non-hold open shoe permitting 15% (+/- 7-1/2%) power adjustment. ** [1601] [1601SS].

**For special arms insert the appropriate specification from column two or three on this page.

1600BC Series

Closers for interior and exterior doors shall be full rack-and-pinion type with cast aluminum alloy shell. Closers shall be surface mounted and shall project no more than 2-7/8" from the surface of the door. Closers shall be non-handed to permit installation of doors of either hand. Closer fluid shall contain lubricity and anti-oxidation agents. Closer fluid shall maintain stable viscosity to allow the door closer to perform in temperatures ranging from extremely high to as low as -40°F. Closers shall be sized for each door. Closers shall have two non-critical valves, hex key adjusted, to independently regulate sweep and latch speed. [Closers shall have adjustable backcheck cushioning controlled by a hex key adjusted valve.]

Regular arm and top jamb closers shall have a non-hold open shoe permitting 15% (+/- 7-1/2%) power adjustment. ** [1600BC].

**For special arms insert that specification here (see column three on this page).

**Unitrol® Arm

Door closers shall have built in-door stop [and holder] effective at one point selected at installation, from 85° - 115° in five-degree increments. Door stop shall be cushioned by a shock-absorbing heavy-duty spring action effective at the [soffit plate] [arm shoe] pivot. [Closers shall be provided for parallel arm installation using rigid steel main arm and secondary arm lengths proportional to the door width to reduce racking at the hinge/pivot.] [Closers shall be provided for top jamb installation using steel, rigid main arm and telescoping secondary arm adequate for the frame reveal of the openings.] (Closer arm shall have ball and detent hold open feature that can be engaged or disengaged by 1/4 turn of mechanism; and hold open strength shall be adjustable.)

**CloserPlus® Arm

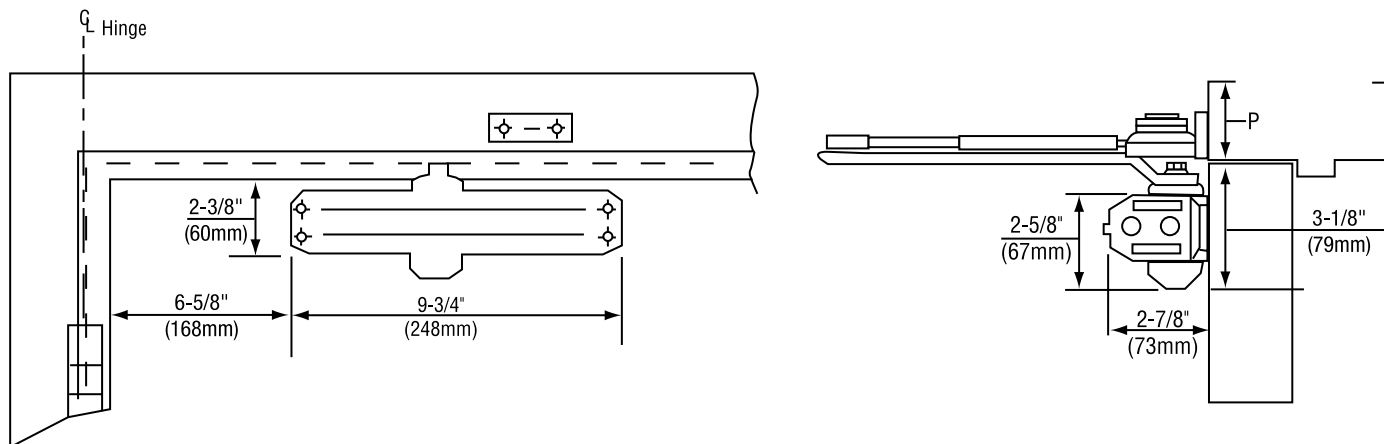
Door closers shall have built-in door stop [and holder] effective at one point selected at installation, from 85° - 110° in five-degree increments. Door stop mechanism shall be reversible and attached to soffit plate. [Hold open mechanism shall have engage/disengage and strength selection actuated by thumbturn.] Closers shall be provided for parallel arm installation using rigid steel main and secondary arm.

**CloserPlus Spring™ Arm

Door closers shall have built in door stop[and holder] effective at one point selected at installation, from 85° - 110° in five-degree increments. Door stop mechanism shall have a buffer spring that engages prior to the dead stop feature, reducing shock loads to the door and frame assembly. Door stop mechanism shall be reversible and attached to soffit plate. [Hold open mechanism shall have engage/disengage and strength selection actuated by thumbturn.] Closers shall be provided for parallel installation using rigid steel main and secondary arm.

1600 SERIES ALUMINUM STOREFRONT DOOR CLOSERS

REGULAR ARM

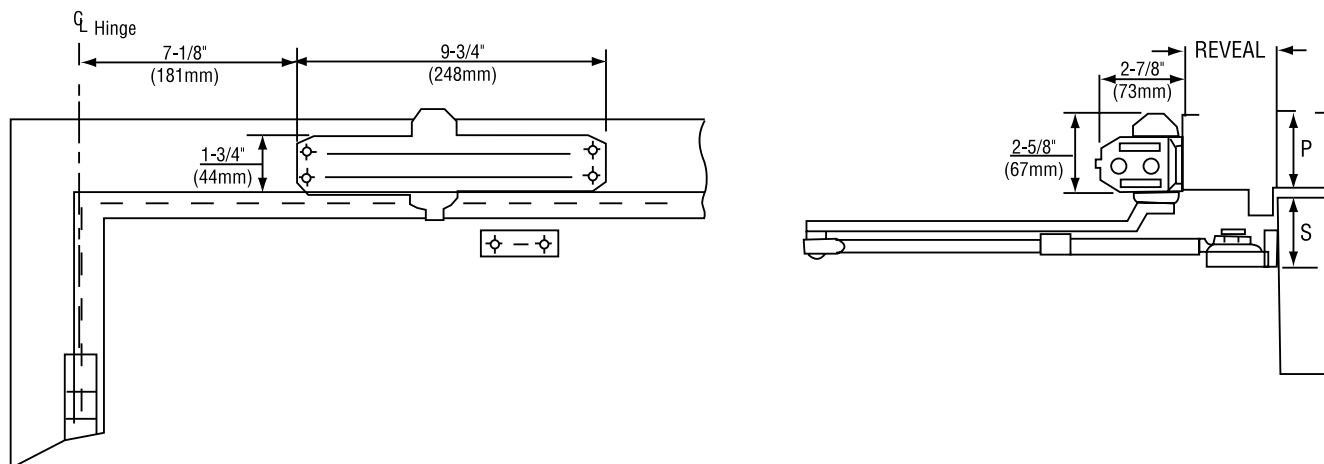


Mounting holes for closer body are spaced 3/4" (19mm) vertically x 9-1/16" (230mm) horizontally.

Maximum Door Size Inches (cm)		Model Number				P Minimum Ceiling Clearance Inches/mm		
		Sized Closers		Multi-Sized Closers				
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open	Non-Hold Open		Hold Open
32" (81)	—	—	—	1601	1601H	1600BC/1601	1680BC/1681	1-5/8" (41)
38" (97)	30" (76)	1603BC	1603BCH			1-1/2" (38)	1" (25)	
42" (107)	36" (91)	1604BC	1604BCH					
48" (122)	42" (107)	—	—					
—	48" (122)	—	—					

Notes:
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.
Contact factory if door weight exceeds 250 lbs.

TOP JAMB



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

Maximum Door Size Inches (cm)		Model Number			
		Sized Closers		Multi-Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
32" (81)	—	—	—	1601	1601H
38" (97)	30" (76)	1603BC J1603BC J1683BC^	1603BCH J1603BCH		
42" (107)	36" (91)	1604BC J1604BC J1684BC^	1604BCH J1604BCH		
48" (122)	42" (107)	—	—		
—	48" (122)	—	—		

Notes:

1601 door closers are adjustable for sizes 1 through 6 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 2-3/4" (0-70mm). Use top jamb J1600H closer for frame reveals from 2-3/4" to 6-3/4" (70 to 171mm).

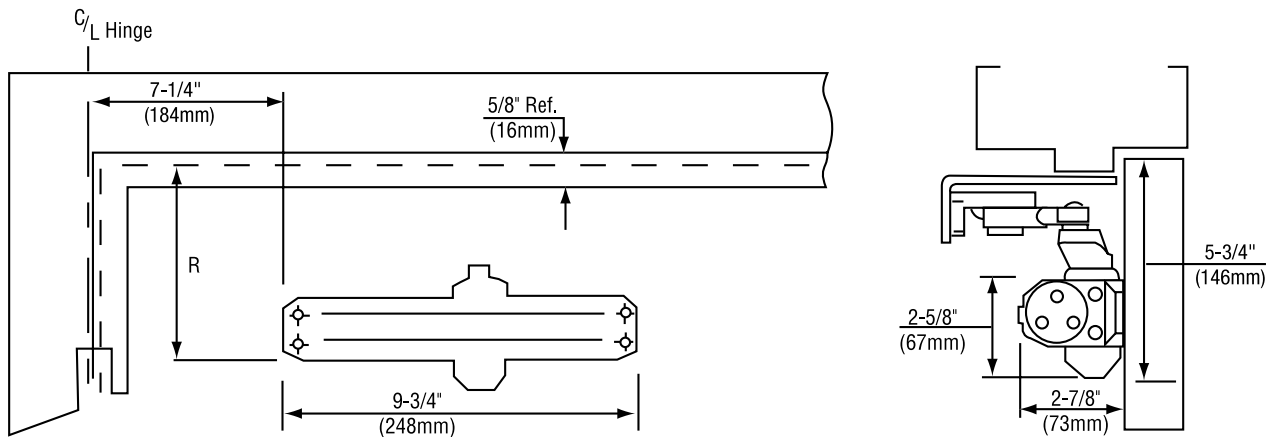
Contact factory if door weight exceeds 250 lbs.

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	1600BC/1601 1680BC/1681
2-5/8" (67)	1-3/4" (44)	1-7/8" (48)	2-5/8" (67)	4" (102)

1600 SERIES

ALUMINUM STOREFRONT DOOR CLOSERS

PARALLEL ARM



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

Maximum Door Size Inches (cm)		Model Number			
		Sized Closers		Multi-Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
30" (76)	—	—	—	1601	1601H
36" (91)	30" (76)	P1603BC	P1603BCH		
42" (107)	36" (91)	P1604BC	P1604BCH		
48" (122)	42" (107)	—	—		
—	48" (122)	—	—		

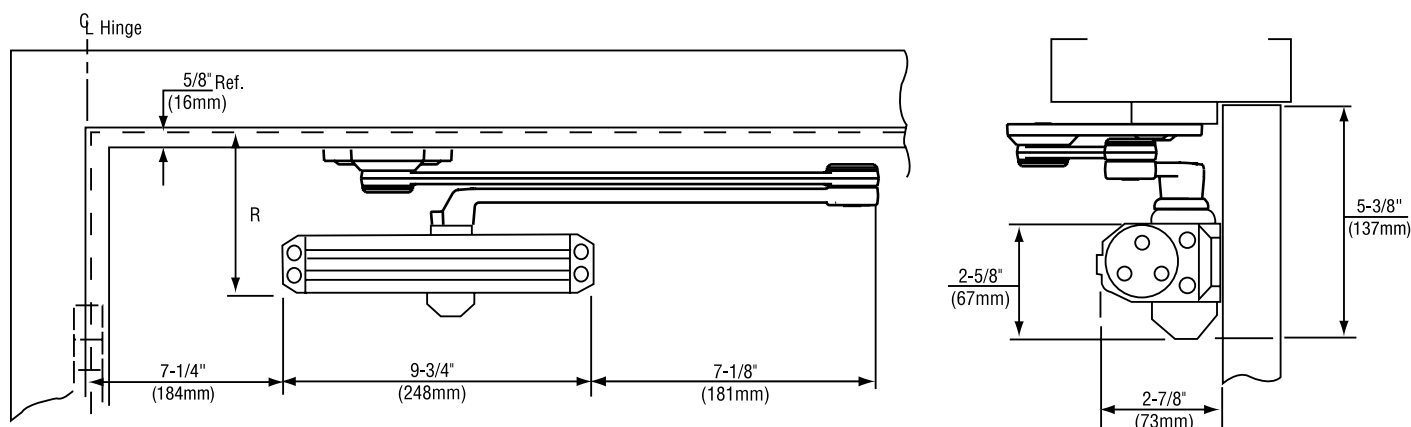
Notes:
 This door sizing information also applies to corner bracket mounted closers.

 1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

 Contact factory if door weight exceeds 250 lbs.

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

PARALLEL RIGID ARM



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

Door Size Wood or Metal Inches (cm)		Model Number			
		Sized Closers		Multi-Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
28"-32" (71-81)	—	—	—	PR1601	PR1601H
33"-36" (84-91)	28"-32" (71-81)	PR1603BC	PR1603BCH		
37"-42" (94-107)	33"-36" (84-91)	PR1604BC	PR1604BCH		
43"-48" (109-122)	37"-42" (94-107)	—	—		
—	43"-48" (109-122)	—	—		

Notes:

1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

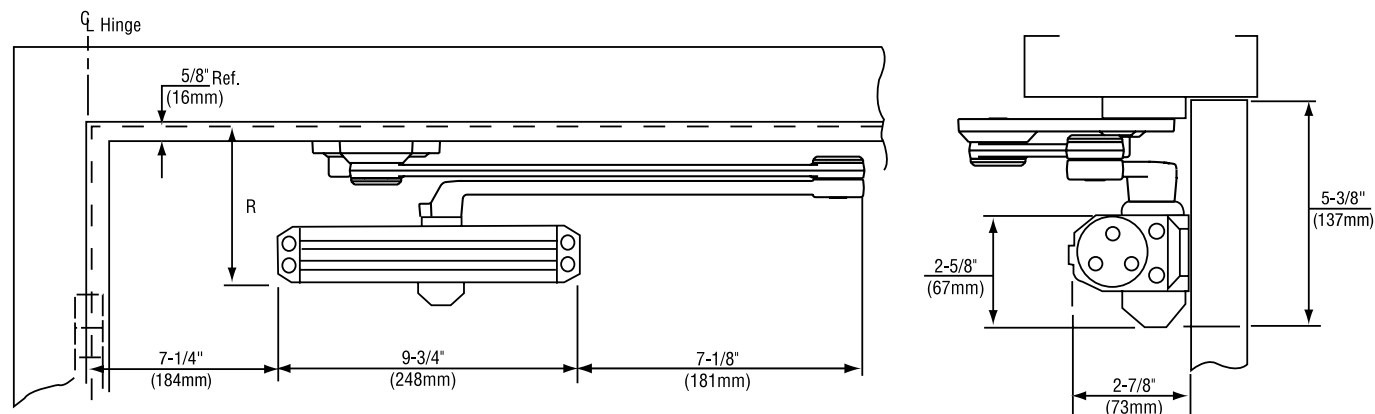
Contact factory if door weight exceeds 250 lbs.

R Minimum Top Rail of Door with 5/8" (16mm) frame stop	
Without Drop Plate	With Drop Plate
4-1/2" (114)	2-5/8" (67)

1600 SERIES

ALUMINUM STOREFRONT DOOR CLOSERS

CLOSERPLUS® ARM



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

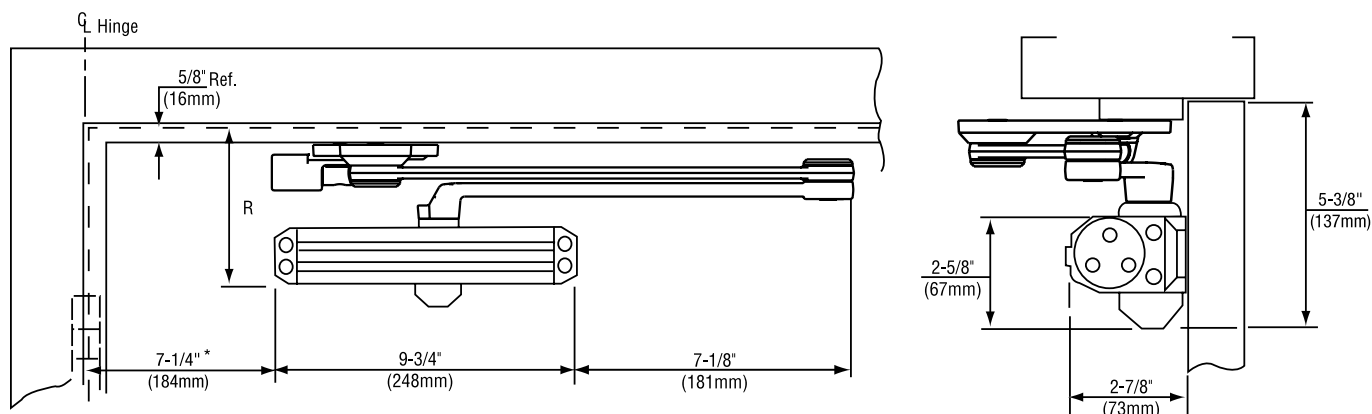
Door Size Wood or Metal Inches (cm)		Model Number			
		Sized Closers		Multi-Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
28"-32" (71-81)	—	—	—	CLP1601	CLP1601T
33"-36" (84-91)	28"-32" (71-81)	CLP1603BC	CLP1603BCT		
37"-42" (94-107)	33"-36" (84-91)	CLP1604BC	CLP1604BCT		
43"-48" (109-122)	37"-42" (94-107)	—	—		
—	43"-48" (109-122)	—	—		

Notes:
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

Contact factory if door weight exceeds 250 lbs.

R Minimum Top Rail of Door with 5/8" (16mm) frame stop	
Without Drop Plate	With Drop Plate
4-1/2" (114)	2-5/8" (67)

CLOSERPLUS SPRING™ ARM



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

Door Size Wood or Metal Inches (cm)		Model Number			
		Sized Closers		Multi-Sized Closers	
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open
28"-32" (71-81)	—	—	—	CPS1601	CPS1601T
33"-36" (84-91)	28"-32" (71-81)	CPS1603BC	CPS1603BCT		
37"-42" (94-107)	33"-36" (84-91)	CPS1604BC	CPS1604BCT		
43"-48" (109-122)	37"-42" (94-107)	—	—		
—	43"-48" (109-122)	—	—		

Notes:

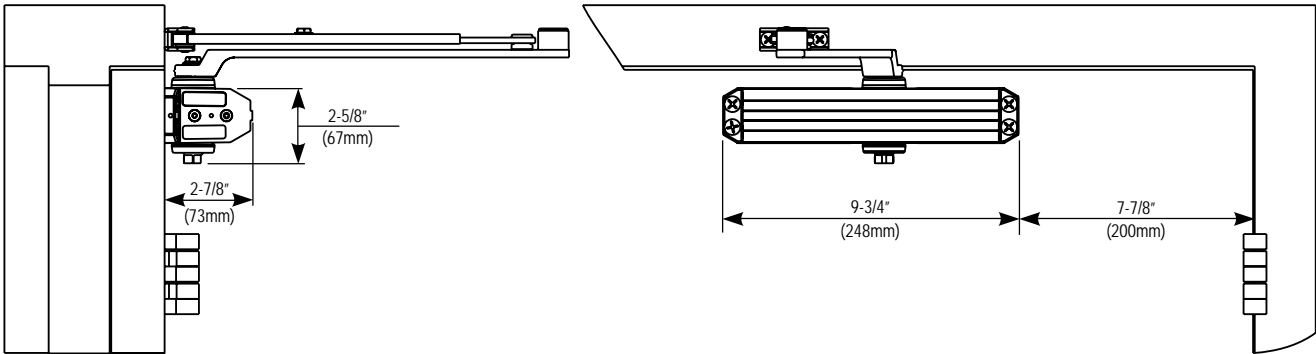
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

Contact factory if door weight exceeds 250 lbs.

R Minimum Top Rail of Door with 5/8" (16mm) frame stop	
Without Drop Plate	With Drop Plate
4-1/2" (114)	2-5/8" (67)

1600 SERIES
ALUMINUM STOREFRONT DOOR CLOSERS

CUSHION STOP ARM



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

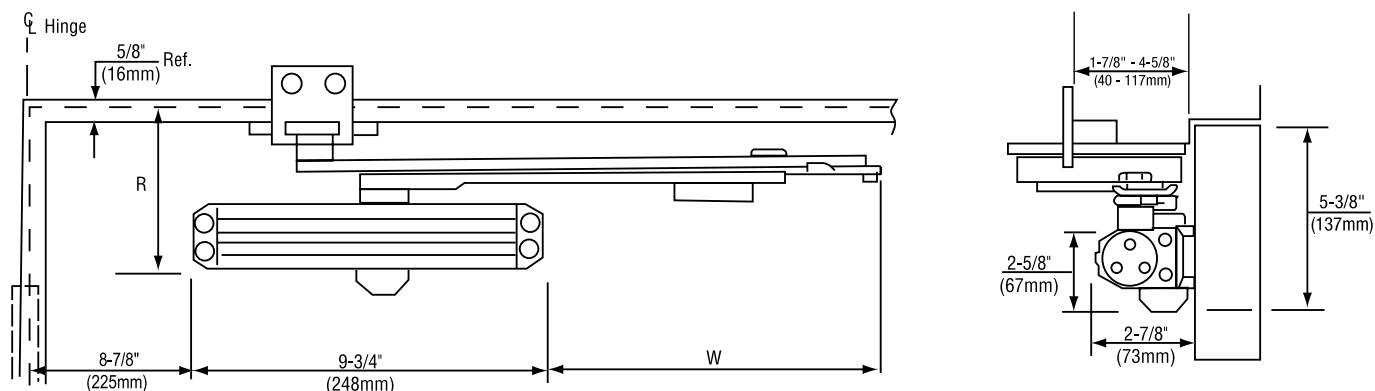
Maximum Door Size Inches (cm)		Model Number	
		Sized Closers	Multi-Sized Closers
Interior	Exterior	Non-Hold Open	Non-Hold Open
32" (81)	—	—	1601
38" (97)	30" (76)	1603BC	
42" (107)	36" (91)	1604BC	
48" (122)	42" (107)	—	
—	48" (122)	—	

Notes:
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

Contact factory if door weight exceeds 250 lbs.

P Minimum Ceiling Clearance Inches/mm
Non-Hold Open
1600BC/1601
1-1/2" (38)

PARALLEL UNITROL® ARM



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

Door Size Wood or Metal Inches (cm)		Model Number				x Specify Door Width
		Sized Closers		Multi-Sized Closers		
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open	
28"-32" (71-81)	—	—	—	UNI1601	UNI1601H	
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)	—	—			
—	42"-48" (107-122)	—	—			

Notes:
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

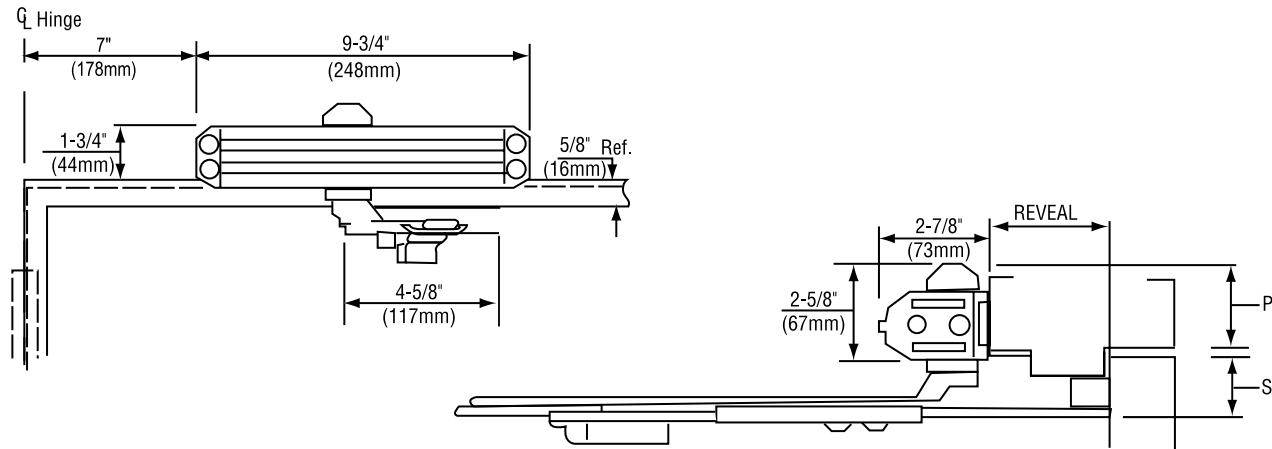
Contact factory if door weight exceeds 250 lbs.

Door Width	R Minimum Top Rail		W Arm Extension
	Without Drop Plate	With Drop Plate	
28"-32" (71-81)	4-1/2" (114)	2-5/8" (67)	7" (178)
33"-41" (84-104)			8-1/2" (216)
42"-48" (107-122)			10" (254)

1600 SERIES

ALUMINUM STOREFRONT DOOR CLOSERS

TOP JAMB UNITROL® ARM



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

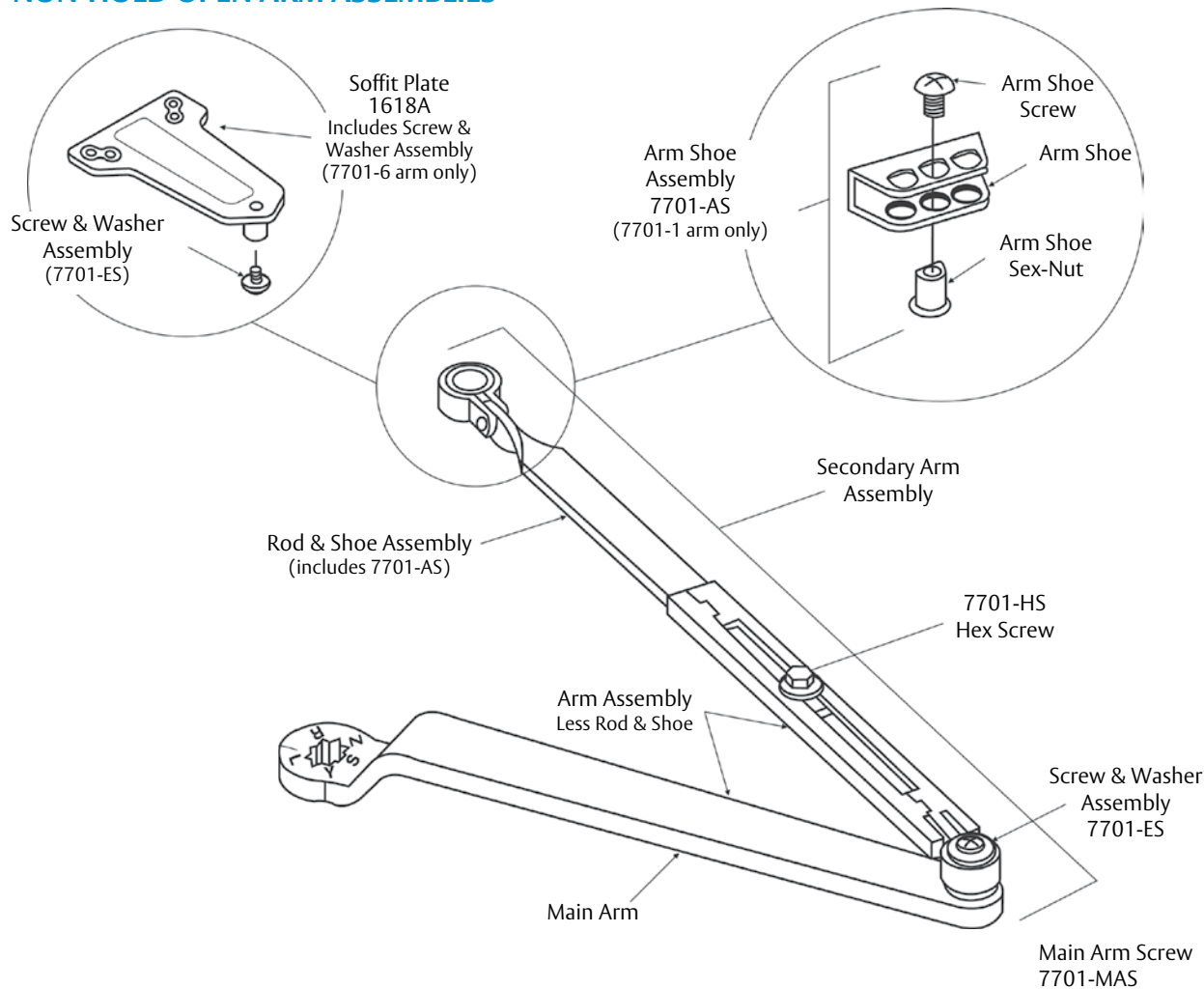
Door Size Wood or Metal Inches (cm)		Model Number				x Specify Frame Reveal
		Sized Closers		Multi-Sized Closers		
Interior	Exterior	Non-Hold Open	Hold Open	Non-Hold Open	Hold Open	
28"-34" (71-86)	—	—	—	UNIJ1601	UNIJ1601H	
35"-42" (89-107)	28-34 (71-86)	UNI1603BC	UNIJ1603BCH			
43"-48" (109-122)	35-42 (89-107)	UNI1604BC	UNIJ1604BCH			
49"-54" (124-137)	43-48 (109-122)	—	—			
—	49-54 (124-137)	—	—			

Notes:
1601 door closers are adjustable for sizes 1 through 6 and can be adjusted to conform to ADA opening force requirements.

Contact factory if door weight exceeds 250 lbs.

P Minimum Ceiling Clearance		S Minimum Top Rail Clearance	
Without Drop Plate	With Drop Plate	Without Drop Plate	With Drop Plate
2-5/8" (67)	1-3/4" (44)	2-3/8" (60)	3-1/8" (79)

NON-HOLD OPEN ARM ASSEMBLIES



Note: Mounting hardware included with all parts orders.

Closer Series	Complete Arm Assembly	Main Arm Assembly ¹ (length)(mm) (includes 7701-ES)	Secondary Arm Assembly (includes 7701-ES)	Arm Assembly Less Rod and Shoe	Rod & Shoe ² Assembly (length)(mm)
1600BC/1601	7701-1	7701-1M (11)(279)	7701-111	7701-1W	7701-11 (8-7/8)(225)
J1600BC/J1601	7701-1A		7701-121		7701-11A (12-1/2)(318)
P1600BC/P1601	7701-6		7701-116		7701-16 (8-7/8)(225)
P1600BC/P1601 ³	7701-6A		7701-116A		7701-16A (12-1/2)(318)
1600BC/1601	7701-26 (Tri-Style® includes 7701-1 plus 1618A plate)				

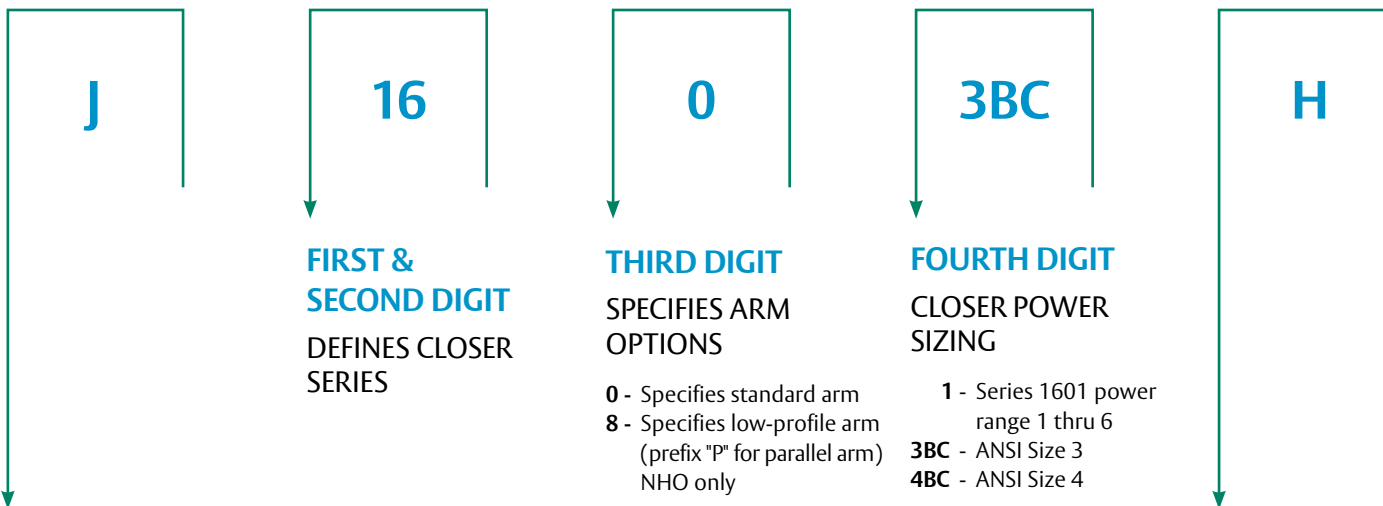
1. C to C length shown in parentheses.

2. C of connecting link to end of rod shown in parentheses.

3. For 180° door swing when using a special template for doors hung on 6" to 8" (162 to 203mm) wide throw hinges.

HOW TO ORDER

For optimum protection of door and frame assemblies, always use auxiliary wall, floor, or overhead door stop.



PREFIXES

- No Prefix** } 1600BC series designates Tri-Style®, sized 1601 series designates Tri-Style®, multi-sized closer
- J** - Top jamb installation – reveals in excess of 2-3/4 to 7"
 - P** - 1600BC parallel arm units requiring specialty brackets
 - 1601 parallel arm units requiring specialty brackets
 - 1680BC low-profile closer
 - 1601SS corrosion-resistant closer – not Tri style
 - PR** - Parallel Rigid arm (parallel arm only) – specify hand for hold open functions
 - CLP** - CloserPlus® arm (parallel arm only)
 - CPS** - CloserPlus Spring™ arm (parallel arm only)
 - UNI** - Unitrol® arm (parallel arm only - specify door width)
 - UNIJ** - Unitrol arm (top jamb only - specify frame reveal)
 - CA** - Cushion stop arm (regular arm only)

FIFTH DIGIT

- NONE** - Non-hold open arm function
- H** - Hold open arm function (specify hand when "PR" prefix is ordered)
- SS** - Series 1601 only
 - Corrosion-resistant closer
 - Not Tri-Style Available with non-hold open adjustable arm only; for regular arm, top jamb "J" prefix or parallel arm "P" prefix
- T** - Thumbturn hold open on CloserPlus® (CLP) and CloserPlus Spring™ (CPS) arms
- P** - Cover

Notes:

- Door closer warranty becomes void if it is installed on the exterior side of a door in the exterior wall of a building.
- It is strongly recommended, and it is required on fire door assemblies, that doors having a door closer be hung on ball bearing or anti-friction hinges or pivots.
- Failure to use the correct type and size fasteners may void factory warranty.
- Optional Torx® drive screws (with security pin) are only available with machine screw threads.
- Fasteners for fire/smoke door assemblies must conform to NFPA 80. In some applications additional fasteners may be mandated by NFPA 80 that are not shipped with standard Norton product, such as sleeve-nuts/sex-nuts or thru bolts and grommet nuts.
- Sizing charts provided on pages 9-17 are based on 1-3/4" (44mm) x 7' (2.13m) standard weight doors swinging to 110 degrees. Other conditions (such as door height or weight; or wind/draft conditions) may require a larger size closer.

Norton®

ASSA ABLOY

ASSA ABLOY is the global leader in door opening solutions, dedicated to satisfying end-user needs for security, safety and convenience

Since 1880, Norton door controls have been an integral part of schools, hospitals and businesses around the globe. When you need products and people that perform at the highest level, rely on Norton – From Open to Close.

Norton Door Controls | www.nortondoorcontrols.com

3000 Highway 74 East | Monroe, NC 28112 | Tel: 1-877-974-2255 | Fax: 1-800-338-0965

ASSA ABLOY Door Security Solutions Canada | www.assaabloy.ca

160 Four Valley Drive | Vaughan, Ontario, L4K 4T9 Canada | Tel: 800-461-3007 | Fax: 1-905-738-2478

Norton is a brand associated with Yale Security Inc., an ASSA ABLOY Group company. Copyright © 2012–2017, Yale Security Inc. All rights reserved. Reproduction in whole or in part without the express written permission of Yale Security Inc. is prohibited.