ConsuLab
TRAINING AIDS
4210 rue Jean-Marchand, Quebec, QC G2C 1Y6, Canada
Phone: 418 688 9067 / 800 567 0791 / 810 222 4525 (USA)
Fax: 418 843 3444 / Email: info@consulab.com

EM-130 (52793)

SUSPENSION AND STEERING TRAINER

The ConsuLab EM-130 Suspension and Steering trainer is designed to assist instructors in teaching basic alignment geometry and the function of a MacPherson strut suspension system with rack & pinion steering. The trainer is extremely versatile in that students can easily visualize all component operation as well as practice adjusting the various alignment angles. The trainer is equipped with two movable turntables and a magnetic alignment measuring gauge to assist students in observing actual measurement and changes in alignment angles. Students can also visualize and learn common braking system components. The EM-130 trainer consists of a typical front wheel drive vehicle having MacPherson strut suspension, rack & pinion steering and front disc brakes. The components necessary for correct operation and service of alignment angle adjustments and component identification are included. The potential danger of the MacPherson spring pressures have been eliminated by replacing the stock coil spring with a custom plastic coil spring that does not support any of the weight of the suspension system. The lower control arm and support bushings are OEM.

The sway bar has been designed with a quick disconnect feature that allows students to disconnect it for easy and precise alignment adjustment procedures. The rack and pinion steering linkage is connected to a steering wheel identical to actual vehicle configuration. The tie-rod ends are equipped with typical adjustment methods for the adjustment of toe specifications. The trainers frame has three manual adjustment features that allow students to create abnormal vehicle conditions such as uneven front or rear loading, worn springs, etc. The trainer also features adjustment plates at the top of both MacPherson strut assemblies which allow easy adjustment of caster and camber. The tires sit on movable plates for ease of movement during adjustments. The trainer can also be used for student learning of front wheel bearing and hub construction as well as the disc brake system based on a 2012-2018 Hyundai Accent.

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SUSPENSION AND STEERING TRAINER

Educational Advantages

The EM-130 trainer can be used to provide students with the following educational outcomes:

- Provides full accessibility of vehicle components without access limitations of a real vehicle
- Alignment demonstrations, measurement and adjustments can be accomplished with clear viewing by students
- Component identification of a typical MacPherson strut suspension system
- Component identification of a typical rack & pinion steering system
- Component identification of a typical sway & stabilizer bar
- Front bearing hub and wheel bearing service
- Make, measure and observe changes of Caster, Camber and Toe

The EM-130 trainer can be used for student identification of a typical disc brake system. Students can practice the following brake tasks:

- Wheel & tire service
- Brake caliper and rotor service
- Rotor (T.I.R.) runout and thickness measurements
- Brake condition inspection

The EM-130 trainer can be used for the instruction and practice of common MacPherson strut and rack & pinion steering service procedures including:

- Rack removal and reinstallation
- Inner & outer tie rod service
- Strut and ball joint service

The trainer allows superior component visualization and allows actual measurement of camber, caster and SAI using the included magnetic gauge. Students can easily make adjustments and view the results of the changes.

Students can also view the following alignment concepts on the trainer:

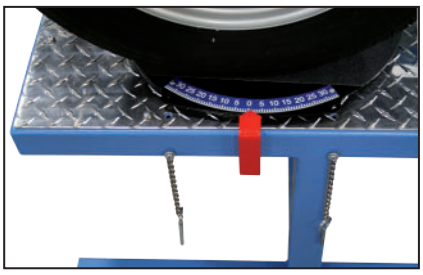
- SAI (STEERING AXIS INCLINATION)
- TOTAL INCLUDED ANGLE
- SIDE-TO-SIDE DIFFERENCES IN CASTER, CAMBER AND TOE.

Technical Information

Dimensions: 72 x 34 x 66 in (183 x 86 x 168 cm)

Shipping Weight: 650 lb (192 kg)

based on a 2012-2018 Hyundai Accent



GRADUATED TURNTABLE
WITH LOCKING PINS

OPTIONAL MAGNETIC CAMBER/CASTER GAUGE
WITH STORAGE CASE

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NATEF TASKS FOR THE EM-130 SUSPENSION AND STEERING TRAINER

MLR - MAINTENANCE & LIGHT REPAIR

Manual Drive Train & Axles

III-D-1 Inspect, remove, and replace front wheel drive (FWD) bearings, hubs, and seals. P-2

Steering & Suspension

IV-B-1 Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. P-1
IV-B-8 Inspect tie rod ends (sockets), tie rod sleeves, and clamps. P-1
IV-B-15 Inspect and replace front stabilizer bar (sway bar) bushings, brackets, and links. P-1
IV-B-16 Inspect strut cartridge or assembly. P-1
IV-B-17 Inspect front strut bearing and mount. P-1
IV-C-1 Perform prealignment inspection and measure vehicle ride height; determine necessary action. P-1
IV-D-1 Inspect tire condition; identify tire wear patterns; check for correct size and application (load and speed ratings) and adjust air pressure; determine necessary action. P-1
IV-D-2 Rotate tires according to manufacturer's recommendations. P-1
IV-D-5 Inspect tire and wheel assembly for air loss; perform necessary action. P-1

Brakes

V-A-3 Install wheel and torque lug nuts. P-1
V-D-1 Remove and clean caliper assembly; inspect for leaks and damage/wear to caliper housing; determine necessary action. P-1
V-D-2 Clean and inspect caliper mounting and slides/pins for proper operation, wear, and damage; determine necessary action. P-1
V-D-3 Remove, inspect, and replace pads and retaining hardware; determine necessary action. P-1
V-D-4 Lubricate and reinstall caliper, pads, and related hardware; seat pads and inspect for leaks. P-1
V-D-5 Clean and inspect rotor, measure rotor thickness, thickness variation, and lateral runout; determine necessary action. P-1
V-D-6 Remove and reinstall rotor. P-1

AST - AUTOMOTIVE SERVICE TECHNICIAN

ALL OF THE TASKS ABOVE FROM MLR PLUS THE FOLLOWING:

Steering & Suspension

IV-B-7 Remove and replace rack and pinion steering gear; inspect mounting bushings and brackets. P-2
IV-B-8 Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots; replace as needed. P-2
IV-C-2 Diagnose strut suspension system noises, body sway, and uneven ride height concerns; determine necessary action. P-1
IV-C-6 Inspect, remove and install steering knuckle assemblies. P-3
IV-C-9 Inspect, remove and install front stabilizer bar (sway bar) bushings, brackets, and links. P-3
IV-C-10 Inspect, remove and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount. P-3
IV-E-1 Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action. P-1

MAST - MASTER AUTOMOTIVE SERVICE TECHNICIAN

Steering & Suspension

IV-B-7 Remove and replace rack & pinion steering gear; inspect mounting bushings and brackets. P-2
IV-B-8 Inspect rack & pinion steering gear inner tie rod ends (sockets) and bellows boots; replace as needed. P-2
IV-B-17 Inspect, replace and adjust tie rod (sockets) ends, tie rod sleeves and clamps. P-1
IV-C-1 Diagnose strut suspension systems, body sway, and uneven ride height concerns; determine necessary action. P-1
IV-C-3 Inspect, remove and install upper and lower control arms, bushings, shafts and rebound bumpers. P-3
IV-C-6 Inspect, remove and install steering knuckle assemblies. P-3
IV-C-9 Inspect, remove and install front stabilizer bar (sway bar) bushings, brackets and links. P-3
IV-C-10 Inspect, remove and install strut cartridge or assembly, strut coil spring, insulators (silencers) and upper strut bearing mount. P-3
IV-E-1 Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action. P-1
IV-E-2 Perform pre-alignment inspection and measure vehicle ride height; perform necessary action. P-1
IV-E-4 Check toe-out-on-turns (turning radius); determine necessary action. P-2
IV-E-5 Check SAI (steering axis inclination) and included angle; determine necessary action. P-2