

# PAT NBK CO., LTD TEST REPORT

#### **SCOPE OF WORKs**

ANSI/ASSP Z359.14-2014 - SELF RETRACTING DEVICES

#### **REPORT NUMBER**

104354142CRT-001

#### **ORIGINAL REPORT NUMBER**

104032569CRT-001a

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Report No.: 104354142CRT-001

Date: June 24th 2020

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Report Number.....: 104354142CRT-001

Signed Quote Number.....: Qu-01076865

PO Number.....: NA

Name of Testing Laboratory

**Test Specification:** 

Standard.....: ANSI/ASSP Z359.14-2014

**Date(s) of Testing.....**: 9/23/19 – 6/23/20

**Product Description:** 

Product Type: .....: Self-Retracting Device

Brand Name: ..... PAT NBK

Model Number(s): ..... HB-2N 6'

Additional Models .....: NA

Date(s) Samples Received ...... 9/3/19

Date: June 24<sup>th</sup>, 2020

#### **SECTION 1**

#### **SUMMARY OF TESTING**

TESTS COMPLETED	TEST DATE	ANSI/ASSP Z359.14-2014 CLAUSE	STATUS
Dynamic and Static Strength	9/25/19	3.1.7 & 3.1.8	PASS
Dynamic Performance (ambient)	9/24/19	3.1.9 & 4.2.1	PASS
Dynamic Performance (hot)	9/26/19	3.1.9 & 4.2.8.1	PASS
Dynamic Performance (cold)	9/26/19	3.1.9 & 4.2.8.2	PASS
Dynamic Performance (wet)	9/24/19	3.1.9 & 4.2.8.3	PASS
Line Constituent (Webbing)	9/25/19	3.3.2 & 7.5	PASS
General Requirements	9/24/19	3	PASS
Corrosion Resistance (96 hrs.)	9/27/19	7.4	PASS
Markings and instructions	6/23/20	5	PASS

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#### **SECTION 2**

This test report concludes the work anticipated in the testing phase of your project. If there are any questions regarding this report please contact the undersigned at 607-753-6711.

COMPLETED BY:	Theodore Brown	REVIEWED BY:	Matthew Stevens
TITLE:	Technician	TITLE:	Associate Engineer
SIGNATURE:	6/24/20	SIGNATURE DATE:	6/24/20

Please see attached test data for details.

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#### **SECTION 3**

#### **TESTING EQUIPMENT CALIBRATION INFORMATION**

USED FOR TEST	DESCRIPTION	MANUFACTURER	CONTROL NO.	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE
X	Test Weight	NA	NA	282 lbs	-	VBU	VBU
X	Test Weight	NA	NA	300 Lbs	-	VBU	VBU
X	Load Cell	PCB	N1392	10k	-	6/17/19	6/17/20
X	Tape Measure	Stanley	R214	25'	-	4/8/19	4/8/20

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#### **SECTION 4**

#### **SUPPLEMENTAL TEST DATA**

Section (Test)	Requirement	Results	Compliance			
3.1.7 (4.2.5)	Static Strength: (ambient) shall withstand 3,000 lbs. when tested to: - apply a 3,000 lbs ,(+60/-0 lbs) load and maintain for 1-minute to the point of SRL line connection to the SRL drum (across the device)	Withstand the tensile load	Sample: 1 YES	Sample: 2 YES	Sample: 3 YES	PASS

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C	l Barriago	D				C!'	
Section (Test)	Requirement	Results				Compliance	
3.1.8 (4.2.3)		tensile strength of 1, ot (48-inch) free fall he affected area	e affected area				
		Sample:	Sample:	Sample:			
	Type of load indicator:	N/A	N/A	N/A			
	SN or ID:	#1	#2	#3			
	SRL Locked:	YES	YES	YES			
	SRL Remained Locked until released	YES	YES	YES			
	Test weight touch the ground	NO	NO	NO			
	Did SRL payload out to full extension	NO	NO	NO			
	Did load indictor engage	e YES	YES	YES			
	Retain a minimum of 1,000 lbs of residual tensile strength following the test	YES	YES	YES		PASS	
	MAF: (lbs) Ref only:	1000	879	910			
	Notes:						

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	Requirement		Results			Compliand
)						-
	<u>Dynamic Performance</u> : "AMI	BIENT"				
)						
	1. connect 282 lb. we			F + C+		
			ree fall per Fig 5 in	iest Standard.		
	3. release the test we	igni				
			Sample:	Sample:	Sample:	
			4	5	6	
	Conditioning in: (2 hrs r	min)	24 Hr.	24 Hr.	24 Hr.	
	SN or ID:		4	5	6	
	Payout and retract the	line	VEC	VEC	VEC	
	per 3.1.6 following test		YES	YES	YES	
	Lock function shall open	rate	YES	YES	YES	
	per 3.1.2				IES	
	Visual indicator shall ac	tivate	YES	YES	YES	
	Max. Arrest Force: (lbs.		916	1009	977	
	Class A & B < 1,800 lbs.		310	1003	311	
	Avg Arrest Force (lbs.):					
	Class A <1,350 lbs.		788	781	789	
	Class B < 900 lbs.					
	Distance Initial (in): D1		54	54	54	
	Distance Final (in): D2		66	72	67	
	Arrest Distance (in): D2	-D1	40	40	42	PASS
	Class A < 24-inches		12	18	13	
	Class B < 54-inches					_
		Line		Ι		
		Extension	Sample:	Sample:	Sample:	
		( in or ft )	(#4)	(#5)	(#6)	
	(1) Force (lbs) @ 1 ft	1'	2.5	2.3	3.0	
	Retracted length < 24-inc		N/A	N/A	N/A	
	(2) Force (lbs) @ 20%	2'	3.2	3.1	4.5	
	Retracted length < 24-inc	ches	N/A	N/a	N/A	
1	(3) Force (lbs) @ 40%	3'	4.3	3.9	5.1	
	Retracted length < 24-inc		N/A	N/A	N/A	
	1	4'	5.9	6.5	5.9	
	(4) Force (lbs) @ 60%		N/A	N/A	N/A	
	Retracted length < 24-inc			1	7.2	į –
	Retracted length < 24-ind (5) Force (lbs) @ 80%	5′	7.0	7.1		
	Retracted length < 24-ind (5) Force (lbs) @ 80% Retracted length < 24-ind	5'	7.0 N/A	N/A	N/A	
	Retracted length < 24-ind (5) Force (lbs) @ 80%	5' ches 6'	7.0			

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		Results				Complian
c Performance: "HEAT"						
erenormance. HEAT						
connect 282 lb. weight	İ					
extract enough line for	r a 36-inch fre	e fall per Fig 5 in T	est Standard.			
release the test weigh						
test within 90 seconds		from conditioning				
		Canada.	Carranta	Committee		
54 C, 85% RH	3	Sample:	Sample:	Sample:		
	,	7	8	9		
onditioning in: (2 hrs min	)	3	3	3		
l or ID:		7	8	9		
yout and retract the line	:	YES	YES	YES		
r 3.1.6 following test						
ck function shall operate	•	YES	YES	YES		
r 3.1.2 sual indicator shall activa	nto.	YES	YES	YES		
	ite	163	TES	TES		
Max. Arrest Force: (lbs.) Class A & B < 1,800 lbs.  Avg Arrest Force (lbs.): Class A <1,350 lbs. Class B < 900 lbs.  Distance Initial (in): D1  Distance Final (in): D2		862	864	943		
		719	718	743		
		713	710	743		
		54	54	54		
		71	68	72		
rest Distance (in): D2-D1		,,,		,,,		
ass A < 24-inches		17	14	18		PASS
ass B < 54-inches						
	- 1	,				
	Line	<u> </u>				
	Extension	Sample:	Sample:	Sample:		
	(in or ft)	(#7)	(#8)	(#9)		
ce (lbs) @ 1 ft	1'	2.3	2.4	2.0		
racted length < 24-inche		N/A	N/A	N/A		
ce (lbs) @ 20%	2'	2.4	3.3	3.1		
racted length < 24-inche		N/A	N/A	N/A		
ce (lbs) @ 40%	3′	4.5	4.3	3.8		
racted length < 24-inche		N/A	N/A	N/A		
racted length < 24-inche						
	5'	5.9	6.6	7.0		
racted length < 24-inche						
	6'			7.7		
racted length < 24-inche	S			N/A		
ce (lbs) @ 60% racted length < 24- ce (lbs) @ 80% racted length < 24- ce (lbs) @ 100%	inche inche	4' inches 5' inches 6'	4' 5.6 inches N/A 5' 5.9 inches N/A 6' 6.8	4'     5.6     5.9       inches     N/A     N/A       5'     5.9     6.6       inches     N/A     N/A       6'     6.8     6.8	4'     5.6     5.9     5.0       inches     N/A     N/A     N/A       5'     5.9     6.6     7.0       inches     N/A     N/A     N/A       6'     6.8     6.8     7.7	4'     5.6     5.9     5.0       inches     N/A     N/A     N/A       5'     5.9     6.6     7.0       inches     N/A     N/A     N/A       6'     6.8     6.8     7.7

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Section	Requirement		Results			Compliance
(Test)						,
3.1.9	<u>Dynamic Performance</u> : "COL	D"				
(4.2.8.2						
)	1. connect 282 lb. we					
	<ol><li>extract enough line</li></ol>		ee fall per Fig 5 in 1	Test Standard.		
	<ol><li>release the test wei</li></ol>					
	4. test within 90 secor	nds of removing	from conditioning			
			Camania	Sample:	Commile	
	-40 C		Sample:		Sample:	
	Conditioning in: (2 hrs n	nin)	2	11 2	12	
	SN or ID:	11111)	10	11	12	
	Payout and retract the I	line	10	11	12	
	per 3.1.6 following test		YES	YES	YES	
	Lock function shall oper					
	per 3.1.2		YES	YES	YES	
	Visual indicator shall act	tivate	YES	YES	YES	
	Max. Arrest Force: (lbs.)					
	Class A & B < 1,800 lbs.		1100	1094	1142	
	Avg Arrest Force (lbs.):					
	Class A <1,350 lbs.		844	907	93	
	Class B < 900 lbs.					
	Distance Initial (in): D1		54	54	54	
	Distance Final (in): D2		68	69	68	
	Arrest Distance (in): D2-	-D1				
	Class A < 24-inches		14	15	14	PASS
	Class B < 54-inches					
		T				
		Line	Sample:	Sample:	Sample:	
		Extension	(#10)	(#11)	(#12)	
	(1) 7 (11) 0 1 5	( in or ft )				
	(1) Force (lbs) @ 1 ft	1'	3.2	3.0	3.3	
	Retracted length < 24-inc		N/A	N/A	N/A	
	(2) Force (lbs) @ 20%	2′	3.8	3.7	4.1	
	Retracted length < 24-inc (3) Force (lbs) @ 40%		N/A	N/A	N/A	
			5.0 N/A	4.9 N/A	5.5 N/A	
	Retracted length < 24-inc (4) Force (lbs) @ 60%	4'	6.1	5.2	6.3	
	Retracted length < 24-inc		N/A	5.2 N/A	N/A	
	(5) Force (lbs) @ 80%	nes 5'	6.9	6.8	7.2	
	Retracted length < 24-inc		N/A	N/A	N/A	
	(6) Force (lbs) @ 100%	6'	8.6	7.9	8.0	
	Retracted length < 24-inc		N/A	N/A	N/A	
	netracted length < 24-Inc	iic3	IN/A	IN/A	IN/A	
<u> </u>	l					

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	Requirement			Results			Compliano
	Desferred (NAIFT	-11					
.3	Oynamic Performance: "WET						
	1. connect 282 lb. wei	aht					
	extract enough line		nch free	fall per Fig 5 in T	est Standard.		
	<ol><li>release the test wei</li></ol>						
	4. test within 90 secor		oving f	rom conditioning			
							_
			S	ample:	Sample:	Sample:	
	0 1::: : : (0.1	. ,		13	14	15	4
	Conditioning in: (3 hrs n	nin)		4	4	4	4
	SN or ID:			13	14	15	4
	Payout and retract the I	ine		YES	YES	YES	
	per 3.1.6 following test Lock function shall oper	ato					1
	per 3.1.2	ate		YES	YES	YES	
	Visual indicator shall act	tivate		YES	YES	YES	1
	Max. Arrest Force: (lbs.)						7
	Class A & B < 1,800 lbs.			898	939	953	
	Avg Arrest Force (lbs.):						1
	Class A <1,350 lbs.			789	802	752	
	Class B < 900 lbs.						
	Distance Initial (in): D1			54	54	54	
	Distance Final (in): D2			69	69	66	PASS
	Arrest Distance (in): D2-	-D1					
	Class A < 24-inches			15	15	12	
	Class B < 54-inches						_
١r		Line		I			
		Extens		Sample:	Sample:	Sample:	
		( in or		(#13)	(#14)	(#15)	
	(1) Force (lbs) @ 1 ft	1'		3.0	3.1	3.2	
	Retracted length < 24-inc			N/A	N/A	N/A	
- 1 [	(2) Force (lbs) @ 20%	2'		4.3	4.2	3.8	
	Retracted length < 24-inc	hes		N/A	N/A	N/A	
	(3) Force (lbs) @ 40%	3'		4.8	4.8	5.3	
	Retracted length < 24-inc	hes		N/A	N/A	N/A	
	(4) Force (lbs) @ 60%	4'		5.9	6.7	6.2	
	Retracted length < 24-inc			N/A	N/A	N/A	
	(5) Force (lbs) @ 80%	5'		7.0	7.6	7.6	
	Retracted length < 24-inc			N/A	N/A	N/A	
	(6) Force (lbs) @ 100%	6'		8.2	8.0	8.3	
	Retracted length < 24-inc	hoc		N/A	N/A	N/A	i

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Section	Requirement			R	esults							Compliance		
(Test)														
7.4	Corrosion Resistan	<u>_</u>												
	Subject the sample test 3.1.6	es to <b>96 hou</b>	<b>rs</b> of salt spra	ıy per ASTM	B117, fo	llowing	the salt s	spray perfo	rm retract	ion tension	,			
			nple: Salt (-1)	Sample 3.1.5 Salt			mple: Salt (-3)							
	SN or ID		16	17			18							
	Operate as intended:	Y	'ES	YES			YES							
	Signs of corrosion (visual only):	) I	NO	NO			NO							
	Line pay out, retract, and lock:	Y	'ES	YES			YES							
	Line Extensi ( in or f									-				
			Line Extension ( in or ft )		nple: :16)		Sample: (#17)		mple: #18)			PASS		
	(1) Force (lbs) @ 1 ft		1′	3	.3		3.1		3.1					
	Retracted leng	th < 24-inch		N	N/A		N/A		N/A					
	(2) Force (lbs) @	20%	2′	4	.4		4.3		5.0					
	Retracted leng	ngth < 24-inches		N	N/A		/A		N/A		N/A			
	(3) Force (lbs) @ 40%		3′		.1		4.9		6.2					
	Retracted leng	Retracted length < 24-inches		N	/A		N/A		N/A					
	(4) Force (lbs) @		4'		5.6		5.3		7.6					
	Retracted leng				/A		-	N/A N/A						
	(5) Force (lbs) @		5′		7.0		7.0 7.9							
	Retracted leng				/A		N/A		N/A					
	(6) Force (lbs) @		6'		5.5		8.8		8.1					
	Retracted leng	th < 24-inch	nes	N	/A		N/A		N/A					
3.3.2	Webbing (Line Cor	stituent)					Made o	f Synthetic	materials?	,	YES	PASS		
							Any Res	trictions?			NO	PASS		
	Section 7.1 3.3.2 (-1) 3.3.2 (-1)		Sample: 3.3.2 (-2		mple: .2 (-3)		mple: .2 (-4)	Sample 3.3.2 (-5		AVG.				
	Tensile Load (lbs.)	>4500	>4500	>4	500	>4	1500	>4500	>	4500		PASS		
	Minimum breaking strength of 4,500 lbs when tested to Section 7.1 (FED-STD-191/4108)													

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Section (Test)	Requirement		Results					
5	"Marking and Instructions"							
5.1.1	Shall be in English						PASS	
5.1.3	Self-Retracting Devices shall be marked with t	he followi	ng:					
	Marking	Comme	nts	YES	NO	NA		
	Part number and model designation			X				
	Year of manufacture			Х				
	Manufacturer's name or logo			Х				
	Capacity Range			Х				
	Unique ID Number			Х				
	Standard Number (Z359.14)			Х				
	How to inspect the visual indicator			Х				
	Warning to follow the manufacturer's							
	instructions included with the equipment			Х				
	at time of shipment from the manufacturer							
	Warning of the need for inspection in							
	accordance with the manufacturer's			X				
	instructions							
	The fiber or other materials used in the			l x			PASS	
	lanyard construction			^			FA33	
	The lanyard working length			X				
	Average arresting force for the SRD class			X				
	Arresting distance			X				
	Proper installation means			X				
	Warning on the need for testing the device			l x				
	for locking and retraction before each use			^				
	SRD class and arrest distance			X				
	Warning of the need to avoid lanyard							
	contact with sharp edges and abrasive			X				
	surfaces (not required for LE devices)							
	Free fall limit			X				
	Suitability for use with horizontal lifelines					X		
	Suitability for horizontal use				1	Х		
	Suitability for Leading Edge capability					Х		
5.2.1	Instructions shall be in English, and affixed to	the						
3.2.1	equipment at time of shipment from the manufacturer						PASS	

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Section	Requirement		Results				Compliance
(Test)	Requirement		nesuits				Compilance
5.2.2							
3.2.2	Instructions shall contain the following inform	ation:					
	Instructions	Comm	ents	YES	NO	NA	
	A statement that the manufacturer's	-			1	1	
	instructions shall be provided to the users			Х			
	Manufacturers name, address, and						
	telephone number			X			
	Manufacturer's part number and model						
	designation for the equipment			X			
	Intended use and purpose of the						
	equipment			X			
	Proper method of use and limitations on						
	use of the equipment			X			
	Illustrations showing locations of markings						
	on the equipment			X			
	Reproduction of printed information on all						
	markings			X			
	Inspection procedures required to assure						
	the equipment is in serviceable condition			х			
	and operating correctly						
	Anchorage requirements			Х			PASS
	Criteria for discarding equipment which						
	fails inspection			X			
	Procedures for cleaning. maintenance, and			.,			
	storage			X			
	Reference to Z359 standards			Х			
	Proper installation means and limitations						
	on the type of anchorage connectors used			X			
	The fiber or other materials used in the			.,			
	lanyard construction			X			
	The lanyard length			Х			
	The average arresting force when						
	dynamically tested in accordance with the			Х			
	requirements of the standard						
	SRD class and arrest distance when						
	dynamically tested in accordance with the			Х			
	requirements of the standard						
	How to determine fall clearance			X			
	Testing the device for locking before each			.,			
	use			X			
5.2.3	Instructions shall require that only the equipm	nent		•			
	manufacturer, or persons or entities authorize	ed in					DACC
	writing by the manufacturer, shall make repair						PASS
	the equipment						
5.2.4	Instructions shall require the user to remove						
	equipment from service if it has been subjecte	ed to					PASS
	the forces of arresting a fall or affecting a resc						
5.2.5	Instructions shall require the user to have a wi						
	rescue plan and the means at hand to implement						PASS
	when using the equipment						

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Section (Test)	Requirement	Results				(	Compliance
Section (Test) 5.2.6	Instructions shall provide warnings regarding:  Warnings  Altering the equipment  Misusing the equipment  Using combinations of components or subsystems, or both, which may affect or interfere with the safe function of each other  Exposing the equipment to chemicals, high heat, severe cold, or other harsh environments which may produce a	Comments	YES X X X	NO	NA NA		PASS
	harmful effect and to consult the manufacturer in case of doubt  Using the equipment around moving machinery and electrical hazards  Using the equipment near sharp edges or abrasive surfaces  Risk of striking an object or obstruction during a swing fall  That the consequences of improperly using the device, not following instructions or markings may cause serious injury or death		x x x				

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#### **SECTION 5**

#### **REVISION HISTORY**

REPORT NUMBER	DATE OF REVISION	DESCRIPTION OF CHANGE:	PROJECT OWNER	REVIEWED BY
104032569CRT-001a	9/27/19	Original Report	Matthew Stevens	Andrew Rulison
104354142CRT-001	6/23/20	Markings/Instructions Evaluation	Theodore Brown	Matthew Stevens