



**U.S. Customs and
Border Protection**

N350620

July 24, 2025

OT:RR:NC:N4:410

CATEGORY: Origin

Keith Hwang
Keith J Hwang CHB
3701 Sacramento Street ,MB113
San Francisco, CA 94118

RE: The country of origin of an electronic pneumatic lumbar support system

Dear Mr. Hwang:

In your letter dated June 25, 2025, you requested a country of origin ruling on an electronic pneumatic lumbar support system on behalf of your client, Leggett & Platt Automotive (Korea) LLC. (LPA Korea)

The merchandise under consideration is referred to as the "JK1 PE 7CELL Electronic Pneumatic Lumbar Support System (7CELL)". You state that the 7CELL is a vehicle seat subassembly, which will be integrated into and fully enclosed in vehicle seats to be installed in certain passenger vehicle models and trims. Positioned inside the lower (lumbar) portion of the vehicle seat's backrest, the 7CELL will be permanently attached to the seat frame with fasteners, connected via the 7CELL's air pump cable to a vehicle power source, and wired via its Electronic Control Unit (ECU) wire to an exterior touch panel accessible to the seat occupant.

You present the following manufacturing process scenario, in which the plant in south Korea uses the South Korean-origin components and the Chinese-origin components to manufacture the 7CELLs in South Korea. By value, approximately 70% of the 7CELL's components is sourced from and manufactured by suppliers located in Korea.

The components imported from China are: air pump fitted with an electric motor, spring loaded air tube and coated wire for connection to a power source, PET (polyurethane) cut-to-size air cells or bladders, plastic air tubes, copper solenoid valves with matching plastic seals for incorporation into the ECU, and several plastic clips to be used when the 7CELL is installed at the U.S. vehicle seat OEMs.

The plant(s) in South Korean will make the following components, then combines the components imported from China to make the finished 7CELLs. You described the assembly process in South Korea as follows:

ECU manufacture and programming

Upon receipt of the specifications and input to produce and program ECUs to be used in vehicle model-specific 7CELL units, the plant uses surface mount technology (SMT) to position a microcontroller,

transceiver, and other components onto a bare printed circuit board (PCB), loads the vehicle specific firmware onto the microcontroller, adds the eight copper solenoid valves and rubber seals to the PCB, and uses a plastic container to encase the PCB assembly. Using a barcode on each PCB, the ECUs are tracked, labeled and packaged according to the vehicle model and trim for which they are intended.

Wire suspension frame manufacture

The wire suspension frame is designed to soften the feel of the 7CELL against the occupant's back. Raw uncut wire and coated wire—both manufactured in South Korea from South Korean steel—are fed into a wire bending machine that is programmed by LPA Korea to cut and bend the coated wires into two vertical supports and to cut, bend-tie horizontal “cross” wires onto the two vertical wires.

Component assembly

The 7CELL assembly process includes both manual and semi-automated sub-processes—soundproofing, tubing, and fastening—all of which are performed at LPA Korea's Busan plant. First, the wire suspension frame, ECU, air pump, air tubes, bladders and other components must be encased or covered with a non-woven, soundproofing fabric (referred to as “wallpaper” on the BOM) that is supplied by a local, South Korean industrial fabric manufacturer. As with the ECU and the wire suspension frame, the fabric pieces must be produced to the size and shape specifications of a vehicle seat for a particular vehicle model. Note that prior to this soundproofing, another support wire (called a “middle wire”) is punch-clamped to the suspension frame, which is then encased by gluing a pre-cut soundproofing fabric to each side.

After soundproofing, the various components are manually tied to the suspension frame using plastic cable ties at precise locations as indicated on a position map specific to a particular vehicle model and trim. The two plastic “bolster” bladders are each encased in a plastic bladder shell (manufactured in South Korea by injection molding), which is created by manually bolting an upper and lower bolster casing together.

A tubing machine is used to attach a plastic plug and socket to the air pump tubes. Before attaching the ECU to the suspension frame, the loose ends of the seven air cell tubes are attached to the ECU valves with a separate tubing machine. This tubing machine applies consistent force to ensure a full seating of the tubes onto the valve stems. This step is critical to the functionality of the system as it ensures leak-free pneumatic communication between the ECU and each air cell. Any misalignment or incomplete sealing would result in system failure or inconsistent lumbar support. The ECU is then tied to the suspension frame to complete the assembly process.

Quality control and validation testing

Once finished, each 7CELL unit must undergo a quality control (QC) process to ensure full functionality and structural reliability. This process is critical in verifying that the product conforms to design specifications and performance requirements.

Each unit is connected to an End-of-Line (EOL) inspection machine that supplies electrical power to the system. The ECU is initialized and diagnostic signals are checked to confirm firmware integrity and electrical continuity across pump activation and valve switching circuits.

The system is commanded via a Controlled Area Network (CAN) to inflate all seven air bladders sequentially. Each bladder is monitored to confirm that it meets target inflation volume and inflation time.

A trained quality control technician manually inspects each inflated bladder for air retention (no visible deflation over a defined interval) and seam integrity (no material splitting, cracks, or visible deformation). The technician also performs tactile testing by applying controlled pressure to the bladders to detect hidden leaks or weak spots. See EOL testing images.

Using a barcode system, each unit is given a pass/fail determination. Units that pass all tests are tagged with a QC sticker and logged into a traceability system. Failed units are routed to a rework station with documented defect codes and disposition instructions.

When determining the country of origin, the substantial transformation analysis is applicable. See, e.g., Headquarters Ruling Letter (“HQ”) H301619, dated November 6, 2018. The test for determining whether a substantial transformation will occur is whether an article emerges from a process with a new name, character, or use different from that possessed by the article prior to processing. See Texas Instruments Inc. v. United States, 681 F.2d 778 (C.C.P.A. 1982). This determination is based on the totality of the evidence. See National Hand Tool Corp. v. United States, 16 C.I.T. 308 (1992), aff’d, 989 F.2d 1201 (Fed. Cir. 1993).

In order to determine whether a substantial transformation occurs when components are assembled into completed products, all factors such as the components used to create the product and manufacturing processes that these components undergo are considered in order to determine whether a product with a new name, character, and use has been produced. No one factor is decisive, and assembly/manufacturing operations that are minimal will generally not result in a substantial transformation.

This office has reviewed the submitted materials and is of the opinion that a significant number of parts and components are produced in South Korea, the manufacturing process, including the making of PBCAs via SMT process is sufficiently “complex and meaningful”, in which the non South Korean-origin components are substantially transformed when they are used in the production of the finished products, such that these components lose their individual identities and become an integral part of a new article, possessing a new name, character, and use. Therefore, the country of origin of the 7CELL will be South Korea, China Section 301 remedies do not apply.

The holding set forth above applies only to the specific factual situation and merchandise description as identified in the ruling request. This position is clearly set forth in Title 19, Code of Federal Regulations (“CFR”), Section 177.9(b)(1). This section states that a ruling letter is issued on the assumption that all of the information furnished in the ruling letter, whether directly, by reference, or by implication, is accurate and complete in every material respect. In the event that the facts are modified in any way, or if the goods do not conform to these facts at time of importation, you should bring this to the attention of U.S. Customs and Border Protection (“CBP”) and submit a request for a new ruling in accordance with 19 CFR 177.2. Additionally, we note that the material facts described in the foregoing ruling may be subject to periodic verification by CBP.

This ruling is being issued under the provisions of Part 177 of the Customs and Border Protection Regulations (19 C.F.R. 177).

A copy of the ruling or the control number indicated above should be provided with the entry documents filed at the time this merchandise is imported. If you have any questions regarding the ruling, please contact National Import Specialist Michael Chen at michael.w.chen@cbp.dhs.gov.

Sincerely,

(for)

James Forkan
Acting Director
National Commodity Specialist Division