

# ***TEST REPORT***

## ***COMPLIANCE TESTING FOR FMVSS NO. 218 MOTORCYCLE HELMETS***

S.Y.K Autopart Import-Export Co. Ltd.  
Brand and Model – Index 811  
Size – L (59 cm)



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The results of this test report apply only to the specific samples tested. If the manufacturer extends the test results to apply to other samples of the same model, or from the same lot or batch, the manufacturer should ensure the additional samples are manufactured using identical electrical and mechanical components. This test report shall not be reproduced, except in full, without written approval of Southwest Research Institute.



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## RELEASE CONTROL RECORD

Below is a table documenting the various changes recorded in this report. Each issuance of the report is clearly marked with the revision number and date of issue.

*Table 1.1: Revision Table*

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
1	Original release	February 8, 2019

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## 1 PURPOSE OF COMPLIANCE TEST

The purpose of the test was to determine if the 811 production helmets supplied by S.Y.K Autopart Import-Export Co. Ltd. satisfy the requirements of Federal Motor Vehicle Safety Standard Number 218 – Motorcycle Helmets (FMVSS No. 218). Testing is performed in accordance with DOT-TP-07. This specification is a performance standard, and is not intended to restrict design.

## 2 HELMET DATA

Helmet data given is based on information provided with the helmets, information provided by the manufacturer/distributor, and measured data.

Table 2.1: General Helmet Information

<b>HELMET BRAND NAME:</b>	Index				
<b>HELMET MODEL DESIGNATION:</b>	811				
<b>HELMET MANUFACTURER:</b>	S.Y.K Autopart Import-Export Co. Ltd.				
<b>MONTH AND YEAR OF MANUFACTURE:</b>	12/2018				
<b>HELMET SIZE DESIGNATION:</b>	L (59 cm)				
<b>COVERAGE:</b>	Complete				
<b>HELMET POSITION INDEX (HPI) (MM)</b>	56 mm				
<b>SHELL MATERIAL:</b>	Acrylonitrile Butadiene Styrene				
<b>LINER MATERIAL:</b>	Expanded Polystyrene				
<b>TYPE OF RETENTION SYSTEM:</b>	D-Ring				
	<b>HELMET</b>				
	<b>A AMBIENT</b>	<b>B LOW TEMP</b>	<b>C HIGH TEMP</b>	<b>D WATER IMMERSED</b>	<b>E SPARE</b>
<b>SHELL COLOR/PATTERN</b>	White	White	White	White	White
<b>WEIGHT (grams)</b>	1177	1190	1180	1190	1176
<b>MONTH/YEAR OF MANUFACTURER</b>	12/2018	12/2018	12/2018	12/2018	12/2018

### Comments:

- The HPI is based on information supplied by the manufacturer.
- Weight is determined with all auxiliary equipment removed, which includes face shield and support hardware; helmet is ready for testing.
- Photographs of the helmets are given in Section 19.

### 3 SUMMARY OF TEST RESULTS

Table 3.1: Summary of Test Results

TEST	HELMET			
	A	B	C	D
IMPACT (S5.1, S7.1)	PASS	PASS	PASS	PASS
PENETRATION (S5.2, S7.2)	PASS	PASS	PASS	PASS
RETENTION (S5.3, S7.3)	PASS	PASS	PASS	PASS
CONFIGURATION (S5.4)	PASS	NA	NA	NA
PERIPHERAL VISION/BROW OPENING (S5.4)	PASS	NA	NA	NA
PROJECTIONS (S5.5)	PASS	NA	NA	NA
LABELING (S5.6)	PASS	NA	NA	NA

Comments:

- Testing was performed on January 21, 2019.
- The helmet satisfies the testing requirements of FMVSS No. 218.

### 4 SELECTION OF APPROPRIATE HEADFORM (S6.1)

Selection of the headform used during testing was based on the helmet size designation, as identified in the following table. If the size range is not specified by hat size, the selection is based on best fit of the helmet on the headform. As identified in FMVSS No. 218, if the helmet size designation falls into more than one of the size ranges, it shall be tested on each appropriate headform. When multiple headforms are appropriate, the selection shall be based on best fit and discussion with the supplier of the helmets.

Table 4.1: Headform Selection

HELMET SIZE DESIGNATION	HEADFORM SIZE	DROP ASSEMBLY WEIGHT
$\leq$ European Size 54 $\leq 6 \frac{3}{4}$	Small	3.5, +0.1, -0.1 kg 7.8, +0.2, -0.2 lbs
$>$ European Size 54 but $\leq$ European Size 60 $> 6 \frac{3}{4}$ but $\leq 7 \frac{1}{2}$	Medium	5.0, +0.1, -0.1 kg 11.0, +0.2, -0.2 lbs
$>$ European Size 60 $> 7 \frac{1}{2}$	Large	6.1, +0.1, -0.1 kg 13.4, +0.2, -0.2 lbs

Comments:

- A medium headform was used based on the discrete size and information provided by the manufacturer. The total weight of the drop assembly was 4.98 kg. The helmet was a loose fit on the headform.

## 5 REFERENCE MARKING (S6.2) AND HELMET POSITIONING (S6.3)

The test line was drawn on the helmet, as identified by Figure 2 in FMVSS No. 218, following the procedures of S6.2 of FMVSS No. 218. The centers of impact sites were selected at points on the helmet on or above the test line. Before each test, the helmet was fixed on the test headform in the position that conformed to the helmet position index, in accordance with the requirements of S6.3 of FMVSS No. 218.

### Comments:

- None.

## 6 CONFIGURATION (S5.4)

The configuration of this helmet is such that it has a protective surface of continuous contour at all points above the test line.

### Comments:

- The helmet satisfies the configuration requirements of S5.4 of FMVSS No. 218. See helmet photographs in Section 19.

## 7 PERIPHERAL VISION AND BROW OPENING (S5.4)

The peripheral vision shall be at least 105° each side of the mid-sagittal plane through the basic plane. The brow opening shall be at least 2.54 cm (1-inch) above all points in the basic plane that is within the angles of peripheral vision. The peripheral vision and brow opening were measured with the helmet positioned on the headform in accordance with S6.2.1 and S6.2.2 of FMVSS No. 218.

*Table 7.1: Peripheral Vision and Brow Opening Conformance Summary*

	REQUIREMENTS	TEST RESULTS
PERIPHERAL VISION	>105°	>105°
BROW OPENING	>2.54 cm	>2.54 cm

### Comments:

- This helmet satisfies the peripheral vision and brow opening requirements of S5.4 of FMVSS No. 218.



## 8 PROJECTIONS (S5.5)

A helmet shall not have any internal rigid projections. External rigid projections shall be limited to those required for operation of essential accessories, and shall not protrude more than 5 mm (0.20 inches).

*Table 8.1: Projections Conformance Summary*

PROJECTION TYPE	REQUIREMENTS		TEST RESULTS	
	AVAILABILITY	HEIGHT (mm)	AVAILABILITY	HEIGHT (mm)
INTERNAL RIGID	None	0.00	None	N/A
EXTERNAL RIGID	Operational	<5 mm	Top Air Vent Rear, Top Front Air Vent, Chin Guard Air Vent, Visor Side Covers	5.0, 1.6, 3.2, 6.5

Comments:

- The helmet visor side covers (6.5 mm) exceeds the specified 5 mm. This is not considered a failure because it is faired to the surface of the helmet.
- This helmet satisfies the projection requirements of S5.5 of FMVSS No. 218.

## 9 LABELING (S5.6)

Each helmet shall be labeled permanently and legibly in a manner such that the label(s) can be easily read without removing padding or any other permanent part. The following information shall be included:

*Table 9.1: Labeling Conformance Summary*

REQUIRED INFORMATION	CONTENT/ FORMAT	PERMANENCE
(1) Manufacturer's name or identification.	PASS	PASS
(2) Discrete Size.	PASS	PASS
(3) Month and year of manufacture.	PASS	PASS
(4) Instruction to the Purchaser as follows:	PASS	PASS
Shell and liner constructed of (identify type(s) of materials)	PASS	PASS
The helmet can be seriously damaged by some common substances without the damage being visible to the user.	PASS	PASS
Apply only the following: (Recommended cleaning agents, paints, adhesives, etc. as appropriate).	PASS	PASS
Make no modifications.	PASS	PASS
Fasten helmet securely.	PASS	PASS
If the helmet experiences a severe blow, return it to the manufacturer for inspection or destroy and replace it.	PASS	PASS
(5) The Certification Label shall be on the outer surface of the helmet, centered laterally, and with letters in a color that contrast to the label background. This constitutes the manufacturer's certification that the helmet conforms to the applicable Federal Motor Vehicle Safety Standards. The certification label shall contain the following:	PASS	PASS
Manufactures name and/or brand. This must be above the model designation, centered, and in letters at least 0.23 cm (0.09 inch) high.	PASS	PASS
Precise model designation. This must be above the symbol "DOT", centered, and in letters at least 0.23 cm (0.09 inch) high.	PASS	PASS
Symbol "DOT". This symbol should be centered with letters at least 1 cm (0.375 inch) high. The horizontal centerline on the symbol shall be located a minimum of 2.5 cm (1.0 inches) and a maximum of 7.6 cm (3.0 inches) from the bottom edge of the posterior portion of the helmet	PASS	PASS
"FMVSS No. 218". This must be below the symbol "DOT", centered, and in letters at least 0.23 cm (0.09 inch) high.	PASS	PASS
"Certified". This must be below the "FMVSS No. 218", centered, and in letters at least 0.23 cm (0.09 inch) high.	PASS	PASS

### Comments:

- This helmet satisfies all the labeling requirements of S5.6 of FMVSS No. 218 Section 12.5.4. See labeling photographs (Section 19). The DOT symbol is 1.00 cm in height and is 7.5 cm above the rear of the helmet based on the edge of the black molding. The specified height is between 2.5 and 7.6 cm.

## 10 CONDITIONING FOR TESTING (S6.4)

The helmets were conditioned for 4 to 24 hours in the specified environmental condition shown below, prior to testing. One helmet was conditioned in each environment. Each test was begun within two minutes after removal of the helmet from conditioning. The maximum time during which the helmets were out of the conditioning environment was less than four minutes. Records of the conditioning are given in Conditioning Environments (Section 16).

*Table 10.1: Test Conditioning Summary*

IDENTIFICATION	CONDITIONS	HELMET
Ambient Conditions	21°C ± 5°C, 30% to 70% RH, Site Pressure 61°F to 79°F	A
Low Temperature	-10°C ± 5°C 5°F to 23°F	B
High Temperature	50°C ± 5°C 113°F to 131°F	C
Water Immersion	21°C ± 5°C 61°F to 79°F	D

Comments:

- None.

## 11 IMPACT TESTING (S5.1 & S7.1)

The helmets were subjected to the impact attenuation test in accordance with S7.1 of FMVSS No. 218. The construction materials and resonant frequencies of the headforms satisfy the requirements of S7.1.5 of FMVSS No. 218. The testing was performed using a monorail drop test system, as required by S7.1.6 of FMVSS No. 218. The drop assembly satisfies the requirements of S7.1.7, S7.1.8, and S7.1.12 of FMVSS No. 218. The response accelerometer and instrumentation satisfy the requirements of S7.1.9 of FMVSS No. 218. The anvils and mounting satisfy the requirements of S7.1.10 and S7.1.11 of FMVSS No. 218.

The Impact Attenuation Instrument System was checked before and after testing by dropping the bare headform, for impact on the top, onto a MEP pad. The pre-test drop height was set to achieve a nominal peak acceleration of 400 g's  $\pm$  10 g's. Post-test drops were made from the same drop height. Three drops were made for the pre-test and post-test conditions, and the peak deceleration averaged. Summary data is provided in the following table and time histories for the system check impacts are given in Impact Time Histories (Section 17). The difference between pre-test average and the post-test average shall not exceed 15 g's.

*Table 11.1: Impact Pre- and Post-Test Results*  
**SYK05, Index, 811, L (59-60 cm)**  
**Impact Testing**

Anvil	Impact Velocity
Hemispherical	5.0 to 5.4 m/sec
Flat	5.8 to 6.2 m/sec

Headform Size = Medium  
Impact Position on Crown

Drop Assembly Weight = 4.98 kg

System Check	Drop No	Drop Height (cm)	Vel (m/s)	Peak Acceleration (g)	Dwell Time (msec)	
					at 150g	at 200g
Pre Test	1A	105	4.51	399	2.2	1.9
	2A	105	4.51	403	2.2	1.9
	3A	105	4.51	399	2.2	1.9
Pre Test Average		---	---	400	---	---
Post Test	1B	105	4.51	400	2.2	1.9
	2B	105	4.45	396	2.2	1.9
	3B	105	4.50	399	2.2	1.9
Post Test Average		---	---	398	---	---
Difference Between Pre Test and Post Test Averages				-2	Difference Not to Exceed 15g	

Each helmet (A, B, C, and D) was impacted at four sites with the center of impact points on or above the test line, and at least one-fifth of the maximum circumference of the helmet from any prior impact center. Two impacts on each helmet were with the hemispherical anvil and two were with the flat anvil. The two impacts at a given shall be within 1.9 cm (0.75 inches) of each other. Acceptable velocities were: (a) Flat Anvil – 5.8 to 6.2 m/sec (19.0 to 20.3 ft/sec) and (b) Hemispherical Anvil – 5.0 to 5.4 m/sec (16.4 to 17.7 ft/sec). Summary data is provided in the following table and time histories for the impacts are given in Impact Time Histories (Section 17). Given on these plots is the conditioning environment, impact location, anvil type, peak acceleration, dwells at 150 g's and 200 g's, and impact velocity information.

*Table 11.2: Impact Test Results*  
**SYK05, Index, 811, L (59-60 cm)**  
**Impact Testing**

Helmet Designation	Helmet Condition	Helmet Type	Impact Location (+/- 45 degrees)							
		Partial/Full	Forehead		Left Side		Right Side		Rear	
		Complete	Left Front		Right Rear		Right Front		Left Rear	
		Impact No.	1	2	1	2	1	2	1	2
A	Ambient	Anvil	Hemi		Hemi		Flat		Flat	
		Test Record No.	3	4	11	12	19	20	27	28
		Peak g	108	120	84	114	158	185	172	189
		ms @ 150g	0.0	0.0	0.0	0.0	1.3	2.8	1.4	2.3
		ms @ 200g	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Velocity m/s	5.20	5.19	5.20	5.20	6.04	6.03	5.92	6.05
B	Low Temperature	Anvil	Hemi		Hemi		Flat		Flat	
		Test Record No.	5	6	13	14	21	22	29	30
		Peak g	114	127	101	105	165	205	185	210
		ms @ 150g	0.0	0.0	0.0	0.0	2.0	3.0	1.4	2.0
		ms @ 200g	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.6
		Velocity m/s	5.28	5.27	5.19	5.21	5.94	5.93	6.03	6.04
C	High Temperature	Anvil	Hemi		Hemi		Flat		Flat	
		Test Record No.	7	8	15	16	23	24	31	32
		Peak g	115	129	84	111	147	185	161	186
		ms @ 150g	0.0	0.0	0.0	0.0	0.0	2.7	1.2	1.9
		ms @ 200g	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Velocity m/s	5.20	5.19	5.20	5.27	5.93	5.94	6.03	6.04
D	Water Immersed	Anvil	Hemi		Hemi		Flat		Flat	
		Test Record No.	9	10	17	18	25	26	33	34
		Peak g	105	103	90	107	153	177	161	176
		ms @ 150g	0.0	0.0	0.0	0.0	0.3	2.5	1.0	1.7
		ms @ 200g	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Velocity m/s	5.20	5.20	5.20	5.20	5.94	6.04	6.04	6.05

Comments:

- The helmet passes the impact testing. This satisfies the requirements of S5.1 of FMVSS No. 218.

## 12 PENETRATION (S5.2 & S7.2)

One sample of each of the helmets was subjected to the penetration test in accordance with S7.2 of FMVSS No. 218. The penetration striker satisfies the requirements of S7.2.6 and S7.2.7 of FMVSS No. 218. The height of the free fall drop of  $300 \text{ cm} \pm 1.5 \text{ cm}$  ( $118.1 \pm 0.6$  inches), as measured from the striker point to the impact point on the outer surface of the test helmet. Two penetration blows were applied to each helmet at least 7.6 cm (3 inches) apart, and at least 7.6 cm (3 inches) from the centers of any impacts applied during the impact attenuation test.

*Table 12.1: Penetration Test Results Summary*

TEST	HELMET	CONDITION	PASS	FAIL
1	A	Ambient	PASS	
2	A	Ambient	PASS	
3	B	Low Temperature	PASS	
4	B	Low Temperature	PASS	
5	C	High Temperature	PASS	
6	C	High Temperature	PASS	
7	D	Water Immersed	PASS	
8	D	Water Immersed	PASS	

Comments:

- This helmet satisfies the penetration requirements of S5.2 of FMVSS No. 218.

### 13 RETENTION SYSTEM TESTING (S5.3 & S7.3)

The helmets were subjected to the retention system testing in accordance with the procedures given in S7.3 of FMVSS No. 218. The helmet was placed on the headform, which was mounted on a stationary support. Load was applied to the retention system through a simulated jaw structure that satisfies the requirements of S7.3.2. The elongation of the retention system was measured between the extremity of the adjustable portion of the retention system and the apex of the helmet. Elongation was defined as the difference between the position with an initial 22.7 kg +4.5 kg -0.0 kg (50-lb.) load and the final position with a 136 kg +0.0 kg -4.5 kg (300-lb.) load. The load rate shall be 1.0 to 3.0 cm/minute as measure between the rolls assembly and the headform. The acceptance criteria were that the retention system remained intact without elongating more than 2.54 cm (1 inch).

Table 13.1: Retention Test Results Summary

HELMET	CONDITIONS	INITIAL READING (cm)	FINAL READING (cm)	ELONGATION (cm)
A	Ambient	2.20	3.58	1.38
B	Low Temperature	1.98	3.72	1.74
C	High Temperature	2.34	3.81	1.47
D	Water Immersed	2.69	4.09	1.40

Time histories for the retention system testing are given in Retention Time Histories (Section 18). Given on these plots are the conditioning environment, load, and elongation.

Comments:

- This helmet satisfies the retention testing requirements of FMVSS No. 218.

### 14 TEST FAILURE DETAILS

Comments:

- None.

### 15 INTERPRETATION OF DEVIATIONS FROM FMVSS NO. 218

Comments:

- All testing was performed in accordance with the requirements of FMVSS NO. 218.

## 16 CONDITIONING ENVIRONMENTS

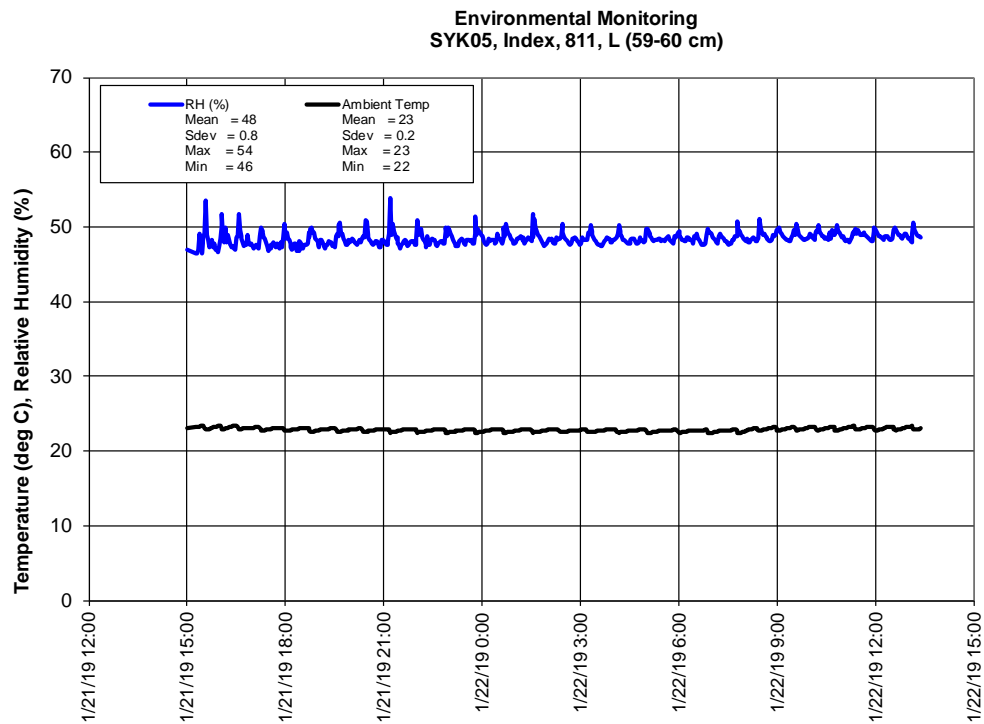


Figure 16-1: Relative Humidity and Ambient Temperature, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

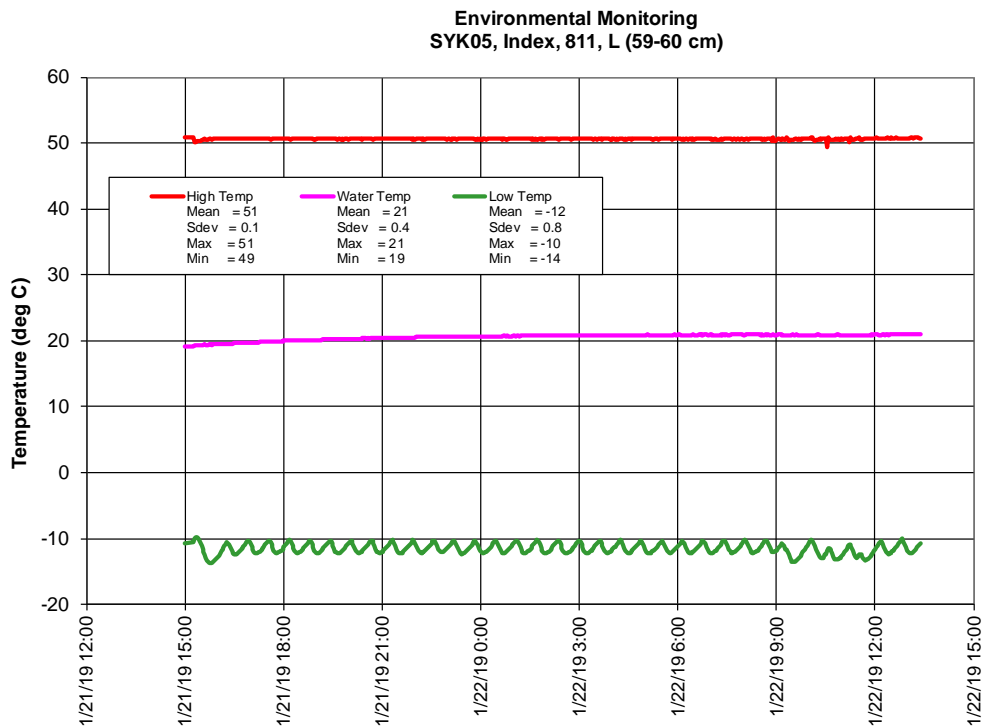


Figure 16-2: High, Low, and Water Temperatures, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)



## 17 IMPACT TIME HISTORIES

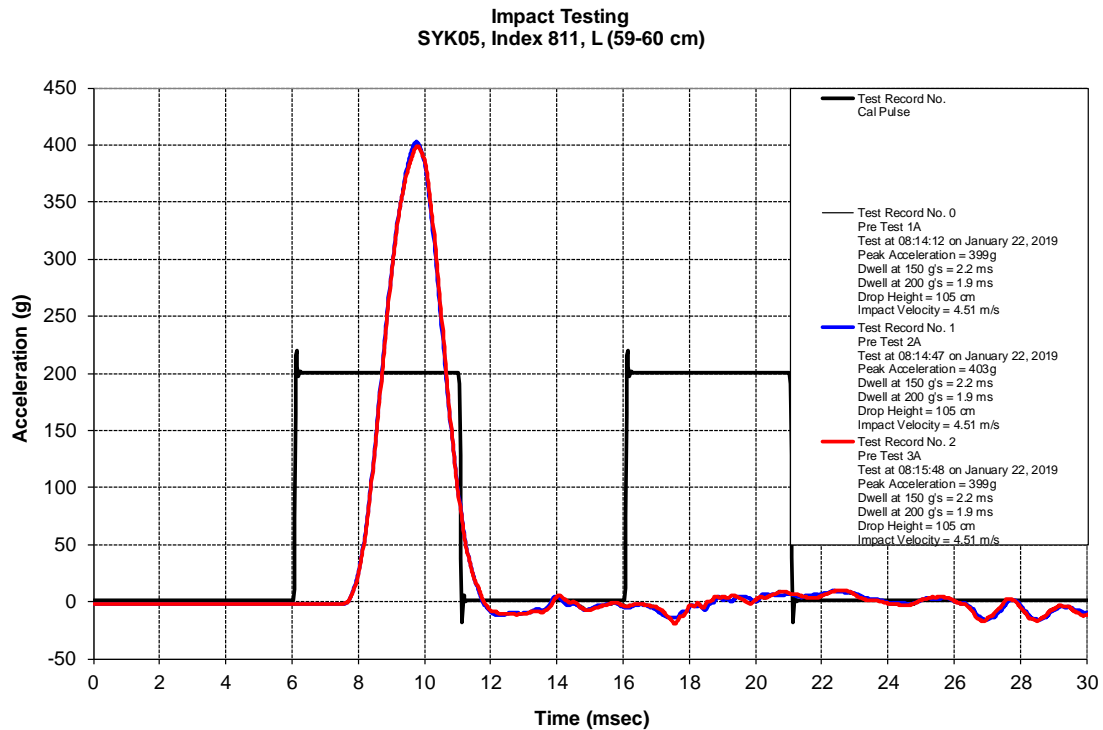


Figure 17-1: Pre-Impact Test Checks, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

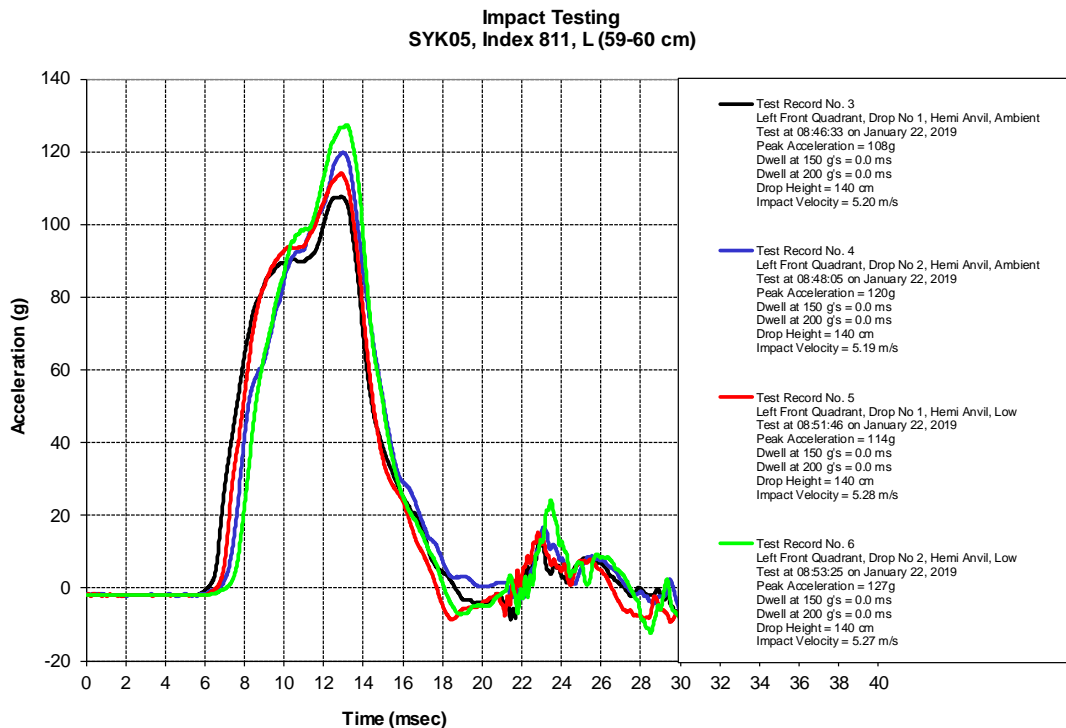


Figure 17-2: Impact Loc. #1, Helmets A and B, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

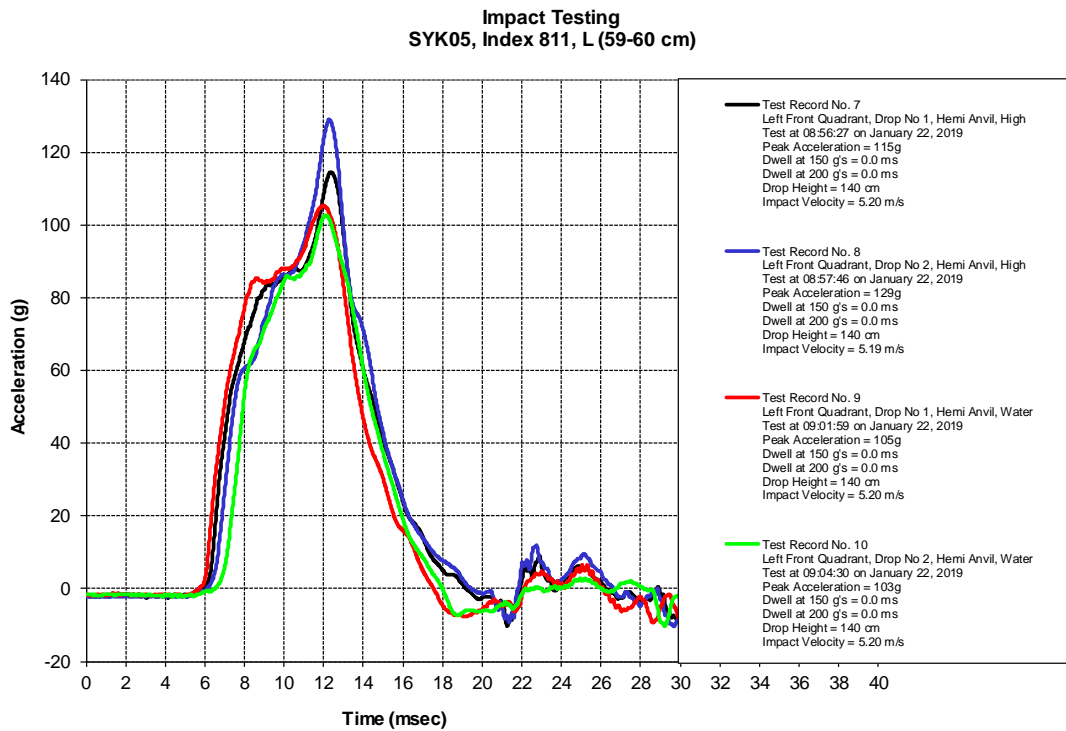


Figure 17-3: Impact Loc. #1, Helmets C and D, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

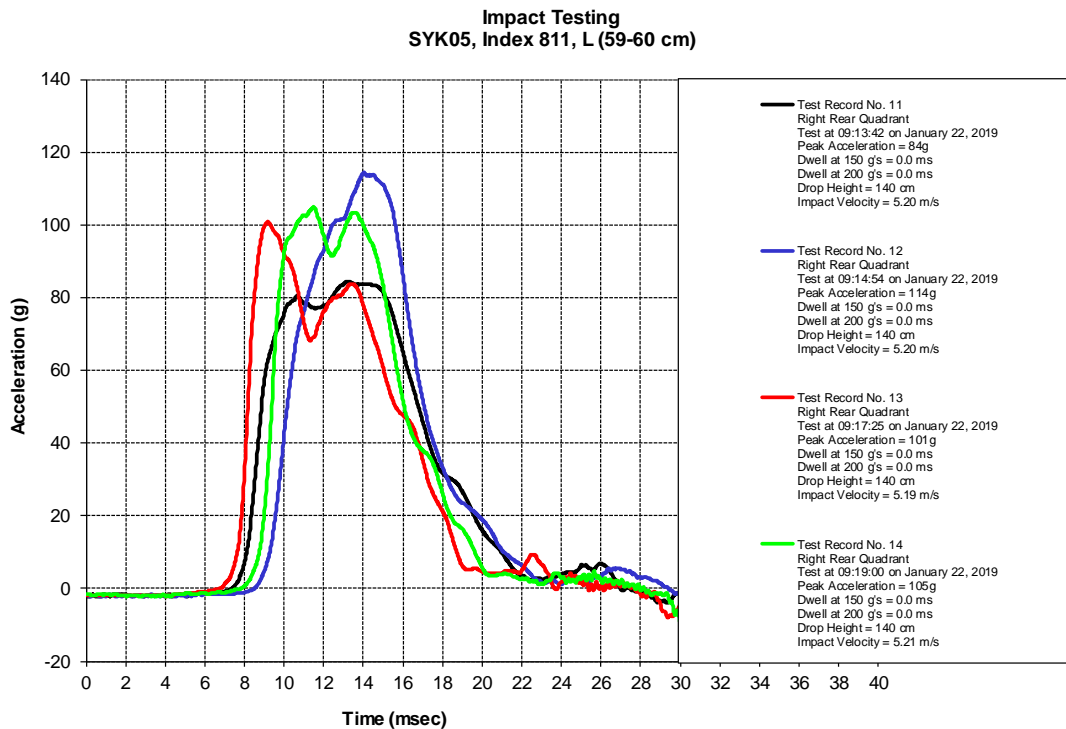


Figure 17-4: Impact Loc. #2, Helmets A and B, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

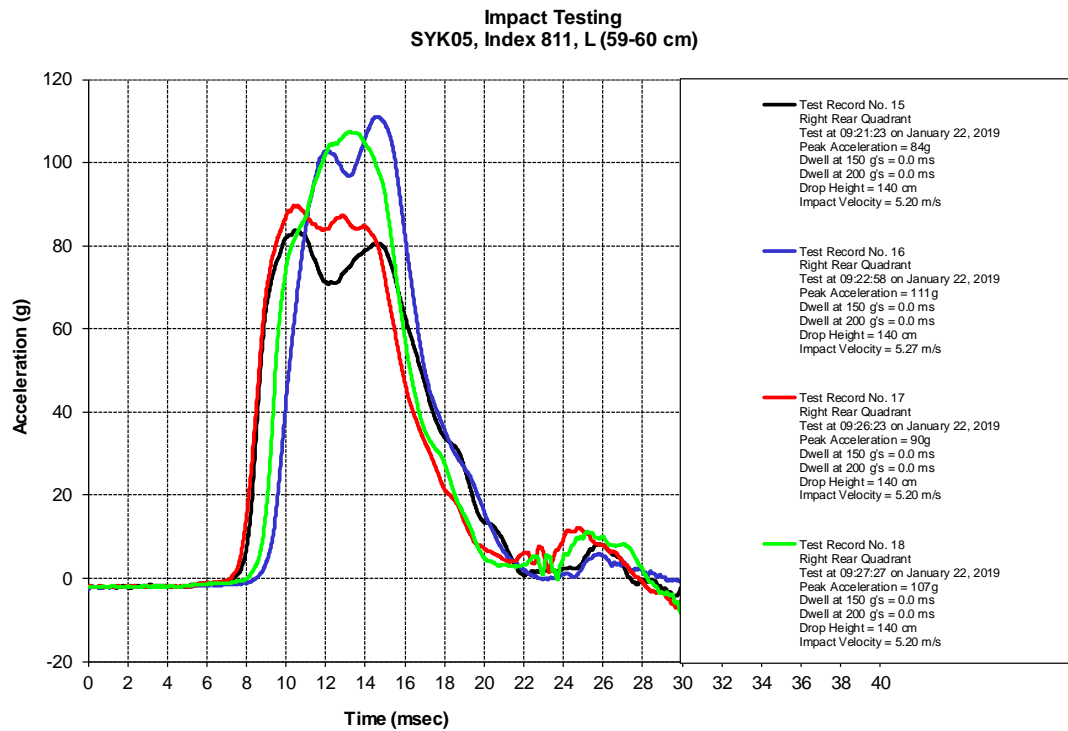


Figure 17-5: Impact Loc. #2, Helmets C and D, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

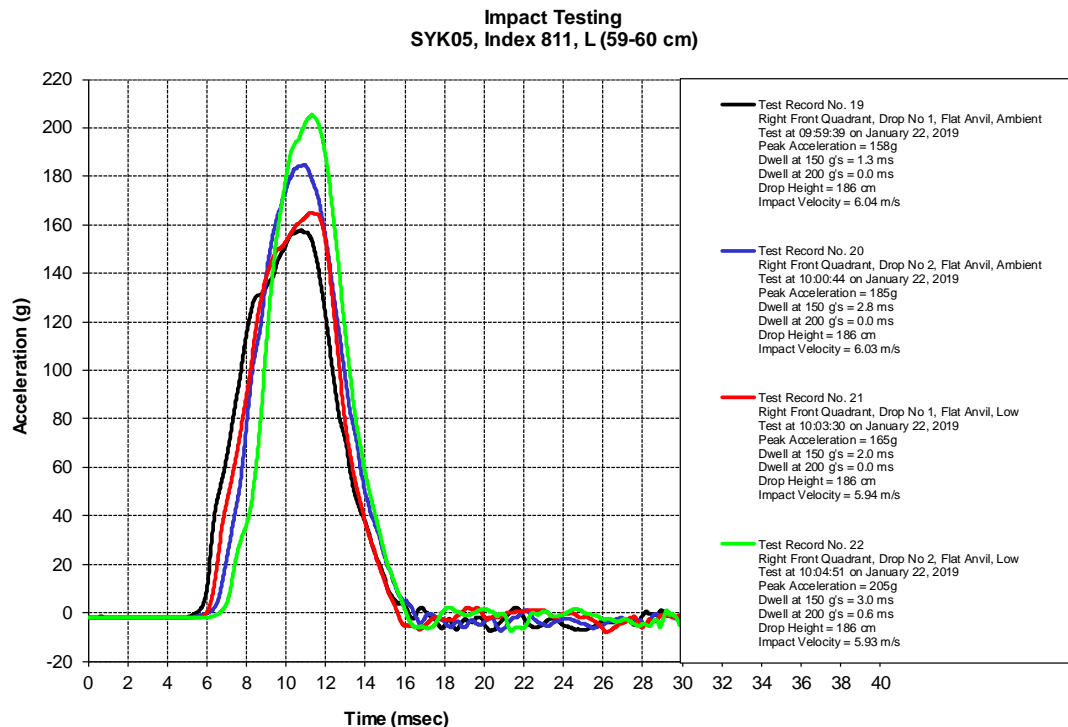


Figure 17-6: Impact Loc. #3, Helmets A and B, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

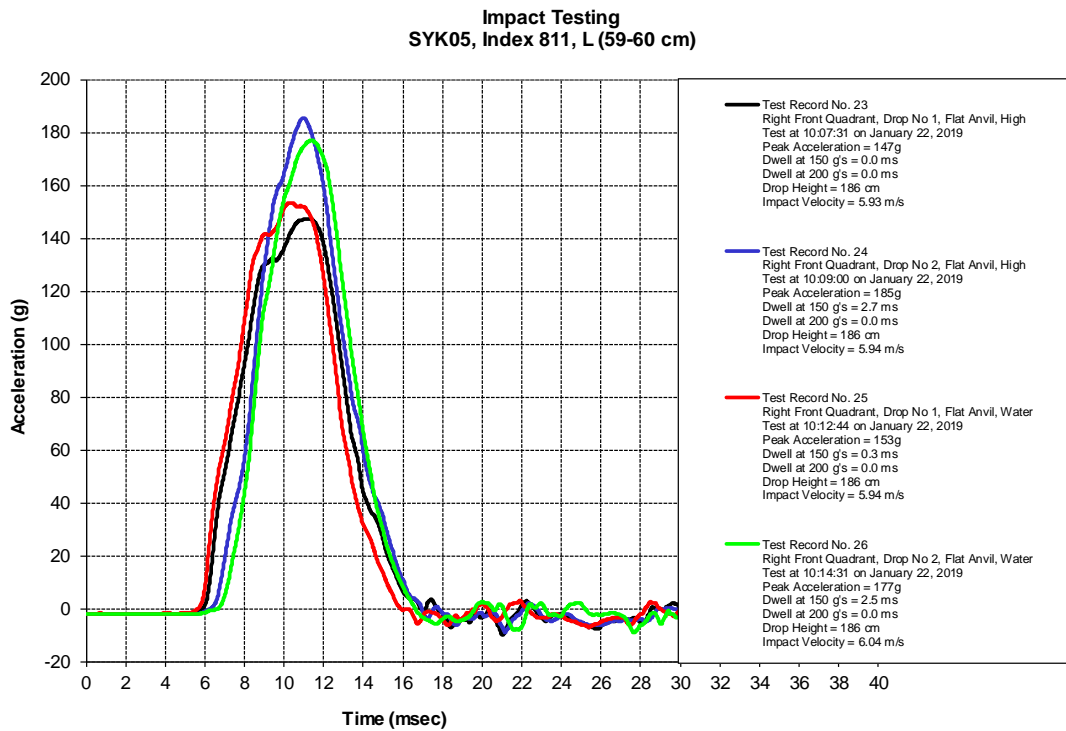


Figure 17-7: Impact Loc. #3, Helmets C and D, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

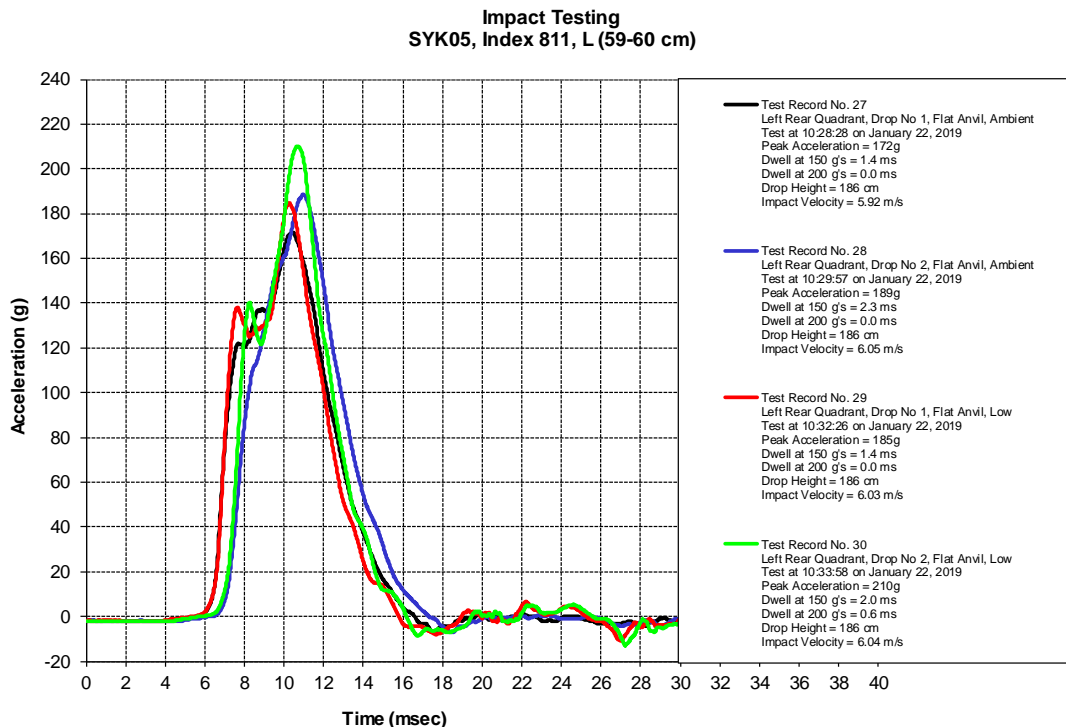


Figure 17-8: Impact Loc. #4, Helmets A and B, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

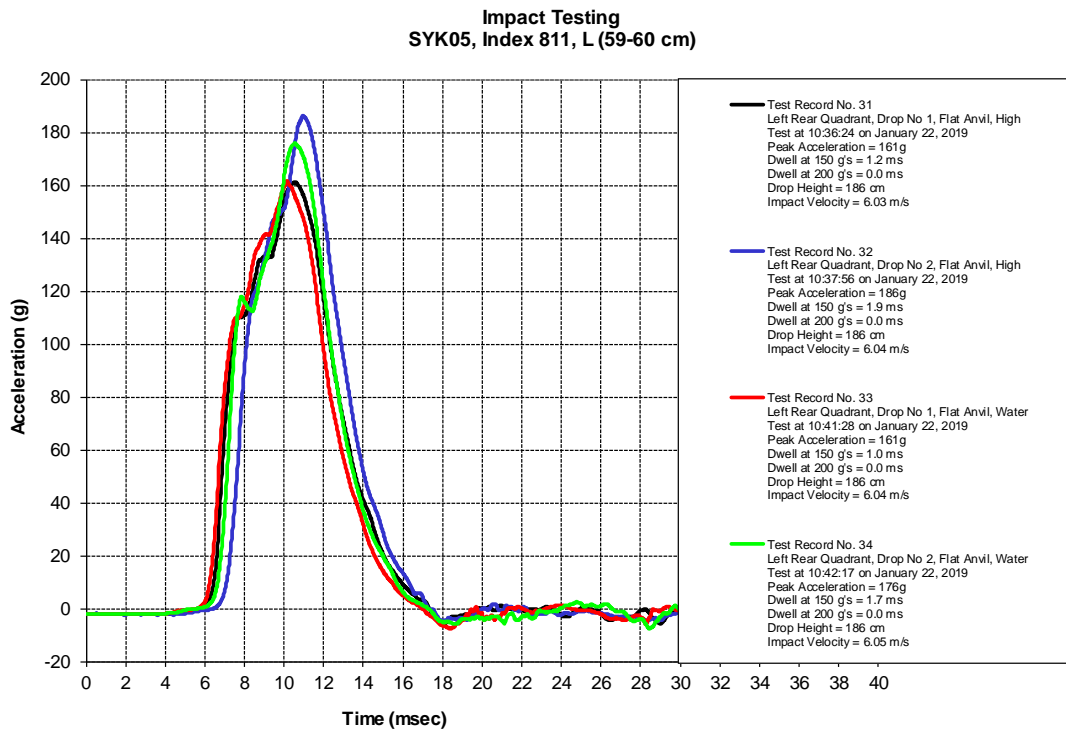


Figure 17-9: Impact Loc. #4 Helmets C and D, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

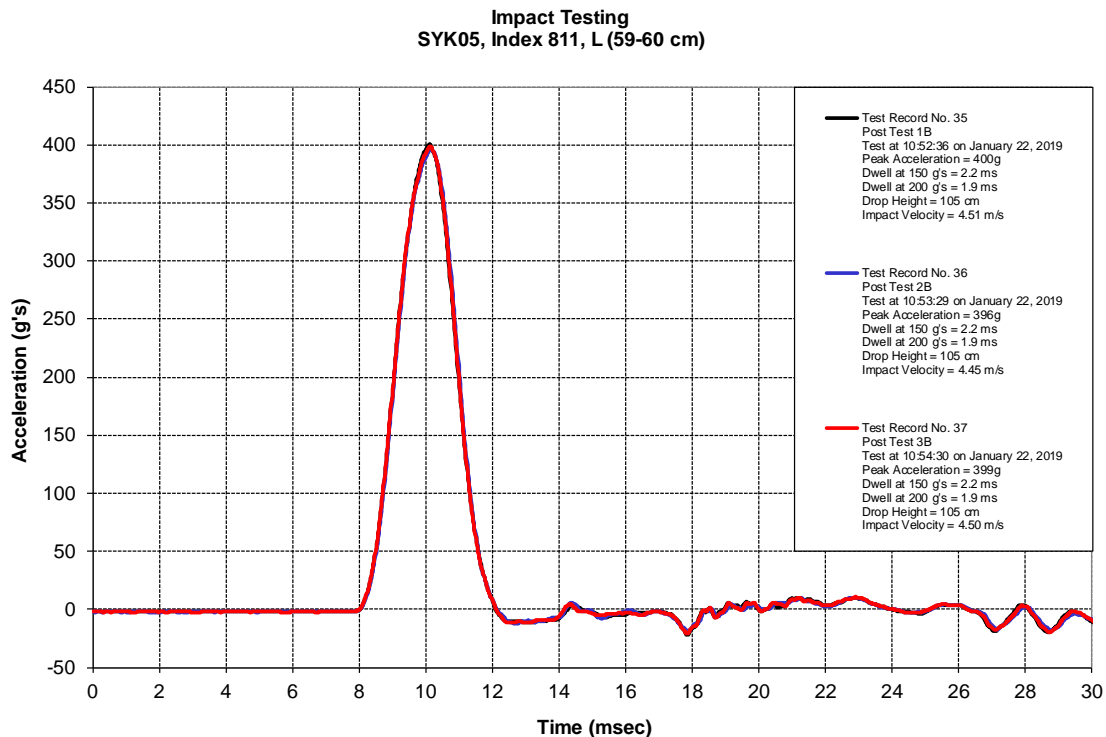


Figure 17-10: Post-Impact Test Checks, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

## 18 RETENTION TIME HISTORIES

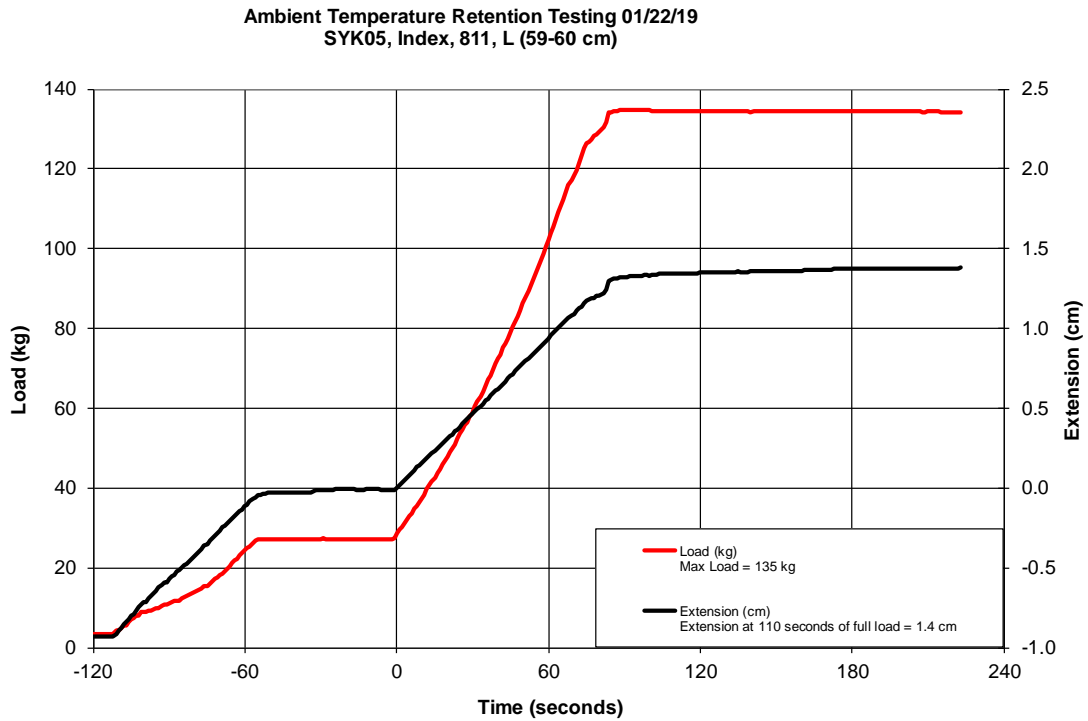


Figure 18-1: Ambient Temperature Retention Testing, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

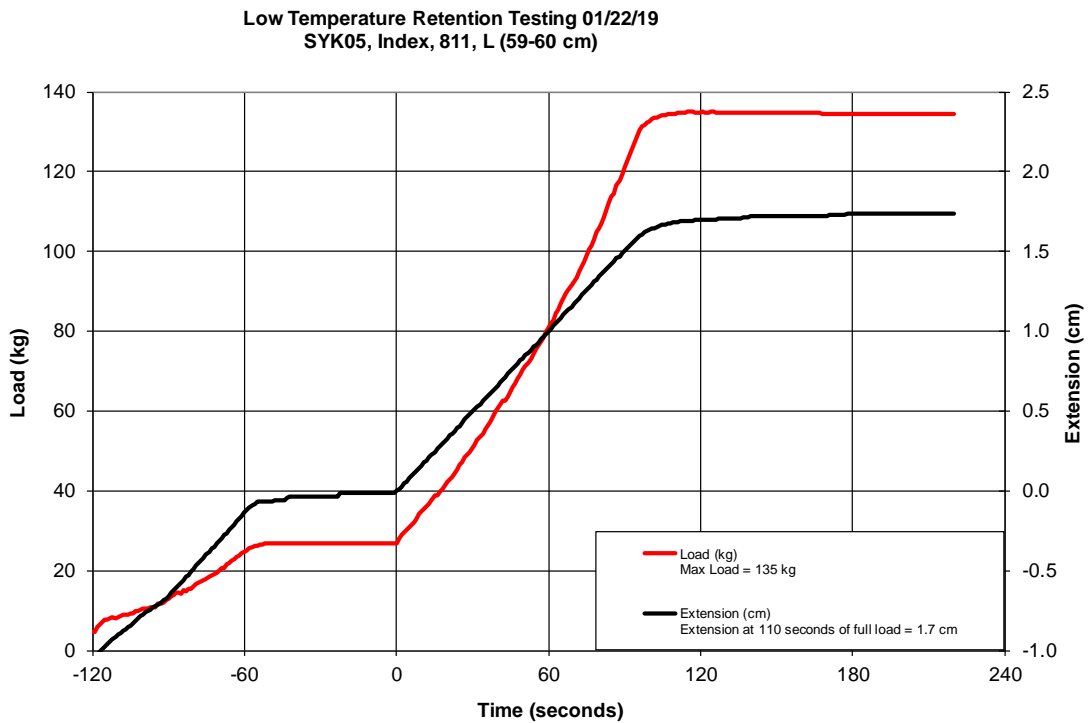


Figure 18-2: Low Temperature Retention Testing, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

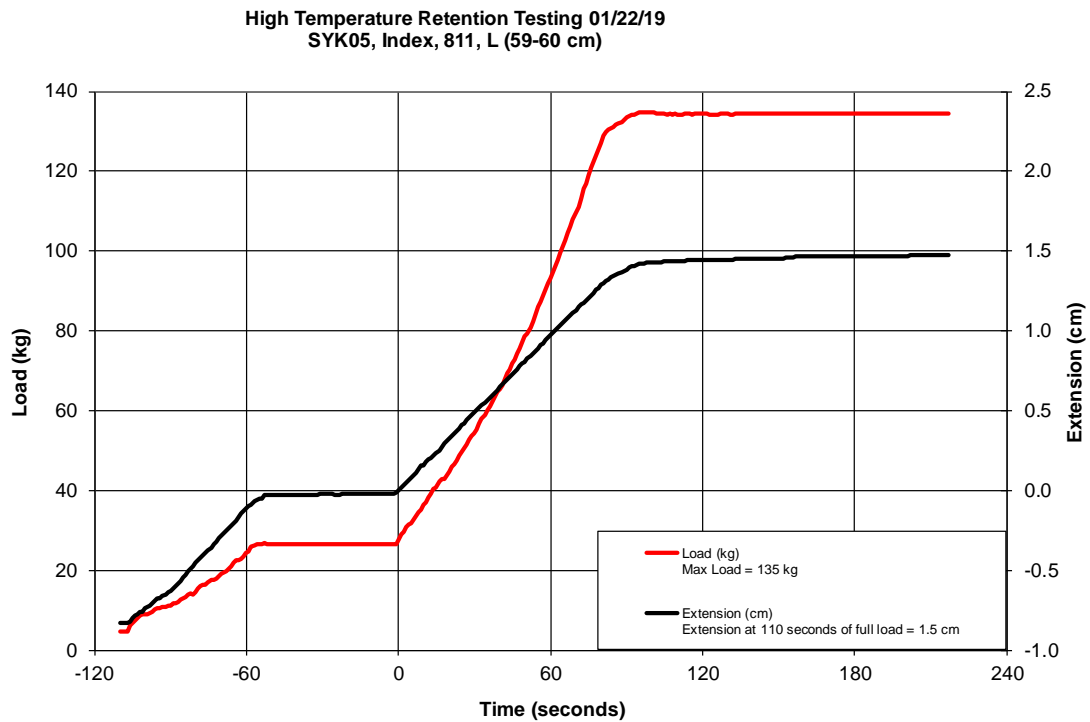


Figure 18-3: High Temperature Retention Testing, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

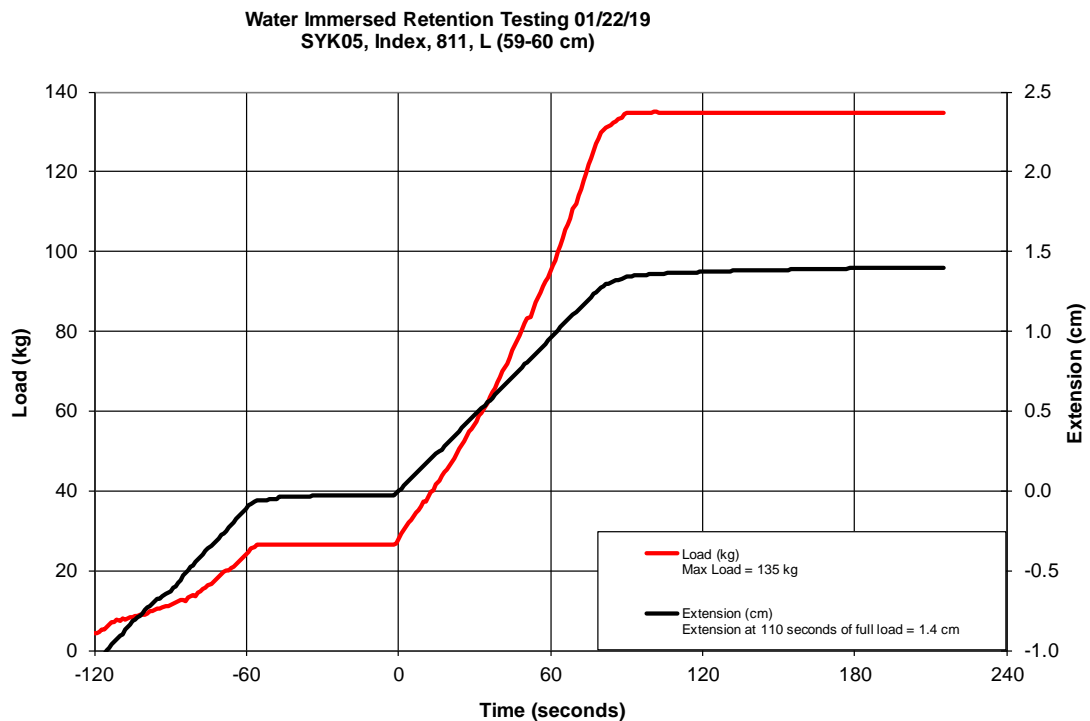


Figure 18-4: Water Immersed Retention Testing, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)



## 19 PHOTOGRAPHS



*Figure 19-1: Front View, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)*



*Figure 19-2: Side View, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)*





*Figure 19-3: Rear View, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)*



*Figure 19-4: Top View, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)*



Figure 19-5: Interior View, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

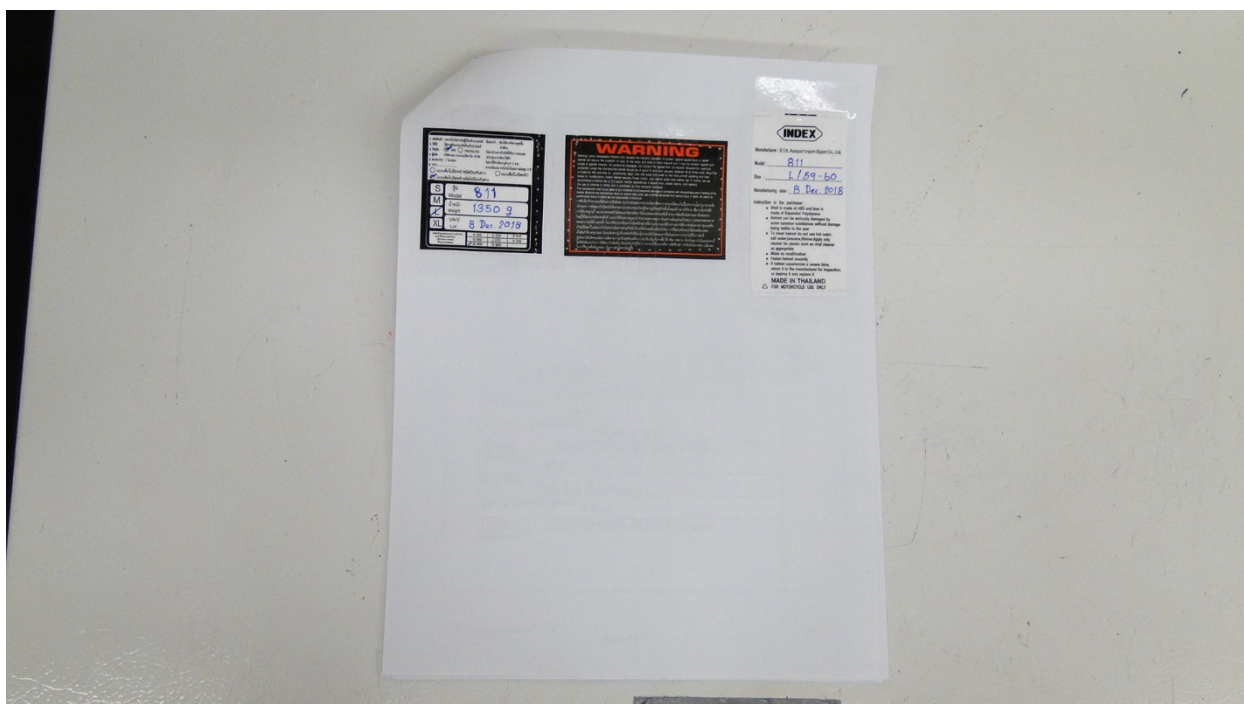


Figure 19-6: Labeling 1, S.Y.K Autopart Import-Export Co. Ltd., 811, L (59 cm)

## 20 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

Table 20.1: Instrumentation List for SwRI Protective Headgear Testing

ITEM NO.	DESCRIPTION	MANUFACTURER AND MODEL	ASSET/SN	ACCURACY	DATE OF LAST CAL.	DATE OF NEXT CAL.
1	Data Acquisition System	National Instruments CDAQ-9178, NI-9402, NI-9239	None	System Software Validation Procedure	06/05/2018	06/05/2019
	Data Acquisition Software	National Instruments / Labview for Windows	Ver 12			
	Data Acquisition Computer	HP Z220 Workstation	NA			
2	Humidity and Temperature Transmitter	Omega / HX41	010751 / 0599-6004	Manufacturer's Specification and System Software Verification Procedure	10/05/2018	10/05/2019
	Isolated Voltage Output	Omega / OM5-II-4-20	9213-15 9149-08			
3	Thermocouple Wire and Thermocouple Input Module	Omega / OM5-LTC-J2-C	21266 21261 21253	System Software Verification Procedure	06/05/2018	06/05/2019
4	Optical Velocity Transducer	Biokinetic and Associates Velocity Gate / 048-004-9411	9505-007	System Software Verification Procedure	06/05/2018	06/05/2019
5	Test Accelerometer	Endevco / 2262-1000	NL05	System Software Verification Procedure	06/05/2018	06/05/2019
	Strain Gage Conditioner	Measurement Group Inc. / 2120A	102130			
	Strain Gage Power Supply	Measurements Group Inc. / 2110A	102034			
	Filter	Frequency Devices, Inc. / 5BAF-LPBU4 4 Pole Butterworth 1.75 KHz	None			
6	Load Cell	Futek LSB353	286580	System Software Verification Procedure	06/05/2018	06/05/2019
	Strain Gage Conditioner	Measurement Group Inc. / 2120A	102130			
	Strain Gage Power Supply	Measurements Group Inc. / 2110A	102034			
	Isolated Voltage Output	Intelligent Measurement / PCI-5B41-02	None			
7	Potentiometer	Humphrey / RP14-0601-1	87	System Software Verification Procedure	06/05/2018	06/05/2019
	Isolated Voltage Output	Intelligent Measurement / PCI-5B41-02	None			
8	Scale	Ohaus Scale Corp / EB-15	015480 / 8029436776	Manufacturer's Specification	12/26/2018	12/26/2019
9	Function Generator	Agilent / 33220A	013902 / MY44029640	Manufacturer's Specification	03/01/2018	03/01/2019

Table 20.2. Test Apparatus List for SwRI Protective Headgear Testing Requiring One-Time Dimension Checks or No Calibration

ITEM No.	DESCRIPTION	MANUFACTURER	MODEL	ASSET/SN	ACCURACY	DATE OF DIMENSIONAL CHECK
1	DOT Headforms	Controlled Casting	Small, Medium, and Large	None	+0.31 inches	6/89
		CADEX	Large	4914	+0.31 inches	2/08
2	ISO Impact Headforms		A, E, J, M, and O			
3	ISO Full Headforms		A, E, J, M, and O			
4	Drop Assembly	SwRI	Small, Medium, and Large	None	TP-218-06	6/89
5	Modular Elastomeric Programmer (MEP)	MTS Systems Corp.	None	None	N/A	N/A
6	Spherical Impactor with MEP					
7	Static Retention Test System	SwRI				
8	Chin Strap Fixture	SwRI	1	1	TP-218-06	1/80
9	Static Weights (Steel)	SwRI	1	1	$\pm 0.1$ lbs.	2/94
10	Hydraulic Cylinder	Enerpac	RD46	1	N/A	N/A
11	Hydraulic Pump	Enerpac	P-18	CC 4511	N/A	N/A
12	Dynamic Retention Test System					
13	Chin Strap Fixture	SwRI	1	1	TP-218-06	1/80
14	Dynamic Weights (Steel)				$\pm 0.1$ lbs.	
15	Roll-off Test System					
16	Penetration Striker	SwRI	1	1	TP-218-06	1/80
17	Environmental Conditioner	EDPAC	Mini Tech 90	None	N/A	N/A
18	Oven with Digitronic Control	Despatch Industries Inc.	LDB1-69	128710	N/A	N/A
19	Freezer with Omega Temperature Controller	Sears	9105010 CN100TC	S102041026 4011302	N/A	N/A
20	Peripheral Vision Template	SwRI	1	1	$\pm 15$ min	1/80