



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0692

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: FireFlex Systems

Manufacturer's Technical Representative: Jonathan Roger

Mailing Address: 1935 Lionel Bertrand, Boisbriand, QC J7H1N8

Telephone: (450) 437-3473 Email: jroger@fireflex.com

Product Information

Product Name: Electrical Control Panels on Life Safety/Critical Branch

Product Type: Fire Protection & Security Panels

Product Model Number: FireFlex Dual and 1230 Integrated Fire Suppression Systems

General Description: This system consists of floor-mounted fire suppression systems containing pumps, valves, air compressors, control panels, batteries and accessories.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: Forell/Elsesser Engineers

Contact Person: Christopher Tung

Mailing Address: 160 Pine Street, 6th Floor, San Francisco, CA 94111

Telephone: (415) 837-0700 Email: c.tung@forell.com

Title: Engineer





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: FORELL / ELSESSER ENGINEERS, INC.

Name: Marco Scanu California License Number: S4454

Mailing Address: 160 Pine Street, Suite 600, San Francisco, CA 94111

Telephone: (415) 837-0700 Email: scanu@forell.com

Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3

Other (Please Specify): _____

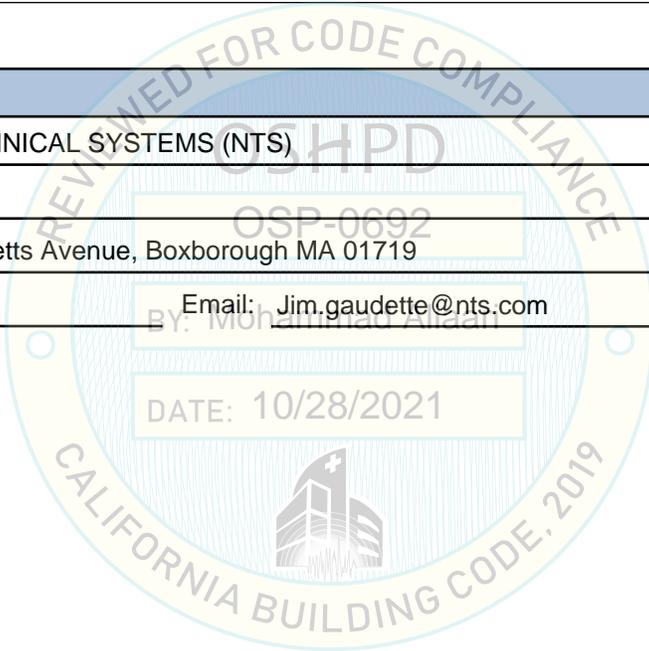
Testing Laboratory

Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)

Contact Person: Jim Gaudette

Mailing Address: 1146 Massachusetts Avenue, Boxborough MA 01719

Telephone: (978) 263-9515 Email: Jim.gaudette@nts.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = See Attachments

SDS (Design spectral response acceleration at short period, g) = See Attachments

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

OSHPD Approval (For Office Use Only) - Approval Expires on 11/01/2027

Date: 10/28/2021

Name: Mohammad Aliaari Title: Senior Structural Engineer

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

Condition of Approval (if applicable): DATE: 10/28/2021



Certified FIREFLEX 1230 Product Line

ENCLOSURE UNITS (carbon steel)									
Main Model number	Unit	Width (in)	Height (in)	Depth (in)	Operating Weight (lb)	Mount	Test Status	S_{Ds} (g)	Fp/Wp
FLX1230001	40 lb single cylinder without control panel	23	77.25	25	356 to 380	Floor mounted	Extrapolated	1.84	1.38
FLX1230002	76 lb single cylinder without control panel	23	77.25	25	390 to 417		Extrapolated	1.84	1.38
FLX1230003	164 lb single cylinder without control panel	23	77.25	25	476 to 574		Extrapolated	1.84	1.38
FLX1230004	322 lb single cylinder without control panel	23	77.25	25	672 to 865		Extrapolated	1.84	1.38
FLX1230005	601 lb single cylinder without control panel	23	77.25	25	862 to 1222		Extrapolated	1.71	1.28
FLX1230007	40 lb single cylinder with control panel	23	77.25	25	400		TR027686-14N-SEI UUT-1	2.22	1.67
FLX1230007	40 lb single cylinder with control panel	23	77.25	25	356 to 380		Interpolated	1.84	1.38
FLX1230008	76 lb single cylinder with control panel	23	77.25	25	390 to 417		Interpolated	1.84	1.38
FLX1230009	164 lb single cylinder with control panel	23	77.25	25	476 to 574		Interpolated	1.84	1.38
FLX1230010	322 lb single cylinder with control panel	23	77.25	25	672 to 865		Interpolated	1.84	1.38
FLX1230011	601 lb single cylinder with control panel	23	77.25	25	862 to 1222		Interpolated	1.71	1.28
FLX1230007V01	601 lb single cylinder with control panel	23	77.25	25	1050		TR016191-13I-SEI UUT-1	1.84	1.38
FLX1230013	2 x 40 lb double cylinder Main/reserve without control panel	35.75	77.25	25	485 to 523		Extrapolated	1.84	1.38
FLX1230014	2 x 76 lb double cylinder Main/reserve without control panel	35.75	77.25	25	548 to 638		Extrapolated	1.84	1.38
FLX1230015	2 x 164 lb double cylinder Main/reserve without control panel	35.75	77.25	25	715 to 911		Extrapolated	1.84	1.38
FLX1230016	2 x 322 lb double cylinder Main/reserve without control panel	46	77.25	25	1156 to 1552		Extrapolated	1.71	1.28
FLX1230017	2 x 601 lb double cylinder Main/reserve without control panel	46	77.25	25	1578 to 1900		Extrapolated	1.71	1.28
FLX1230019	2 x 40 lb double cylinder Main/reserve with control panel	35.75	77.25	25	485 to 523		Extrapolated	1.71	1.28
FLX1230020	2 x 76 lb double cylinder Main/reserve with control panel	35.75	77.25	25	548 to 638		Extrapolated	1.71	1.28
FLX1230021	2 x 164 lb double cylinder Main/reserve with control panel	35.75	77.25	25	715 to 911		Extrapolated	1.71	1.28

Certified FIREFLEX 1230 Product Line, cont'd

ENCLOSURE UNITS (carbon steel)									
Main Model number	Unit	Width (in)	Height (in)	Depth (in)	Operating Weight (lb)	Mount	Unit	S _{DS} (g)	Fp/Wp
FLX123002 2	2 x 322 lb double cylinder Main/ reserve with control panel	46	77.25	25	1156 to 1552	Floor mounted	Extrapolated	1.71	1.28
FLX123002 3	2 x 601 lb double cylinder Main/ reserve with control panel	46	77.25	25	1578 to 1900		Extrapolated	1.71	1.28
FLX123000 12V01	2 x 601 lb double cylinder Main/ reserve with control panel	46	77.25	25	1900		TR-303911-10I-2 UUT- 1*	1.71	1.28
FLX123002 5	2 x 40 lb double cylinder Main/slave without control panel	35.75	77.25	25	485 to 523		Interpolated	1.71	1.28
FLX123002 6	2 x 76 lb double cylinder Main/slave without control panel	35.75	77.25	25	548 to 638		Interpolated	1.71	1.28
FLX123002 7	2 x 164 lb double cylinder Main/slave without control panel	35.75	77.25	25	715 to 911		Interpolated	1.71	1.28
FLX123002 8	2 x 322 lb double cylinder Main/slave without control panel	46	77.25	25	1156 to 1552		Interpolated*	1.71	1.28
FLX123002 9	2 x 601 lb double cylinder Main/slave without control panel	46	77.25	25	1578 to 1900		Interpolated*	1.71	1.28
FLX123003 1	2 x 40 lb double cylinder Main/slave with control panel	35.75	77.25	25	485 to 523		Interpolated	2.22	1.67
FLX123003 1	2 x 40 lb double cylinder Main/slave with control panel	35.75	77.25	25	600		TR027686-14N-SEI UUT-3	2.22	1.67
FLX123003 2	2 x 76 lb double cylinder Main/slave with control panel	35.75	77.25	25	548 to 638		Extrapolated	2.22	1.67
FLX123003 3	2 x 164 lb double cylinder Main/slave with control panel	35.75	77.25	25	715 to 911		Extrapolated	1.84	1.38
FLX123003 4	2 x 322 lb double cylinder Main/slave with control panel	46	77.25	25	1156 to 1552		Extrapolated*	1.71	1.28
FLX123003 5	2 x 601 lb double cylinder Main/slave with control panel	46	77.25	25	1578 to 1900		Extrapolated*	1.71	1.28

Note: Quantity of NOVEC Fluid is calculated for each project.

*Tested unit was modified using threaded rods through the cabinet to hold the doors close. This modification shall be applied to interpolated units weighing 1300 lbs or more.

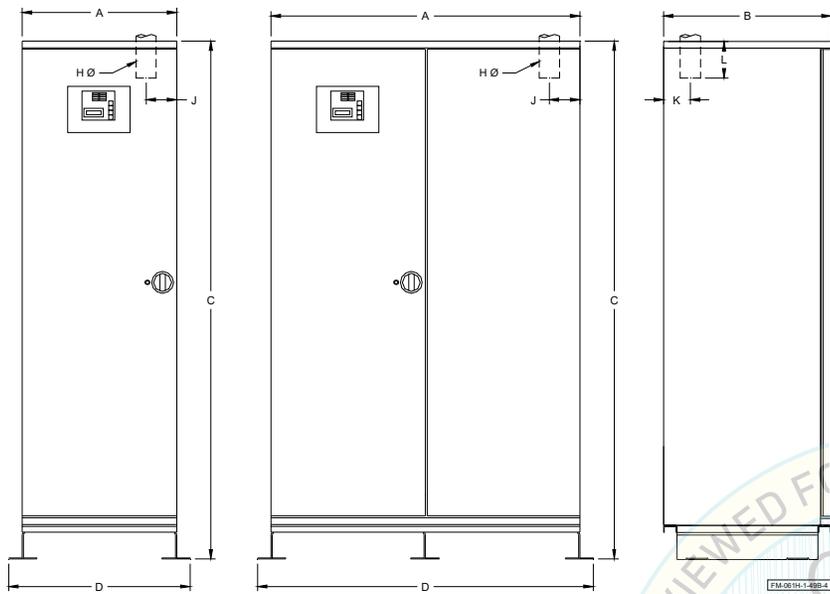


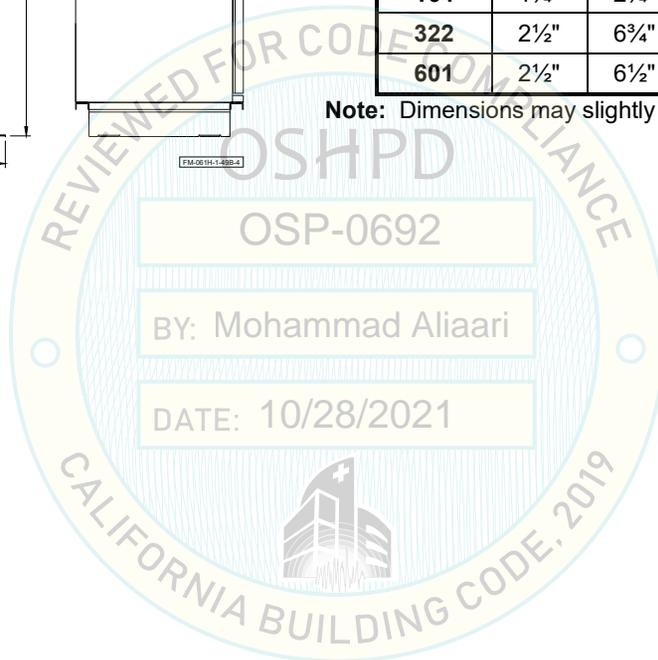
Table 1 - Cabinet dimensions

Size	A	B	C	D	E	F	G
24"	23"	25"	77 ¹ / ₈ "	29"	15"	27"	N / A
36"	35 ³ / ₄ "	25"	77 ¹ / ₈ "	39 ³ / ₄ "	15"	37 ³ / ₄ "	12 ³ / ₄ "
46"	46"	25"	77 ¹ / ₈ "	50"	15"	48"	23"

Table 2 - NOVEC 1230 piping installation

Lbs	H	J	K	L
40	1"	2 ³ / ₄ "	6"	3 ¹ / ₄ "
76	1"	2 ³ / ₄ "	6"	3 ¹ / ₄ "
164	1 ¹ / ₄ "	2 ³ / ₄ "	6"	1 ³ / ₄ "
322	2 ¹ / ₂ "	6 ³ / ₄ "	6"	4 ³ / ₄ "
601	2 ¹ / ₂ "	6 ¹ / ₂ "	6"	3 ³ / ₄ "

Note: Dimensions may slightly differ from real unit.



Certified FIREFLEX DUAL Product Line

ENCLOSURE UNITS (carbon steel)									
Main Model number	Unit	Width (in)	Height (in)	Depth (in)	Operating Weight (lb)	Mount	Test Status	S _{DS} (g)	Fp/Wp
FLXDUALS01	2" Single int+ NOVEC 1230 40lbs cylinder cabinet without control panel	35.75	77.25	25	597 to 621	Floor mounted	Extrapolated	2.22	1.67
FLXDUALS02	2" Single int+ NOVEC 1230 76lbs cylinder cabinet without control panel	35.75	77.25	25	626 to 671		Extrapolated	2.22	1.67
FLXDUALS03	2" Single int+ NOVEC 1230 164lbs cylinder cabinet without control panel	46	77.25	25	762 to 860		Extrapolated	1.71	1.28
FLXDUALS04	2" Single int+ NOVEC 1230 322lbs cylinder cabinet without control panel	46	77.25	25	953 to 1146		Extrapolated	1.71	1.28
FLXDUALS05	2" Single int+ NOVEC 1230 601lbs cylinder cabinet without control panel	46	77.25	25	1208 to 1568		Extrapolated	1.71	1.28
FLXDUALS07	2" Single int+ NOVEC 1230 40lbs cylinder cabinet with control panel	35.75	77.25	25	597 to 621		Extrapolated	2.22	1.67
FLXDUALS08	2" Single int+ NOVEC 1230 76lbs cylinder cabinet with control panel	35.75	77.25	25	626 to 671		Extrapolated	2.22	1.67
FLXDUALS09	2" Single int+ NOVEC 1230 164lbs cylinder cabinet without control panel	46	77.25	25	762 to 860		Extrapolated	1.71	1.28
FLXDUALS10	2" Single int+ NOVEC 1230 322lbs cylinder cabinet with control panel	46	77.25	25	953 to 1146		Extrapolated	1.71	1.28
FLXDUALS11	2" Single int+ NOVEC 1230 601lbs cylinder cabinet without control panel	46	77.25	25	1208 to 1568		Extrapolated	1.71	1.28
FLXDUALD01	2" Double int+ NOVEC 1230 40lbs cylinder cabinet without control panel	35.75	77.25	25	597 to 621		Extrapolated	2.22	1.67
FLXDUALD02	2" Double int+ NOVEC 1230 76lbs cylinder cabinet without control panel	35.75	77.25	25	626 to 671		Extrapolated	2.22	1.67
FLXDUALD03	2" Double int+ NOVEC 1230 164lbs cylinder cabinet without control panel	46	77.25	25	762 to 860		Extrapolated	1.71	1.28
FLXDUALD04	2" Double int+ NOVEC 1230 322lbs cylinder cabinet without control panel	46	77.25	25	953 to 1146		Extrapolated	1.71	1.28
FLXDUALD05	2" Double int+ NOVEC 1230 601lbs cylinder cabinet without control panel	46	77.25	25	1208 to 1568		Extrapolated	1.71	1.28
FLXDUALD07	2" Double int+ NOVEC 1230 40lbs cylinder cabinet with control panel	35.75	77.25	25	597 to 621		Extrapolated	2.22	1.67
FLXDUALD07	2" Double int+ NOVEC 1230 40lbs cylinder cabinet with control panel	35.75	77.25	25	720		TR027686-14N-SEI UUT-5	2.22	1.67
FLXDUALD08	2" Double int+ NOVEC 1230 76lbs cylinder cabinet with control panel	35.75	77.25	25	626 to 671		Interpolated	2.22	1.67
FLXDUALD09	2" Double int+ NOVEC 1230 164lbs cylinder cabinet with control panel	46	77.25	25	762 to 860		Interpolated	1.71	1.28
FLXDUALD10	2" Double int+ NOVEC 1230 322lbs cylinder cabinet with control panel	46	77.25	25	953 to 1146		Interpolated	1.71	1.28
FLXDUALD11	2" Double int+ NOVEC 1230 601lbs cylinder cabinet with control panel	46	77.25	25	1208 to 1568		Interpolated	1.71	1.28
FLXDUALD24 V02	2" Double int+ NOVEC 1230 601lbs cylinder cabinet with control panel	46	77.25	25	1300		TR-303911-10I-2 UUT-2	1.71	1.28

Note: Quantity of NOVEC Fluid is calculated for each project.

Certified FIREFLEX DUAL Product Line, cont'd

ENCLOSURE UNITS (carbon steel)

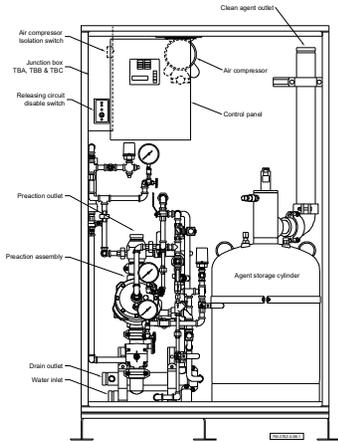
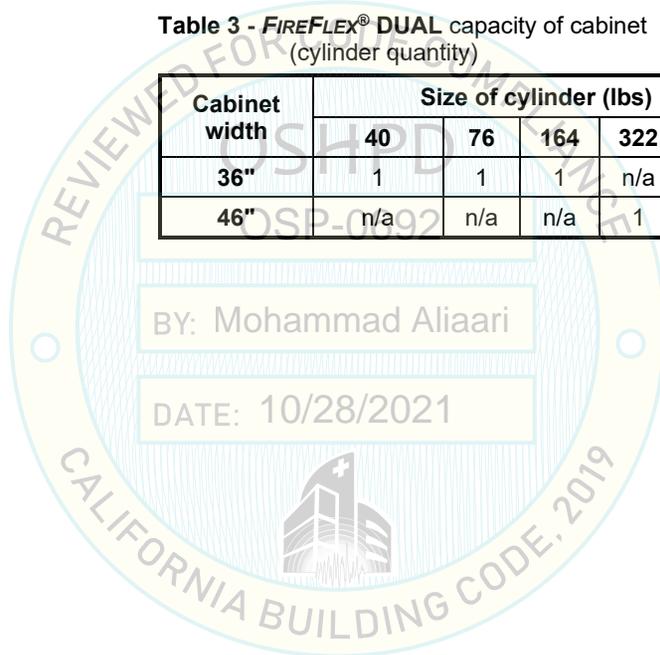


Table 3 - FIREFLEX® DUAL capacity of cabinet
(cylinder quantity)

Cabinet width	Size of cylinder (lbs)				
	40	76	164	322	601
36"	1	1	1	n/a	n/a
46"	n/a	n/a	n/a	1	1

BY: Mohammad Aliaari

DATE: 10/28/2021



**CERTIFIED SUBCOMPONENT LIST
MECHANICAL SECTION**

Manufacturer	Model number	Description	Size	Test Status	S _{DS} (g)	Fp/Wp	
Viking Corp.	F-1, 12057	Deluge Valve straight through style	2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	L-1, 11059	In-line swing check valve grooved	2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	H-1	Pneumatic actuator		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	11591	Solenoid valve 24VDC/NC 250 psi	½"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	D-1, 10730	Drip check del & flow valve		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	D-3, 16970	Pressure operated relief valve (PORV)		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	10110	1/4" x .062" Restriction orifice		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	05781A	swing check valve with .067 hole	1/2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	04947A	spring loaded check valve	1/4"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
Potter Electric	1340101	PS10-1 single pressure switch		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
Fireflex	T3PIPPMA20	Main pipe	2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	T3PIPPDR20	Drain pipe	1-1/2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
	SEBOGG1001	CED 40 A-53 Seamless pipe	1"	Extrapolated	2.22	1.67	
	SEBOGG1002	CED 40 A-53 Seamless pipe	1"	TR027686-14N-SEI UUT-5	2.22	1.67	
	SEBOGG1003	CED 40 A-53 Seamless pipe	1"	TR027686-14N-SEI UUT-5	2.22	1.67	
	SEBOTG1001	CED 40 A-53 Seamless pipe	1"	TR027686-14N-SEI UUT-1	2.22	1.67	
	SEBOTG1003	CED 40 A-53 Seamless pipe	1-1/4"	Interpolated	1.71	1.28	
	SEBOTG1005	CED 40 A-53 Seamless pipe	1-1/4"	Interpolated	1.71	1.28	
	SEBPIPE251	CED 40 A-53 Seamless pipe	2-1/2"	TR-303911-10I-2 UUT-1	1.71	1.28	
	SEBPIPE255	CED 40 A-53 Seamless pipe	2-1/2"	TR-303911-10I-2 UUT-1	1.71	1.28	
	SEBPIRI101	CED 40 A-53 Seamless pipe	1"	TR027686-14N-SEI UUT-1	2.22	1.67	
	SEBPIRI102	CED 40 A-53 Seamless pipe	1"	TR027686-14N-SEI UUT-3	2.22	1.67	
	SEBPIRI103	CED 40 A-53 Seamless pipe	1-1/4"	Interpolated	1.71	1.28	
	SEBPIRI106	CED 40 A-53 Seamless pipe	1-1/4"	Interpolated	1.71	1.28	
	SEBPIRI107	CED 40 A-53 Seamless pipe	1-1/4"	Interpolated	1.71	1.28	
	SEBPIRI111	CED 40 A-53 Seamless pipe	1"	Interpolated	1.71	1.28	
	SEBPIRI251	CED 40 A-53 Seamless pipe	2-1/2"	TR-303911-10I-2 UUT-2	1.71	1.28	
	SEBPIRI252	CED 40 A-53 Seamless pipe	2-1/2"	TR016191-13I-SEI UUT-1	1.84	1.38	
	Standard Pipe Manufacturer	Various	Grooved Fittings (elbow, tee, cap)	1-1/4"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28
		Various	Grooved Fittings (elbow, tee, cap)	1-1/2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28
Various		Grooved couplings & Fittings (elbow, tee, cap)	2"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
Various		Heavy duty flex grooved coupling	1"	TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3 and TR027686-14N-SEI UUT-5	2.22	1.67	
Various		Heavy duty flex grooved coupling	1-1/4"	Interpolated	1.71	1.28	
Various		Heavy duty flex grooved coupling	2-1/2"	TR-303911-10I-2 UUT-1, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67&1.28	
Anvil	Gruvlock 78FP	Check valve	2-1/2"	TR016191-13I-SEI UUT-1, TR027686-14N-SEI UUT-3, TR-303911-10I-2 UUT-1	2.22	1.67	

CERTIFIED SUBCOMPONENT LIST (continued)

MECHANICAL SECTION (continued)

Manufacturer	Model number	Description	Size	Test Status	SDS(g)	Fp/Wp
Armetco	FM061M1228	Seismic cylinder strap	10"	TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5	2.22	1.67
	FM061M1227	Seismic cylinder strap	13"	Interpolated	2.22	1.67
	FM061M1226	Seismic cylinder strap	20"	TR016191-13I-SEI UUT-1, TR-303911-10I-2 UUT-1, TR-303911-10I-2 UUT-2	2.22 & 1.71 & 2.22	1.67 & 1.28 & 1.67
Victaulic	728	1-1/2" grooved end valve	1-1/2"	Interpolated	1.71	1.28
	728	2" grooved end valve	2"	TR027686-14N-SEI UUT-3, TR303911-10I-2 UUT-1	2.22 & 1.71	1.67&1.28
Nibco	T-FP-600A, NL998H4	Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	1/4"	TR027686-14N-SEI UUT-3, TR303911-10I-2 UUT-1	2.22 & 1.71	1.67&1.28
	T-FP-600A, NL998H6	Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	1/2"	TR027686-14N-SEI UUT-3, TR303911-10I-2 UUT-1	2.22 & 1.71	1.67&1.28
	T-FP-600A, NL998H8	Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	3/4"	TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5, TR303911-10I-2 UUT-1, TR303911-10I-2 UUT-2, TR016191-13I-SEI UUT-1	2.22, 2.22, 2.22, 1.71, 1.71, 1.84	1.67, 1.67, 1.67, 1.28, 1.28, 1.38
KVC Industries	F-1 100T	600 WOG FP NPTFORGED BRASS BALL VALVE	1/4"	TR026390-14N-SEI UUT-1	2.22	1.67
	F-1 100T	600 WOG FP NPTFORGED BRASS BALL VALVE	1/2"	TR026390-14N-SEI UUT-1	2.22	1.67
	F-1 100T	600 WOG FP NPTFORGED BRASS BALL VALVE	3/4"	TR026390-14N-SEI UUT-1	2.22	1.67
Wika	50021214	Water gauge kilo 0-300 psi/kPa	1/4" NPT	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67 & 1.28
	4279931	Air gauge kilo 0-80 and 250 psi/kPa	1/4" NPT	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67 & 1.28
Winters	PFE3933	Water gauge kilo 0-300 psi/kPa	1/4" NPT	TR026390-14N-SEI UUT-4	2.22	1.67
	PFE3932	Air gauge kilo 0-80 and 250 psi/kPa	1/4" NPT	TR026390-14N-SEI UUT-4	2.22	1.67
United Brass	200-50 ME	Strainer 50 mesh	1/4"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67 & 1.28
Fireflex	T3EMERG001	Emergency release assembly for unit in a cabinet		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67 & 1.28
Standard Pipe Manufacturer		Threaded fittings and nipples	1/2", 3/4"	TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22 & 1.71	1.67 & 1.28
Viking Corp	01285A	Dehydrator		TR027686-14N-SEI UUT-5	2.22	1.67
	04624A	Air pressure maintenance device AMPD		TR027686-14N-SEI UUT-5	2.22	1.67
	14800	Anti-column Device LD-1		TR026390-14N-SEI UUT-2	2.22	1.67

CERTIFIED SUBCOMPONENT LIST (continued)

MECHANICAL SECTION (continued)

Manufacturer	Model number	Description	Size	Test Status	SDS(g)	Fp/Wp
SEVO	CV 140069-500	Cylinder / 1" threaded valve ass'y	40LB	TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5	2.22	1.67
	CV 140079-500	Cylinder / 1" threaded valve ass'y	76LB	Extrapolated	1.71	1.28
	CV 14817-500	Cylinder / 1-1/4" threaded valve ass'y	164LB	Extrapolated	1.71	1.28
	CV 148057-500	Cylinder / 2-1/2" valve ass'y	322LB	Extrapolated	1.71	1.28
	CV 14813-500	Cylinder / 2-1/2" threaded valve ass'y	601LB	TR016191-13I-SEI UUT-1, TR-303911-10I-2 UUT-1, TR-303911-10I-2 UUT-2	1.84, 1.71, 1.71	1.38, 1.28, 1.28
	SOL EA45S	Electric Solenoid 24VDC – stackable *		TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5, TR303911-10I-2 UUT-1, TR303911-10I-2 UUT-2, TR016191-13I-SEI UUT-1	2.22,2.22,2.22, 1.71,1.84	1.67, 1.67, 1.67, 1.38, 1.38
	PS10-500	Pressure supervisory SW (NO/NC)		TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5, TR303911-10I-2 UUT-1, TR303911-10I-2 UUT-2, TR016191-13I-SEI UUT-1	2.22,2.22,2.22, 1.71,1.84	1.67, 1.67, 1.67, 1.28, 1.38
	MA 3033	Mechanical actuator		TR-303911-10I-2 UUT-1	1.71	1.28
	PA 3000	Piston actuator		TR027686-14N-SEI UUT-3	2.22	1.67
	PS 37	Pressure operating switch NO/NC SPDT		TR-303911-10I-2 UUT-1	1.71	1.28
	SOL 20195	Main reserve switch		TR-303911-10I-2 UUT-1	1.71	1.28
	LL 30020-1	Liquid level indicator for 322 LB cylinder		Extrapolated	1.71	1.28
	LL 30020-2	Liquid level indicator for 601LB cylinder		TR016191-13I-SEI UUT-1, TR-303911-10I-2 UUT-1, TR-303911-10I-2 UUT-2	1.84, 1.71, 1.71	1.38, 1.28, 1.28
	M5011-500	500 Psi pressure gauge		TR027686-14N-SEI UUT-1, TR027686-14N-SEI UUT-3, TR027686-14N-SEI UUT-5, TR303911-10I-2 UUT-1, TR303911-10I-2 UUT-2, TR016191-13I-SEI UUT-1	2.22, 2.22, 2.22, 1.71, 1.71, 1.84	1.67, 1.67, 1.67, 1.28, 1.28, 1.38
	N 1230	NOVEC fluid 1230 **		Extrapolated	1.71	1.28

VERY IMPORTANT: * The number of solenoid installed depends on the configuration of each system.

**Quantity varies for each project. Maximum in equivalent of water for testing

CERTIFIED SUBCOMPONENT ELECTRICAL SECTION						
Manufacturer	Model number	Description	Size	Test Status	SDS (g)	Fp/Wp
Viking Corp.	VFR-400	Control panel board		TR027686-14N-SEI UUT-1, TR016191-13I-SEI UUT-1, TR027686-14N-SEI UUT-3 and TR-303911-10I-2 UUT-1	2.22, 1.84, 2.22, 1.71	1.67, 1.38, 1.67, 1.28
Notifier	NFS-320	Notifier 320 control panel, 120 VAC		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
Power Max	SB 1275	Batteries 12V 7.5 Ah		TR027686-14N-SEI UUT-1	2.22	1.67
	SB 12120	Batteries 12V 12 Ah		TR027686-14N-SEI UUT-3	2.22	1.67
	SB 12180	Batteries 12V 18 Ah		TR027686-14N-SEI UUT-5	2.22	1.67
Enerwatt, AGM	WP7.5-12	Batteries 12V 7.5 Ah		TR016191-13I-SEI UUT-1	1.84	1.38
	WP12-12	Batteries 12V 12 Ah		Interpolated	1.71	1.28
	WP20-12	Batteries 12V 20 Ah		TR-303911-10I-2 UUT-2	1.71	1.28
Fireflex	SEWIRING01	Electrical wiring Fireflex1230 for 1 cylinder with VFR-400 panel		TR027686-14N-SEI UUT-1	2.22	1.67
	SEWIRING02	Electrical wiring Fireflex1230 main/reserve with VFR-400 panel		TR027686-14N-SEI UUT-3	2.22	1.67
	SEWIRING03	Electrical wiring Fireflex1230 main/slave with VFR-400 panel		TR-303911-10I-2 UUT-1	1.71	1.28
	SEWIRING05	Electrical wiring for panel in a junction box if Panel is installed by others, outside of the unit		Interpolated	1.71	1.28
	SEWIRING06	Electrical wiring for FlxDual with NFS-320		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
	SEWIRIPS37	Electrical wiring for optional PS37 installed on a cylinder		TR027686-14N-SEI UUT-5	2.22	1.67
General Air Products *	OL12516A	Air compressor manual 120/220V 60Hz	1/6 HP	TR027686-14N-SEI UUT-5	2.22	1.67
	OL25033A	Air compressor manual 120/220V 60Hz	1/3 HP	Interpolated	1.71	1.28
	OL36550A	Air compressor manual 120/220V 60Hz	1/2 HP	TR-303911-10I-2 UUT-2	1.71	1.28
Hallen Bradley	HBL 1221I	Elect switch for compressor on off		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
Furnas	69HA3	Pressure switch		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
Swagelock	B-8CP2-1/3	1/2" spring loaded check valve for air compressor		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
Viking Corp.	A-1 10883	1/2" Float check valve for air compressor		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
Potter Electric	1340103	PS10-1 switch 10-175 psi		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
	1340403	PS40-1 switch 10-175 psi		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
	1340404	PS40-2 switch 10-175 psi		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28
	RCDS	Maintenance switch		TR027686-14N-SEI UUT-5, TR-303911-10I-2 UUT-2	2.22, 1.71	1.67, 1.28

NOTE: *Air supplies are tankless

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Test Report TR027686-14N-SEI – UUT1

Model Number: FLX1230007V01

Fireflex 1230 Single Cylinder 40 Lbs (500 PSI) with Contol Panel

77-1/8”H X 23”W X 25”D

Weight: 400 lbs

Rigidly Floor Mounted with (4) – ½” – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{Ds} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
17.8 Hz	4.75 Hz	> 33 Hz						



Internal Components	Manufacturer	Part #
1" CED 40 A-53 Seamless pipe	Fireflex	SEBOTG1001
1" CED 40 A-53 Seamless pipe	Fireflex	SEBPRI101
10" Seismic cylinder strap	Artmetco	FM061M1228
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
40 LB Cylinder / 1" threaded valve ass'y	SEVO	CV 140069-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA45S
Pressure supervisory SW (NO/NC)	SEVO	PS10-500
500 Psi pressure gauge	SEVO	M5011-500
Control panel board	Viking Corp.	VFR-400
Batteries 12V 7.5 Ah	Power Max	SB 1275
Electrical wiring Fireflex1230 for 1 cylinder with VFR-400 panel	Fireflex	SEWIRING01

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Test Report TR027686-14N-SEI – UUT3

Model Number: FLX1230031V01

Fireflex 1230 Main/Slave 40 Lbs (500 PSI) with double cylinder and Control panel
 77-1/8”H X 36”W X 25”D

Weight: 600 lbs

Rigidly Floor Mounted with (4) – ½” – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					AFLX-H	ARIG-H	AFLX-V	ARIG-V
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
12.8 Hz	6.4 Hz	29 Hz						

BY: Mohammad Aliaari

DATE: 10/28/2021

Internal Components	Manufacturer	Part #
1" CED 40 A-53 Seamless pipe	Fireflex	SEBOGG1002
1" CED 40 A-53 Seamless pipe	Fireflex	SEBOGG1003
1" CED 40 A-53 Seamless pipe	Fireflex	SEBPIRI102
2-1/2" Check valve	Anvil	Gruvlock 78FP
10" Seismic cylinder strap	Artmetco	FM061M1228
2" grooved end valve	Victaulic	728
1/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H4
1/2" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H6
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
40 LB Cylinder / 1" threaded valve ass'y	SEVO	CV 140069-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA45S
Pressure supervisory SW (NO/NC)	SEVO	PS10-500
Piston actuator	SEVO	PA 3000
500 Psi pressure gauge	SEVO	M5011-500
Control panel board	Viking Corp.	VFR-400
Batteries 12V 12 Ah	Power Max	SB 12120
Electrical wiring Fireflex1230 main/reserve with VFR-400 panel	Fireflex	SEWIRING02

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Test Report TR027686-14N-SEI – UUT5

Model Number: FLXDUALD07V02

Preaction Double Interlocked 2" Cylinder 40 Lbs assembly with Control panel

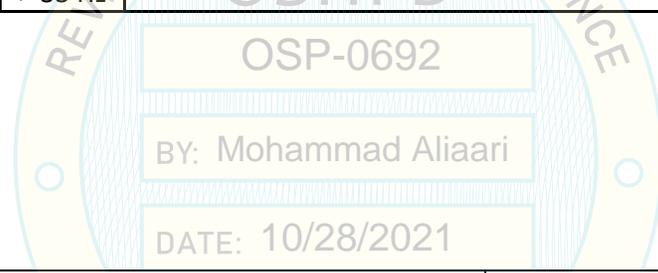
77-1/8" H X 36" W X 25" D

Weight: 720 lbs

Rigidly Floor Mounted with (4) – 1/2" – 13 grade 5 bolt and washer



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
10.7 Hz	4.3 Hz	> 33 Hz						

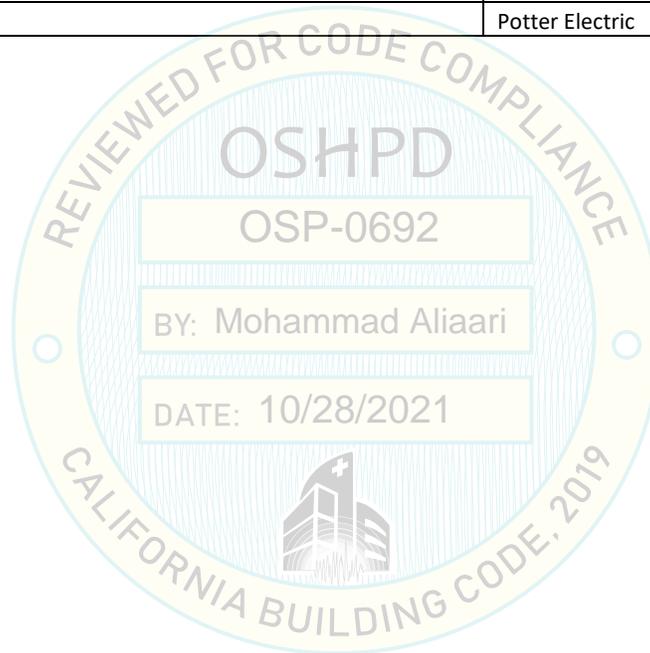


Internal Components	Manufacturer	Part #
2" Deluge Valve straight through style	Viking Corp.	F-1, 12057
2" In-line swing check valve grooved	Viking Corp.	L-1, 11059
Pneumatic actuator	Viking Corp.	H-1
1/2" solenoid valve 24VDC/NC 250 psi	Viking Corp.	11591
Drip check del & flow valve	Viking Corp.	D-1, 10730
Pressure operated relief valve (PORV)	Viking Corp.	D-3, 16970
1/4" x .062" Restriction orifice	Viking Corp.	10110
1/2" swing check valve with .067 hole	Viking Corp.	05781A
1/4" spring loaded check valve	Viking Corp.	04947A
PS10-1 single pressure switch	Potter Electric	1340101
2" Main pipe	Fireflex	T3PIPPMA20
1-1/2" Drain pipe	Fireflex	T3PIPPDR20
10" Seismic cylinder strap	Artmetco	FM061M1228
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
1/4" NPT Water gauge kilo 0-300 psi/kPa	Wika	50021214
1/4" NPT Air gauge kilo 0-80 and 250 psi/kPa	Wika	4279931
1/4" Strainer 50 mesh	United Brass	200-50 ME
Emergency release assembly for unit in a cabinet	Fireflex	T3EMERG001
Dehydrator	Viking Corp	01285A
Air pressure maintenance device AMPD	Viking Corp	04624A
40 LB Cylinder / 1" threaded valve ass'y	SEVO	CV 140069-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA45S
Pressure supervisory SW (NO/NC)	SEVO	PS10-500

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Internal Components Cont.	Manufacturer Cont.	Part # Cont.
500 Psi pressure gauge	SEVO	M5011-500
Notifier 320 control panel, 120 VAC	Notifier	NFS-320
Batteries 12V 18 Ah	Power Max	SB 12180
Electrical wiring for FlxDual with NFS-320	Fireflex	SEWIRING06
Electrical wiring for optional PS37 installed on a cylinder	Fireflex	SEWIRIPS37
1/6 HP Air compressor manual 120/220V 60Hz	General Air Products	OL12516A
Elect switch for compressor on off	Hallen Bradley	HBL 1221I
Pressure switch	Furnas	69HA3
1/2" spring loaded check valve for air compressor	Swagelock	B-8CP2-1/3
1/2" Float check valve for air compressor	Viking Corp.	A-1 10883
PS10-1 switch 10-175 psi	Potter Electric	1340103
PS40-1 switch 10-175 psi	Potter Electric	1340403
PS40-2 switch 10-175 psi	Potter Electric	1340404
Maintenance switch	Potter Electric	RCDS



FireFlex – Dual & 1230 Preaction Systems
Description of Unit Under Testing – Equipment Sheets

Test Report TR026390-14N-SEI – UUT1

Model Number: T3PDPASK15

1 ½” Preaction Double Interlock

Electric-Pneumatic Skid-mounted Unit

No enclosure was included in the test

59”H X 23”W X 25”D

Weight: 250 lbs

Rigidly Floor Mounted with (4) – ½” – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the OSP-AC156 test. Unit full of contents.					
7.1 Hz	6.8 Hz	> 33 Hz						

BY: Mohammad Aliaari

Internal Components	Manufacturer	Part #
1 ½” Deluge valve	Viking Corp.	F-1, 12125
1 ½” In-line swing check valve, groomed	Viking Corp.	L-1, 11054
Pneumatic actuator	Viking Corp.	H-1
½” Solenoid valve 24 VDC/NC 250 psi	Viking Corp.	11591
Drip check del. and flow valve	Viking Corp.	D-1, 10730
Pressure operated relief valve	Viking Corp.	D-3, 16970
¼” x 0.62” Restriction orifice	Viking Corp.	10110
½” Swing check valve with 0.67” hole	Viking Corp.	05781A
¼” Spring loaded check valve	Viking Corp.	04947A
PS10-1 Single pressure switch	Potter Electric	1340101
1 ½” Main pipe	FireFlex	T3PIPPMA15
1 ½” Drain pipe	FireFlex	T3PIPPDR15
1 ½” Grooved end valve	Victaulic	728
¼” Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H4
½” Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H6
¾” Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H8
¼” 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
½” 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
¾” 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
¼” NPT Water gauge kilo 0-300 psi/kPa	Wika	50021214
¼” NPT Air gauge kilo 0-80 and 250 psi/kPa	Wika	4279931
Emergency release assembly	FireFlex	T3EMBOX001
Air pressure maintenance device AMPD	Viking Corp.	04624A
PS10-1 Switch 10-175 psi	Potter Electric	1340103
PS40-1 Switch 10-175 psi	Potter Electric	1340403

FireFlex – Dual & 1230 Preaction Systems
Description of Unit Under Testing – Equipment Sheets

Test Report TR026390-14N-SEI – UUT2

Model Number: T3DRYENP40

4" Dry Cabinet with control panel

77"H X 36"W X 25"D

Weight: 675 lbs

Rigidly Floor Mounted with (4) – ½" – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
7.7 Hz	6.6 Hz	> 33 Hz						

BY: Mohammad Aliaari

DATE: 10/28/2021

Internal Components	Manufacturer	Part #
4" Dry pipe valve	Viking Corp.	F-1, 07627
Pneumatic actuator	Viking Corp.	H-1
Drip check for dry valve	Viking Corp.	D-3, 10732
¼" x 0.62" Restriction orifice	Viking Corp.	10110
½" Swing check valve with 0.67" hole	Viking Corp.	05781A
¼" Spring loaded check valve	Viking Corp.	04947A
PS10-1 Single pressure switch	Potter Electric	1340101
¼" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H4
½" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H6
¾" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H8
¼" 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
½" 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
¼" NPT Water gauge kilo 0-300 psi/kPa	Wika	50021214
¼" NPT Air gauge kilo 0-80 and 250 psi/kPa	Wika	4279931
Emergency release assembly	FireFlex	T3EMERG001
Accelerator E-1 with anti-flood device for dry pipe system	Viking Corp.	08116
Anti-column device LD-1	Viking Corp.	14800
½ hp Air compressor manual 120/220V 60Hz	General Air Products	OL36550A
Pressure switch	Furnas	69HA3
½" Spring loaded check valve for air compressor	Swagelock	B-8CP2-1/3
½" Float check valve for air compressor	Viking Corp.	A-1 10883
PS40-1 Switch 10-175 psi	Potter Electric	1340403

FireFlex – Dual & 1230 Preaction Systems
Description of Unit Under Testing – Equipment Sheets

Test Report TR026390-14N-SEI – UUT4

Model Number: T3PDPAPW40

4" Preaction Double interlock

Electric-Pneumatic Cabinet w/ Control Panel

77"H X 36"W X 25"D

Weight: 770 lbs

Rigidly Floor Mounted with (4) – ½" – 13 grade 5 bolts and washer



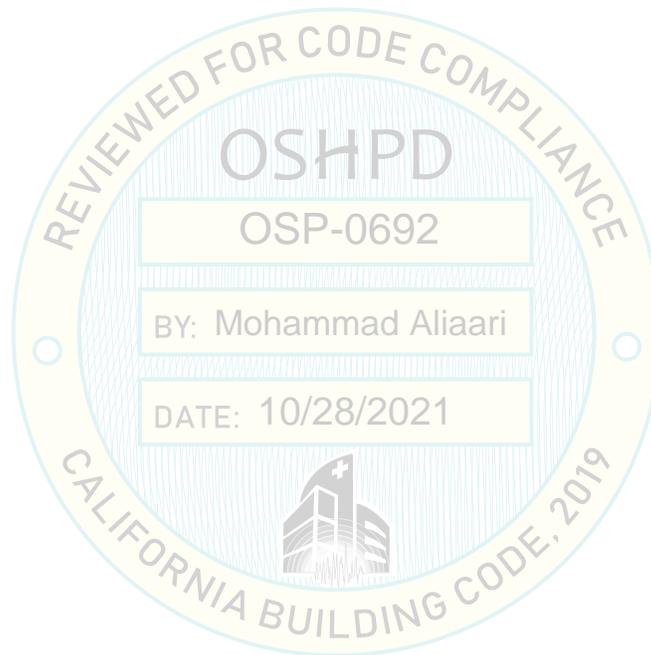
Building Code	Test Criteria	S _{ds} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					AFLX-H	ARIG-H	AFLX-V	ARIG-V
CBC 2019	ICC-ES AC 156	2.22	1.67	1	3.55	2.66	1.50	0.59
Natural Frequencies				Test Results				
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
8.2 Hz	7.6 Hz	> 33 Hz						

Internal Components	Manufacturer	Part #
4" Deluge valve	Viking Corp.	F-1, 11513
4" Easy riser swing check valve, groomed	Viking Corp.	F-1, 08510
Pneumatic actuator	Viking Corp.	H-1
½" Solenoid valve 24 VDC/NC 250 psi	Viking Corp.	11591
Drip check del. and flow valve	Viking Corp.	D-1, 10730
Pressure operated relief valve	Viking Corp.	D-3, 16970
¼" x 0.62" Restriction orifice	Viking Corp.	10110
½" Swing check valve with 0.67" hole	Viking Corp.	05781A
¼" Spring loaded check valve	Viking Corp.	04947A
PS10-1 Single pressure switch	Potter Electric	1340101
4" Main pipe	FireFlex	T3PIPPMA40
4" Drain pipe	FireFlex	T3PIPPDR40
¼" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H4
½" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H6
¾" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998H8
2" Ball valve – brass, 2-piece, full port, NPT x NPT	Nibco	T-FP-600A, NL998HD
4" Grooved butterfly valve	Fivalco	Fireriser HPG
¼" 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
½" 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
2" 600 WOG FP NPT Forged brass ball valve	KVC industries	F-1, 100T
¼" NPT Water gauge kilo 0-300 psi/kPa	Winters	PFE3933
¼" NPT Air gauge kilo 0-80 and 250 psi/kPa	Winters	PFE3932
Emergency release assembly	FireFlex	T3EMERG001
Accelerator E-1 w/o anti-flood device	Viking Corp.	08055
Control Panel	Viking Corp.	VFR-400
Batteries 12V 7.5 Ah	Power Max	SB 1275
Batteries 12V 7.5 Ah	Enerwatt, AGM Series	WP7.5-12

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Internal Components Cont.	Manufacturer Cont.	Part # Cont.
1/3 hp Air compressor manual 120/220V 60Hz	General Air Products	OL25033A
Pressure switch	Furnas	69HA3
½" Spring loaded check valve for air compressor	Swagelock	B-8CP2-1/3
½" Float check valve for air compressor	Viking Corp.	A-1 10883
PS10-1 Switch 10-175 psi	Potter Electric	1340103
PS40-1 Switch 10-175 psi	Potter Electric	1340403



OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Test Report TR016191-13I-SEI – UUT1

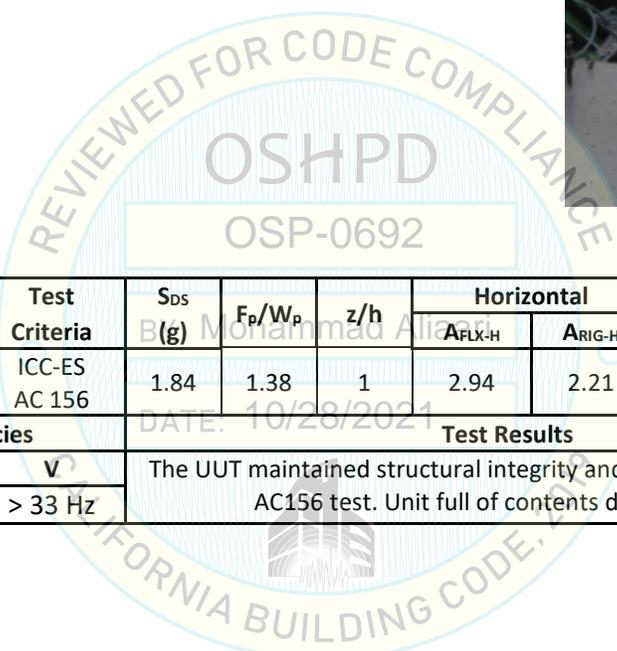
Model Number: FLX1230007V01

Fireflex 1230 Single Cylinder System Cabinet with Panel

77-1/8”H X 23”W X 25”D

Weight: 1050 lbs

Rigidly Floor Mounted with (4) – 1/2” – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	1.84	1.38	1	2.94	2.21	1.23	0.49
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
7.4 Hz	7.1 Hz	> 33 Hz						

Internal Components	Manufacturer	Part #
2-1/2" CED 40 A-53 Seamless pipe	Fireflex	SEBP1R1252
20" Seismic cylinder strap	Artmetco	FM061M1226
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
601 LB Cylinder / 2-1/2" threaded valve ass'y	SEVO	CV 14813-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA455
Pressure supervisory SW (NO/NC)	SEVO	PS10-500
Liquid level indicator for 601LB cylinder	SEVO	LL 30020-2
500 Psi pressure gauge	SEVO	M5011-500
Control panel board	Viking Corp.	VFR-400
Batteries 12V 7.5 Ah	Enerwatt, AGM	WP7.5-12

FireFlex – Dual & 1230 Preaction Systems
Description of Unit Under Testing – Equipment Sheets

Test Report TR-303911-10I-2 – UUT1

Model Number: FLX1230012V01

Fireflex 1230 Double Cylinder with Control Panel

77-1/8”H X 46”W X 25”D

Weight: 1900 lbs

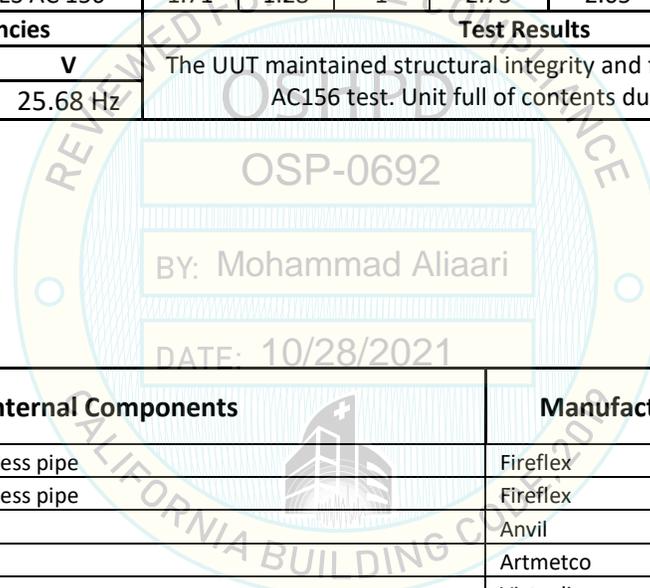
Rigidly Floor Mounted with (6) – ½” – 13 grade 5 bolts and washer

Threaded rods were installed through the cabinet instead of pins

to hold doors closed



Building Code	Test Criteria	S _{DS} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	1.71	1.28	1	2.73	2.05	1.14	0.46
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
5.01 Hz	5.76 Hz	25.68 Hz						



Internal Components	Manufacturer	Part #
2-1/2" CED 40 A-53 Seamless pipe	Fireflex	SEBPIPE251
2-1/2" CED 40 A-53 Seamless pipe	Fireflex	SEBPIPE255
2-1/2" Check valve	Anvil	Gruvlock 78FP
20" Seismic cylinder strap	Artmetco	FM061M1226
2" grooved end valve	Victaulic	728
1/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H4
1/2" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H6
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
601 LB Cylinder / 2-1/2" threaded valve ass'y	SEVO	CV 14813-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA455
Pressure supervisory SW (NO/NC)	SEVO	PS10-500
Mechanical actuator	SEVO	MA 3033
Pressure operating switch NO/NC SPDT	SEVO	PS 37
Main reserve switch	SEVO	SOL 20195
Liquid level indicator for 601LB cylinder	SEVO	LL 30020-2
500 Psi pressure gauge	SEVO	M5011-500
Control panel board	Viking Corp.	VFR-400
Electrical wiring Fireflex1230 main/slave with VFR-400 panel	Fireflex	SEWIRING03

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Test Report TR-303911-10I-2 – UUT2

Model Number: FLXDUALD24V02

Fireflex Dual Single Cylinder Cabinet with Control Panel

77-1/8" H X 46" W X 25" D

Weight: 1300 lbs

Rigidly Floor Mounted with (6) – 1/2" – 13 grade 5 bolts and washer



Building Code	Test Criteria	S _{D5} (g)	F _p /W _p	z/h	Horizontal		Vertical	
					A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC 156	1.71	1.28	1	2.73	2.05	1.14	0.46
Natural Frequencies			Test Results					
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. Unit full of contents during testing.					
5.5 Hz	6.41 Hz	24.35 Hz						

BY: Mohammad Aliaari

Internal Components	Manufacturer	Part #
2" Deluge Valve straight through style	Viking Corp.	F-1, 12057
2" In-line swing check valve grooved	Viking Corp.	L-1, 11059
Pneumatic actuator	Viking Corp.	H-1
1/2" solenoid valve 24VDC/NC 250 psi	Viking Corp.	11591
Drip check del & flow valve	Viking Corp.	D-1, 10730
Pressure operated relief valve (PORV)	Viking Corp.	D-3, 16970
1/4" x .062" Restriction orifice	Viking Corp.	10110
1/2" swing check valve with .067 hole	Viking Corp.	05781A
1/4" spring loaded check valve	Viking Corp.	04947A
PS10-1 single pressure switch	Potter Electric	1340101
2" Main pipe	Fireflex	T3PIPPMA20
1-1/2" Drain pipe	Fireflex	T3PIPPDR20
2-1/2" CED 40 A-53 Seamless pipe	Fireflex	SEBPRI251
20" Seismic cylinder strap	Artmetco	FM061M1226
3/4" Ball Valve – Brass, Two-Piece, Full Port, NPT x NPT	Nibco	T-FP-600A, NL998H8
1/4" NPT Water gauge kilo 0-300 psi/kPa	Wika	50021214
1/4" NPT Air gauge kilo 0-80 and 250 psi/kPa	Wika	4279931
1/4" Strainer 50 mesh	United Brass	200-50 ME
Emergency release assembly for unit in a cabinet	Fireflex	T3EMERG001
601 LB Cylinder / 2-1/2" threaded valve ass'y	SEVO	CV 14813-500
Electric Solenoid 24VDC – stackable	SEVO	SOL EA45S
Pressure supervisory SW (NO/NC)	SEVO	PS10-500
Liquid level indicator for 601LB cylinder	SEVO	LL 30020-2
500 Psi pressure gauge	SEVO	M5011-500

OSP APPLICATION
 FireFlex – Dual & 1230 Preaction Systems
 Description of Unit Under Testing – Equipment Sheets

Date: 10/08/2021

Internal Components Cont.	Manufacturer Cont.	Part # Cont.
Notifier 320 control panel, 120 VAC	Notifier	NFS-320
Batteries 12V 20 Ah	Enerwatt, AGM Series	WP20-12
Electrical wiring for FlxDual with NFS-320	Fireflex	SEWIRING06
1/2 HP Air compressor manual 120/220V 60Hz	General Air Products	OL36550A
Elect switch for compressor on off	Hallen Bradley	HBL 1221I
Pressure switch	Furnas	69HA3
1/2" spring loaded check valve for air compressor	Swagelock	B-8CP2-1/3
1/2" Float check valve for air compressor	Viking Corp.	A-1 10883
PS10-1 switch 10-175 psi	Potter Electric	1340103
PS40-1 switch 10-175 psi	Potter Electric	1340403
PS40-2 switch 10-175 psi	Potter Electric	1340404

