



October 17, 2025

The Honorable Howard W. Lutnick
Secretary
U.S. Department of Commerce
1401 Constitution Avenue NW
Washington, DC 20230

RE: Comments on Section 232 National Security Investigation of Imports of Robotics and Industrial Machinery (90 Fed. Reg. 46382, September 26, 2025, [XRIN 0694-XC138](#))

Dear Secretary Lutnick:

The National Foreign Trade Council (“NFTC”) appreciates this opportunity to provide input as part of the Department of Commerce’s (“the Department”) investigation under Section 232 of the Trade Expansion Act of 1962, as amended (Docket No. 250924-0161, XRIN 0694-XC138) into the possible effects on national security of imports of robotics and industrial equipment.

Overview:

Robotics and industrial machinery are critical infrastructure that is foundational to the strength and competitiveness of the U.S. advanced manufacturing sector. Companies in the U.S. are developing and investing in advanced robotics manufacturing to create custom automation solutions that drive operational excellence, product quality, and economic growth, and lead to upskilling and enhanced safety for employees. Robotics reduce costs, improve productivity, stabilize supply chains, and enable rapid scaling during demand surges. Robotics is also shifting demand away from manual labor-intensive roles toward higher-skill technical positions in engineering, programming, and maintenance, thereby transforming operations, reducing physical strain, and opening opportunities for workers to develop new skills.

The U.S. is in the midst of an era of re-industrialization, where large swaths of the domestic manufacturing sector are growing. This growth requires massive capital expenditure (CAPEX) investments in factory equipment, including robotics, industrial machinery, and equipment. As a result, access to robotics and advanced manufacturing equipment will be a critical determinant of future U.S. industrial competitiveness by enabling companies to produce the best, most competitive products in the U.S.. Many American companies seek to source robotics and industrial machinery domestically. However, for many applications, there are few, if any, U.S. producers. As equipment becomes more complex, specialized, or large-scale, manufacturers increasingly depend on imports—often from trusted allies such as the European Union, Japan and Korea—to remain at the forefront of technological innovation. Robotics and industrial machinery are not interchangeable commodities like steel, aluminum, copper, and lumber. Rather, these products are highly specialized and often customized for specific applications, which makes shifting suppliers much more complex, if not impossible.

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In many cases, the U.S. has successfully drawn foreign investment in manufacturing and in research and development on some cutting-edge robotics, automation, and industrial equipment technology, but certainly not all. Robotics manufacturers in the U.S. need access to robotics parts and components that are not available in the U.S. Many components are imported from allied countries, like the EU and Japan, which have already signed trade deals with the U.S. and should not pose the security risks suggested by the Department's detailed questions for this investigation. Indeed, as the majority of high-value equipment comes from trusted allies (Germany, France, Canada, Israel, Japan, Korea and the Netherlands), rather than adversarial nations, blanket restrictions could harm relationships with key partners while providing limited security benefits.

Given these factors, imposing tariffs or other trade restrictions under Section 232 would not advance U.S. national security objectives. Instead, such measures would raise costs, delay modernization, and deter capital investment in U.S. manufacturing facilities. The resulting uncertainty could discourage foreign suppliers from contracting with U.S. firms and divert critical equipment to other markets, undermining ongoing efforts to strengthen domestic manufacturing and put U.S. companies at a competitive disadvantage.

Instead of recommending additional Section 232 tariffs, the Department should focus on developing collaborative approaches with the private sector to secure critical supply chains and promote innovation. Instead of restricting imports, the U.S. government should encourage domestic production of robotics and industrial machinery by: (1) eliminating unnecessary compliance requirements, (2) working with industry to develop a more robust supply of engineers and technicians, and (3) allowing U.S. companies to have access to the materials necessary from global partners to develop a stronger robotics and industrial machinery industry in this country. Targeted, evidence-based policies—rather than sweeping tariffs—will best safeguard national security while ensuring that U.S. manufacturers retain access to the advanced technologies necessary to lead in robotics and industrial production.

In the event the Department determines that additional tariffs are necessary, we recommend incorporating the elements below:

1. **Tariffs should be applied only to a very limited, clear scope of products**, not the broad definition of “robotics and industrial machinery” provided in the Federal Register notice and only where there is a clear and documented nexus to specific national security concerns. Moreover, since the description in the Federal Register is presented as an illustrative, rather than comprehensive, list, it is unclear whether certain robotic systems/applications, like articulated robotic systems used for material handling and delta robots used in pick and place applications, are included within the scope of this investigation. Finally, tariffs should not apply broadly to parts and components of robotics and industrial machinery to ensure access to replacement parts for maintenance and repair.
2. A Section 232 tariff remedy for robotics and industrial machinery should **preserve the existing preferential treatment for allied trading partners** (e.g., the EU, United Kingdom, and Japan, to this point) provided in implementing other Section 232 duties. We also encourage the Administration to finalize more trade deals with key trade partners; and

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3. Any tariff remedy, even a narrowly tailored one, **should provide maximum flexibility to mitigate any potential disruption** in access to in scope robotics and industrial machinery. For example, tariff remedies should include delayed/phased implementation, access to duty drawback and use in foreign trade zones, flexibility to waive tariffs for essential equipment, parts, and components not available in the U.S., and minimizing additional entry requirements.

These flexibilities will ensure that companies across the U.S. economy can access—on cost terms comparable to their competitors in other markets—imported robotics and industrial equipment. This is essential to ensuring the successful deployment of various manufacturing projects across the U.S. Moreover, robotics and industrial machinery are not ubiquitous or substitutable commodities, and in any action the Department might recommend, or the President might adopt, there must be flexibility rather than a one-size-fits-all approach to ensure that U.S. manufacturers have access to the equipment and parts they need to deploy advanced manufacturing domestically.

Responses to BIS' questions:

The Federal Register Notice soliciting public comment on this Section 232 national security investigation into imports of robotics and industrial equipment seeks to answer several key questions, including:

(i) the current, projected, and optimal demand for robotics and industrial machinery, and their parts and components in the United States;

(ii) the extent to which domestic production of robotics and industrial machinery, and their parts and components can meet domestic demand;

While companies are investing and manufacturing robotics in the U.S., there is not currently sufficient production, especially in parts and components, to meet domestic demand. Many of these pieces of industrial equipment are not produced in the U.S. at all.

In the med tech sector, many products must be manufactured using the same industrial equipment that was used to validate products initially. This makes it impossible to substitute equipment from another source without undertaking what is often a costly and time-consuming re-validation process that necessarily includes developing and qualifying alternative suppliers, assuming those suppliers even exist in the U.S..

In the consumer electronics industry, there are R&D labs, prototyping, and packaging teams in the U.S. that routinely import robots, RLC equipment, fixtures, and jigs. This equipment is not available domestically but is necessary for this work in the U.S.

Higher costs for energy, compliance, and infrastructure in the U.S. make it difficult for manufacturers to scale production and invest in new capacity, limiting progress toward a stronger, more self-sufficient, and robust domestic supply chain. Shortages of engineers, mechatronics specialists, and technicians in the U.S. slow innovation and expansion. Meanwhile, retraining programs are well behind industry needs.

As a result, there simply is not sufficient domestic capacity to replace imports in the near term. It takes years to build new factories, train and hire workers, and get production lines running. Under

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these circumstances, the most likely outcome of imposing tariffs on imported robotics and industrial machinery is higher prices for U.S. consumers, discouraging the development and slowing the growing use of robotics and industrial machinery in the U.S..

(iii) the role of foreign supply chains, particularly of major exporters, in meeting United States demand for robotics and industrial machinery, and their parts and components;

Foreign supply chains play not just a critical role but are the key mechanism whereby U.S. manufacturers of advanced technologies obtain the equipment they need. Foreign suppliers meet U.S. demand for robotics and industrial machinery by supplying components, sub-assemblies, and raw materials that are not readily available domestically. Major exporters provide high-precision parts, specialized sensors, actuators, and electronic components essential for advanced manufacturing. Access to these global suppliers helps U.S. manufacturers scale quickly, maintain cost competitiveness, and access cutting-edge technologies. Moreover, millions of dollars of this foreign-sourced robotics technology and equipment directly support server manufacturing in the U.S. and critical data center operations essential to position the U.S. as the AI leader; Restricting access to international robotics technology could impair U.S. competitiveness in AI and other critical emerging technology sectors.

Major manufacturers of industrial equipment for the consumer electronics industry are global partners, which can provide advanced capabilities with short lead times, at competitive costs, and at scale. The U.S. does not have comparable equipment that is produced at scale. U.S. based companies also tend to focus on niche use cases that are not directly comparable. Specifically:

- Manufacturing robotic motors domestically is currently not feasible because high-performance designs require rare earth magnets, and the U.S. lacks sufficient deposits and production capacity for these critical minerals.
- Domestic sources for graphic processing units (“GPUs”) lack the advanced technologies that have been developed outside the U.S.. If domestic companies were forced to rely on domestic GPUs, their ability to integrate AI and edge computing into cameras would be limited, reducing speed and efficiency.
- For satellite manufacturing, specialized high-end Thermal Vacuum Chamber companies are located in the European Union. The EU also has unique capacities for high-end testing and measurement applications.

Because of these strong relationships with suppliers in trusted U.S. partner countries, the vast majority of current imports of robotics and industrial machinery do not threaten to impair national security. Instead, such imports are vital to maintaining, developing and further scaling robotics production and supporting technological advancements in the U.S. that serve U.S. consumers.

To the extent the U.S. government wants to encourage robotics and industrial machinery production in this country, it should focus on policies that make it easier and more profitable to manufacture in the U.S., rather than restricting necessary inputs.

(iv) the concentration of U.S. imports of robotics and industrial machinery, and their parts and components from a small number of suppliers or foreign nations and the associated risks;

There is no market indication that the U.S. is critically dependent on a single source of supply for robotics and industrial machines. To avoid such an outcome, U.S. companies must have access to the full range of materials necessary to develop robotic production in this country, at a

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competitive cost. That is the best way to develop a robust domestic manufacturing base that can avoid dependence on countries of concern including foreign adversaries.

To the extent there are legitimate concerns that foreign adversaries and competitors could achieve a dominant position in the robotics industry, there are other trade and regulatory approaches beyond Section 232 tariffs that are better suited to target specific security concerns. Global tariffs or other broad import restrictions will discourage the development of robotics production in the U.S.. American producers will face higher costs to bring in parts and other materials that are not available here and risk falling further behind competitors. This will give foreign adversaries and competitors more room to develop – and maintain – an even more dominant position.

(v) the impact of foreign government subsidies and predatory trade practices on the competitiveness of the robotics and industrial machinery, and their parts and components, in the United States;

Certain foreign governments, including China's, are known to have provided significant subsidies to their robotics industry. However, to the extent U.S. policymakers are concerned about this development, their best option is to ensure that U.S. producers have ready access to necessary supplies and parts from non-China markets around the world. This includes focusing on reducing non-tariff barriers to trade and making Foreign-Trade Zones (FTZ) and bonded warehousing more accessible to U.S. companies looking to optimize their supply chains.

Tariffs on foreign produced, highly specialized industrial machinery and robotics are unlikely to incentivize significant investment in U.S. manufacturing. For many manufacturing applications, robotics and industrial machinery differ from other components and raw materials used in manufacturing in that this equipment is imported only when a manufacturing facility is constructed or expanded. That means there is a small demand over time that does not justify production in the U.S.. Tariffs will mean that U.S. factories lock in a competitive cost disadvantage by paying extra CAPEX for tariffs.

(vi) the economic impact of artificially suppressed prices of robotics and industrial machinery, and their parts and components, due to foreign unfair trade practices and state-sponsored overproduction;

(vii) the potential for export restrictions by foreign nations, including the ability of foreign nations to weaponize their control over supplies of robotics and industrial machinery, and their parts and components;

(viii) the feasibility of increasing domestic capacity for robotics and industrial machinery, and their parts and components to reduce import reliance;

The feasibility of increasing domestic capacity is linked to the ability of U.S. producers to achieve economies of scale necessary to be profitable and competitive. This is a challenge as specialized machinery, particularly for large, complex pieces of critical infrastructure (such as energy equipment), is bespoke and produced on a limited basis in any given year. As a result, the global supplier base is extremely small, has no presence in the U.S., and is unlikely to develop an additional supplier base here to serve such limited demand. Similarly, production of robotics and industrial machinery parts and components is often tethered to production of the original equipment as OEM parts work better than those manufactured by alternative suppliers.

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There are policies that can drive the U.S. to expand capacity and develop a strong and robust domestic robotics industry:

- Promoting robotics innovation hubs across the country can accelerate development by bringing together researchers and manufacturers. Education and technical training programs in such a hub would help to build a skilled workforce. Modern infrastructure and robust supply chains will support rapid innovation and deployment of robotics technology. Such hubs could also attract capital, which would help startups and small businesses turn their ideas into market-ready solutions.
- International collaboration – properly managed – will lead to more capacity in the U.S.. By working with non-U.S. partners on funding research, developing industry-wide standards, and exchanging technology, U.S. companies can remain at the forefront of innovation while ensuring that U.S. products are aligned with market trends around the world.

Together, this approach can generate a virtuous cycle: investment in U.S. capabilities will lead to innovation, which in turn will fuel commercial success and generate resources for further advancement. Once again, however, it will not be possible to achieve this type of growth unless U.S. companies have access to necessary materials and supplies from key non-U.S. markets.

(ix) the impact of current trade policies on domestic production of robotics and industrial machinery, and their parts and components, and whether additional measures, including tariffs or quotas, are necessary to protect national security;

Rising costs from current trade policies make robotics and industrial equipment more expensive, for foreign and domestic suppliers alike. With a shrinking labor pool, automation is essential to operate buildings efficiently, and additional tariffs to increase costs would slow deployment, limit operational capacity, and ultimately stifle business growth. Tariffs or import quotas that further raise costs may inadvertently hinder U.S. competitiveness and the scaling of critical automation infrastructure needed to maintain a robust defense industrial base.

Under these circumstances, tariffs on materials that are not available in the U.S. will undoubtedly raise costs in the U.S. – thus discouraging further U.S. investment and prioritization of business expansion in the U.S. Rather than impose tariffs on materials that are critical to U.S. robotics production, the U.S. government should consider other policies – such as more favorable regulations – to grow the U.S. robotics industry.

(x) the impact of the use or lack of use of robotics and industrial machinery on U.S. manufacturing employment;

As U.S. manufacturing increasingly adopts robotics and industrial automation, the nature of workforce roles is shifting. Highly automated facilities require employees to move beyond traditional tasks toward technical oversight and support, supported by robust training programs and intuitive systems that enable data-driven decision-making.

To minimize downtime, preventive maintenance is becoming more proactive, and technical roles are transitioning from generalized responsibilities to specialized expertise in mechatronics, control systems, and equipment analysis. Management roles are also evolving; for example, Operations Managers now need engineering and manufacturing knowledge.

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Overall, the adoption of robotics is reshaping employment in U.S. manufacturing: it reduces demand for routine manual labor while increasing demand for technically skilled operators, maintenance specialists, and engineers, emphasizing the need for workforce upskilling and specialized expertise.

Moreover, industrial robots are becoming more common around the world, particularly in China, and this trend is likely to continue. Thus, to maintain pace with competitors in other countries, U.S. companies will face pressure to increase their use of robots as well.

Given these facts, it seems clear that growing use of robots – like every other wave of technology over the last 150 years – will lead to more productive workers and higher living standards for all Americans. Rather than fearing this change, U.S. policymakers should work with industry to develop a stronger robotics industry in the U.S..

(xi) the potential for foreign control or exploitation of the robotics and industrial machinery supply chain;

NFTC members are not aware of evidence that foreign control or exploitation of the robotics and industrial machinery supply chain is causing harm to U.S. users of imported equipment. However, to the extent that this is a concern for the Administration, the best way to minimize the potential for risk from foreign exploitation is to ensure that American companies have access to a robust global supply chain. That will not happen if U.S. companies are forced to pay tariffs for robotics equipment and components that are not currently available in this country. Tariffs discourage the adoption of robotics, thus making it more likely that the U.S. falls behind other countries in the use of robotics.

(xii) the ability of foreign persons to weaponize the capabilities or attributes of foreign-built robotics and industrial machinery, and their parts or components;

(xiii) the future role of robotics and industrial machinery in the production of items essential to national security or in activities related to national security;

Robotics and industrial machinery are critical to the future of U.S. production. These technologies enhance the speed, precision, and resilience of manufacturing lines that supply essential goods—from advanced electronics and defense components to critical infrastructure equipment. Robotics improves consistency across manufacturing processes, allowing U.S. workers to be safer and more productive, which further enables reliable, large-scale production. To maintain a globally competitive production of key items essential to national security, U.S. companies must have access to the full robotics and industrial machinery supply chain, including materials and equipment not currently produced domestically. Specific issues related to specific sectors essential to national security are described below.

Satellites

Robotics and automation solutions are prevalent in satellite manufacturing operations. Solar arrays are produced on an automated line, components are placed on the satellite using robotic arms, special coatings are sprayed using robotic arms, and satellites are manipulated during production and loading at the launch sites using semi-automated equipment. Automation increases worker productivity and improves yields and quality. The use of robotics is driven by safety – to remove people from operations that use chemicals and ergonomic repetitive stress

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syndrome, for example. It is also driven by quality, such as for the precision locating and placing of components, and productivity, like using a coordinate measuring machine instead of manual metrology, which can reduce the time necessary to complete tasks from 1.5 hours to 9 minutes.

Semiconductors

Specialized industrial machinery and robotic tools are essential for domestic semiconductor production. Domestic semiconductor equipment manufacturing capacity cannot meet current demand, making allied partnerships essential for maintaining and expanding U.S. chip production capabilities, which this Administration has articulated as a national security imperative. Imposing Section 232 restrictions on robotics and industrial machinery potentially cripples the very domestic semiconductor manufacturing capacity the Administration seeks to build.

Additionally, there is confusion within the industry about how this robotics and industrial machinery Section 232 investigation relates to the separate investigation into semiconductors. Virtually all semiconductor manufacturing equipment would fall within the definition of “industrial equipment.” We want to underscore how critical it is for the Department to more clearly articulate the core products covered by this Section 232 investigation and to distinguish it from the semiconductor manufacturing equipment covered by the separate semiconductor Section 232 investigation. Ultimately, the Administration must ensure semiconductor manufacturers retain access to robotics and industrial machinery to help restore advanced manufacturing in strategic sectors in the U.S..

Energy

If this Section 232 investigation results in tariffs for specialty robots and industrial machinery used in the energy sector, it would severely hamper the Administration’s goal of U.S. energy dominance. Robotics and industrial equipment are essential to the U.S. energy sector at every stage from exploration to refining to petrochemicals – for example, drilling rig equipment and automation, robotic subsea operations and inspections, pipeline operations and storage, and petrochemical finishing and packaging plants.

Medical Technologies

Medtech companies strive to deliver the highest quality products for patients at the lowest possible production cost. To achieve these objectives, medical technology manufacturers seek to use the most innovative technology and the most advanced manufacturing equipment available globally. The reality of the market is that some of the industrial equipment required to fulfill these promises is not available in the U.S. and companies are required to purchase from an array of suppliers globally. These specific equipment purchases are the result of decades-long partnerships with some suppliers. Implementing tariffs on this industrial equipment is counterproductive as it will increase the cost of investing in manufacturing capacity in the U.S. versus other countries, undermining the goal of bringing more medical technology manufacturing back to the U.S..

Shipping and Logistics

U.S. logistics companies import enormous quantities of industrial machinery and their parts to build and maintain their national networks for sorting and movement of goods. Alongside the large U.S. workforces employed by the logistics sector, these networks distribute goods within the U.S.

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and abroad. These are the same networks that enable U.S. exporters to ship their goods abroad more efficiently, helping to lower the U.S. trade deficit. In other words, for national logistic providers, there are no separate networks for imports, exports, and domestic movements. Instead, singular networks, built on widely deployed industrial machines, make all of these movements of goods possible. The affected industrial machinery includes sortation equipment, programmable logic controllers, camera tunnels, and other electronic sensors. Because these machines run almost 24/7 in many settings, maintenance is a constant requirement. As a result, replacement parts are always in high demand.

Robotics in the logistics industry is in a more nascent phase. Currently, U.S. logistics companies are primarily testing potential applications. Unlike industrial machinery, they are not widely deployed yet in the logistics sector. New potential tariffs on robotics risk curtailing innovation. In other words, U.S. logistics companies are trying to find the best robotic applications at this point. Tariffs could make the best ideas (if they happen to be sourced abroad currently) too expensive for U.S. companies, giving foreign logistics companies an innovation advantage.

and

(xiv) any other relevant factors.

There is a close relationship between robotics and AI. In fact, AI allows more sophisticated communication between workers and robots, thus resulting in a more productive workforce. This relationship represents another reason it is important for the U.S. to develop a strong robotics industry.

There are potentially very significant benefits from partnerships between businesses and universities, particularly in terms of research. Specific research areas of interest for robotics include dynamic manipulation, movement optimization, safe and predictable robot navigation, and safe machine learning for autonomy.

As operations become increasingly automated, network security and resilience are becoming more important. U.S. companies will need to enhance authentication programs and will also need to ensure that automated systems are resilient. Again, this fact argues strongly in policies that will encourage more investment in the U.S..

Conclusion:

NFTC recognizes the benefits of having robust domestic manufacturing capacity in robotics and industrial equipment. Equally important is the need to safeguard supply chains that underpin this sector. Support for greater capacity by removing regulatory and other impediments will have a greater lasting impact than the imposition of tariffs. Tariffs on manufacturing inputs ultimately weaken domestic production capacity and supply chain resilience. These impacts are magnified across sectors that integrate or use robotics and industrial equipment.

Given the complexity of the products at issue and the critical importance of access to these products, we urge the Department to engage in a thoughtful and more deliberate public engagement process. To that end, we respectfully reiterate our previous requests for a meaningful extension of time to submit written comments (at least 30 days) and the opportunity for officials to engage directly with stakeholders at a public hearing.

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About NFTC

The NFTC, organized in 1914, is an association of U.S. business enterprises engaged in all aspects of international trade and investment, including maintaining competitiveness and technological leadership. Our membership covers the full spectrum of industrial, commercial, financial, and service activities, accounting for over \$6 trillion in revenue and employing nearly 6 million people in the U.S.

Thank you for your consideration of our comments. We welcome the opportunity to provide additional information and address any questions you may have. For additional information, please contact Jeannette Chu, Vice President, National Security Policy at jchu@nftc.org, (703)225-8519.

Sincerely,



Jake Colvin
President

cc: The Honorable Jamieson Greer
U.S. Trade Representative

The Honorable Jeffrey Kessler
Under Secretary of Commerce for Industry and Security

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