

Eaton Electrical

Launches New Options for Upgrading Existing Panelboards.

More and more customers need to upgrade their existing electrical systems to meet their growing power demand. The digital age coupled with the aging infrastructure is driving these opportunities as well as a desire for improved building safety and reliability through adding arc fault, ground fault, and/or surge protection. In the specific situation of upgrading an existing panelboard, the question becomes when is it better to upgrade reusing the existing box versus doing a full replacement.

Situations where reusing the existing box is the right choice

- The panel is flush mounted so that replacing with a new panel will require major wall repair. This is especially relevant with plaster, concrete, or block walls
- Other difficulties exist with disturbing the existing installation such as existing asbestos insulation
- When limiting downtime is beneficial – total installation time of a retrofit is much quicker than total wall repair
- When total project completion time is critical. More steps are required in complete removal, new installation and wall repair. It also requires coordination with other subcontractors

However there are many challenges to retrofitting into an existing box including:

- Sometimes the box is too shallow or short to accommodate upgrading the existing box
- It can be tricky to get the interior mounted to the right elevation within the existing box to work properly with the cover
- Sometimes the contractor is hesitant to do a detailed take off of the existing box specs.
- When doing a job walk through, it is not quick and easy for the contractor to determine if the box can accommodate the upgrade
- The lead times can be too long for the project time line

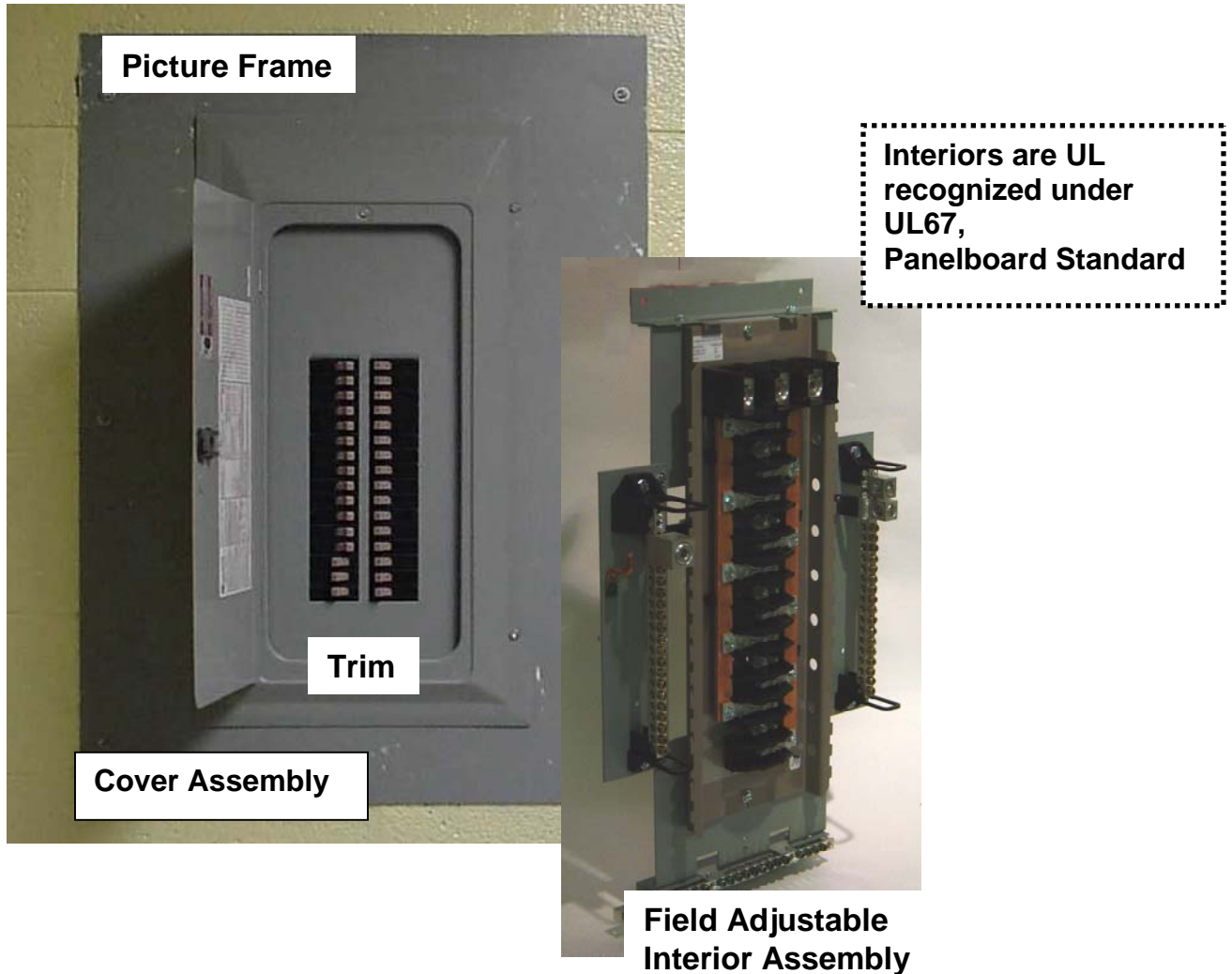
To address these concerns, we are expanding our offering to include a new loadcenter based (plug on style breaker) solution. This new offering will meet the needs of especially size constrained 240V panelboard applications.

The new loadcenter based (plug on style breaker) solution takes advantage of its compact design to handle even the most challenging upgrade needs. It features an innovative field adjustable interior assembly that is adaptable between 4" and 6" of box depth, which relieves the pressure of the precise field measurement. To satisfy the need of quick lead times and desire for easier selection we have developed a kitted offering that you select based on your existing box size. This way you know literally at the walk through whether an upgrade will work in the application thus saving return trips to the job site. Our interiors are UL recognized under UL67, the panelboard standard, and the approved box sizes provide the contractor the right guidance to comply with current NEC wire bend space requirements. The standardized kits are available with quick lead-times to meet tight project timelines.

This document contains detailed information on this new addition to our offering. If you have further questions or need a quotation on these retrofit kits please contact our Lincoln Flex Center at 800-330-6479. If however you would like more information about Eaton Electrical's other panelboard retrofit solutions, contact your local satellite or Eaton Electrical/ Cutler-Hammer sales office.

Retrofit Kits

Consist of cover assembly and field adjustable interior assembly



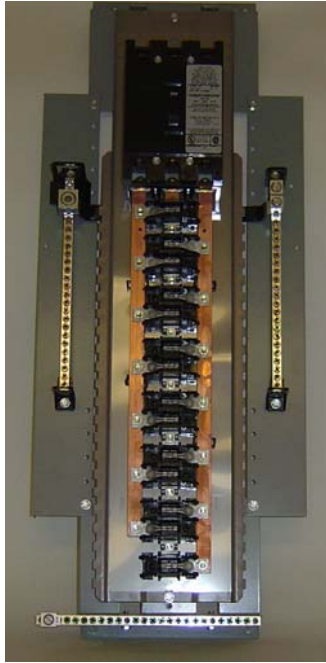
Cover assembly consists of a **picture frame** and **trim**. The picture frame adapts the trim assembly to the existing box size and provides some additional coverage over the wall. The picture frame is drilled in the field for attaching it to the existing box flange.

The amount of coverage over the wall is the difference between the standard picture frame size (shown in the selection chart) and the existing box dimensions. If different dimensions are required, then choose the **custom cover option**.

The **interior assembly** includes a field adjustable riser that sets the interior at the right depth within the existing box. The assembly is field adjustable to accommodate box depths between 4" and 6". The existing box is drilled in the field to mount the riser assembly.

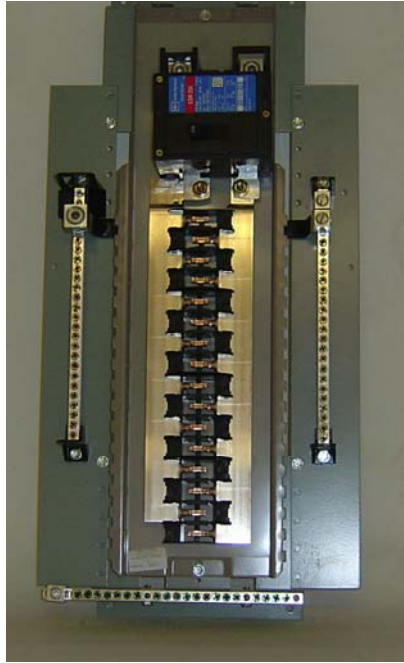
Cutler-Hammer offers two types of Retrofit kits CH and BR
 Type CH Panelboard Retrofit Kits – Most Compact Option

All Cutler-Hammer Designs Feature Sturdy Metal Interior Construction



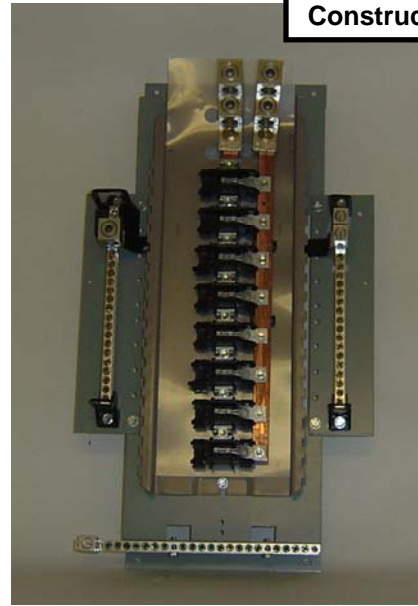
3 Phase Panels

Typical construction for 3 phase main breaker and main lug CH panels feature copper bus & tin-plated copper bus stabs.



1 Phase Panels

Typical construction for 1 phase main breaker and main lug CH panels feature one piece copper bus construction



Sub Feed Lug Panels

Typical construction for sub feed lug panels both 1 and 3 phase feature copper bus & tin-plated copper bus stabs.

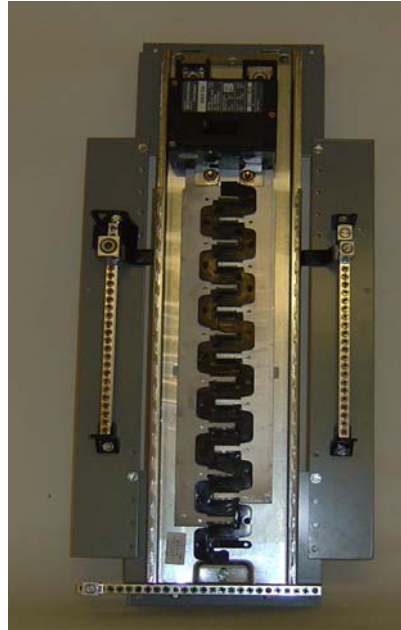
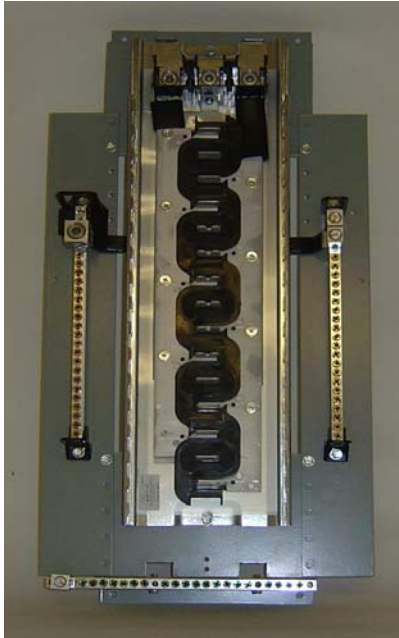
Types of Branch Breakers – ¾" Per Pole Format

Catalog Numbers	Voltage	Poles	AMP	AIC	Special Protection or features
CH110 – CH160*	120	1	10 - 60	10K	Trips to off
CH210 – CH2100*	120/240	2	10 - 100	10K	Trips to off
CH310 – CH3100*	240V	3	10 - 100	10K	Trips to off
CH115AF, CH120AF	120	1	15 - 20	10K	Arc Fault, Trips to off
CH115AFGF - CH120AFGF	120	1	15 - 20	10K	Arc Fault, 5 MA GFI, Trips to off
CH215AF - CH220AF**	120/240	2	15 - 20	10K	Arc Fault , Trips to off
CH215AFGF, CH220AFGF	120/240	2	15 - 20	10K	Arc Fault, 5 MA GFI, Trips to off
CH115GF – CH130GF*	120	1	15 - 30	10K	5 MA GFI, Trips to off
CH215GF – CH260GF	120/240	2	15 - 60	10K	5MA GFI, Trips to off
CH115EPD – CH130EPD	120	1	15 - 30	10K	30MA GFI, Trips to off
CH215EPD – CH260EPD	120/240	2	15 - 60	10K	30MA GFI, Trips to off
CH215SW – CH250SW*	120V	2	15 - 50	10K	Switching neutral, Trips to off
CH315SW – CH350SW*	120/240	3	15 - 50	10K	Switching neutral, Trips to off
CH115HID – CH130HID	120/240	1	15 - 30	10K	Suitable for HID loads, Trips to off
CH215HID – CH230HID	240	2	15 - 30	10K	Suitable for HID loads, Trips to off
CH315HID – CH330HID	240	3	15 - 30	10K	Suitable for HID loads, Trips to off
CH115M50 – CH150M50	120	1	15 - 50	10K	High Ambient, Trips to off
CH215M50 – CH270M50	120/240	2	15 - 70	10K	High Ambient, Trips to off
CH115HM – CH120HM*	120	1	15 - 20	10K	High Magnetic, Trips to off
CH215HM – CH220HM*	120/240	2	15 - 20	10K	High Magnetic, Trips to off

* - denotes breakers available in trip to center position by substituting a CHP for CH in the part number

** - denotes breakers available with independent trip by substituting AFIT for AF in the part number

Type BR Panelboard Retrofit Kits



All Cutler-Hammer Designs Feature Sturdy Metal Interior Construction

3 Phase Panels
 Typical construction for 3 phase main breaker and main lug BR panels with tin-plated aluminum bus.

1 Phase Panels
 Typical construction for 1 phase main breaker and main lug BR panels with tin-plated aluminum bus.

Branch Breakers – 1" Per Pole Format

Catalog Numbers	Voltage	Poles	AMP	AIC	Special Protection or features
BR110 – BR170	120	1	10 - 70	10K	
BRH115 – BRH170	120	1	15 - 70	22K	Higher AIC rating
BR210 – BR2125	120/240	2	10 - 125	10K	
BR210H – BR2100H	240V	2	10 - 100	10K	Rated for voltage to ground of 240V
BRH215 – BRH2125	120/240	2	15 - 125	22K	Higher AIC rating
BR310 – BR3100	240	3	10 - 100	10K	
BRH315 – BRH3100	240	3	15 - 100	22K	Higher AIC rating
BR115AF – BR120AF**	120	1	15 - 20	10K	Arc Fault
BR115AFGF – BR120AFGF	120	1	15 - 20	10K	Arc Fault, 5 MA GFI
BR215AF – BR220AF**	120/240	2	15 - 20	10K	Arc Fault
BR215AFGF – BR220AFGF	120/240	2	15 - 20	10K	Arc Fault, 5 MA GFI
GFCB115 – GFCB140	120	1	15 - 40	10K	5 MA GFI
GFCB215 – GFCB250	120/240	2	15 - 50	10K	5MA GFI
GFCBH115 – GFCBH125	120	1	15 - 25	22K	5MA GFI, Higher AIC
GFCBH215 – GFCB H230	120/240	2	15 - 30	22K	5MA GFI, Higher AIC
GFEP115 – GFEP130	120	1	15 - 30	10K	30MA GFI
GFEP215 – GFEP250	120/240	2	15 - 50	10K	30MA GFI
BRSN215 – BRSN230	120V	2	15 - 30	10K	Switching neutral
BR115H – BR120H	120/240	1	15 - 20	10K	Suitable for HID loads
BR315H – BR320H	240	3	15 - 20	10K	Suitable for HID loads
BJ2125 – BJ2225	120/240	2	125 - 225	10K	Branch mounts in 4 circuits
BJH2125 – BJH2225	120/240	2	125 - 225	22K	Branch mounts in 4 circuits, Higher AIC
BJ3125 – BJ3225	240	3	125 - 225	10K	Branch mounts in 6 circuits
BJH3125 – BJH3225	240	3	125 - 225	22K	Branch mounts in 6 circuits, Higher AIC
BD1010 – BD5030	120/240	(2) 1	10 - 50	10K	Twin breaker qty 2 – 1 pole in 1" space
Type BQ	120/240	1/2	15 - 50	10K	Quad breakers qty 4 poles in 2" space, see internet catalog for detailed offering

** - denotes breakers available with independent trip by substituting AFIT for AF in the part number

Detailed product Guide

All standard retrofit kits size A-E are suitable for a range of existing box sizes*

Box Width's ranging from 14 ½" to 22"

Box Depth's ranging from 4" for BR and 4 ¼" for CH to 6"

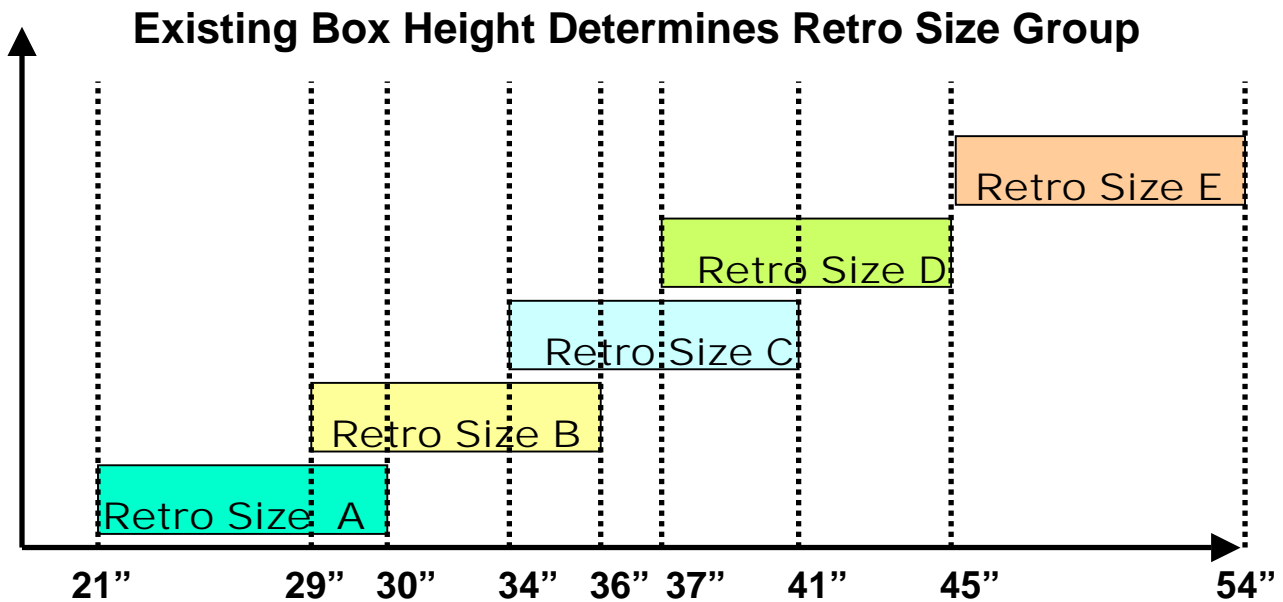
Box Height's ranging from 21" to 45"

For box dimensions outside of these ranges contact the Lincoln Flex Center at 800-330-6479. Be sure to provide the existing incoming line wire size.

To select the retrofit kit

1. Decide which type of interior you want (CH or BR) – see descriptions pages 3-4
2. From the existing box size determine which retrofit groups are suitable (may be more than one).

* For box sizes smaller than Retro Size A, see page 10 for additional offerings.



3. Use type of interior, # of phases, and type of main to find the selection chart
4. Select part number from chart (if main breaker, replace XXX with specific amp rating)
5. Note that the overlap of the existing wall is the retro cover size minus the existing box size. If specific measurements are needed communicate that you need a custom trim size.
6. Contact the Lincoln Flex Center at 800-330-6479 for pricing, lead-times, and order entry instructions.

Type CH Interior									
Single Phase with Main Breaker						Selection Chart 1			
Main Breaker		Existing Box Height		Wire Size	# of Ckts	Part Number (XXX is for Main Breaker specific amp rating)	Retro Size Group	Retro Cover Size*	
Amp Rating	AIC Rating	Min	Max					H	W
60 – 125	10K	21"	30"	#2 – 1/0	22	RACH22BXXX	A	33"	24"
60 – 125	10K	29"	36"	#2 – 1/0	30	RBCH30BXXX	B	40"	24"
100 – 200	35K	29"	30"	#2 – 250MCM	24	RBCH24BXXX			
		30.5"	36"	#2 – 300MCM					
100 – 225	35K	34"	41"	#2 – 300MCM	32	RCCH32BXXX	C	43"	24"
100 – 225	35K	37"	45"	#2 – 300MCM	42	RDCH42BXXX	D	47"	24"
	100K			#4 – 300MCM		RDCH42HXXX			

Type CH Interior									
Single Phase Main Lug Only						Selection Chart 2			
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
125	21"	30"	#4 – 2/0	24	RACH24L125	A	33"	24"	
125	25"	26"	#4 – #1	42	RBCH42L125	B	40"	24"	
	26.5"	30"	#4 – 1/0						
225	29"	36"	#1 – 300MCM	32	RBCH32L225				
225	28.5"	36"	#4 – 4/0	42	RBCH42L225	C	43"	24"	
225	34"	41"	#1 – 300MCM	42	RCCH42L225				
225	37"	45"	#1 – 300MCM	42	RDCH42L225	D	47"	24"	

Type CH Interior									
Single Phase with Sub Feed Lugs						Selection Chart 3			
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
225	29"	36"	#6 – 300MCM	24	RBCH24D225	B	40"	24"	
	31"	33.5"	#6 – 250MCM	30	RBCH32D225				
	34"	36"	#6 – 300MCM						
225	34"	41"	#6 – 300MCM	32	RCCH32D225	C	43"	24"	
225	37"	45"	#6 – 300MCM	42	RDCH42D225	D	47"	24"	

* Specific cover sizes are available. Be sure to specify the custom cover option and provide exact dimensions required.

Type CH Interior									
Three Phase with Main Breaker							Selection Chart 4		
Main Breaker		Existing Box Height		Wire Size	# of Ckts	Part Number (XXX is for Main Breaker specific amp rating)	Retro Size Group	Retro Cover Size*	
Amp Rating	AIC Rating	Min	Max					H	W
60 - 125	10K	21"	30"	#2 - 1/0	18	RACH18B3XXX	A	33"	24"
100 - 225	10K	37"	45"	2/0 - 300MCM	42	RDCH42B3XXX	D	47"	24"
	100K	37"	38.5"	2/0 - 250MCM		RDCH42H3XXX			
		39"	45"	2/0 - 300MCM					

Type CH Interior									
Three Phase with Main Lugs Only							Selection Chart 5		
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
125	21"	30"	#6 - 2/0	24	RACH24L3125	A	33"	24"	
125	22"	30"	#4 - #1	30	RACH30L3125				
150	22.5"	30"	#4 - 1/0	30	RACH30L3225				
225	24.5"	30"	#4 - 4/0	30	RBCH30L3225	B	40"	24"	
225	29"	36"	#4 - 300MCM	30	RBCH30L3225				
125	25"	28"	#4 - #1	42	RBCH42L3125				
225	28.5"	36"	#4 - 4/0	42	RBCH42L3225	C	43"	24"	
225	34"	41"	#4 - 300MCM	42	RCCH42L3225				
225	37"	45"	#4 - 300MCM	42	RDCH42L3225				
225	37"	45"	#4 - 300MCM	42	RDCH42L3225	D	47"	24"	

Type CH Interior									
Three Phase with Sub Feed Lugs							Selection Chart 6		
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
225	29"	36"	#6 - 300MCM	24	RBCH24D3225	B	40"	24"	
	31"	33.5"	#6 - 250MCM	30	RBCH30D3225				
	34"	36"	#6 - 300MCM						
225	34"	41"	#6 - 300MCM	30	RCCH30D3225	C	43"	24"	
225	37"	45"	#6 - 300MCM	42	RDCH42D3225	D	47"	24"	

* Specific cover sizes are available. Be sure to specify the custom cover option and provide exact dimensions required.

Type BR Interior									
Single Phase with Main Breaker							Selection Chart 7		
Main Breaker		Existing Box Height		Wire Size	# of Ckts	Part Number (XXX is for Main Breaker specific amp rating)	Retro Size Group	Retro Cover Size*	
Amp Rating	AIC Rating	Min	Max					H	W
60 – 125	10K	21"	30"	#4 – 2/0	20	RABR20BXXX	A	33"	24"
	22K			#4 – 2/0		RABR20HXXX			
60 – 125	10K	29"	36"	#4 – 1/0	30	RBBR30BCXXX	B	40"	24"
	22K			#4 – 1/0		RBBR30HCXXX			
100 – 200	25K	29"	30.5"	#2 – 250MCM	20	RBBR20BXXX			
		31"	36"	#2 – 300MCM					
100 – 200	25K	34"	35.5"	#2 – 250MCM	30	RCBR30BXXX	C	43"	24"
		36"	41"	#2 – 300MCM					
100 – 200	25K	37"	38.5"	#2 – 4/0	40	RDBR40BXXX	D	47"	24"
		39"	40.5"	#2 – 250MCM					
		41"	45"	#2 – 300MCM					

Type BR Interior									
Single Phase with Main Lugs Only							Selection Chart 8		
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
125	21"	30"	#14 – 2/0	20	RABR20L125	A	33"	24"	
200	29"	31.5"	#1 – 250MCM	30	RBBR30L200	B	40"	24"	
	32"	36"	#1 – 300MCM						
200	34"	36.5"	#1 – 250MCM	40	RCBR40L200	C	43"	24"	
	37"	41"	#1 – 300MCM						
225	37"	38.5"	#1 – 250MCM	42	RDBR42L225	D	47"	24"	
	39"	45"	#1 – 300MCM						

* Specific cover sizes are available. Be sure to specify the custom cover option and provide exact dimensions required.

Type BR Interior									
Three Phase with Main Breaker						Selection Chart 9			
Main Breaker		Existing Box Height		Wire Size	# of Ckts	Part Number (XXX is for Main Breaker specific amp rating)	Retro Size Group	Retro Cover Size*	
Amp Rating	AIC Rating	Min	Max					H	W
60 - 100	10K	21"	30"	#4 - 1/0	12	RABR12B3XXX	A	33"	24"
	22K					RABR12H3XXX			
60 - 100	10K	29"	36"	#4 - 1/0	30	RBBR30B3XXX	B	40"	24"
	22K					RBBR30H3XXX			
100 - 200	10K	37"	45"	2/0 - 300MCM	30	RDBR30B3XXX	D	47"	24"
	100K	37"	38.5"	2/0 - 250MCM		RDBR30H3XXX			
		39"	45"	2/0 - 300MCM					
100 - 225	10K	45"	54"	2/0 - 300MCM	42	REBR42B3XXX	E	56"	24"
	100K					REBR42H3XXX			

Type BR Interior									
Three Phase with Main Lugs Only						Selection Chart 10			
Max. Bus Amp Rating	Existing Box Height		Wire Size	# of Ckts	Part Number	Retro Size Group	Retro Cover Size*		
	Min	Max					H	W	
125	21"	30"	#8 - 2/0	12	RABR12L3125	A	33"	24"	
100	29"	36"	#8 - 2/0	30	RBBR30L3100	B	40"	24"	
150			#4 - 4/0	24	RBBR24L3150				
200	34"	35.5"	#4 - 250MCM	30	RCBR30L3200	C	43"	24"	
	36"	41"	#4 - 300MCM						
225	37"	38.5"	#4 - 250MCM	42	RDBR42L3225	D	47"	24"	
	39"	45"	#4 - 300MCM						
225	45"	54"	#4 - 300MCM	42	REBR42L3225	E	56"	24"	

* Specific cover sizes are available. Be sure to specify the custom cover option and provide exact dimensions required.

Retrofit Options for Smaller Existing Panelboard or Loadcenter Enclosures

An additional offering has been geared toward retrofitting enclosures that are smaller than the Retro Size A group listed above. These kits are specifically designed for enclosures with the following parameters:

- Box Width's ranging from 10 ½" to 15 ½"
- Box Depth's ranging from 3 ½" to 5 ¼"
- Box Height's ranging from 14 ½" to 20 ½"



Compact Design for 12/24 circuit MLO Retrofit

Cover assembly consists of a **picture frame** and **trim**. The trim protrudes ½" from drywall to provide additional depth for the adjustable riser assembly. The picture frame is drilled in the field for attaching it to the existing box flange.

The amount of coverage over the wall is the difference between the standard picture frame size (shown in the selection chart) and the existing box dimensions. If different dimensions are required, then choose the **custom cover option**.

The **interior assembly** includes a field adjustable riser that sets the interior at the right depth within the existing box. The assembly is field adjustable to accommodate box depths between 3 ½" and 5 ¼". The existing box is drilled in the field to mount the riser assembly.

Type BR Interior					Selection Chart 11			
Amp Rating	Main	Wire Size	# of Spaces	# of Ckts	Part Number (XXX is for MB Amp Rating)	Retro Size Group	Retro Cover Size*	
							H	W
125	Lugs	#6 – 1/0	12	24	RAABR12L125	AA	19"	13"
					RAABR12L125A		21"	16"
60-125	Breaker	#6 – 1/0	10	20	RAABR10BXXX		19"	13"
					RAABR10BXXXA		21"	16"