KMT
For Industrial Services

Increase productivity and uptime

PowerFlex® 755T AC drives deliver flexible, high-performance motor control for demanding industrial applications

Allen-Bradley
by ROCKWELL AUTOMATION

Powerful **motor control**
for demanding industrial applications

Boost your plant productivity

Industrial manufacturers meet their biggest challenges head-on with PowerFlex® 755T variable frequency drives with TotalFORCE® technology:

- Increase plant productivity
- Minimize downtime
- Reduce energy costs

Whatever your industry – and whether you're managing legacy equipment and systems or designing a new plant – smart motor control solutions from Rockwell Automation can help meet your productivity goals.

PowerFlex 755T AC drives make the most of your assets and production time

With patented TotalFORCE technology, you get the flexibility and high-performance motor control that meets a wide range of application requirements.

Add real-time operational intelligence along with automated application commissioning and optimization and this portfolio will keep your operations running at optimal performance.

NEW **PowerFlex 755TS** drives represent the next generation of industrial drives with more capabilities designed to meet your application requirements. It's the first six-pulse drive with TotalFORCE technology that adds flexible, high-performance motor control, real-time operational intelligence and automated application commissioning and optimization.

PowerFlex 755TL drives deliver harmonic mitigation and power factor correction through the use of active front end technology.

PowerFlex 755TR drives use regenerative active front end technology to deliver 100% energy back to the incoming supply. Plus, provide harmonic mitigation and power factor correction.

PowerFlex 755TM drives deliver optimized energy consumption and reduced installation footprint in multi-motor applications using a common DC bus with regenerative and non-regenerative options.

PowerFlex 755TL, 755TR and 755TM drives

PowerFlex 755TS drive

Time-saving **design**
and functionality

Simplify installation and maintenance

The entire family of PowerFlex755T drives are built for easy installation, commissioning and maintenance. The design provides convenient access to compact components that can be easily installed, removed and serviced. The slot-based hardware architecture gives you the flexibility to select up to five option cards to suit your application for I/O, communications, safety and feedback.

When space is a premium

PowerFlex 755TS drives provide more power in a smaller footprint, getting the most out of your space and investment.

Floor mount PowerFlex 755TL, TR and TM drives with market leading power density make it easy to install, repair and replace:

- Power wiring can stay connected while power modules are easily rolled-out for service
- Convenient access to key components
- Optional entry/exit wiring bays allow cable access through the top of the cabinet

Support when you need it

Our highly experienced field service professionals supplement your resources, help improve equipment operation and ensure long-term performance.

Modernization and migration services

Turnkey engineering services help you move from legacy platforms to our newest technology.

Drive startup

Field service professionals inspect and verify drive installation to factory standards, tune drives and adjust parameters to your application. Plus, commission drives to ensure correct operation and optimal performance.

Preventive maintenance

Annual or custom agreements help extend the lifecycle of your hardware and optimize its performance.

"Easy configuration, integration and **visualization in the FactoryTalk Studio 5000® design environment"**

Simplified drive configuration and programming

PowerFlex drives make configuration and programming fast and uncomplicated with easy-to-use software packages and tools.

Local or remote PowerFlex HIMs

Connected Components Workbench™ software

- Free software gets your drives up and running with an intuitive interface and startup wizards

FactoryTalk® Studio 5000 Logix Designer® environment

- Achieve premier integration with Logix programmable automation controllers
- One development environment to configure and program your entire control and device system
- Data associated with the drive is automatically generated to ease configuration and eliminate mismatch errors
- Easy access to system, machine and diagnostics data

TotalFORCE **technology**
boosts productivity out of the box

Turn your drive into a strategic advantage

PowerFlex drives with TotalFORCE technology can help meet your production output, uptime and energy efficiency goals.

TotalFORCE technology combines flexible, high-performance motor control, advanced self-monitoring capabilities and a real-time digital platform that provides data that can make the difference between profit and loss.

Flexible, high-performance motor control
PowerFlex 755T drives deliver superior electric motor control across the toughest industrial applications with precise velocity, torque and position control.

You can now leverage the complete portfolio of PowerFlex 755T drives to meet any application from standard and premium industrial motor control applications to low harmonic and regenerative solutions.

Real-time operational intelligence
The information and insights from these PowerFlex drives can be used to make smart operation, energy and predictive maintenance decisions.

Automated commissioning and optimization
A suite of adaptive control features reduce startup and commissioning time (without complex code or the need for drive tuning experts) and automatically respond to application load and mechanical changes to improve electrical efficiency and mechanical system reliability.

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Reduce risk of **cyber attacks**

Increase security for your smart machines, network and manufacturing equipment. CIP Security-enabled devices, like PowerFlex 755T drives, help improve the security of your plant and minimize the risk of cyber incidents. CIP Security provides a secure transport layer in an EtherNet/IP network to help protect the drives from malicious communications. CIP Security provides:

- Trusted connections to help prevent unauthorized devices from establishing communications
- Integrity to help prevent tampering or modification of communications
- Encryption to help prevent disclosure of data

Adaptive **control**

increases productivity, reduces mechanical wear and downtime

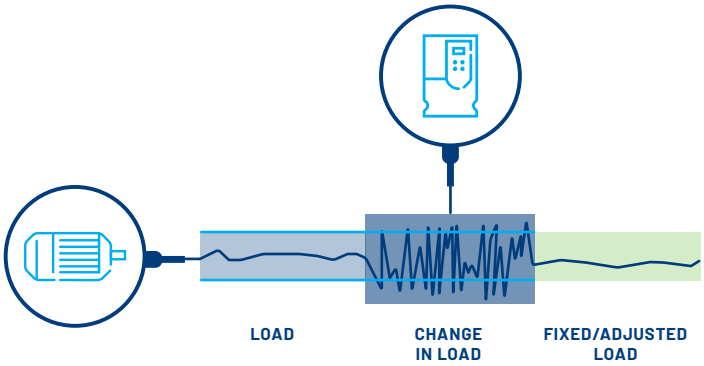
Increase machine reliability and performance

Adaptive control is a key component of TotalFORCE technology to help improve your productivity.

Adaptive control is the combination of Adaptive Tuning, Load Observer and Bus Observer working together to reduce commissioning time at start up, and monitor your machine characteristics as your equipment operates.

As your machine's operating characteristics change over time, PowerFlex 755T drives automatically adjust to compensate for these changes to maintain productivity. This advanced capability helps reduce mechanical wear and keeps your operation running at optimal production.

- Reduce startup time needed for tuning without complex code or the need for drive-tuning experts
- Monitor real-time drive and system performance characteristics and adapt as necessary
- Identify potentially harmful resonance and vibration conditions and suppress the resonance for continued operation
- Automatically monitor and compensate for changes in inertia and for motor-to-load, providing for higher throughput in your process, regardless of load changes or external disturbances



Your **partner**

through every step of your journey

Our factory-trained professionals can provide assistance through every step of your PowerFlex drives investment.

Global capabilities span system design and engineering, startup and commissioning, remote and on-site technical support, proactive preventive maintenance, as well as MRO and asset management programs. These Lifecycle Services are all focused on maximizing your productivity and minimizing downtime and maintenance costs.

Predictive **technology**
improves uptime

Proactive diagnostic data

PowerFlex 755T drives offer a proactive approach in receiving diagnostic data, where you can continuously monitor the health of your drive and compare the current performance to the application settings driven by our patented TotalFORCE technology.

Real-time monitoring and on-board predictive analytics can help reduce unplanned downtime and develop a resource-optimized maintenance strategy.

Predictive analytics help minimize downtime

PowerFlex 755T drives notify operators immediately about issues that might compromise drive or motor health such as:

- Blown fuses
- Components approaching end of life
- Increasing temperatures out of normal operating range

Using patented predictive maintenance models and algorithms, PowerFlex 755T drives have built in capabilities to improve productivity.

- A DC bus conditioner helps protect power components by minimizing DC bus voltage transients
- The voltage boost feature enables full voltage to the motor, even when operating on a reduced incoming line
- Thermal manager monitors temperature and helps manage critical operating conditions that can result in thermal overloads of the products
- Drives can operate two types of incoming power sources, allowing you to switch between utility operation and generator backup

Drives with predictive analytics help reduce maintenance costs and downtime by modeling the equipment's predicted life.

For example, an analytic model considers measured ambient temperature (sensors are built into drive modules) and measures equipment speed. Decreasing speed indicates that the bearings may be failing.

The predictive maintenance model gives a notification over a secure Ethernet network to the control system when equipment has reached a certain percent of its predicted life – 80% by default. This alerts the maintenance team to replace the equipment during the next scheduled outage, avoiding unplanned downtime.

Energy savings **you can count on...**
this technology delivers results

Energy payback in as little as 6 months

Energy consumption is one of the biggest operating costs in manufacturing. And industrial motor operation can be responsible for more than 50% of industrial energy use.

New directives in six-pulse VFD design also help customers reduce the amount of energy needed to control an application. The efficiency from PowerFlex 755TS drives improves the performance on your application and lowers the amount of energy used — this allows you to "right size" your drive for your application.

PowerFlex 755T drives with TotalFORCE technology deliver many energy-saving solutions.

The drives support a wide variety of motors, including permanent magnet motors that:

- Reduce heat loss in the motor
- Provide a wide speed range, high torque performance, low audible noise and vibration
- Offer smaller, lighter motors to reduce the weight and size of a machine

Active front end technology enables:

- Regenerative capability to put energy onto the incoming power supply
- Energy pause mode reduces fan speed and sets PowerFlex 755T drives or Bus Supply into a low energy state to help reduce overall energy consumption
- Harmonic mitigation and power factor correction reduce energy use

"Best-in-class efficiency for PowerFlex 755TS drives **improves application performance and lowers energy use"**

Per IEC 61800-9-2, IE2 EcoDesign directive

Sustainable lifecycle services

At Rockwell Automation, we provide customers with reliable power control products that can be repaired and reintroduced to service many times. The PowerFlex 755T family has built-in predictive maintenance capabilities that allow proactive measures to optimize the cost and frequency of maintenance activities. In the event you need repair, our Remanufacturing Services provide an environmentally friendly option, with quality and sustainability incorporated into every step. Prolonging the value of your assets is just one way we help industry transform in a way that is resilient and sustainable. Learn more at **rok.auto/sustainability**.

Safety solutions that improve productivity

Safety is priority one

In the past, implementing safety solutions often meant sacrificing productivity. PowerFlex 755T drives address productivity concerns by offering safety options that help protect your people and equipment while also reducing planned and unplanned downtime.

PowerFlex 755T drives offer four safety option modules

Hardwired safe torque off is designed for safety-related applications that benefit from removal of rotational power from the drive. This offers quick startup after a demand on the safety system. SIL3, PLe, CAT 3.

Networked safe torque off on EtherNet/IP provides the same benefits as hardwired Safe Torque Off using the network to deliver the safety command. Plus, networked safety gives you the ability to simplify your machine design and minimize required equipment. SIL3, PLe, CAT 3.

Safe speed monitor provides a solution for applications that benefit from access to a safety zone while there is limited motion. It allows operators to perform some process or maintenance work without stopping the machine.

Integrated controller-based safety functions provide PowerFlex 755T AC drives with advanced safety on an EtherNet/IP network. The option module uses safety instructions based on IEC 61800-5-2.

Drive-based safety instructions:

- Safe Torque Off (STO)
- Safe Stop 1 (SS1)

Controller-based safety functions:

- Safety Feedback Interface (SFX)
- Safe Stop 1 (SS1)
- Safe Stop 2 (SS2)
- Safe Operational Stop (SOS)
- Safely-limited Speed (SLS)
- Safely-limited Position (SLP)
- Safe Direction (SDI)
- Safe Brake Control (SBC)

When used as part of an integrated safety system that includes a GuardLogix® 5580ES controller or Compact GuardLogix 5380ES controller, the integrated safety functions option module provides safety ratings up to and including SIL3 and PLe CAT 4. Studio 5000 Logix Designer application version 31 or later is also required.

Built-in **control tools**

PowerFlex 755T drives come standard with DeviceLogix™ technology, a built-in control capability for local application and supplementary supervisory control.

Ideally suited to enhance productivity for standalone applications, DeviceLogix is designed for applications that require a quick and localized response to input events without the delays of network round-trip polling times. Plus, processing logic locally makes troubleshooting easier and processes can continue to run in the event of a network interruption.

DeviceLogix uses a simple programming tool that supports function block and ladder editors and is accessible via FactoryTalk® Studio 5000® add on profiles. DeviceLogix technology can be configured to operate under specific situations – so the created program runs only if the logic has been enabled and unswitched power is present. And by using built-in DeviceLogix capabilities, users can eliminate redundant firmware.

A few of the applications:

- Speed reference selection
- Complex math function
- Signal scaling
- Fault handling
- Selector switch functions
- Material counting for batch processes
- Encoder functions
- Signal conditioning
- Temperature control
- Motor control applications

Protection in harsh environments

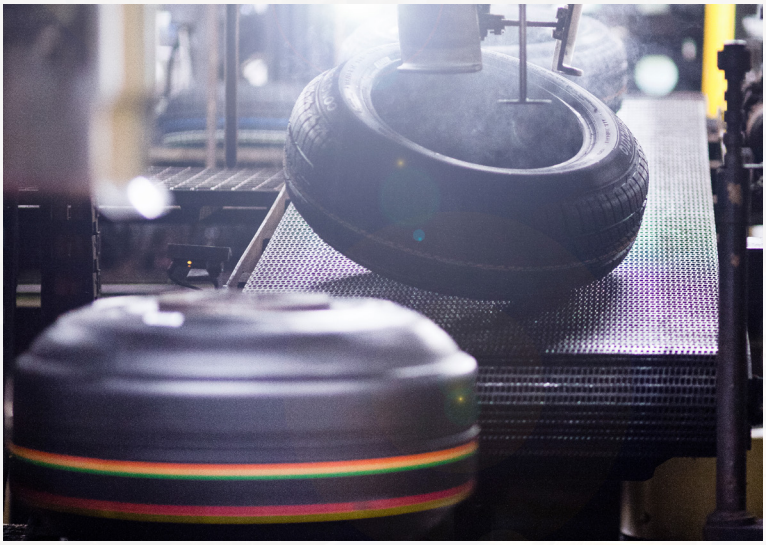
Your defense against corrosive gases

Reduce threat of early equipment failure from corrosion with PowerFlex drives with XT corrosive gas protection.

We've researched this widespread industry challenge to understand it better than anyone.

From our research, we developed solutions and recommendations that are helping manufacturers combat the effects of corrosion on VFDs in their plants. We call this XT.

Leveraging Rockwell Automation's proprietary research, testing, product design and installation instructions, PowerFlex drives with XT corrosive gas protection help reduce downtime that's related to premature equipment failure due to corrosion in caustic gas environments. Now available standard on all PowerFlex 755TL, TR and TM drives, and as an option for PowerFlex 755TS drives.



We'll help with the **heavy lifting**

If your work involves cranes, hoists or the lifting of any type of load, you understand the unique challenges posed by these types of applications. Safety, reliability and productivity are always on your mind. Fortunately, Allen-Bradley® drives are specifically designed to make your job easier.

Put these PowerFlex drive capabilities to work and invest in improved performance:

- TorqProve™ Control helps verify control of a load in lifting applications
- Anti-sway capability is designed to improve safety and efficiency by reducing the swinging of a moving load
- Regeneration enables a drive to put energy back on the incoming line, providing a braking solution that is far more energy efficient than resistive braking

PowerFlex **755TS drives**,
the smart motor control decision

The new addition to our portfolio of premium drives

The PowerFlex 755TS drive can be applied throughout your plant from traditional VFD applications to more advanced motor control applications that require high-performance motor control for precise speed, torque and positioning. It is the first standard industrial six-pulse drive to offer TotalFORCE® technology.

Designed for countless applications and industries, the PowerFlex 755TS helps deliver the productivity and throughput you need.

Boost productivity and uptime with:

- High-performance motor control with precise velocity, torque and positioning
- Simplified equipment maintenance and service with patented predictive maintenance technology
- Real-time device data for fast decision making at the plant level and that's accessible to cloud-based analytical engines
- Adaptive control features enable faster machine startup and increased machine reliability and performance
- Integrated networked and hardwired safety enables cost-effective machine safety implementation
- A common software and hardware experience that reduces complexity and training
- Multiple motor type support – induction, permanent magnet and synchronous reluctance
- Built-in dual port Gigabit Ethernet, 1000 MB — 10x higher throughput when compared to 10/100
- DeviceLogix™ integrated logic-solving capability for applications that require a quick and localized response to input events
- T-Link option card for fiber optic high-speed drive-to-drive communication
- CIP Security for secure communications, ensuring authorization, integrity and privacy between trusted devices
- XT corrosive gas protection option helps improve uptime and reduce corrosion in caustic gas environments
- 1...400 Hp / 0.75...270 kW / 400...480V
- -20...60°C operating temp (-20...50°C without derate)
- Enclosure options: IP54, flange and option for XT corrosive gas protection

"Designed for countless applications and industries, the **PowerFlex 755TS helps deliver the productivity and throughput you need.**"

PowerFlex **755TL & 755TR drives**

boost productivity

Nobody delivers a broader suite of smart solutions

With operating data and process control status at your fingertips, it can make the difference between profit and loss.

The family of PowerFlex 755T drives can boost productivity, lower costs and improve performance from your process control system.

PowerFlex 755TL and 755TR drives provide built-in harmonic mitigation and power factor correction through the use of active front end technology. By reducing the adverse effects of harmonic distortion, the drives help to improve energy efficiency, reduce energy costs and minimize power distribution issues on the factory floor.

Using built-in regeneration, PowerFlex 755TR drives also help reduce energy consumption by delivering energy back to the incoming power supply.

Benefits of harmonic mitigation

- Lower harmonics and power factor correction reduces the need to oversize your electrical power equipment
- Reduced harmonic distortion helps minimize disruption to other devices
- Meets IEEE 519 standard (5% or less of total harmonic distortion)

Benefits of regeneration

- The drive can put energy back on the incoming power supply, and is far more energy efficient than resistive or mechanical braking
- Eliminate the need for braking resistors and cooling equipment along with wiring, labor, installation and maintenance costs

Other benefits

Built-in components decrease floor space requirements and panel width to provide market-leading power density

- Maintain operation through most line disturbances with power loss ride-through control
- Configure and program the converter and inverter using Studio 5000 Logix Designer® or Connected Components Workbench™ software
- Standard dual EtherNet/IP ports provide topology flexibility and Premier Integration into the Logix environment
- Advanced diagnostics and predictive maintenance to help increase performance and uptime, decrease commissioning time
- PowerFlex 755TL and TR drives come standard with XT corrosive gas protection

Looking for an “out of the box” solution?

PowerFlex 755TL, TR and TM drives can be ordered and delivered to meet your specific packaging needs:

- Input circuit breaker and/or fuses
- Door-mounted pushbuttons and selector switches
- Optional door-mounted HIM
- Output contactor and/or output filter
- Communication options
- I/O options
- Voltage sensing and infrared viewing windows

Design and order through ProposalWorks. If you don’t already have access to our configuration tool, download the ProposalWorks tool at **rok.auto/pst**.

PowerFlex **755TM drive solutions**

optimize system design and power consumption

Agile operating systems increase productivity and so much more

Select from a series of predesigned configurations for regenerative common bus supplies and common bus inverters to optimize your system design and power consumption. A common bus drive system offers design flexibility, energy optimization and reduced installation costs. Plus, the PowerFlex 755TM offers harmonic mitigation and built-in regeneration capability.

PowerFlex 755TM benefits

- Gain energy efficiency with motors that share energy between regenerating and motoring loads
- Optimize floor space, simplify installation and reduce hardware with drives connected to a common DC bus
  - Removes the need to wire AC power to each drive individually
  - Reduces installation time, labor and cabling costs
  - DC bus terminals built into each unit allow for easy connection to adjacent units
  - Floor mount drives feature an integrated control bus in each unit for efficient distribution of auxiliary power throughout a cabinet line up
  - PowerFlex 755TM drives come standard with XT corrosive gas protection
- Common bus systems enable a mixed architecture that allows connection of different types of VFDs, servo drives and other power components to the same DC bus
- Designed to enable coordination of multiple motors
  - Meets IEEE 519 standard (5% or less of total harmonic distortion)
  - Reducing harmonic distortion helps improve energy efficiency and minimize power distribution issues on the factory floor
  - Eliminate the need for auto-transformers or filters along with the associated wiring, labor, space, installation and maintenance costs

PowerFlex 755TM non-regenerative supply

A cost-effective solution for a common bus, when regenerative and low harmonics are not required. This modular offering is scalable to meet your specific power requirements.

"The regeneration ability puts energy back on the incoming line, **providing a solution that is far more energy efficient than resistive braking."**

Service integration minimizes downtime

Combining advance drive technology with modern support tools minimizes unplanned downtime and reduces maintenance costs.

- Troubleshoot more quickly with online and virtual support options
- Maximize technology investments with integrated service offerings that provide priority support
- Empower your maintenance resources with access to data insights and augmented reality tools to optimize maintenance productivity, and with e-learning that fits your schedule
- Adopt new technology and build automation and control systems expertise

Technical **specifications**

	PowerFlex 755TS Drives	PowerFlex 755TL Drives	PowerFlex 755TR Drives	PowerFlex 755TM Drives
Ratings 200/240V	Future Availability	NA	NA	NA
Ratings 400V	0.75...270 kW	7.5...1250 kW	7.5...3640 kW	Common Bus Inverter: 160...3640 kW Regenerative Bus Supplies: 87...4358 kW
Ratings 480V	1...400 Hp	10...1800 Hp	10...6000 Hp	Common Bus Inverter: 250...6000 Hp Regenerative Bus Supplies: 90...4818 kW
Ratings 600V	Future Availability	10...1500 Hp	10...5100 Hp	Common Bus Inverter: 250...5100 Hp Regenerative Bus Supplies: 69...4432 kW
Ratings 690V	Future Availability	11...1400 kW	11...4550 kW	Common Bus Inverter: 200...4550 kW Regenerative Bus Supplies: 84...4714 kW
Communications	Built-in dual-port Gigabit EtherNet/IP • ControlNet • DeviceNet • PROFIBUS DP • PROFINET • Fiber optic drive-to-drive communication			
Safety Options	Hardwired Safe Torque Off SIL3, PLe, CAT 3 • Networked Safe Torque Off SIL3, PLe, CAT 3 • Hardwired Safe Speed Monitor SIL3, PLe, CAT 4 • Networked Integrated Safety Functions SIL3 and PLe, CAT 4			
Ambient Temperature Ratings	-20...50 °C ambient without derating -20...60 °C with derate	-20...40 °C ambient without derating -20...55 °C with derate		
Storage Temperature	-40...70 °C			
Relative Humidity	Operation: 0...95% non-condensing			
TotalFORCE Technology Motor Control	Sensorless vector • Flux vector control • Volts per Hertz • Economizer • Field-oriented control • Permanent magnet motor control • Synchronous reluctance			
Motor Control Bandwidth*	Velocity Regulator Bandwidth 300 Hz (1885 Radians per second) Position Regulator Bandwidth 207 Hz (1301 Radians per second)			
Standards and Certifications	c-UL-us • CE • EAC • KCC • RCM • RoHS • Seismic For a complete list of product certifications, please search for PowerFlex Certifications on the Rockwell Automation website (literature.rockwellautomation.com)			
Torque Accuracy	2% of rated torque down to 5% of motor base speed – with optional torque accuracy module 5% of rated torque below 5% of motor base speed			

* 3 dB Crossing (Closed Loop) specifications

The right expertise, at the right time.

We empower your lifecycle and digital transformation journey with our expansive domain knowledge.

CONSULTING SERVICES

Digital transformation & The Connected Enterprise

Data science & analytics

Enterprise technology

Automation FEED / FEL

Safety & risk management

PROFESSIONAL SERVICES

Main Automation Contractor (MAC)

Modernization & migration engineering

Program and project management & implementation

Global rollouts

CONNECTED SERVICES

OT networks & cybersecurity

Managed services

OT infrastructure as a service

Remote support

Predictive/prescriptive analytics

FIELD SERVICES

Asset repair, remanufacturing and management

Safety assessment and remediation

On-site technical support

WORKFORCE SERVICES

E-learning

Instructor-led & virtual training

Workforce assessments

Virtual reality / augmented reality

To learn how we can help you solve your unique business challenges, contact your local authorized Allen-Bradley® distributor or Rockwell Automation sales office, or visit: **rok.auto/lifecycle.**

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Connect with us.

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Publication 755T-BR001G-EN-P – March 2022
Supersedes publication 755T-BR001F-EN-P – March 2021
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