

Dec 22, 2019

MD-Series V2 DC Torque Control System Product Specifications And Calibration Procedure



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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 THIS 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 in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any 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 ad 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
- **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep 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 properly. 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. Be sure 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.
- **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables 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 other 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 force tool. 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 tool if 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.** Such preventive safety
- **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 tools operation. If damaged, have the tool serviced before using.** 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 own 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.

Product

It consist of DC Servo screwdriver and controller as a complete system.

1) Standard packing item



Screwdriver



Cable_14P (3m)



MDC-26, MDC-32 controller

2) Option accessories



44P I/O wiring box



ParaMon Touch II



AC adapter
(DC24V, 1A)



RS-232C cable



Vacuum
pick-up assy



Bit holder
for long bit

Main features

- 1) Digital torque and angle program in 15 preset numbers and 2 multi step sequence programs
- 2) 15 Models managing variable presets with counting no. and I/O in sequential 10 steps
- 3) Color LCD touch screen with easy control
- 4) Auto speed setting by torque
- 5) Monitoring fastening quality and count of screw numbers
- 6) Error information by code display
- 7) Easy parameter setting and monitoring by ParaMON (PC software)
- 8) Real time torque data and curve display
- 9) Real time fastening data output
- 10) Modbus and Open Protocol
- 11) RS232C, Ethernet communication port

● Straight hand-held (Lever start)

Model	Torque kgf.cm	Torque Lbf.In	Speed range	Bit socket	Controller
MD2601	0.3 ~ 4	0.26 - 3.4	150-2000	Hex1/4" or dia.4	MDC-26
MD2602	0.5 ~ 7	0.43 - 6	150-2000	Hex1/4" or dia.4	
MD2604	2 ~ 14	1.7 - 12.1	150-1500	Hex1/4"	
MD2611	4 ~ 34	3.4 - 29.5	100-900	Hex1/4"	
MD2616	5 ~ 50	4.3 - 43.4	100-620	Hex1/4"	
MD3201	1 ~ 12	0.86 - 10.4	150-2000	Hex1/4"	MDC-32
MD3202	2 ~ 22	1.7 - 19	150-2000	Hex1/4"	
MD3204	4 ~ 40	3.4 - 34.7	150-1500	Hex1/4"	
MD3208	7 ~ 75	6 - 65.1	50-950	Hex1/4"	
MD3210	8 ~ 87	6.9 - 75.1	50-750	Hex1/4"	
MD3211	10 ~ 90	8.68 - 78.1	50-690	Hex1/4"	
MD3216	20 ~ 140	17.3 - 121.5	50-470	Hex1/4"	
MD3236	40 ~ 280	34.7 - 243	50-210	SQ3/8	
MD3264	80 ~ 500	69.4 - 434	50-115	SQ1/2	

● Pistol grip hand held (Trigger start)

Model	Torque kgf.cm	Torque Lbf.In	Speed range	Bit socket	Controller
MDP3201	1 ~ 12	0.86 - 10.4	150-2000	Hex1/4"	MDC-32
MDP3202	2 ~ 22	1.7 - 19	150-2000	Hex1/4"	
MDP3204	4 ~ 40	3.4 - 34.7	150-1500	Hex1/4"	
MDP3208	7 ~ 75	6 - 65.1	50-950	Hex1/4"	
MDP3210	8 ~ 87	6.9 - 75.1	50-750	Hex1/4"	
MDP3211	10 ~ 90	8.68 - 78.1	50-690	Hex1/4"	
MDP3216	20 ~ 140	17.3 - 121.5	50-470	Hex1/4"	
MDP3236	40 ~ 280	34.7 - 243	50-210	Hex1/4"	
MDP3264	80 ~ 500	69.4 - 434	50-115	SQ3/8	

● Angle head hand-held (Lever start)

Model	Torque kgf.cm	Torque Lbf.In	Speed range	Bit socket	Controller
MDH2604	2 ~ 14	1.73 - 12.1	150-1500	Hex1/4"	MDC-26
MDH2611	4 ~ 34	3.4 - 29.5	100-900	Hex1/4"	
MDH2616	5 ~ 50	4.34 - 43.4	100-620	Hex1/4"	
MDH3201	1 ~ 12	0.86 - 10.4	150-2000	Hex1/4"	MDC-32
MDH3202	2 ~ 22	1.7 - 19	150-2000	Hex1/4"	
MDH3204	4 ~ 40	3.4 - 34.7	150-1500	Hex1/4"	

MDH3208	7 ~ 75	6 - 65.1	50-950	Hex1/4"
MDH3210	8 ~ 87	6.9 - 75.1	50-750	Hex1/4"
MDH3211	10 ~ 90	8.68 - 78.1	50-690	Hex1/4"
MDH3216	20 ~ 140	17.3 - 121.5	50-470	Hex1/4"
MDH3236	40 ~ 280	34.7 - 243	50-210	SQ3/8
MDH3264	80 ~ 500	69.4 - 434	50-115	SQ1/2



MDA2201
MDA2204

vacuum pick-up (Option)

vacuum pick-up (Option)

★ Options

C : Bit cushion – rotating shaft has
4.5mm stroke sliding up cushion

V : Vacuum pick-up assy – screw
pick-up by vacuum. It require
custom design for mouthpiece

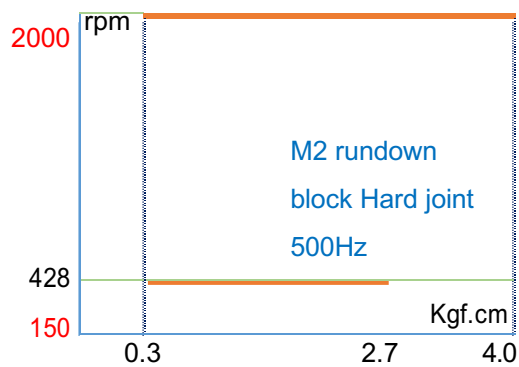
MDA2601	MDA3201	MDA3211
MDA2602	MDA3202	MDA3216
MDA2604	MDA3204	MDA3236
MDA2611	MDA3208	MDA3264
MDA2616	MDA3210	

● Spindle for automation (Remote start by I/O)

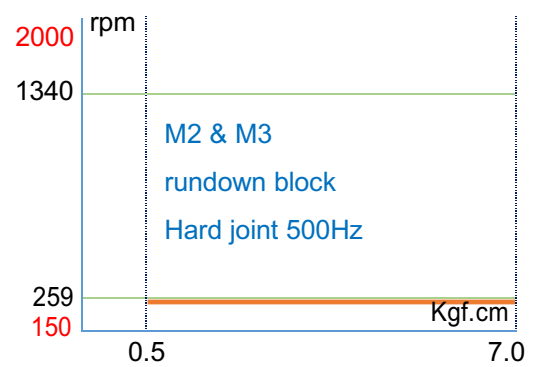
Model	Torque(kgf. cm)	Torque Lbf.In	Speed range	Bit socket	Controller
MDA2201	0.10 ~ 0.7	0.08 - 0.60	1000	dia.4 half moon	MDC-26
MDA2204	0.2 ~ 2.8	0.17 - 2.43	1000	dia.4 half moon	
MDA2601	0.3 ~ 4	0.26 - 3.4	150-2000	dia.4 half moon	
MDA2602	0.5 ~ 7	0.43 - 6	150-2000	Hex1/4" or dia.4	
MDA2604	2 ~ 14	1.73 - 12.1	150-1500	Hex1/4" or dia.4	
MDA2611	4 ~ 34	3.4 - 29.5	100-900	Hex1/4"	
MDA2616	5 ~ 50	4.34 - 43.4	100-620	Hex1/4"	
MDA3201	1 ~ 12	0.86 - 10.4	150-2000	Hex1/4"	MDC-32
MDA3202	2 ~ 22	1.7 - 19	150-2000	Hex1/4"	
MDA3204	4 ~ 40	3.4 - 34.7	150-1500	Hex1/4"	
MDA3211	10 ~ 90	8.68 - 78.1	50-690	Hex1/4"	
MDA3216	20 ~ 140	17.3 - 121.5	50-470	Hex1/4"	
MDA3236	40 ~ 280	34.7 - 243	50-210	SQ3/8	
MDA3264	80 ~ 500	69.4 - 434	50-115	SQ1/2	

Auto Speed by torque setting under the each test condition

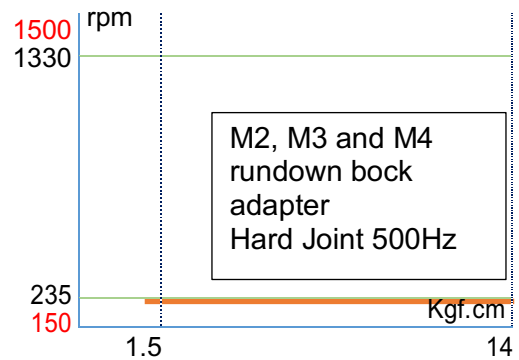
- ◆ **Speed range** : Available setting range by manual
- ◆ **Auto speed by torque setting** : Safe speed not exceeding over torque by rotation inertia under the testing conditions described on the chart



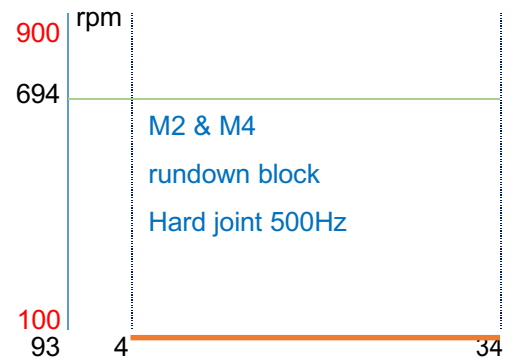
MD2601



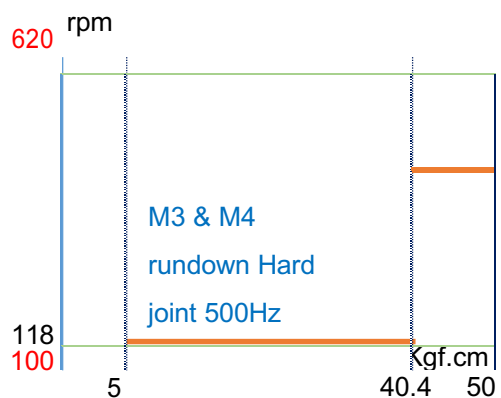
MD2602



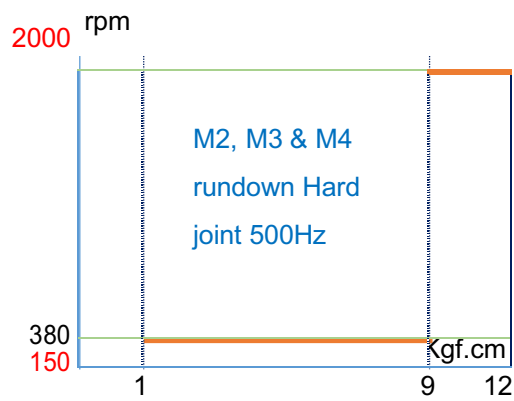
MD2604



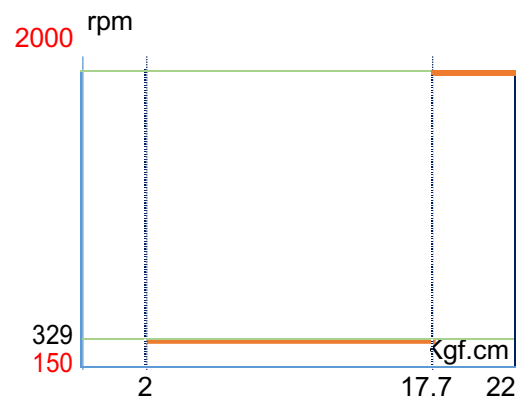
MD2611



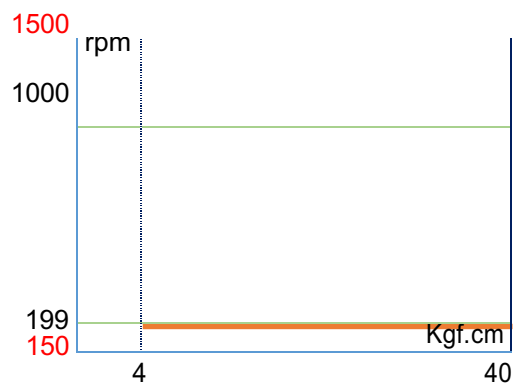
MD2616



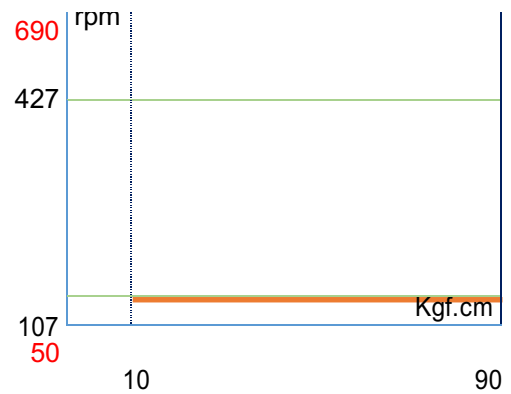
MD3201



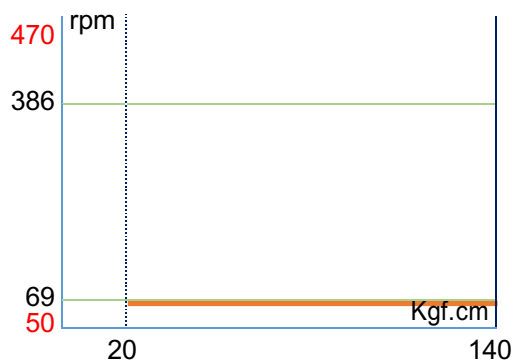
MD3202



MD3204



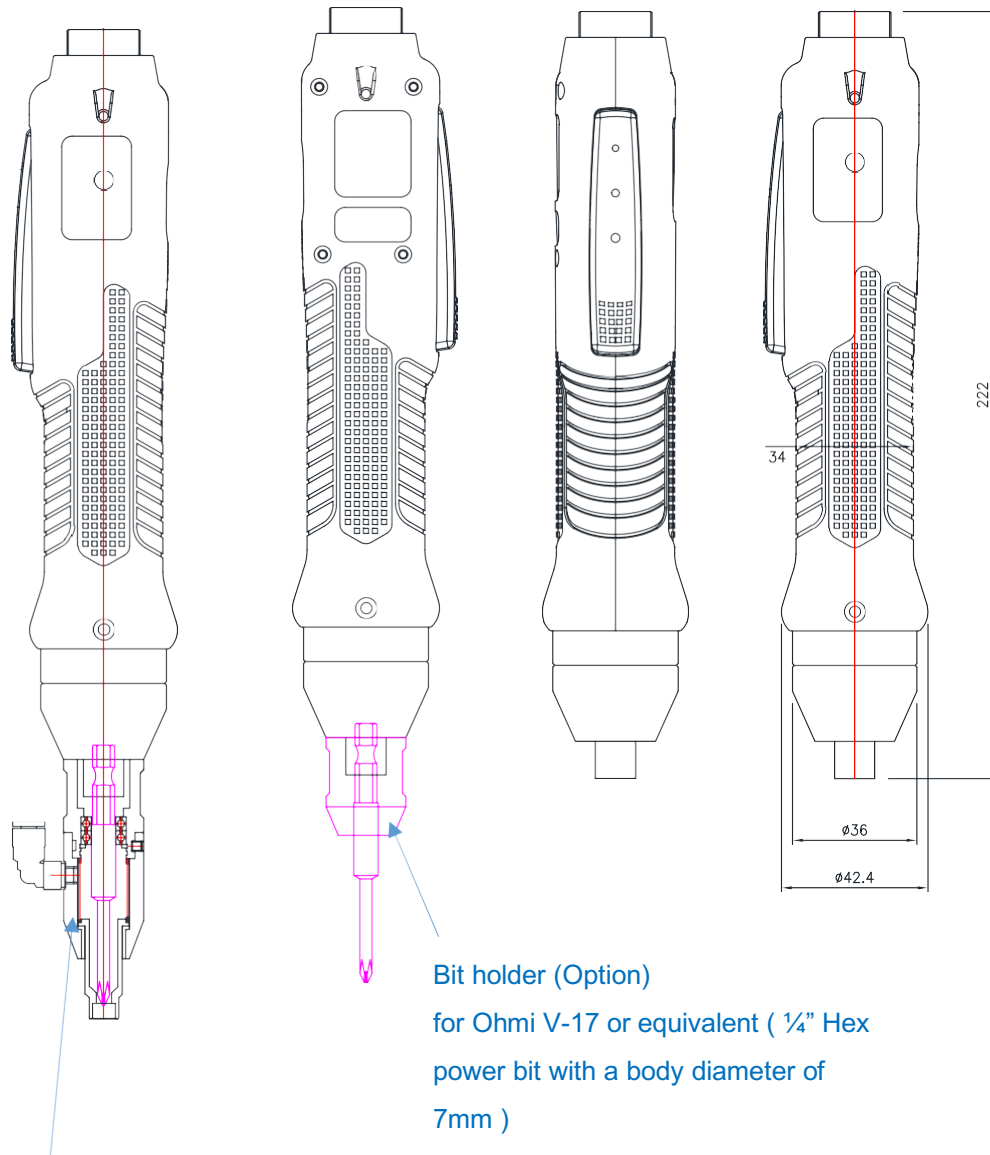
MD3211



MD3216

Screwdriver dimension

■ MD2601, MD2602

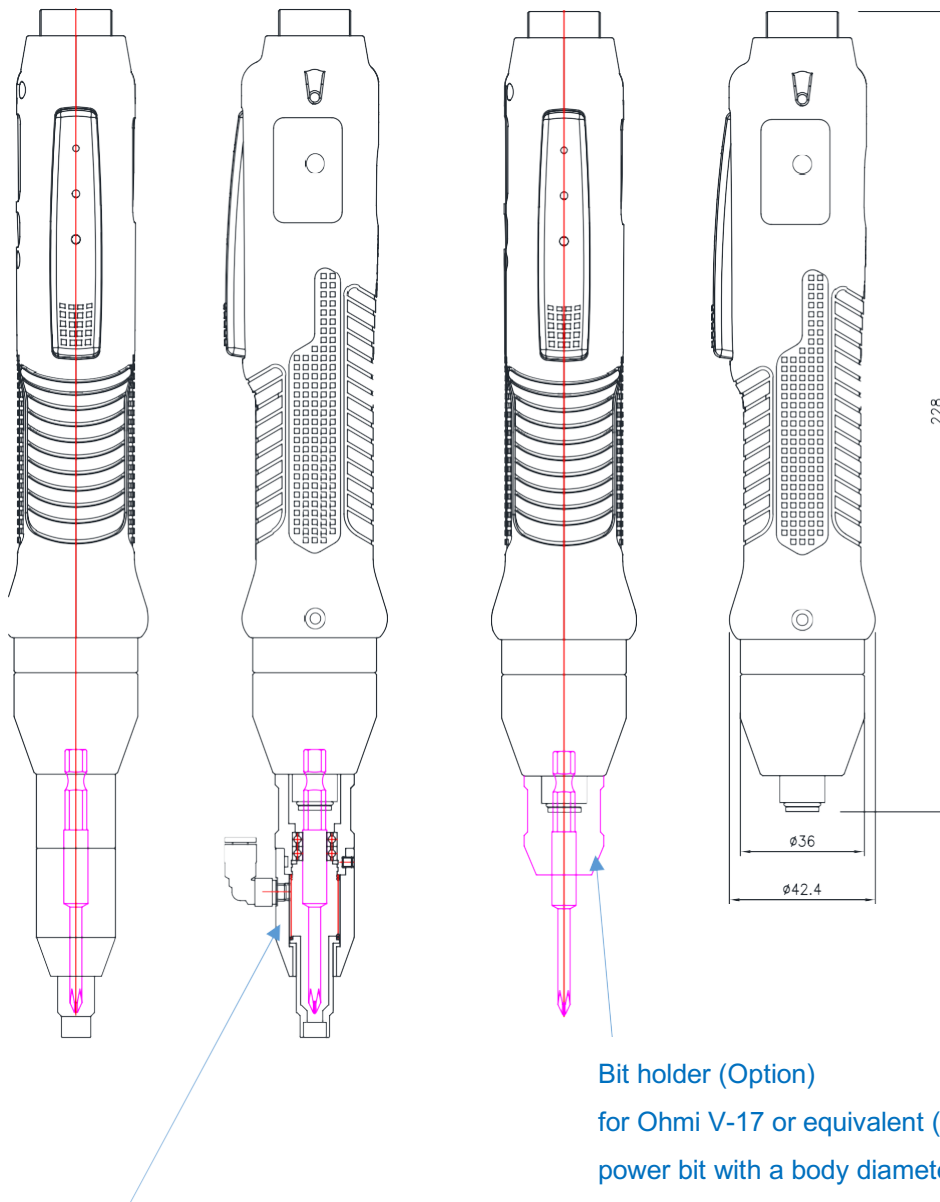


Vacuum pick-up assy (Option)

for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)

The above vacuum pick-up assembly and mouthpiece is for reference only and is sold separately. All mouthpieces are application specific and must be designed and fabricated for each application.

■ MD2604, MD2611, MD2616



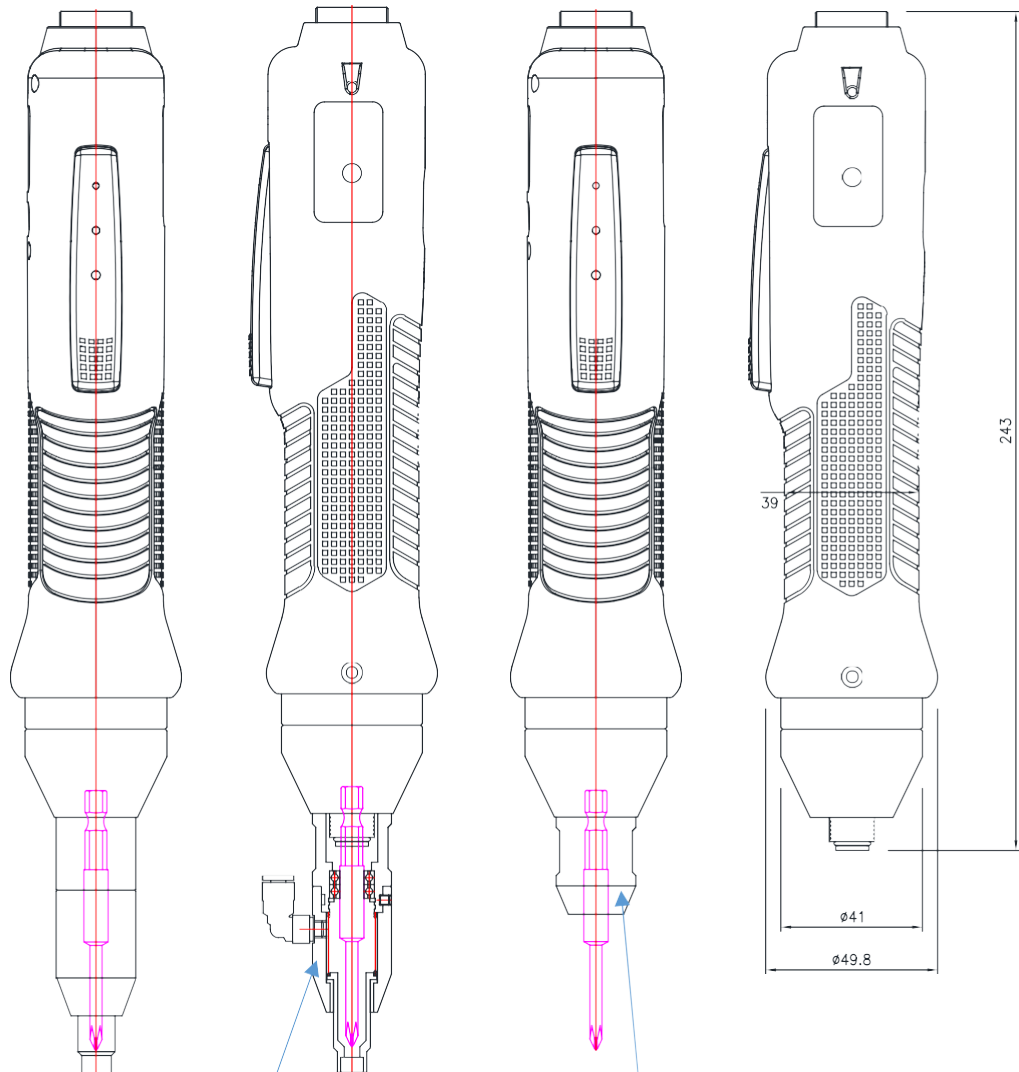
Bit holder (Option)
for Ohmi V-17 or equivalent (1/4" Hex
power bit with a body diameter of
7mm)

Vacuum pick-up assy (Option)

for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)

The above vacuum pick-up assembly and mouthpiece is for reference only and is sold separately. All mouthpieces are application specific and must be designed and fabricated for each application.

■ MD3201, MD3202



Bit holder (Option)
for Ohmi V-17 or equivalent ((1/4"
Hex power bit with a body diameter
of 7mm)

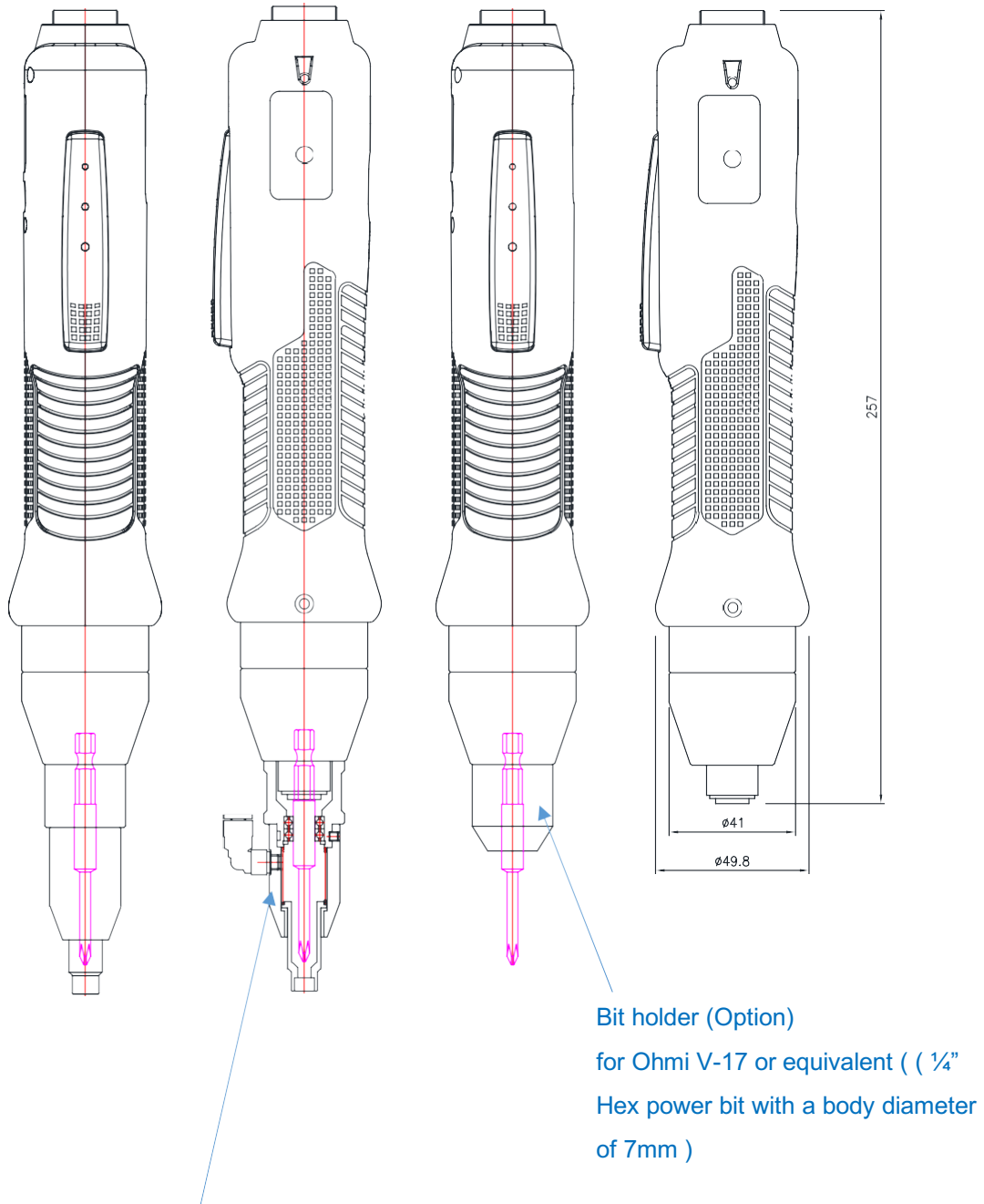
Vacuum pick-up assy (Option)

for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)

The above vacuum pick-up assembly and mouthpiece is for reference only and is sold separately.

All mouthpieces are application specific and must be designed and fabricated for each application.

■ MD3204, MD3211, MD3216



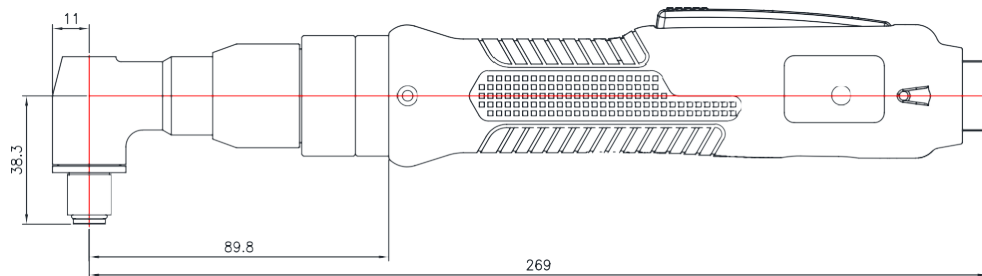
Vacuum pick-up assy (Option)

for Ohmi V-17 or equivalent (Hex1/4" with Dia 7mm body hold by bearing)

The above vacuum pick-up assembly and mouthpiece is for reference only and is sold separately.

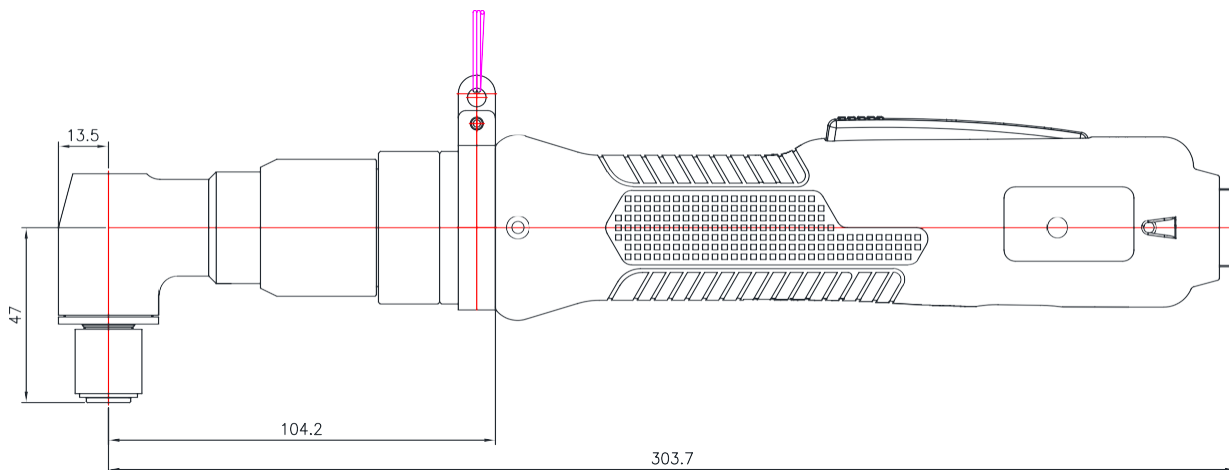
All mouthpieces are application specific and must be designed and fabricated for each application.

■ MDH2604, MDH2611, MDH2616

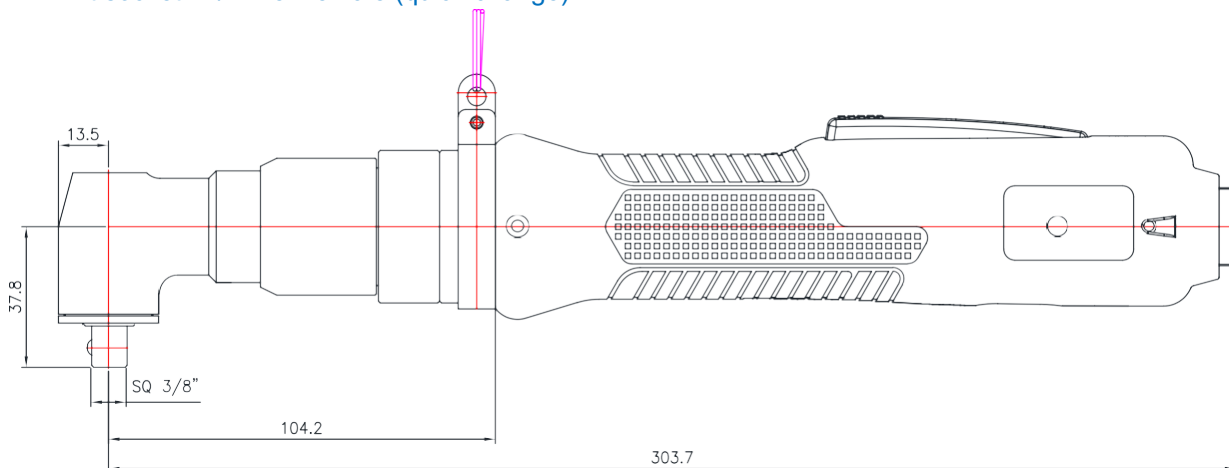


Bit socket : 1/4" hex female (quick change)

■ MDH3201, MDH3204, MDH3211, MDH3216

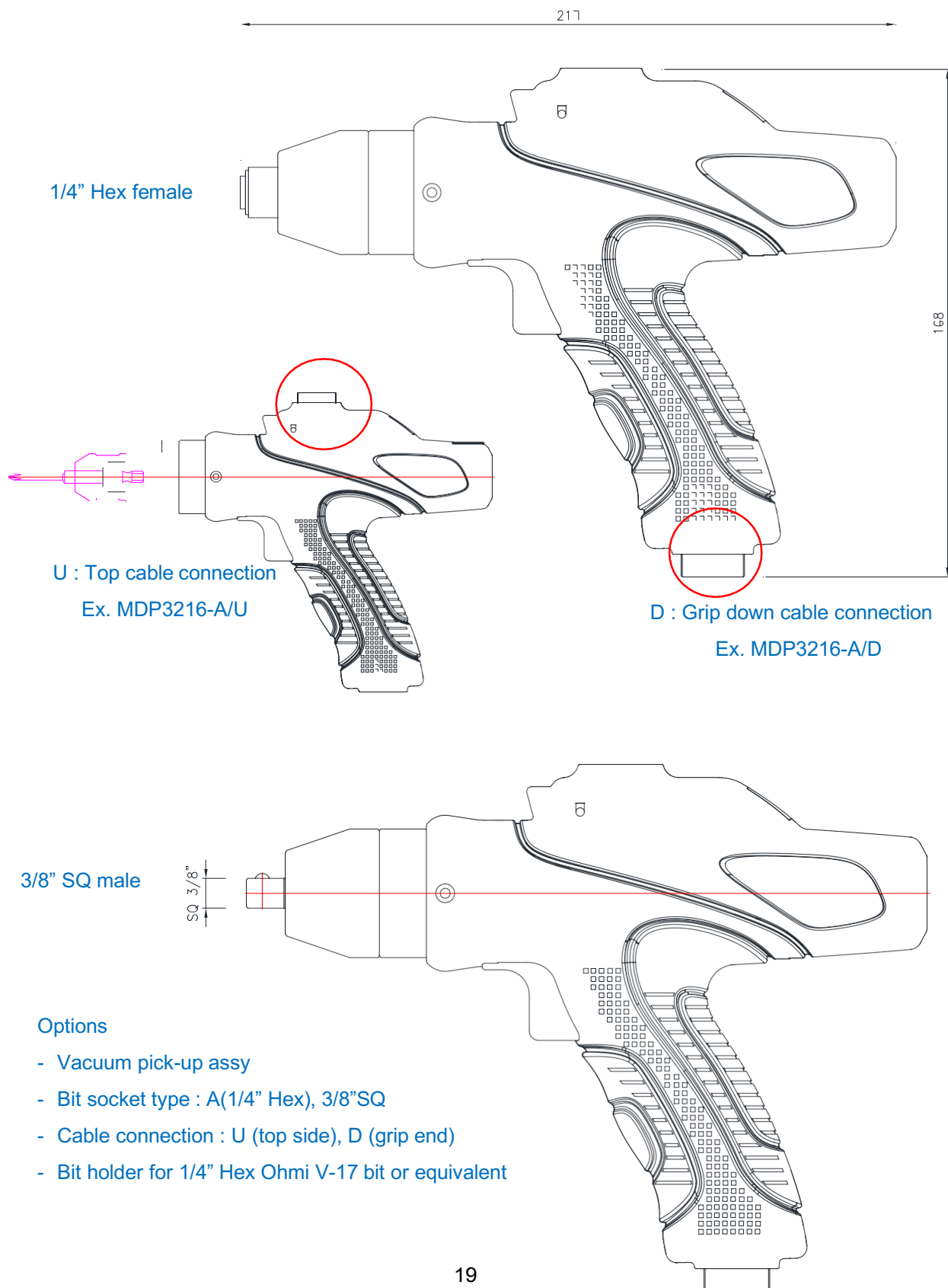


Bit socket : 1/4" hex female (quick change)



Bit socket : 3/8"SQ drive

- MDP3201, MDP3202, MDP3204, MDP3211, MDP3216



MDA2201-E+VC

MDA2201-E + VC

Model

Bit type

A: 1/4" Hex

E: Dia. 4mm

Option accessory

V : Vacuum pick-up assy

C : Bit Cushion

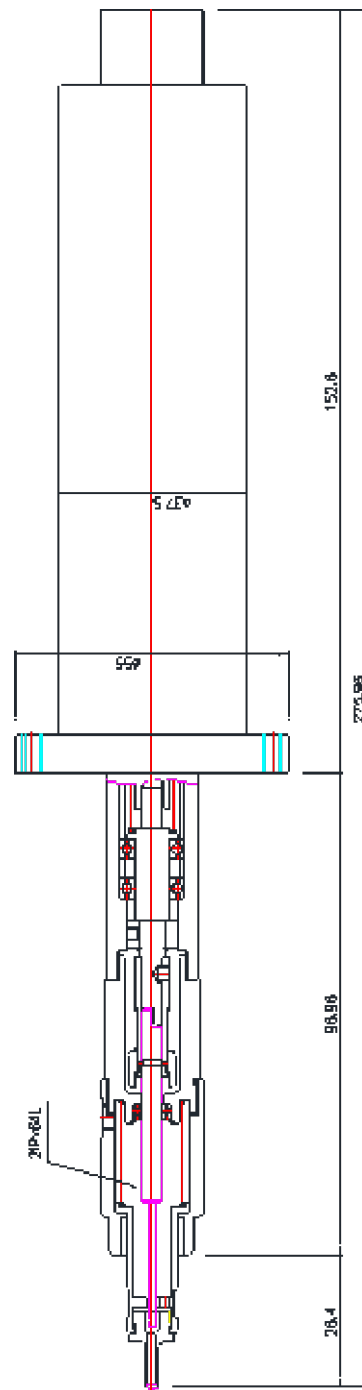
Vacuum pick-up + Bit cushion (Option)

Available model : MD2207-E

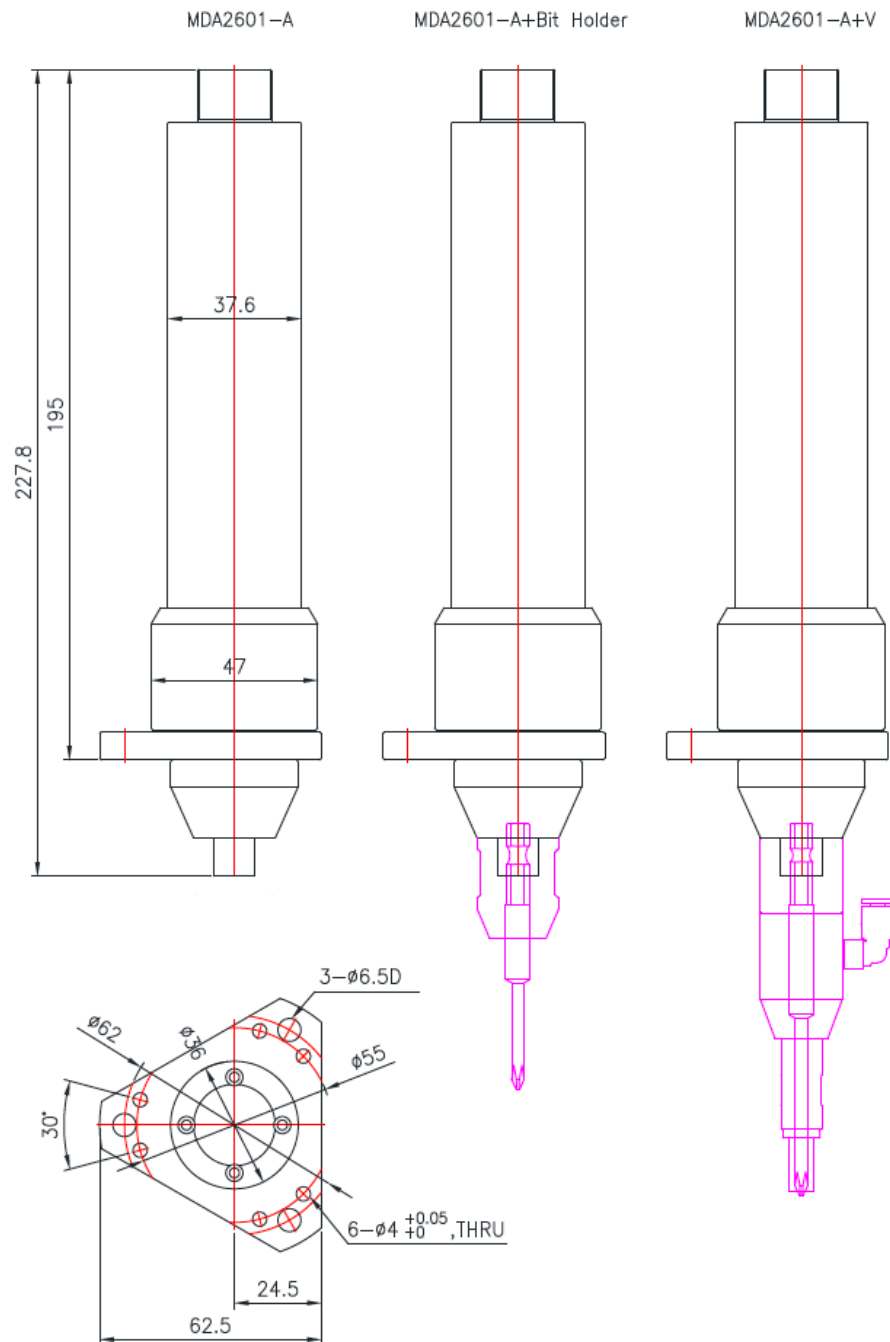
Bit socket : 4mm round half moon D-cut

Bit cushion : 5mm stroke

Mouthpiece : Custom design (not included)



■ MDA2601

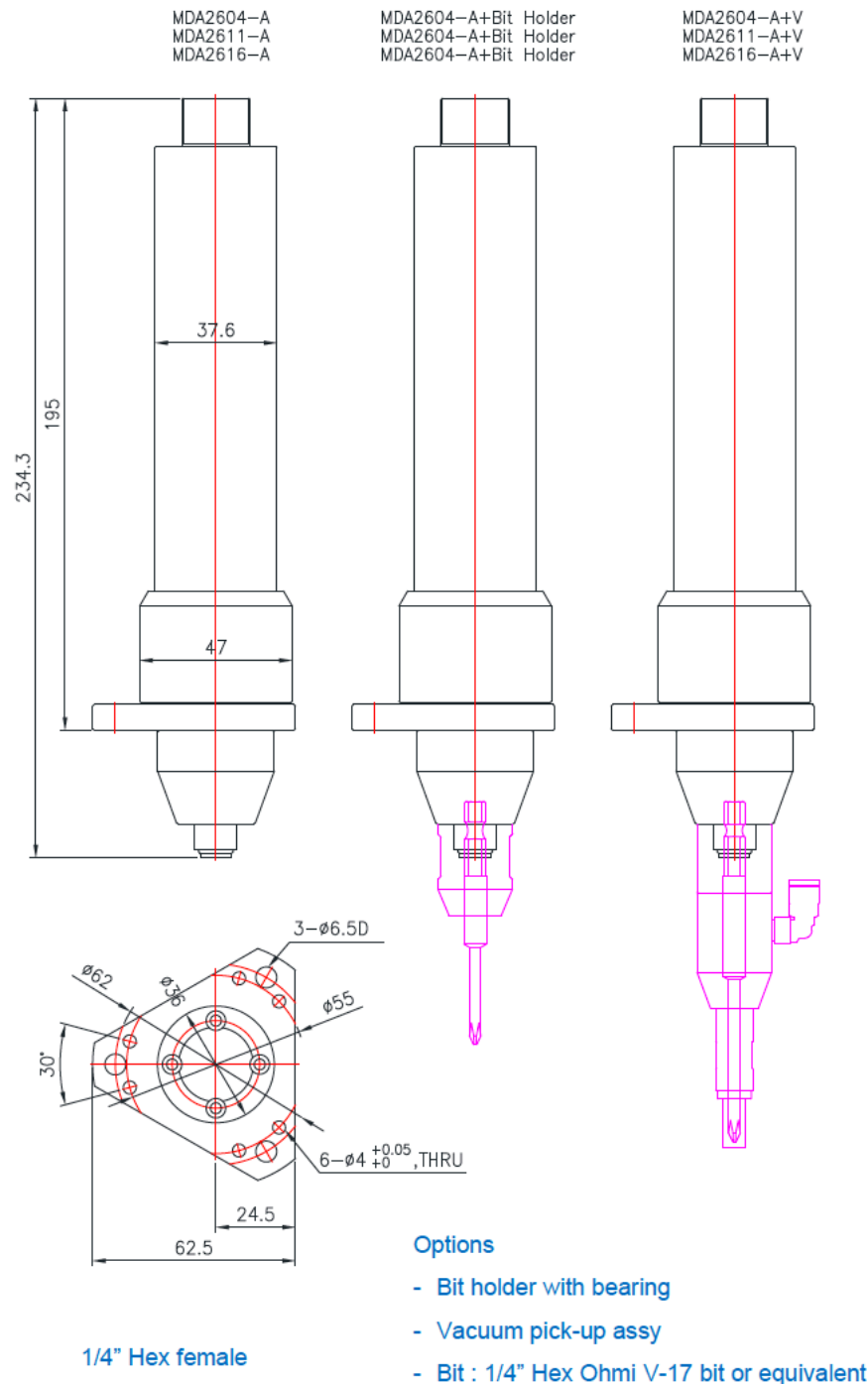


1/4" Hex female

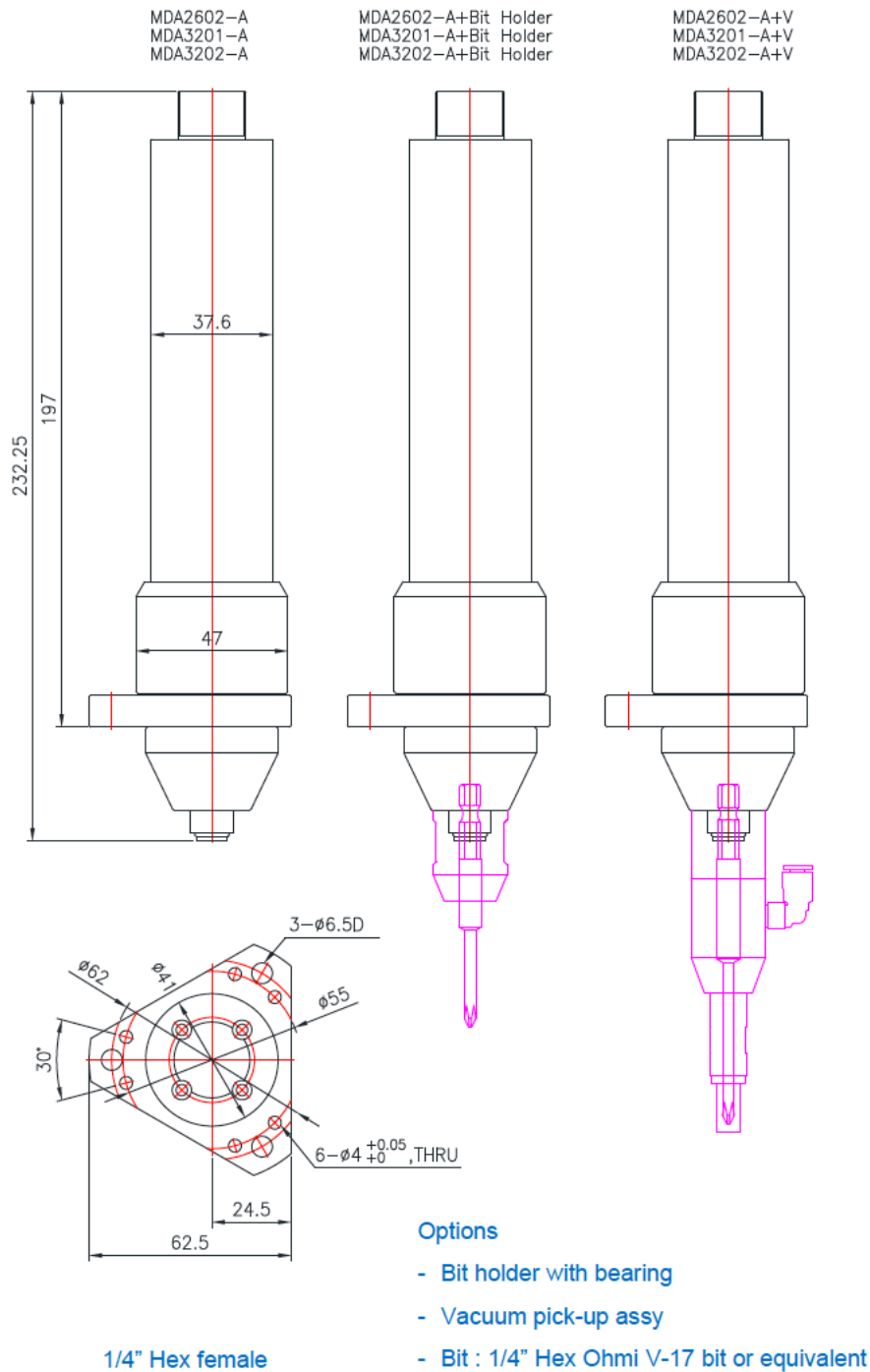
Options

- Bit holder with bearing
- Vacuum pick-up assy
- Bit : 1/4" Hex Ohmi V-17 bit or equivalent

■ MDA2604, MDA2611, MDA2616



■ MDA2602, MDA3201, MDA3202

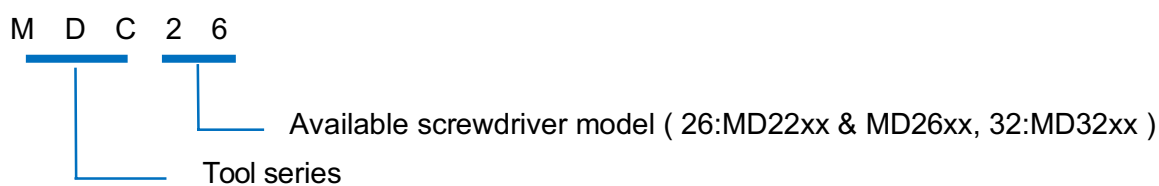


Controller

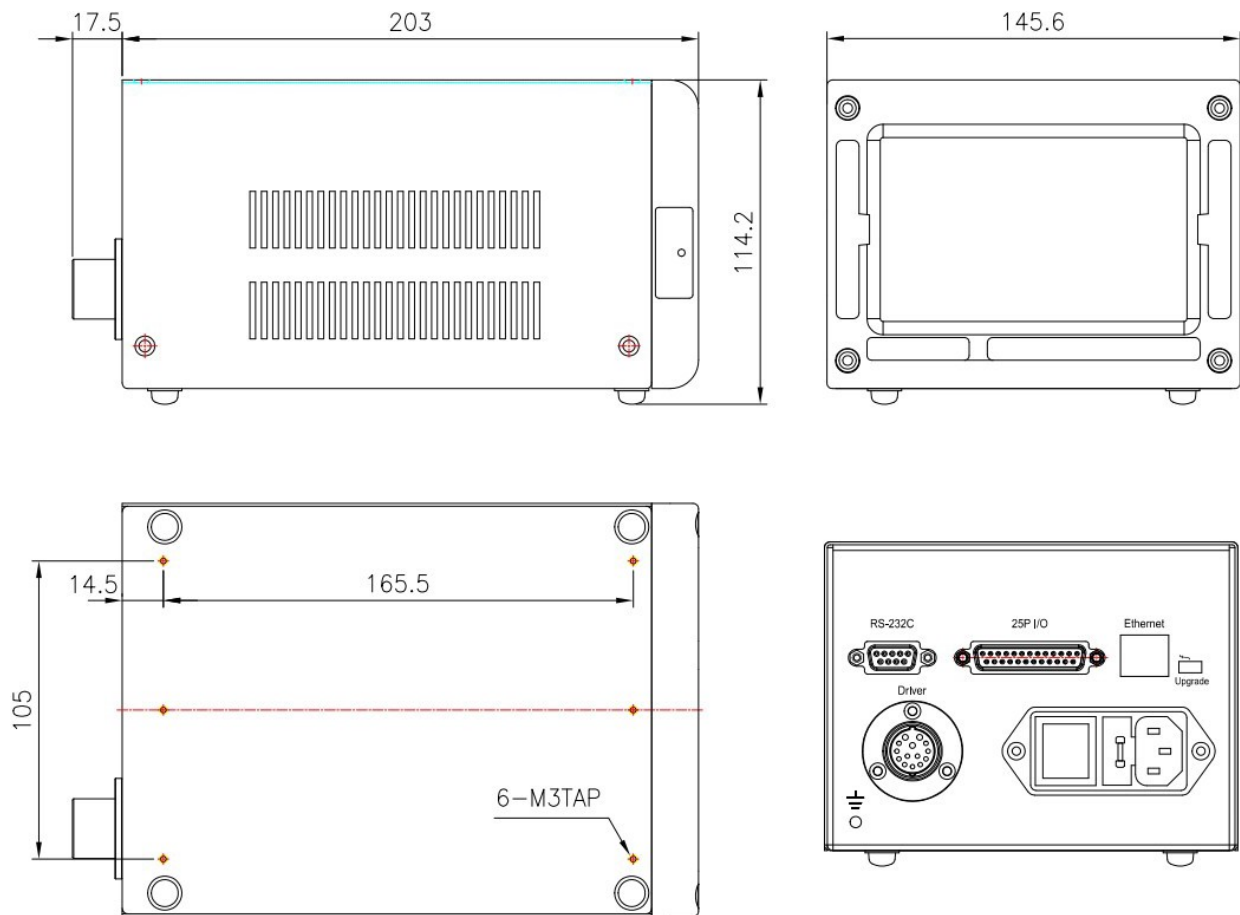
Specification

no	Item	Specification	
		MDC-26 series	MDC-32 series
1	Input	AC120VC / AC230V, 50/60Hz	
2	Output	DC38V 3.5A	
3	Fuse	230V 25A	
4	Operating environment	0 ~ 40°C / 15 ~ 80% RH (without dew)	
5	Front panel	4.3" Color LCD with touch screen	
6	Communication	1 x RS232C, 1 x Ethernet	
7	Protocol	Modbus and Open Protocol	
8	I/O	8 Input & 8 Output flexible I/O (25P D-Sub)	
9	No. of program(Preset)	15	
10	Torque calibration	- 10% ~ +10%	
11	Screwdriver recognition	Auto detection of connected driver when power ON of controller	
12	Error display	Error code display (3 groups)	
13	Fastening verification	Torque control, Angle Monitoring or Angle Control, Torque Monitoring.	

Model specification



Controller dimension



Memory card (option)



E-DRIV[®] MD-Series DC Torque Control System

Calibration Procedure



There are three ways to adjust torque Output on MD-Series DC Controllers:

1. Tool Calibration from Factory

- Tools is calibrated and adjusted to match readings with an ISO17025 Torque Analyzer. Torque output is validated by adjusting calibration percentage A278 that can be set from +/- 10%. Customer receives a CMK Preset Certificate showing target torque, speed and tolerance settings for the test, along with information on equipment used to perform this test. See "Standard test condition on factory calibration used by Mountz".

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

- Customer can adjust A278 calibration percentage to their Master Torque Analyzer if desired. Mountz cannot warranty accuracy of these readings.

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

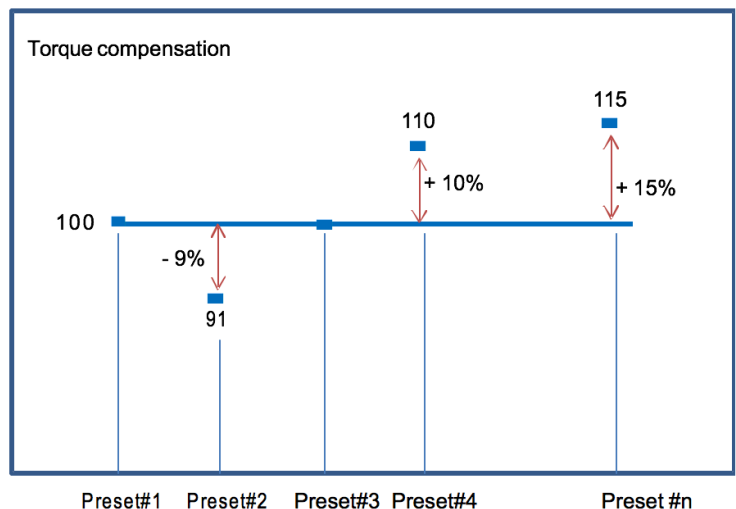
2. Tool Preset Certification

- MD-Series comes with a CMK test Preset Certificate. Customer can request a customized CMK test to a desired torque setting at specific speed and tolerances. This test can ordered at the time of purchase or by requesting a Preset Service at Mountz Service Centers. This Certificate has extra charges.

3. Tool Compensation

This option is done at the preset (program) level. On specific preset, customer might need to lower or exceed 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 customer can adjusted up to +/-20%. This is adjusted when an application target torque slightly exceeds max or min torque capacity. Mountz strongly recommends to select a higher or lower torque capacity tool if this feature will be adjusted permanently.



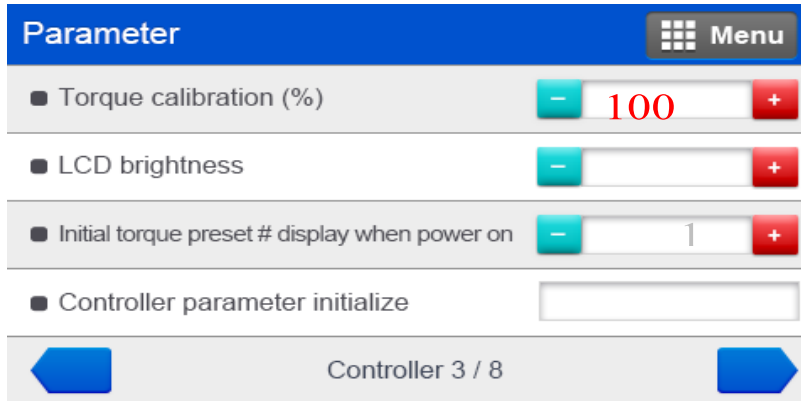
NOTE: Tool Compensation adjustment affects only the selected preset (program), this means that all other presets will remain as normal. Tool Compensation is stored on the Controller Memory

NOTE: It is Mountz recommendation to customer to periodically verify torque accuracy of MD-Series DC Control System with a ISO17025 Certified torque verification meter and ensure quality of their process.

It is up to customer's standards to determine how often the tools needs to be validated or verified.

Tool Calibration Process

Torque calibration using controller Display

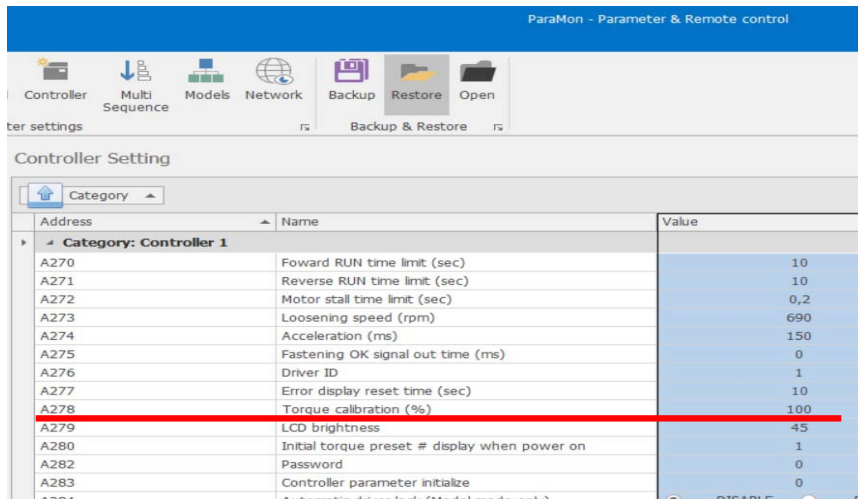


The screenshot shows a blue header bar with the word "Parameter" and a "Menu" button. Below it, there are four settings, each with a minus button, a text field, and a plus button:

- Torque calibration (%): The text field contains "100".
- LCD brightness: The text field is empty.
- Initial torque preset # display when power on: The text field contains "1".
- Controller parameter initialize: The text field is empty.

At the bottom, there is a grey bar with a blue left arrow, the text "Controller 3 / 8", and a blue right arrow.

Torque calibration using Controller's Software

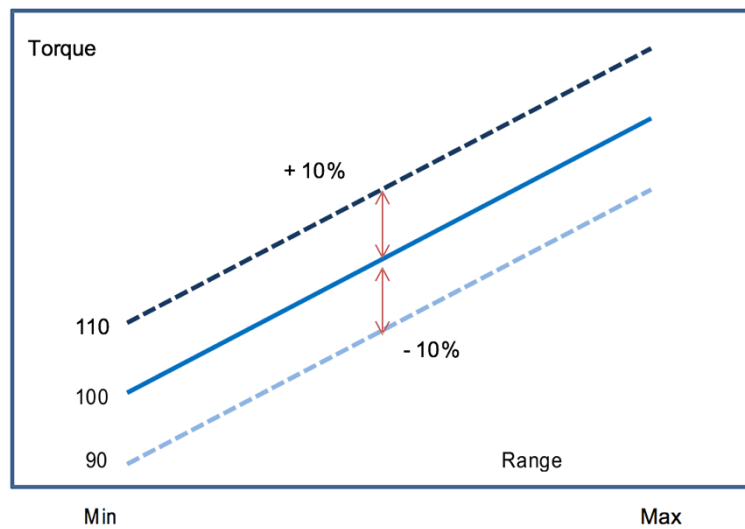


The screenshot shows the ParaMon software interface. At the top, there is a blue bar with the text "ParaMon - Parameter & Remote control". Below it is a toolbar with icons for Controller, Multi Sequence, Models, Network, Backup, Restore, and Open. Underneath the toolbar is a "Controller Setting" section with a "Category" dropdown menu. Below the dropdown is a table with three columns: Address, Name, and Value.

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 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 in order to obtain valid results.



Standard test conditions on factory calibration used by Mountz.

Rundown screw size, joint type and filter

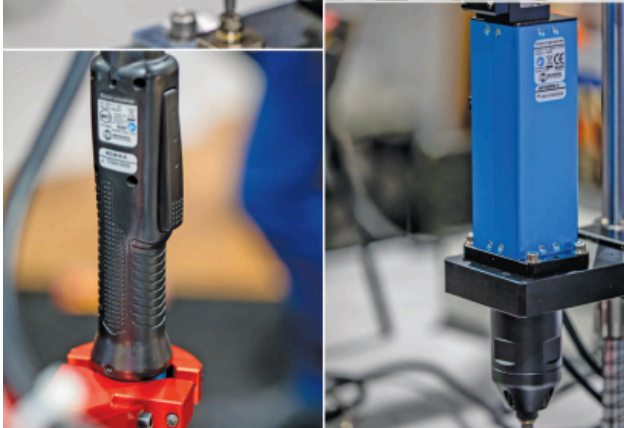
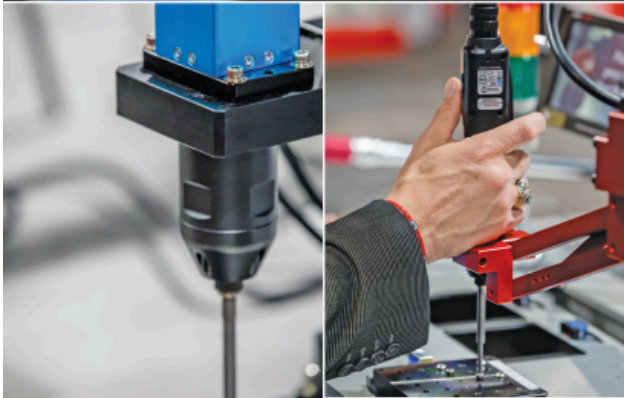
Tool	Rundown adaptor	Low Pass Filter
MD2601	M3 Allen, Hard joint	200Hz
MD2602, MD2604	M3 Allen, Hard joint	500Hz
MD2611, MD2616	M4 Allen, Hard joint	500 Hz
MD3201	M3 Allen, Hard joint	200Hz
MD3202	M3 Allen, Hard joint	500Hz
MD3204	M4 Allen, Hard joint	500 Hz
MD3211, MD3216	M6 Allen, Hard joint	500 Hz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





CORPORATE HEADQUARTERS

1080 North 11th Street
San Jose CA 95112
t 408.292.2214
t 800.456.1828
f 408.292.2733
sales@mountztorque.com
www.mountztorque.com

DISTRIBUTION & SERVICE CENTER

19051 Underwood Road
Foley AL 36535
t 251.943.4125
f 251.943.4979

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