

# E3 bifold door hardware for panels to 250lb



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# flexibly manage space in a wide range of applications



# Engineered excellence

One moment bifolding doors are acting as an effective, secure barrier from rain, wind and noise. The next they're effortlessly moved aside to reveal wide open space – with no fixed glass panels or posts. E3 can be relied upon to add flair and flexibility to the widest range of applications, from private residences to the most ambitious store front, restaurant or commercial project. The considerable weight-bearing capacity of the elegant, precisely functioning E3 ensures that possible applications for Centor's bifold range are limited only by the imaginations of the world's most progressive architects and designers.

Engineered to withstand the most severe weather, E3 is just as suited to interior use where the ability to visually and physically connect spaces can be just as beneficial and the sound-proofing effect of double-glazing just as important. The benefits to the end-user in flexibly managing interior or exterior space to suit lifestyle or business are literally changing the face of contemporary building design.

E3 Specifications			
max panel weight	250lbs (115kg) each		
max panel width	4' (1200mm)		
max panel height	12" (3600mm)		
door thickness	a) 1 3/4" or 2 1/4" (44.45 or 57.15mm) when using E3 sill system b) 1 3/8" to 3" (34.9 to 76.2mm) when using floor channel		
max number of doors	16 (8 each direction)		

**Note**> When using maximum door width and height 4' x 12' (1200mm to 3600mm) door may exceed maximum door weight of 250lbs (115kg). Calculated weight check should be done.





# High performance results

Environment, operational function, durability, painstaking attention to detail and unerring commitment to quality ensure E3 achieves 'Centor-grade' performance – whatever the category. The result is a degree of control and comfort for the end-user which matches the easy flexibility of modern design.

# Rain and Wind

A door using Centor's bifold system was the first tracked bifolding door system to be successfully certified against Australian Standard AS2047, which specifies the performance required of external windows and sliding doors, in particular for resistance to rain and wind. Many door manufacturing clients in Australia, Canada and the United States have tested doors using Centor's systems to their relevant local standards. Centor's E3 system has since been certified to stringent *Miami Dade County* hurricane standards, the toughest testing anywhere in the world. Impressive water performance ratings are achievable from both outward and inward opening doors. Driving rain and howling gales can be shut out completely.

## **Air Infiltration**

The system achieves its superior rain and wind resistance in part from the way it allows the folding door panels to close snugly against weather seals. In the same way doors using the E3 system effectively resist air infiltration to a level up to 50 times better than a sliding door.

# Noise and Temperature

With double glazing allowed for by E3's impressive panel weight capacity, unprecedented insulation against noise and temperature variation is possible.

# Centor hardware for doors that glide open and slide shut



# **Effortless Operation**

While E3's outstanding performance as part of a secure, weatherproof barrier is crucial, it's not until the doors are opened that the space-transforming benefits of the system truly come into play. For maximum enjoyment and use of the system every effort has been made to ensure that doors glide open and slide shut with the minimum of effort – and that they continue to do so.

## Quality Manufacture, Clever Design

E3 carriers, guides and pivots use the highest grade stainless steel bearings custom machined to extremely fine tolerances on state-of-the-art Japanese and Swiss machinery – a minimum of five bearings to each carrier. Machined wheels are individually precision ground to an ultra-fine hone. Clever carrier design prevents scraping on the inside of the overhead track. A polypropylene floor channel lining adds to the smooth, almost silent rolling action which brings a smile to the face of the user!

# Installation and Adjustment

All fittings are surface-mounted with no mortising required. Installation couldn't be easier with comprehensive instructions and drill jigs available for fittings.

While E3 is designed to operate flawlessly well into the future, built-in adjustment mechanisms make the system tolerant of an imperfect world. Surelock™, Centor's patented carrier pin locking system ensures that once heights are set they stay set. However should door panels swell or a newly built structure settle over time, the end-user can easily make vertical and lateral adjustments simply using a screwdriver.



#### Structural Testing

Structural proof load tests up to 3600 Pa (74 psf) have been achieved by doors using the less substantial E2 system.

#### **Finite Element Analysis**

Finite Element Analysis (FEA) is a computerized simulation technique where products are exposed to virtual operating environments and accurate predictions are made in terms of load and deflection. Centor undertakes FEA in the design process to ensure the best balance of performance, cost and materials in every system.

#### **Hurricane Testing**

In the course of obtaining approval under the stringent *Miami Dade County* testing regime, doors using Centor's E3 system were subjected to hurricane strength wind loads, flexing the doors in and out five thousand times without component failure. Small and large missile impact testing was also performed as part of the single toughest testing process anywhere in the world.

#### **Proven durability**

In addition to the extensive weather testing undergone by doors using Centor's bifold systems, all individual E3 components have undergone extensive laboratory testing, ensuring years of trouble-free enjoyment from hardware which ages with grace.

#### **Cyclic Testing**

Centor's minimum requirement of cyclic testing for any released product is a grueling 50,000 cycles without a single failure at maximum configuration. E3 has been tested in excess of 50,000 cycles with many of the parts rated to over 100,000 cycles.

# pair E3 based doors with the award winning Centor S1E Eco-Screen™



# E3 up close

Even a casual glance at the E3 system gives a strong impression of Centor's commitment to quality, but it's only upon closer inspection that the attention to detail really becomes apparent. Stacked with standard features and with an abundance of options to choose from, Centor E3 looks even better up close!

## **Materials and Finishes**

E3 carriers, guides, pivots and hinges are available in brushed stainless steel for a modern industrial look, PVD Bronze powdercoat or a PVD brass finish over stainless steel should a more traditional finish be required. Head tracks, sills and floor guide channels are produced in extruded aluminum with the option of bronze and satin anodized. Both sills and channels have black polypropylene liner.

#### **Panel Size and Materials**

Centor's innovative hinge system enables all door panels to be made the same size regardless of the door configuration (eg 3L2R or 1L4R). The easily installed hardware can be teamed with ordinary 'book end' door panels in wood, aluminum, PVC or fiberglass.

#### **Concealed Floor Guide Channel**

Floor guides and floor pivots have been offset so that the floor guide channel is located directly under the doors when they are in the closed position. Beneficial from an aesthetic perspective this design feature also reduces opportunity for dust and debris to enter the channel.

## Wall Pivot

A floating wall pivot is used to control door stile deflection and bowing on tall doors caused by wind loads or climatic conditions. When using tall doors (over 7'4" high), use of four rather than three hinges at each junction is recommended.

#### Dropbolts

Easily installed with a dedicated router bit available from Centor, DF and DO dropbolts are available in a range of lengths and finishes to suit every E3 application. Available keyed and non-keyed, the clean-lined DF and DO dropbolts anchor doors firmly in the closed position and, together with the weather seals, eliminate rattling in strong winds.

#### Screening

E3 is fully compatible with the S1E insect door screen, Centor's superbly effective, world-first integrated screening solution for bifold scale openings.

# range of features allow E3 to be utilised with confidence



## E3 Assurance

Modern design is all about allowing the end-user to feel relaxed and comfortable in their surroundings. E3's superior functioning and performance goes much of the way towards meeting this goal and Centor takes care of the rest with a range of measures to ensure the system can be used with complete confidence.

# **Unparalleled Security**

The E3 system responds to an increasingly security conscious market place with measures designed to ensure unwanted visitors are excluded along with the elements.

## **Concealed Fittings**

When doors utilizing E3 are closed there are no externally accessible parts that can be removed or damaged. Screw fixings are concealed and hinge caps are retained by hidden fasteners.

#### Locking Screw Technology

The E3 system incorporates locking screw technology which ensures hardware can not be removed from the track when the doors are closed.

#### Warranty

In line with a commitment to the highest possible quality Centor offers a 10-year warranty on all E3 hardware.

For full details go to www.centorusa.com

#### Specifying E3

E3 is a fully integrated system suitable for applications up to 220lb per panel in wood, aluminum, PVC or fiberglass. Architects and specifiers can feel confident simply specifying 'Centor E3' and leaving detailed component selection to the builder, joiner or fabricator. For more detailed selection refer to Component Selection on page 18.

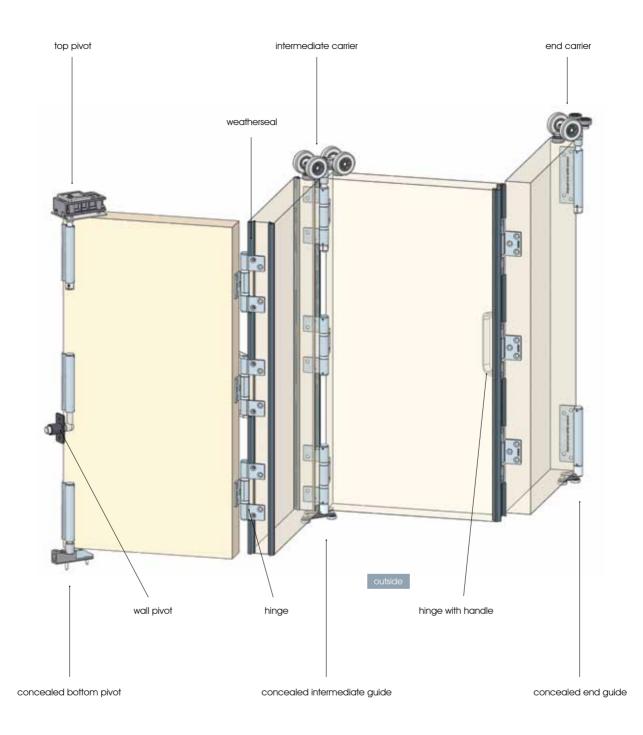






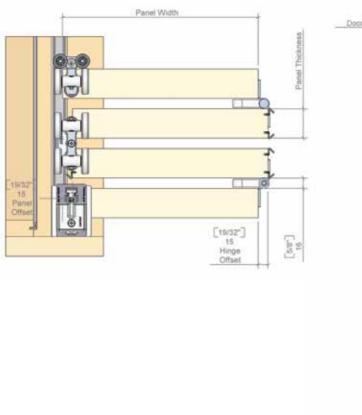


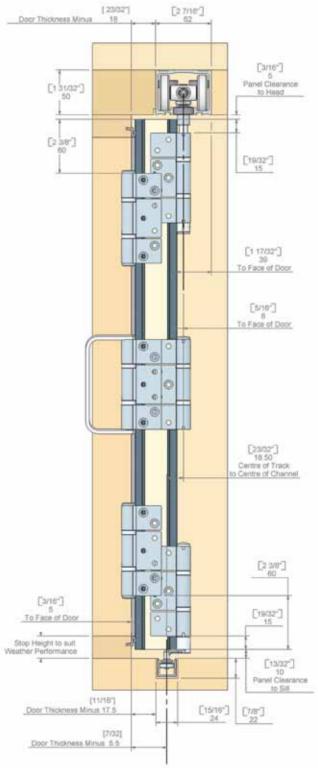
# E3 Product Details

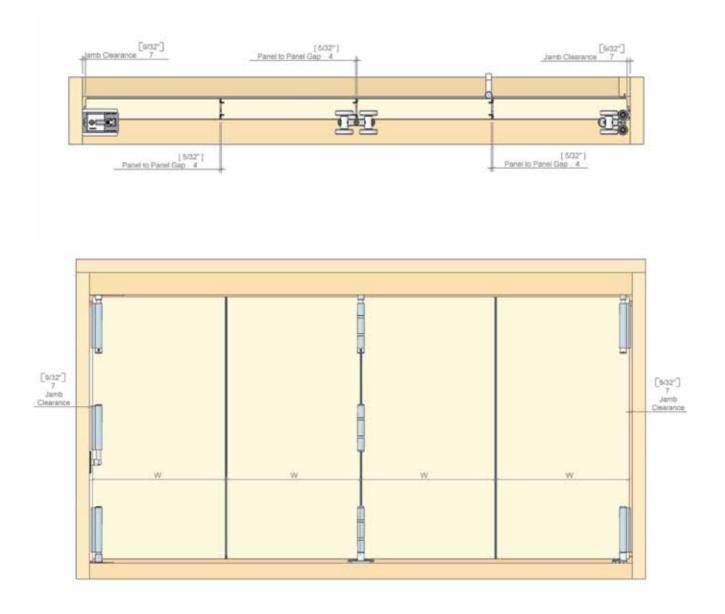


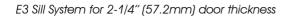
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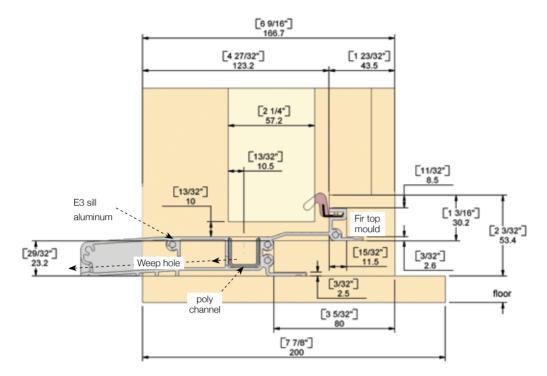
Other US Patents Pending 10/913279



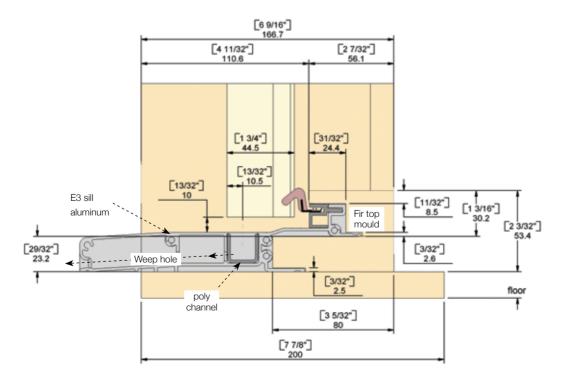


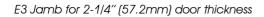


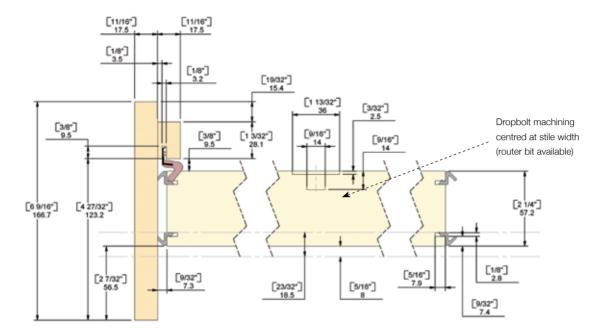




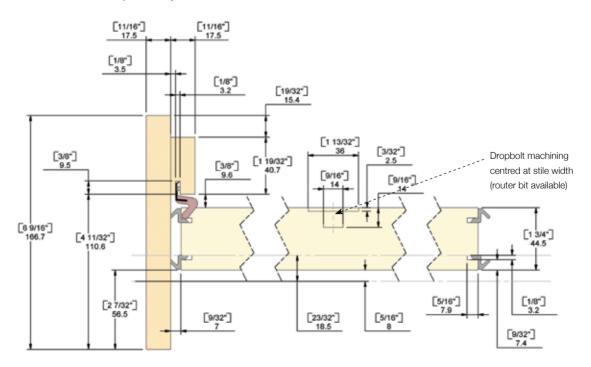
E3 Sill System for 1-3/4" (44.5mm) door thickness

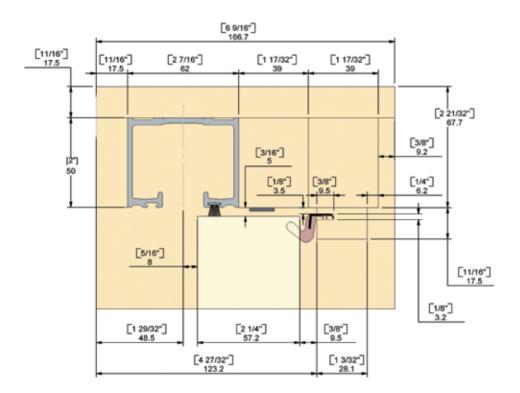






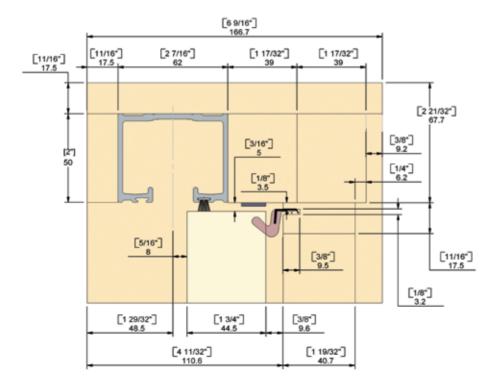
E3 Jamb for 1-3/4" (44.5mm) door thickness





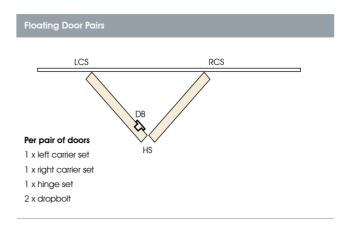
E3 Header for 2-1/4" (57.2mm) door thickness

E3 Header for 1-3/4" (44.5mm) door thickness



# Common Panel Layouts

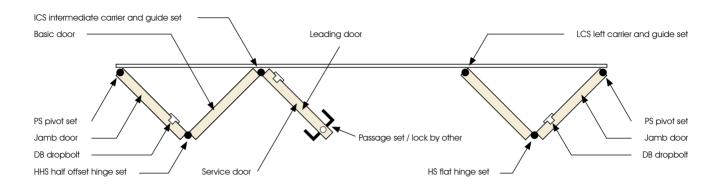
Hardware legend			
PS	pivot set		
WPS	wall pivot set		
ICS	intermediate carrier set		
LCS	left carrier set		
RCS	right carrier set		
HHS	half offset hinge set		
HS	hinge set (flat)		
DB	dropbolt		



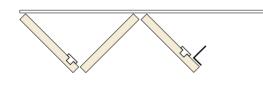
# Legend Passage set / lock by other Image: set / lock by

# Note> Wall Pivot Set recommended for doors over 7'4" (2250mm) in height.

#### Hardware Application (3L2R)



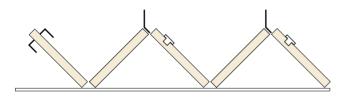
Outswing Application Exterior Handle Optio



Use one exterior handle on exit door (outswing system) where passage set / lock not required. Use dropbolts top and bottom to lock door from the inside only.

Note> Exit door not accessible from exterior in this application.

Inswing Application Exterior Handle Option



Use one exterior handle on each pair of doors (inswing system) to pull open and close doors.

CODE	OPENING CONFIGURATION	HARDWARE
2L	inside WPS, PS not accessible from exterior outside RCS HS	1 x pivot set 1 x wall pivot set 1 x right carrier set 1 x hinge set 2 x dropbolt
2L1R	inside WPS, PS outside RCS HS	2 x pivot set 2 x wall pivot set 1 x right carrier set 1 x hinge set 2 x dropbolt
3L	inside WPS, PS ICS outside	1 x pivot set 1 x wall pivot set 1 x intermediate carrier set 1 x half offset hinge set 2 x dropbolt
3L1R	inside WPS, PS ICS WPS, PS outside	2 x pivot set 2 x wall pivot set 1 x intermediate carrier set 1 x half offset hinge set 4 x dropbolt
4L	inside WPS, PS ICS RCS not accessible from exterior outside HHS HHS	1 x pivot set 1 x wall pivot set 1 x intermediate carrier set 1 x right carrier set 2 x half offset hinge set 4 x dropbolt
4L1R	inside WPS, PS ICS WPS, PS outside HHS HHS	2 x pivot set 2 x wall pivot set 1 x intermediate carrier set 1 x right carrier set 2 x half offset hinge set 4 x dropbolt
3L2R	inside WPS, PS ICS WPS, PS outside HHS HS	2 x pivot set 2 x wall pivot set 1 x intermediate carrier set 1 x left carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbolt
5L	inside WPS, PS ICS ICS outside HHS HS	1 x pivot set 1 x wall pivot set 2 x intermediate carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbolt
3L3R	inside WPS, PS ICS ICS WPS, PS outside may be reversed HHS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 2 x half offset hinge set 6 x dropbolt
7L	inside WPS, PS ICS ICS ICS outside HHS HS HS HS	1 x pivot set 1 x wall pivot set 3 x intermediate carrier set 2 x hinge set 1 x half offset hinge set 6 x dropbolt
4L3R	inside WPS, PS ICS RCS ICS WPS, PS outside HHS HHS HHS HHS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 1 x right carrier set 3 x half offset hinge set 6 x dropbolt
5L2R	inside WPS, PS ICS ICS RCS WPS, PS outside HHS HS HS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 1 x left carrier set 2 x hinge set 1 x half offset hinge set 6 x dropbolt
5L3R	Inside WPS, PS ICS ICS ICS WPS, PS outside	2 x pivot set 2 x wall pivot set 3 x intermediate carrier set 1 x hinge set 2 x half offset hinge set 8 x dropbolt

# Common Panel Layouts (outswing)

CODE	OPENING CONFIGURATION	HARDWARE
2R	inside PS, WPS not accessible from exterior outside LCS HS	1 x pivot set 1 x wall pivot set 1 x left carrier set 1 x hinge set 2 x dropbolt
1L2R	inside WPS, PS outside LCS WPS, PS HS	2 x pivot set 2 x wall pivot set 1 x left carrier set 1 x hinge set 2 x dropbolt
3R	inside ICS WPS, PS outside	1 x pivot set 1 x wall pivot set 1 x intermediate carrier set 1 x half offset hinge set 2 x dropbolt
1L3R	inside WPS, PS ICS WPS, PS outside HHS	2 x pivot set 2 x wall pivot set 1 x intermediate carrier set 1 x half offset hinge set 4 x dropbolt
2L2R	inside WPS, PS RCS LCS WPS, PS not accessible from exterior outside HS HS	2 x pivot set 2 x wall pivot set 1 x right carrier set 1 x left carrier set 2 x hinge set 4 x dropbolt
1L4R	inside WPS, PS LCS ICS WPS, PS outside HHS HHS	2 x pivot set 2 x wall pivot set 1 x intermediate carrier set 1 x left carrier set 2 x half offset hinge set 4 x dropbolt
4R	inside LCS ICS WPS, PS outside HHS HHS	1 x pivot set 1 x wall pivot set 1 x intermediate carrier set 1 x left carrier set 2 x half offset hinge set 4 x dropbolt
2L3R	inside WPS, PS RCS ICS WPS, PS outside HS HS HHS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 1 x right carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbolt
5R	Inside outside	1 x pivot set 1 x wall pivot set 2 x intermediate carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbolt
3L4R	inside WPS, PS ICS LCS ICS WPS, PS outside HHS HHS HHS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 1 x left carrier set 3 x half offset hinge set 6 x dropbolt
7R	inside ICS ICS ICS WPS, PS outside	1 x pivot set 1 x wall pivot set 3 x intermediate carrier set 2 x hinge set 1 x half offset hinge set 6 x dropbolt
2L5R	inside WPS, PS RCS ICS WPS, PS outside HS HS HHS	2 x pivot set 2 x wall pivot set 2 x intermediate carrier set 1 x right carrier set 2 x hinge set 1 x half offset hinge set 6 x dropbolt
8R	Inside LCS ICS ICS ICS WPS, PS not accessible from exterior	1 x pivot set 1 x wall pivot set 3 x intermediate carrier set 1 x left carrier set 2 x hinge set 2 x half offset hinge set 8 x diopbolt

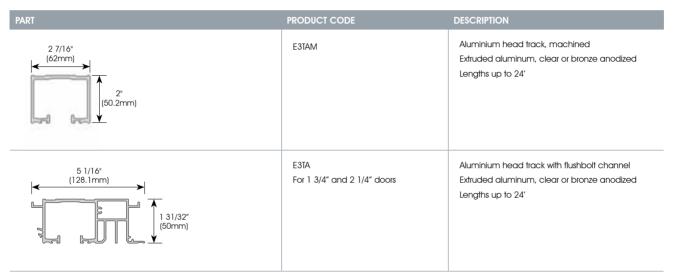
# Component selection

E3 is specified with 5 separate groups:

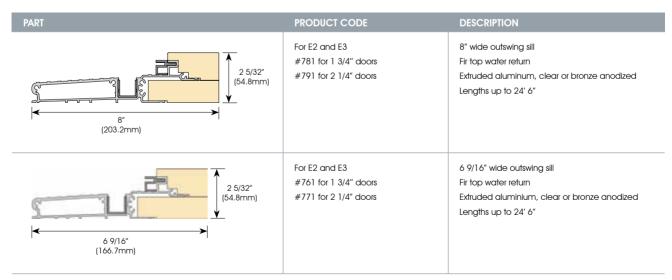
- 1 track
- 2 sill with channel
- 3 hardware
- 4 weathersealing
- 5 dropbolts

Components are required from all 5 groups to build an E3 bifolding door system.

# Track

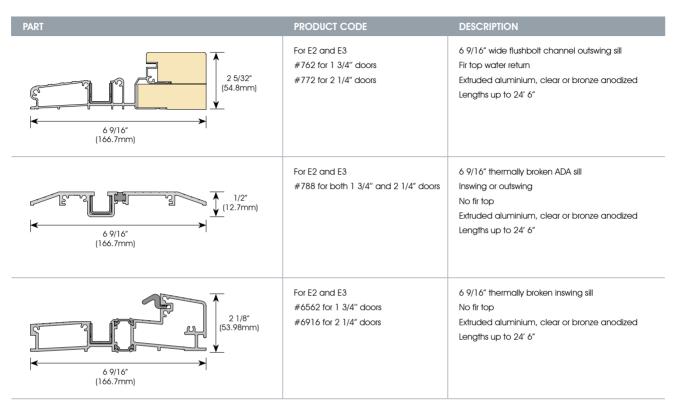


# Sill



# Component selection

Sill



# Channel

PARTS	PRODUCT CODE	DESCRIPTION
$  \underbrace{ 3/4^{*}}_{(19mm)} $	E22FCP	Concealed polypropylene channel 13/16" (21mm) Lengths up to 19′ 8"
Replacement polypropylene channel fits inside aluminum channel		
7/8" (22mm) 15/16" (24mm)	E22FCR	Concealed channel retainer Extruded aluminium, clear or bronze anodized Lengths up to 19' 8"

# Hardware selection

# Left / Right Carrier Set



# Intermediate Carrier Set (fourth hinge recommended for doors over 7'4" (2250mm)

PARTS		PARTS ON PANELS	PRODUCT CODE	DESCRIPTION
a)	b)	a)	E3CICSS	concealed intermediate set, stainless steel
C.SO	(P)	*	E3CICSOL	concealed intermediate set, PVD bronze
		Ĩ	E3CICSTG	concealed intermediate set, PVD brass
and a state of the			E3HNHS	single straight hinge, stainless steel
20			E3HNHOL	single straight hinge, PVD bronze
1		b)	E3HNHTG	single straight hinge, PVD brass
Pile and the		Jan an ang		
	arrier set with concealed	d bottom guide over over 7'4" (2250mm)		

# Hardware selection

# Hinge Set



# c) fourth hinge recommended for doors over over 7'4" (2250mm)

# Half Offset Hinge Set

PARTS	PARTS ON PANELS	PRODUCT CODE	DESCRIPTION
a) b)	a)	E3HHSS	half offset hinge set with handle, stainless steel
the state		E3HHSOL	half offset hinge set with handle, PVD bronze
	Ď	E3HHSTG	half offset hinge set with handle, PVD brass
m m	b)		
	S,	E3HHNHSS	half offset hinge set with no handle, stainless steel
		E3HHNHSOL	half offset hinge set with no handle, PVD bronze
	8	E3HHNHSTG	half offset hinge set with no handle, PVD brass
		E3HHNHS	single half offset hinge, stainless steel
c)		E3HHNHOL	single half offset hinge, PVD bronze
la		E3HHNHTG	single half offset hinge, PVD brass
1 million			

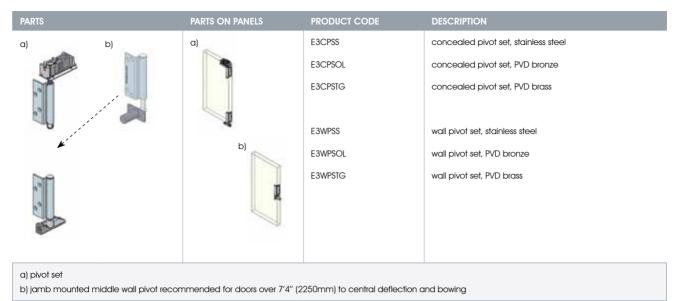
a) half offset hinge set with handle for outswing doors

b) half offset hinge set with no handle for inswing doors

c) fourth hinge recommended for doors over over 7'4" (2250mm)

# Hardware selection

# Pivot Set / Wall Pivot



# **External Handle**

PARTS	PARTS ON PANELS	PRODUCT CODE	DESCRIPTION
	<i>d</i> 1	E3EHS	external handle, stainless steel
2		E3EHOL	external handle, PVD bronze
000	a	E3EHTG	external handle, PVD brass
single hinge with handle for outswing and inswing application (please refer to Common Panel Layouts page 15 fore more details)			

# Weatherseal selection

# Weatherseals

PARTS	PRODUCT CODE	DESCRIPTION
	426	White or brown weatherseal for between doors.
1	427	White or brown weatherseal for sill, jamb and header (perimeter).
**	P108-35	For entry door
<b>&gt;</b>	P108-50	Doorsweep

# available in a range of lengths and finishes

## Dropbolts

Centor's stylish, flush-mounting dropbolts are the ideal solution for fastening or securing bifold doors based on the E3 system. Easily installed with a dedicated router bit available from Centor, DF and DO dropbolts are available in a range of lengths and finishes to suit many applications.

## Centor DF

Rated to resist the most extreme wind conditions (up to 990lb force in certain timbers) DF dropbolts feature rounded styling and are suited to use with outward opening bifold doors. Available in 8" (200mm), 16" (400mm), 24" (600mm) and 39" (1000mm) lengths with a 3/4" (20mm) throw, they come in natural and gold anodised, chrome, brushed metallic and custom powdercoated finishes.

#### Centor DO

Offering all the style, security and choice of DF, but with varying degrees of offset in the bolt shaft, DO dropbolts suit inward opening doors based on the E3 Concealed system. DO is installed at the top of the door panel while DO Concealed locks into the floor channel of the bifold system, meaning no extra holes or slots to drill or machine in the floor surface or door-sill.





# Dropbolts / outward opening

DY Specifications			
maximum wind load	990lb (450kg) force		
minimum door thickness	1 3/4' (44.45mm)		
bolt lengths	8″ (200mm),16″ (400mm), 24″ (600mm), 39″ (1000mm)		
throw length	1" (25mm)		
finishes	Brushed metallic, oil rubbed bronze powdercoat and PVD brass.		



PART	ARCHITECTURAL DETAIL	PRODUCT CODE	DESCRIPTION
		DBSY200NRTG	8" (200mm), PVD brass
		DBSY200NRQ	8" (200mm), oil rubbed bronze powdercoat
		DBSY200NRX	8" (200mm), brushed metallic
		DBSY400NRTG	16" (400mm), PVD brass
		DBSY400NRQ	16" (400mm), oil rubbed bronze powdercoat
_		DBSY400NRX	39" (1000mm), brushed metallic
0 0		DBSY600NRTG	24" (600mm), PVD brass
D,		DBSY600NRQ	24" (600mm), oil rubbed bronze powdercoat
		DBSY600NRX	24" (600mm), brushed metallic
		DBSY1000NRQ	39" (1000mm), oil rubbed bronze powdercoat
		DBSY1000NRX	39" (1000mm), brushed metallic

# Dropbolts / inward opening

DO Specifications			
minimum door thickness	1 3/4' (44.45mm)		
bolt lengths	8" (200mm),16" (400mm), 24" (600mm), 39" (1000mm)		
throw length	3/4" (20mm)		
finishes	Brushed metallic, oil rubbed bronze powdercoat and PVD brass.		

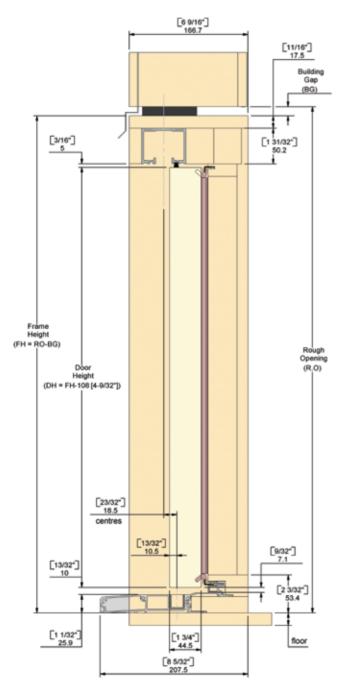


PART	ARCHITECTURAL DETAIL	PRODUCT CODE	DESCRIPTION
	0	DBOC200NRTG	8" (200mm) concealed dropbolt, PVD brass
R. Star		DBOC200NRX	8" (200mm) concealed dropbolt, brushed metallic
and the second se		DBOC200NRQ	8" (200mm) concealed dropbolt, oil rubbed bronze powdercoat
		DBOC400NRTG	16" (400mm) concealed dropbolt, PVD brass
	0	DBOC400NRX	16" (400mm) concealed dropbolt, brushed metallic
		DBOC400NRQ	16" (400mm) concealed dropbolt, oil rubbed bronze powdercoat
Col in a summer of	and the second s	DBOC400NRTG DBOC400NRX	16" (400mm) concealed dropbolt, PVD brass 16" (400mm) concealed dropbolt, brushed metallic

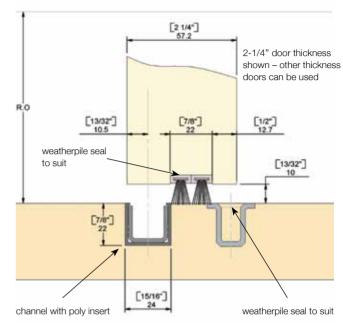
PART	ARCHITECTURAL DETAIL	PRODUCT CODE	DESCRIPTION
		DBOC200NRTG	8" (200mm) concealed dropbolt, PVD brass
		DBOC200NRX	8" (200mm) concealed dropbolt, brushed metallic
and the second se	(a)	DBOC200NRQ	8" (200mm) concealed dropbolt, oil rubbed bronze powdercoat
and the second second		DBOE200NRTG	8" (200mm) dropbolt, PVD brass
5		DBOE200NRX	8" (200mm) dropbolt, brushed metallic
-	and the second sec	DBOE200NRQ	8" (200mm) dropbolt, oil rubbed bronze powdercoat
		DBOE400NRTG	16" (400mm) dropbolt, PVD brass
		DBOE400NRX	16" (400mm) dropbolt, brushed metallic
		DBOE400NRQ	16" (400mm) dropbolt, oil rubbed bronze powdercoat
		DBOE600NRTG	24" (600mm) dropbolt, PVD brass
	DBOE600NRX	24" (600mm) dropbolt, brushed metallic	
	DBOE600NRQ	24" (600mm) dropbolt, oil rubbed bronze powdercoat	
		DBOE1000NRTG	39" (1000mm) dropbolt, PVD brass
		DBOE1000NRX	39" (1000mm) dropbolt, brushed metallic
		DBOE1000NRQ	39" (1000mm) dropbolt, oil rubbed bronze powdercoat

# Installation Details

Full opening with self drain sill option



Flush with floor channel sill option





# Centor North America Inc.

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