



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0804

HCAI Special Seismic Certification Preapproval (OSP)

Type:  New  Renewal

Manufacturer Information

Manufacturer: Benshaw, Inc.

Manufacturer's Technical Representative: Nicole Caparanis

Mailing Address: 615 Alpha Drive, Pittsburgh, PA 15238

Telephone: (412) 968-0100

Email: nicole.caparanis@benshaw.com

Product Information

Product Name: Motor Control Centers

Product Type: Motor Control Centers - Medium Voltage

Product Model Number: Various MV Motor Control Center and Starter Products

General Description: Various starter products in welded carbon steel enclosures. Installation both standalone and ganged.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: Pre Compliance

Contact Person: Galen Reid

Mailing Address: 36 SW Wall Street, Bend, OR 97702

Telephone: (541) 241-2310

Email: galen@go-pre.com

Title: Principal & Program Manager





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION**

**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

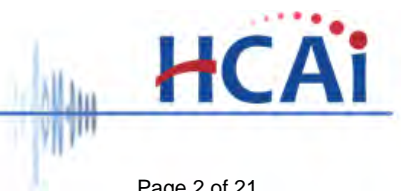
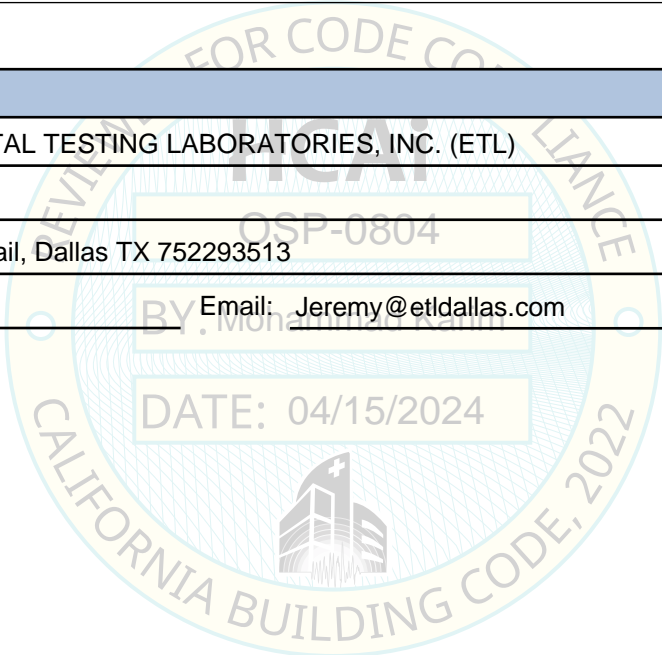
Company Name: PRE COMPLIANCE  
Name: Andrew Coughlin California License Number: S6082  
Mailing Address: 36 SW Wall Street, Bend, OR 97702  
Telephone: (415) 635-8461 Email: Andy@go-pre.com

**Certification Method**

GR-63-Core     ICC-ES AC156     IEEE 344     IEEE 693     NEBS 3  
 Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)  
Contact Person: Jeremy Lange  
Mailing Address: 11034 Indian Trail, Dallas TX 752293513  
Telephone: (972) 247-9657 Email: Jeremy@etldallas.com





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION**

**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.34 (z/h=1); 1.04 (z/h=0)

SDS (Design spectral response acceleration at short period, g) = 1.78 (z/h = 1); 2.30 (z/h = 0)

$a_p$  (Amplification factor) = 2.5

$R_p$  (Response modification factor) = 6.0

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

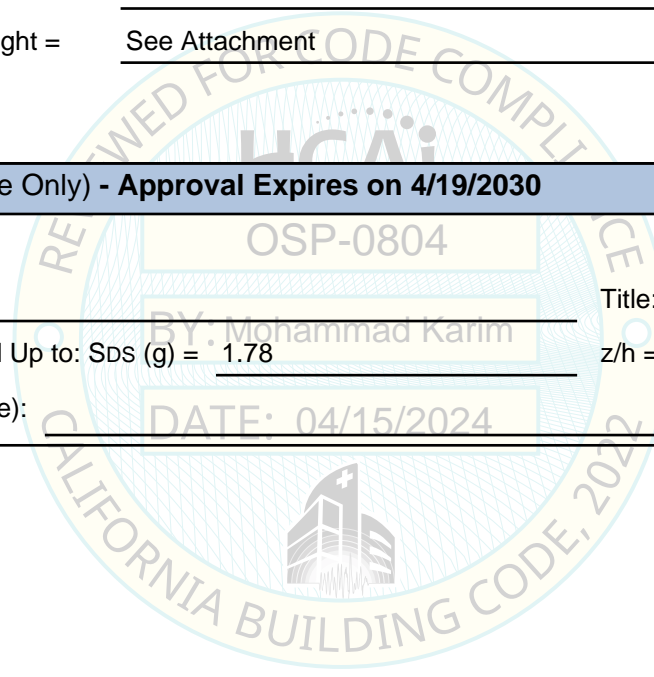
**HCAI Approval (For Office Use Only) - Approval Expires on 4/19/2030**

Date: 4/15/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 1.78 z/h = 1

Condition of Approval (if applicable): DATE: 04/15/2024



**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

**Seismic Parameters**  
 $S_{DS} = 1.78g$  for  $z/h=1$   
 $S_{DS} = 2.30g$  for  $z/h=0$        $I_p = 1.5$

**Building Codes**  
**CBC 2022**

## TABLE 1      Mounting Configuration: Standalone Rigid Base Mounted

### Construction Summary

Welded enclosures constructed of 11 gauge carbon steel

### Options Summary

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Prepackaged Solid State Starters w/ATL Bypass	CFMV-RNX-200-36-30	30	36	92	1292	Version of Reduced Voltage Starters	1
Solid State Reduced Voltage Starters	CFMV-RNX-360-36-30	30	36	92	1500	Same as Full Voltage ATL Starters	Interp.
	CFMV-RNX-360-45-30	30	45	92	1600		Interp.
	CFMV-RNX-360-36-36	36	36	92	1600		Interp.
	CFMV-RNX-360-45-36	36	45	92	1610		2
Dual Soft Starter	MVDH-TB-RNX-XXX-RNX-XXX	36	45	92	2301		6
Smart Full Voltage ATL Starters	CFMV-ANX-450-20-30	30	20	92	1051	Same as Full Voltage ATL Starters	Interp.
	CFMV-ANX-400-24-30	30	24	92	900		Interp.
	CFMV-ANX-400-30-30	30	30	92	1000		Interp.
	CFMV-ANX-450-20-36	36	20	92	900		Interp.
	CFMV-ANX-400-24-36	36	24	92	1000		Interp.
	CFMV-ANX-400-30-36	36	30	92	1103		Interp.
Full Voltage ATL Starters	CFMV-ATL-450-20-30	30	20	92	1051	Same as Full Voltage ATL Starters	3
	CFMV-ATL-400-24-30	30	24	92	900		Interp.
	CFMV-ATL-400-30-30	30	30	92	1000		Interp.
	CFMV-ATL-450-20-36	36	20	92	900		Interp.
	CFMV-ATL-400-24-36	36	24	92	1000		Interp.
	CFMV-ATL-400-30-36	36	30	92	1103		4
Dual Full Voltage ATL Starter	MVDH-TB-ATL-XXX-ATL-XXX	36	36	92	1830		5
Load Break Interrupter Switch	CFMV-DISC-450-20-30	30	20	92	750	Depopulated version of Full Voltage ATL Starters	Interp.
	CFMV-DISC-400-24-30	30	24	92	850		Interp.
	CFMV-DISC-450-20-36	36	20	92	850		Interp.
	CFMV-DISC-400-24-36	36	24	92	950		Interp.
	CFMV-DISC-400-30-36	36	30	92	950		Interp.
	CFMV-DISC-600-36-36	36	36	92	1700		Interp.
	CFMV-DISC-1200-36-36	36	36	92	1108		7

# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENTS

Pre No. CC231340-01-R0

**Manufacturer:** Benschaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

**Seismic Parameters**  
 $S_{DS} = 1.78g$  for  $z/h=1$   
 $S_{DS} = 2.30g$  for  $z/h=0$       $I_p = 1.5$

**Building Codes**  
**CBC 2022**

## TABLE 1

**Mounting Configuration: Standalone Rigid Base Mounted**

### Construction Summary

Welded enclosures constructed of 11 gauge carbon steel

### Options Summary

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Dual Load Break Interrupter Switch	MVDH-TB-ATL-XXX-ATL-XXX-DB	36	36	92	1900	Depopulated from Dual full voltage ATL	Interp.
Transformer Feeders	CFMV-ATL-450-20-30	30	20	92	1100	Same as Full Voltage ATL Starters	Interp.
	CFMV-ATL-400-24-30	30	24	92	1200		Interp.
	CFMV-ATL-450-20-36	36	20	92	1200		Interp.
	CFMV-ATL-400-24-36	36	24	92	1300		Interp.
Dual Transformer Feeders	MVDH-TB-ATL-XXX-ATL-XXX-DF	36	36	92	1900	Same as Dual Full Voltage ATL Starters	Interp.



# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENTS

Pre No. CC231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

### Seismic Parameters

$S_{DS} = 1.78g$  for  $z/h=1$   
 $S_{DS} = 2.30g$  for  $z/h=0$        $I_p = 1.5$

### Building Codes

CBC 2022

## TABLE 2

Mounting Configuration: Ganged Rigid Base Mounted

### Construction Summary

Welded enclosures constructed of 11 gauge carbon steel

### Options Summary

MLO cabinets with lift-off or swing door

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Prepackaged Solid State Starters w/ATL Bypass	CFMV-RNX-200-36-30	30	36	92	1292	Version of Reduced Voltage Starters	10
Solid State Reduced Voltage Starters	CFMV-RNX-360-36-30	30	36	92	1500	Same as Full Voltage ATL Starters	Interp.
	CFMV-RNX-360-45-30	30	45	92	1600		Interp.
	CFMV-RNX-360-36-36	36	36	92	1600		Interp.
	CFMV-RNX-360-45-36	36	45	92	1610		9
Dual Soft Starter	MVDH-TB-RNX-XXX-RNX-XXX	36	45	92	2301		8
Smart Full Voltage ATL Starters	CFMV-ANX-450-20-30	30	20	92	1051	Same as Full Voltage ATL Starters	Interp.
	CFMV-ANX-400-24-30	30	24	92	900		Interp.
	CFMV-ANX-400-30-30	30	30	92	1000		Interp.
	CFMV-ANX-450-20-36	36	20	92	900		Interp.
	CFMV-ANX-400-24-36	36	24	92	1000		Interp.
	CFMV-ANX-400-30-36	36	30	92	1103		Interp.
Full Voltage ATL Starters	CFMV-ATL-450-20-30	30	20	92	1051		10
	CFMV-ATL-400-24-30	30	24	92	900		Interp.
	CFMV-ATL-400-30-30	30	30	92	1000		Interp.
	CFMV-ATL-450-20-36	36	20	92	900		Interp.
	CFMV-ATL-400-24-36	36	24	92	1000		Interp.
	CFMV-ATL-400-30-36	36	30	92	1103		9
Dual Full Voltage ATL Starter	MVDH-TB-ATL-XXX-ATL-XXX	36	36	92	1830		8
Load Break Interrupter Switch	CFMV-DISC-450-20-30	30	20	92	750	Depopulated version of Full Voltage ATL Starters	Interp.
	CFMV-DISC-400-24-30	30	24	92	850		Interp.
	CFMV-DISC-450-20-36	36	20	92	850		Interp.
	CFMV-DISC-400-24-36	36	24	92	950		Interp.
	CFMV-DISC-400-30-36	36	30	92	950		Interp.
	CFMV-DISC-600-36-36	36	36	92	1700		Interp.
	CFMV-DISC-1200-36-36	36	36	92	1108		10



Pre No. CC231340-01-R0

# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENTS

**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

### Seismic Parameters

$S_{DS} = 1.78g$  for  $z/h=1$   
 $S_{DS} = 2.30g$  for  $z/h=0$        $I_p = 1.5$

### Building Codes

**CBC 2022**

## TABLE 2

**Mounting Configuration:** Ganged Rigid Base Mounted

### Construction Summary

Welded enclosures constructed of 11 gauge carbon steel

### Options Summary

MLO cabinets with lift-off or swing door

Model Line	Model	Max. Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Dual Load Break Interrupter Switch	MVDH-TB-ATL-XXX-ATL-XXX-DB	36	36	92	1900	Depopulated from Dual full voltage ATL	Interp.
Transformer Feeders	CFMV-ATL-450-20-30	30	20	92	1100	Same as Full Voltage ATL Starters	Interp.
	CFMV-ATL-400-24-30	30	24	92	1200		Interp.
	CFMV-ATL-450-20-36	36	20	92	1200		Interp.
	CFMV-ATL-400-24-36	36	24	92	1300		Interp.
Dual Transformer Feeders	MVDH-TB-ATL-XXX-ATL-XXX-DF	36	36	92	1900	Same as Dual Full Voltage ATL Starters	Interp.
Main Lug Only (MLO) Cabinets	MVMLO-XXX-18-30	30	18	92	758	Swing Door	Interp.
	MVMLO-XXX-18-36	36	18	92	758	Swing Door	Interp.
	MVMLO-XXX-18-30-L	30	18	92	758	Lift-off Door	Interp.
	MVMLO-XXX-18-36-L	36	18	92	758	Lift-off Door	8
	MVMLO-XXX-24-30	30	24	92	688	Swing Door	Interp.
	MVMLO-XXX-24-36	36	24	92	688	Swing Door	9

**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

**Seismic Parameters**  
 $S_{DS} = 1.78g$  for  $z/h=1$        $I_p = 1.5$   
 $S_{DS} = 2.30g$  for  $z/h=0$

**Building Codes**  
**CBC 2022**

## TABLE 3      Electrical Subcomponents

Component (Manufacturer)	Model	Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Stacks (Benshaw)	S-450271-00	12.39	8.5	27	44	195A, 4.16KV	1,10
	S-450272-01	12.39	9	27	70	360A, 4.16KV	2,9
	S-450280-00	15.38	8.5	15.66	88	2 High	6,8
Contactor (Hyundai)	62C*	14.84	14.8	11.25	32	7.2KV 400A VC. AC/DC110 COIL CON-100188-00	4,9
Contactor (ABB)	ConVac 7 400A	14.8	13.5	8.3	33	7.2KV 400A 3P 120V COIL CON-100244-00	2,9
Contactor (Greenstone)	VC3/400/7200	12.63	14.5	11.53	48	7.2KV 400A 3P 120V COIL CON-100242-00	1,10
Contactors (JOSLYN CLARK)	MVC77U034A50	12.68	14.5	11.53	56	5KV 400A XP 120V COIL CON-100016-00	5,6,8
	MVC77U036A50	12.68	14.5	11.53	56	5KV 600A XP 120V COIL CON-100016-01	3,10
Fuses - 5.5KV Clip-In (MERSEN)	A480R**R-1	3	3	15.88	10.5	Single - 2R,3R,4R,5R,6R,9R,12R	1,2,4,9,10
	A055F1D0R0-**	3	3	15.88	10	Single - 100E-200E	Interp.
	A480R**R-1	6.41	3	15.88	20	Double - 18R, 24R	Interp.
	A055F2D0R0-**	6.63	3	15.88	20	Double - 250E-450E	Interp.
	A480R36R-1	9.72	3	15.88	29	Triple - 36R	3,10
Fuses - 5.5KV Bolt-On (MERSEN)	A055B1DAR0-**	3.63	3	19.25	12	2R - 12R	5,6,8
	A055B1DAR0-**	3.63	3	19.25	12.1	10E - 100E	Interp.
	A055B2DAR0-**	7.62	3	19.25	23	250E - 450E	Interp.
	A051B2DAR0-**	7.63	3	19.25	23	18R-38R	Interp.
	A055B2D0R0-**	7.63	3	25.11	28	450E - 600E	Interp.
	A051B3DAR0-**	11.63	3	19.25	33	48X-57X	Interp.
	A055B3D0R0-**	11.62	3	25.11	44	750E, 900E	Interp.
	A055B4D0R0-**	7.63	7.63	25.11	57	1200E	7,10
GFCT (GE)	HGF5	7.8	1.5	8.5	3	GE Ground Fault CT 2000:1 CT-100001-01	6,8
	137—500	9.88	5	9.88	50	GE Ground Fault CT 50:5 CT-100020-00	2,9



**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

**Seismic Parameters**  
 $S_{DS} = 1.78g$  for  $z/h=1$        $I_p = 1.5$   
 $S_{DS} = 2.30g$  for  $z/h=0$

**Building Codes**  
**CBC 2022**

## TABLE 3      Electrical Subcomponents

Component (Manufacturer)	Model	Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Current Xfmr (Electric Metering)	25472SH-**-	4.9	2.25	4.6	3.5	CT RATIOS 50:5, 100:5, 150:5, 250:5, 400:5, 600:5	1,2,6,8,9,10
	25472SH-**-1	4.9	2.25	4.6	3.5	CT RATIOS 50:1, 100:1, 150:1, 250:1, 400:1, 600:1	Interp.
	4270SH-**-	7	1.44	7	3.25	CT's used in Disconnect Section	7,10
Disconnects (Powercon)	DISC-100021-00	13.2	19.50	12	34	Microrupter Disconnect (400A)	1,2,5,6,8,9
	DISC-100015-02	21.52	20.31	25.88	135	Microrupter Disconnect (600A)	Interp.
	DISC-100016-02	21.52	20.31	25.88	150	Microrupter Disconnect (1200A)	7,10
425A Disconnect (Benshaw)	DISC-450001	20.5	13.5	17.2	34	INTELLEGUARD	4,9
600A Disconnect (ABB)	VK3A0564U-0-7-DDLA	19.75	14.89	18.89	71	DISC-VK3A0564U-0-7-DDLA-000	3,4,9,10
Control Power Transformers (Instrument Trans)	3PT3-60	8.94	8.5	9.5	38	3 Phase 700VA PT-100006-00 / PT-100008-01	3,9,10
	CPT3-60-1.0-***	9.62	8.63	9.38	40	1KVA CPT-100004-00 / CPT-100006-00	1,2,5,6,8,9,10
	CPT3-60-1.5-***	10	8.63	9.38	54	1.5KVA CPT-100008-00 / CPT-100010-00	Interp.
	CPT3-60-2-***	10	8.63	9.83	63	2KVA CPT-100012-00 / CPT-100014-00	Interp.
	CPT3-60-3-***	13.75	9.5	10.03	85	3KVA CPT-100016-00 / CPT-100017-00	3,10
24VDC Power supply (IDEC)	PWS200	5.25	3.375	4.9	5	POWER SUPPLY 120VAC:24VDC	1,2,9,10
Motor Protection Relay (PowerLogic)	P3U30-*	8.9	6.73	6.93	5.5	Motor Protection Relay	4,9
MULTILIN 869 (GE)	869 E P5 NN 0B **	9.1	8.42	9.9	6	Motor Protection Relay	3,10
SEL 710-5 METER (SEL)	SEL-710-5-**-	6.92	5.67	7.56	6	Motor Protection Relay	2,9

**Manufacturer:** Benshaw, Inc.  
**Product Type:** MV Motor Control Centers  
**Model Line:** Various

Seismic Parameters	
$S_{DS} = 1.78g$ for $z/h=1$	$I_p = 1.5$
$S_{DS} = 2.30g$ for $z/h=0$	

Building Codes
CBC 2022

## TABLE 3 Electrical Subcomponents

Component (Manufacturer)	Model	Dimensions (in)			Wt. (lb)	Notes	UUT
		D	W	H			
Switch Gear Space Heater (Heatrex)	276-3	7	3.5	1.5	1	TH-100032-00	4,9
Motor Control Module (Benshaw)	MCM*	5.25	3.218	5.906	5		1,2,9,10
Plant Interface Module (Benshaw)	PIM	5.25	2.09	5.58	5		1,2,9,10
DIVIDER CARD (Benshaw)	BIPC-300032-08	1	9	8	2		1,2,6,8,9,10
Capacitors KLV3223 (ISKRA)	25KVAR	16.8	5.3	14.3	14		2,9
	35KVAR	16.8	5.3	14.3	14		Interp.
	100KVAR	16.8	5.7	18.3	23		Interp.
	250KVAR	16.8	5.7	28.15	41		Interp.
	600KVAR	16.8	5.7	43.7	71		4,9

UUT	Model	Test Report	Test Laboratory	S <sub>DS</sub>	z/h	I <sub>p</sub>
1	CFMV-RNX-200-36-30	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.87 2.30	1 0	1.5
2	CFMV-RNX-360-45-36	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.85 2.40	1 0	1.5
3	CFMV-ATL-450-20-30	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.87 2.30	1 0	1.5
4	CFMV-ATL-400-30-36	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.85 2.40	1 0	1.5
5	MVDH-TB-ATL-XXX-ATL-XXX	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.85 2.40	1 0	1.5
6	MVDH-TB-RNX-XXX-RNX-XXX	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.78 2.40	1 0	1.5
7	CFMV-DISC-1200-36-36	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.87 2.30	1 0	1.5
8	MVMLO-XXX-18-36-L + MVDH-TB-ATL-XXX-ATL-XXX + MVDH-TB-RNX-XXX-RNX-XXX	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.89 2.85	1 0	1.5
9	CFMV-RNX-360-45-36 + CFMV-ATL-400-30-36 + MVMLO-XXX-24-36	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.82 2.65	1 0	1.5
10	UUT1 + CFMV-ATL-450-20-30 + CFMV-DISC-1200-36-36	TR231340-01-R1	Environmental Testing Laboratory (ETL)	1.85 2.60	1 0	1.5

Notes:

## UUT 1

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Prepackaged Solid State Starter w/ATL  
**Model Number:** CFMV-RNX-200-36-30

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.87	1	1.5	2.99	2.24	1.53	0.61
2.30	0					

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
30	36	92	1,292

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
11.12	9.47	>33.3

Building Codes
CBC 2022

Test Criteria
ICC-ES AC156

Construction/Option Summary
Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
195A, 4.16KV Stack	S-450271-00	44
Contactor	VC3/400/7200	48
5.5kV Fuse	A480R**R-1	10
Current Transformer	25472SH-**	3.5
400A Disconnect	DISC-100021-00	34
24VDC Power Supply	PWS200	5
Motor Control Module	MCM*	5
Plant Interface Module	PIM	5
Divider Card	BIPC-300032-08	2
CPT	CPT3-60-1.0-***	40

## UUT 2

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Solid State Reduced Voltage Starter  
**Model Number:** CFMV-RNX-360-45-36

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.85	1					
2.40	0	1.5	2.96	2.22	1.6	0.64

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	45	92	1,610

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
9.42	8.49	27.42

Building Codes
CBC 2022

Test Criteria
ICC-ES AC156

Construction/Option Summary
Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
360A, 4.16KV Stack Contactor	S-450272-01	70
GFCT	ConVac 7 400A	33
Current Transformer	137-500	50
400A Disconnect	25472SH-**	3.5
24VDC Power Supply	DISC-100021-00	34
Motor Protection Relay	PWS200	5
Motor Control Module	SEL-710-5-**	6
Plant Interface Module	MCM*	5
Divider Card	PIM	5
Capacitor	BIPC-300032-08	2
5.5 kV Fuse	25KVAR	14
CPT	A480R**R-1	10.5
	CPT3-60-1.0-***	40

## UUT 3

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Smart Full Voltage ATL Starter  
**Model Number:** CFMV-ATL-450-20-30

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.87	1	1.5	2.99	2.24	1.53	0.61
2.30	0					

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
30	20	92	1,051

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
10.59	4.48	>33.3

**Building Codes**  
 CBC 2022

**Test Criteria**  
 ICC-ES AC156

**Construction/Option Summary**  
 Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
Contactors	MVC77U036A50	56
5.5kV Fuse	A480R36R-1	29
600A Disconnect	VK3A0564U-0-7-DDLA	71
CPTs	3PT3-60	38
	CPT3-60-3-***	85
Motor Protection Relay	869 E P5 NN 0B**	6



Pre No. CC231340-01-R0

# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 4

Test Report# TR231340-01-R0

**Manufacturer:** Benschaw, Inc.  
**Model Line:** Smart Full Voltage ATL Starter  
**Model Number:** CFMV-ATL-400-30-36

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.85	1		2.96	2.22	1.6	0.64
2.40	0	1.5				

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	30	92	1,103

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
8.81	8.05	30.36

Building Codes
CBC 2022

Test Criteria
ICC-ES AC156

Construction/Option Summary
Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
Contactor	62C*	32
425A Disconnect	DISC-450001	34
Motor Protection Relay	P3U30-*	5.5
Capacitor	600KVAR	71
5.5 kV Fuse	A480R**R-1	10.5
600A Disconnect	VK3A0564U-0-7-DDLA	71
Space Heater	276-3	1

## UUT 5

Test Report# TR231340-01-R0

**Manufacturer:** Benschaw, Inc.  
**Model Line:** Dual Full Voltage ATL Starter  
**Model Number:** MVDH-TB-ATL-XXX-ATL-XXX

Highest Passed Test Level						
$S_{DS}$	$z/h$	$I_p$	$A_{flx-h}$	$A_{rig-h}$	$A_{flx-v}$	$A_{rig-v}$
1.85	1	1.5	2.96	2.22	1.6	0.64
2.40	0					

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	36	92	1,830

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
5.73	5.74	31.63

Building Codes
CBC 2022

Test Criteria
ICC-ES AC156

Construction/Option Summary
Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
Contactors	MVC77U034A50	56
5.5kV Fuse	A055B1DARO-**	12
400A Disconnect	DISC-100021-00	34
CPT	CPT3-60-1.0-***	40



# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 6

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Dual Soft Starter  
**Model Number:** MVDH-TB-RNX-XXX-RNX-XXX

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.78	1	1.5	2.85	2.14	1.6	0.64
2.40	0					

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	45	92	2,301

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
11.91	9.11	31.75

Building Codes	Test Criteria	Construction/Option Summary
CBC 2022	ICC-ES AC156	Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1-1/2" long 1/8" fillet welds.  
 Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
2 High Stack Contactors	S-450280-00	88
5.5kV Fuse	MVC77U034A50	56
GFCT	A055B1DAR0-**	12
	HGF5	3
Current Transformer	25472SH-**	3.5
400A Disconnect	DISC-100021-00	34
CPT	CPT3-60-1.0-***	40
Divider Card	BIPC-300032-08	2

## UUT 7

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Load Break Interrupter Switch  
**Model Number:** CFMV-DISC-1200-36-36

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.87	1	1.5	2.99	2.24	1.53	0.61
2.30	0					

Dimensions/Weights			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	36	92	1,108

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
8.51	8.29	13.85

**Building Codes**  
CBC 2022

**Test Criteria**  
ICC-ES AC156

**Construction/Option Summary**  
Welded carbon steel enclosure.

### UUT Mounting Details:



UUT was rigid base mounted to the table using (4) 1/2"-13 Grade 5 bolts and washers. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

### List of Included Subcomponents

Description	Model #	Wt. (lbs.)
5.5kV Fuse	A055B4D0R0-**-**	57
Current Transformer	4270SH-**-**	3.25
1200A Disconnect	DISC-100016-02	150

## UUT 8

Test Report# TR231340-01-R0

**Manufacturer:** Benshaw, Inc.  
**Model Line:** Varies  
**Model Number:** MVMLO-XXX-18-36-L + MVDH-TB-ATL-XXX-ATL-XXX + MVDH-TB-RNX-XXX-RNX-XXX

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.89	1	1.5	3.02	2.27	1.90	0.76
2.85	0					

Dimensions/Weights <sup>1</sup>			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	99	92	4,889

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
9.35	7.54	28.85

Building Codes	Test Criteria	Construction/Option Summary
CBC 2022	ICC-ES AC156	Welded carbon steel enclosures.

**UUT Mounting Details:**  
**Note:** UUT8 is made up of UUT5, UUT6, and an 18" MLO cabinet bolted together.



UUT was rigid base mounted to the table using (4) 1-1/2" long 1/8" fillet welds (right section) and (4) 1/2"-13 Grade 5 bolts and washers (left sides of center and left hand sections).

Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

List of Included Subcomponents		
Description	Model #	Wt. (lbs.)
Contactors	MVC77U034A50	56
5.5kV Fuse	A055B1DAR0-**	12
400A Disconnect	DISC-100021-00	34
CPT	CPT3-60-1.0-***	40
2 High Stack	S-450280-00	88
Contactors	MVC77U034A50	56
5.5kV Fuse	A055B1DAR0-**	12
GFCT	HGF5	3
Current Transformer	25472SH-**	3.5
400A Disconnect	DISC-100021-00	34
CPT	CPT3-60-1.0-***	40
Divider Card	BIPC-300032-08	2

<sup>1</sup> UUT Individual Section Dims/Wts				
Section	D (in)	W (in)	H (in)	Wt. (lbs)
Left	36	18	92	758
Middle	36	36	92	1,830
Right	36	45	92	2,301

## UUT 9

Test Report# TR231340-01-R0

**Manufacturer:** Benschaw, Inc.  
**Model Line:** Varies  
**Model Number:** CFMV-RNX-360-45-36 + CFMV-ATL-400-30-36 + MVMLO-XXX-24-36

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.82	1	1.5	2.91	2.18	1.77	0.71
2.65	0					

Dimensions/Weights <sup>1</sup>			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	99	92	3,401

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
8.76	7.84	8.66

Building Codes	Test Criteria	Construction/Option Summary
CBC 2022	ICC-ES AC156	Welded carbon steel enclosures.

**UUT Mounting Details:**  
**Note:** UUT9 is made up of UUT2, UUT4, and a 24" MLO cabinet bolted together.

List of Included Subcomponents		
Description	Model #	Wt. (lbs.)
360A, 4.16KV Stack Contactor	S-450272-01	70
GFCT	ConVac 7 400A	33
Current Transformer	137—500	50
400A Disconnect	25472SH-**	3.5
24VDC Power Supply	DISC-100021-00	34
Motor Protection Relay	PWS200	5
Motor Control Module	SEL-710-5-**	6
Plant Interface Module	MCM*	5
Divider Card	PIM	5
Capacitor	BIPC-300032-08	2
Capacitor	25KVAR	14
Contactor	62C*	32
425A Disconnect	DISC-450001	34
Motor Protection Relay	P3U30-*	5.5
Capacitor	600KVAR	71
5.5 kV Fuse	A480R**R-1	10.5
CPT	CPT3-60-1.0-***	40
CPT	3PT3-60	38
Space Heater	276-3	1



UUT was rigid base mounted to the table using (8) 1/2"-13 Grade 5 bolts and washers (4 in right hand section, and 2 at left side of center and left hand sections).  
 Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

<sup>1</sup> UUT Individual Section Dims/Wts				
Section	D (in)	W (in)	H (in)	Wt. (lbs)
Left	36	24	92	688
Middle	36	30	92	1,103
Right	36	45	92	1,610

## UUT 10

Test Report# TR231340-01-R0

**Manufacturer:** Benschaw, Inc.  
**Model Line:** Varies  
**Model Number:** UUT1 + CFMV-ATL-450-20-30 + CFMV-DISC-1200-36-36

Highest Passed Test Level						
S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>flx-h</sub>	A <sub>rig-h</sub>	A <sub>flx-v</sub>	A <sub>rig-v</sub>
1.85	1	1.5	2.96	2.22	1.73	0.69
2.60	0					

Dimensions/Weights <sup>1</sup>			
Depth (in)	Width (in)	Height (in)	Weight (lbs.)
36	92	92	3,451

Lowest Natural Frequency (Hz)		
Front-Back	Side-Side	Vertical
8.52	9.31	9.15

Building Codes	Test Criteria	Construction/Option Summary
CBC 2022	ICC-ES AC156	Welded carbon steel enclosures.

**UUT Mounting Details:**  
**Note:** UUT9 is made up of UUT1, UUT3, and UUT7 bolted together.

List of Included Subcomponents		
Description	Model #	Wt. (lbs.)
195A, 4.16KV Stack Contactor	S-450271-00	44
5.5kV Fuse	VC3/400/7200	48
Current Transformer	A480R**R-1	10
400A Disconnect	25472SH-**	3.5
24VDC Power Supply	DISC-100021-00	34
Motor Control Module	PWS200	5
Plant Interface Module	MCM*	5
Divider Card	PIM	5
Contactor	BIPC-300032-08	2
5.5kV Fuse	MVC77U036A50	56
600A Disconnect	A480R36R-1	29
CPTs	VK3A0564U-0-7-DDLA	71
	3PT3-60	38
	CPT3-60-3-***	85
Motor Protection Relay	869 E P5 NN 0B**	6
5.5kV Fuse	A055B4D0R0-**	57
Current Transformer	4270SH-**	3.25
1200A Disconnect	DISC-100016-02	150
CPT	CPT3-60-1.0-***	40



UUT was rigid base mounted to the table using (8) 1/2"-13 Grade 5 bolts and washers (4 in right hand section, and 2 at left side of center and left hand sections).

Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

<sup>1</sup> UUT Individual Section Dims/Wts				
Section	D (in)	W (in)	H (in)	Wt. (lbs)
Left	30	20	92	1,051
Middle	30	36	92	1,292
Right	36	36	92	1,108