

Norton[®]

ASSA ABLOY

1600BC/1601 Series Aluminum Storefront Door Closers



ASSA ABLOY, the global leader
in door opening solutions

INTRODUCTION

Features

- Non-handed
- Rack-and-pinion design
- Cast aluminum body
- 2-7/8" (73mm) projection
- 1-3/8" (35mm) diameter piston
- 5/8" (16mm) diameter pinion journals
- Standard, separate and independent, latch, sweep and backcheck intensity valves
- Tri-Style® packaging (regular arm, top jamb and parallel arm mounting)
- All standard arm applications allow doors to swing 180°, conditions permitting
- Staked valves
- 10-year limited warranty

Features	1600BC	1601	1601BF
Sized springs 2,3,4,5,6 with no power adjustment	X		
Adjustable spring sizes 3 through 6		X	
Adjustable spring sizes 1 through 4			X

Optional Features

- Delayed action (in lieu of backcheck). Specify 1601DA or 1601BFDA
- Corrosion-resistant model (non-hold open only). Specify 1601SS or 1601BFSS . (Not tri-packed)
- Molded plastic cover. Specify suffix P
- Heavy-duty arms: Parallel Rigid, CloserPlus®, CloserPlus Spring™, and Unitrol®

Complicance Standards

- ANSI/BHMA A156.4, Grade 1 certified
- UL listed
- UL10C compliant for positive pressure
- A.D.A. compliant (1601BF)



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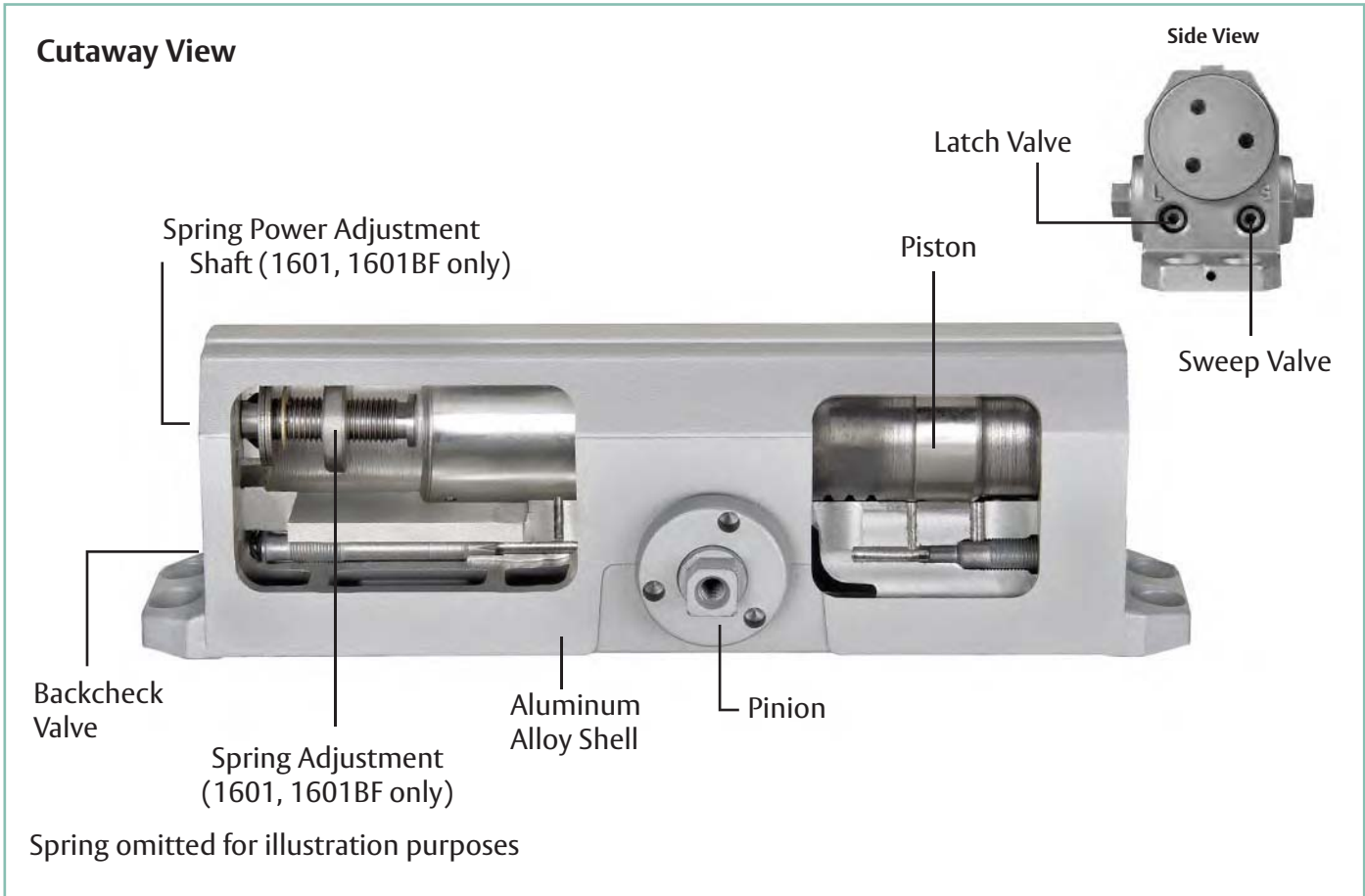
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OVERVIEW



COMPLIANCE STANDARDS

The series 1601BF door closers are designed to comply with requirements of the Americans with Disabilities Act (A.D.A.) and ANSI standard A117.1. All series 1600BC/1601(BF) are ANSI/BHMA A156.4, Grade 1 certified. All Norton series 1600BC/1601(BF) closers with non-hold open arms are listed by Underwriters' Laboratories for labeled fire doors. This includes compliance to UL10C and UBC-72 (1997) for 3-hour assemblies. These products are manufactured in a certified ISO 9001 facility. These closers are also listed by New York City Materials and Equipment Acceptance Division.

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.

HOW TO ORDER

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

- 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**)

- 0 - Specifies standard arm.
- 8 - Specifies low-profile arm (prefix "P" for parallel arm). NHO only.

- 1 - Series 1601 power range 3 thru 6.
- 1BF - Series 1601BF power range 1 thru 4 for A.D.A. accessibility.
- 2BC - ANSI Size 2
- 3BC - ANSI Size 3
- 4BC - ANSI Size 4
- 5BC - ANSI Size 5
- 6BC - ANSI Size 6

J
PREFIXES

16
FIRST & SECOND DIGIT
Defines closer series

0
THIRD DIGIT
Specifies arm options

3BC
FOURTH DIGIT
Closer power sizing

H
SUFFIXES

- None - Non-hold open arm function.
- H - Hold open arm function (specify hand when "PR" prefix is ordered)
- DA - Optional delayed action feature (in lieu of backcheck)
- HOSP - 1603BC and 1604BC only. Hospital hold open (specify hand)
- COUP - 1602BC and 1603BC only. Coupon booth hold open (specify hand)
- TEL - 1602BC only - Telephone booth (non-handed)
- SS - Series 1601/1601BF 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.
- 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.
- Optional Torx® drive screws (with security pin) are only available with machine screw threads.
- Sizing charts provided on pages 12-19 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.

Fasteners

Type	Description	Arm							
		RA	PA	TJ	Low Profile	PR	CLP/CPS	UNI	UNI-J
DOOR									
SDST	Self-Drilling Self-Tapping	S	S	S	S	S	S	S	S
MS	Machine Screw	S	S	S	S	S	S	S	S
SN	Sleeve Nut	O	O	O	O	S	S	S	S
TBGN	Thru Bolts & Grommet Nuts	O	O	O	O	O	O	O	O
SMS	Sheet Metal Screws	O	O	O	O	O	O	O	O
FRAME									
SDST	Self-Drilling Self-Tapping	S	S	S	S	S	S	S	S
MS	Machine Screw	S	S	S	S	S	S	S	S
SMS	Sheet Metal Screws	O	O	O	O	O	O	O	O

S = standard; O = optional

SN are for use on unreinforced hollow metal doors or to prevent any hollow metal door from collapse/dimpling. They can also be used for thru bolting on wood doors. SN are supplied for 1-3/4" (44mm) thick doors unless specified for 2-1/4" (57mm) thick doors.

TBGN are an alternative to SN for wood doors. TBGN are supplied standard for 1-3/4" (44mm) thick doors. They can be specified for 1-3/8" (35mm) thick doors.

SMS - when specified, closer will be packed with sheet metal screws for the door *AND* sheet metal screws plus machine screws for the frame. SMS are supplied as a substitute for wood doors and frames.

Finishes

All door closers are painted in water-borne acrylics. All steel parts, arms, brackets and mounting plates are powder coated. The closers will withstand 100 hours of salt spray. ANSI requires 25 hours.

Sprayed Finishes

Description	Specify (BHMA) Designation	Complements the following finishes	Old Designation
Aluminum	689	628, 625, 629, 630, 651, 652	AL
Statuary Bronze	690	640, 613	STAT
Dull Bronze	691	612, 637, 639	DB
Black	693	315	315
Medium Amber	694	312	312
Gold	696	605, 606, 632, 633	GB
Prime Coat*	600	—	SRI*

*600 is a special rust-inhibiting prime coat. Closers can be ordered prime coat only (specify closer x 600). An additional charge applies if finish coat is required over prime coat (ex: 1605BC x 600 x 689).

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(BF) 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 Valve

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 ten-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**Series 1600BC Sized Door Closer**

Available in five different power sizes (2, 3, 4, 5 or 6). Outlined in ANSI specification A156.4. Spring power is not adjustable.

Series 1601 Multi-Sized Door Closer

Adjustable through the power range of sizes 3 through 6. Outlined in ANSI specification A156.4.

Series 1601BF Multi-Sized Door Closer

Adjustable through the power range of sizes 1 through 4 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.

OPTIONAL FEATURES**Corrosion Resistant Door Closer**

The series 1601SS and 1601BFSS 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.

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.



OPTIONAL FEATURES

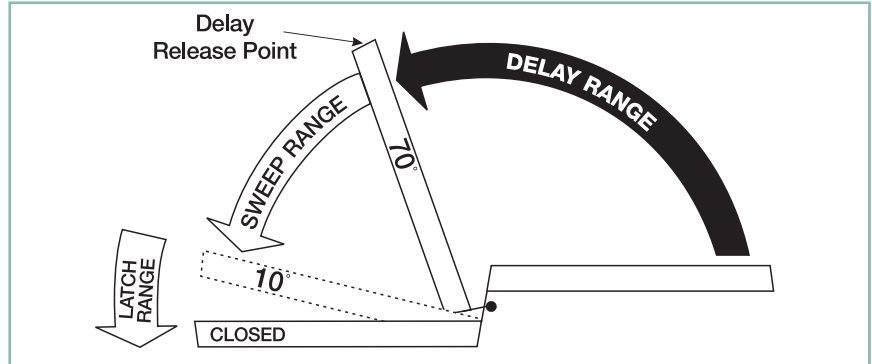
Adjustable Delayed Action Closing

An optional hydraulic feature, available in lieu of backcheck, adds a third speed range to the closing cycle. This feature becomes effective when the door is opened and released at any point beyond 70°. The amount of time delay depends upon the combination of the angle of door release and valve adjustment. The valve can be adjusted with a 1/8" (3mm) hex key from no delay time up to maximum delay times of:

Door Opened and Released at	Approximate Time of Delay Cycle
180°	4-5 minutes
120°	2-3 minutes
90°	25-30 seconds

Pressure Relief Safety Valve

The delayed action hydraulic system contains a pressure relief valve. Any time the door is forced toward the closed direction while it is in the closing cycle, the valve will open and permit the door to close. This prevents damage to door, frame and closer.



Suggested Applications

Delayed action closing allows slow-moving traffic to clear the opening before the door closer's normal closing cycle begins. This feature can be helpful in health care facilities such as hospitals and nursing homes. It provides sufficient time for persons on crutches or in wheelchairs to pass through a door without concern of it closing. At the same time, it can accommodate the facility's staff with movement of food service carts, beds, and other wheeled traffic.

Use of delayed action closers on many doors throughout industrial and commercial buildings can also assist the flow of traffic. Locations where additional time to clear the opening is advantageous are doors between office and factory/warehouse facilities, doors to workshops or laboratories, doors to kitchen and food processing areas, etc.

OPTIONAL FEATURES

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.

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
Non-Hold Open	✓	✓	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

✓ = 180° trim and template permitting

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SPECIAL FUNCTION
DOOR CLOSERSeries 1600BC Special Function
Door Closers

Telephone Booth Operation

Closer holds the door to the telephone booth open at 5° from the closed position. This prevents the light switch from being activated and allows the booth to be ventilated. It also indicates to users that the booth is unoccupied. Available in size 2 only for regular arm or top jamb application only.

Coupon Booth Hold Open

Most commonly used on doors to safe-deposit box inspection cubicles. Closer holds the door to the booth open at 15° to indicate that the booth is available for use by a safe-deposit box renter. When the door is opened beyond 70°, the closer will close the door and engage the lock, providing the occupant with the desired privacy.

Available in sizes 2 and 3 only for regular arm, top jamb or parallel arm application. Specify hand.

Hospital Hold Open

Closer will hold door open at approximately 15° for ventilation, 45° for observation and beyond 90° for full access.

Closer is supplied with a standard hold open arm for the beyond 90° hold open position.

Available in sizes 3 and 4 only for regular arm, top jamb or parallel arm application. Specify hand.

SUGGESTED
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 4) or (3 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.

[Closers shall have adjustable delayed-action closing controlled by a hex key adjustable 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] [1601BF] [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.]

[Closers shall have adjustable delayed action closing 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.)

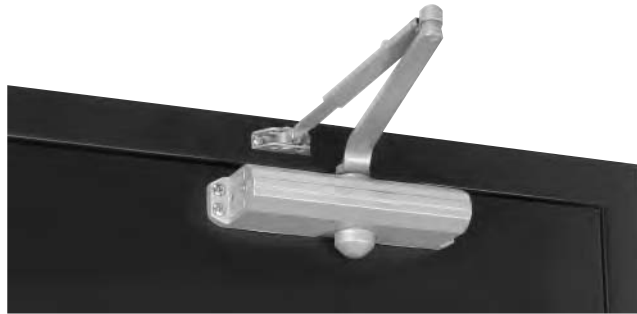
**CloserPlus® Arm

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.

APPLICATIONS



Regular Arm

Non-hold open arm shown

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.

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



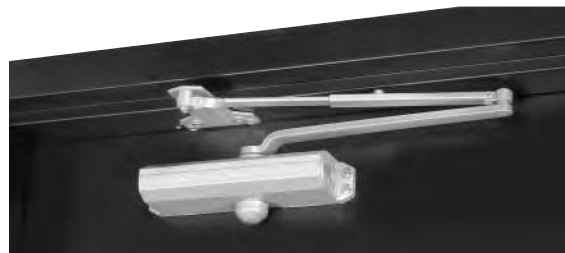
Top Jamb

Non-hold open arm shown

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.

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

Non-hold open arm shown

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.

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.