

2015 Acura TLX Body Structure Review



URA

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> Honda R&D Americas, Inc.







Great Designs

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Introduction









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Designs







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Designs

Acura Vehicle Lineup









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History of the Acura TL Sedan TLX







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History of the Acura TL Sedan 71



Steel Matters



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History of the Acura TL Sedan TLX

Honda of America Manufacturing, Inc.







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Concept and Package 2015

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Acura Dynamic Concept













Balance of Performance and Luxury

Magnetic Dynamic Design

RED CARPET ATHLETE



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Interactive Experience



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Intuitive

TLX



2015 Acura TLX Concept





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PROPORTIONS that Offer an *Invitation*

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to Acura Performance & Prestige





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Proportion Changes





* Compared to Outgoing TL





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Proportion Changes



"Right Size" Package

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Dynamic Proportion



* Compared to Outgoing TL





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NO Sacrifice to Luxury Space







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Design Image 2015

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Low Wide Stance

Sloping Low Hood

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TLX





Designed Using CFD, Scale Tunnel & Real-world Coast-down Best in Class C_D*A





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Clean Appearance, Aero Benefit 72



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Intuitive Cargo Loading



Opening Width



Floor Length



Lift Over Height

User Friendly Cargo Area

Increased cargo capacity/usability

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Improved lift-over height





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Luxury Prestige



Cabin Comfort & Quietness

Dynamic Refinement



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THREE Levels of Performance

2.4L 2WD P-AWS *

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* Precision All-Wheel Steer

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** Super Handling All-Wheel Drive





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Body Concept & Materials

2015

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Body Concept & Development







Designs in Seminar

Body Component Commonality







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Optimized Body Structure for Performance

- 1 Next Gen ACE Body Construction for Crash Compatibility and Handling
- 2 Reinforced cabin for SICE / SOT

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3 Rigid IP Frame and SUS Mounting Points for Handling and NVH







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Material Type Application



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52% Advanced High Strength Materials





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Designs

Key Improvements in Body Structure, NVH, Crash Safety







TLX





Optimized Global Midsize Platform

Body Rigidity

Body Rigidity + Road Noise

Road Noise

(Targeted Stiffness Regions)







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Performance Achievement

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Body Rigidity for Static/Dynamic Performance

RR Damper

D

-12dB

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Mount Point Static Stiffness

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Body Rigidity for Static/Dynamic Performance





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Body Rigidity for Passenger Comfort Level





Designs

Body Construction Strategy



Hot Stamp Door Ring Stiffener

Stiff Ring Benefits

- Improved energy management by uninterrupted joints that transfers load more efficiently.
- 2 Improved door fit & finish by controlling front and rear door hinges on one part.
- 3 4.1 kg (9lbs) weight down by overall strength increase and eliminating weld flange overlaps.



12M TL = 4 Separate Welded Pieces

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15M TLX = 1 Piece, 1.4mm Thick

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Body Construction Strategy



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Cast Magnesium IP Frame Performance







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Optimized Body and Subframe Improve Driver Comfort

Front Axle Vibration as Felt by Driver



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Rear Axle Vibration as Felt by Driver



High Level Static and Dynamic Optimization provide ideal ride and handling properties





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Optimized Body, NV & Subframe Improve Driver Comfort



Low Frequency Drumming

- Torsional Rigidity Improved by 21 %
- Chassis Mounting Point Improved by 25 %
- Body Leak Improved by 50%

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A Stiffer Body, with Higher Isolation & Sealing, was Required to Balance TLX's NVH

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Best-in-Class Wind Noise

Wind Noise



Mid Frequency dBA



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Crash Safety 2015

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Complete Vehicle Safety Design

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Highest achievements in both consumer information testing & Honda requirements for vehicle-to-vehicle compatibility & pedestrian safety



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Crash Safety Performance



IIHS SICE Crash Achievement



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HIGHWAY SAFETY RESEARCH & COMMUNICATIONS



	Result	Judge
Survival Space	180mm	GOOD
Injury Measures	FR/RR	GOOD









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IIHS 4X Roof Crush Achievement

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* Benefit of SOT Pillar Structure creates large strength margin



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Crash Safety Performance



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Door Ring Crash Management

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Designs



Door Ring Crash Management



The Door Ring components with the Floor components better balance and distribute crash energy in a controlled manner

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IIHS Small Overlap Achievement

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[Crash Video]







IIHS Official SOT Achievement





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IIHS Small Overlap Test









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Overall Crash Safety Performance TLX

Item	Mode	14M TL	15M TLX
NHTSA	NCAP	Overall 4-Star	Overall 5-Star
IIHS	4 X Roof Crush	Good Roof Crush	Good Roof Crush
Top Safety Pick	Side Impact SICE	4x Curb weight Good Side Crash	4x Curb weight Good Side Crash
TOP SAFETY PICK	Rear Crash Protection (whiplash)	Good Rear Crash	SUV 50 km/h Good Rear Crash
INSURANCE INSTITUTE FOR HIGHWAY SAFETY	Front Crash • Small Overlap Test • 40% ODB	Good Small Overlap Test	Active freat lest Active freat lest Small Overlap Test
TSP+	Crash Avoidance		15M TLX: ADV: CMBS Tech: FCW
Ped	lestrian Protection	$\begin{array}{c} \text{GTR HEAD} \\ \text{HIC} \leq 1000 \ \ 66\% \\ \text{HIC} \leq 1700 \ \ 100\% \end{array}$	GTR HEAD HIC ≤ 1000 66% HIC ≤ 1700 100%

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Designs



- 2015 TLX Vehicle Design adapts "Smart Proportions" to absorb outgoing packages of the TSX & TL
- Body Concept and Structure significantly improved global and local stiffness and isolation to deliver high performance targets for:
 - Capable Dynamic Response for the demands of three powertrain / drivetrain packages
 - Significant NVH Achievement for a best in class balanced cabin environment
- Body Structure applies 60% AHSS in targeted areas to achieve Acura crash safety goal of Top Safety *Pick* **/** while also shaving 25kg (55lbs)





Great Designs

in





THANK YOU FOR YOUR ATTENTION



