

Revision: 1.0
Dec 3rd, 2020

EC-Series DC Torque Control System Calibration Procedure



GENERAL SAFETY RULES

WARNING! Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious personal injury.

SAVE THESE INSTRUCTIONS

Work Area

Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.

Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite the dust or fumes.

Keep bystanders, children, and visitors away while operating a power tool.

Distractions can cause you to lose control.

Electrical Safety

Grounded tools must be plugged into an outlet properly installed and grounded by all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use ungrounded plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.

Avoid body contact with grounded surface and pipes, radiators, ranges, and refrigerators. There is an increased risk of electric shock if your body is grounded.

Don't expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

Take care when using and handling the power/data cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep the cord away from heat, oil, sharp edges, or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.

When operating a power tool outside, use an outdoor extension cord marked W-A or W. These cords are rated for outdoor use and reduce the risk of electric shock.

Personal Safety

Stay alert, watch what you are doing, and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury.

Dress according to local safety guidelines. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.

Avoid accidental starting of tool(s). Be sure the switch is off before plugging in. Carrying tools with your finger on the switch or plugging in tools may result in personal injury.

Remove adjusting keys or switches before turning the tool on. A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.

Keep proper footing and balance at all times. Proper footing and balance enable better control of the tool in unexpected situations. Use safety equipment. Always wear eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

Tool use and Care

Use clamps or another practical way to secure and support the workplace to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.

Do not operate a tool beyond its defined limits. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

Do not use the tool if the switch does not turn it on or off. Any tool that cannot be controlled with the switch is dangerous and must be repaired.

Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.

Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.

Maintain tools with care. Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges, are less likely to bind and are easier to control.

Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the operation of the

tool. If damaged, have the tool serviced before using it. Many accidents are caused by poorly maintained tools. Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool, may become hazardous when used on another tool.

SERVICE

Tool service must be performed only by qualified personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.

When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES

Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its cord. Contact with a "live" wire will make exposed metal parts of the tool "live" and shock the operator.

Never lubricate aerosol oil on to the electrical part.

There are four scenarios needed to be taken into consideration to adjust torque Output on EC-Series DC Controllers:

1. Tool Calibration from Factory

Tools gearbox and servo motor are tuned to reach maximum efficiency during the manufacturing process. DC Controller is calibrated using ISO17025 certified torque tester. Results are saved to both driver and control unit memory. Customers will notice under “torque calibration %” that brand new units will show 100%.

NOTE: ANY OTHER MODEL OR BRAND OF TORQUE TESTING EQUIPMENT USED TO VERIFY CONTROLLER READINGS FROM FACTORY MIGHT SHOW DIFFERENT RESULTS

2. Tool Preset @ Specific Torque Setting @ the time of purchase

This option can be selected by the customer when acquiring a new system. Mountz Service Department would generate an ISO17025 traceable calibration certificate

The customer would have to indicate the torque setting needed to be certified

NOTE: THIS CERTIFICATE loses VALUE AS SOON AS CUSTOMER CHANGES TORQUE CALIBRATION % VALUES ON CONTROLLER SETTINGS

3. DC Controller torque verification @ customer's site

Customers can choose to use their existent torque testing equipment to validate and calibrate DC Controller at any time.

Under this scenario, the customer takes readings from the controller and if these do not match to their torque testing device, simply adjust Torque Calibration % up and down until matching reading with torque tester device.

Customer can perform this verification using two ways:

- a) Statically, using a torque testing device
- b) Dynamically, using a Rotary Sensor and taking readings directly at the application

NOTE: MAKE SURE DURING THIS PROCESS, TO DOCUMENT TYPE OF JOINT, SPEED, TOLERANCE, AND TESTER FEATURES TO ASSURE SAME RESULTS NEXT TIME THIS PROCESS IS REPEATED

Note: Tool Calibration affects all programs (presets). Tool Calibration is stored on the Driver Memory

4. Torque Transference to joint or customer's application.

DC Controller is either calibrated and verified torque from the factory, or customer's location using their torque testing equipment. Assuming that torque will be 100% transferred to joint or application would be inaccurate.

Depending on the application or joint conditions; installed torque on the product could be minimum, or it also could be a big difference. Joint characteristics are completely different from one application to another. Users must make sure they understand these differences and act accordingly.

Best way to acknowledge this will be with the use of a Rotary Sensor connected to a torque tester device and attached to the DC Controller Driver. Take some readings on the product been assembled, compare them to Controller readings on display. These readings must be very close to the same. If not, adjustments to the controller must be made.

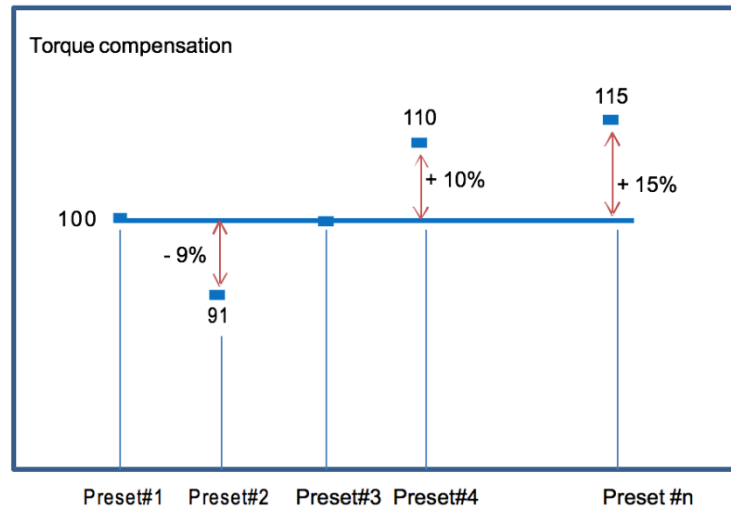
- a) The best-recommended scenario would be torque compensation @ controller PRESET level. This adjustment affects the specific PRESET settings been used on that application.
- b) If the tool is been used permanently on the same application, it would be recommended to simply adjust Torque Calibration % that would store value to the entire system. All default presets.

How to:

Tool Compensation (PRESET LEVEL)

This option is done at the preset (program) level. On a specific preset, a customer might need to lower or exceed the minimum or maximum torque capacity of the tool been used on the preset.

MD-Series offers the possibility of lowering or increasing motor power to achieve this unique feature. Setting A015 offers this possibility and customers can be adjusted up to +/-20%. This is adjusted when an application target torque slightly exceeds max or min torque capacity. Mountz strongly recommends selecting a higher or lower torque capacity tool if this feature will be adjusted permanently.



NOTE: Tool Compensation adjustment affects only the selected preset (program), this means that all other presets will remain as normal. Tool Compensation is stored on the Controller Memory

NOTE: It is Mountz's recommendation to a customer to periodically verify torque accuracy of EC-Series DC Control System with an ISO17025 Certified torque verification meter and ensure the quality of their process. It is up to the customer's standards to determine how often the tools need to be validated or verified.

Tool Calibration Process

Torque calibration using controller Display

Parameter		Menu
■ Torque calibration (%)	- 100 +	
■ LCD brightness	- +	
■ Initial torque preset # display when power on	- 1 +	
■ Controller parameter initialize		

Controller 3 / 8

Torque calibration using Controller's Software

ParaMon - Parameter & Remote control

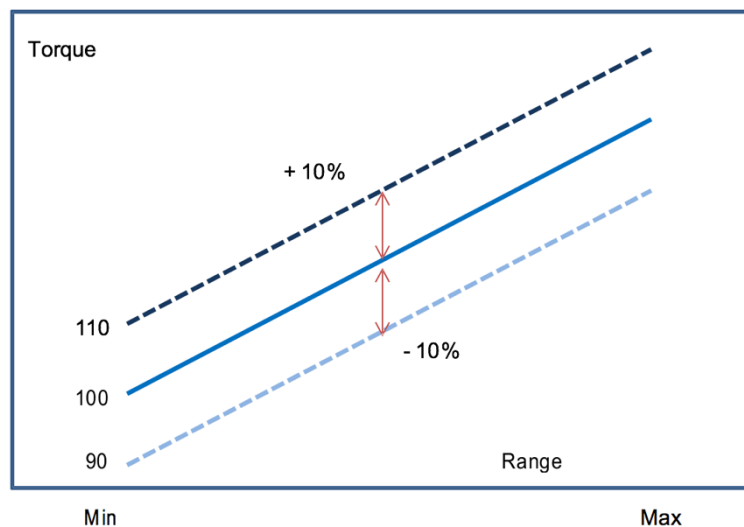
Controller Multi Sequence Models Network Backup Restore Open

Controller Setting

Address	Name	Value
Category: Controller 1		
A270	Forward RUN time limit (sec)	10
A271	Reverse RUN time limit (sec)	10
A272	Motor stall time limit (sec)	0,2
A273	Loosening speed (rpm)	690
A274	Acceleration (ms)	150
A275	Fastening OK signal out time (ms)	0
A276	Driver ID	1
A277	Error display reset time (sec)	10
A278	Torque calibration (%)	100
A279	LCD brightness	45
A280	Initial torque preset # display when power on	1
A282	Password	0
A283	Controller parameter initialize	0
A284	Automatic driver lock (Model mode only)	DISABLE

When the reading on the torque meter master is lower than the setting on the tool, increase the calibration value more than 100(%) which is basic on production. To increase the output torque 5% more, key in 105(%). The calibration value works through a whole range of torque. It will be refreshed and stored in the memory of the tool so it can be still effective when using the tool on another controller.

NOTE: Different Torque Analyzer Master will provide different results. Make sure you always use the same ISO17025 Torque Analyzer Master with the same accessories and testing conditions: RDA, Tool Speed, Tester Filter Setting, Torque Arm to obtain valid results.



Standard test conditions on factory calibration used by Mountz.

Rundown screw size, joint type, and filter

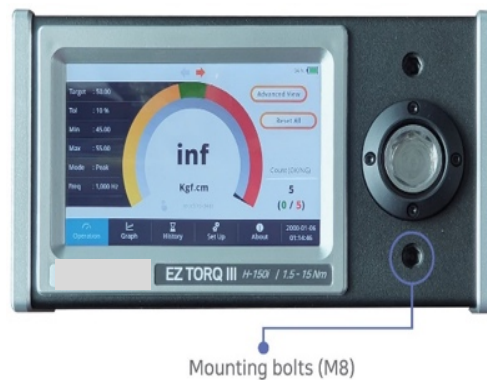
Tool	Rundown adaptor	Low Pass Filter
MD2601	M3 Allen, Hard joint	200Hz
MD2602, MD2604	M3 Allen, Hard joint	500Hz
MD2611, MD2616	M4 Allen, Hard joint	500 Hz
MD3201	M3 Allen, Hard joint	200Hz
MD3202	M3 Allen, Hard joint	500Hz
MD3204	M4 Allen, Hard joint	500 Hz
MD3211, MD3216	M6 Allen, Hard joint	500 Hz
MD3236, MD3264	M12 Allen, Hard joint	500 Hz



EZtorQ-III

Model	Item	Torque Capacity Lbf.In.
EZTorQIII-10i	070810	1 - 10
EZTorQIII-50i	070811	5 - 50
EZTorQIII-100i	070812	10 - 100
EZTorQIII-150i	070813	15 - 150
EZTorQIII-300i	070814	30 - 300

Note: Be careful not to exceed torque capacity on torque analyzer. Doing so may damage the analyzer and/or pull the calibration of the analyzer out of spec





From the land of 1's and 0's torque tools that inspire 100% confidence

Tools that come from the birthplace of innovation. Engineered with the legendary precision, accuracy and safety that continue to turn the world of manufacturing in one direction: forward.

LEARN MORE ABOUT US



Need Help Finding A Tool?

From screwdrivers and wrenches to analyzers, multipliers, arms, bits and accessories, we have the torque tools for your job.

TALK TO AN ADVISOR

World Class ISO Certified Tool Repair and Calibration Services

Whether under warranty or not, we can repair Mountz tools with the utmost precision and we can calibrate any torque tool in the world.

📞 (408) 850-9978

🕒 M-F 6am - 5pm PST

Silicon Valley Headquarters:
1080 N. 11th St
San Jose, CA 95112

Alabama Distribution and Service Center:
19051 Underwood Road
Foley, AL 36535

📞 International:
+44 800 014 8753

[View All Our Locations](#)