IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

WILDCAT LICENSING WI LLC, *Plaintiff,* v. FORD MOTOR COMPANY, *Defendant.*	Civil Action No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Wildcat Licensing WI LLC ("Plaintiff") brings this action and makes the following allegations of patent infringement relating to U.S. Patent Nos. RE47,220 (the "'220 Patent") and RE47,232 (the "'232 Patent" and collectively, the "Patents-in-Suit"). Defendant Ford Motor Company ("Defendant" or "Ford") infringes each of the Patents-in-Suit in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq*.

INTRODUCTION

1. The Patents-in-Suit encompass core technology in the field of assembling articles of manufacture. The Patents-in-Suit arose from the research and development efforts of Michael A. Walt, II and Samuel A. Walt, through their company LMS-Walt, Inc. ("LMS-Walt"). The Walts founded LMS-Walt in 1994 and pioneered innovative assembly line fixtures, controls, and quality control testing systems.

2. Michael A. Walt, II has over three decades of experience in the field of assembly. During LMS-Walt's approximately 15 years in business, he served as the company's Chief Technical Officer and was directly involved in the design, manufacture, and sale of all of its innovative products. In the early days of the company, he also served as a mechanical and controls

designer and engineer, and was responsible for installing and validating the equipment LMS-Walt sold into customer's facilities. Samuel A. Walt is also an experienced designer of assembly systems, including with regard to their mechanical operation and function.

3. From the inception of LMS-Walt through early 2001, the Walts observed that existing assembly systems could not ensure proper fastening because they could not eliminate operator error from the fastening process. Articles of manufacture including automotive transmissions, suspensions, door panels, chassis, engines, instrument panels, and seats are assembled by connecting various components together with fasteners, such as screws or bolts. Existing assembly systems counted the number of fasteners applied by a line operator but could not verify, for example, that the operator applied the fasteners in the correct sequence.

4. The Patents-in-Suit explain the problems with then-existing assembly systems:

> To achieve high volume assembly and to keep conveyor lines short, typically several different screws are fastened by a single worker at a given assembly station along the line. For example, a common arrangement is a seat assembly station where several screws are installed into the seat requiring a predetermined applied torque of the same value. This system includes a mechanism that keeps a seat at a station until the desired number of torque values is achieved with the torque reaction arm that is equal to the number of screws being installed.
>
> *While the torque reaction arm is capable of providing an indication of driven torque, this type of system can be easily tricked or subject to failure.* In particular, if the worker of the torque reaction arm drives the same screw twice he can accidentally provide two torque values for one screw. In repetitive work operations requiring several tasks at a single assembly station, workers can forget which screw has been properly fastened or otherwise make an accidental error in fastening the same screw twice. The result is that one or more screws have been improperly fastened despite the total number of torque values has been achieved for the station (thereby allowing release of the seat from the station for further downstream assembly).
>
> Even without mistakes, some workers have been known to intentionally bypass or trick existing systems. In particular, there have been instances where a worker drives a screw, then reverses the same screw and then refastens that same screw at the same location to get more than one good output value at the same location to in effect trick the system. Workers have even been known to drive a screw mounted in a panel proximate the assembly station to intentionally bypass or

trick the system. The cause of these problems is difficult to understand but it may include worker frustration or fatigue with respect to properly fastening screws into a seat.

5. The Walts conceived their invention in 2001 and filed their first patent application on the invention later that same year. The Patents-in-Suit solve the long-felt need for a way to conduct critical fastening operations in a mass-assembly environment in a reliable, error-proof manner. The Patents-in-Suit teach an assembly method and system that ensure that the fasteners are fastened with the correct torque and in the right sequence.

6. Today, what the Patents-in-Suit refer to as "fool-proof" fastening is referred to as "error-proof" fastening in the industry. Industry publications widely recognize the need for assembly systems to control both the torque and the fastening sequence of fasteners when components are assembled together in a mass-assembly environment. For example:

- *Quality in Assembly: Controller Aids in Setting Up Error-Proofing Applications*: "Any line that relies on manual assembly requires error-proofing technology" so that "[e]ngineers are guided through a series of menus that define the control logic, sensing locations and operation sequence" (https://www.assemblymag.com/articles/86585-quality-in-assembly-controller-aids-in-setting-up-error-proofing-applications).

- *Specify a Torque & Tightening Sequence for Critical Fastening Joints*: "The majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the

preload generated by the first bolt tightened" (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

- *The Assembly Show* industry conference, October 23-25, 2018, Rosemont, IL, including a workshop entitled "Technology for Error-Proofing Automated Assembly" (https://www.assemblymag.com/the-assembly-show/agenda).

7. Tooling suppliers to the industry also tout that their tooling controls both the torque applied to the fasteners and the fastening sequence. For example:

- *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0* at 11, providing an assembly station with tool control for "[m]aking sure your tool is performing correct tightenings for your assembly" (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf)

- *Mountz, EZ-Glider Position Control Torque Arms*, providing a "torque arm . . . designed to reduce the risk of improperly fastened screws, ensuring that every screw is . . . correctly tightened in the correct sequence" (https://www.mountztorque.com/Product-Type/Power-Assembly-Tools/Power-Assembly-Torque-Arms/Position-Control-Torque-Arms).

- *Advanced Manipulator, The Locator™ Smart Arm*, providing a torque arm that "[e]liminates assembly errors – only operates if the correct sequence is chosen" (https://advancedmanipulator.com/torque-arms-smart-arms.html).

- *ESTIC, Handheld Nutrunner: Tracer Arm*, providing tooling that ensures that "different tightening torques are defined in the tightening order and the tightening part, eliminating operator mistakes and providing high traceability by associating tightening torque with tightening position (coordinates)" (http://www.estic.co.jp/products/product_en.php?ac_id=detail&id=22&targ=toku).

8. Underscoring the importance of the technology taught by the Patents-in-Suit is the fact that they or their related, predecessor publications have been cited by dozens of U.S. and international patent applications in the field.

9. For example, General Motors' Patent Application Publication Nos. 2009/0158579 and 2011/0023280 cited the predecessor patents to the Patents-in-Suit on July 13, 2011 and February 27, 2013, respectively. General Motors filed the latter patent application in 2009, which acknowledged, years after the priority date of the Patents-in-Suit, the importance and value of "error-checking in the automobile assembly process":

> There is a need for additional error-checking in the automobile assembly process. The automobile assembly process requires joining hundreds to thousands of components, in a precise manner, into the final product. Imprecise assembly leads to loss of time, money, and convenience for the manufacturer and the consumer. For the manufacturer, time and expense is lost in repairing the defectively joined components during the warranty period. For the consumer, time and convenience are lost when defectively joined components are repaired under warranty. Moreover, defectively joined components have a shorter than expected life span.

10. As another example, a predecessor patent to one of the Patents-in-Suit was cited on June 23, 2006 in U.S. Patent Application Publication No. 2005/0223533. On information and belief, this patent application was owned by a subsidiary of Navistar International Corporation. On information and belief, in 2001, Ford and Navistar International Corporation formed a joint venture to build commercial trucks, which remained in place until 2014. This patent application, filed years after the priority date of the Patents-in-Suit, acknowledged that "[i]mproving vehicle

assembly line processes presents many challenges to manufacturing engineers and technicians. One of these is the process of installing bolts and nuts."

11. The Walts' groundbreaking error-proofing technology in the field of assembly has been widely adopted in the industry without license to the Patents-in-Suit. LMS-Walt ceased operations in 2008 as a result of declining revenues in the face of this infringement.

THE PARTIES

WILDCAT LICENSING WI LLC

12. Plaintiff is a limited liability company organized and existing under the laws of the State of Wisconsin.

13. Plaintiff acquired the Patents-in-Suit to pursue the monetary damages owed for Defendant's use of the inventions claimed by the Patents-in-Suit.

FORD MOTOR COMPANY

14. On information and belief, Defendant Ford is a corporation organized and existing under the laws of the State of Delaware with a principal place of business located at One American Road, Dearborn, MI 48126. Defendant can be served with process through its registered agent, The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, DE 19801.

JURISDICTION AND VENUE

15. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

16. This Court has personal jurisdiction over Defendant in this action because Defendant has committed acts within Delaware giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Defendant would not

offend traditional notions of fair play and substantial justice. Defendant has purposefully availed itself of the benefits and protections of Delaware state law by incorporating in Delaware. In addition, Defendant, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has offered to sell and sold in this District products that Defendant has manufactured by infringing the Patents-in-Suit.

17. Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b).

THE PATENTS-IN-SUIT

18. The ’220 Patent, entitled *Method for Monitoring Proper Fastening of an Article of Assembly at More Than One Location*, was filed on February 6, 2017, and claims priority to November 19, 2001. A true and correct copy of the ’220 Patent is attached hereto as Exhibit 1.

19. Plaintiff Wildcat is the owner by assignment of all right, title, and interest in the ’220 Patent.

20. The ’232 Patent, entitled *Assembly System for Monitoring Proper Fastening of an Article of Assembly at More Than One Location*, was filed on March 7, 2017, and claims priority to November 19, 2001. A true and correct copy of the ’232 Patent is attached hereto as Exhibit 2.

21. Plaintiff Wildcat is the owner by assignment of all right, title, and interest in the ’232 Patent.

22. The Patents-in-Suit are narrowing reissues of original U.S. Patent Nos. 7,062,831 (the “’831 Patent”) and 6,763,573 (the “’573 Patent”), respectively.

23. Claims 22-28 of the original ’831 Patent were challenged in *inter partes* review (“IPR”) proceeding IPR2014-00305, and claims 24 and 25 of the original ’573 Patent were challenged in IPR2014-00304. At the conclusion of these IPR proceedings, the Patent Trial and

Appeal Board ("PTAB") held the challenged claims of the original patents invalid. On appeal, the Federal Circuit affirmed the PTAB's decisions without opinion.

24. Subsequently, the patent owner filed narrowing reissue applications in order to correct errors in the original patents that led to their invalidation. During the reissue proceedings, the patent owner amended the claims to claim more explicitly the novel and non-obvious improvements disclosed in the Patents-in-Suit, and to distinguish them from the prior art. All of the prior art at issue in the IPR proceedings was cited to the patent examiner in the reissue proceedings.

25. A three-judge panel of the PTAB reversed the examiner's rejections of the reissue claims in a pair of decisions issued on August 23, 2018. Subsequently, the United States Patent and Trademark Office duly and legally issued the '220 Patent on February 5, 2019 and the '232 Patent on February 12, 2019. As such, both the PTAB and the examiner allowed the Patents-in-Suit to issue over all of the prior art used to invalidate the challenged claims of the original patents.

DEFENDANT'S INFRINGING ACTS

26. On information and belief, Defendant is engaged in the business of assembling and selling in the United States, and/or assembling overseas for importation into the United States, automobiles and/or components thereof.

27. On information and belief, Defendant manufactures automobiles and component parts thereof in at least the following United States facilities:

Plant Name	Address	Defendant's Automobiles
Flat Rock Assembly Plant	1 International Dr. Flat Rock, Michigan 48134	Ford Mustang, Lincoln Continental
Chicago Assembly	12600 S Torrance Ave. Chicago, Illinois 60633	Ford Explorer, Lincoln Aviator

Plant Name	Address	Defendant's Automobiles
Dearborn Truck	3001 Miller Rd. Dearborn, Michigan 48120	Ford F-150
Kansas City Assembly	8121 NE 69th Hwy. Claycomo, Missouri 64068	Ford F-150, Ford Transit
Kentucky Truck Plant	3001 Chamberlain Ln. Louisville, Kentucky 40241	Ford Super Duty, Ford Expedition & Expedition EL/Max, Lincoln Navigator & Navigator L
Louisville Assembly Plant	2000 Fern Valley Rd. Louisville, Kentucky 40213	Ford Escape, Lincoln Corsair
Michigan Assembly Plant	37625 Michigan Ave. Wayne, Michigan 48184	Ford Ranger, Ford Bronco (2020)
Ohio Assembly	650 Miller Rd. Avon Lake, Ohio 44012	Ford F-650, Ford Super Duty (Chassis Cab)

28. On information and belief, Defendant also manufactures automobiles or component parts thereof in facilities outside of the United States for importation into the United States, including at least the Ford Edge, Flex, Fusion, Transit Connect, and Focus RS, and multiple Lincoln models.

29. On information and belief, Defendant manufactures and sells more than approximately 2.5 million automobiles per year in the United States. *See* https://www.automobilemag.com/news/u-s-auto-sales-totaled-17-25-million-calendar-2017/.

30. On information and belief, each of Defendant's automobiles includes multiple articles of assembly, including but not limited to a transmission, suspension, at least two door panels, chassis, engine, instrument panel, and at least two seats.

31. As explained in detail below, on information and belief, Defendant assembles each of Defendant's articles of assembly by joining one or more pairs of components together with fasteners, such as screws or bolts. For each pair of components the assembly of which is accused

of infringement herein, Defendant sets two design requirements. The first requirement is a sequence by which at least first and second fasteners must be inserted within the components to join the components together to reduce the risk of structural failure that would result if the sequence were not followed. The second requirement is that each fastener must be applied with the correct torque as the sequence is followed to reduce the risk of structural failure that would result if the second fastener were inserted before the first fastener was correctly fastened. Hereafter, "Defendant's Assembly Operations" and "Defendant's Assembly Systems" shall refer to Defendant's operations and systems, respectively, for joining components of these articles of assembly together according to these sequence and torque requirements.

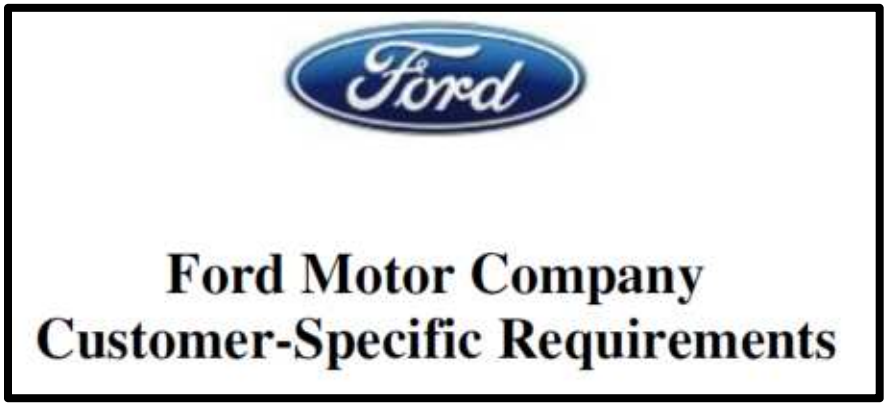
COUNT I
INFRINGEMENT OF U.S. PATENT NO. RE47,220

32. Plaintiff references and incorporates by reference all of the preceding paragraphs of this Complaint as if fully set forth herein.

33. On information and belief, Defendant infringes at least claim 31 of the '220 Patent, by using Defendant's Assembly Operations to manufacture automobiles and component parts thereof in the United States as well as overseas for importation into the United States.

34. On information and belief, Defendant's Assembly Operations perform error free fastening or error-proofing automated assembly to assemble together two components of an article of assembly such as, for example, an automotive transmission, suspension, door panel, chassis, engine, instrument panel (e.g., air bag assembly), and/or seat (e.g., a seat back to a seat track in a marriage station, cushion pads to seat tracks, seat tracks to risers, and/or recliners to seat backs) to prevent operator error, ensure safety, and prevent liability and costly automobile recalls. On information and belief, Defendant's Assembly Operations form multiple such assemblies for each automobile.

35. Defendant's documentation identifies that Defendant utilizes "error and/or mistake proofing techniques integrated into the organization's manufacturing and material handling processes":



Inverted Delta parts

For parts designated as inverted delta (parts with Critical Characteristics), the organization shall prevent the shipment of non-conforming product to Ford.

Note: this is typically accomplished by using error and/or mistake proofing techniques integrated into the organization's manufacturing and material handling processes.

Parts without inverted delta designation

An error proof approach is recommended for all parts, not just parts designated as inverted delta.

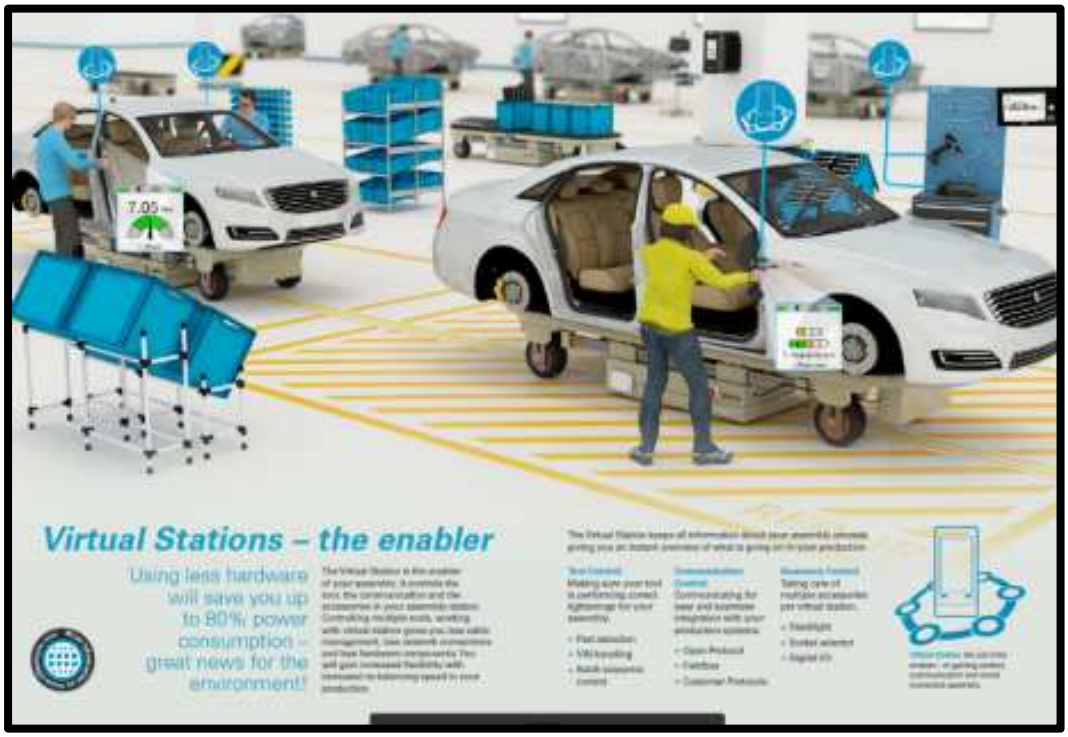
Ford Motor Company Customer-Specific Requirements, at 9 (https://www.iatfglobaloversight.org/wp/wp-content/uploads/2016/12/Ford_Specifics_for_PPAP.pdf).

36. Industry publications also refer to the need for error-proofing technology. For example, *Quality in Assembly: Controller Aids in Setting Up Error-Proofing Applications*, indicates that "[a]ny line that relies on manual assembly requires error-proofing technology" such that "[e]ngineers are guided through a series of menus that define the control logic, sensing locations and operation sequence" (https://www.assemblymag.com/articles/86585-quality-in-assembly-controller-aids-in-setting-up-error-proofing-applications).

37. On information and belief, Defendant's Assembly Operations use tooling, alone or in combination with tooling from one or more suppliers, to assemble the components of the article of assembly in a manner that infringes at least claim 31 of the '220 Patent. For example, on

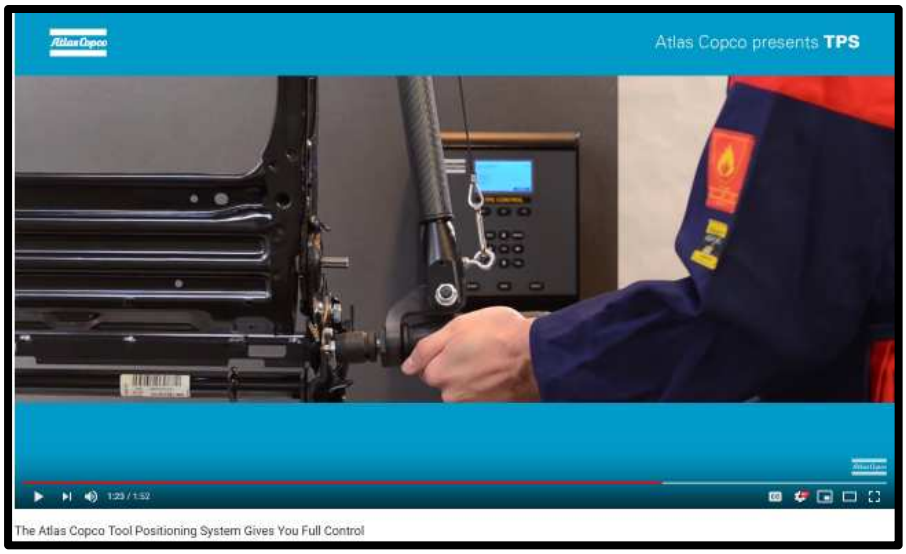
information and belief, Defendant's Assembly Operations use Atlas Copco tooling to assemble the components of the articles of assembly. *See*: *Smart Connected Assembly Roadshow – Valiant/Ford* (https://www.atlascopco.com/en-ca/events/assembly-road-show-valiant-ford).

38. Atlas Copco provides tooling for a "Virtual Station" that "keeps all information about your assembly process" and "[m]ak[es] sure your tool is performing correct tightenings for your assembly":



Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0" at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf).

39. Atlas Copco provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners:



The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning); *see also*, https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Error-proofing-solutions/Tool-location-system.

40. On information and belief, Defendant's Assembly Operations use Mountz tooling to assemble the components of the articles of assembly. *See*: *Mountz The Torque Tool Specialists®, Corporate Clients* (https://www.slideshare.net/BMountz/1705-mountz-profile2) (identifying "Ford Motor Company" as a Mountz client).

41. Mountz provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. For example, Mountz documentation explains the need to utilize a specific tightening sequence to fasten critical components because "[t]he majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened." *Specify a*

Torque & Tightening Sequence for Critical Fastening Joints (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints). *See also, Ensure Screws are Correctly Tightened in the Correct Sequence with Position Control Torque Arm* (https://www.mountztorque.com/learning-center/video/ensure-screws-are-correctly-tightened-correct-sequence-position-control-torque).

42. Mountz provides, for example, a "position control torque arm system [that] helps manufacturers detect and eliminate costly screw-fastening errors during the assembly process. This torque arm is designed to reduce the risk of improperly fastened screws, ensuring that every screw is . . . correctly tightened in the correct sequence. A good tightening sequence ensures that an even preload distribution is achieved in the joint. Using a position control arm is like putting the eyes and ears of a quality control manager where they are needed most - right on the assembly area."

https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm; *see also* https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-posi-control-telescoping-torque-arm.

43. On information and belief, Defendant's Assembly Operations use Advanced Manipulator tooling to assemble the components of the articles of assembly. *See* https://advancedmanipulator.com/about-clientele.html (identifying "Ford Motor Co" as a client).

44. Advanced Manipulator provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. *See*, for example, *The Locator™ Smart Arm*, which "[e]liminates assembly errors – only operates if the correct sequence is chosen":

https://advancedmanipulator.com/torque-arms-smart-arms.html.

45. On information and belief, Defendant's Assembly Operations use ESTIC tooling to assemble the components of the articles of assembly. *See* http://www.estic.co.jp/en/company/customer_list/index.html (identifying Ford Motor Company as a customer).

46. ESTIC provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. *See*, for example, the "*Handheld Nutrunner: Tracer Arm,*" which defines "different tightening torques . . . in the tightening order and the tightening part, eliminating operator mistakes and providing high traceability by associating tightening torque with tightening position (coordinates)":

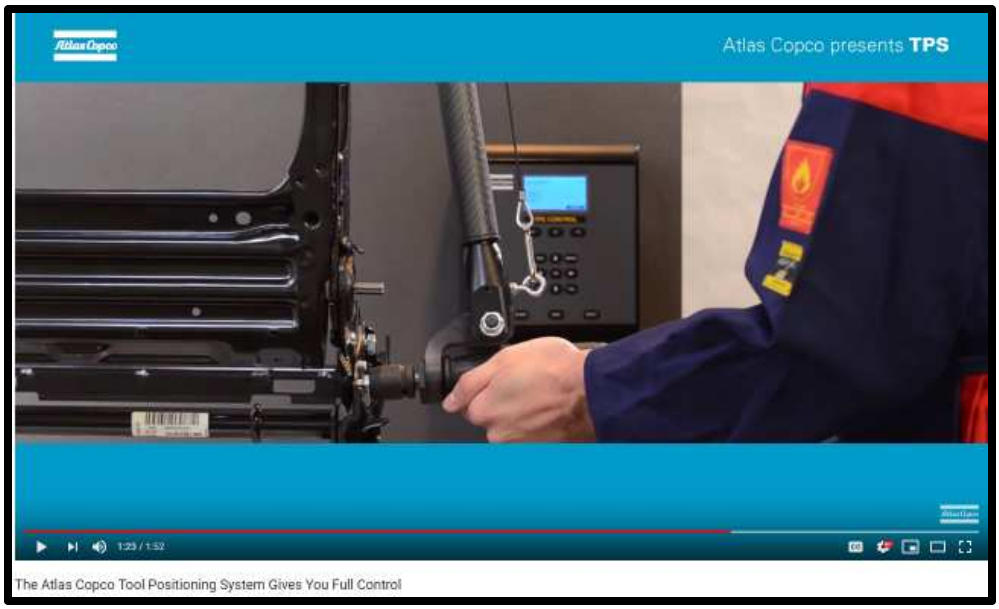
http://www.estic.co.jp/products/product_en.php?ac_id=detail&id=22&targ=toku.

47. Defendant provides at least first and second physically separate components that, when assembled together by Defendant's Assembly Operations, form at least a portion of the article of assembly. As explained above, an operator performing error-proof fastening uses an assembly station to assemble together two components of an article of assembly such as, for example, an automotive transmission, suspension, door panel, chassis, engine, instrument panel (e.g., air bag assembly), and/or seat (e.g., a seat back to a seat track in a marriage station, cushion pads to seat tracks, seat tracks to risers, and/or recliners to seat backs). *See, e.g.*: *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=

1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

48. On information and belief, Defendant's Assembly Operations join the first and second physically separate components. These components have a single set of discrete portions that, when placed together, form a single process site consisting of a plurality of fastening locations within the single process site including first and second fastening locations. Adjacent surfaces of the two components are placed together to form the single process site consisting of the plurality of fastening locations. For example, as explained above, the error-proof fastening "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0*" at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). In addition, "[t]he majority of joints consist of more than one bolt . . ." (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

49. On information and belief, each of the first and second fastening locations of Defendant's first and second physically separate components consists of a single opening for receiving a single fastener that, when fastened in the single opening by Defendant's Assembly Operations, partially assembles the first and second components together. For example, when a bolt is fastened into one of two available holes, this fastening partially assembles the components together. *See*:



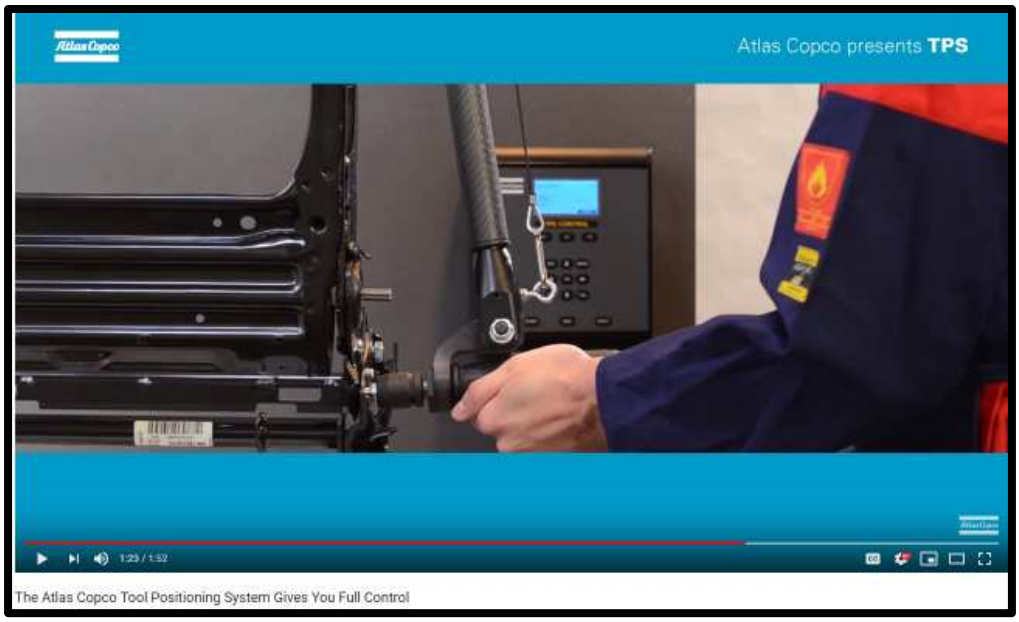
The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

50. On information and belief, each pair of components of Defendant's articles of assembly is structurally designed so that the first and second fastening locations are positioned within the single process site in spaced apart relation to each other such that Defendant's Assembly Operations must insert a fastener in the first fastening location before a fastener is inserted in the second fastening location to reduce the risk of structural failure of the assembled combination of the first and second components that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. Defendant's structural design for each pair of components of Defendant's articles of assembly determines a fastening sequence to be followed by Defendant's Assembly Operations for all of the fasteners joining the two components for the first process site. During assembly, Defendant's Assembly Operations follow this fastening sequence. For example, as explained above, the error-proof fastening "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco,*

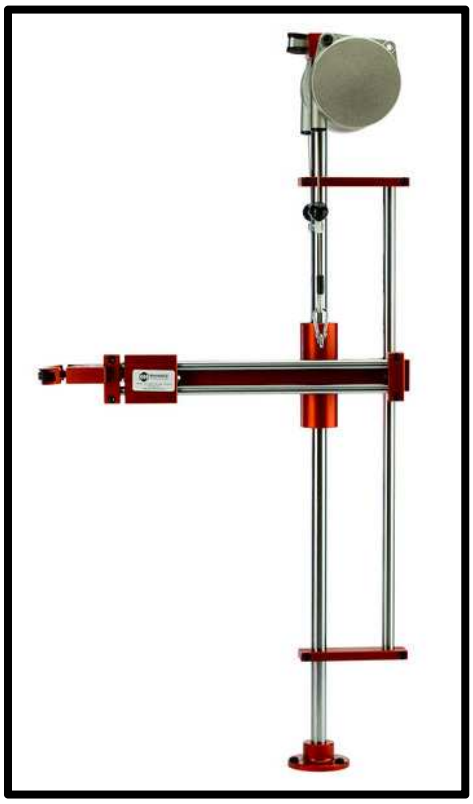
Smart Connected Assembly, Empowering the vision of Industry 4.0 at 11 (https://www.atlascopco.com/content/dam/atlascopco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). The particular tightening sequence must be followed because "[t]he sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened" (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

51. On information and belief, Defendant's Assembly Operations hold the first and second components of the article of assembly in a predetermined position in which the first and second components are placed together to form the single process site. For example, *see*: *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

52. On information and belief, an operator for Defendant's Assembly Operations manually fastens fasteners into the first and second fastening locations of the article of assembly using a fastening tool. The tooling can include, for example, a torque arm:



https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning.



https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm; *see also* https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-posi-control-telescoping-torque-arm.

https://advancedmanipulator.com/torque-arms-smart-arms.html.

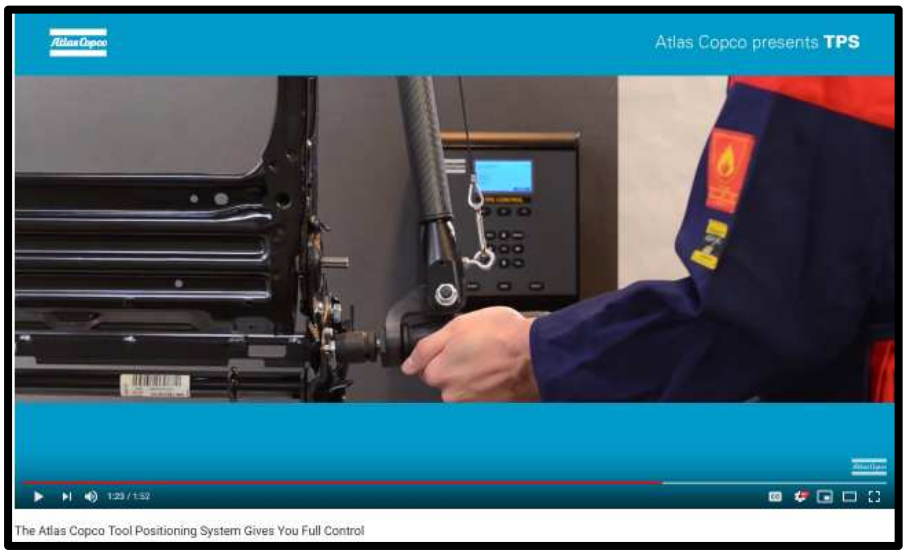
http://www.estic.co.jp/products/product_en.php?ac_id=detail&id=22&targ=toku.

53. On information and belief, Defendant provides an electronic controller having stored in a memory thereof before an operator for Defendant's Assembly Operations has commenced manually fastening fasteners using the fastening tool (a) data representative of the location of the first fastening location within the single process site together with first order data

indicating that a fastener must be inserted in the first fastening location at a point in time before a fastener is inserted in the second fastening location, and (b) data representative of the location of the second fastening location within the single process site together with second order data indicating that a fastener must be inserted in the second fastening location at a point in time after a fastener has been inserted in the first fastening location, wherein the location data and the first and second order data for the first and second fastening locations form a predetermined fastening sequence that must be followed in order for the first and second components to be assembled together in a manner that reduces the risk of structural failure of the assembled combination that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. For example, Defendant provides an electronic controller, and the following data is stored in memory of the electronic controller before the operator for Defendant's Assembly Operations commences manually fastening fasteners using the fastening tool: location data (*e.g.*, three-dimensional data, x, y, z) for each one of the individual fastening locations within the first process site, and data indicative of a predetermined fastening sequence for the fastening locations. Defendant's Assembly Operations ensure that the predetermined fastening sequence is followed by the operator when the fastening tool is used to assemble the components. Doing so reduces the risk of an incorrect assembly that could lead to structural failure of the assembly. For example, as explained above, the error-proof fastening "keeps all information about your assembly process" and "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0* at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrialtechnique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). The particular tightening sequence must be used because "[t]he majority of joints consist of more than one bolt

and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened" (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

54. On information and belief, Defendant provides one or more sensors for sensing the position of the fastening tool. For example, when the operator for Defendant's Assembly Operations moves the fastening tool, which can be mounted on the end of a reaction arm, the one or more sensors generate signals that allow the control system to compute the position of the operating end of the fastening tool.



The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

55. On information and belief, Defendant's Assembly Operations electronically compare the sensed position of the fastening tool with the data representative of the location of the

first and second fastening locations to determine if the fastening tool is located in operative relation to one of the first and second fastening locations and then use the order data associated with the one of the first and second fastening locations to ensure the operator's use of the fastening tool conforms to the predetermined sequence of fastening among the first and second fastening locations by (a) enabling the fastening tool, when it is positioned in operative relation to the first fastening location, to insert a fastener in the first fastening location only if the operator has not inserted a fastener in the second fastening location, and (b) enabling the fastening tool, when it is positioned in operative relation to the second fastening location, only if the operator already has inserted a fastener in the first fastening location, which reduces the risk of structural failure of the assembled combination that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. When the fastening tool is positioned in operative relation to a particular fastening location, Defendant's Assembly Operations consult the stored order data to ensure that the operator's use of the fastening tool conforms to the predetermined fastening sequence. For example, "[w]ith visual feedback on the display, the correct sequence and position are guaranteed." "A blue display lets you know the tool is in the right position":

(https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning)

"The solid green display says the job is done with the right torque and the correct sequence":

Id.

"A red display alerts when the tool is out of position":

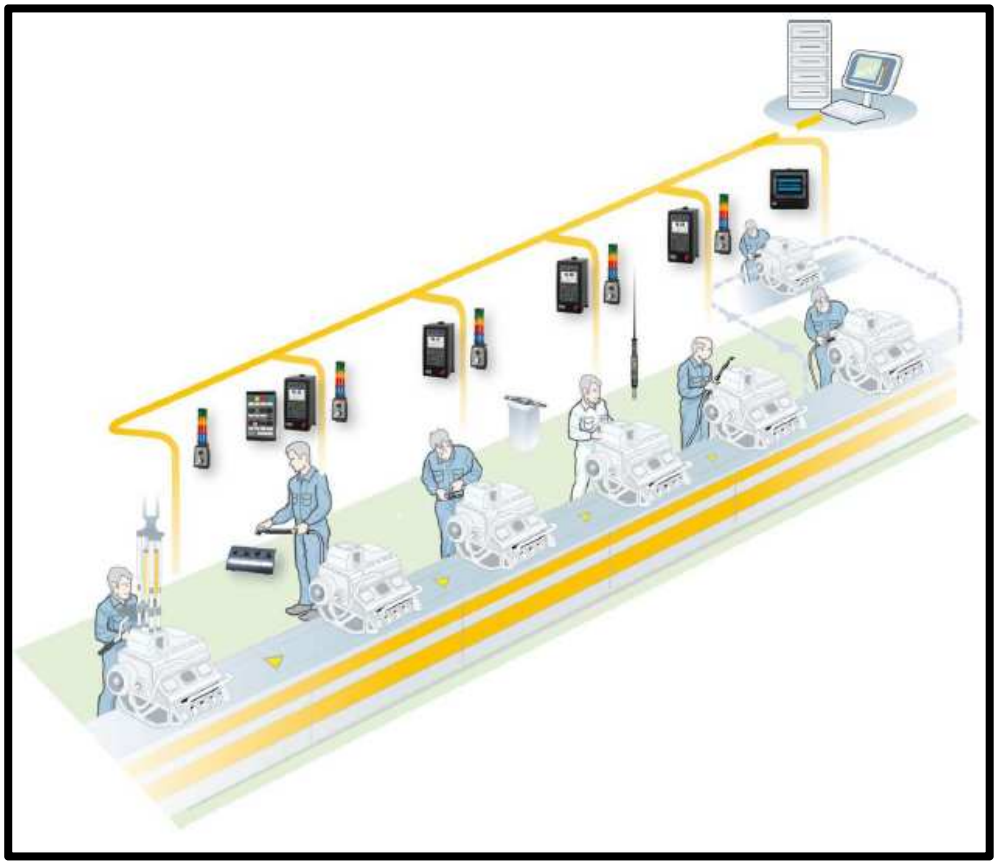
Id.; see also, https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence").

Provided that the operator's use of the fastening tool conforms to the predetermined fastening sequence, Defendant's Assembly Operations enable the fastening tool. *Id*. Requiring the operator's use of the fastening tool to conform to the predetermined fastening sequence reduces the risk of structural failure of the assembly that would arise if the predetermined fastening sequence were not followed. For example, *see*: *Specify a Torque & Tightening Sequence for Critical Fastening Joints* (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints) ("The majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened.").

56. On information and belief, Defendant's Assembly Operations provide a sequence output each time that the operator attempts to fasten a fastener in one of the first and second fastening locations indicating whether the predetermined fastening sequence has been achieved. For example, as explained in the immediately preceding paragraph, each time the operator attempts to fasten a fastener in a fastening location, Defendant's Assembly Operations enable the fastening tool when the predetermined fastening sequence is followed. A sequence output is provided each time the operator attempts to fasten a fastener (e.g., "[t]he solid green display says the job is done with the right torque and the correct sequence" and "[a] red display alerts when the tool is out of position," and indicating that the tool is enabled or disabled depending on whether the predetermined fastening sequence is followed). *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at

https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

57. On information and belief, Defendant's electronic controller also has stored in its memory first and second predetermined torque values that represent torque values that the operator for Defendant's Assembly Operations is supposed to apply to fasteners inserted in the first and second fastening locations when the operator's use of the fastening tool conforms to the predetermined sequence of fastening. For example, a "programmed Job function automatically selects the correct tightening sequence and parameters" to assemble an object having "bolts that require different torque values":



Job example

The figure to the right shows an example of an object with bolts that require different torque values:

Four bolts that require a torque of: 39 Nm

Three bolts that require a torque of: 70 Nm

One bolt that requires a torque of: 88 Nm

For this example three different Psets have to be created:

- Pset1: final target 39 Nm
- Pset2: final target 70 Nm
- Pset3: final target 88 Nm

By combining the Psets in the above example, the following Job list is created (see table below).

PF	Pset	Pset name	Batch size	Max cohered NOK
1	1	Pset1	4	3
1	2	Pset2	3	-
1	3	Pset3	1	-

The Job in this example is performed by one single PF. "Batch size" means the number of times the tightening should be repeated with the same Pset. JOB OK is signaled when all tightenings within the Job have been performed correctly.

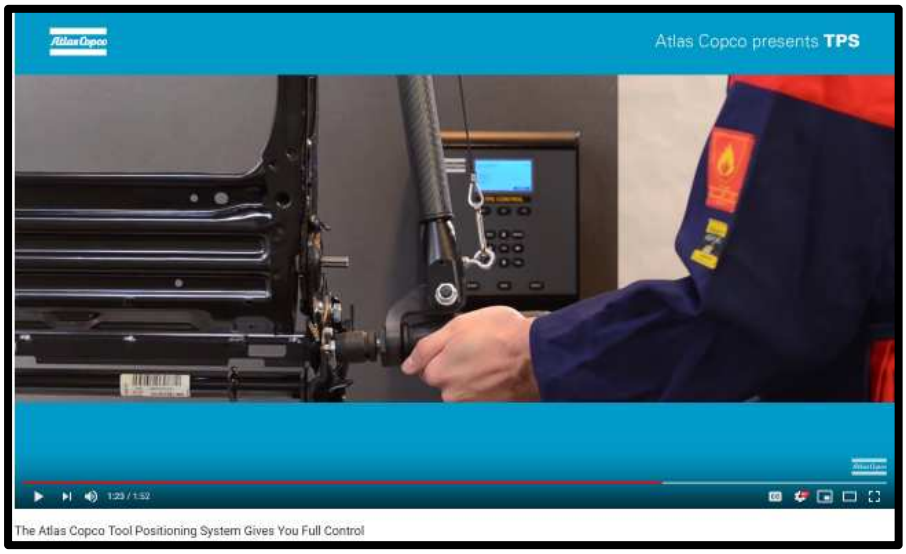
If *P153 or M206 Max coherent NOK's*, or *P151 or M203 Batch size* are used for the Psets or Multistages included in the Job, these settings are ignored by the Job setting. The same is true for other Job settings.

If the torque controller is powered off before the completion of the Job, the Job is lost.

Atlas Copco User guide Power Focus at 17, 18 and 118 (http://www.edlosales.com/9836312301_109_SR3.pdf); *id*. at 117 ("The Job function is advantageous when an object has bolts or screws that require different torque and angle values for tightening."); *id*. at 124 (exemplary display indicative of the job status); *see also*, *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo ("The solid green display says the job is done with the right torque and the correct sequence"); https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence"); https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm (the tooling "[s]ecure[s] the assembly process by ensuring that every screw is in the correct location at the right torque" and "[d]etects - cross threading, omissions, unfinished rundowns and cycle complete").

58. On information and belief, when the operator for Defendant's Assembly Operations uses Defendant's fastening tool in conformance with the predetermined sequence of fastening, Defendant's Assembly Operations (a) measure torque applied to a fastener by the fastening tool as it is being fastened in the first fastening location and then compare the measured torque to the first predetermined torque value, (b) require that the torque applied to the fastener located in the first fastening location equal the first predetermined torque value before the operator is allowed to insert a fastener in the second fastening location, which reduces the risk of structural failure of the

assembled combination that would result if the operator were allowed to insert a fastener in the second fastening location when the torque applied to the first fastener does not equal the first predetermined torque value, (c) measure torque applied to a fastener by the fastening tool as it is being inserted in the second fastening location and then compare the measured torque to the second predetermined torque value, and (d) require that the torque applied to the fastener located in the second fastening location equal the second predetermined torque value after the first fastener has been inserted in the first fastening location at the first predetermined torque value, which reduces the risk of structural failure of the assembled combination that would result if the operator were allowed to complete assembly of the first and second components when the torque applied to the fastener inserted in the second fastening location did not equal the second predetermined torque value. For example, as explained above, Defendant's Assembly Operations ensure on a fastener-by-fastener basis that the correct torque is applied to each fastener:



The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

After each fastening of a fastener, "[t]he solid green display says the job is done with the right torque and the correct sequence":

> *Id.*; *see also*, https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence"); *Specify a Torque & Tightening Sequence for Critical Fastening Joints* (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints) ("The majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened.").

59. By using Defendant's Assembly Operations to manufacture automobiles and component parts thereof in the United States, as well as overseas for importation of such automobiles and component parts thereof into the United States, Defendant has injured Plaintiff and is liable to the Plaintiff for directly infringing one or more claims of the '220 Patent, including at least claim 31, pursuant to 35 U.S.C. §§ 271(a) and 271(g).

60. Defendant also indirectly infringes the '220 Patent by actively inducing infringement under 35 U.S.C. § 271(b), including by way of instructing suppliers to practice the claimed invention. *E.g.*, *Ford Motor Company Customer-Specific Requirements*, at 9

(https://www.iatfglobaloversight.org/wp/wp-content/uploads/2016/12/Ford_Specifics_for_PPAP.pdf). On information and belief, Defendant had knowledge of the '220 Patent, or a patent publication related to it, at least as early as June 23, 2006 when a predecessor patent to one of the Patents-in-Suit was cited in connection with U.S. Patent Application Publication No. 2005/0223533, owned by a company with which Defendant had a joint venture. Defendant has had knowledge of the '220 Patent and of its infringement thereof since at least service of this Complaint in this matter.

61. On information and belief, from the time it received notice of its infringement of the '220 Patent, Defendant has not had any good faith basis to believe it does not infringe or that the '220 Patent is invalid. Defendant's infringement, therefore, has been willful.

62. By reason of Defendant's infringement of the '220 Patent, Plaintiff has suffered substantial damages.

63. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Defendant's infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendant together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. RE47,232

64. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

65. On information and belief, Defendant infringes at least claim 26 of the '232 Patent, by making and using Defendant's Assembly Systems to manufacture automobiles and component parts thereof in the United States.

66. On information and belief, Defendant's Assembly Systems perform error free fastening or error-proofing automated assembly to assemble together two components of an article of assembly such as, for example, an automotive transmission, suspension, door panel, chassis, engine, instrument panel (e.g., air bag assembly), and/or seat (e.g., a seat back to a seat track in a marriage station, cushion pads to seat tracks, seat tracks to risers, and/or recliners to seat backs) to prevent operator error, ensure safety, and prevent liability and costly automobile recalls. On information and belief, Defendant's Assembly Systems form multiple such assemblies for each automobile.

67. Defendant's documentation identifies that Defendant utilizes "error and/or mistake proofing techniques integrated into the organization's manufacturing and material handling processes":

Inverted Delta parts

For parts designated as inverted delta (parts with Critical Characteristics), the organization shall prevent the shipment of non-conforming product to Ford.

Note: this is typically accomplished by using error and/or mistake proofing techniques integrated into the organization's manufacturing and material handling processes.

Parts without inverted delta designation

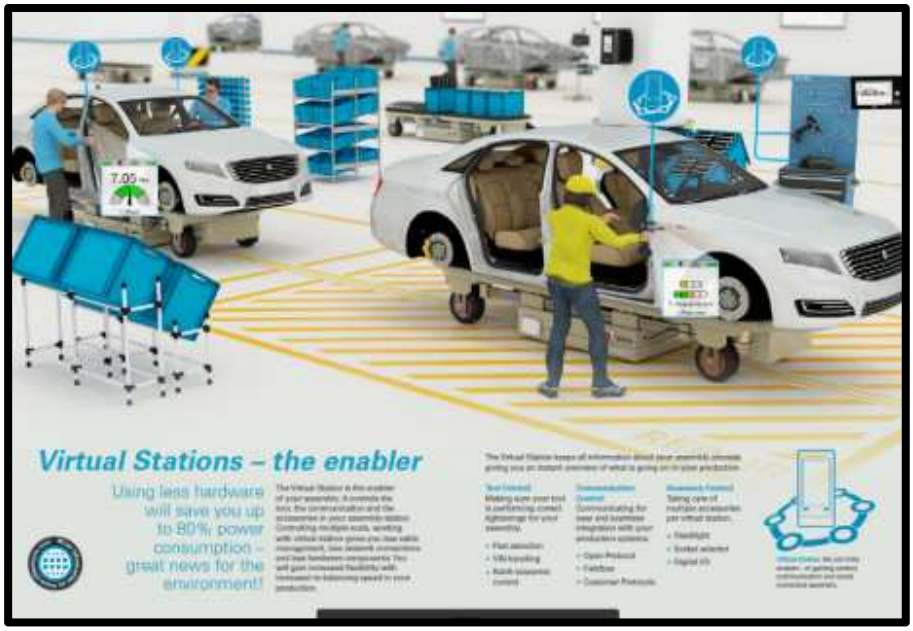
An error proof approach is recommended for all parts, not just parts designated as inverted delta.

Ford Motor Company Customer-Specific Requirements, at 9 (https://www.iatfglobaloversight.org/wp/wp-content/uploads/2016/12/Ford_Specifics_for_PPAP.pdf).

68. Industry publications also refer to the need for error-proofing technology. For example, *Quality in Assembly: Controller Aids in Setting Up Error-Proofing Applications,* indicates that "[a]ny line that relies on manual assembly requires error-proofing technology" such that "[e]ngineers are guided through a series of menus that define the control logic, sensing locations and operation sequence" (https://www.assemblymag.com/articles/86585-quality-in-assembly-controller-aids-in-setting-up-error-proofing-applications).

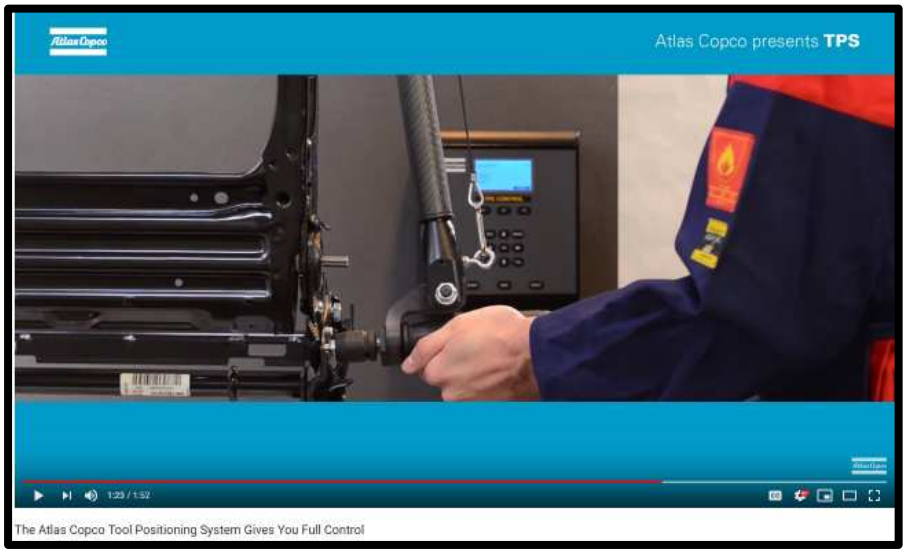
69. On information and belief, Defendant's Assembly Systems use tooling, alone or in combination with tooling from one or more suppliers, to assemble components of the articles of assembly in a manner that infringes at least claim 26 of the '232 Patent. For example, on information and belief, Defendant's Assembly Operations use Atlas Copco tooling to assemble the components of the articles of assembly. *See*: *Smart Connected Assembly Roadshow – Valiant/Ford* (https://www.atlascopco.com/en-ca/events/assembly-road-show-valiant-ford).

70. Atlas Copco provides tooling for a "Virtual Station" that "keeps all information about your assembly process" and "[m]ak[es] sure your tool is performing correct tightenings for your assembly":



Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0" at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf).

71. Atlas Copco provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners:



The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning); *see also*, https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Error-proofing-solutions/Tool-location-system.

72. On information and belief, Defendant's Assembly Systems use Mountz tooling to assemble the components of the articles of assembly. *See*: *Mountz The Torque Tool Specialists®, Corporate Clients* (https://www.slideshare.net/BMountz/1705-mountz-profile2) (identifying "Ford Motor Company" as a Mountz client).

73. Mountz provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. For example, Mountz documentation explains the need to utilize a specific tightening sequence to fasten critical components because "[t]he majority of joints consist of more than one bolt and bring together

surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened." *Specify a Torque & Tightening Sequence for Critical Fastening Joints* (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints). *See also, Ensure Screws are Correctly Tightened in the Correct Sequence with Position Control Torque Arm* (https://www.mountztorque.com/learning-center/video/ensure-screws-are-correctly-tightened-correct-sequence-position-control-torque).

74. Mountz provides, for example, a "position control torque arm system [that] helps manufacturers detect and eliminate costly screw-fastening errors during the assembly process. This torque arm is designed to reduce the risk of improperly fastened screws, ensuring that every screw is . . . correctly tightened in the correct sequence. A good tightening sequence ensures that an even preload distribution is achieved in the joint. Using a position control arm is like putting the eyes and ears of a quality control manager where they are needed most - right on the assembly area."

https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm; *see also* https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-posi-control-telescoping-torque-arm.

75. On information and belief, Defendant's Assembly Systems use Advanced Manipulator tooling to assemble the components of the articles of assembly. *See* https://advancedmanipulator.com/about-clientele.html (identifying "Ford Motor Co" as a client).

76. Advanced Manipulator provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. *See*, for example, *The Locator™ Smart Arm*, which "[e]liminates assembly errors – only operates if the correct sequence is chosen":

https://advancedmanipulator.com/torque-arms-smart-arms.html.

77. On information and belief, Defendant's Assembly Systems use ESTIC tooling to assemble the components of the articles of assembly. *See* http://www.estic.co.jp/en/company/customer_list/index.html (identifying Ford Motor Company as a customer).

78. ESTIC provides, for example, tooling that includes a torque arm to control both the fastening sequence and the torque applied to the fasteners. *See*, for example, the "*Handheld Nutrunner: Tracer Arm*," which defines "different tightening torques . . . in the tightening order and the tightening part, eliminating operator mistakes and providing high traceability by associating tightening torque with tightening position (coordinates)":

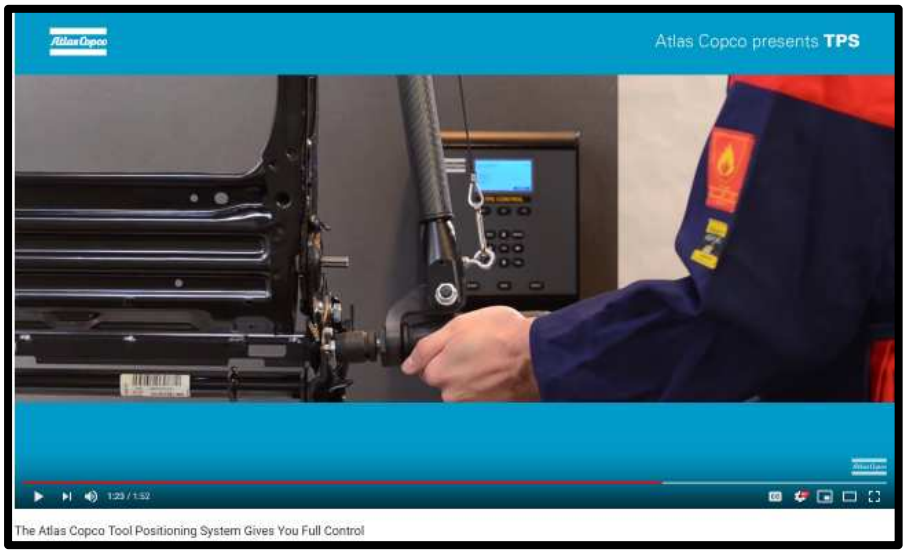
http://www.estic.co.jp/products/product_en.php?ac_id=detail&id=22&targ=toku.

79. Defendant's Assembly Systems include first and second physically separate components that, when assembled together, form at least a portion of the article of assembly. An operator of Defendant's Assembly Systems performing error-proof fastening uses an assembly station to assemble together two components of an article of assembly such as, for example, an automotive transmission, suspension, door panel, chassis, engine, instrument panel (e.g., air bag assembly), and/or seat (e.g., a seat back to a seat track in a marriage station, cushion pads to seat tracks, seat tracks to risers, and/or recliners to seat backs). *See, e.g.*: *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

80. On information and belief, Defendant provides first and second physically separate components having a single set of discrete portions that, when placed together by Defendant's Assembly Systems, form a single process site consisting of a plurality of fastening locations within the single process site including first and second fastening locations. Defendant's Assembly Systems place adjacent surfaces of the two components together to form the single process site

consisting of the plurality of fastening locations. For example, as explained above, the error-proof fastening "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0*" at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). In addition, "[t]he majority of joints consist of more than one bolt . . ." (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

81. On information and belief, each of the first and second fastening locations of Defendant's first and second physically separate components consists of a single opening for receiving a single fastener that, when fastened by Defendant's Assembly Systems in the single opening, partially assembles the first and second components together. For example, when a bolt is fastened into one of two available holes, this fastening partially assembles the components together. *See*:



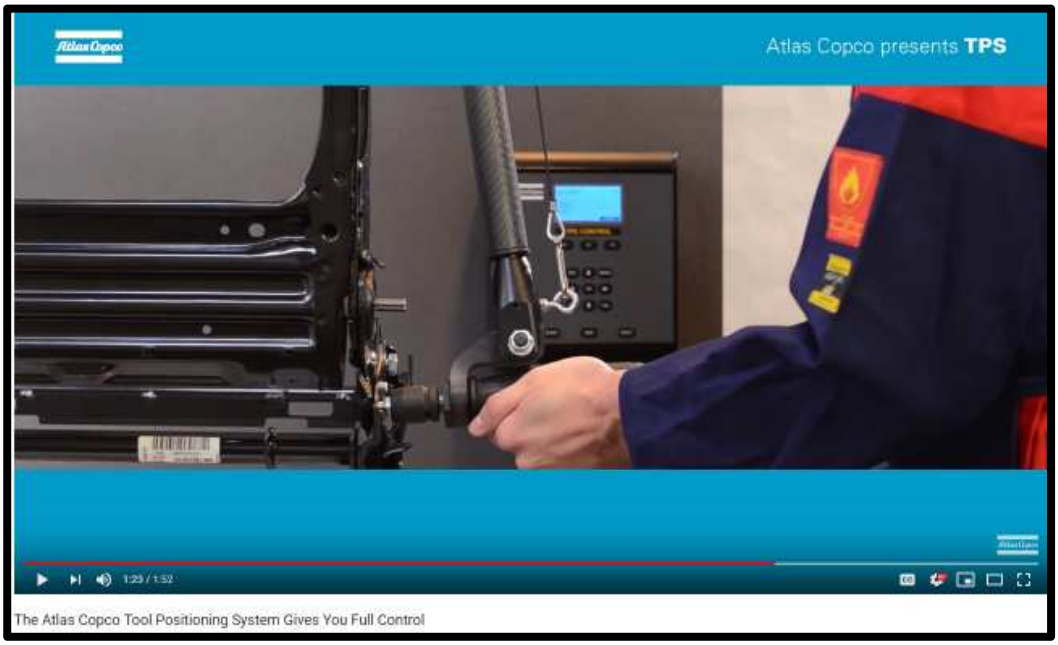
The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

82. On information and belief, each pair of components of Defendant's articles of assembly is structurally designed so that the first and second fastening locations are positioned within the single process site in spaced apart relation to each other such that an operator of Defendant's Assembly Systems must insert a fastener in the first fastening location before a fastener is inserted in the second fastening location to reduce the risk of structural failure of the assembled combination of the first and second components that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. Defendant's structural design for each pair of components of Defendant's articles of assembly determines a fastening sequence to be followed by Defendant's Assembly Systems for all of the fasteners joining the two components for the first process site. During assembly, Defendant's Assembly Systems follow this fastening sequence. For example, as explained above, the error-proof fastening "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0* at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). The particular tightening sequence must be followed because "[t]he sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened" (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

83. On information and belief, Defendant's Assembly Systems include a fixture that holds the first and second components of the article of assembly in a predetermined position in

which the first and second components are placed together to form the single process site. For example, *see*: *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

84. On information and belief, Defendant's Assembly Systems include a fastening tool adapted to fasten fasteners into the single process site formed by the first and second components of the article of assembly, the fastening tool having a first position relative to the fixture in which the fastening tool is in position to fasten a fastener at the first fastening location, and a second position relative to the fixture in which the fastening tool is in position to fasten a fastener at the second fastening location. The fastening tool can include, for example, a torque arm:



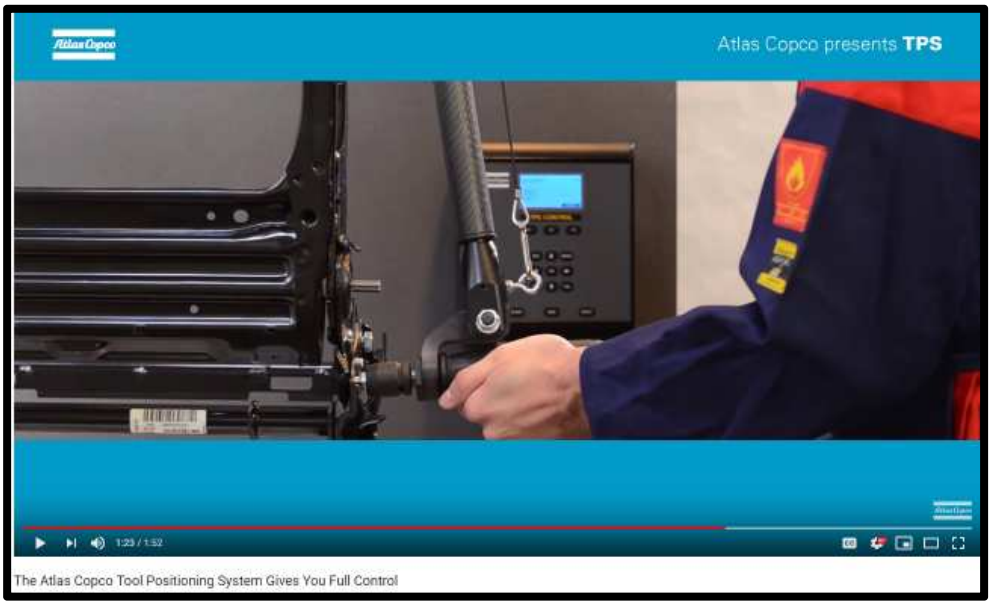
https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning.

https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm; *see also* https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-posi-control-telescoping-torque-arm.

https://advancedmanipulator.com/torque-arms-smart-arms.html.

http://www.estic.co.jp/products/product_en.php?ac_id=detail&id=22&targ=toku.

85. On information and belief, Defendant's Assembly Systems include at least one sensor providing a sensor output indicating when the fastening tool is at the first and second fastening locations. For example, when the operator moves the fastening tool, which can be mounted on the end of a reaction arm, the one or more sensors generate signals that allow the control system to compute the position of the operating end of the fastening tool.

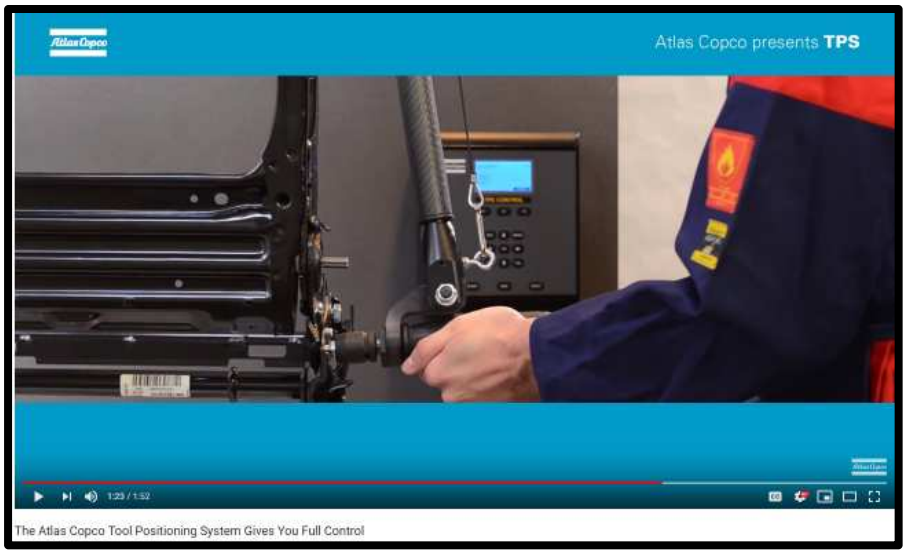


The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

86. On information and belief, Defendant's Assembly Systems include an electronic controller in communication with the at least one sensor, the electronic controller monitoring the location of the fastening tool to ensure proper fastening of fasteners at the fastening locations and having stored in a memory thereof before an operator has commenced manually fastening fasteners using the fastening tool (a) data representative of the location of the first fastening location within the single process site together with first order data indicating that a fastener must be inserted in the first fastening location at a point in time before a fastener is inserted in the second fastening location, and (b) data representative of the location of the second fastening location within the single process site together with second order data indicating that a fastener must be inserted in the second fastening location at a point in time after a fastener has been inserted in the first fastening location, wherein the location data and the first and second order data for the first and second fastening locations form a predetermined fastening sequence for the single process site that must be followed in order for the first and second components to be assembled together in a manner that reduces the risk of structural failure of the assembled combination that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. For example, the following data is stored in memory of the electronic controller before the operator commences manually fastening fasteners using the fastening tool: location data (*e.g.*, three-dimensional data, x, y, z) for each one of the individual fastening locations within the first process site, and data indicative of a predetermined fastening sequence for the fastening locations. Defendant's Assembly Systems ensure that the predetermined fastening sequence is followed by the operator when the fastening tool is used to assemble the components. Doing so reduces the

risk of an incorrect assembly that could lead to structural failure of the assembly. For example, as explained above, the error-proof fastening "keeps all information about your assembly process" and "[m]ak[es] sure your tool is performing correct tightenings for your assembly." *Atlas Copco, Smart Connected Assembly, Empowering the vision of Industry 4.0* at 11 (https://www.atlascopco.com/content/dam/atlas-copco/industrial-technique/general/documents/catalogs/Smart%20Connected%20Assembly%20Catalog.pdf). The particular tightening sequence must be used because "[t]he majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened" (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints).

87. On information and belief, the fastening tool of Defendant's Assembly Systems includes a fastening monitor indicating a fastening operation. Each time the operator uses the fastening tool, the fastening monitor measures the torque that the operator applies to the fastener using the fastening tool. This ensures that the components are assembled together consistently with the design requirements for fastening sequence and torque. Thus, Defendant's Assembly Systems ensure on a fastener-by-fastener basis that the correct torque is applied to each fastener:



The Atlas Copco Tool Positioning System Gives You Full Control (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

After each fastening of a fastener, "[t]he solid green display says the job is done with the right torque and the correct sequence":

Id.

88. On information and belief, the electronic controller of Defendant's Assembly Systems has a predetermined sequence program that, when executed, requires the operator's use of the fastening tool to conform to the predetermined sequence of fastening among the first and second fastening locations by the electronic controller (a) monitoring the sequence of fastening based upon the sensor output, (b) electronically comparing the sensed position of the fastening tool with the data representative of the location of the first and second fastening locations within the single process site to determine if the fastening tool is located in operative relation to one of the first and second fastening locations and then (c) using the order data associated with the one of the first and second fastening locations to (i) enable the fastening tool, when it is positioned in operative relation to the first fastening location, to insert a fastener in the first fastening location only if the operator has not inserted a fastener in the second fastening location, and (ii) enable the fastening tool, when it is positioned in operative relation to the second fastening location, only if the operator already has inserted a fastener in the first fastening location, wherein requiring that the operator's use of the fastening tool conform to the predetermined sequence of fastening within the single process site reduces the risk of structural failure of the assembled combination that would arise if a fastener were inserted in the second fastening location before a fastener were inserted in the first fastening location. The electronic controller compares the sensed position of the fastening tool relative to the position of each one of the individual fastening locations. When the fastening tool is positioned in operative relation to a particular fastening location in the first process site, the stored order data is consulted to ensure that the operator's use of the fastening tool conforms to the predetermined fastening sequence. For example, "[a] blue display lets you know the tool is in the right position":

(https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning)

"The solid green display says the job is done with the right torque and the correct sequence":

Id.

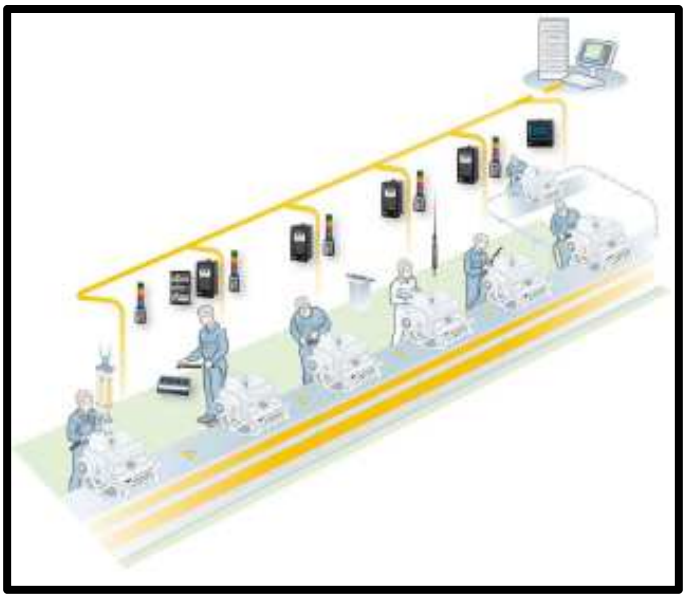
"A red display alerts when the tool is out of position":

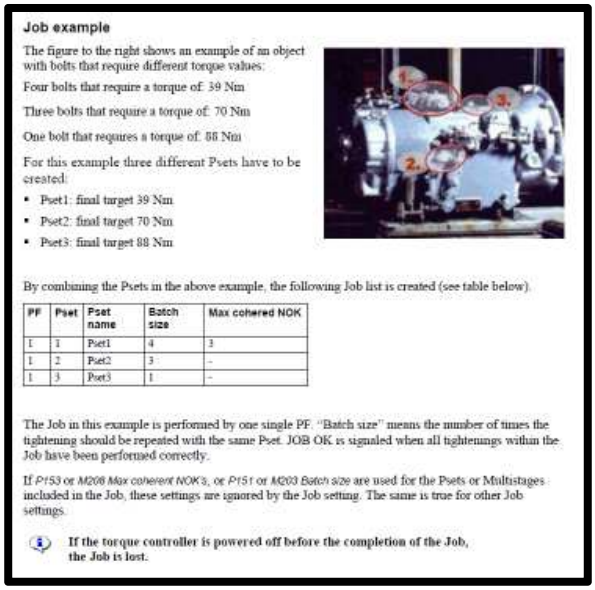
Id.; see also, https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence").

Provided that the operator's use of the fastening tool conforms to the predetermined fastening sequence, Defendant's Assembly Systems enable the fastening tool. *Id*. Requiring the operator's use of the fastening tool to conform to the predetermined fastening sequence reduces the risk of structural failure of the assembly that would arise if the predetermined fastening sequence were not followed. *See, e.g.*: *Specify a Torque & Tightening Sequence for Critical Fastening Joints* (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints) ("The majority of joints consist of more than one bolt and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened.").

89. On information and belief, the electronic controller of Defendant's Assembly Systems provides a sequence output indicating whether the predetermined fastening sequence has been achieved each time that the operator attempts to fasten a fastener in one of the first and second fastening locations. For example, as explained in the immediately preceding paragraph, each time the operator attempts to fasten a fastener in a fastening location, Defendant's Assembly Systems enable the fastening tool when the predetermined fastening sequence is followed. A sequence output is provided each time the operator attempts to fasten a fastener (e.g., "[t]he solid green display says the job is done with the right torque and the correct sequence" and "[a] red display alerts when the tool is out of position," and indicating that the tool is enabled or disabled depending on whether the predetermined fastening sequence is followed). *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo; also viewable at https://www.atlascopco.com/en-us/itba/products/assembly-solutions/Workplace-solutions-automation/torque-arms-and-tool-positioning).

90. On information and belief, the electronic controller of Defendant's Assembly Systems also has stored in its memory first and second predetermined torque values that represent torque values that the operator is supposed to apply to fasteners inserted in the first and second fastening locations when the operator's use of the fastening tool conforms to the predetermined sequence of fastening. For example, a "programmed Job function automatically selects the correct tightening sequence and parameters" to assemble an object having "bolts that require different torque values":





Job example

The figure to the right shows an example of an object with bolts that require different torque values:

Four bolts that require a torque of: 39 Nm

Three bolts that require a torque of: 70 Nm

One bolt that requires a torque of: 88 Nm

For this example three different Psets have to be created:

- Pset1: final target 39 Nm
- Pset2: final target 70 Nm
- Pset3: final target 88 Nm

By combining the Psets in the above example, the following Job list is created (see table below).

PF	Pset	Pset name	Batch size	Max cohered NOK
1	1	Pset1	4	3
1	2	Pset2	3	-
1	3	Pset3	1	-

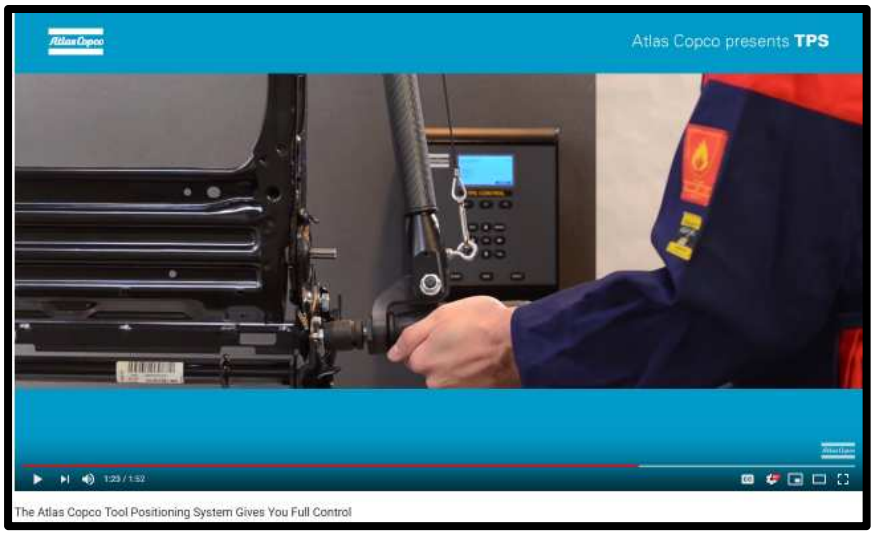
The Job in this example is performed by one single PF. "Batch size" means the number of times the tightening should be repeated with the same Pset. JOB OK is signaled when all tightenings within the Job have been performed correctly.

If *P153* or *M208 Max coherent NOK's*, or *P151* or *M203 Batch size* are used for the Psets or Multistages included in the Job, these settings are ignored by the Job setting. The same is true for other Job settings.

If the torque controller is powered off before the completion of the Job, the Job is lost.

Atlas Copco User guide Power Focus at 17, 18 and 118 (http://www.edlosales.com/9836312301_109_SR3.pdf); *id*. at 117 ("The Job function is advantageous when an object has bolts or screws that require different torque and angle values for tightening."); *id*. at 124 (exemplary display indicative of the job status); *see also*, *The Atlas Copco Tool Positioning System Gives You Full Control* (https://www.youtube.com/watch?v=1Uywl6Rp3vo ("The solid green display says the job is done with the right torque and the correct sequence"); https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence"); https://www.mountztorque.com/products/power-assembly-tools/torque-arms/ez-glider-position-control-torque-arm (the tooling "[s]ecure[s] the assembly process by ensuring that every screw is in the correct location at the right torque" and "[d]etects - cross threading, omissions, unfinished rundowns and cycle complete").

91. On information and belief, the execution of the predetermined sequence program by the electronic controller of Defendant's Assembly Systems requires the predetermined sequence of fastening to be followed in the single process site and also (a) uses the fastening monitor to measure torque applied to a fastener as it is being inserted in the first fastening location and then compares the measured torque to the first predetermined torque value, (b) requires that the torque applied to the fastener located in the first fastening location equal the first predetermined torque value before the operator is allowed to insert a fastener in the second fastening location, which reduces the risk of structural failure of the assembled combination that would result if the operator were allowed to insert a fastener in the second fastening location when the torque applied to the first fastener does not equal the first predetermined torque value, (c) uses the fastening monitor to measure torque applied to a fastener as it is being inserted in the second fastening location and then compares the measured torque to the second predetermined torque value, and (d) requires that the torque applied to the fastener located in the second fastening location equal the second predetermined torque value after the first fastener has been inserted in the first fastening location at the first predetermined torque value, which reduces the risk of structural failure of the assembled combination that would result if the operator were allowed to complete assembly of the first and second components when the torque applied to the fastener inserted in the second fastening location did not equal the second predetermined torque value. For example, as explained above, Defendant's Assembly Systems ensure on a fastener-by-fastener basis that the correct torque is applied to each fastener:



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After each fastening of a fastener, "[t]he solid green display says the job is done with the right torque and the correct sequence":

Id.; *see also*, https://www.youtube.com/watch?v=CCgCrDP24x4 ("[t]he [Mountz] position control torque arm ensures the operator applies the correct torque in the right sequence"); *Specify a Torque & Tightening Sequence for Critical Fastening Joints* (https://www.mountztorque.com/learning-center/article/specify-torque-tightening-sequence-critical-fastening-joints) ("The majority of joints consist of more than one bolt

> and bring together surfaces that are not completely flat. The sequence of tightening bolts can have a major influence on the resulting preloads. With such joints, consideration should be given to specifying the sequence in which the bolts are to tighten. Because the joint surfaces compress, tightening one bolt in the vicinity of another will affect the preload generated by the first bolt tightened.").

92. By making and using Defendant's Assembly Systems for manufacturing automobiles and component parts thereof in the United States, Defendant has injured Plaintiff and is liable to the Plaintiff for directly infringing one or more claims of the '232 Patent, including at least claim 26, pursuant to 35 U.S.C. § 271(a).

93. Defendant also indirectly infringes the '232 Patent by actively inducing infringement under 35 U.S.C. § 271(b), including by way of instructing suppliers to practice the claimed invention. *E.g.*, *Ford Motor Company Customer-Specific Requirements*, at 9 (https://www.iatfglobaloversight.org/wp/wp-content/uploads/2016/12/Ford_Specifics_for_PPAP.pdf). On information and belief, Defendant had knowledge of the '232 Patent, or a patent publication related to it, at least as early as June 23, 2006 when a predecessor patent to one of the Patents-in-Suit was cited in connection with U.S. Patent Application Publication No. 2005/0223533, owned by a company with which Defendant had a joint venture. Defendant has had knowledge of the '232 Patent and of its infringement thereof since at least service of this Complaint in this matter.

94. On information and belief, from the time it received notice of its infringement of the '232 Patent, Defendant has not had any good faith basis to believe it does not infringe or that the '232 Patent is invalid. Defendant's infringement, therefore, has been willful.

95. By reason of Defendant's infringement of the '232 Patent, Plaintiff has suffered substantial damages.

96. Plaintiff should be awarded damages in accordance with 35 U.S.C. §§ 271, 281, and 284, in an amount adequate to compensate for Defendant's infringement, but in no event less

than a reasonable royalty for the use made of the invention by Defendant together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

A. A judgment in favor of Plaintiff that Defendant has infringed, either literally and/or under the doctrine of equivalents, the ’220 Patent and the ’232 Patent;

B. An award of damages resulting from Defendant’s acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Defendant’s infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to Plaintiff enhanced damages;

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys’ fees against Defendant; and

E. Any and all other relief as the Court may deem just and proper.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Plaintiff requests a trial by jury of any issues so triable by right.

Dated: May 6, 2019

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