Police Vehicle Evaluation
Model Year 2019

MICHIGAN STATE POLICE

JTIC
Justice Technology Information Center

STATE OF MICHIGAN

Department of State Police

and

Department of Technology, Management and Budget

2019 Model Year

Police Vehicle Evaluation Program

Published by:
Michigan State Police
Precision Driving Unit
November 2018

TABLE OF CONTENTS

PREFACE

The Michigan State Police Vehicle Test Team is pleased to announce the results of the 2019 Model Year Police Vehicle Evaluation. This year we tested twelve patrol vehicles and seven police motorcycles. We appreciate your continued support and encouragement. The vehicles evaluated this year included the following:

POLICE CATEGORY

Chevrolet Tahoe 5.3L RWD
Chevrolet Tahoe 5.3L 4WD
Dodge Charger 3.6L RWD
Dodge Charger 5.7L AWD
Dodge Charger 5.7L RWD
Dodge Durango Pursuit 3.6L
Dodge Durango Pursuit 5.7L
Ford Police Interceptor Utility Hybrid AWD
Ford Police Interceptor Utility 3.0L EcoBoost AWD
Ford Police Interceptor Utility 3.3L AWD
Ford F150 Police Responder 3.5L EcoBoost
Ford Police Responder Hybrid Sedan

MOTORCYCLES

BMW R 1250 RT-P
BMW F 750 GS-P
BMW F 850 GS-P
Harley-Davidson FLHTP
Harley-Davidson FLHP Stage 1
Harley-Davidson FLHTP Stage 2
Yamaha FJR1300AP

GENERAL INFORMATION

All the patrol vehicles were tested with a clean roof (no overhead light or light bar) and without “A” pillar mount spotlights. We believe this is the best way to ensure all the vehicles are tested on an equal basis. Remember that once overhead lights, spotlights, radio antennas, sirens, and other emergency equipment are installed, overall performance may be somewhat lower than we report.

Each vehicle was tested with the tires that are available as original equipment on the production model. Specific tire information for each vehicle is available in the Vehicle Description portion of this report. All vehicles listed in this report were equipped with electronic speed limiters unless otherwise noted, or with the exception of certain motorcycles.

Motorcycles were tested with equipment installed as provided by their respective manufacturer. Harley-Davidson and Yamaha chose to test their bikes with minimal equipment. BMW chose to test their bikes with the majority of the equipment installed.

The manufacturers were allowed to submit a one-half page highlight of their vehicle. These highlights will be included with the vehicle description and photograph. This information is direct from the manufacturer and is not an opinion or endorsement from the Michigan State Police. It is only an attempt to give the consumer the most information about the vehicle.

Chelsea Proving Grounds - Acceleration, Top Speed, & Braking Tests

Acceleration and Top Speed tests were performed at the Chelsea Proving Grounds. This 4.7-mile 140 mph neutral steer banked oval provides ample space to obtain accurate test results in these areas.

The Brake test is also performed at the Chelsea Proving Grounds, utilizing lanes one and two on the straightaway on the eastside of the oval.

We would like to thank Mr. Greg Spicher and Mr. Craig Latta for the assistance we received from the staff at the Chelsea Proving Grounds.

Grattan Raceway - Motorcycle Dynamics Test

Motorcycle Dynamics testing was performed at Grattan Raceway. This two-mile road course provides a taxing environment to test motorcycles in dynamics and continues to produce comprehensive results regarding durability and performance.

We appreciate the support we received from BMW, Harley-Davidson, and Yamaha during testing. This was the twelfth year of police motorcycle testing and we continue to get great feedback on this important component to the testing lineup.

Grattan Raceway - Vehicle Dynamics Test

Vehicle Dynamics testing was performed at Grattan Raceway. This two-mile road course provides a realistic environment to test vehicles in dynamics and continues to produce comprehensive results regarding durability and performance.

We appreciate the support we received from Fiat Chrysler Automobiles (FCA), Ford Motor Company, and General Motors during testing.

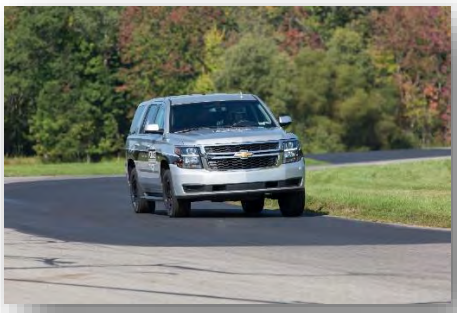
EVALUATION INFORMATION

Vehicle Dynamics Testing

The Chevrolet Tahoe experienced transmission overheating during the vehicle dynamics testing. During the dynamics testing each vehicle is driven a total of 32 timed laps, using four separate drivers, each driving an eight-lap series. The temperature on September 17, 2018, ranged from 70° Fahrenheit at 9 a.m. to 88° Fahrenheit at 3:30 p.m. Both the rear wheel drive and four-wheel drive Tahoes experienced partial power/protect mode issues in laps seven or eight on each run for each driver. This partial power mode limited the vehicles speed and caused the final lap times to increase substantially. General Motors (GM) engineers trouble shot the vehicles and believed the reason was malfunctioning thermal bypass valves. These valves determine the flow of transmission fluid through the transmission oil cooler. Both the rear wheel drive and four-wheel drive Tahoes were retested on October 11, 2018, after having the thermal bypass valves replaced. The four-wheel drive Tahoe did not experience partial power during the retest. The rear wheel drive Tahoe experienced partial power on the last lap of the third and fourth runs. The temperature on October 11, 2018, remained 46° Fahrenheit throughout the testing.

The Los Angeles County Sheriff's Department performed dynamics testing on both Tahoes on Thursday, October 25, 2018, in 84° Fahrenheit temperatures. The four-wheel drive Tahoe experienced the overheating and partial power mode conditions in the later laps of runs three and four. GM engineers have elected not to retest the vehicles at this time until they have isolated and corrected the root cause of the overheating condition.

Per GM Engineering, this condition has only been experienced after an extended period of aggressive driving. If your vehicle experiences this condition, take the vehicle to a Chevrolet dealership for service. A Technical Service Bulletin (TSB) for repair of this condition will be released upon final resolution. We will update the electronic posting on our website with the TSB information once received.



Motorcycle Brake Testing

While performing brake testing on both the BMW F750 GS-P and the BMW F850 GS-P the rear tire lost contact with the roadway on the majority of brake applications. In general, the rear tire lifted 8 to 12 inches causing the rider to modulate braking pressure rather than applying a true panic stop. On several occasions the rider had to release front brake pressure as the rear tire lifted high enough that the motorcycle was no longer stable.

Vehicle Testing History, Pursuit Ratings, and Purchasing Specifications

The Michigan State Police (MSP) began testing patrol cars in the 1950s. At that time, quotations were requested from manufacturers and only the vehicle with the lowest quotation was tested to see if it met our purchasing requirements. Years later, the quotations received from manufacturers were only four dollars apart. At that point, the MSP decided to test all vehicles in order to select the best vehicle. The equipment used to measure speed and distance has evolved from tape measure to global positioning systems providing more accurate measurements, making the MSP vehicle testing an internationally recognized resource for law enforcement agencies.

The term pursuit rated vehicle has recently been called into question as no one fully understands what this term represents. The term pursuit capable is more appropriate as there is no sanctioning body, or specific performance criteria, to determine if the vehicle meets a specialized designation. Each vehicle has been modified from a civilian vehicle to perform better under the rigors of police use. These vehicles are engineered to repetitively stop in a shorter distance, accelerate faster, and handle better than the base platform. Modifications to engines, cooling systems, transmissions and shifting parameters, brakes, tires, stability control programming, and other changes may all be included as part of the manufacturers police package.

The manufacturers provide upcoming model year vehicles to both the MSP and Los Angeles County Sheriff's Department to be tested for suitability in their respective operations. Historically, successful results at both test sites have validated the manufacturers' engineering efforts in building a car capable of handling the stress associated with police pursuits. Neither the MSP, nor the Los Angeles County Sheriff's Department, has the authority or credentials to award the term pursuit rated to any vehicle.

The MSP has performance criteria attached to its purchasing specifications. The criteria has historically been that a vehicle must accelerate from 0 – 60 mph in 9.0 seconds, 0 – 80 mph in 14.9 seconds, and 0 – 100 mph in 24.6 seconds. The vehicle must reach 110 mph in 4,838 feet and 120 mph in 8,985 feet. The vehicle must maintain an average deceleration rate of 25.79 ft./sec^2 while performing twenty 60 – 0 mph threshold braking stops. The vehicle must also successfully complete all 32 laps of the Grattan Raceway dynamics testing without major component failure. Meeting these criteria does not certify a vehicle as being pursuit rated, rather it justifies a vehicle is capable of performing the job function the MSP requires in a police vehicle. When reading the testing results in this book, it is up to each agency to determine if the vehicle is suitable for the mission of their agency.

We recommend you review the information contained in this report and then apply it to the needs of your agency. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job effectively and safely. If anything in this report requires further explanation or clarification, please call or write.

Lt. Michael McCarthy, Phone: 517-230-3184, email: mccarthym4@michigangov
Sgt. Robert Schwalm, Phone: 517-331-7166, email: schwalmr@michigan.gov
Sgt. Nicholas Darlington, Phone: 517-643-5019, email: darlingtonn@michigan.gov
Sgt. Patrick Agema, Phone: 989-818-2214, email: agemap@michigan.gov
Precision Driving Main Line: 517-636-0301
Michigan State Police, Precision Driving Unit, 7426 North Canal Road, Lansing, Michigan 48913

ACKNOWLEDGEMENTS

We would like to thank the following contributors. We are grateful for their support and encouragement toward our ultimate goal: a safe, successful testing program that benefits the law enforcement community nationwide and beyond.

Colonel Kriste Kibbey Etue, Director, Michigan Department of State Police
Lt. Colonel W. Thomas Sands, Deputy Director, Field Services Bureau
Lt. Colonel Richard T. Arnold, Deputy Director, State Services Bureau
Lt. Colonel Chris Kelenske, Deputy Director, Specialized Services Bureau
Mr. Shawn Sible, Deputy Director, Administrative Services Bureau
Capt. Michael A. Brown, Commander, Training Division
Personnel from the Michigan Department of Technology, Management and Budget, Vehicle and Travel Services

The National Institute of Justice, Justice Technology Information Center, Mr. Alex Sundstrom, Leidos.

Mr. Greg Spicher, Mr. Craig Latta and personnel from Chelsea Proving Grounds
Mr. Sam Faasen and personnel from Grattan Raceway Park

Photographs by Mr. Ray Holt, Michigan State Police
Vehicle Evaluation book prepared by Ms. Ashly O'Brien, Michigan State Police Precision Driving Unit

The Michigan State Police Precision Driving Unit would like to extend a very special "thank you" to Fiat Chrysler Automobiles, Ford Motor Company, General Motors, BMW Motorrad USA, Harley-Davidson Motorcycles, and Yamaha Motorcycles for their hard work in building and preparing the test cars and motorcycles. We are grateful for your dedication to law enforcement. Law enforcement officers rely on these vehicles to perform a vast array of duties.

Finally, thank you to all in the United States and Canada who represent law enforcement and purchasing agencies for your constant encouragement and support. We are proud to make a contribution to the law enforcement community.

Michigan State Police Vehicle Test Team:

Team Photo

Back Row: Ret. Sgt. David "Doc" Halliday, Lt. Mike McCarthy Tpr. Jeremy Cupp, Tpr. Jeff Mercer, Sgt. Rob Schwalm,

Front Row: Sgt. Jeffrey Yonker, Sgt. Nicholas Darlington, Sgt. Andy Douville, Sgt. Patrick Agema, Tpr. Lisa Kanyuh, Tpr. Jonathon Tibaudo, Ms. Jackie Fitzsimmons

Not Pictured: Ms. Ashly O'Brien

TEST EQUIPMENT

The following test equipment is utilized during the Acceleration, Top Speed, Braking, and Vehicle Dynamics portions of the evaluation program.

Racelogic USA 27240 Haggerty Rd Suite E17 Farmington Hills, MI 48331	• VBox 3i Data Collection System
Shoei Helmets 3002 Dow Avenue Suite 128 Tustin, CA 92780	• Motorcycle Helmet – Neo-Tec
AMB i.t. US-INC 1631 Phoenix Blvd. Suite 11 College Park, GA 30349	• Orbits 5.2 Extended Loop Decoder • AMB TranX260 Transponders
Alpinestars USA 2780 W. 237th Street Torrance, CA 90505-5270	• Alpinestars Protective Riding Apparel
Stilo Helmets USA 9A Electronics Ave. Danvers, MA 01923	• Test Driver Helmet – WRC DES Composite
Motorola Solutions 1303 East Algonquin Road Schaumburg, IL 60196	• Mag One BPR 40 Two-Way Radios

TEST VEHICLE DESCRIPTIONS AND PHOTOGRAPHS

2019 Chevrolet Tahoe
5.3L RWD

MAKE & MODEL	2019 Chevrolet Tahoe RWD
SALES CODE	CC15706
POWERTRAIN INFORMATION	
CUBIC INCHES	325
LITERS	5.3
DRIVE SYSTEM	Rear Wheel Drive
HORSEPOWER	355 HP
TORQUE	383 ft./lbs.
ALTERNATOR	170 AMP
BATTERY	720 Primary 730 Auxiliary CCA
TRANSMISSION	6-Speed Automatic
AXLE RATIO	3.08 Rear- Wheel Drive with Heavy-Duty Locking Rear Differential
TURNING RADIUS	39 ft.
TIRE SIZE, LOAD & SPEED RATING	Goodyear P265/60R17 All Season, 108 Load Rating, “V” Speed Rating
GROUND CLEARANCE, MINIMUM	8.5 inches
BRAKE SYSTEM	Heavy Duty 4-Wheel Anti-lock front & rear disc with Vacuum boost
FUEL CAPACITY	26 Gallons/98 Liters
GENERAL MEASUREMENTS	
WHEELBASE	116 inches
LENGTH	204 inches
CURB WEIGHT	5,224 lbs.
HEIGHT	72.4 inches
INTERIOR VOLUME	
FRONT	63.8 cu. ft.
REAR	56.9 cu. ft.
COMBINED	120.7 cu. ft.
TRUNK	112.1 cu. ft. (Max. Cargo)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,588 lbs. with 40/40 front seats (no center seat)
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	22
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The Tahoe PPV is a full-size, body-on-frame, pursuit-rated cruiser. It provides excellent officer comfort, visibility, cargo capacity, up-fit capability, and true utility.

Tahoe interior showcases office-like ergonomics, innovative technologies, and a host of safety features to keep officers safe and connected behind the wheel. Standard are a Rear Vision Camera with 8” Display and Rear Park Assist backup sensors. An 8-inch Chevrolet Infotainment radio with Bluetooth1 cell phone connectivity and steering wheel mounted controls are also standard.

Optional Enhanced Driver Alert Package that includes Forward Collision Alert, Low Speed Forward Automatic Braking, Lane Keep Assist with Lane Departure Warning, and exclusive GM Safety Alert Seat is available.
The Tahoe PPV offers full pursuit capability with tremendous power, speed, braking, and agility. The 5.3L EcoTec3 V8 under the hood features direct injection, variable valve timing, and Active Fuel Management. It produces 355 horsepower and 383 lb.-ft of torque all while yielding better gas mileage than the engine it replaced (up to 22 highway mpg). Also, standard is an auxiliary battery to handle the electrical draw of emergency equipment, and a tow package capable of up to 4,000 lbs. of tow capacity2.

Whether it’s high-speed emergency vehicle operations, city patrol, HAZMAT, K-9 unit, medical first responder, or tactical operations, the 2019 Tahoe PPV reaffirms that the SUV is thriving and ready for duty.

1 Go to myChevrolet.com/learnAbout/bluetooth to find out which phones are compatible with the vehicle.
2 Before you buy a vehicle or use it for trailering, carefully review the Trailering section of the Owner’s Manual. The weight of passengers, cargo and options or accessories may reduce the amount you can tow.

2019 Chevrolet Tahoe
5.3L 4WD

MAKE & MODEL	2019 Chevrolet Tahoe 5.3L 4WD
SALES CODE	CK15706
POWERTRAIN INFORMATION	
CUBIC INCHES	325
LITERS	5.3
DRIVE SYSTEM	Four Wheel Drive
HORSEPOWER	355 HP
TORQUE	383 ft./lbs.
ALTERNATOR	170 AMP
BATTERY	720 Primary 730 Auxiliary CCA
TRANSMISSION	6-Speed Automatic
AXLE RATIO	3.08 Driver-Selectable 4-Wheel Drive with HD Locking Rear Differential
TURNING RADIUS	39 ft.
TIRE SIZE, LOAD & SPEED RATING	Goodyear P265/60R17 All Season, 108 Load Rating, “V” Speed Rating
GROUND CLEARANCE, MINIMUM	8.5 inches
BRAKE SYSTEM	Heavy Duty 4-Wheel Anti-lock front & rear disc with Vacuum boost
FUEL CAPACITY	26 Gallons/98 Liters
GENERAL MEASUREMENTS	
WHEELBASE	116 inches
LENGTH	204 inches
CURB WEIGHT	5,442 lbs.
HEIGHT	72.4 inches
INTERIOR VOLUME	
FRONT	68.3 cu. ft.
REAR	56.9 cu. ft.
COMBINED	120.7 cu. ft.
TRUNK	112.1 cu. ft. (Max. Cargo)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,628 lbs. with 40/40 front seats (no center seat)
EPA MILEAGE EST. (MPG)	
CITY	14
HIGHWAY	21
COMBINED	16

MANUFACTURER VEHICLE HIGHLIGHTS

The Tahoe PPV is a full-size, body-on-frame, pursuit-rated cruiser. It provides excellent officer comfort, visibility, cargo capacity, up-fit capability, and true utility.

Tahoe interior showcases office-like ergonomics, innovative technologies, and a host of safety features to keep officers safe and connected behind the wheel. Standard are a Rear Vision Camera with 8” Display and Rear Park Assist backup sensors. An 8-inch Chevrolet Infotainment radio with Bluetooth1 cell phone connectivity and steering wheel mounted controls are also standard.

Optional Enhanced Driver Alert Package that includes Forward Collision Alert, Low Speed Forward Automatic Braking, Lane Keep Assist with Lane Departure Warning and exclusive GM Safety Alert Seat is available.
The Tahoe PPV offers full pursuit capability with tremendous power, speed, braking, and agility. The 5.3L EcoTec3 V8 under the hood features direct injection, variable valve timing, and Active Fuel Management. It produces 355 horsepower and 383 lb-ft of torque all while yielding better gas mileage than the engine it replaced (up to 22 highway mpg). Also, standard is an auxiliary battery to handle the electrical draw of emergency equipment, and a tow package capable of up to 4,000 lbs. of tow capacity2.

Whether it’s high-speed emergency vehicle operations, city patrol, HAZMAT, K-9 unit, medical first responder, or tactical operations, the 2019 Tahoe PPV reaffirms that the SUV is thriving and ready for duty.

1 Go to myChevrolet.com/learnAbout/bluetooth to find out which phones are compatible with the vehicle.
2 Before you buy a vehicle or use it for trailering, carefully review the Trailering section of the Owner’s Manual. The weight of passengers, cargo and options or accessories may reduce the amount you can tow

2019 Dodge Charger
3.6L RWD

MAKE & MODEL	2019 Dodge Charger 3.6L RWD
SALES CODE	27A, Z1B
POWERTRAIN INFORMATION	
CUBIC INCHES	220
LITERS	3.6
DRIVE SYSTEM	Rear Wheel Drive
HORSEPOWER	292 HP
TORQUE	260 ft./lbs.
ALTERNATOR	220 AMP
BATTERY	800 CCA
TRANSMISSION	5 Speed Electronic Automatic
AXLE RATIO	2.62
TURNING RADIUS	37.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,019 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMBINED	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1390 lbs.
EPA MILEAGE EST. (MPG)	
CITY	18
HIGHWAY	26
COMBINED	20

MANUFACTURER VEHICLE HIGHLIGHTS

The 2019 Dodge Charger Pursuit comes with FCA's exclusive, no-cost Officer Protection Package, which includes the Fleet Safety Group. This package is designed to provide officers with rear vision and enhanced officer safety when parked and working inside their vehicle. When activated, the rear-facing camera and sensors detect movement behind the vehicle. When motion is detected, images automatically appear on the vehicle's Uconnect touchscreen - and any or all of the following can be programmed to occur: alert chimes sound, reverse lights and tail lamps flash, windows roll up and all doors lock.

The available Uconnect 12.1-inch display integrates law enforcement systems and innovative technology to improve safety and occupant space.

New for 2019:

- Greater range of screen brightness settings to better accommodate individual officer preferences
- Usable area on Uconnect 12.1-inch touchscreen has been increased to 97 percent (from 87 percent)
- New USB connectivity increases tracking and input speed for keyboard and mouse

The 2019 Dodge Charger Pursuit features a Pentastar® V6 engine with Decel Fuel Shut-Off feature that provides a unique balance of pursuit-rated performance and V6 efficiency, including Flex-Fuel capability.

Pursuit package upgrades include performance-tuned suspension, load-leveling shocks and heavy-duty brakes. Additional officer-focused upgrades include specially developed seats to accommodate belt-mounted gear, a steering wheel with auxiliary buttons for controlling police equipment and an I/P-mounted gear shifter that frees up the center console for police-specific controls.

2019 Dodge Charger
5.7L RWD

MAKE & MODEL	2019 Dodge Charger 5.7L RWD
SALES CODE	29A, 5ZV
POWERTRAIN INFORMATION	
CUBIC INCHES	345
LITERS	5.7
DRIVE SYSTEM	Rear Wheel Drive
HORSEPOWER	370 HP
TORQUE	395 ft./lbs.
ALTERNATOR	220 AMP
BATTERY	800 CCA
TRANSMISSION	5 Speed Electronic Automatic
AXLE RATIO	2.62
TURNING RADIUS	37.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,325 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMBINED	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1200 lbs.
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	25
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The 2019 Dodge Charger Pursuit comes with FCA's exclusive, no-cost Officer Protection Package, which includes the Fleet Safety Group. This package is designed to provide officers with rear vision and enhanced officer safety when parked and working inside their vehicle. When activated, the rear-facing camera and sensors detect movement behind the vehicle. When motion is detected, images automatically appear on the vehicle's Uconnect touchscreen - and any or all of the following can be programmed to occur: alert chimes sound, reverse lights and tail lamps flash, windows roll up and all doors lock.

The available Uconnect 12.1-inch display integrates law enforcement systems and innovative technology to improve safety and occupant space.

New for 2019:

- Greater range of screen brightness settings to better accommodate individual officer preferences
- Usable area on Uconnect 12.1-inch touchscreen has been increased to 97 percent (from 87 percent)
- New USB connectivity increases tracking and input speed for keyboard and mouse

Power under the hood comes from the legendary 5.7L HEMI® V8 engine. Its Variable Valve Timing (VVT) increases power output without sacrificing fuel economy through continuous adjusting of the camshaft timing.

Pursuit package upgrades include performance-tuned suspension, load-leveling shocks, heavy-duty brakes and two-mode police-specific Electronic Stability Control (ESC). Additional officer-focused upgrades include specially developed seats to accommodate belt-mounted gear, a steering wheel with auxiliary buttons for controlling police equipment and an I/P-mounted gear shifter that frees up the center console for police-specific controls.

2019 Dodge Charger
5.7L AWD

MAKE & MODEL	2019 Dodge Charger 5.7L AWD
SALES CODE	29A, 590
POWERTRAIN INFORMATION	
CUBIC INCHES	345
LITERS	5.7
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	370 HP
TORQUE	395 ft./lbs.
ALTERNATOR	220 AMP
BATTERY	800 CCA
TRANSMISSION	5 Speed Electronic Automatic
AXLE RATIO	3.08
TURNING RADIUS	38.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,520 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMBINED	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1000 lbs.
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	23
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The 2019 Dodge Charger Pursuit comes with FCA's exclusive, no-cost Officer Protection Package, which includes the Fleet Safety Group. This package is designed to provide officers with rear vision and enhanced officer safety when parked and working inside their vehicle. When activated, the rear-facing camera and sensors detect movement behind the vehicle. When motion is detected, images automatically appear on the vehicle's Uconnect touchscreen - and any or all of the following can be programmed to occur: alert chimes sound, reverse lights and tail lamps flash, windows roll up and all doors lock.

The available Uconnect 12.1-inch display integrates law enforcement systems and innovative technology to improve safety and occupant space.

New for 2019:
- Greater range of screen brightness settings to better accommodate individual officer preferences
- Usable area on Uconnect 12.1-inch touchscreen has been increased to 97 percent (from 87 percent)
- New USB connectivity increases tracking and input speed for keyboard and mouse

The 2019 Dodge Charger Pursuit's advanced all-wheel-drive system transitions seamlessly from RWD to AWD, resulting in more control for officers. The segment-exclusive active transfer case and front-axle disconnect system monitor and adapt to environmental/road conditions, vehicle mode and driver habits. This system improves traction, acceleration and cornering balance. The 5.7L HEMI® V8 engine features Variable Valve Timing (VVT), which increases power output without sacrificing fuel economy through continuous adjusting of the camshaft tuning based on the level of performance required.

Pursuit package upgrades include performance-tuned suspension, load-leveling shocks, heavy-duty brakes and two-mode police-specific Electronic Stability Control (ESC). Additional officer-focused upgrades include specially developed seats to accommodate belt-mounted gear, a steering wheel with auxiliary buttons for controlling police equipment and an I/P-mounted gear shifter that frees up the center console for police-specific controls.

2019 Dodge Durango
3.6L AWD

MAKE & MODEL	2019 Dodge Durango Pursuit 3.6L
SALES CODE	2BZ, 514
POWERTRAIN INFORMATION	
CUBIC INCHES	220
LITERS	3.6
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	293 HP
TORQUE	260 ft./lbs.
ALTERNATOR	220 AMP
BATTERY	650 CCA + Aux 200 CCA
TRANSMISSION	8 Speed Automatic
AXLE RATIO	3.45
TURNING RADIUS	41.0 ft.
TIRE SIZE, LOAD & SPEED RATING	265/60R18T Michelin Latitude Tour HP
GROUND CLEARANCE, MINIMUM	8.1 inches
BRAKE SYSTEM	Power with dual piston front calipers, single piston rear calipers, anti-lock
FUEL CAPACITY	24.6 Gallons/93.12 Liters
GENERAL MEASUREMENTS	
WHEELBASE	119.8 inches
LENGTH	201.2 inches
CURB WEIGHT	4,849 lbs.
HEIGHT	70.9 inches
INTERIOR VOLUME	
FRONT	54.4 cu. ft.
REAR	44.8 cu. ft.
COMBINED	99.2 cu. ft.
TRUNK	47.7 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1640 lbs.
EPA MILEAGE EST. (MPG)	
CITY	18
HIGHWAY	25
COMBINED	21

MANUFACTURER VEHICLE HIGHLIGHTS

The 2019 Dodge Durango Pursuit – America's high-performance police SUV – is equipped with world-class safety and security features, segment-first technology and tactical equipment. The Uconnect 7.0-inch display integrates law enforcement systems and innovative technology. The 2019 Durango Pursuit embodies the three qualities that every Dodge law enforcement vehicle is designed to maximize: safety, performance and efficiency.

Dodge recognizes that the heroic men and women who protect us must be equipped with the best-performing pursuit-rated vehicle. With input from law enforcement officials, the 2019 Durango Pursuit continues to add improvements to meet the high expectations and performance needs of the heroes who protect us.

New for 2019

- The 2019 Dodge Durango Pursuit adds a new front fascia with integrated brake-cooling air ducts for improved brake performance and durability

Durango Pursuit models feature all-wheel-drive (AWD) and offer the standard 3.6-liter Pentastar V-6 engine rated at 293 horsepower and 260 lb.-ft. of torque, class-exclusive, K-9 friendly tri-zone interior temperature control and the segment's longest wheelbase (120 inches) for added stability and handling.

2019 Dodge Durango
5.7L AWD

MAKE & MODEL	2019 Dodge Durango 5.7L AWD
SALES CODE	22Z, 514
POWERTRAIN INFORMATION	
CUBIC INCHES	345
LITERS	5.7
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	360 HP
TORQUE	390 ft./lbs.
ALTERNATOR	220 AMP
BATTERY	700 CCA
TRANSMISSION	8 Speed Automatic
AXLE RATIO	3.09
TURNING RADIUS	41.0 ft.
TIRE SIZE, LOAD & SPEED RATING	265/60R18T Michelin Latitude Tour HP
GROUND CLEARANCE, MINIMUM	8.1 inches
BRAKE SYSTEM	Power with dual piston front calipers, single piston rear calipers, anti-lock
FUEL CAPACITY	24.6 Gallons/93.12 Liters
GENERAL MEASUREMENTS	
WHEELBASE	119.8 inches
LENGTH	201.2 inches
CURB WEIGHT	5,211 lbs.
HEIGHT	70.9 inches
INTERIOR VOLUME	
FRONT	54.4 cu. ft.
REAR	44.8 cu. ft.
COMBINED	99.2 cu. ft.
TRUNK	47.7 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1650 lbs.
EPA MILEAGE EST. (MPG)	
CITY	14
HIGHWAY	22
COMBINED	17

MANUFACTURER VEHICLE HIGHLIGHTS

The 2019 Dodge Durango Pursuit – America's high-performance police SUV – is equipped with world-class safety and security features, segment-first technology and tactical equipment. The Uconnect 7.0-inch display integrates law enforcement systems and innovative technology. The 2019 Durango Pursuit embodies the three qualities that every Dodge law enforcement vehicle is designed to maximize: safety, performance and efficiency.

Dodge recognizes that the heroic men and women who protect us must be equipped with the best-performing pursuit-rated vehicle. In addition to the legendary 5.7L V-8 HEMI® engine that delivers a best-in-class 360 horsepower, Durango Pursuit offers the segment's most advanced all-wheel-drive (AWD) system for maximum tactical performance, all-weather traction and fuel-efficiency. With input from law enforcement officials, the 2019 Durango Pursuit continues to add improvements to meet the high expectations and performance needs of the heroes who protect us.

New for 2019

- The 2019 Dodge Durango Pursuit adds a new front fascia with integrated brake-cooling air ducts for improved brake performance and durability

Durango Pursuit models feature all-wheel-drive (AWD) and the 5.7-liter V-8 HEMI model that's rated at a best-in-class 360 horsepower and 390 lb.-ft. of torque and includes the segment's most technologically advanced AWD system with a segment-exclusive active transfer case to improve real-world fuel economy while also enhancing the vehicle's traction and handling

2020 Ford Police Interceptor Utility Hybrid AWD

MAKE & MODEL	2020 Ford Police Interceptor Utility Hybrid AWD
SALES CODE	K8A, 99W
POWERTRAIN INFORMATION	
CUBIC INCHES	201
LITERS	3.3
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	TBD
TORQUE	TBD
ALTERNATOR	DC/DC Converter: 220 AMP
BATTERY	800 CCA
TRANSMISSION	10 Speed
AXLE RATIO	3.73
TURNING RADIUS	40.4 ft.
TIRE SIZE, LOAD & SPEED RATING	255/60R18 108V
GROUND CLEARANCE, MINIMUM	7.4 inches
BRAKE SYSTEM	ABS & Regenerative Braking with power dual piston front calipers, single piston rear calipers
FUEL CAPACITY	19.0 Gallons/72.0 Liters
GENERAL MEASUREMENTS	
WHEELBASE	119.1 inches
LENGTH	198.8 inches
CURB WEIGHT	5,303 lbs.
HEIGHT	69.5 inches
INTERIOR VOLUME	
FRONT	59.7 cu. ft.
REAR	58.5 cu. ft.
COMBINED	118.2 cu. ft.
TRUNK	89.9 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1637 lbs.
EPA MILEAGE EST. (MPG)	
CITY	TBD
HIGHWAY	TBD
COMBINED	TBD

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:

- All-new for 2020 Model Year, the Ford Police Interceptor Utility comes with standard Hybrid AWD and Ford Telematics
- Hybrid and AWD is ideal for law enforcement, due to optimal performance and significant fuel savings achieved by reduced engine idle time; with hybrid technology, on-board electrical equipment is powered via the lithium-ion hybrid battery, allowing the gas engine to shut off for extended periods, running intermittently to charge the battery
- Fuel savings of over $3,500 per year, per vehicle, at $2.75/gallon; see www.fordpoliceinterceptor.com for details

SAFETY:

- Ford Police Interceptors are the only vehicles in the world designed and engineered for the 75-mph rear-impact crash test
- New factory-installed Police Perimeter Alert monitors approximately 270° and secures vehicle if threatening motion detected
- Optional Level III & IV NIJ Ballistic Panels – includes additional LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:

- Enhanced police durability-cycle tested, proven real-world durability results

PERFORMANCE:

- New standard Hybrid powertrain provides increased horsepower, torque, acceleration and top speed vs. 3.7L AWD
- Standard AWD provides optimum handling in all road conditions – dry, ice/snow, wet/rain, gravel, etc.

2020 Ford Police Interceptor Utility EcoBoost AWD

MAKE & MODEL	2020 Ford Police Interceptor Utility 3.0L EcoBoost AWD
SALES CODE	K8A, 99C
POWERTRAIN INFORMATION	
CUBIC INCHES	183
LITERS	3.0
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	TBD
TORQUE	TBD
ALTERNATOR	250 AMP
BATTERY	730 CCA
TRANSMISSION	10 Speed
AXLE RATIO	3.31
TURNING RADIUS	40.4 ft.
TIRE SIZE, LOAD & SPEED RATING	255/60R18 108V
GROUND CLEARANCE, MINIMUM	7.2 inches
BRAKE SYSTEM	Power - dual piston calipers front, single piston calipers rear, 4 circuit ABS
FUEL CAPACITY	21.4 Gallons/81.0 Liters
GENERAL MEASUREMENTS	
WHEELBASE	119.1 inches
LENGTH	198.8 inches
CURB WEIGHT	4,848 lbs.
HEIGHT	69.5 inches
INTERIOR VOLUME	
FRONT	59.7 cu. ft.
REAR	58.5 cu. ft.
COMBINED	118.2 cu. ft.
TRUNK	89.9 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1632 lbs.
EPA MILEAGE EST. (MPG)	
CITY	TBD
HIGHWAY	TBD
COMBINED	TBD

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:

- All-new for 2020 Model Year, the Ford Police Interceptor Utility comes with standard Hybrid AWD and Ford Telematics
- Hybrid and AWD is ideal for law enforcement, due to optimal performance and significant fuel savings achieved by reduced engine idle time; with hybrid technology, on-board electrical equipment is powered via the lithium-ion hybrid battery, allowing the gas engine to shut off for extended periods, running intermittently to charge the battery
- Optional 3.3L Direct Injection and 3.0L EcoBoost engines also available

SAFETY:

- Ford Police Interceptors are the only vehicles in the world designed and engineered for the 75-mph rear-impact crash test
- New factory-installed Police Perimeter Alert monitors approximately 270° and secures vehicle if threatening motion detected
- Optional Level III & IV NIJ Ballistic Panels – includes additional LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:

- Enhanced police durability-cycle tested, proven real-world durability results

PERFORMANCE:

- New 3.0L EcoBoost AWD provides increased horsepower, torque, acceleration and top speed vs. 3.5L EcoBoost AWD
- Standard AWD provides optimum handling in all road conditions – dry, ice/snow, wet/rain, gravel, etc.

2020 Ford Police Interceptor Utility
3.3L AWD

MAKE & MODEL	2020 Ford Police Interceptor Utility 3.3L AWD
SALES CODE	K8A, 99B
POWERTRAIN INFORMATION	
CUBIC INCHES	201
LITERS	3.3
DRIVE SYSTEM	All Wheel Drive
HORSEPOWER	TBD
TORQUE	TBD
ALTERNATOR	250 AMP
BATTERY	730 CCA
TRANSMISSION	10 Speed
AXLE RATIO	3.73
TURNING RADIUS	40.4 ft.
TIRE SIZE, LOAD & SPEED RATING	255/60R18 108V
GROUND CLEARANCE, MINIMUM	7.6 inches
BRAKE SYSTEM	Power - dual piston calipers front, single piston calipers rear, 4 circuit and ABS
FUEL CAPACITY	21.4 Gallons/81.0 Liters
GENERAL MEASUREMENTS	
WHEELBASE	119.1 inches
LENGTH	198.8 inches
CURB WEIGHT	4,755 lbs.
HEIGHT	69.5 inches
INTERIOR VOLUME	
FRONT	59.7 cu. ft.
REAR	58.5 cu. ft.
COMBINED	118.2 cu. ft.
TRUNK	89.9 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1636 lbs.
EPA MILEAGE EST. (MPG)	
CITY	TBD
HIGHWAY	TBD
COMBINED	TBD

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:

- All-new for 2020 Model Year, the Ford Police Interceptor Utility comes with standard Hybrid AWD and Ford Telematics
- Hybrid and AWD is ideal for law enforcement, due to optimal performance and significant fuel savings achieved by reduced engine idle time; with hybrid technology, on-board electrical equipment is powered via the lithium-ion hybrid battery, allowing the gas engine to shut off for extended periods, running intermittently to charge the battery
- Optional 3.3L Direct Injection and 3.0L EcoBoost engines also available

SAFETY:

- Ford Police Interceptors are the only vehicles in the world designed and engineered for the 75-mph rear-impact crash test
- New factory-installed Police Perimeter Alert monitors approximately 270° and secures vehicle if threatening motion detected
- Optional Level III & IV NIJ Ballistic Panels – includes additional LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:

- Enhanced police durability-cycle tested, proven real-world durability results

PERFORMANCE:

- New standard Hybrid powertrain provides increased horsepower, torque, acceleration and top speed vs. 3.7L AWD
- Standard AWD provides optimum handling in all road conditions – dry, ice/snow, wet/rain, gravel, etc.

2019 Ford F150 Police Responder
3.5L EcoBoost

MAKE & MODEL	2019 Ford F-150 Police Responder 3.5L EcoBoost
SALES CODE	W1P
POWERTRAIN INFORMATION	
CUBIC INCHES	213
LITERS	3.5
DRIVE SYSTEM	Four Wheel Drive
HORSEPOWER	375 HP
TORQUE	470 ft./lbs.
ALTERNATOR	240 AMP
BATTERY	800 CCA
TRANSMISSION	10-Speed SelectShift Automatic
AXLE RATIO	3.55
TURNING RADIUS	47.1 ft.
TIRE SIZE, LOAD & SPEED RATING	275/65R18, 110S
GROUND CLEARANCE, MINIMUM	9.3 inches
BRAKE SYSTEM	Power – dual piston calipers front, single piston calipers rear, 4 circuit and ABS
FUEL CAPACITY	26.0 Gallons/87 Liters
GENERAL MEASUREMENTS	
WHEELBASE	145.0 inches
LENGTH	231.9 inches
CURB WEIGHT	5,060 lbs.
HEIGHT	77.2 inches
INTERIOR VOLUME	
FRONT	79.9 cu. ft.
REAR	51.9 cu. ft.
COMBINED	131.8 cu. ft.
TRUNK	52.8 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	2030 lbs.
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	22
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES:
The Ford F-150 Police Responder™ is the first-ever pursuit-rated pickup truck to market, designed for on-road pursuit with Built Ford Tough off-road capability. The standard FX4 off-road package includes a purpose-tuned suspension, electronic-locking rear axle and underbody skid plates. Unique upgrades include brake pad-friction material, front stabilizer bar for improved braking and handling, and durable fabric front seats with slim bolsters for comfort and anti-stab plates in seat backs. Best interior passenger volume of any pursuit-rated police vehicle, as well as best front/rear shoulder room, front/rear hip room and rear leg room.

SAFETY:
- Curve Control
- Rear View Camera with Dynamic Hitch Assist
- Perimeter Alarm
- Keyless Entry
- Standard Anti-Stab plates in front seat backs

DURABILITY:
- Off-Road tuned shock absorbers
- Underbody skid plates
- Upgraded front stabilizer bar
- Best payload capacity (2,030 lbs.) and best standard towing capacity (7,000 lbs.) of any pursuit-rated vehicle

PERFORMANCE:
- Powerful 3.5L EcoBoost® engine generates 375 horsepower and 470 lb.-ft. of torque, highest of any pursuit-rated vehicle
- 10-Speed Transmission with selectable drive modes: Tow/Haul, Snow/Wet, EcoSelect and Sport
- 240 amp alternator
- Unique brake pad-friction material

2019 Ford Police Responder Hybrid Sedan

MAKE & MODEL	2019 Ford Police Responder Hybrid Sedan
SALES CODE	P0A
POWERTRAIN INFORMATION	
CUBIC INCHES	122
LITERS	2.0
DRIVE SYSTEM	Front Wheel Drive
HORSEPOWER	188 HP
TORQUE	129 ft./lbs.
ALTERNATOR	165 AMP
BATTERY	590 CCA
TRANSMISSION	eCVT (Automatic)
AXLE RATIO	2.57
TURNING RADIUS	37.6 ft.
TIRE SIZE, LOAD & SPEED RATING	235/50R17 96W
GROUND CLEARANCE, MINIMUM	6.3 inches
BRAKE SYSTEM	Regenerative Braking System and 4-wheel Disc with Anti-Lock Brake System (ABS)
FUEL CAPACITY	14.0 Gallons/53.0 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.2 inches
LENGTH	191.8 inches
CURB WEIGHT	3,748 lbs.
HEIGHT	58.0 inches
INTERIOR VOLUME	
FRONT	55.2 cu. ft.
REAR	47.6 cu. ft.
COMBINED	102.8 cu. ft.
TRUNK	12.0 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1200 lbs.
EPA MILEAGE EST. (MPG)	
CITY	40
HIGHWAY	36
COMBINED	38

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES:

A Greener Shade of Blue™

The first-ever pursuit-rated Hybrid police vehicle to market, the Ford Police Responder™ Hybrid Sedan provides a capable option that delivers multiple benefits, including potential fuel savings, reduced CO_2 emissions and fewer fill-ups – meaning less vehicle downtime to keep your vehicles and officers on the road. Our scenario shows potential savings of nearly $4,300 per year, per vehicle, at $2.75 per gallon. See www.fordpoliceresponder.com for details and to run your own scenarios. In Fall 2017 testing at MSP, 0-100 acceleration was similar to the last testing of V8-powered Crown Victoria Police Interceptor in Fall 2011.

SAFETY:

- Standard Anti-Stab plates in front seat backs
- Standard Rear View Camera
- Standard Individual Tire Pressure Monitoring System
- Optional NIJ Level IIIa Ballistic Panels
- Standard Police Engine Idle feature

DURABILITY:

- Enhanced Police durability-cycle tested
- Standard Front Underbody Deflector Plate

PERFORMANCE:

- Pursuit calibrated powertrain
- Police-tuned Regenerative Braking System
- Heavy duty suspension components, upgraded braking and cooling

VEHICLE DYNAMICS TESTING

TESTING OBJECTIVE

To determine each vehicle's high-speed pursuit or emergency response handling characteristics and performance in comparison to the other vehicles in the test group. The course used is a 2-mile road-racing type configuration, containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the success or failure of the vehicle manufacturers to offer vehicles that provide the optimum balance between handling (suspension components), acceleration (usable horsepower), and braking characteristics.

TESTING METHODOLOGY

Each vehicle is driven a total of 32 timed laps, using four separate drivers, each driving an eight-lap series. The final score for the vehicle is the combined average (from the four drivers) of the five fastest laps for each driver during the eight-lap series.

Grattan Raceway, 7201 Lessiter Road, Belding, MI 48809

616-691-7221

GRATTAN RACEWAY
2019 (2020) MODEL YEAR VEHICLE DYNAMICS SCHEDULE
SEPTEMBER 17, 2018

	SCHWALM	AGEMA	DOUVILLE	MERCER
9:30 a.m.	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder 3.5L EcoBoost	Dodge Durango Pursuit 3.6L	Pass
9:50 a.m.	Dodge Charger 3.6 RWD	Dodge Charger 5.7L RWD	Pass	Dodge Charger 5.7L AWD
10:10 a.m.	Ford PI Utility Hybrid AWD	Pass	Ford PI Utility 3.0L EcoBoost AWD	Ford PI Utility 3.3L AWD
10:30 a.m.	Pass	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Dodge Durango Pursuit 5.7L
10:50 a.m.	Pass	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder 3.5L EcoBoost	Dodge Durango Pursuit 3.6L
11:10 a.m.	Dodge Charger 5.7L AWD	Dodge Charger 3.6 RWD	Dodge Charger 5.7L RWD	Pass
11:30 a.m.	Ford PI Utility 3.3L AWD	Ford PI Utility Hybrid AWD	Pass	Ford PI Utility 3.0L EcoBoost AWD
11:50 a.m.	Dodge Durango Pursuit 5.7L	Pass	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD
12:50 p.m.	Dodge Durango Pursuit 3.6L	Pass	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder 3.5L EcoBoost
1:10 p.m.	Pass	Dodge Charger 5.7L AWD	Dodge Charger 3.6 RWD	Dodge Charger 5.7L RWD
1:30 p.m.	Ford PI Utility 3.0L EcoBoost AWD	Ford PI Utility 3.3L AWD	Ford PI Utility Hybrid AWD	Pass
1:50 p.m.	Chevrolet Tahoe 5.3L 4WD	Dodge Durango Pursuit 5.7L	Pass	Chevrolet Tahoe 5.3L RWD
2:10 p.m.	Ford F-150 Police Responder 3.5L EcoBoost	Dodge Durango Pursuit 3.6L	Pass	Ford Police Responder Hybrid Sedan
2:30 p.m.	Dodge Charger 5.7L RWD	Pass	Dodge Charger 5.7L AWD	Dodge Charger 3.6 RWD
2:50 p.m.	Pass	Ford PI Utility 3.0L EcoBoost AWD	Ford PI Utility 3.3L AWD	Ford PI Utility Hybrid AWD
3:10 p.m.	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Dodge Durango Pursuit 5.7L	Pass

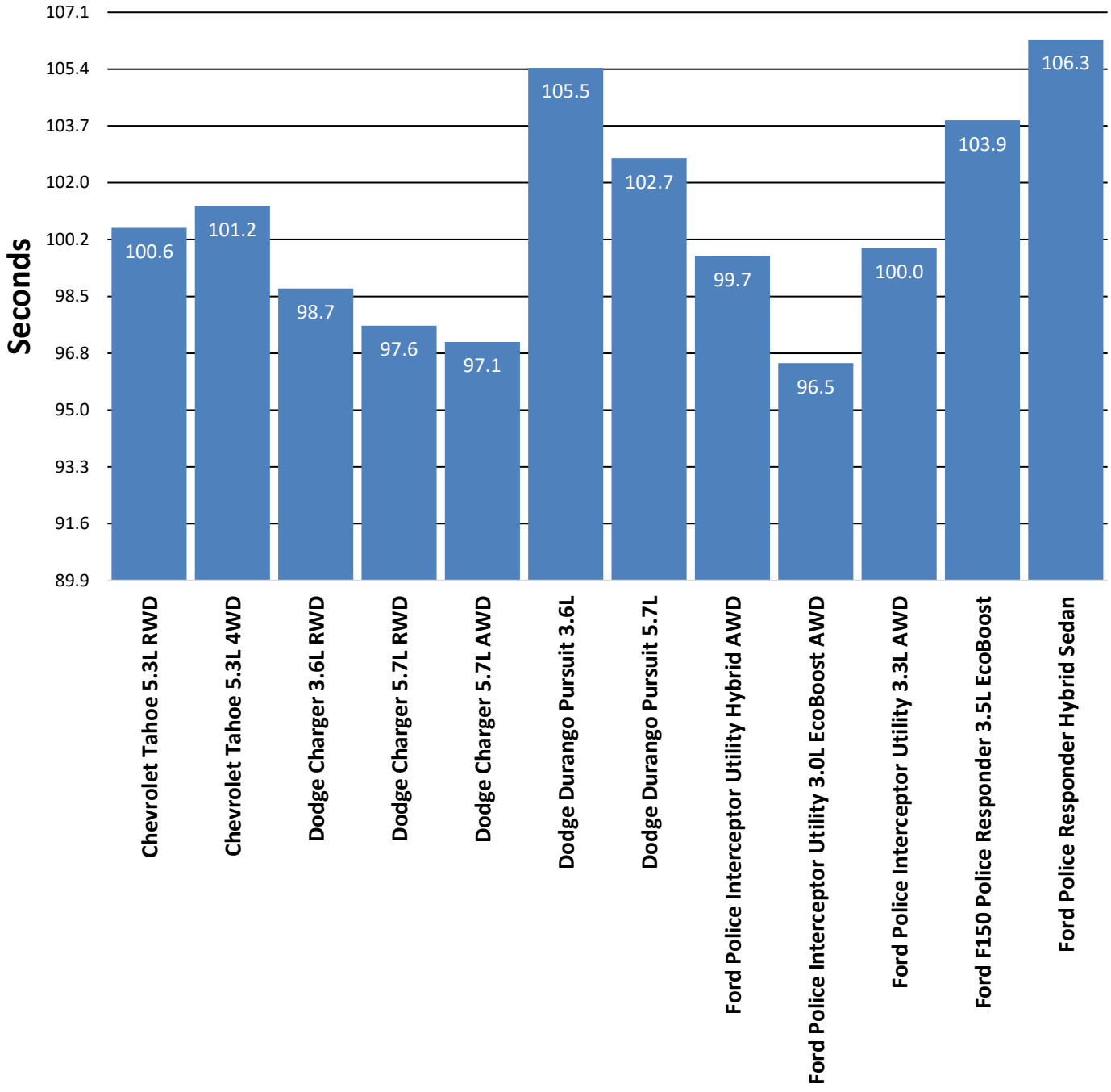
VEHICLE DYNAMICS TESTING ON SEPTEMBER 17, 2018

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Chevrolet Tahoe 5.3L RWD	AGEMA	01:40.96	01:40.79	01:40.74	01:40.26	01:40.82	01:40.71
	DOUVILLE	01:40.46	01:40.28	01:40.29	01:40.98	01:41.11	01:40.62
	MERCER	01:40.00	01:39.49	01:39.90	01:39.67	01:39.75	01:39.76
	SCHWALM	01:41.53	01:40.68	01:41.22	01:40.85	01:41.89	01:41.23
OVERALL AVERAGE	*** Refer to page 3 for further details**						**01:40.58**
Chevrolet Tahoe 5.3L 4WD	DOUVILLE	01:41.98	01:41.69	01:42.01	01:42.25	01:41.66	01:41.92
	MERCER	01:39.71	01:40.11	01:39.77	01:40.32	01:40.73	01:40.13
	SCHWALM	01:41.81	01:40.95	01:41.38	01:42.17	01:43.15	01:41.89
	AGEMA	01:41.02	01:41.22	01:41.24	01:40.66	01:40.98	01:41.02
OVERALL AVERAGE	*** Refer to page 3 for further details**						**01:41.24**
Dodge Charger 3.6L RWD	SCHWALM	01:39.78	01:39.51	01:39.20	01:38.69	01:39.43	01:39.32
	AGEMA	01:38.24	01:39.30	01:38.93	01:38.59	01:39.11	01:38.83
	DOUVILLE	01:38.85	01:38.97	01:38.91	01:38.80	01:38.94	01:38.89
	MERCER	01:38.12	01:38.10	01:37.69	01:37.67	01:38.03	01:37.92
OVERALL AVERAGE							**01:38.74**
Dodge Charger 5.7L RWD	AGEMA	01:37.47	01:38.02	01:37.87	01:37.42	01:37.67	01:37.69
	DOUVILLE	01:37.39	01:37.29	01:37.38	01:37.45	01:37.45	01:37.39
	MERCER	01:36.83	01:36.93	01:36.80	01:36.91	01:36.79	01:36.85
	SCHWALM	01:38.56	01:37.82	01:38.92	01:38.79	01:38.49	01:38.52
OVERALL AVERAGE							**01:37.61**
Dodge Charger 5.7L AWD	MERCER	01:36.65	01:36.48	01:36.73	01:36.47	01:35.79	01:36.42
	SCHWALM	01:37.18	01:37.30	01:37.27	01:37.57	01:37.44	01:37.35
	AGEMA	01:37.23	01:36.98	01:36.84	01:36.89	01:37.21	01:37.03
	DOUVILLE	01:37.66	01:37.69	01:37.55	01:37.50	01:37.63	01:37.61
OVERALL AVERAGE							**01:37.10**
Dodge Durango Pursuit 3.6L	DOUVILLE	01:45.82	01:45.56	01:45.31	01:45.76	01:45.91	01:45.67
	MERCER	01:44.49	01:44.21	01:44.19	01:44.39	01:44.43	01:44.34
	SCHWALM	01:45.60	01:45.31	01:45.04	01:45.39	01:45.48	01:45.36
	AGEMA	01:46.38	01:46.22	01:46.40	01:46.79	01:46.42	01:46.44
OVERALL AVERAGE							**01:45.45**

VEHICLE DYNAMICS TESTING ON SEPTEMBER 17, 2018

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Dodge Durango Pursuit 5.7L	MERCER	01:42.34	01:42.15	01:42.21	01:42.54	01:41.80	01:42.21
	SCHWALM	01:42.24	01:42.40	01:42.09	01:42.51	01:42.62	01:42.37
	AGEMA	01:43.80	01:42.86	01:43.70	01:44.09	01:44.16	01:43.72
	DOUVILLE	01:42.65	01:42.44	01:42.35	01:42.58	01:42.56	01:42.52
OVERALL AVERAGE							**01:42.70**
Ford Police Interceptor Utility Hybrid AWD	SCHWALM	01:39.48	01:39.22	01:39.39	01:39.48	01:39.46	01:39.41
	AGEMA	01:40.34	01:40.30	01:40.28	01:40.49	01:39.81	01:40.24
	DOUVILLE	01:40.39	01:40.13	01:39.75	01:40.26	01:40.36	01:40.18
	MERCER	01:38.61	01:39.25	01:39.06	01:39.22	01:39.24	01:39.08
OVERALL AVERAGE							**01:39.73**
Ford Police Interceptor Utility 3.0L EcoBoost AWD	DOUVILLE	01:36.54	01:36.90	01:36.82	01:36.79	01:36.81	01:36.77
	MERCER	01:35.82	01:35.77	01:35.62	01:35.22	01:35.41	01:35.57
	SCHWALM	01:36.56	01:36.58	01:36.58	01:36.43	01:36.62	01:36.55
	AGEMA	01:37.18	01:36.92	01:36.91	01:36.71	01:37.29	01:37.00
OVERALL AVERAGE							**01:36.47**
Ford Police Interceptor Utility 3.3L AWD	MERCER	01:39.15	01:38.92	01:38.98	01:39.11	01:39.39	01:39.11
	SCHWALM	01:39.09	01:39.38	01:39.68	01:39.38	01:39.31	01:39.37
	AGEMA	01:41.31	01:41.45	01:41.23	01:41.70	01:41.13	01:41.36
	DOUVILLE	01:39.85	01:40.05	01:40.12	01:40.10	01:39.96	01:40.02
OVERALL AVERAGE							**01:39.96**
Ford F150 Police Responder 3.5L EcoBoost	AGEMA	01:43.87	01:44.19	01:43.68	01:44.30	01:44.53	01:44.11
	DOUVILLE	01:43.61	01:43.84	01:43.63	01:43.56	01:44.01	01:43.73
	MERCER	01:44.16	01:43.46	01:43.37	01:42.40	01:42.52	01:43.18
	SCHWALM	01:44.75	01:44.14	01:43.99	01:44.35	01:44.58	01:44.36
OVERALL AVERAGE							**01:43.85**
Ford Police Responder Hybrid Sedan	SCHWALM	01:46.05	01:46.11	01:46.34	01:46.48	01:46.20	01:46.24
	AGEMA	01:46.24	01:45.79	01:46.02	01:45.97	01:45.82	01:45.97
	DOUVILLE	01:46.99	01:46.68	01:46.79	01:47.43	01:47.32	01:47.04
	MERCER	01:45.38	01:45.51	01:46.07	01:46.42	01:46.58	01:45.99
OVERALL AVERAGE							**01:46.31**

2019 Model Year
Vehicle Dynamics




Grattan
RACEWAY


POLICE


POLICE

ACCELERATION AND TOP SPEED TESTING

ACCELERATION TESTING OBJECTIVE

To determine the ability of each test vehicle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph, and determine the distance to reach 100 mph and 120 mph.

ACCELERATION TESTING METHODOLOGY

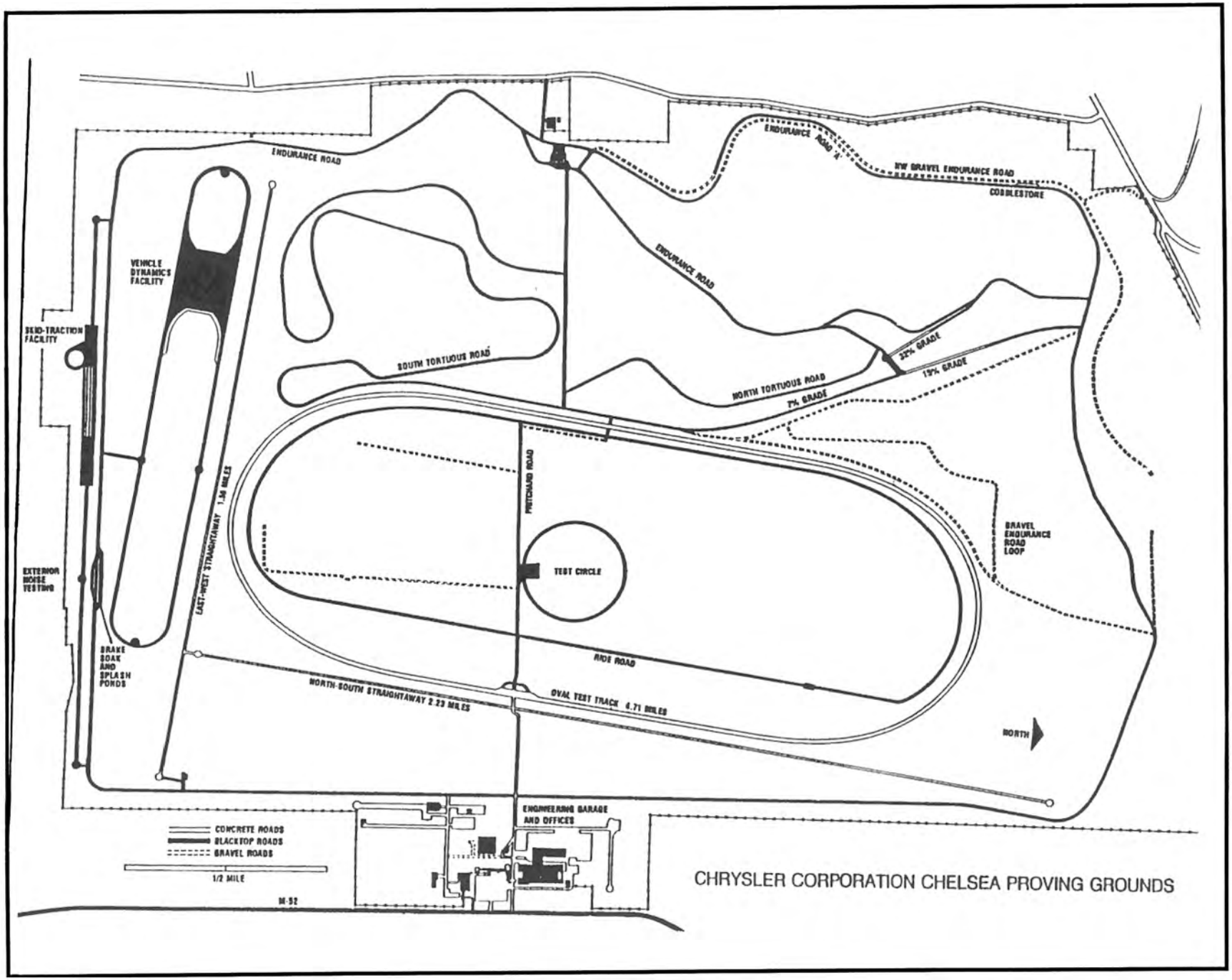
Using a Race Logic Vbox 3i GPS based data collection unit, each vehicle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times are used to derive scores for acceleration.

TOP SPEED TESTING OBJECTIVE

To verify the electronically limited top speed reported by the manufacturer attainable by each test vehicle within a distance of 14 miles from a standing start.

TOP SPEED TESTING METHODOLOGY

Following the fourth acceleration run, each test vehicle continues to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14-mile distance is considered the vehicle's top speed.


ENDURANCE ROAD
ENDURANCE ROAD
NW GRAVEL ENDURANCE ROAD
COBBLESTONE
ENDURANCE ROAD
VEHICLE DYNAMICS FACILITY
SKID-TRACTION FACILITY
SOUTH TORTUOUS ROAD
NORTH TORTUOUS ROAD
32% GRADE
19% GRADE
7% GRADE
PRITCHARD ROAD
EAST-WEST STRAIGHTAWAY 1.56 MILES
TEST CIRCLE
GRAVEL ENDURANCE ROAD LOOP
EXTERIOR NOISE TESTING
BRAKE SOAK AND SPLASH PONDS
RIDE ROAD
NORTH-SOUTH STRAIGHTAWAY 2.23 MILES
OVAL TEST TRACK 4.71 MILES
NORTH
ENGINEERING GARAGE AND OFFICES
CONCRETE ROADS
BLACKTOP ROADS
GRAVEL ROADS
1/2 MILE
M-52
CHRYSLER CORPORATION CHELSEA PROVING GROUNDS

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2018

Chevrolet Tahoe 5.3L RWD

BEGINNING TIME: 1:23 p.m. **TEMPERATURE:** 80.4° F
WIND VELOCITY: 2.4 mph **WIND DIRECTION:** 153°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	8.02	7.58	7.72	7.66	7.75
0 – 80	13.09	12.37	12.56	12.44	12.62
0 – 100	19.74	18.46	18.89	18.56	18.91

DISTANCE TO REACH 100 MPH: 0.32 mile
DISTANCE TO REACH 120 MPH: 0.69 mile

TOP SPEED ATTAINED: 134 mph

DISTANCE TO REACH TOP SPEED: 1.43 miles
TIME TO REACH TOP SPEED: 51.15 seconds

Chevrolet Tahoe 5.3L 4WD

BEGINNING TIME: 2:52 p.m. **TEMPERATURE:** 82.6° F
WIND VELOCITY: 4.1 mph **WIND DIRECTION:** 120°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	7.68	8.03	8.06	8.15	7.98
0 – 80	13.01	13.26	13.24	13.41	13.23
0 – 100	19.97	20.19	19.93	20.53	20.16

DISTANCE TO REACH 100 MPH: 0.35 mile
DISTANCE TO REACH 120 MPH: 0.77 mile

TOP SPEED ATTAINED: 121 mph

DISTANCE TO REACH TOP SPEED: 0.79 mile
TIME TO REACH TOP SPEED: 34.39 seconds

Dodge Charger 3.6L RWD

BEGINNING TIME: 3:45 p.m. **TEMPERATURE:** 85.2° F
WIND VELOCITY: 3.5 mph **WIND DIRECTION:** 98°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	8.10	7.87	7.85	7.85	7.92
0 – 80	13.34	12.70	12.57	12.64	12.81
0 – 100	20.56	20.04	19.49	19.96	20.01

DISTANCE TO REACH 100 MPH: 0.35 mile
DISTANCE TO REACH 120 MPH: 0.73 mile

TOP SPEED ATTAINED: 141 mph

DISTANCE TO REACH TOP SPEED: 1.94 miles
TIME TO REACH TOP SPEED: 64.77 seconds

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2018

Dodge Charger 5.7L RWD

BEGINNING TIME: 9:54 a.m. **TEMPERATURE:** 69.9° F
WIND VELOCITY: 2.9 mph **WIND DIRECTION:** 323°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	6.47	6.02	6.10	6.00	6.15
0 – 80	9.71	9.18	9.27	9.14	9.33
0 – 100	15.13	14.56	14.41	14.52	14.66

DISTANCE TO REACH 100 MPH: 0.25 mile
DISTANCE TO REACH 120 MPH: 0.45 mile

TOP SPEED ATTAINED: 149 mph

DISTANCE TO REACH TOP SPEED: 3.16 miles
TIME TO REACH TOP SPEED: 88.59 seconds

Dodge Charger 5.7L AWD

BEGINNING TIME: 11:17 a.m. **TEMPERATURE:** 76.5° F
WIND VELOCITY: 0.8 mph **WIND DIRECTION:** 328°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.93	5.88	5.87	5.80	5.87
0 – 80	9.82	9.67	9.71	9.55	9.69
0 – 100	14.72	14.72	14.88	14.50	14.71

DISTANCE TO REACH 100 MPH: 0.26 mile
DISTANCE TO REACH 120 MPH: 0.51 mile

TOP SPEED ATTAINED: 149 mph

DISTANCE TO REACH TOP SPEED: 1.43 miles
TIME TO REACH TOP SPEED: 46.58 seconds

Dodge Durango Pursuit 3.6L

BEGINNING TIME: 3:32 p.m. **TEMPERATURE:** 84.7° F
WIND VELOCITY: 5.1 mph **WIND DIRECTION:** 164°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	8.73	8.59	8.51	8.51	8.59
0 – 80	14.32	14.22	13.95	14.19	14.17
0 – 100	22.79	23.16	22.44	23.05	22.86

DISTANCE TO REACH 100 MPH: 0.41 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 117 mph

DISTANCE TO REACH TOP SPEED: 0.96 mile
TIME TO REACH TOP SPEED: 40.36 seconds

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2017

Dodge Durango Pursuit 5.7L

BEGINNING TIME: 1:57 p.m. **TEMPERATURE:** 80.8° F
WIND VELOCITY: 0.51 mph **WIND DIRECTION:** 138°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	6.94	7.01	7.35	7.01	7.08
0 – 80	11.34	11.45	11.90	11.52	11.55
0 – 100	17.92	18.36	18.82	18.25	18.34

DISTANCE TO REACH 100 MPH: 0.33 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 118 mph

DISTANCE TO REACH TOP SPEED: 0.63 mile
TIME TO REACH TOP SPEED: 28.10 seconds

Ford Police Interceptor Utility Hybrid AWD

BEGINNING TIME: 12:49 p.m. **TEMPERATURE:** 79.2° F
WIND VELOCITY: 4.47 mph **WIND DIRECTION:** 5°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	7.44	7.24	7.21	7.20	7.27
0 – 80	11.74	11.50	11.52	11.41	11.54
0 – 100	18.05	17.54	17.75	17.43	17.69

DISTANCE TO REACH 100 MPH: 0.31 mile
DISTANCE TO REACH 120 MPH: 0.62 mile

TOP SPEED ATTAINED: 137 mph

DISTANCE TO REACH TOP SPEED: 1.24 miles
TIME TO REACH TOP SPEED: 44.78 seconds

Ford Police Interceptor Utility 3.0L EcoBoost AWD

BEGINNING TIME: 10:39 a.m. **TEMPERATURE:** 73.9° F
WIND VELOCITY: 1.24 mph **WIND DIRECTION:** 102°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.87	5.95	5.67	5.60	5.77
0 – 80	9.57	9.18	8.79	8.68	9.06
0 – 100	14.68	13.56	13.08	13.02	13.59

DISTANCE TO REACH 100 MPH: 0.23 mile
DISTANCE TO REACH 120 MPH: 0.44 mile

TOP SPEED ATTAINED: 150 mph

DISTANCE TO REACH TOP SPEED: 1.45 miles
TIME TO REACH TOP SPEED: 46.23 seconds

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2017

Ford Police Interceptor Utility 3.3L AWD

BEGINNING TIME: 3:18 p.m. **TEMPERATURE:** 84.6° F
WIND VELOCITY: 2.8 mph **WIND DIRECTION:** 113°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	8.02	7.78	7.76	7.79	7.84
0 – 80	12.53	12.36	12.18	12.43	12.38
0 – 100	19.36	19.56	18.78	19.63	19.33

DISTANCE TO REACH 100 MPH: 0.34 mile
DISTANCE TO REACH 120 MPH: 0.73 mile

TOP SPEED ATTAINED: 137 mph

DISTANCE TO REACH TOP SPEED: 2.48 miles
TIME TO REACH TOP SPEED: 80.41 seconds

Ford F150 Police Responder 3.5L EcoBoost

BEGINNING TIME: 2:30 p.m. **TEMPERATURE:** 84.3° F
WIND VELOCITY: 6.3 mph **WIND DIRECTION:** 195°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	6.94	6.78	7.08	6.79	6.90
0 – 80	10.94	10.57	10.85	10.59	10.74
0 – 100	16.94	16.28	16.45	16.23	16.48

DISTANCE TO REACH 100 MPH: 0.28 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 106 mph

DISTANCE TO REACH TOP SPEED: 0.42 mile
TIME TO REACH TOP SPEED: 21.24 seconds

Ford Police Responder Hybrid Sedan

BEGINNING TIME: 3:45 p.m. **TEMPERATURE:** 85.2° F
WIND VELOCITY: 3.5 mph **WIND DIRECTION:** 98°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	9.35	9.22	9.17	9.20	9.24
0 – 80	15.34	15.19	14.82	14.91	15.07
0 – 100	27.77	28.47	23.66	24.10	26.00

DISTANCE TO REACH 100 MPH: 0.48 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 119 mph

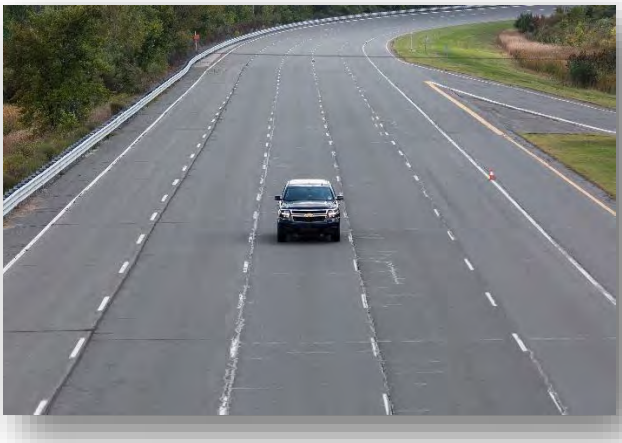
DISTANCE TO REACH TOP SPEED: 2.53 miles
TIME TO REACH TOP SPEED: 90.54 seconds

SUMMARY OF ACCELERATION AND TOP SPEED

	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Dodge Charger 3.6L RWD	Dodge Charger 5.7L RWD
ACCELERATION (seconds)				
0-20 mph	2.25	2.12	1.98	1.71
0-30 mph	3.26	3.21	3.37	2.65
0-40 mph	4.56	4.56	4.74	3.56
0-50 mph	6.12	6.21	6.16	4.74
0-60 mph	7.75	7.98	7.92	6.15
0-70 mph	10.05	10.39	10.27	7.61
0-80 mph	12.62	13.23	12.81	9.33
0-90 mph	15.51	16.42	15.63	11.86
0-100 mph	18.91	20.16	20.01	14.66
TOP SPEED (mph)	134	121	141	149
DISTANCE TO REACH (miles)				
100 mph	0.32	0.35	0.35	0.25
120 mph	0.69	0.77	0.73	0.45
Top Speed	1.43	0.79	1.94	3.16

SUMMARY OF ACCELERATION AND TOP SPEED

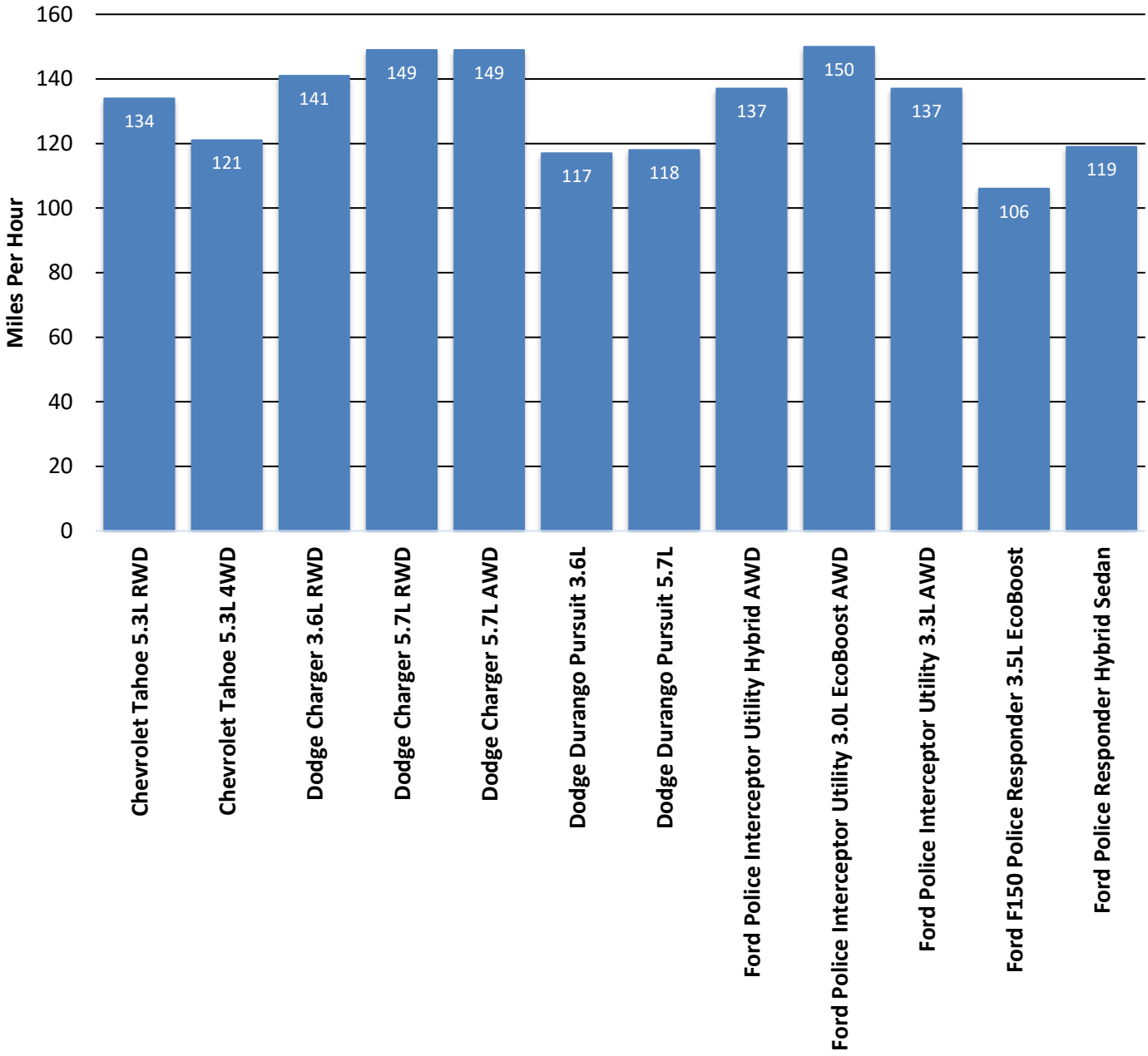
	Dodge Charger 5.7L AWD	Dodge Durango Pursuit 3.6L	Dodge Durango Pursuit 5.7L	Ford Police Interceptor Utility Hybrid AWD
ACCELERATION (seconds)				
0-20 mph	1.40	2.02	1.62	1.80
0-30 mph	2.29	3.16	2.54	2.95
0-40 mph	3.24	4.62	3.79	4.16
0-50 mph	4.54	6.27	5.21	5.63
0-60 mph	5.87	8.59	7.08	7.27
0-70 mph	7.56	11.12	9.09	9.17
0-80 mph	9.69	14.17	11.55	11.54
0-90 mph	12.02	18.04	14.50	14.37
0-100 mph	14.71	22.86	18.34	17.69
TOP SPEED (mph)	149	117	118	137
DISTANCE TO REACH (miles)				
100 mph	0.26	0.41	0.33	0.31
120 mph	0.51	N/A	N/A	0.62
Top Speed	1.43	0.96	0.63	1.24



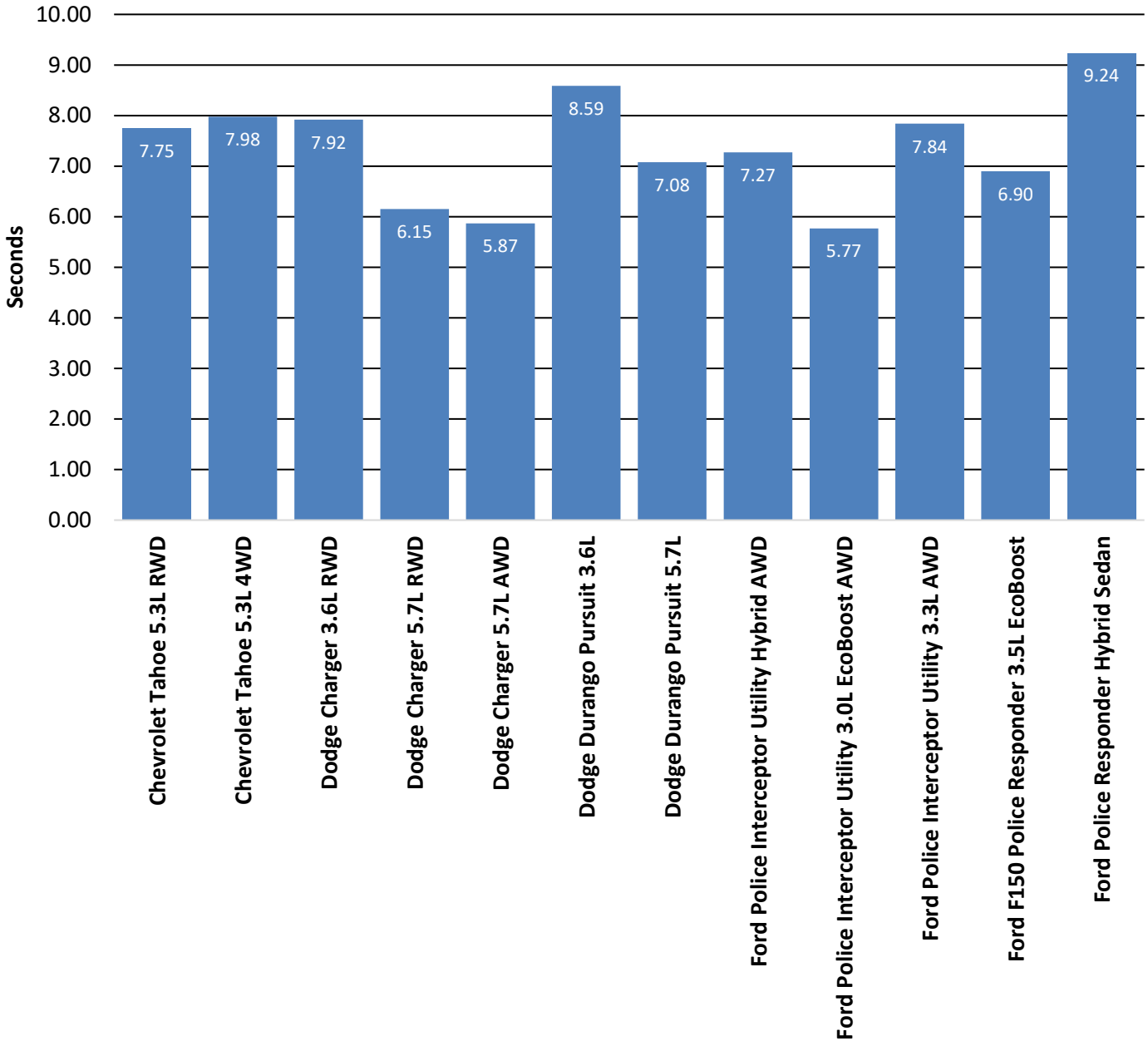
SUMMARY OF ACCELERATION AND TOP SPEED

	Ford Police Interceptor Utility 3.0L EcoBoost AWD	Ford Police Interceptor Utility 3.3L AWD	Ford F150 Police Responder 3.5L EcoBoost	Ford Police Responder Hybrid Sedan
ACCELERATION (seconds)				
0-20 mph	1.60	2.19	1.92	2.41
0-30 mph	2.32	3.30	2.93	3.63
0-40 mph	3.31	4.60	4.04	5.15
0-50 mph	4.41	6.16	5.35	7.01
0-60 mph	5.77	7.84	6.90	9.24
0-70 mph	7.23	9.92	8.63	11.89
0-80 mph	9.06	12.38	10.74	15.07
0-90 mph	11.05	15.45	13.33	19.47
0-100 mph	13.59	19.33	16.48	26.00
TOP SPEED (mph)	150	137	106	119
DISTANCE TO REACH (miles)				
100 mph	0.23	0.34	0.28	0.48
120 mph	0.44	0.73	N/A	N/A
Top Speed	1.45	2.48	0.42	2.53

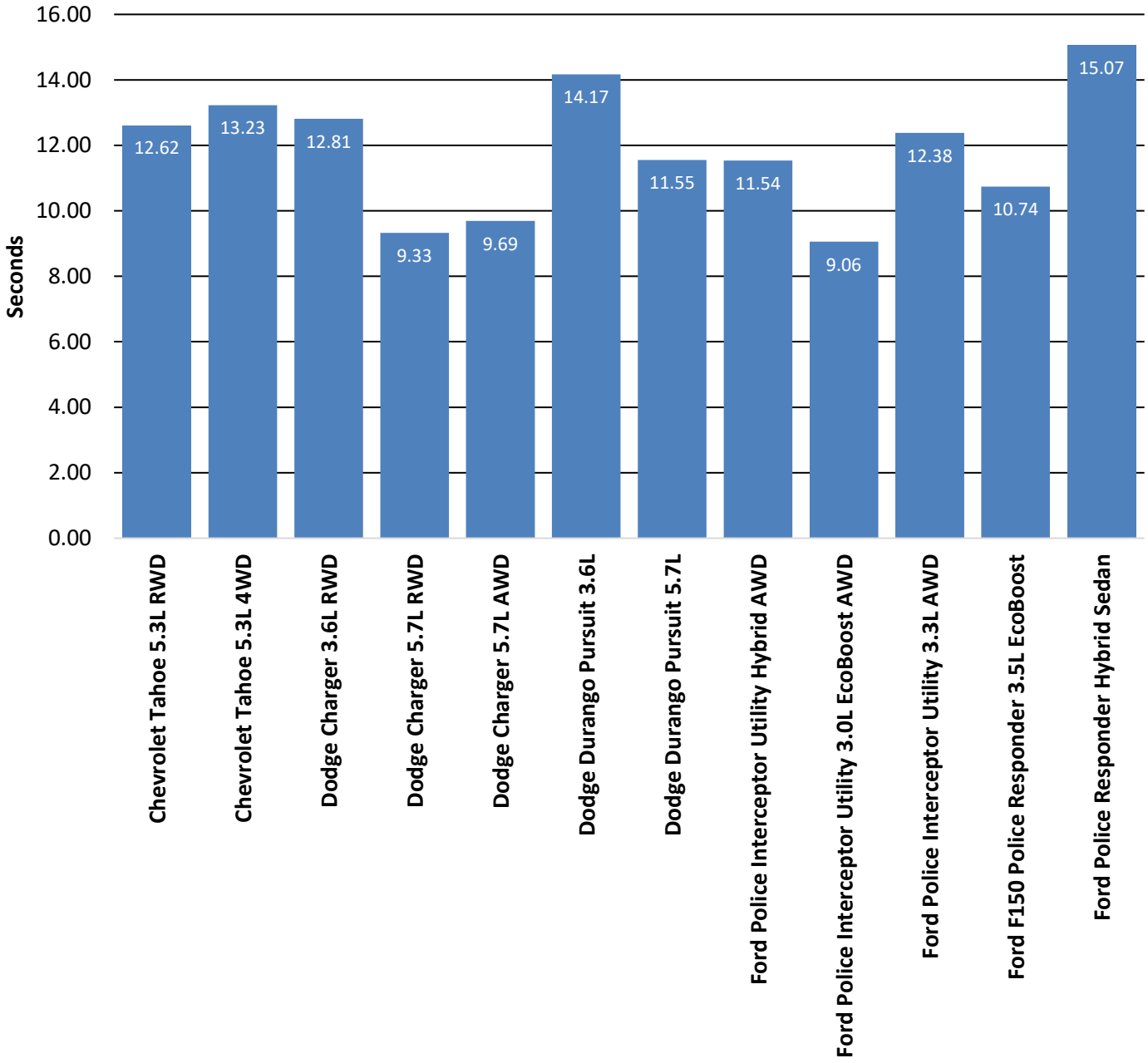
2019 Model Year
Top Speed Comparison
Top Speed Attained



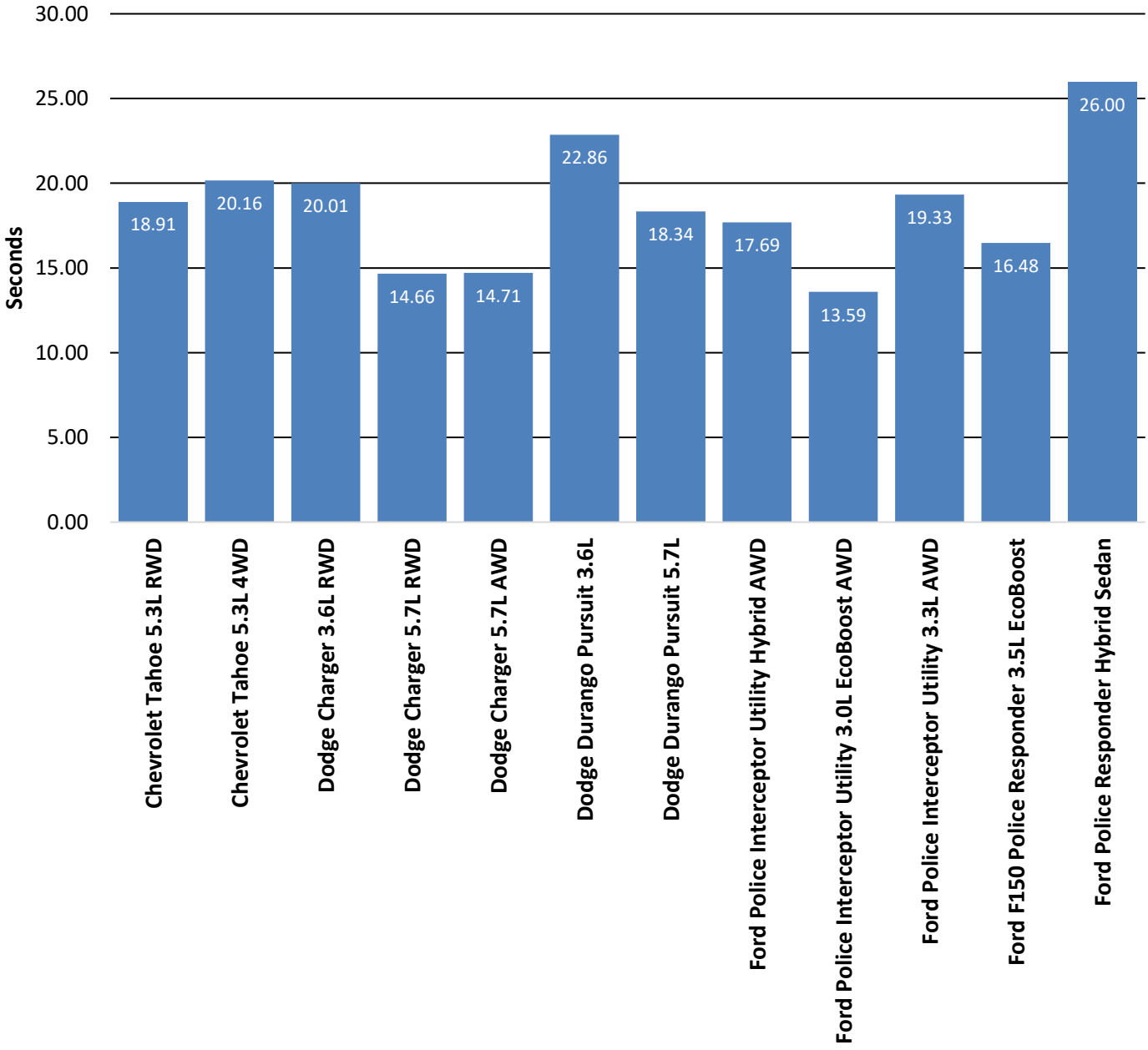
2019 Model Year
Acceleration Comparison
Acceleration Times
0-60 mph



2019 Model Year
Acceleration Comparison
Acceleration Times
0-80 mph



2019 Model Year
Acceleration Comparison
Acceleration Times
0-100 mph



BRAKE TESTING

BRAKE TESTING OBJECTIVE

To determine the deceleration rate attained by each test vehicle on twenty 60 – 0 mph full ABS stops. Each vehicle is scored on the average deceleration rate it achieves.

BRAKE TESTING METHODOLOGY

Each vehicle is driven to the north end of the straightaway on the east side of the oval. The vehicle then begins its sequence of stops heading in a southerly direction. The vehicle is stopped 5 times at pre-determined points on the roadway. The vehicle is then turned around and stops an additional 5 times again at pre-determined points on the roadway in a northerly direction. After the 10 stops, the vehicle drives one lap around the oval at 45 mph. This is done in an effort to cool the brakes before the second sequence. After the cool down lap, the 10 stops are repeated.

The data resulting from the twenty stops is used to calculate the average deceleration rate which is the vehicle's score for the test.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity*(IV) squared}}{\text{2 times Stopping Distance (SD)}} = \frac{(IV)^2}{2\,(SD)}$$

EXAMPLE:

Initial Velocity = 89.175 ft/s (60.8 mph x 1.4667*)
Stopping Distance = 171.4 ft.

$$DR = \frac{(IV)^2}{2(SD)} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

Once a vehicle's average deceleration rate has been determined, it is possible to calculate the approximate stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the vehicle in question.

EXAMPLE:

60 mph = 88.002 ft/s x 88.002 = 7744.352 / 2 = 3872.176 / 23.198 ft/s^2 = 166.9 ft.

*Initial velocity must be expressed in terms of feet per second, with 1 mile per hour being equal to 1.4667 feet per second.


POLICE

BRAKE TESTING

Chevrolet Tahoe 5.3L RWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 1:58 p.m.	**TEMPERATURE:** 81° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.34	153.36	25.54
2	60.26	145.04	26.93
3	58.73	143.54	25.85
4	60.16	148.75	26.17
5	60.07	145.41	26.69
6	60.02	150.51	25.74
7	60.37	147.64	26.55
8	60.00	146.17	26.49
9	60.30	150.09	26.06
10	*Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**26.22 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.24	145.94	26.75
2	59.18	142.80	26.38
3	59.07	134.07	27.99
4	59.64	145.05	26.38
5	59.91	141.67	27.25
6	60.21	146.40	26.63
7	60.54	145.64	27.07
8	60.46	144.73	27.17
9	59.80	146.86	26.19
10	59.45	139.42	27.27
AVERAGE DECELERATION RATE:			**26.91 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**26.58 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**145.7 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Chevrolet Tahoe 5.3L 4WD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2016
BEGINNING TIME: 10:22 a.m.	**TEMPERATURE:** 73° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.45	151.89	25.88
2	60.16	146.93	26.49
3	59.11	134.44	27.95
4	59.29	139.25	27.15
5	59.86	145.11	26.56
6	58.93	135.74	27.52
7	59.83	142.34	27.05
8	59.89	141.81	27.21
9	60.29	145.72	26.83
10	60.13	149.64	25.99
AVERAGE DECELERATION RATE:			**26.86 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.20	135.78	27.76
2	59.81	139.20	27.64
3	60.53	141.16	27.92
4	59.78	143.23	26.84
5	59.99	143.28	27.02
6	60.59	143.23	27.57
7	60.57	143.09	27.58
8	60.42	142.34	27.59
9	59.91	139.27	27.72
10	*Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**27.51 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.17 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**142.5 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 3.6L RWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2017
BEGINNING TIME: 10:38 a.m.	**TEMPERATURE:** 74° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.70	130.06	29.48
2	59.89	130.21	29.63
3	59.25	125.46	30.10
4	58.93	124.42	30.02
5	59.68	125.23	30.59
6	58.85	121.58	30.64
7	59.54	125.42	30.40
8	58.72	121.67	30.48
9	59.85	127.23	30.28
10	59.61	125.34	30.49
AVERAGE DECELERATION RATE:			**30.21 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.91	129.50	30.81
2	59.51	123.49	30.85
3	59.96	124.81	30.98
4	59.63	126.12	30.32
5	60.32	132.07	29.63
6	60.27	125.94	31.02
7	60.04	124.05	31.26
8	59.75	122.81	31.27
9	61.07	130.22	30.81
10	60.59	127.22	31.04
AVERAGE DECELERATION RATE:			**30.80 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**30.51 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**126.9 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 5.7L RWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 12:50 p.m.	**TEMPERATURE:** 79° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	61.16	133.85	30.06
2	59.12	122.93	30.58
3	60.25	128.05	30.49
4	60.15	126.51	30.76
5	58.93	120.83	30.91
6	60.15	126.32	30.81
7	58.65	122.06	30.31
8	58.46	121.51	30.25
9	59.81	125.21	30.73
10	59.88	130.85	29.47
AVERAGE DECELERATION RATE:			**30.44 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.48	129.10	30.48
2	61.09	137.37	29.22
3	58.85	126.48	29.45
4	60.34	129.97	30.13
5	59.65	129.97	29.45
6	59.87	126.87	30.39
7	61.05	131.15	30.57
8	60.73	131.45	30.18
9	60.33	129.32	30.27
10	60.25	128.05	30.49
AVERAGE DECELERATION RATE:			**30.06 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**30.25 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**128.0 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 5.7L AWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 1:24 p.m.	**TEMPERATURE:** 81° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.48	143.32	27.45
2	59.37	133.45	28.41
3	60.68	139.38	28.41
4	60.61	135.32	29.20
5	60.00	133.93	28.91
6	60.64	134.57	29.39
7	59.93	132.70	29.11
8	59.62	130.40	29.32
9	60.44	134.92	29.12
10	60.71	141.19	28.08
AVERAGE DECELERATION RATE:			**28.74 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.95	132.19	29.24
2	60.03	133.32	29.07
3	59.84	133.57	28.84
4	60.12	136.53	28.47
5	60.59	140.71	28.06
6	60.47	133.24	29.52
7	60.33	135.28	28.94
8	60.65	133.11	29.72
9	58.89	125.13	29.81
10	60.26	131.89	29.61
AVERAGE DECELERATION RATE:			**29.13 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.94 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**133.8 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Durango Pursuit 3.6L

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 11:16 a.m.	**TEMPERATURE:** 77° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.77	128.81	29.83
2	59.19	123.83	30.43
3	58.70	121.00	30.63
4	59.90	126.55	30.50
5	59.58	126.36	30.22
6	59.56	128.23	29.76
7	59.78	128.12	30.00
8	59.02	124.62	30.07
9	59.75	129.05	29.76
10	59.61	127.73	29.92
AVERAGE DECELERATION RATE:			**30.11 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.78	128.79	29.85
2	59.63	127.26	30.05
3	58.14	120.53	30.17
4	59.65	126.87	30.17
5	60.22	130.00	30.00
6	59.50	128.21	29.70
7	60.15	128.75	30.23
8	59.48	125.38	30.35
9	59.49	126.13	30.18
10	59.15	126.82	29.67
AVERAGE DECELERATION RATE:			**30.04 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**30.07 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**128.8 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Durango Pursuit 5.7L

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 2:16 p.m.	**TEMPERATURE:** 83° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.63	132.96	28.76
2	60.55	134.80	29.25
3	60.66	132.03	29.98
4	60.11	133.81	29.04
5	59.30	127.27	29.72
6	59.87	129.81	29.70
7	59.82	131.83	29.20
8	59.55	132.28	28.84
9	58.74	127.63	29.08
10	59.62	134.47	28.43
AVERAGE DECELERATION RATE:			**29.20 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.31	134.36	29.12
2	59.85	130.91	29.43
3	58.86	129.02	28.88
4	60.28	133.60	29.25
5	59.67	131.78	29.06
6	60.03	131.25	29.53
7	60.17	130.84	29.76
8	59.79	133.24	28.86
9	60.48	137.56	28.60
10	59.43	131.01	29.00
AVERAGE DECELERATION RATE:			**29.15 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.18 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**132.7 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Utility Hybrid AWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 1:42 p.m.	**TEMPERATURE:** 84° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.65	137.91	28.69
2	60.37	133.31	29.41
3	60.93	135.83	29.40
4	59.43	128.45	29.58
5	61.32	136.79	29.57
6	59.83	132.24	29.12
7	60.72	134.79	29.42
8	60.50	134.34	29.31
9	60.82	137.26	28.99
10	59.59	132.26	28.88
AVERAGE DECELERATION RATE:			**29.23 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.92	132.97	29.04
2	60.55	135.96	29.00
3	59.62	130.97	29.19
4	60.18	135.27	28.80
5	59.94	131.72	29.34
6	59.68	132.13	28.99
7	59.80	128.80	29.86
8	61.10	134.37	29.88
9	59.72	130.93	29.30
10	60.37	134.70	29.10
AVERAGE DECELERATION RATE:			**29.25 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.24 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**132.4 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Utility 3.0L EcoBoost AWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 1:07 p.m.	**TEMPERATURE:** 80° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.22	134.61	28.98
2	60.15	131.65	29.56
3	59.52	129.92	29.33
4	60.47	133.25	29.52
5	59.89	127.91	30.16
6	60.06	131.02	29.61
7	59.35	128.98	29.37
8	59.58	128.08	29.81
9	61.06	136.72	29.33
10	59.64	129.45	29.55
AVERAGE DECELERATION RATE:			**29.52 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.94	130.33	29.65
2	60.25	136.41	28.62
3	60.96	135.46	29.51
4	59.89	131.93	29.24
5	59.58	130.82	29.19
6	60.80	137.23	28.97
7	60.01	133.34	29.05
8	59.54	128.25	29.73
9	59.44	127.23	29.87
10	60.08	130.48	29.76
AVERAGE DECELERATION RATE:			**29.36 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.44 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**131.5 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

*****All Vehicles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Ford Police Interceptor Utility 3.3L AWD

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 10:56 a.m.	**TEMPERATURE:** 76° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.37	130.43	29.07
2	59.98	130.66	29.62
3	59.72	132.73	28.90
4	59.94	133.99	28.84
5	59.89	132.74	29.06
6	59.17	131.52	28.63
7	61.15	137.48	29.26
8	59.53	134.59	28.32
9	59.72	130.63	29.37
10	*Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**29.01 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.05	133.70	29.01
2	60.54	135.26	29.15
3	60.00	133.79	28.94
4	60.81	137.67	28.89
5	60.48	138.88	28.33
6	60.31	137.69	28.41
7	61.56	139.18	29.29
8	59.29	127.36	29.69
9	60.40	135.24	29.01
10	59.48	130.66	29.12
AVERAGE DECELERATION RATE:			**28.98 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.00 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**133.5 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford F150 Police Responder 3.5L EcoBoost

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 9:24 a.m.	**TEMPERATURE:** 68° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.39	153.34	25.58
2	59.76	141.08	27.23
3	60.31	145.27	26.93
4	59.33	140.44	26.96
5	60.26	142.32	27.44
6	59.83	144.81	26.59
7	59.09	131.68	28.52
8	60.34	143.89	27.22
9	60.33	144.45	27.10
10	*Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**27.06 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.17	142.59	27.31
2	60.06	141.68	27.39
3	60.10	139.69	27.81
4	59.76	139.14	27.61
5	59.41	139.87	27.14
6	60.07	140.31	27.66
7	59.75	140.28	27.37
8	59.76	138.90	27.65
9	59.29	136.11	27.78
10	60.30	143.03	27.34
AVERAGE DECELERATION RATE:			**27.51 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.30 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**141.9 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Responder Hybrid Sedan

TEST LOCATION: Chelsea Proving Grounds	**DATE:** September 15, 2018
BEGINNING TIME: 12:33 p.m.	**TEMPERATURE:** 79° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.36	134.47	29.14
2	59.43	128.41	29.58
3	60.76	132.86	29.89
4	60.30	129.26	30.26
5	60.61	132.22	29.88
6	60.98	131.22	30.48
7	61.22	133.12	30.28
8	60.34	129.91	30.15
9	60.32	132.25	29.59
10	60.14	131.48	29.59
AVERAGE DECELERATION RATE:			**29.62 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.61	130.70	29.24
2	61.05	132.53	30.25
3	59.53	124.79	30.55
4	59.59	133.39	28.63
5	59.39	125.77	30.16
6	60.26	128.44	30.41
7	61.21	134.37	29.99
8	60.78	131.82	30.14
9	60.33	127.80	30.63
10	60.31	131.61	29.73
AVERAGE DECELERATION RATE:			**29.97 ft/s²**

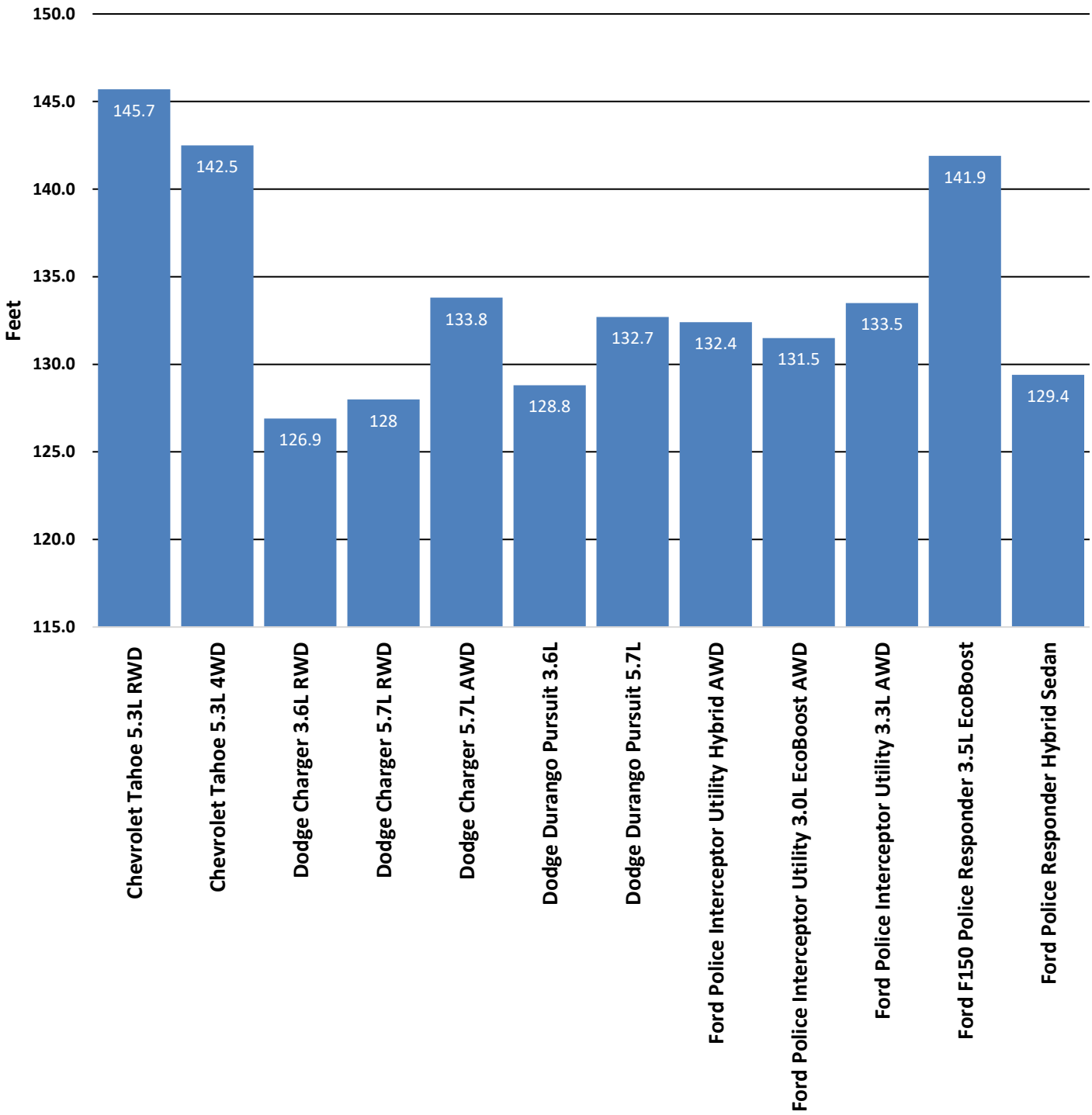
Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.93 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**129.4 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

2019 Model Year
Brake Testing
Projected Stopping Distance




TO PROTECT & SERVE
10

ERGONOMICS AND COMMUNICATIONS

TESTING OBJECTIVE

Rate each test vehicle's ability to:

1. Provide a suitable environment for the patrol officer in the performance of his/her assigned tasks.

2. Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TESTING METHODOLOGY

Utilizing the Ergonomics and Communications Form (as seen on page 68 of this book) each category is graded on a scale of 1-10, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores given are averaged to minimize personal prejudice for or against any given vehicle.

For the ergonomics portion of the form, a minimum of four officers (in this case six) individually and independently compare and score each test vehicle in several areas. These include comfort, convenience, instrumentation, and visibility.

The installation and communications portion of the evaluation is conducted by personnel from the Michigan Public Safety Communications System. The scores are given based on the relative difficulty of the necessary installations.

COMMUNICATIONS

	Chevrolet Tahoe	Dodge Charger	Dodge Durango	2020 Ford Police Interceptor Utility	Ford F150 Police Responder	Ford Police Responder Hybrid
COMMUNICATIONS						
Dashboard Accessibility	9.33	9.39	10.00	10.00	9.56	7.61
Trunk Accessibility	8.86	9.07	9.33	8.33	7.57	6.93
Engine Compartment	8.33	7.67	10.00	10.00	9.00	5.67
TOTAL SCORES	**8.84**	**8.71**	**9.78**	**9.44**	**8.71**	**6.74**

ERGONOMICS

	Chevrolet Tahoe	Dodge Charger	Dodge Durango	Ford Police Interceptor Utility	Ford F150 Police Responder	Ford Police Responder Hybrid
FRONT SEAT						
Padding	7.00	8.50	8.17	6.00	7.00	6.33
Depth of Bucket Seat	6.17	8.33	7.17	6.50	6.83	6.17
Adjustability – Front to Rear	8.67	8.67	8.17	7.50	7.50	5.17
Upholstery	7.67	7.50	7.83	6.20	6.33	5.00
Bucket Seat Design	7.83	8.00	7.83	6.33	6.67	5.50
Headroom	9.33	8.00	8.83	8.67	9.17	7.83
Seatbelts	6.00	8.67	7.83	7.67	7.67	8.00
Ease of Entry and Exit	8.50	7.33	8.50	7.67	7.50	5.33
Overall Comfort Rating	8.67	8.33	8.83	7.50	7.67	6.67
REAR SEAT						
Leg room – Front seat back	7.83	6.17	7.50	8.00	9.17	6.17
Ease of Entry and Exit	7.83	6.33	8.17	8.00	8.00	6.17
INSTRUMENTATION						
Clarity	8.67	9.00	9.00	8.00	8.50	7.83
Placement	7.83	8.67	8.83	8.00	8.17	7.50
VEHICLE CONTROLS						
Pedals, Size, and Position	8.17	8.17	8.17	6.67	8.50	7.67
Power Window Switch	9.17	9.17	8.67	7.83	8.67	7.33
Stability/Traction Control Switch	8.17	8.00	8.67	7.20	8.50	3.40
Door Lock Switch	8.00	8.83	8.67	7.50	6.83	7.67
Outside Mirror Controls	8.33	8.50	8.17	7.67	8.17	7.00
Steering Wheel, Size, Tilt Release, and Surface	7.83	8.33	8.17	7.67	7.50	7.17
Heat/AC Vent Placement and Adjustability	8.83	7.00	7.83	7.33	7.83	7.17
Trunk Release Switch	N/A	8.17	N/A	6.00	N/A	6.33
VISIBILITY						
Front (Windshield)	8.83	8.67	8.50	7.67	8.50	8.00
Rear (Back Window)	8.33	8.00	7.33	7.00	7.00	7.33
Left Rear Quarter	6.67	7.50	7.00	7.00	7.33	7.83
Right Rear Quarter	6.33	7.17	6.67	7.17	8.17	8.00
Outside Rear View Mirrors	7.50	7.33	7.17	8.17	9.17	8.50
TOTAL SCORES	**7.93**	**8.01**	**8.07**	**7.34**	**7.85**	**6.81**

FUEL ECONOMY

The respective auto manufacturers provided estimates for fuel economy as shown below.

This information has been certified by the Environmental Protection Agency.

Vehicles Make/Model/Engine	E.P.A. Miles Per Gallon		
	City Label	Highway Label	Combined Label
Chevrolet Tahoe 5.3L RWD	15	22	18
Chevrolet Tahoe 5.3L 4WD	14	21	16
Dodge Charger 3.6L RWD	18	26	20
Dodge Charger 5.7L RWD	16	25	18
Dodge Charger 5.7L AWD	15	23	18
Dodge Durango Pursuit 3.6L	18	25	21
Dodge Durango Pursuit 5.7L	14	22	17
Ford Police Interceptor Utility Hybrid AWD	TBD*	TBD*	TBD*
Ford Police Interceptor Utility 3.0L EcoBoost AWD	TBD*	TBD*	TBD*
Ford Police Interceptor Utility 3.3L AWD	TBD*	TBD*	TBD*
Ford F-150 Police Responder 3.5L EcoBoost	16	22	18
Ford Police Responder Hybrid Sedan	40	36	38

* Fuel mileage numbers are officially certified closer to the sale date of the vehicle. Ford anticipates these numbers may be available in early 2019.

MOTORCYCLES

Like many law enforcement agencies, the Michigan State Police used motorcycles until late 1942 and then switched to automobiles. The Michigan State Police rekindled interest in motorcycles for day to day patrol operations in 1993. In 2004, Michigan State Police headquarters asked if we had additional information as a resource for our purchasing decisions regarding motorcycles. During that time, we were given direction to expand vehicle testing to include motorcycle testing. It should be noted, the only motorcycles we test are those provided by the manufacturers which are purpose built as police motorcycles. We would like to thank BMW Motorrad USA, Harley-Davidson Motorcycles, and Yamaha Motorcycles for participating and providing their assistance in preparation for this year's successful testing program.

We are constantly evaluating our various tests with the manufacturers and the law enforcement industry to provide you with the most objective test data available. While there are many similarities to automobiles, there are also quite a few differences.

This year we conducted motorcycle brake testing on our track at the Precision Driving Unit in Lansing. Our facility provides a very flat and consistent surface for this type of testing. Thus, better information is provided to the reader as to the braking capabilities of each motorcycle.

The motorcycle dynamics portion was again conducted at Grattan Raceway. Grattan Raceway provides a two-mile road course that has several different curves and elevation changes that tests the motorcycle's high-speed handling characteristics and durability during pursuit and emergency response riding. See the motorcycle dynamics test objectives for further information.

When looking at the data, it is very important for the reader to apply your mission requirements to the motorcycle you are considering so you may make an appropriate decision. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job more effectively and safely. If anything in this report requires further explanation or clarification, please call or write the Michigan State Police Precision Driving Unit.

BMW R1250 RT-P

MAKE & MODEL	BMW R1250 RT-P
SALES CODE	19RP
POWERTRAIN INFORMATION	
CUBIC INCHES	76.5
LITERS	1.254
HORSEPOWER SAENET	136 bhp @ 7,750 rpm
ALTERNATOR	508W with dual speed charge, 23A @ 1150 rpm
TORQUE	105 @ 6,500 rpm
BATTERY	2 x 16 Ah AGM no-maintenance batteries
TRANSMISSION	Constant mesh 6-speed w/helical cut gears
SUSPENSION TYPE (FRONT)	BMW Telelever, 37 mm stanchions, central spring strut
SUSPENSION TYPE (REAR)	BMW Paralever; travel related damping single strut
TURNING CIRCLE (CURB TO CURB)	16 feet
TIRE SIZE, LOAD & SPEED RATING	120-70 ZR 17 Front / 180-55 ZR 17 Rear
GROUND CLEARANCE, MINIMUM	5.2 inches
BRAKE SYSTEM	BMW partial-integral ABS with traction control & ABS Pro
FUEL CAPACITY	6.6 Gallons/ 25 Liters
GENERAL MEASUREMENTS	
WHEELBASE	58.5 inches
LENGTH	87.5 inches
TEST WEIGHT	684 lbs.
HEIGHT	55.7 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,114 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	50 (WMTC)

MANUFACTURER HIGHLIGHTS

The R 1250 RT-P is the newest generation police motor derived from the K52 platform. The R 1250 RT-P model includes an unmatched list of standard features: Electronic Suspension Adjustment (ESA), ABS brakes with traction control, rain or road riding modes, heated handlebar grips, cruise control, tire pressure monitors and weather protection.

The new generation contains a multi-plate self-adjusting wet clutch that can be changed in an hour, variable valve timing, completely new emergency lighting system (including take-down lights and alley lights), handlebar switch system, power management system for all authority accessories, plus a host of special conveniences including electronic radio box latch release, saddlebag lights, alternating headlight system, selectable emergency light start sequence, narrower/lower seat with heat-reflective material (18° cooler in sun), adjustable dashboard angle, integrated PTT/PTPA switches, etc.

The test motorcycle options include Ride Modes Pro, enabling the selection of riding modes Rain, Road or Dynamic, Dynamic ESA electronic suspension control, Gear Shift Assist Pro, which allows you to shift up or down once the motorcycle is in motion without use of the clutch, ABS Pro enabling braking in corners, and additional fog lights, which also wig-wag with the headlight when there is sufficient ambient light (controlled by dashboard light sensor).

The R 1200 RT-P includes 6,000 mile oil change service intervals, comes with a 3-year / 60,000 mile limited warranty at no extra charge and now with EU4 management can be run on regular 87 Anti-Knock Index (AKI) fuel.

BMW F 750 GS-P

MAKE & MODEL	BMW F 750 GS-P
SALES CODE	FB
POWERTRAIN INFORMATION	
CUBIC INCHES	52
LITERS	853 CC
HORSEPOWER SAENET	77 hp @ 7,500
ALTERNATOR	416 Watts
TORQUE	61 ft./lbs.
BATTERY	2 - 10 Ah rated AGM maintenance free batteries
TRANSMISSION	Six speed constant mesh
SUSPENSION TYPE (FRONT)	Standard Fork 41mm
SUSPENSION TYPE (REAR)	Two sided aluminum swing arm
TURNING CIRCLE (CURB TO CURB)	16 ft.
TIRE SIZE, LOAD & SPEED RATING	Front 110/80 R19 Rear 15-/70 R17
GROUND CLEARANCE, MINIMUM	7.83 inches
BRAKE SYSTEM	BMW Motorrad ABS (disengageable)
FUEL CAPACITY	4 Gallons/ 15 Liters
GENERAL MEASUREMENTS	
WHEELBASE	61.3 inches
LENGTH	88.8 inches
TEST WEIGHT	593 lbs.
HEIGHT	48.2 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	970 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	57 mpg (WMTC)

MANUFACTURER HIGHLIGHTS

Today's needs for homeland security and law enforcement challenge every agency with limited budgets to utilize its resources as broadly as possible. The F 750 GS-P and F 850 GS-P models provide the widest range available to agencies for deploying resources. The GS-P's are not only capable of doing 100+ mph on the street, but can also tackle secondary roads, trails, greenbelts, parks and recreation areas, airports, dams, reservoirs, power plants, docks, ports, your college campus or anywhere else motors work best.

- **Performance:** will pleasantly surprise even seasoned motor veterans – few will evade you on or off pavement.
- **Lighting:** state-of-the-art emergency lighting system, with take-down & alley lights, wig-wag headlight, etc.
- **Two Suspension Versions:** 19" (BMW F 750 GS-P) or 21" (BMW F 850 GS-P) front wheel sizes provide the right suspension for your mission.
- **Standard ABS brakes:** provide superior stopping power which can be disabled on-the-fly when terrain demands.
- **Versatility:** multiple saddlebag options. The GS-P can fit through narrow gates and crossings that stop ATV's in their tracks.
- **Sure-starting:** linked auxiliary battery powers emergency lights and pre-wired equipment with engine "off" ensures restarting.
- **Superior cooling:** fan-driven water-cooled single won't over-heat in parades or congested traffic.
- **Economy:** 57 mpg on regular fuel, 6,000-mile service intervals and 3-year/36,000 miles limited warranty.

BMW F 850 GS-P

MAKE & MODEL	BMW F 850 GS-P
SALES CODE	19FP
POWERTRAIN INFORMATION	
CUBIC INCHES	52
LITERS	853 CC
HORSEPOWER SAENET	90 hp @ 8,000
ALTERNATOR	416 Watts
TORQUE	63 @ 6,250
BATTERY	2 - 10 Ah rated AGM maintenance free batteries
TRANSMISSION	Six speed constant mesh
SUSPENSION TYPE (FRONT)	Upside Down Fork 43mm
SUSPENSION TYPE (REAR)	Two sided aluminum swing arm
TURNING CIRCLE (CURB TO CURB)	16 ft.
TIRE SIZE, LOAD & SPEED RATING	Front 90/90 R21 Rear 150-/70 R17
GROUND CLEARANCE, MINIMUM	6.26 inches
BRAKE SYSTEM	BMW Motorrad ABS (disengageable)
FUEL CAPACITY	4 Gallons/ 15 Liters
GENERAL MEASUREMENTS	
WHEELBASE	62.7 inches
LENGTH	90.8 inches
TEST WEIGHT	600 lbs.
HEIGHT	53.4 inches (excluding mirrors)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	981 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	57 mpg (WMTC)

MANUFACTURER HIGHLIGHTS

Today's needs for homeland security and law enforcement challenge every agency with limited budgets to utilize its resources as broadly as possible. The F 750 GS-P and F 850 GS-P models provide the widest range available to agencies for deploying resources. The GS-P's are not only capable of doing 100+ mph on the street, but can also tackle secondary roads, trails, greenbelts, parks and recreation areas, airports, dams, reservoirs, power plants, docks, ports, your college campus or anywhere else motors work best.

- **Performance:** will pleasantly surprise even seasoned motor veterans – few will evade you on or off pavement.
- **Lighting:** state-of-the-art emergency lighting system, with take-down & alley lights, wig-wag headlight, etc.
- **Two Suspension Versions:** 19" (BMW F 750 GS-P) or 21" (BMW F 850 GS-P) front wheel sizes provide the right suspension for your mission.
- **Standard ABS brakes:** provide superior stopping power which can be disabled on-the-fly when terrain demands.
- **Versatility:** multiple saddlebag options. The GS-P can fit through narrow gates and crossings that stop ATV's in their tracks.
- **Sure-starting:** linked auxiliary battery powers emergency lights and pre-wired equipment with engine "off" ensures restarting.
- **Superior cooling:** fan-driven water-cooled single won't over-heat in parades or congested traffic.
- **Economy:** 57 mpg on regular fuel, 6,000-mile service intervals and 3-year/36,000 miles limited warranty.

Harley-Davidson FLHTP

MAKE & MODEL	Harley-Davidson FLHTP
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	114 CID
LITERS	1868 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 Amp (producing approximately 28 amps at idle)
TORQUE	123 @3000 RPM
BATTERY	12VDC, 28 Amp/Hour, 405 CCA
TRANSMISSION	6 Speed Manual / Wet 10 Plate Assist and Slip Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49mm Telescopic Forks with Showa® Dual Bending Valve Technology (improving dampening performance)
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17 ft.
TIRE SIZE, LOAD & SPEED RATING	Tires / Front Dunlop D408F 130/80B17(65H) Rear Dunlop D407T 180/65B16(81H)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc / Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors-Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/ 22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	843 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR-1360 lbs. / Payload-515 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	43 mpg

MANUFACTURER HIGHLIGHTS

- The OE Engine is the 114 CID Milwaukee Eight™: pushrod-operated overhead valves with hydraulic self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), compression ratio: 10.5:1, Electronic Sequential Port Fuel Injection System (ESPFI), Single Cam design,
- Air and Oil cooled
- Fan Assisted Oil Cooler
- Hydraulically Actuated Assist and Slip 10 Plate wet clutch
- Showa® Dual Bending Valve Technology front suspension with 117mm of travel, larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Daymaker™ LED Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- Heated Grips
- Security OE Standard
  2 Year Unlimited Mileage OE Warranty

Harley-Davidson FLHP Stage 1

MAKE & MODEL	Harley-Davidson FLHP Stage 1
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	114 CID
LITERS	1868 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 Amp (producing approximately 28 amps at idle)
TORQUE	110 @ 3000 RPM RWTQ
BATTERY	12VDC, 28 Amp/Hour, 405 CCA
TRANSMISSION	6 Speed Manual / Wet 10 Plate Assist and Slip Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49mm Telescopic Forks with Showa® Dual Bending Valve Technology (improving dampening performance)
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17 ft.
TIRE SIZE, LOAD & SPEED RATING	Tires / Front Dunlop D408F 130/80B17(65H) Rear Dunlop D407T 180/65B16(81H)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc / Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors-Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/ 22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	831 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR-1360 lbs. / Payload-515 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	43 mpg

MANUFACTURER HIGHLIGHTS

H-D Milwaukee Eight™ 114 Stage 1 Performance Engine. H-D High Flow Air Cleaner Part # 29400245 SE Pro Street Tuner Part # 41000008C

- The OE Engine is the 114 CID Milwaukee Eight™ Engine: pushrod-operated, overhead valves with hydraulic, self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), Compression ratio: 10.5:1, Electronic Sequential Port Fuel Injection System (ESPFI), Single Cam design, Air and Oil cooled
- Fan-assisted oil cooler
- Hydraulically actuated clutch with Assist and Slip 10 plate wet clutch
- Showa® Dual Bending Valve Technology front suspension with 117mm of travel, larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Dual Halogen Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- Security OE Standard
- 2 Year Unlimited Mileage OE Warranty

Harley-Davidson FLHTP Stage II

MAKE & MODEL	Harley-Davidson FLHTP Stage 2
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	114 CID
LITERS	1868 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 Amp (producing approximately 28 amps at idle)
TORQUE	115 @ 3500 RPM RWTQ
BATTERY	12VDC, 28 Amp/Hour, 405 CCA
TRANSMISSION	6 Speed Manual / Wet 10 Plate Assist and Slip Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49mm Telescopic Forks with Showa® Dual Bending Valve Technology (improving dampening performance)
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17 ft.
TIRE SIZE, LOAD & SPEED RATING	Tires / Front Dunlop D408F 130/80B17(65H) Rear Dunlop D407T 180/65B16(81H)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc / Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors-Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/ 22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	841 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR-1360 lbs. / Payload-515 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	43 mpg

MANUFACTURER HIGHLIGHTS

H-D Milwaukee Eight™ 114 Stage 2 Torque Performance Engine Upgrade

- H-D High Flow Air Cleaner Part # 29400246
  SE Pro Street Tuner Part # 41000008C
- SE Milwaukee Eight Stage II Torque Kit Part # 92500047
- The OE Engine is the 114 CID Milwaukee Eight™: pushrod-operated overhead valves with hydraulic self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), compression ratio: 10.5 :1, Electronic Sequential Port Fuel Injection System (ESPFI), Single Cam design, Air and Oil cooled
- Fan Assisted Oil Cooler
- Hydraulically Actuated Assist and Slip 10 Plate wet clutch
- Showa® Dual Bending Valve Technology front suspension with 117mm of travel, larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Daymaker™ LED Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- Heated Grips
- Security OE Standard
- 2 Year Unlimited Mileage OE Warranty

Yamaha FJR1300

MAKE & MODEL	Yamaha FJR1300P-AB
SALES CODE	RP31Y
POWERTRAIN INFORMATION	
CUBIC INCHES	79.2
LITERS	1.298
HORSEPOWER SAENET	144.2 bhp @8000RPM
ALTERNATOR	590W
TORQUE	138Nm @7000RPM
BATTERY	12v-24Ah
TRANSMISSION	6 Speed Manual / Wet, Multiple Disc Clutch
SUSPENSION TYPE (FRONT)	48mm fork fully adjustable
SUSPENSION TYPE (REAR)	Single Shock – adjustable spring preload and rebound damping
TURNING CIRCLE (CURB TO CURB)	122.0 inches
TIRE SIZE, LOAD & SPEED RATING	FR – 120/70/ZR17 RR – 180/55/ZR17
GROUND CLEARANCE, MINIMUM	5.1 Inches
BRAKE SYSTEM	FR – Dual 12.6 in discs; Unified Brake System and ABS RR – 11.1in; Unified Brake System and ABS
FUEL CAPACITY	6.6 gallons
GENERAL MEASUREMENTS	
WHEELBASE	60.8 inches
LENGTH	87.8 inches
TEST WEIGHT	689 lbs.
HEIGHT	Low 55.7 inches / High – 61 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1111 lbs.
EPA MILEAGE EST.	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	36 mpg

MANUFACTURER HIGHLIGHTS

The FJR1300 has made its mark as a truly iconic model for Yamaha Motor Company since its introduction to the U.S. market in 2003, with tens of thousands of this incredibly reliable “supersport touring” model having been sold since that time.

Known for its sportbike-like engine performance, impeccable handling, and superb braking capabilities, the FJR1300 has proven itself to be extremely reliable, with many retail customers racking up well over 100,000 miles on their personal bikes.

The FJR1300 has also undergone 4 significant generational updates and multiple refinements since its introduction, the last of which coming in the 2016 model year, with the addition of a six-speed transmission and advanced electronic additions. These upgrades have only added to the reliability, versatility, comfort, and sophistication of this motorcycle, without inhibiting the impressive performance or rider adjustability of this uniquely capable sport-touring motorcycle.

MOTORCYCLE DYNAMICS TESTING

MOTORCYCLE DYNAMICS TESTING OBJECTIVE

To determine each motorcycle's high-speed handling characteristics and performance in comparison to other motorcycles. The course used is a two-mile road racing type configuration containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the motorcycle manufacturers in offering balanced packages of acceleration capabilities, suspension components, and braking characteristics.

MOTORCYCLE DYNAMICS TESTING METHODOLOGY

Each motorcycle is ridden over the course a total of 32 timed laps using four separate riders, each riding an eight-lap series. The final score for the motorcycle is the combined average (from the four riders) of the five fastest laps for each rider during the eight-lap series.

MOTORCYCLE DYNAMICS SCHEDULE

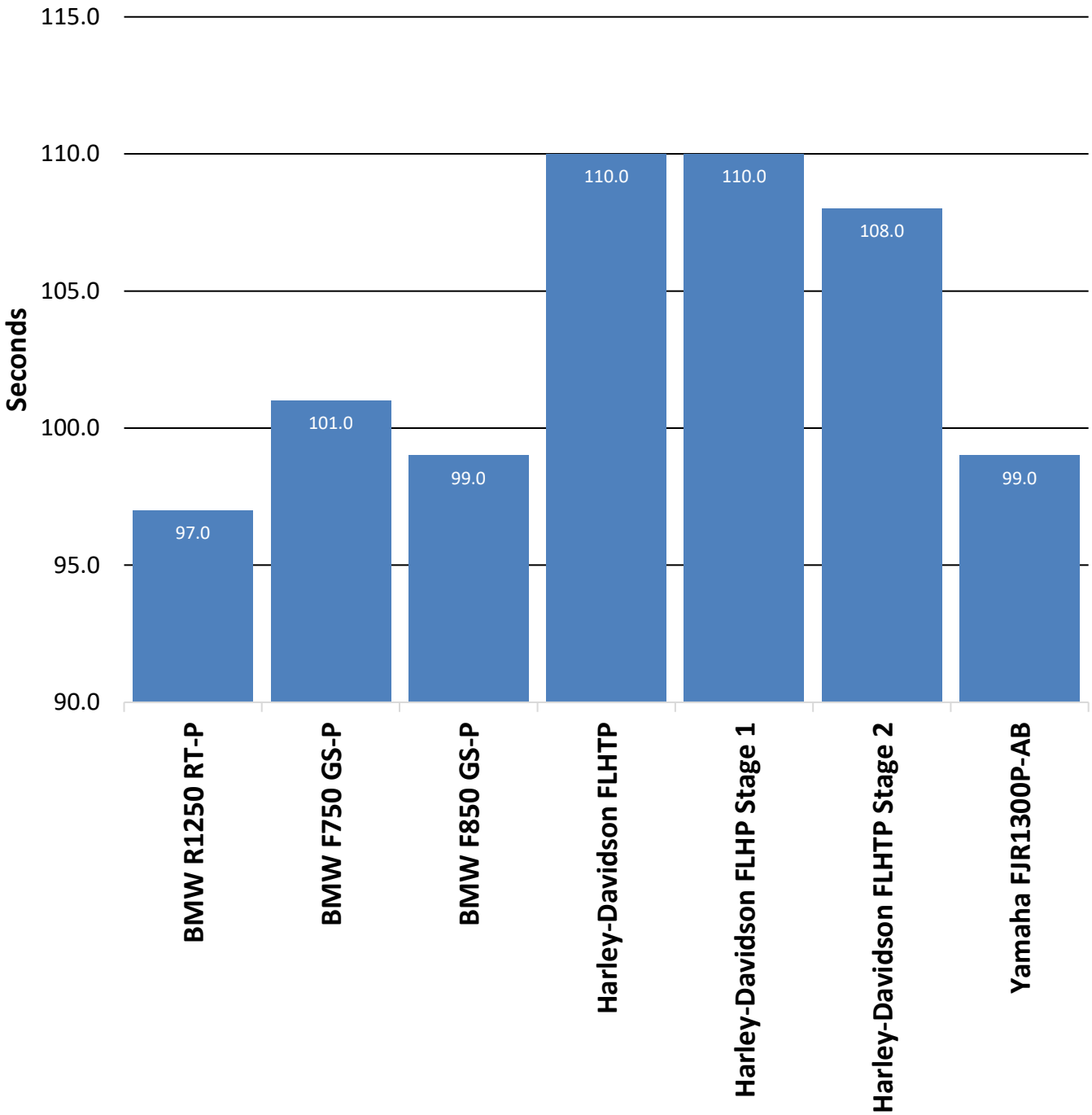
GRATTAN RACEWAY
2019 MODEL YEAR MOTORCYCLE DYNAMICS SCHEDULE
SEPTEMBER 13, 2018

	DARLINGTON	ROGERS	TIBAUDO	CUPP
9:30 a.m.	BMW R1250 RT-P	Yamaha FJR1300P-AB		
10:00 a.m.			BMW F750 GS-P	BMW F850 GS-P
10:30 a.m.	Harley-Davidson FLHTP	Harley-Davidson FLHP Stage 1	Harley-Davidson FLHTP Stage 2	
11:00 a.m.	Yamaha FJR1300P-AB			BMW R1250 RT-P
11:30 a.m.		BMW F750 GS-P	BMW F850 GS-P	
12:30 p.m.	Harley-Davidson FLHP Stage 1	Harley-Davidson FLHTP Stage 2		Harley-Davidson FLHTP
1:00 p.m.			BMW R1250 RT-P	Yamaha FJR1300P-AB
1:30 p.m.	BMW F750 GS-P	BMW F850 GS-P		
2:00 p.m.	Harley-Davidson FLHTP Stage 2		Harley-Davidson FLHTP	Harley-Davidson FLHP Stage 1
2:30 p.m.		BMW R1250 RT-P	Yamaha FJR1300P-AB	
3:00 p.m.	BMW F850 GS-P			BMW F750 GS-P
3:30 p.m.		Harley-Davidson FLHTP	Harley-Davidson FLHP Stage 1	Harley-Davidson FLHTP Stage 2

MOTORCYCLE DYNAMICS TESTING
SEPTEMBER 13, 2018

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
BMW R 1250 RT-P	DARLINGTON	01:36.81	01:36.03	01:36.58	01:36.56	01:36.89	01:36.58
	CUPP	01:35.73	01:35.44	01:36.39	01:36.53	01:36.09	01:36.03
	TIBAUDO	01:36.75	01:36.94	01:37.15	01:36.54	01:36.81	01:36.84
	ROGERS	01:37.54	01:37.36	01:37.22	01:36.56	01:36.10	01:36.96
Overall Average							**01:36.60**
BMW F 750 GS-P	TIBAUDO	01:41.19	01:40.43	01:40.07	01:39.45	01:39.61	01:40.15
	ROGERS	01:42.91	01:42.63	01:42.40	01:41.72	01:41.04	01:42.14
	DARLINGTON	01:41.53	01:40.96	01:40.74	01:40.79	01:40.57	01:40.92
	CUPP	01:41.52	01:41.66	01:41.48	01:40.71	01:39.93	01:41.06
Overall Average							**01:41.07**
BMW F 850 GS-P	CUPP	01:37.69	01:37.62	01:37.85	01:37.19	01:37.12	01:37.49
	TIBAUDO	01:38.89	01:38.83	01:38.86	01:38.03	01:39.33	01:38.79
	ROGERS	01:41.93	01:40.81	01:40.13	01:39.32	01:39.29	01:40.30
	DARLINGTON	01:38.72	01:38.70	01:38.09	01:37.63	01:38.05	01:38.24
Overall Average							**01:38.70**
Harley-Davidson FLHTP	DARLINGTON	01:48.89	01:48.83	01:48.76	01:48.51	01:48.53	01:48.70
	CUPP	01:49.83	01:49.88	01:50.17	01:49.95	01:50.13	01:49.99
	TIBAUDO	01:50.11	01:49.07	01:50.19	01:49.48	01:49.20	01:49.61
	ROGERS	01:50.08	01:49.65	01:49.63	01:49.95	01:49.74	01:49.81
Overall Average							**01:49.53**
Harley-Davidson FLHP Stage 1	ROGERS	01:51.05	01:51.24	01:50.38	01:51.34	01:50.45	01:50.89
	DARLINGTON	01:50.44	01:50.14	01:49.81	01:50.48	01:50.01	01:50.18
	CUPP	01:50.27	01:50.59	01:50.52	01:51.00	01:51.21	01:50.72
	TIBAUDO	01:50.48	01:50.29	01:50.14	01:49.82	01:49.59	01:50.06
Overall Average							**01:50.46**
Harley-Davidson FLHTP Stage 2	TIBAUDO	01:47.65	01:48.27	01:47.85	01:47.24	01:47.79	01:47.76
	ROGERS	01:47.63	01:47.90	01:47.76	01:47.82	01:48.03	01:47.83
	DARLINGTON	01:46.88	01:47.25	01:47.20	01:47.19	01:46.86	01:47.08
	CUPP	01:47.67	01:47.56	01:48.06	01:48.25	01:48.19	01:47.95
Overall Average							**01:47.65**
Yahama FJR1300P-AB	ROGERS	01:38.99	01:38.66	01:37.82	01:37.65	01:38.40	01:38.31
	DARLINGTON	01:38.84	01:38.27	01:38.65	01:38.34	01:38.33	01:38.49
	CUPP	01:38.85	01:38.66	01:38.08	01:38.28	01:38.67	01:38.51
	TIBAUDO	01:38.92	01:38.51	01:39.40	01:38.73	01:39.06	01:38.92
Overall Average							**01:38.56**

2019 Model Year
Motorcycle Dynamics



MOTORCYCLE ACCELERATION
&
TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

To determine the ability of each test motorcycle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph.

ACCELERATION TEST METHODOLOGY

Using a Race Logic Vbox 3i GPS data collection unit, each motorcycle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times are used to derive scores for acceleration. To ensure accuracy, the same rider performs the test for all motorcycles.

TOP SPEED TEST OBJECTIVE

To determine the actual top speed attainable by each test motorcycle within a distance of 14 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test motorcycle will continue to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14-mile distance will be recorded as the vehicle's top speed.

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2018

BMW R1250 RT-P

BEGINNING TIME: 10:59 a.m. **TEMPERATURE:** 75.4° F
WIND VELOCITY: 0.15 mph **WIND DIRECTION:** 132°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	4.07	4.12	4.00	3.93	4.03
0 – 80	6.00	5.93	6.00	5.80	5.93
0 – 100	8.84	8.84	8.76	8.63	8.77

DISTANCE TO REACH 100 MPH: 0.14 mile
DISTANCE TO REACH 120 MPH: 0.30 mile

TOP SPEED ATTAINED: 137 mph

DISTANCE TO REACH TOP SPEED: 4.72 miles
TIME TO REACH TOP SPEED: 133.37 seconds

BMW F750 GS-P

BEGINNING TIME: 1:40 p.m. **TEMPERATURE:** 82.5° F
WIND VELOCITY: 1.54 mph **WIND DIRECTION:** 324°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.26	5.10	4.91	4.90	5.04
0 – 80	8.76	8.71	8.36	8.48	8.58
0 – 100	15.92	16.44	15.84	15.80	16.00

DISTANCE TO REACH 100 MPH: .30 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 113 mph

DISTANCE TO REACH TOP SPEED: 1.79 miles
TIME TO REACH TOP SPEED: 66.38 seconds

BMW F850 GS-P

BEGINNING TIME: 2:43 p.m. **TEMPERATURE:** 84.8° F
WIND VELOCITY: 4.76 mph **WIND DIRECTION:** 145°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.02	4.96	5.06	4.95	5.00
0 – 80	8.48	8.59	8.68	8.44	8.55
0 – 100	16.85	14.18	17.68	15.65	16.09

DISTANCE TO REACH 100 MPH: 0.31 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 118 mph

DISTANCE TO REACH TOP SPEED: 1.50 miles
TIME TO REACH TOP SPEED: 53.49 seconds

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2018

Harley-Davidson FLHTP

BEGINNING TIME: 10:13 a.m. **TEMPERATURE:** 71.7° F
WIND VELOCITY: 0.94 mph **WIND DIRECTION:** 158°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.18	5.22	5.32	5.18	5.23
0 – 80	9.18	9.06	9.45	9.23	9.23
0 – 100	18.23	20.04	19.63	20.07	19.49

DISTANCE TO REACH 100 MPH: 0.39 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 109 mph

DISTANCE TO REACH TOP SPEED: 0.80 mile
TIME TO REACH TOP SPEED: 33.11 seconds

Harley-Davidson FLHP Stage 1

BEGINNING TIME: 2:17 p.m. **TEMPERATURE:** 82.8° F
WIND VELOCITY: 2.70 mph **WIND DIRECTION:** 126°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	5.02	5.03	4.89	5.16	5.03
0 – 80	8.65	8.67	8.55	8.85	8.68
0 – 100	16.35	15.81	16.20	16.17	16.13

DISTANCE TO REACH 100 MPH: 0.31 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 109 mph

DISTANCE TO REACH TOP SPEED: 0.63 mile
TIME TO REACH TOP SPEED: 27.10 seconds

Harley-Davidson FLHTP Stage 2

BEGINNING TIME: 12:34 p.m. **TEMPERATURE:** 79.5° F
WIND VELOCITY: 5.49 mph **WIND DIRECTION:** 12°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	4.80	4.55	4.49	4.50	4.59
0 – 80	7.86	7.77	7.41	7.69	7.68
0 – 100	13.25	13.88	12.82	14.04	13.50

DISTANCE TO REACH 100 MPH: 0.25 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 109 mph

DISTANCE TO REACH TOP SPEED: 0.40 mile
TIME TO REACH TOP SPEED: 18.39 seconds

TEST LOCATION: Chelsea Proving Grounds **DATE:** September 15, 2018

Yamaha FJR1300P-AB

BEGINNING TIME: 1:06 p.m. **TEMPERATURE:** 79.9° F
WIND VELOCITY: 4.50 mph **WIND DIRECTION:** 360°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE (seconds)
0 – 60	3.92	3.88	3.68	3.65	3.78
0 – 80	5.72	5.79	5.54	5.54	5.65
0 – 100	8.46	8.60	8.19	8.29	8.39

DISTANCE TO REACH 100 MPH: 0.14 mile
DISTANCE TO REACH 120 MPH: 0.27 mile

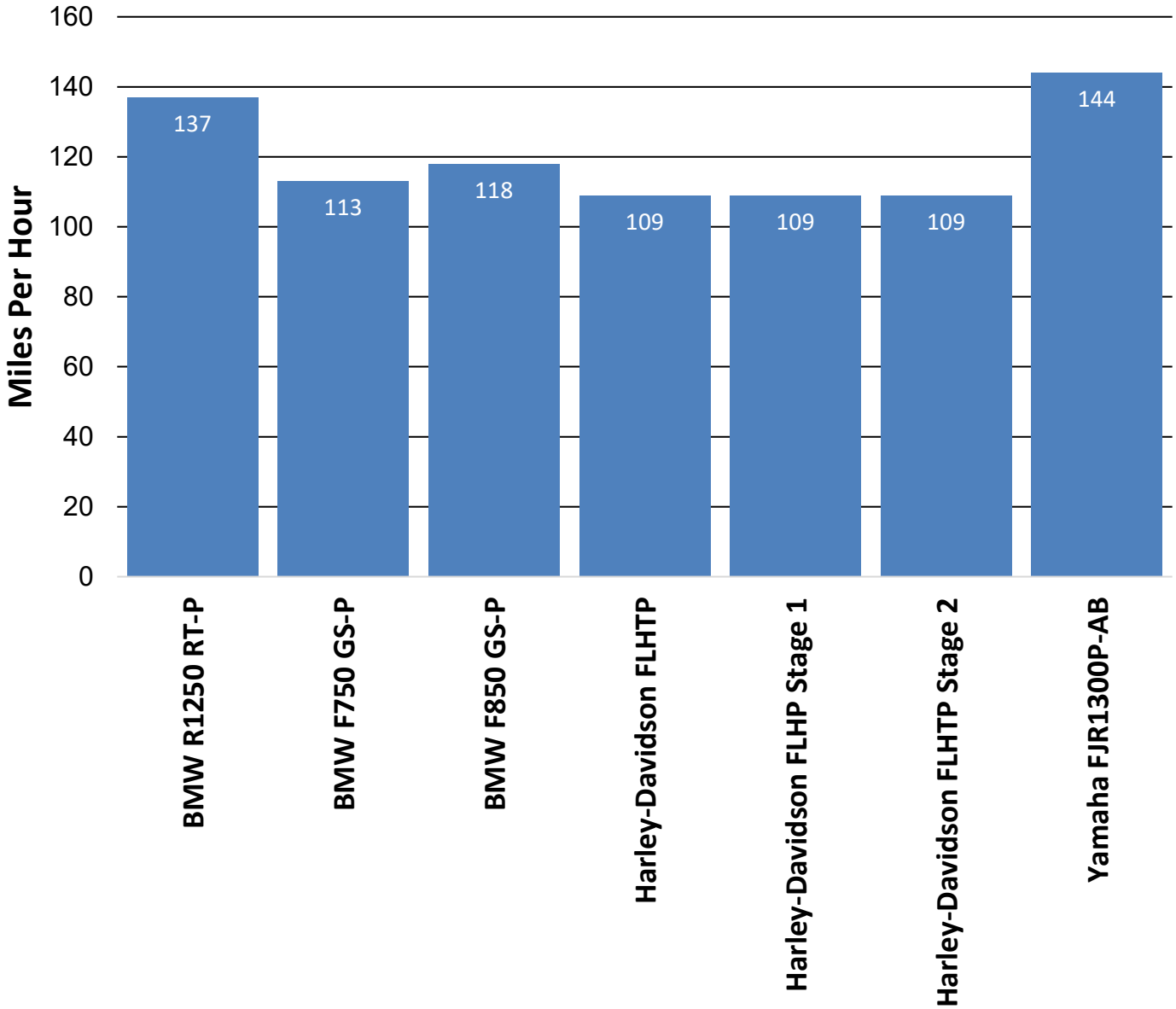
TOP SPEED ATTAINED: 144 mph

DISTANCE TO REACH TOP SPEED: 2.56 miles
TIME TO REACH TOP SPEED: 72.29 seconds

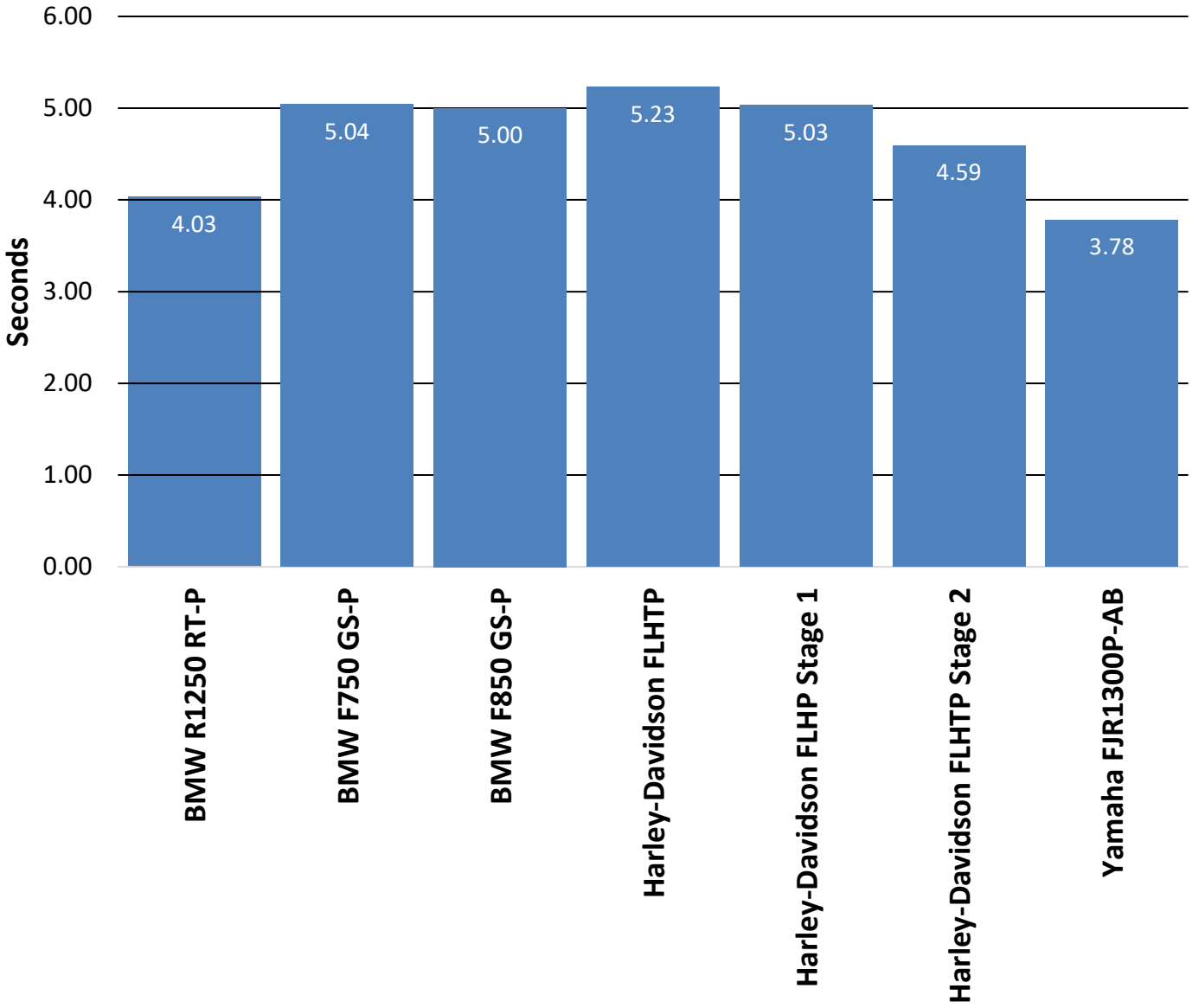
SUMMARY OF MOTORCYCLE ACCELERATION & TOP SPEED

	BMW R 1250 RT-P	BMW F 750 GS-P	BMW F 850 GS-P	Harley-Davidson FLHTP	Harley-Davidson FLHP Stage 1	Harley-Davidson FLHTP Stage 2	Yahama FJR1300 P-AB
ACCELERATION (seconds)							
0-20 mph	1.55	1.41	1.49	1.22	1.29	1.26	1.29
0-30 mph	2.14	2.15	2.20	1.86	1.92	1.87	1.91
0-40 mph	2.71	2.90	2.93	2.73	2.72	2.58	2.52
0-50 mph	3.36	3.87	3.87	3.81	3.82	3.58	3.10
0-60 mph	4.03	5.04	5.00	5.23	5.03	4.59	3.78
0-70 mph	4.90	6.53	6.48	6.88	6.74	6.05	4.72
0-80 mph	5.93	8.58	8.55	9.23	8.68	7.68	5.65
0-90 mph	7.18	11.39	11.41	12.47	11.87	10.22	6.98
0-100 mph	8.77	16.00	16.09	19.49	16.13	13.50	8.39
TOP SPEED (mph)	137	113	118	109	109	109	144
DISTANCE TO REACH (miles)							
100 mph	0.14	0.30	0.31	0.39	0.31	0.25	0.14
120 mph	0.30	N/A	N/A	N/A	N/A	N/A	0.27
Top Speed	4.72	1.79	1.50	0.80	0.63	0.40	2.56

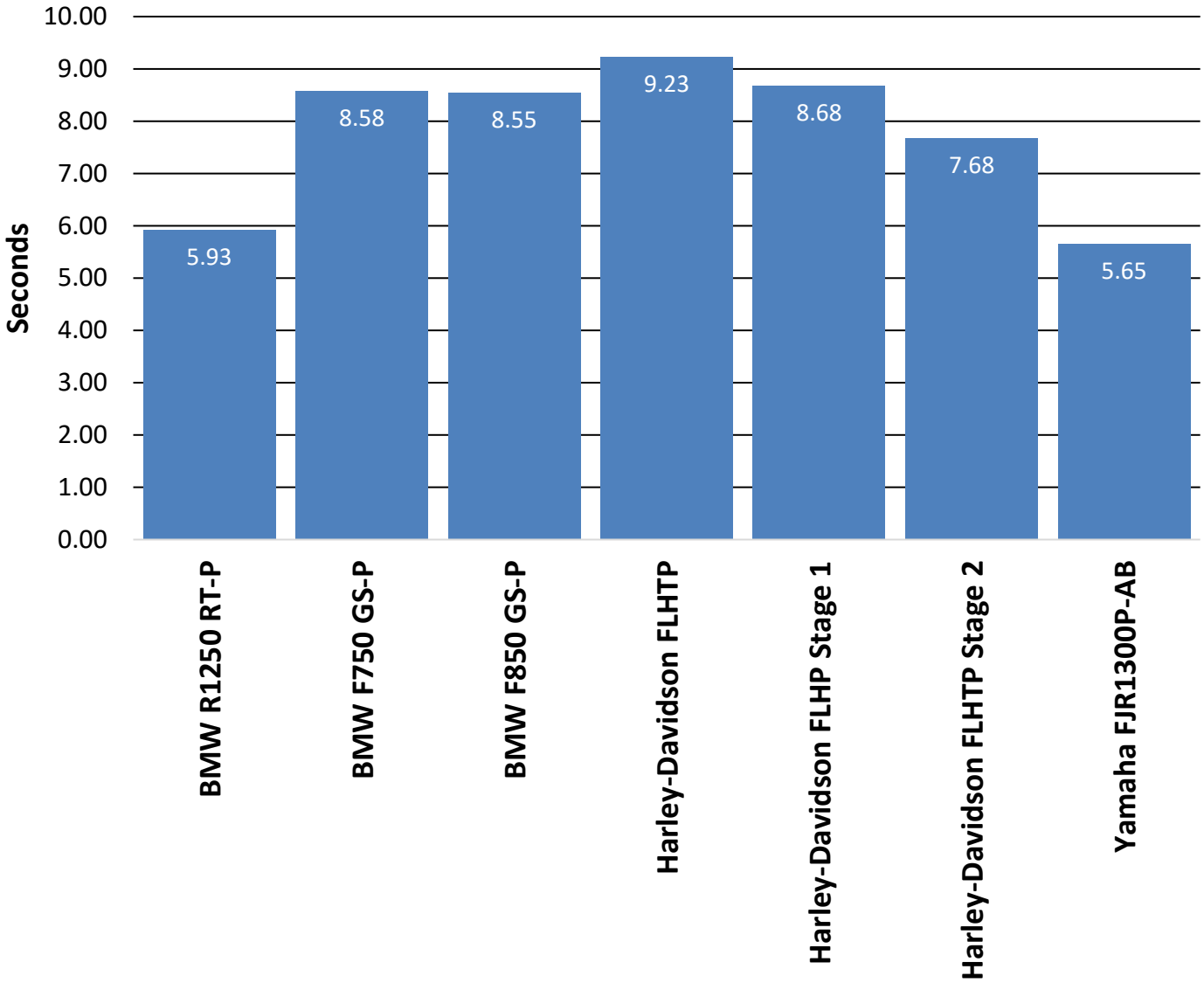
2019 Model Year
Motorcycle Top Speed Comparison
Top Speed Attained



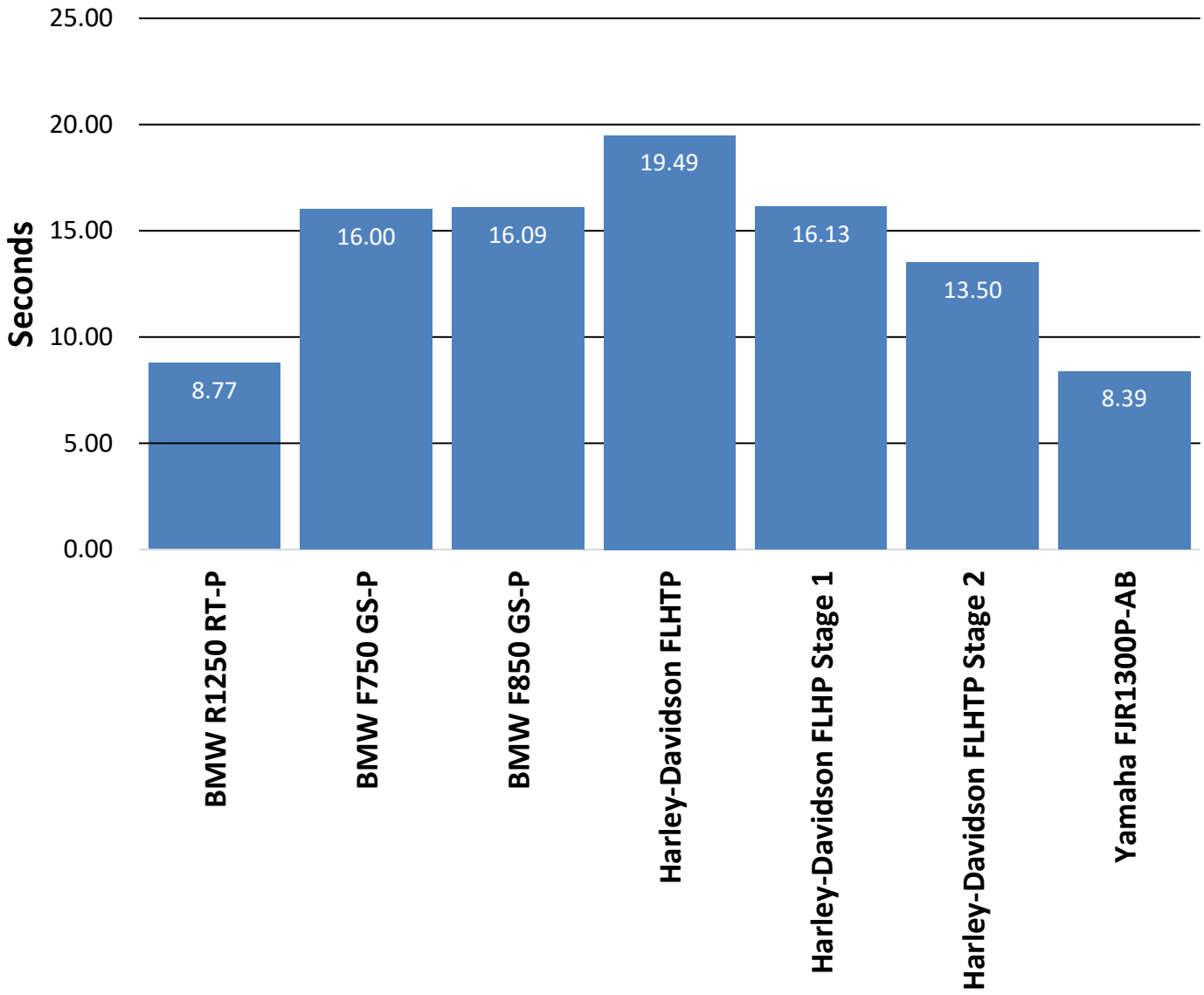
2019 Model Year
Motorcycle Acceleration Comparison
Acceleration Times
0-60 mph



2019 Model Year
Motorcycle Acceleration Comparison
Acceleration Times
0-80 mph



2019 Model Year
Motorcycle Acceleration Comparison
Acceleration Times
0-100



MOTORCYCLE BRAKE TESTING

BRAKE TEST OBJECTIVE

To determine the deceleration rate attained by each test motorcycle on twenty 60 – 0 mph full ABS maximum deceleration panic stops. Each motorcycle will be scored on the average deceleration rate it attains.

BRAKE TEST METHODOLOGY

Each motorcycle makes ten measured 60 – 0 mph full ABS maximum deceleration panic stops, at specific predetermined points. After a one-mile lap to cool the brakes, the entire sequence is repeated. The exact initial velocity at the beginning of each of the 60 – 0 mph decelerations, and the exact distance required to make each stop, is recorded by means of a Race Logic Vbox 3i GPS based data collection unit. The data resulting from the twenty total stops is used to calculate the average deceleration rate which is the motorcycle's score for this test. To ensure consistency, the same rider performs all the stops on every motorcycle.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity*(IV) squared}}{\text{2 times Stopping Distance (SD)}} = \frac{(IV)^2}{2\,(SD)}$$

EXAMPLE:

Initial Velocity = 89.175 ft/s (60.8 mph x 1.4667*)
Stopping Distance = 171.4 ft.

$$DR = \frac{(IV)^2}{2(SD)} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

Once a motorcycle's average deceleration rate has been determined, it is possible to calculate the approximate stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the motorcycle in question.

EXAMPLE: 60 mph = 88.002 ft/s x 88.002 = 7744.352 / 2 = 3872.176 / 23.198 ft/s^2 = 166.9 ft.

BRAKE TESTING

BMW R1250 RT-P

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 1:03 p.m.

AIR TEMPERATURE: 73° F	**TRACK SURFACE TEMPERATURE:** 88° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.70	131.10	29.24
2	58.80	128.20	29.01
3	59.00	125.50	29.83
4	60.80	132.50	30.01
5	62.10	136.00	30.50
6	59.70	129.90	29.51
7	60.20	130.90	29.78
8	60.30	129.10	30.29
9	60.50	132.10	29.80
10	60.90	136.90	29.14
AVERAGE DECELERATION RATE:			**29.71 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.00	130.30	29.72
2	60.30	133.20	29.36
3	59.50	129.10	29.50
4	60.00	127.90	30.28
5	60.10	132.40	29.34
6	59.70	129.60	29.58
7	60.00	132.40	29.25
8	59.50	130.00	29.29
9	60.40	131.50	29.84
10	59.90	132.00	29.24
AVERAGE DECELERATION RATE:			**29.54 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.63 ft/s²**

PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**130.7 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

BMW F750 GS-P

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 12:03 p.m.

AIR TEMPERATURE: 76° F	**TRACK SURFACE TEMPERATURE:** 88° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.80	141.70	28.06
2	58.30	120.20	30.41
3	59.00	125.90	29.74
4	58.70	122.80	30.18
5	60.20	135.60	28.75
6	59.70	125.60	30.52
7	60.10	128.90	30.14
8	58.30	123.40	29.63
9	60.60	133.80	29.52
10	No record due to data collection error		
AVERAGE DECELERATION RATE:			**29.66 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	57.70	125.40	28.56
2	59.70	132.60	28.91
3	59.70	127.80	30.00
4	60.20	137.50	28.35
5	58.90	131.30	28.42
6	61.10	135.90	29.55
7	59.30	124.10	30.48
8	60.20	135.60	28.75
9	59.80	128.60	29.91
10	59.90	130.40	29.60
AVERAGE DECELERATION RATE:			**29.25 ft/s²**

Phase II

OVERALL AVERAGE DECELERATION RATE:	**29.45 ft/s²**

PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**131.5 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

Refer to page 3 for further details*

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

BMW F850 GS-P

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 1:35 p.m.

AIR TEMPERATURE: 75° F	**TRACK SURFACE TEMPERATURE:** 93° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.50	136.80	28.78
2	58.60	133.00	27.77
3	58.60	130.00	28.41
4	60.20	126.50	30.81
5	59.50	124.50	30.59
6	59.30	136.70	27.67
7	59.30	134.00	28.23
8	59.20	131.50	28.67
9	59.00	140.60	26.63
10	57.70	128.50	27.87
AVERAGE DECELERATION RATE:			**28.54 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.90	135.30	28.52
2	59.20	130.00	29.00
3	57.20	126.30	27.86
4	59.30	131.40	28.79
5	57.60	121.00	29.49
6	60.60	138.20	28.58
7	59.30	128.30	29.48
8	59.80	130.30	29.52
9	59.10	124.50	30.18
10	59.80	131.20	29.32
AVERAGE DECELERATION RATE:			**29.07 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.81 ft/s²**

PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**134.4 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

Refer to page 3 for further details
All Motorcycles Tested are Equipped with Anti-Lock Brakes

BRAKE TESTING

Harley-Davidson FLHTP

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 12:54 p.m.

AIR TEMPERATURE: 72° F	**TRACK SURFACE TEMPERATURE:** 92° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.50	131.00	29.07
2	60.00	133.00	29.11
3	60.00	132.50	29.22
4	59.70	133.90	28.63
5	59.50	132.50	28.74
6	60.80	139.80	28.44
7	60.10	136.10	28.55
8	59.40	140.90	26.93
9	60.10	138.10	28.13
10	60.00	140.30	27.60
AVERAGE DECELERATION RATE:			**28.44 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.60	130.80	29.21
2	59.80	140.10	27.45
3	60.20	138.60	28.12
4	59.70	135.80	28.23
5	60.30	141.70	27.60
6	60.70	147.60	26.85
7	60.70	141.10	28.09
8	60.20	138.20	28.21
9	59.80	139.00	27.67
10	60.10	142.80	27.21
AVERAGE DECELERATION RATE:			**27.86 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.15 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**137.5 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Harley-Davidson FLHP Stage 1

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 12:18 p.m.

AIR TEMPERATURE: 71° F	**TRACK SURFACE TEMPERATURE:** 93° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.00	127.40	29.39
2	59.80	129.60	29.68
3	59.90	136.00	28.38
4	59.90	132.10	29.21
5	60.00	136.50	28.37
6	59.50	136.00	28.00
7	61.40	140.80	28.80
8	59.80	136.70	28.14
9	60.70	140.80	28.15
10	59.90	138.60	27.84
AVERAGE DECELERATION RATE:			**28.60 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.60	134.80	28.34
2	61.30	147.00	27.50
3	60.80	146.90	27.07
4	60.40	141.80	27.67
5	61.00	149.80	26.72
6	60.40	144.10	27.23
7	60.00	136.90	28.28
8	60.40	142.80	27.48
9	59.70	144.30	26.57
10	60.20	148.80	26.20
AVERAGE DECELERATION RATE:			**27.31 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.95 ft/s²**

PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**138.5 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Harley-Davidson FLHTP Stage 2

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 12:36 p.m.

AIR TEMPERATURE: 71° F	**TRACK SURFACE TEMPERATURE:** 96° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.40	132.00	28.75
2	60.00	133.60	28.98
3	60.30	135.50	28.86
4	60.50	139.40	28.24
5	60.40	142.60	27.52
6	59.90	135.70	28.44
7	60.60	140.80	28.05
8	60.50	144.30	27.28
9	Not recorded due to data collection error		
10	Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**28.27 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.20	131.60	29.62
2	60.40	144.90	27.08
3	60.50	142.90	27.55
4	60.20	141.30	27.59
5	60.40	142.70	27.50
6	60.60	142.00	27.82
7	60.40	139.20	28.19
8	60.90	148.00	26.95
9	Not recorded due to data collection error		
10	Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**27.79 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.03 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**138.2 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

*****All Motorcycles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Yamaha FJR1300P-AB

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 14, 2018	**BEGINNING TIME:** 12:42 p.m.

AIR TEMPERATURE: 72° F	**TRACK SURFACE TEMPERATURE:** 97° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.50	141.20	26.97
2	60.30	143.80	27.20
3	59.90	123.80	31.17
4	60.50	149.70	26.30
5	59.70	135.80	28.23
6	60.80	148.50	26.78
7	60.50	152.60	25.80
8	60.50	144.40	27.26
9	60.00	143.20	27.04
10	61.20	148.60	27.11
AVERAGE DECELERATION RATE:			**27.39 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.50	140.70	27.06
2	61.10	160.50	25.02
3	60.00	144.40	26.82
4	60.60	153.80	25.68
5	60.00	138.00	28.06
6	59.40	145.60	26.07
7	60.10	140.60	27.63
8	60.40	146.30	26.82
9	59.90	142.70	27.04
10	60.30	148.10	26.41
AVERAGE DECELERATION RATE:			**26.66 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.02 ft/s²**

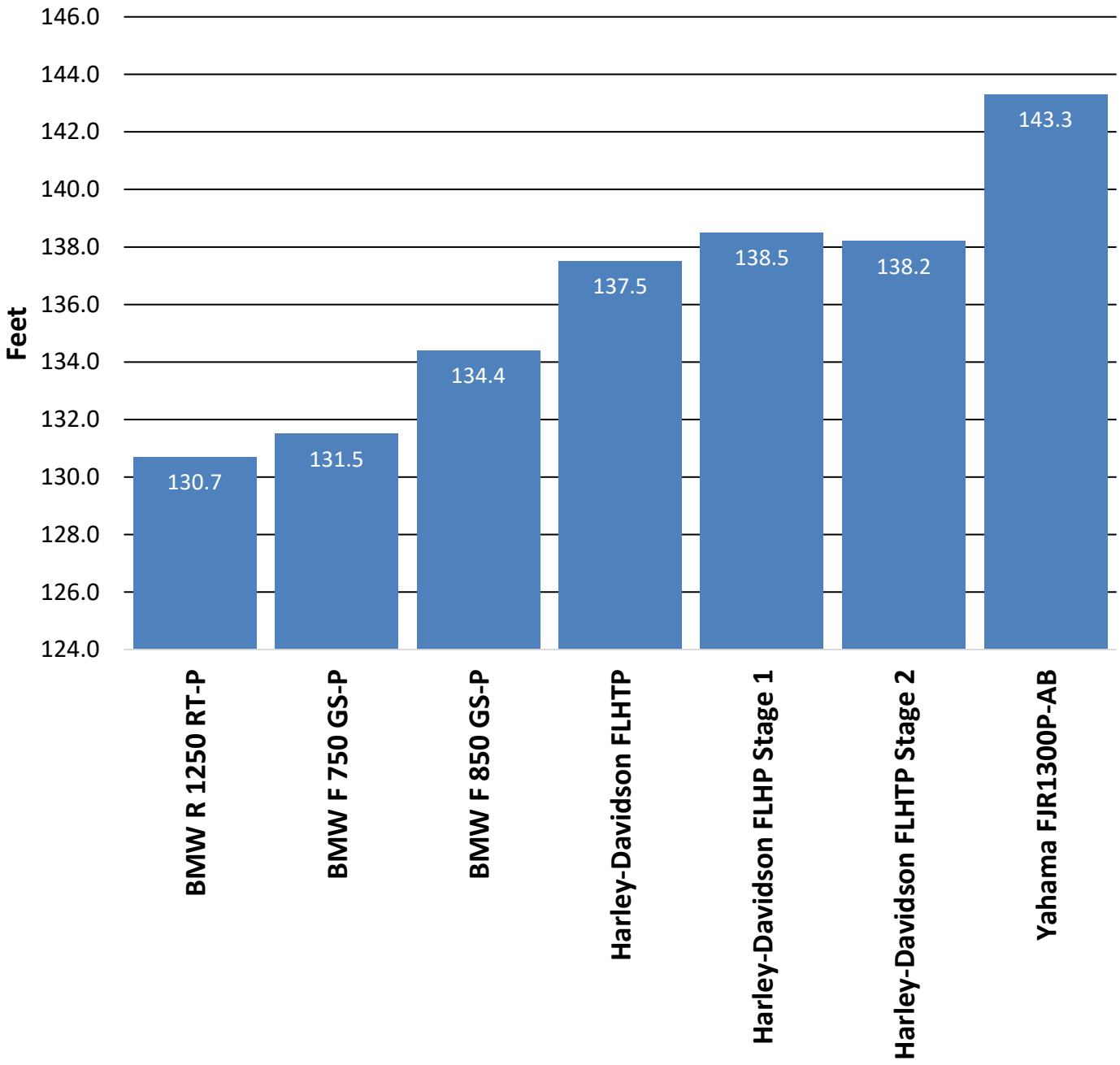
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**143.3 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

2019 Motorcycle Brake Testing

Projected Stopping Distance



For Your Information

About the National Institute of Justice

NIJ — the research, development, and evaluation agency of the U.S. Department of Justice - is dedicated to improving knowledge and understanding of crime and justice issues through science. NIJ provides objective and independent knowledge and tools to inform the decision-making of the criminal justice community to reduce crime and advance justice, particularly at the state and local levels.

NIJ's pursuit of this mission is guided by the following principles:

- Research can make a difference in individual lives, in the safety of communities and in creating a more effective and fair justice system.
- Government-funded research must adhere to processes of fair and open competition guided by rigorous peer review.
- NIJ's research agenda must respond to the real world needs of victims, communities, and criminal justice professionals.
- NIJ must encourage and support innovative and rigorous research methods that can provide answers to basic research questions as well as practical, applied solutions to crime.
- Partnerships with other agencies and organizations, public and private, are essential to NIJ's success.

The National Institute of Justice is committed to being a transformative force in the criminal justice field by meeting five strategic challenges:

1. **Fostering science-based criminal justice practice** - supporting rigorous scientific research to ensure the safety of families, neighborhoods, and communities.
2. **Translating knowledge to practice** - disseminating rigorous scientific research to criminal justice professionals to advance what works best in preventing and reducing crime.
3. **Advancing technology** - building a more effective, fair and efficient criminal justice system through technology.
4. **Working across disciplines** - connecting the physical, forensic and social sciences to reduce crime and promote justice.
5. **Bolstering the research infrastructure** - supporting young scholars, encouraging researchers from a broad array of disciplines to apply their work to criminal justice, and increasing the availability of research findings and data.
6. **Adopting a global perspective** - understanding crime in its social context within the U.S. and globally.

About the Standards and Testing Program

The NIJ Standards and Testing Program develops and publishes equipment standards that specifically address the needs of law enforcement, corrections, and other criminal justice agencies. The goal is to ensure to the degree possible that equipment is safe, reliable, and performs according to established minimum requirements.

NIJ standards are voluntary standards. Manufacturers are neither required nor mandated to follow them. They are also performance standards. They do not specify a particular solution, but rather define what a potential solution must accomplish.

Even though NIJ standards are not regulatory in nature, they are nevertheless influential because they articulate best practice. They obtain their influence from an agency's consideration of the legal or monetary penalties that may ensue as a consequence of a bad outcome resulting from not adopting a standard.

Having a standard provides the end user with performance information on key equipment characteristics, provides a level of confidence in a product's fitness for use and allows comparison of products based on standardized testing methods and minimum performance requirements.

NIJ standards are an articulation of the criminal justice practitioner's operational needs and associated performance levels with regard to particular tools and technology. They reflect the practical experiences of the community in the field articulated in such a way as to enable testing in a valid and consistently replicable manner.

NIJ also supports testing programs based on the standards.

For more information, please visit the NIJ website at http://www.nij.gov/topics/technology/standards-testing/Pages/welcome.aspx, or JUSTNET, the website of the Justice Technology Information Center, at https://www.justnet.org/compliant/Learn-about-testing.html. JTIC manages the Compliance Testing Program for NIJ>