DOGA®
ASSEMBLY
TECHNOLOGY

MD series
MDC v2

INSTRUCTIONS MANUAL

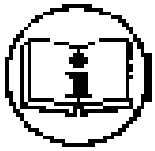
IMPORTANT

The tool delivered with this manual may have been modified for specific needs.

In that case, please give us the tool code number written on our shipping note or the approximate tool delivery date when you place an order for a new similar tool or for spare parts.

In that way, you will be sure to get the required tool and/or spare part.

WARNING



This information has to be kept in a location known by all users.

Each operator has to read carefully this manual before installing, using, and mending the product.

Be sure that the operator has understood using recommendations and the meaning of signs put on the product.

Most accidents could be avoided respecting this Manual Instructions. As a matter of fact, they were created according to European laws and norms regarding products.

In each case, please respect and follow safety national norms. Do not take off nor damage the stickers or advise put on the product and above all the details imposed by the law.

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1. GENERAL SAFETY RULES

ENGLISH

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

1.1 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.

1.2 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.

1.3 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 inflation 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.

1.4 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.

1.5 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.

2. SPECIFIC SAFETY RULES

2.1 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.

2.2 Never lubricate aerosol oil on to the electrical part.

2. Product

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

1) Screwdriver packing :

x1 screwdriver
x1 CE declaration of conformity
x1 calibration test certificate (original to be preserved)

2) Controller packing :

x1 MDC controller
x1 power cable with type E and F electrical plug
x1 CE declaration of conformity

3) Cable packing :

x1 cable with 14 pins connectors

3. Main features

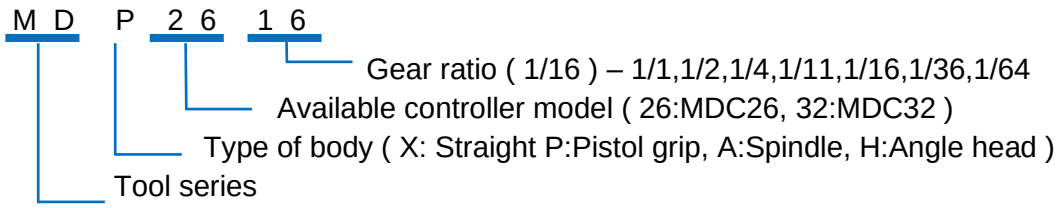
1) Digital torque and angle program in 15 preset numbers and 2 multi step sequence programs
2) 15 Models managing variable presets with counting no. and I/O in sequential 10 steps
3) Color LCD touch screen with easy control
4) Auto speed setting by torque
5) Monitoring fastening quality and count of 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 protocol
11) RS232C, Ethernet communication port

4. Screwdriver

4.1 General specification

no	Item	Specification
1	Electric power	DC38V, 5A max
2	Motor	Swiss DC servo motor
6	Torque accuracy	10% in full scale
7	Torque repeatability	+/- 3%
8	Speed	Auto speed by torque setting,

4.2 Model specification



- Straight hand-held (Lever start)

Model	Torque(Nm)	Speed range	Bit socket	Controller
MD2601	0.03 ~ 0.39	150-2000	Hex1/4” or dia.4	MDC-26
MD2602	0.05 ~ 0.68	150-2000	Hex1/4” or dia.4	
MD2604	0.2 ~ 1.37	150-1500	Hex1/4”	
MD2611	0.4~ 3.3	100-900	Hex1/4”	
MD2616	0.5 ~ 4.9	100-620	Hex1/4”	
MD3201	0.1 ~ 1.17	150-2000	Hex1/4”	MDC-32
MD3202	0.2 ~ 2.15	150-2000	Hex1/4”	
MD3204	0.4 ~ 3.9	150-1500	Hex1/4”	
MD3211	1 ~ 8.8	50-690	Hex1/4”	
MD3216	2 ~ 13.7	50-470	Hex1/4”	
MD3236	4 ~ 27	50-210	SQ3/8	
MD3264	8 ~ 49	50-115	SQ1/2	

- Pistol grip hand held (Trigger start)

Model	Torque(Nm)	Speed range	Bit socket	Controller
MDP3201	0.1 ~ 1.17	150-2000	Hex1/4”	MDC-32
MDP3202	0.2 ~ 2.15	150-2000	Hex1/4”	
MDP3204	0.4 ~ 3.9	150-1500	Hex1/4”	
MDP3211	1 ~ 8.8	50-690	Hex1/4”	
MDP3216	2 ~ 13.7	50-470	Hex1/4”	
MDP3236	4 ~ 27	50-210	Hex1/4”	
MDP3264	8 ~ 49	50-115	SQ3/8	

- Angle head hand-held (Lever start)

Model	Torque(Nm)	Speed range	Bit socket	Controller
MDH2604	0.2 ~ 1.37	150-1500	Hex1/4”	MDC-26
MDH2611	0.4~ 3.3	100-900	Hex1/4”	
MDH2616	0.5 ~ 4.9	100-620	Hex1/4”	
MDH3201	0.1 ~ 1.17	150-2000	Hex1/4”	MDC-32
MDH3202	0.2 ~ 2.15	150-2000	Hex1/4”	
MDH3204	0.4 ~ 3.9	150-1500	Hex1/4”	
MDH3211	1 ~ 8.8	50-690	Hex1/4”	
MDH3216	2 ~ 13.7	50-470	Hex1/4”	
MDH3236	4 ~ 27	50-210	SQ3/8	
MDH3264	8 ~ 49	50-115	SQ1/2	

MD26xx MD32xx

MDP32xx

MDH32xx

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

Model	Torque(Nm)	Speed range	Bit socket	Wight	Controller
MDA2201	0.010 ~ 0.068	1000	dia.4 half moon		MDC-26
MDA2204	0.02 ~ 0.27	1000	dia.4 half moon		
MDA2601	0.03 ~ 0.39	150-2000	dia.4 half moon		
MDA2602	0.05 ~ 0.68	150-2000	Hex1/4” or dia.4		
MDA2604	0.2 ~ 1.37	150-1500	Hex1/4” or dia.4		
MDA2611	0.4 ~ 3.3	100-900	Hex1/4”		
MDA2616	0.5 ~ 4.9	100-620	Hex1/4”		
MDA3201	0.1 ~ 1.17	150-2000	Hex1/4”		MDC-32
MDA3202	0.2 ~ 2.15	150-2000	Hex1/4”		
MDA3204	0.4 ~ 3.9	150-1500	Hex1/4”		
MDA3211	1 ~ 8.8	50-690	Hex1/4”		
MDA3216	2 ~ 13.7	50-470	Hex1/4”		
MDA3236	4 ~ 27	50-210	SQ3/8		
MDA3264	8 ~ 49	50-115	SQ1/2		

★ 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

MDA2201-E+C

MDA2201-E+VC

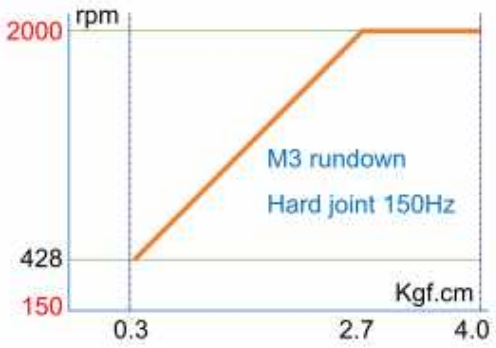
MDA32xx-A

MDA32xx-A

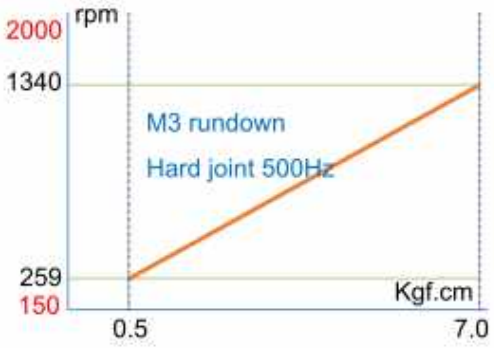
With vacuum pick-up

4.3 Auto Speed by torque setting under the each test condition

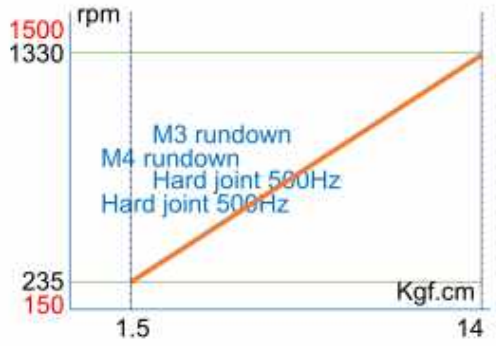
- Speed range : Available setting range by manual
- **Auto speed by torque setting** : Safe speed not exceeding over torque by rotation inertia under the testing conditions described on the chart



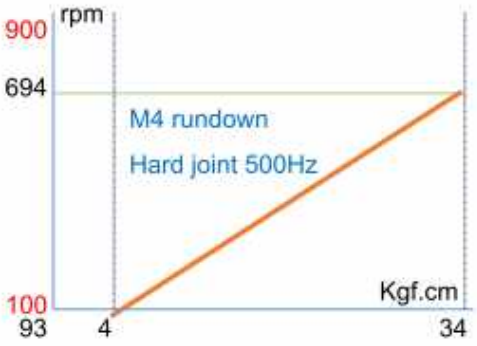
MD2601



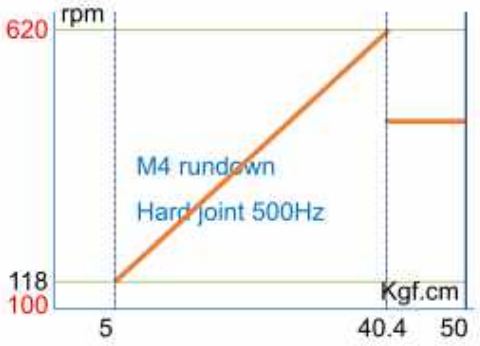
MD2602



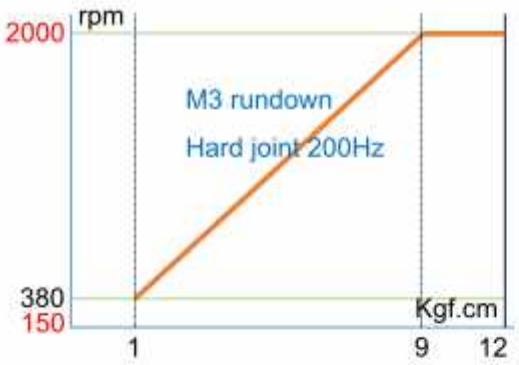
MD2604



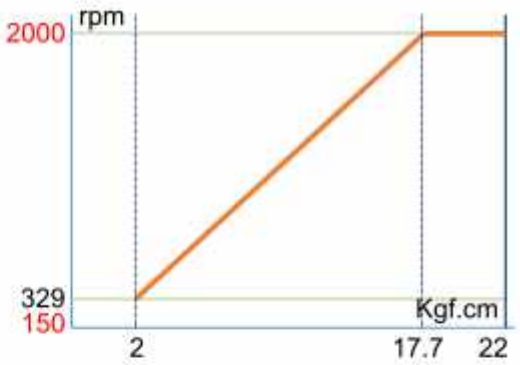
MD2611



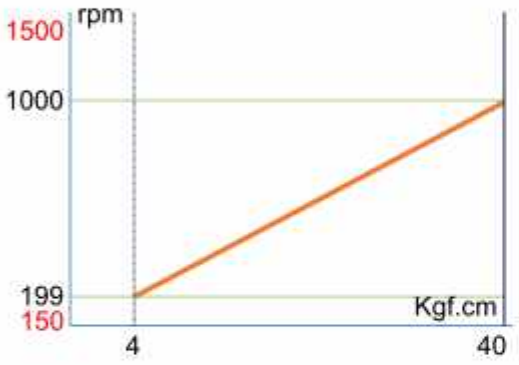
MD2616



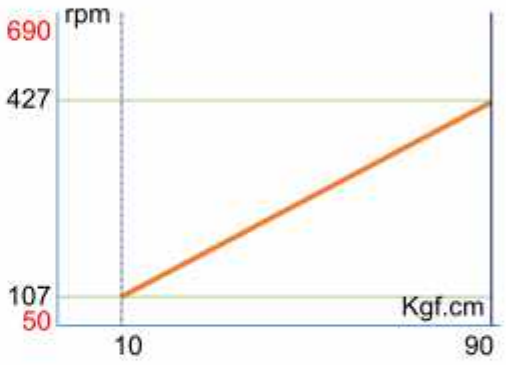
MD3201



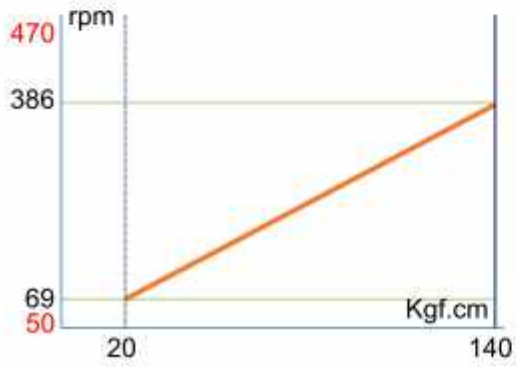
MD3202



MD3204



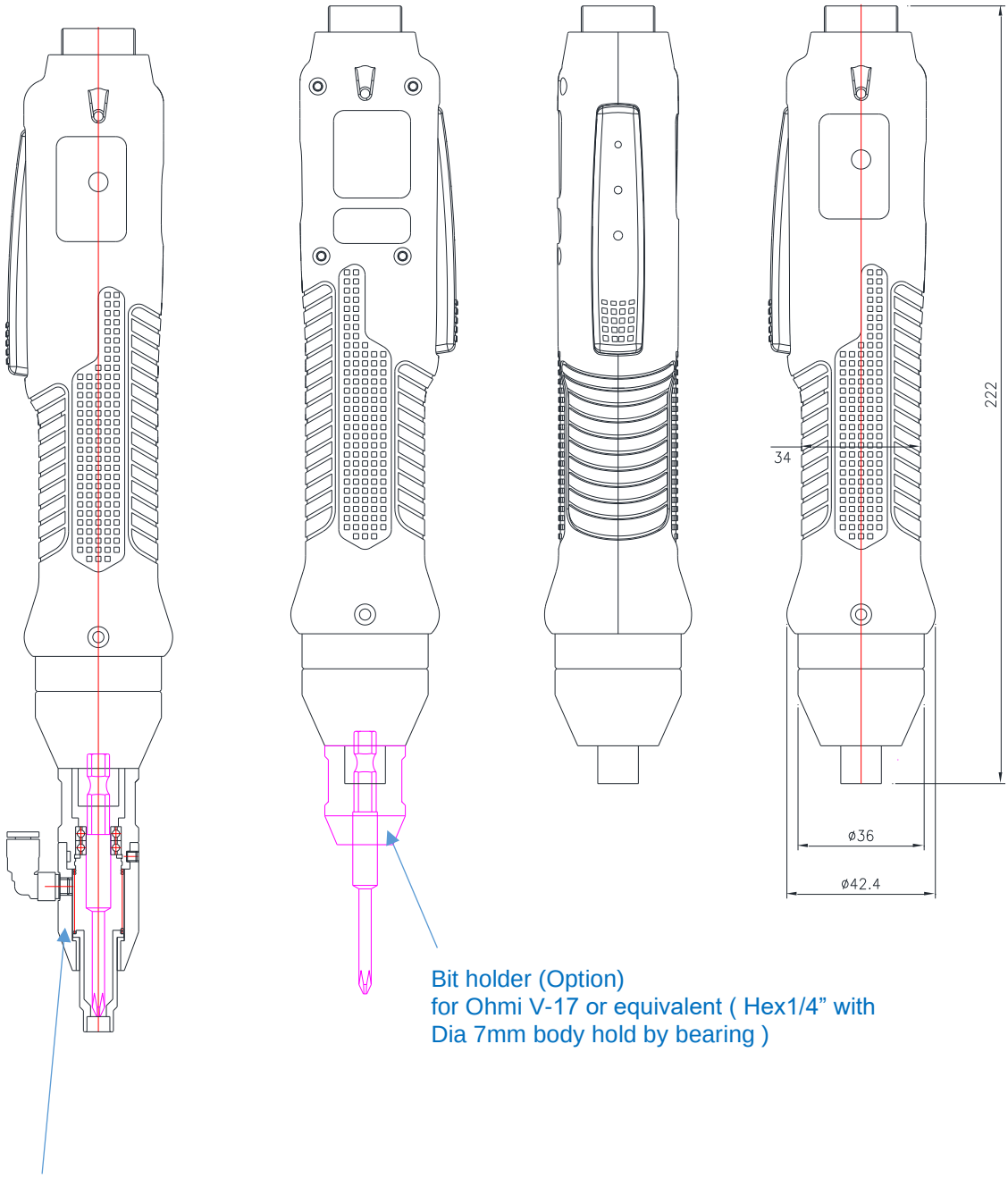
MD3211



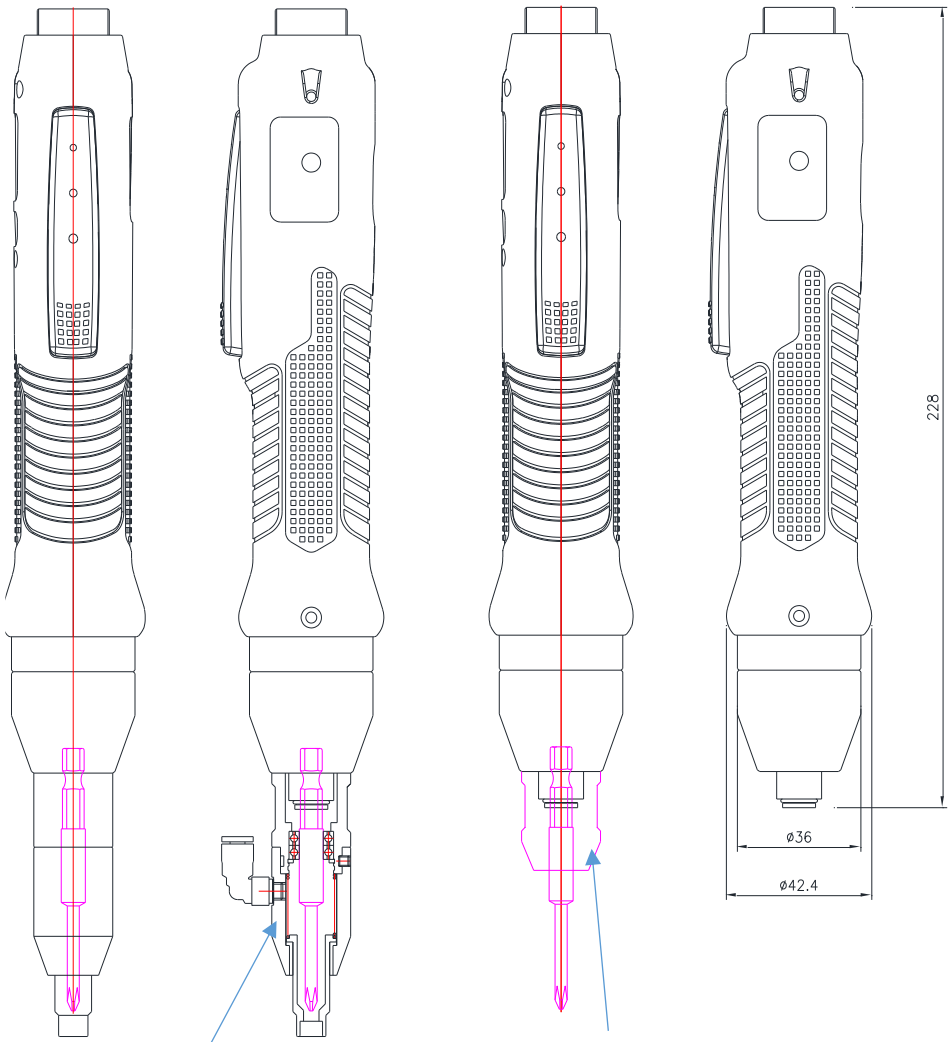
MD3216

4.4 Screwdriver dimension

■ MD2601, MD2602



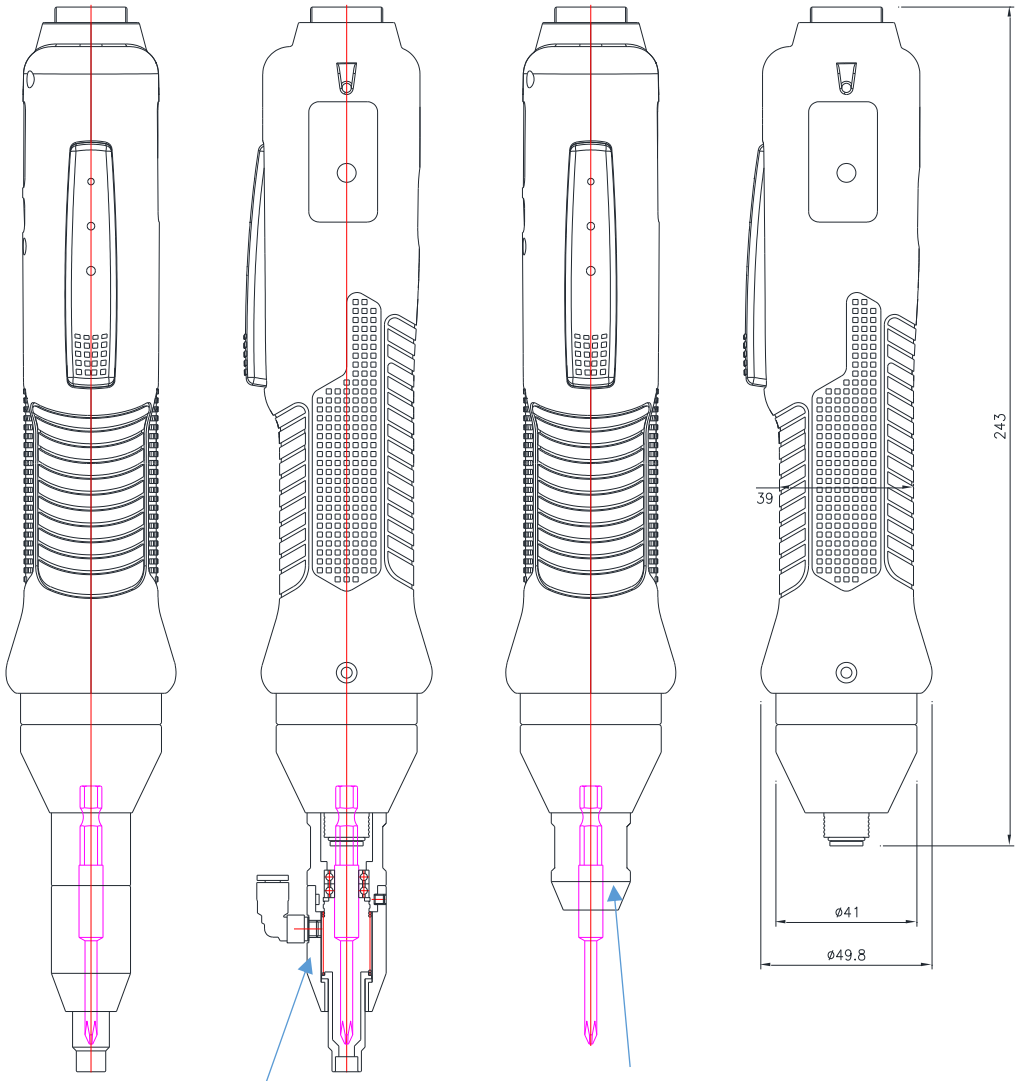
■ MD2604, MD2611, MD2616



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

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4” with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and applications. The above described vacuum pick-up assy is for one of the application.
It doesn’t work for all application.

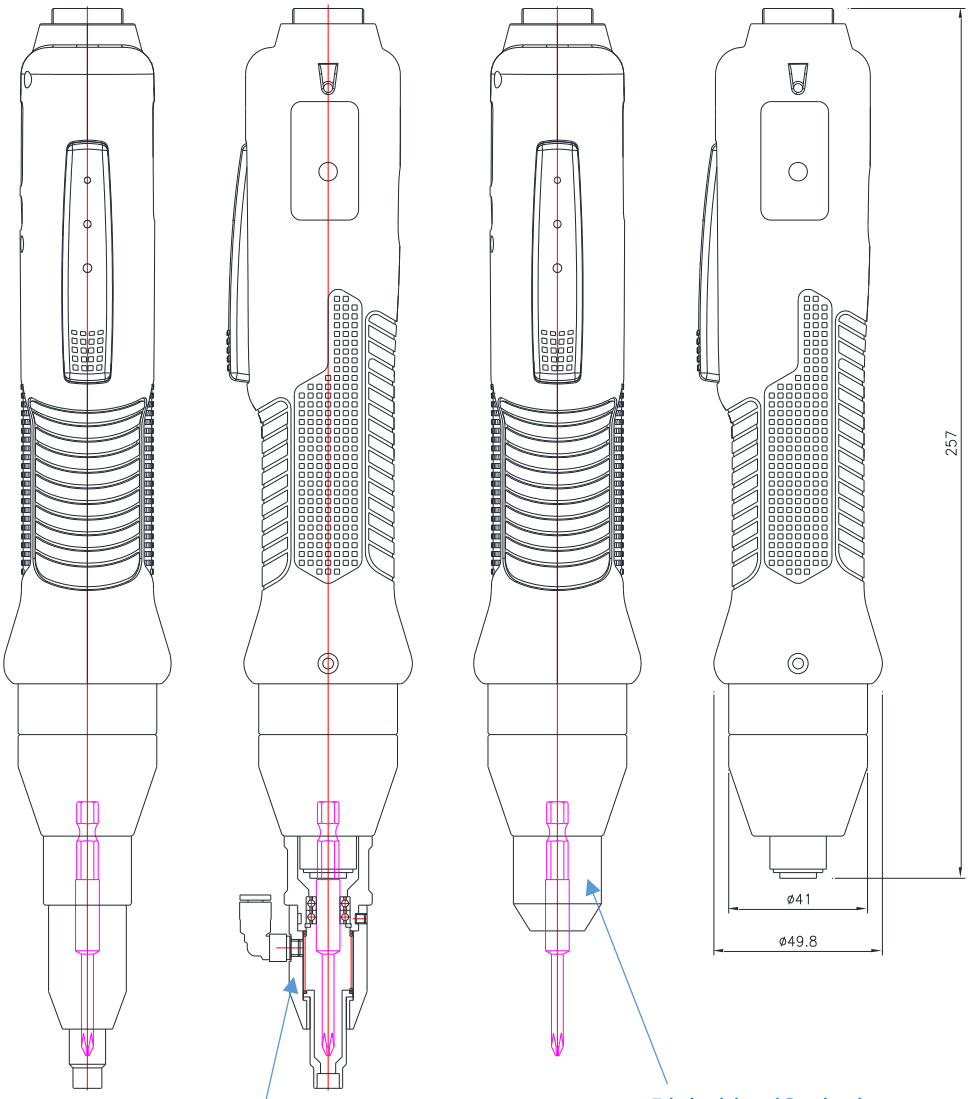
■ MD3201, MD3202



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

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4” with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and applications. The above described vacuum pick-up assy is for one of the application. It doesn’t work for all application.

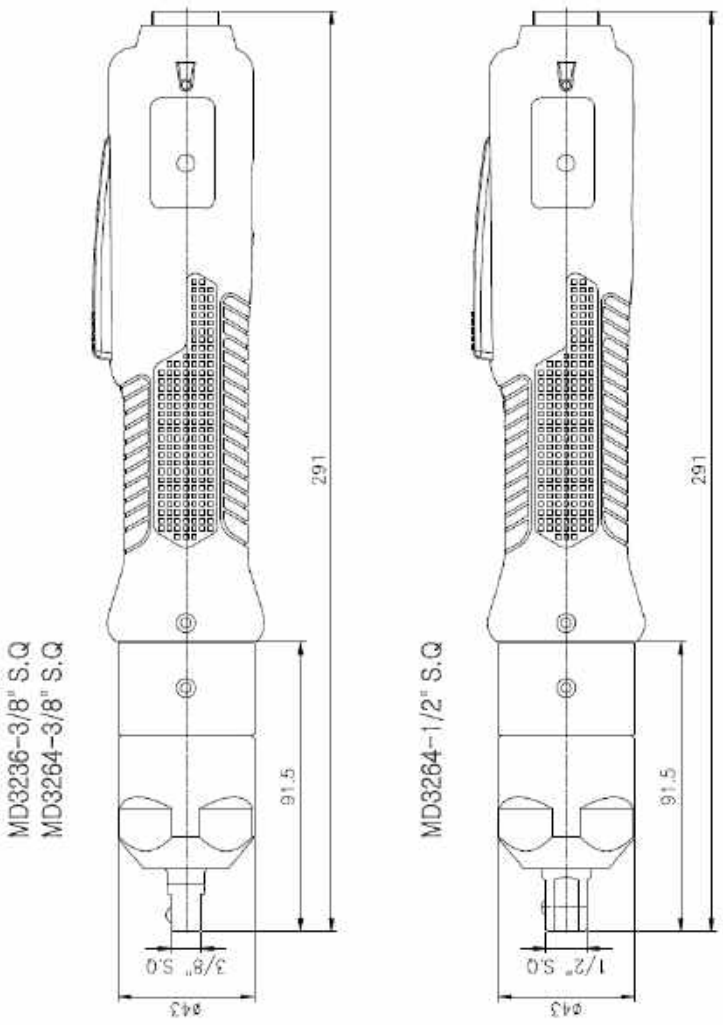
■ MD3204, MD3211, MD3216



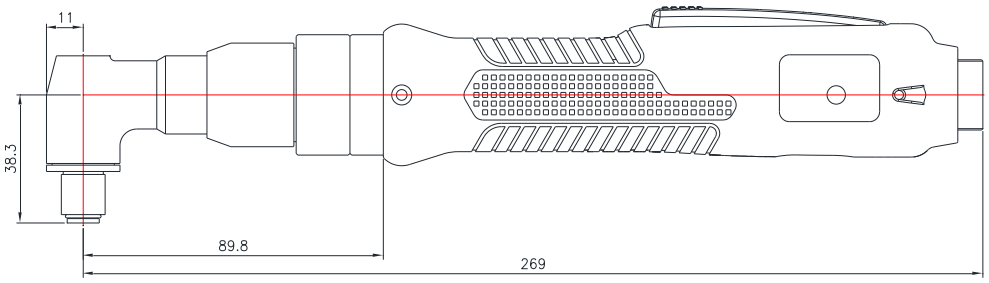
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4”
with Dia 7mm body hold by bearing)

Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4” with Dia 7mm body hold by bearing)
Mouth piece is not included in the assy. It is custom designed for each screw size and applications. The above described vacuum pick-up assy is for one of the application. It doesn’t work for all application.

■ MD3236, MD3264

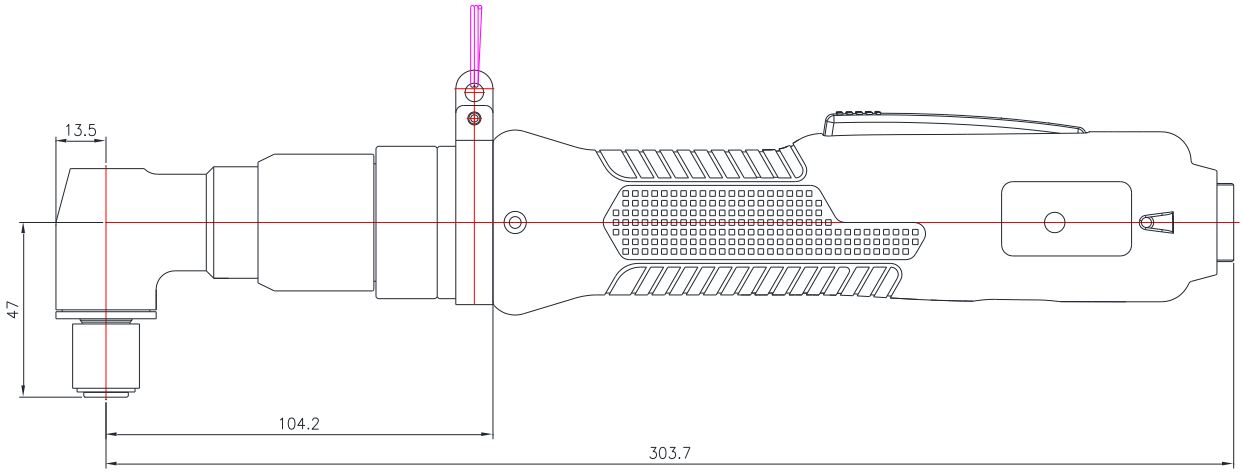


■ MDH2604, MDH2611, MDH2616

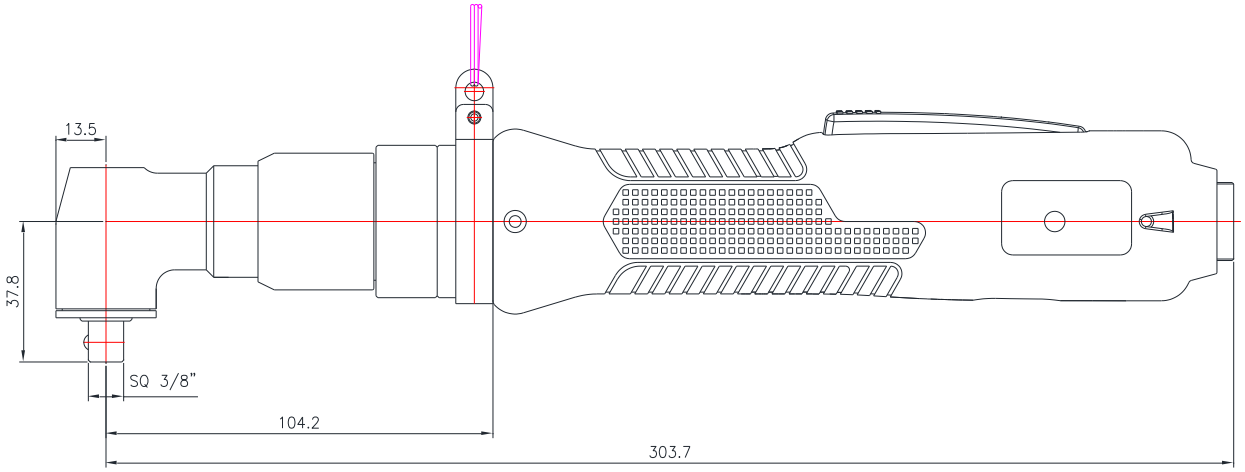


Bit socket : 1/4” hex female (quick change)

■ MDH3201, MDH3204, MDH3211, MDH3216

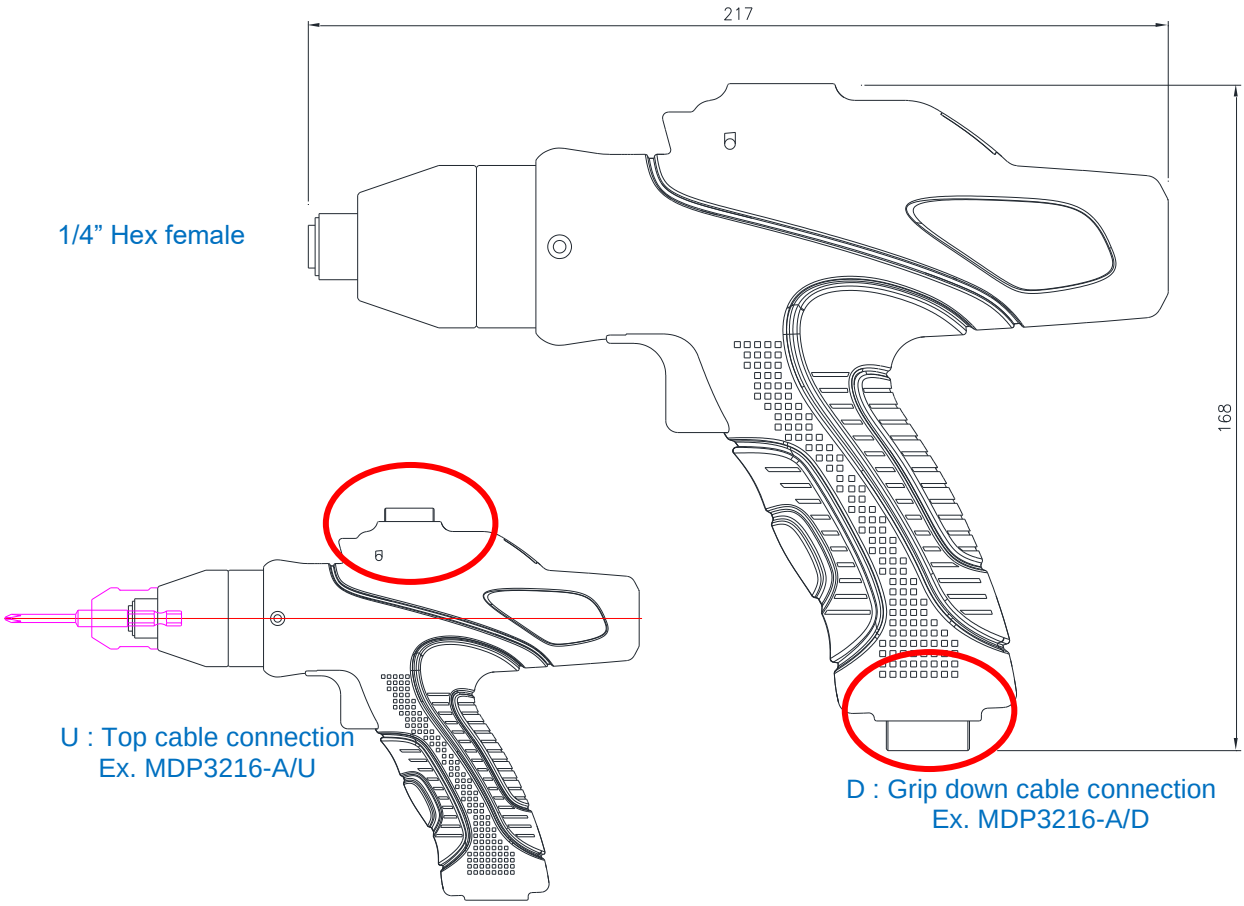


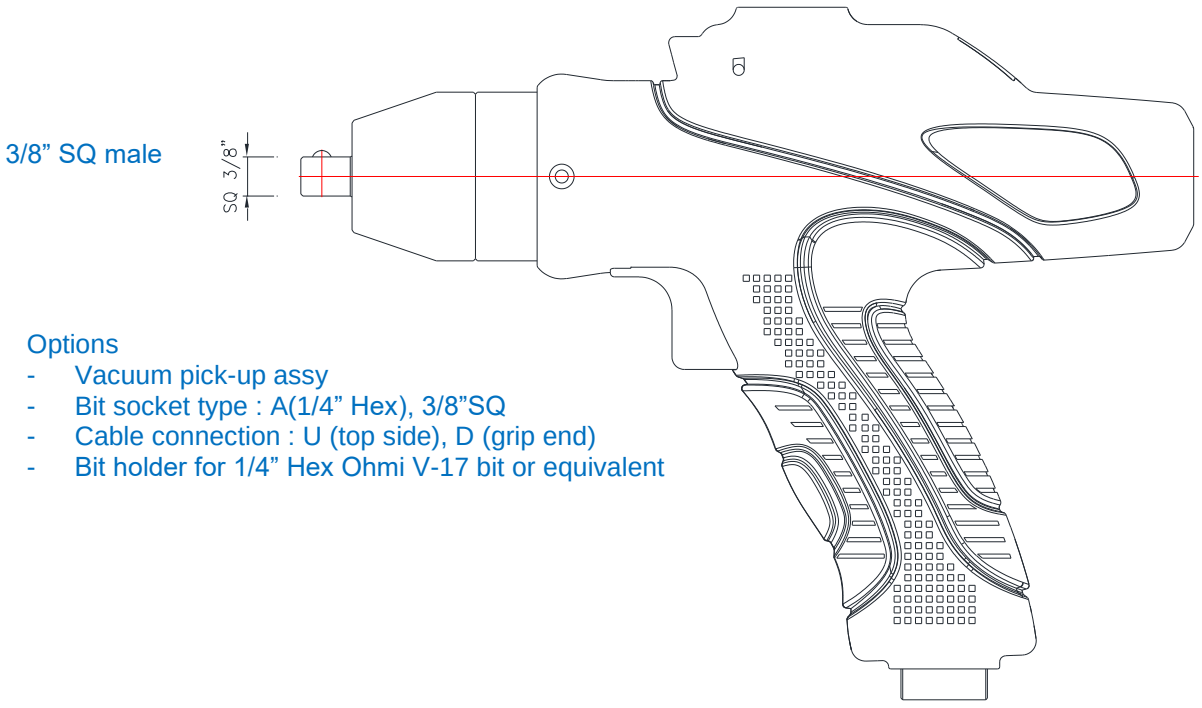
Bit socket : 1/4” hex female (quick change)



Bit socket : 3/8”SQ drive

■ MDP3201, MDP3202, MDP3204, MDP3211, MDP3216





Options
- Vacuum pick-up assy
- Bit socket type : A(1/4” Hex), 3/8”SQ
- Cable connection : U (top side), D (grip end)
- Bit holder for 1/4” Hex Ohmi V-17 bit or equivalent

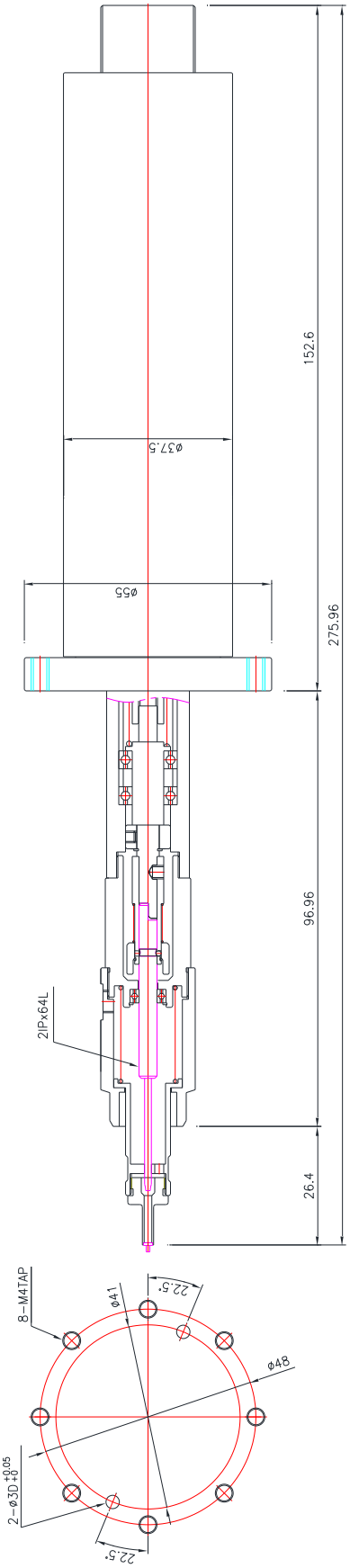
■ MDA2201-E +VC

M D A 2 2 0 1 - E + V C

Model

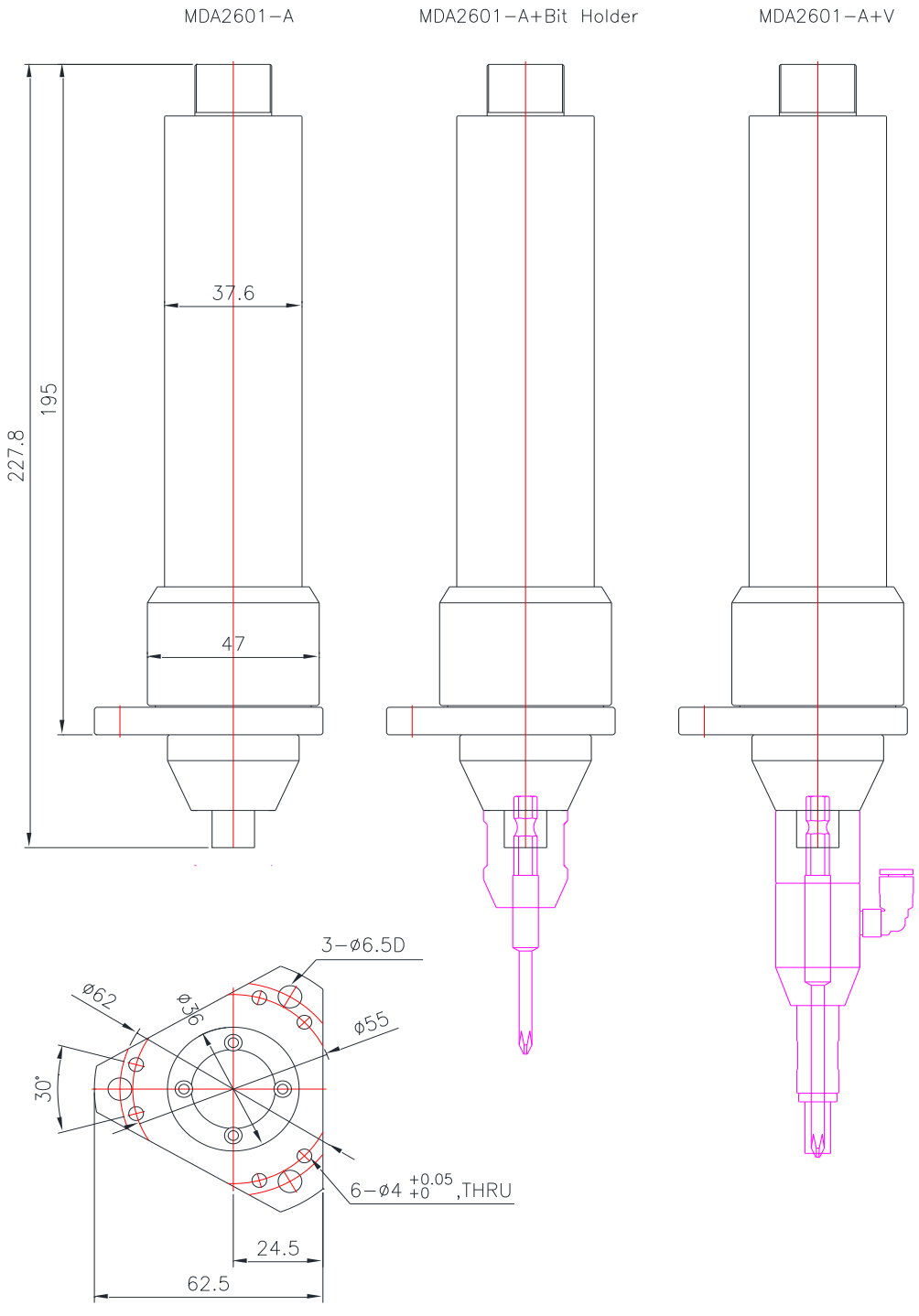
Bit type
A:1/4”Hex
E:Dia.4mm

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)

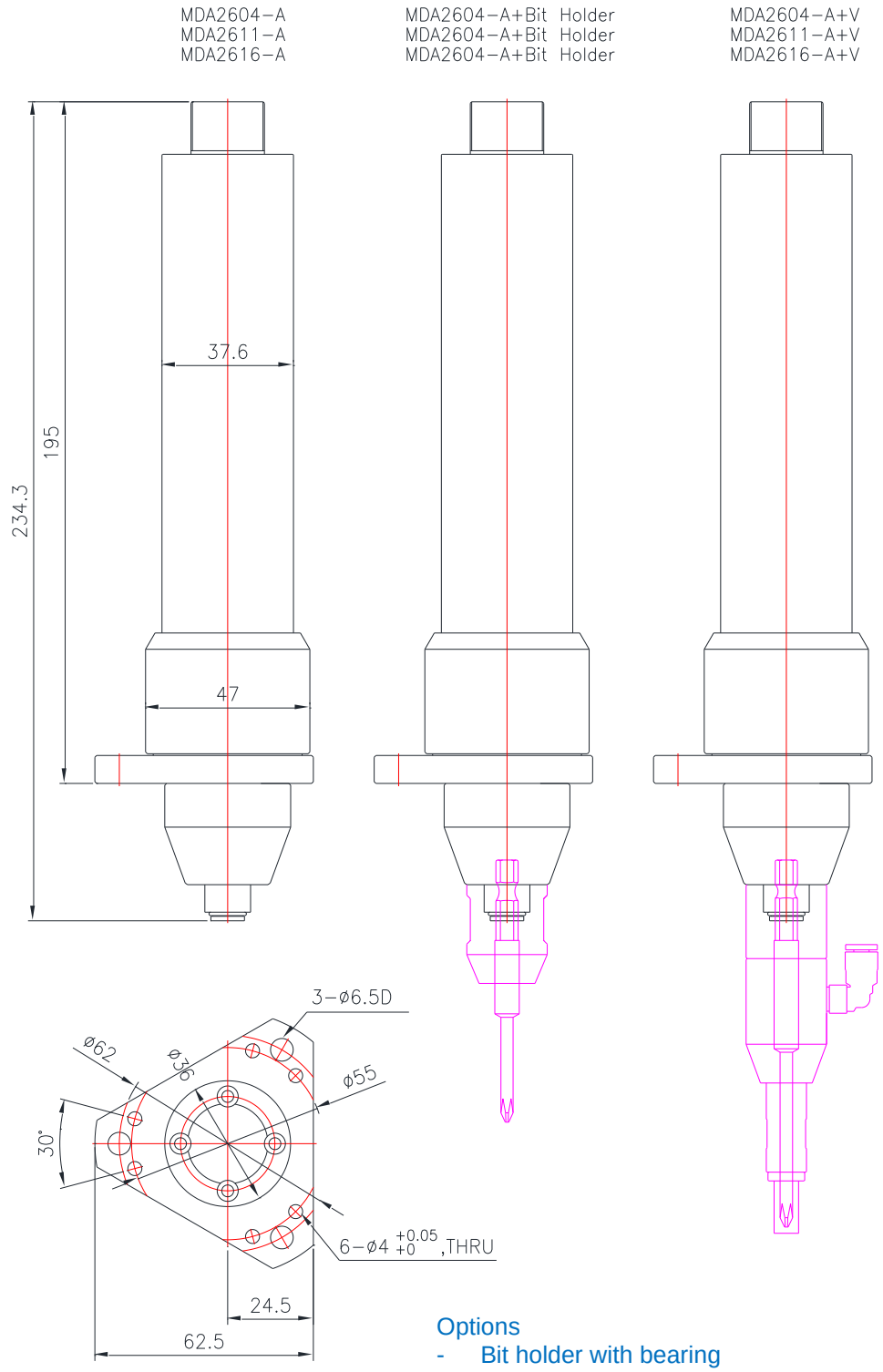
■ MDA2601



1/4” Hex female

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

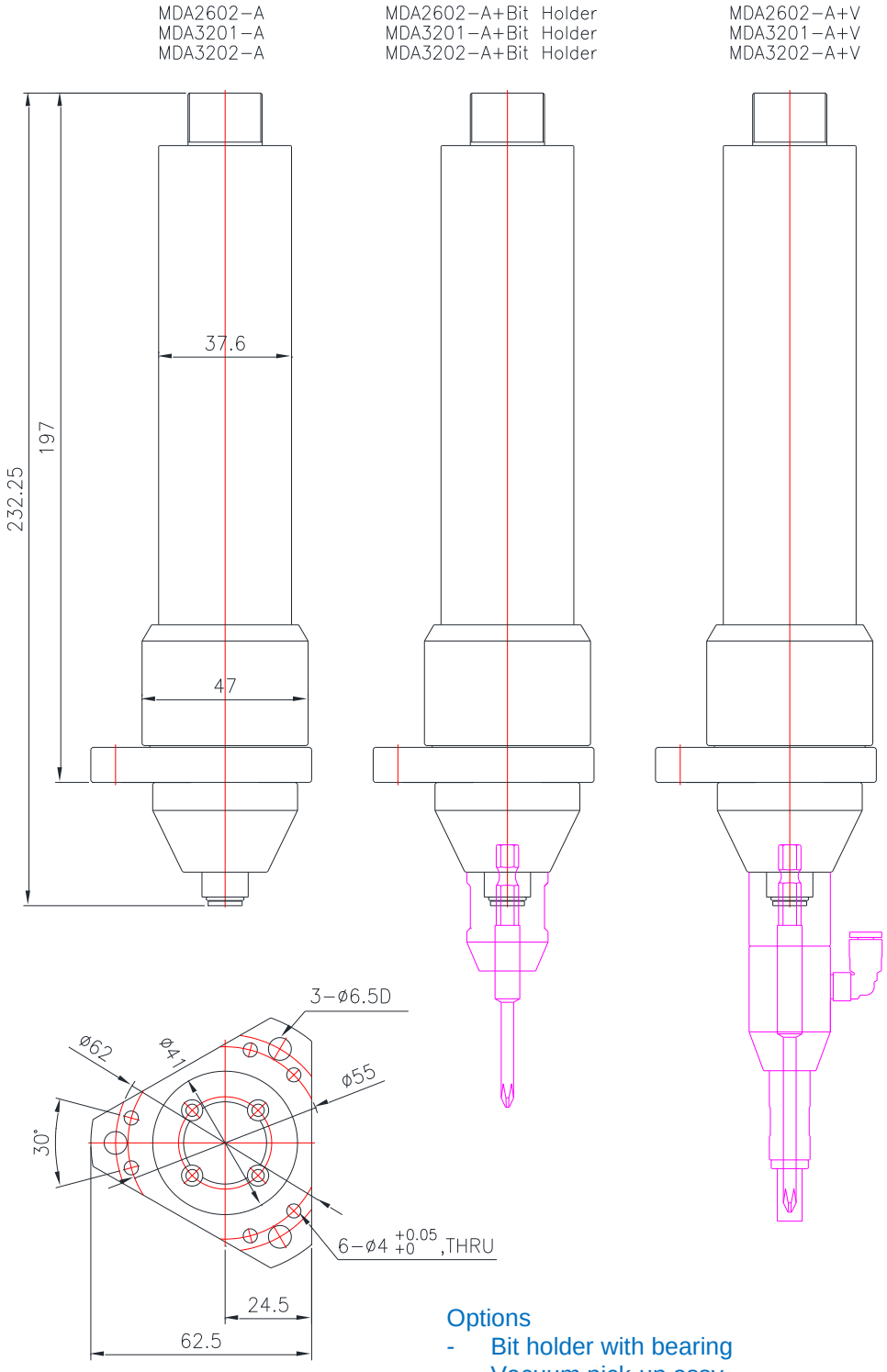
■ MDA2604, MDA2611, MDA2616



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

1/4” Hex female

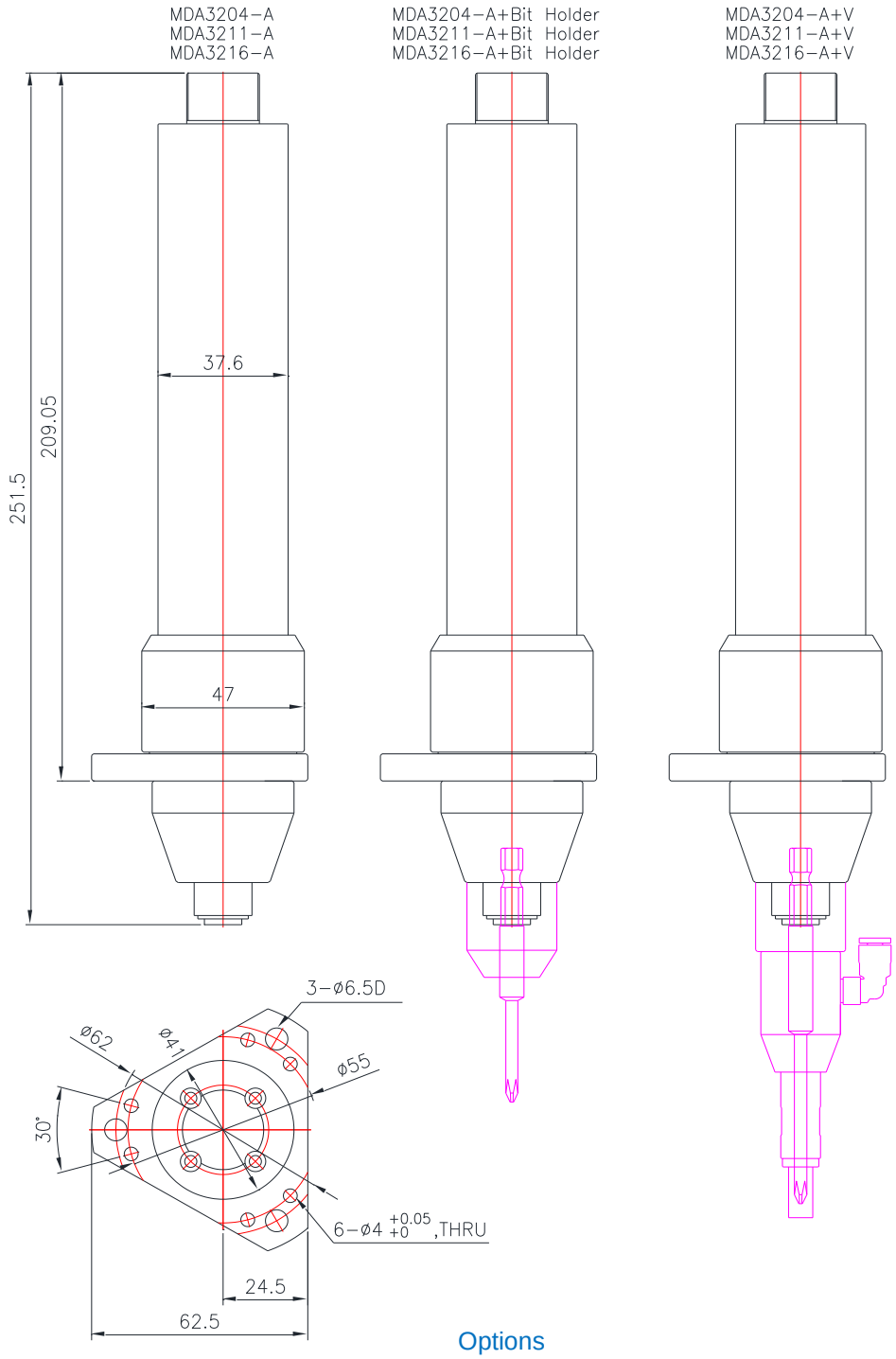
■ MDA2602, MDA3201, MDA3202



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

1/4” Hex female

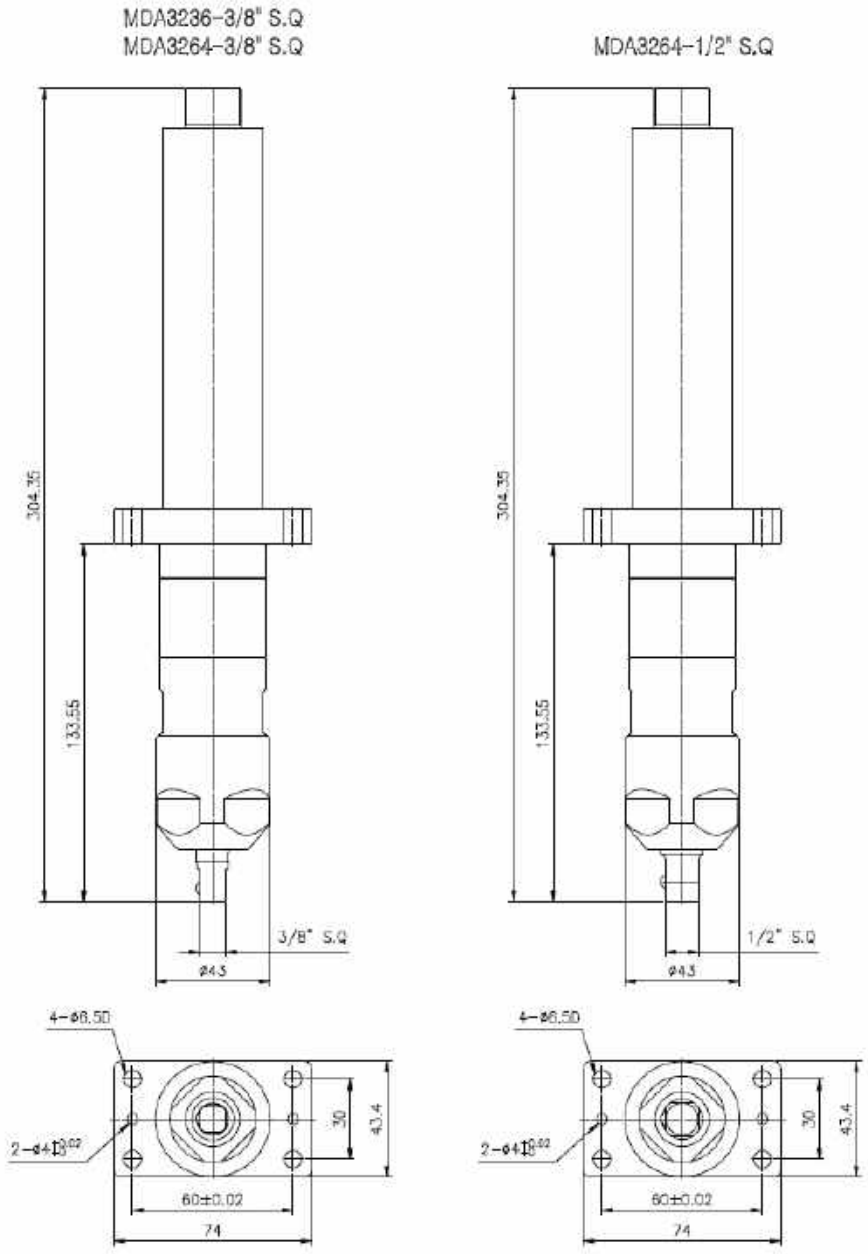
■ MDA3204, MDA3211, MDA3216



1/4” Hex female

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

■ MDA3236, MDA3264



5. Screwdriver cables

5.1 Models

Standard – with longer connector on driver side
length 3m, 5m, 8m

Reinforced II – highly recommended for angle and pistol screwdrivers applications
length 3m, 5m, 8m

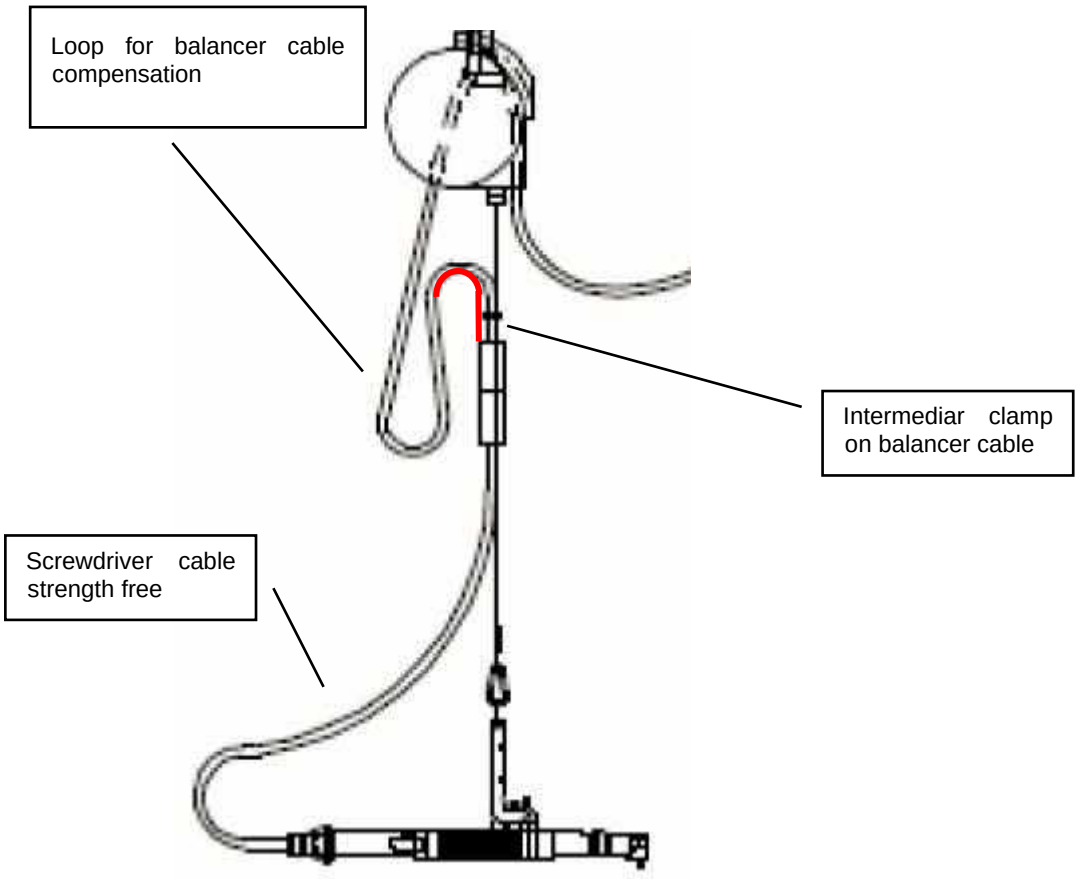
Important : screwdriver max torque can be lower than it's specification by 5% and 20% for extra long 5 and 8 meters cables

5.2 Installation

Cable management should be done in a way to avoid unormal strength and twist applied to cable than natural cable bending.

An appropriate cable management will Use appropriate accessories from

As example below :



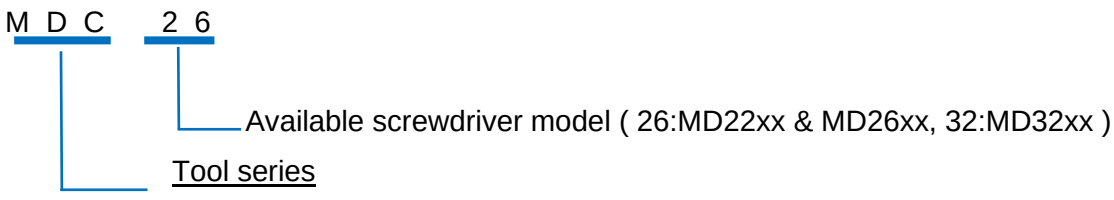
Normal cable bend radius : 150mm

6. Controller MDC v2

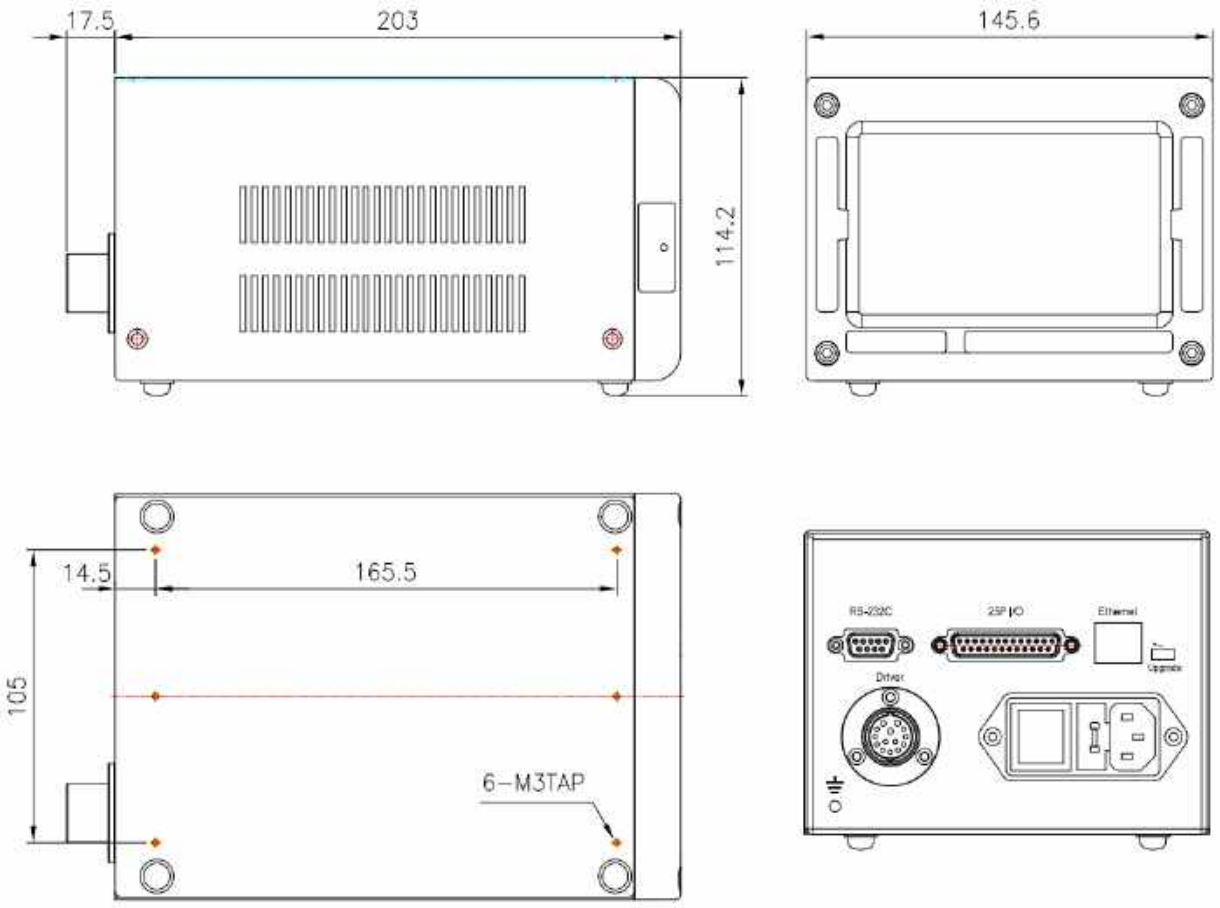
6.1 Specification

no	Item	Specification MDC v2	
		MDC-26 series	MDC-32 series
1	Input	AC230V, 50/60Hz 2.5A	
2	Output	DC 38V 5A	
3	Fuses	230V T5A Qty : 2x(N+L)	
4	Operating environment	0 ~ 40℃ / 15 ~ 80% RH (without dew)	
5	Front panel	5” Color LCD 800*400 dots - touch screen Multilingual menus	
6	Communication	1 x RS232C, 1 x RJ45	
7	Protocol	Modbus RTU(Serial), Modbus TCP/IP(Ethernet)	
8	I/O	Connector 25P D-Sub female : Inputs : port 1 to 8 assignable port 9 to 15 non assignable for models Outputs : port 1 to 8 assignable	
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	Fastening data verification (NG/OK) by the preset pattern of angle.	
14	SD card reader	Buit-in – industrial grade SD card up to 32 Gb	

6.2 Model specification



6.3 Controller dimension

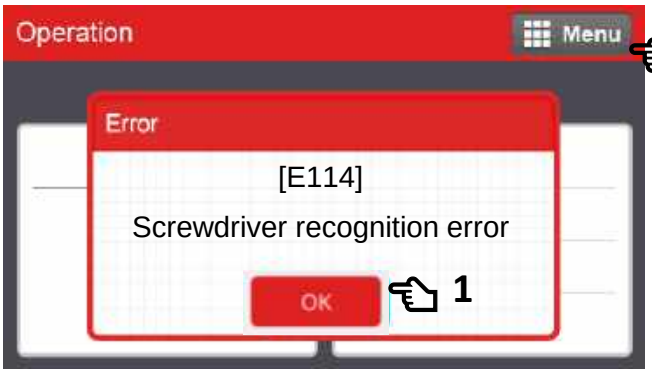


7. Operation

7.1 Getting started at first power on or after screwdriver change.

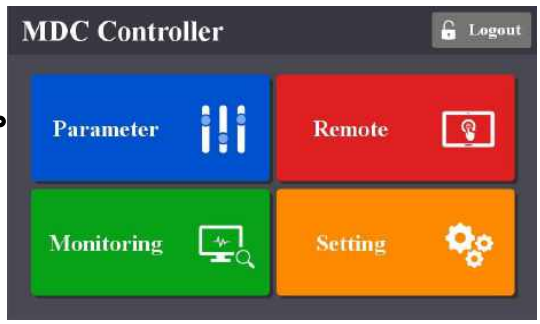
It is really important to initialize the controller and driver as a set, before attempting to make any settings, as the information stored within the controller during testing at time of manufacture may not correlate with the driver shipped with the system.

- Connect screwdriver to controller with supplied cable
- Connect controller power cable
- Power on controller with power switch
- Controller screen will display error message as below and screwdriver is locked.

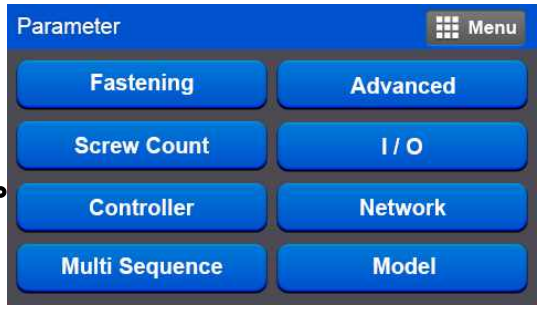


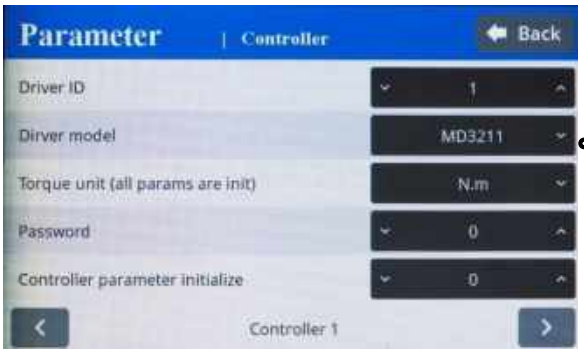
3 : enter 0 (factory password)

4 : Parameter

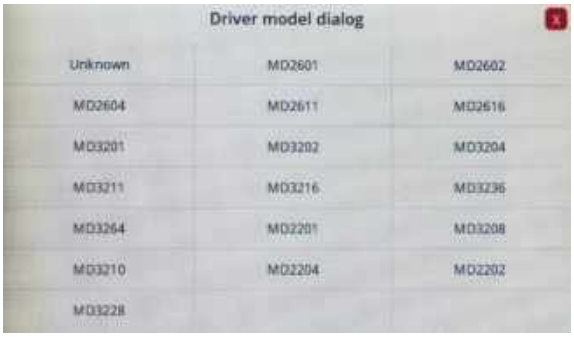


5 : Controller





6 : open driver model list



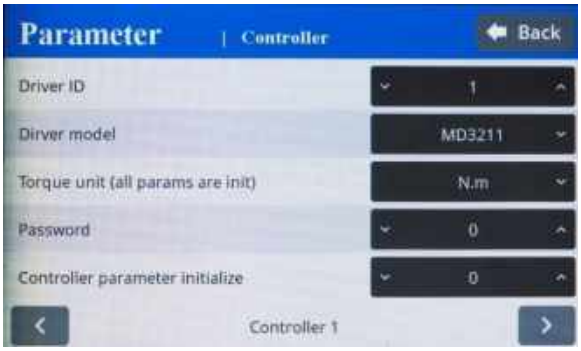
7 : select screwdriver model in list

MDP, MDA, MDH are same as MDxxxx

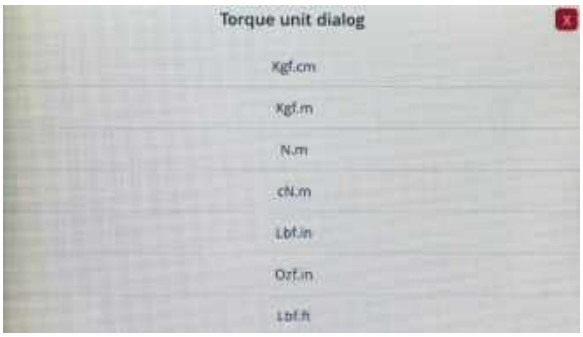
Power reset is done automatically and controller is initialized with selected screwdriver factory parameters.

- **Torque unit selection :**
  If necessary change torque unit (changing torque unit will reset all parameters)

  same procedure as above



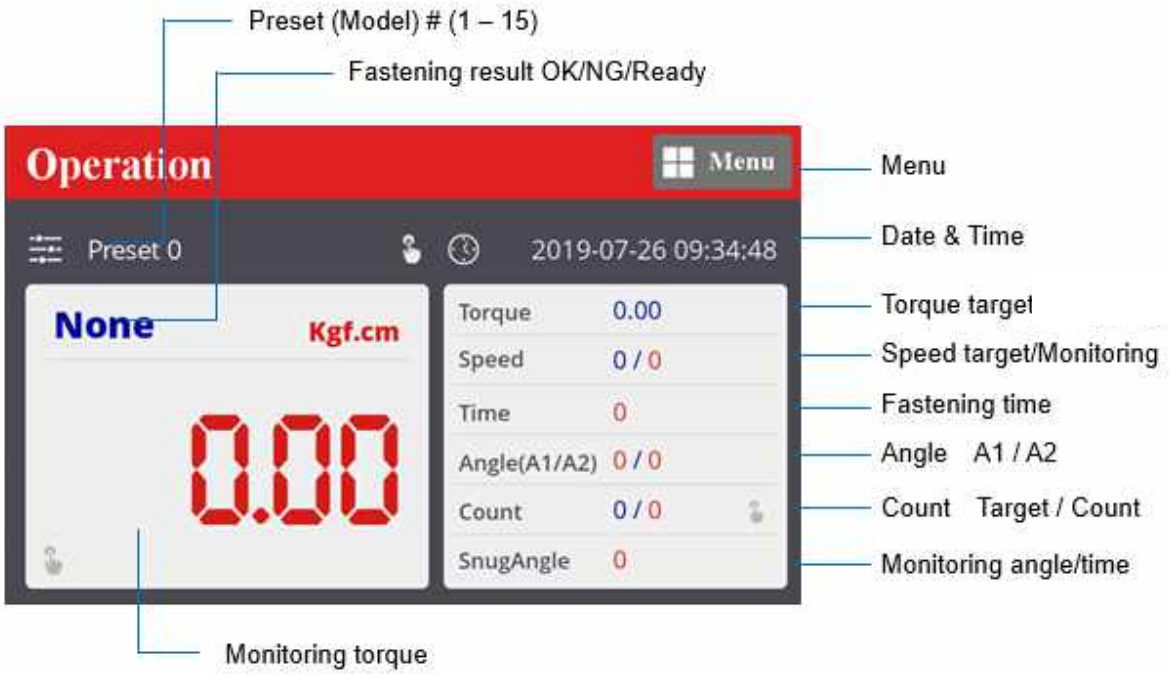
6 : open torque unit list



7 : select torque unit in the list

Power reset is done automatically and parameters are reset to factory settings

7.2 Operation screen

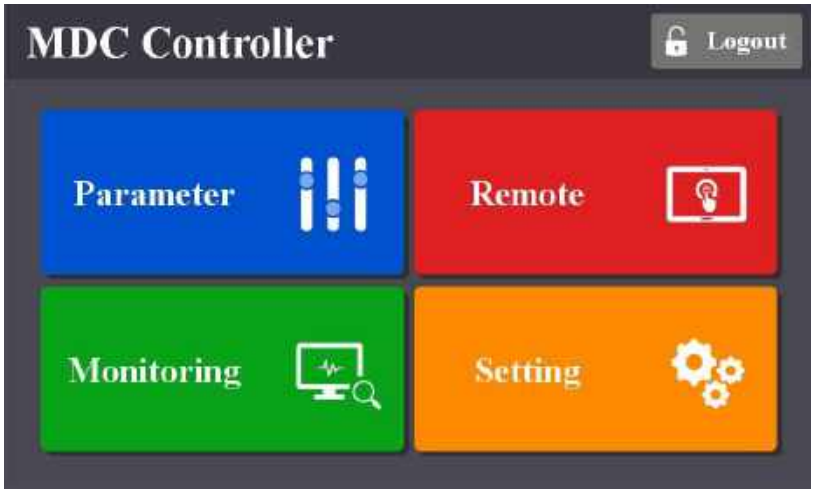


Operation screen is a default window when the controller power ON.

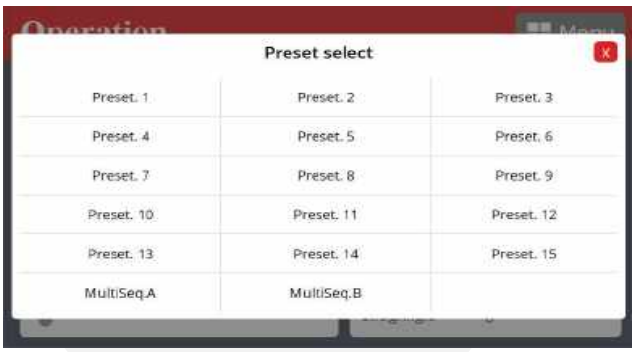
The real time monitoring data and target settings are displayed together.

To go other menu, click the Menu on the top right side.

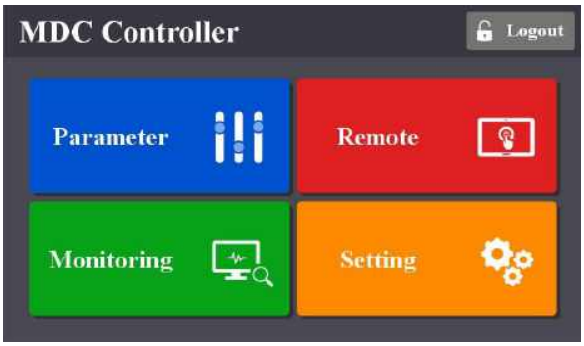
There are 4 menu for Parameter change, Remote operation, Real time monitoring and Display settings.



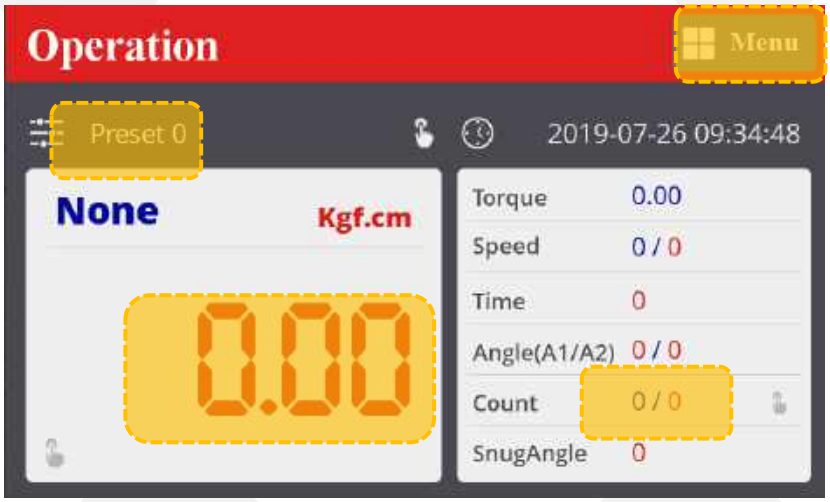
Touch Screen field to move



Preset # or Model select

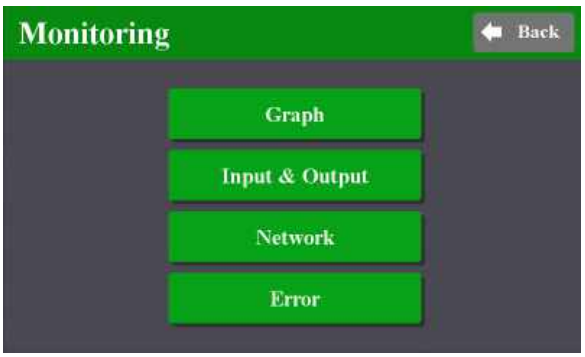


Password Log In

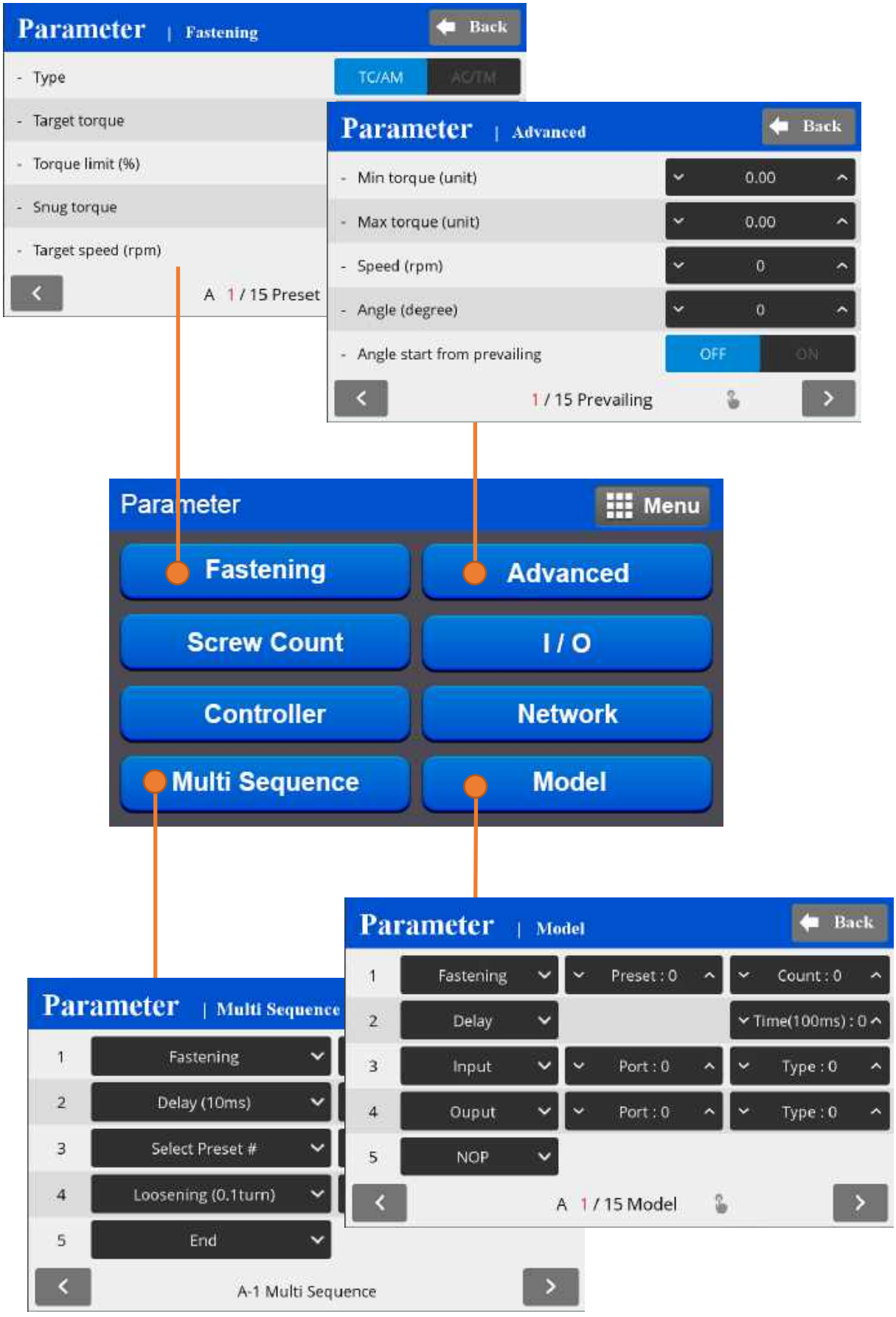


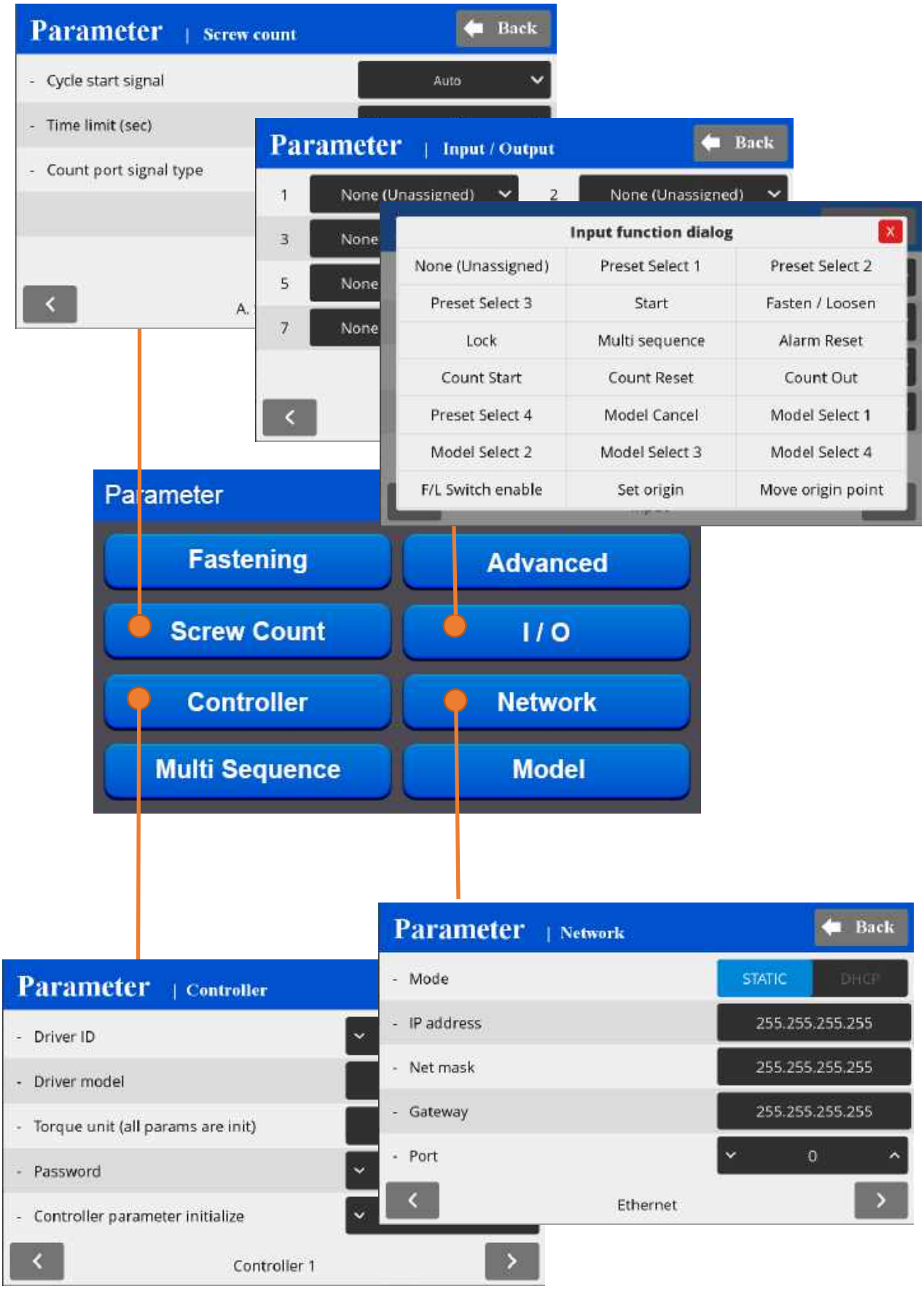
Real time monitoring

Last count cancel



7.3 Rapid view Parameter screens




Parameter | Screw count
Back
- Cycle start signal
Auto
- Time limit (sec)
- Count port signal type
Parameter | Input / Output
Back
1
None (Unassigned)
2
None (Unassigned)
3
None
5
None
7
None
Input function dialog
None (Unassigned)
Preset Select 1
Preset Select 2
Preset Select 3
Start
Fasten / Loosen
Lock
Multi sequence
Alarm Reset
Count Start
Count Reset
Count Out
Preset Select 4
Model Cancel
Model Select 1
Model Select 2
Model Select 3
Model Select 4
F/L Switch enable
Set origin
Move origin point
Parameter
Fastening
Advanced
Screw Count
I / O
Controller
Network
Multi Sequence
Model
Parameter | Network
Back
- Mode
STATIC
DHCP
- IP address
255.255.255.255
- Net mask
255.255.255.255
- Gateway
255.255.255.255
- Port
0
Ethernet
Parameter | Controller
- Driver ID
- Driver model
- Torque unit (all params are init)
- Password
- Controller parameter initialize
Controller 1

7.4 Presets or Model select

To use Model, Controller 4/8 → Model select ON setting required

There are 15 presets of program. Each preset contains the following parameters

- Torque
- Speed
- verifying angles
- soft start duration time
- free speed tightening.

Preset #1 **Advanced #1** ... **Preset #15** **Advanced #15** **Multi A,B**

Fastening parameter

1. Type (TC/AM or AC/TM)
2. Target Torque or Max torque
3. Torque limit(%) or Min torque
4. Target angle or No use
5. Min angle
6. Max angle
7. Snug torque
8. Speed
9. Angle for free speed
10. Free speed
11. Soft start
12. Seating point
13. Torque rising time
14. Ramp-up speed
15. Torque compensation

+

Advanced Function parameter

1. Free reverse rotation
   - Speed, Angle
2. Prevailing
   - Min /Max torque
   - Speed, Angle
   - Angle start from prevailing
3. Engaging torque detection
   - Speed, Torque(%)
   - Angle limit (turn)
   - Time limit (sec)
   - Angle start from engaging
4. Angle after torque-up
   - Speed
   - Angle
   - Direction

7.5 Parameters

To program each Presets, Click

and go to

Parameter menu require password to log in
The initial factory setting is " 0 " for password
The password can be changed once log in.
There are .875 address for each parameters.
Parameters are grouped for each settings as below

On the log in window, there are tool information about controller firmware version, LCD UI graphic version and option card firmware version, screwdriver model, serial no

Parameter group :

Please refer to the operation manual of ParaMon PC software for details of parameter settings.

Group	Parameter	Address
1. Fastening	Preset #1 to #15	A001 – A225
2. I/O	Input	A226 – A233
	Output	A234 – A241
3. Screw count	Number & cycle start	A242 – A247
4. Crow foot option		A265 – A269
5. Controller		A270 – A306
6. Network	IP address	A307 – 320
7. Multi sequence	Multi-A, Multi-B	A321 – 340
8. Error	8 error history	A341 – 348
	Controller model	A349
9. Model	Model #1 to 15	A350 – 649
10. Advanced Function	Advanced #1 to #15	A650 – 874
11. Firmware version		A875

7.6 Fastening settings

Parameters listed on A, B and C pages for each Preset from 1 to 15

Preset selection

Type

	Unit	Range	Initial
Description	Control type TC/AM : torque control/ angle monitoring AC/TM: angle control/ torque monitoring		

Target torque

	Unit	Range	Initial
	set up in controller	Tool range	
Description	TC/AM : Target torque AC/TM : Max torque		

Torque limit

	Unit	Range	Initial
Torque limit (TC) % Min torque (AC)	% Set up in controller	0 ~ 100 Tool range	0
Description	TC/AM : torque monitoring tolerance +/- % of target for fastening Ok AC/TM : Min torque		

Snug torque

	Unit	Range	Initial
	Set up in controller	Tool range	0
Description	In TC/AM : Point to start angle monitoring In AC/TM : Point to control angle		

Target Speed

	Unit	Range	Initial
	rpm	Tool range	Auto
Description	Target speed : Speed is changed by torque setting automatically. To change manually, Auto Speed must be Disabled in Controller 5/9		

Target angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Target angle in AC/TM mode		

Min angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Minimum angle to be OK in TC/AM mode		

Max angle

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Maximum angle to be OK in TC/AM mode		

Angle for Free speed

	Unit	Range	Initial
	degree	0 ~ 9999	0
Description	Angle for Free speed		

Free speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Manual setting speed. Shift back to the auto speed after the free angle running		

Soft start

	Unit	Range	Initial
	msec	0 ~ 300	0
Description	Speed reach to the target in the setting time, Preset complement to acceleration controller parameter		

Seating point torque %

	Unit	Range	Initial
	%	10 ~ 95	50
Description	In TC/AM : % of Target torque Auto speed slow down to ramp-up speed for torque control In AC/TM : to be set with same torque value as Snug torque, in % of Max torque		

Torque rising time

	Unit	Range	Initial
	msec	50 ~ 200	50
Description	Time setting from seating point to the target		

Ramp-up speed

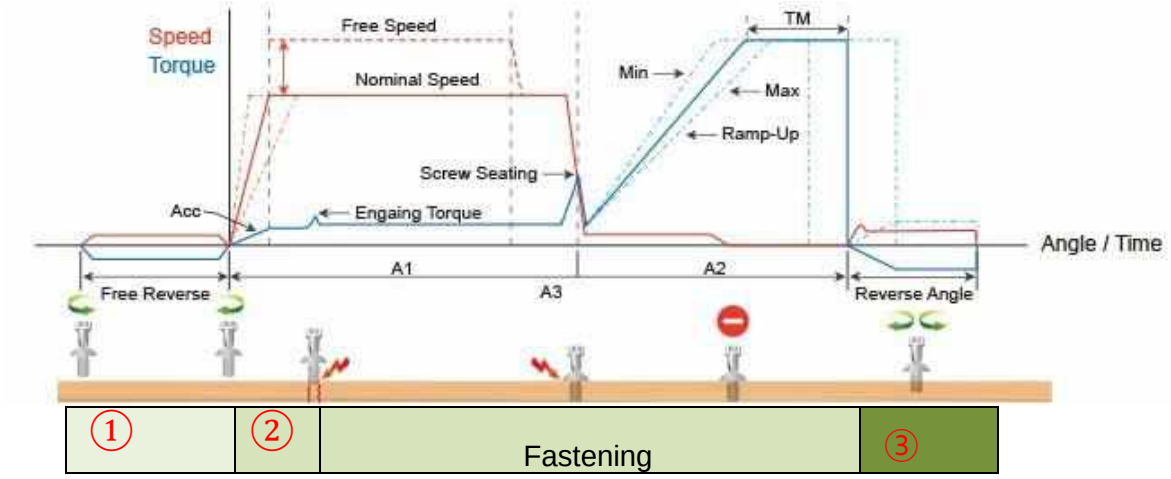
	Unit	Range	Initial
	rpm	Tool range	Auto
Description	Speed after seating to the end of tightening		

Torque compensation

	Unit	Range	Initial
	%	80 ~ 120	100
Description	Individual torque tuning on each preset, saved in the controller The torque output can be adjusted in the selected preset ONLY, it does not influence other presets. For details, please refer to chapter 8 – page **XX**		

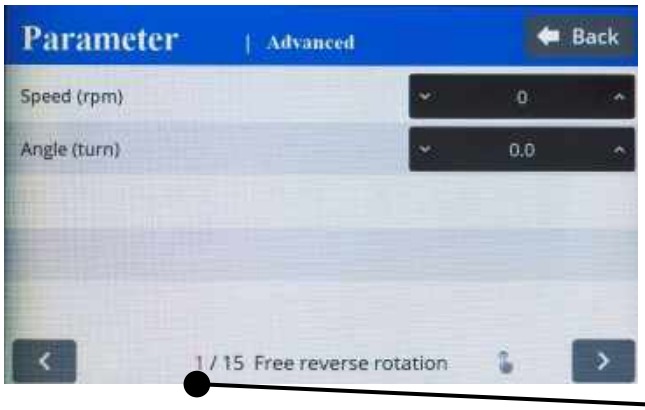
7.7 Advanced functions:
Free reverse rotation, Engaging torque detection, Angle after torque up Thread tapping

4 extra fonctions can be set **independantly** for each Preset



7.7.1 Free reverse rotation before Fastening

Free Reverse rotation to guide the screw into the screw hole smoothly with low speed



Preset selection

Speed (rpm)

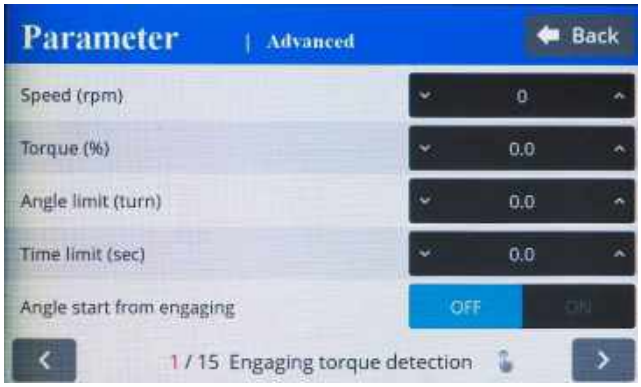
	Unit	Range	Initial
	rpm	Tool range	0
Description	Tool reverse rotation speed		

Angle (turn)

	Unit	Range	Initial
	0.1 turn	0 ~ 20	0
Description	Reverse rotation angle in rev		

7.7.2 Engaging Torque detection

It is possible only when the screw engaging provide significantly higher torque than previous free run.



Speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Tool rotation speed		

Torque (%)

	Unit	Range	Initial
	%	0 ~ 50	0
Description	Engaging torque setting by percentage of target torque – detection will be active from this value		

Angle limit (turn)

	Unit	Range	Initial
	0.1 turn	0 ~ 20	0
Description	Max engaging rotation in rev		

Time limit (sec)

	Unit	Range	Initial
	sec	0 ~ 10	0
Description	Max engaging timelap		

Angle start from engaging

	Unit	Range	Initial
		YES - NO	NO
Description	If select, the monitoring angle count is reset and start again from engaging torque detection.point.		

7.7.3 Angle after torque up

It manage extra angle control in both forward or reverse direction after tightening by torque.

Speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Driver rotation speed		

Angle

	Unit	Range	Initial
	degree	0 ~ 15000	0
Description	Rotation angle		

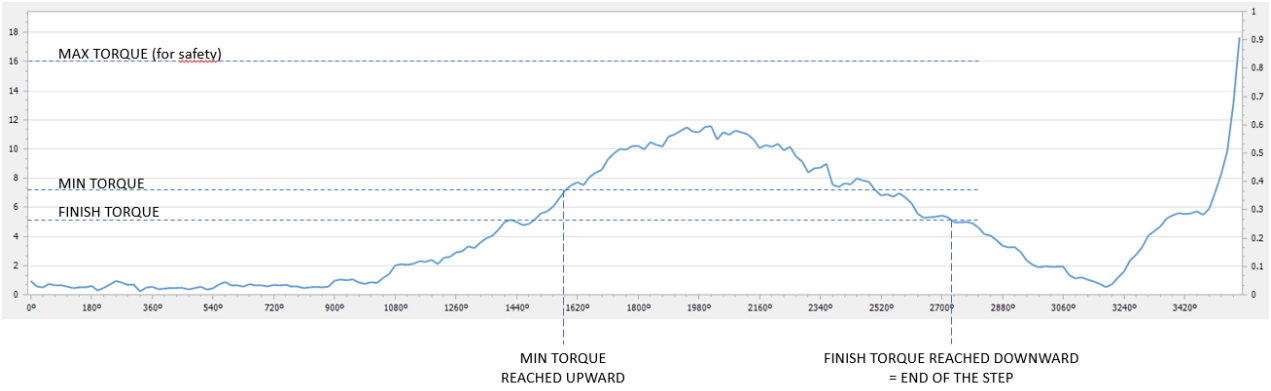
Direction

	Unité	Range	Défaut
		Forward - Reverse	Forward
Description	Angle rotation direction		

7.7.4 Thread tapping

This function is dedicated to trough hole tapping with a torque pic during thread tapping.
TC/AM program will start once the tapping is done.

Typical thread tapping graph



It is not the case in the trace above, but the tapping torque can be higher than target torque (tapping in metal sheets for example)

Min thread torque

	Unit	Range	Initial
	set up in controller	Tool range	0
Description	Torque level to start tapping monitoring Reach upward and higher than end torque parameter		

Max thread torque

	Unit	Range	Initial
	set up in controller	Tool range	0
Description	Safety torque level - end preset with a specific alarm		

Speed

	Unit	Range	Initial
	rpm	Tool range	0
Description	Driver rotation speed		

Thread tapping end torque

	Unit	Range	Initial
	set up in controller	Tool range	0
Description	Torque level to end the thread tapping advance function Reach downward and lower than min thread torque parameter		

Angle start from engaging

	Unit	Range	Initial
		YES - NO	NO
Description	If select, the monitoring angle count is reset and start again from engaging torque detection.point.		

7.8 Multi Sequence settings

Multi sequence provide a cycle of fastening by a start signal.
Total 10 steps of programing is allowed in MA(Multi A) and MB(Multi B) presets
To program, select the command and required parameter on each step.
To finish the multi sequence programing, last step command should be “END”
For screw counting and I/O’s connexions, please use Models

◆ Command details

Command	Description	Data (range)
NOP	No operation	No use
Fastening	tool start fastening process in forward rotation - Selected Preset is fill in Data field	Preset selection 1 to 15
Loosening	tool start loosening process in reverse rotation	Angle in 0.1 turn up to 999
Select preset#	Select preset # (not mandatory) Preset can be selected in data of Fastening command.	Preset selection 1 to 15
Delay	time delay for setting time	1 to 999
Jump	Move to the setting step	2 to 9
Count value = A	Total number “A” to count	1 to 999
Sub if (A)	Subtract 1 from “A” and save the value replacing “A” . If the value “ A” is not “0”, then move to the next lower step. If the value “ A” is “0”, then move to 2nd lower step	No use
End	Finish multi-sequence process (mandatory)	No use

Be carreful : Data can be set from 0 et 999. Please set correct value in fields

Example : please refer to Paramon Instruction Manual

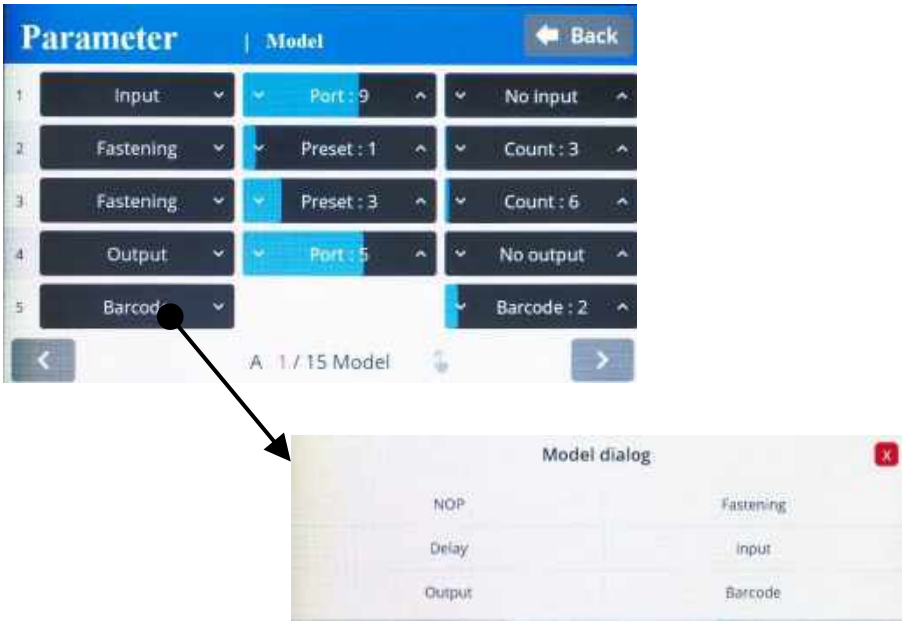
7.9 Model settings

They are 15 sequencing models of 20 steps with assignable tightening program batch counting and logical IO management.

Model should be activated in controller parameters.
The digital inputs for preset # select becomes model # select automatically.

Each step can have one of the above commands with related setting value

There are 5 different type of command : Input, Output, Fastening,Time delay and bar code scan.



Fastening setting : The fastening with counting number follows all settings and features in Screw Count menu except the number of screw.

> The spindle can be locked automaticaly in all steps except Fastening step, by selecting Enable on the menu Controller 'Auto lock' (model)'

Input/Output setting : IO port used in models should be unassigned (None) in IO settings
Inputs port 9 to 15 are unassigned and dedicated to models

◆ Command details

Command	Description	Data 1	Data 2
Input	Mapping digital Input	Input # select from 1 - 8	0 : No output → NG 1 : Active High 2 : Active Low 3 : High status 4 : Low status
Output	Mapping digital Output	Output # select from 1 - 8	0 : No Output → NG 1 : On 2 : Off 3 : On for 0.5s and Off 4 : On for 1.0s and Off
Fastening	Start fastening	**Preset # from 1 – 13** **14 : MA*** **15 : MB***	Count number from 1 - 250
Delay	Delay time	-	1 to 250 (unit: 0.1s) 0.1 - 25 sec.
Bar code	Require bar code scan	None	Barcode step data : '1 to 30' registered barcode(step) '0' any barcode scan

* To select preset 14 and 15, please program preset 14 and 15 in a one step multisequence .

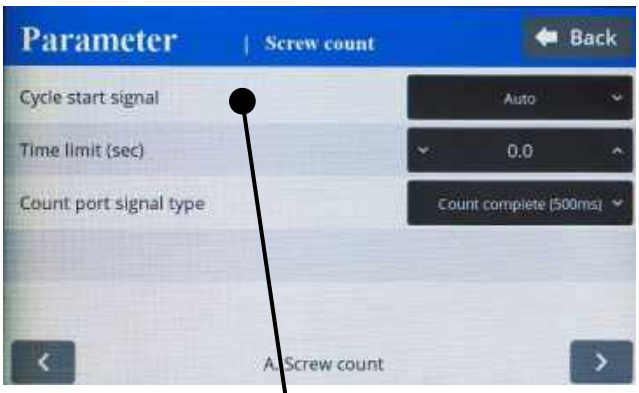
Bar code : receiving a barcode to go to next step

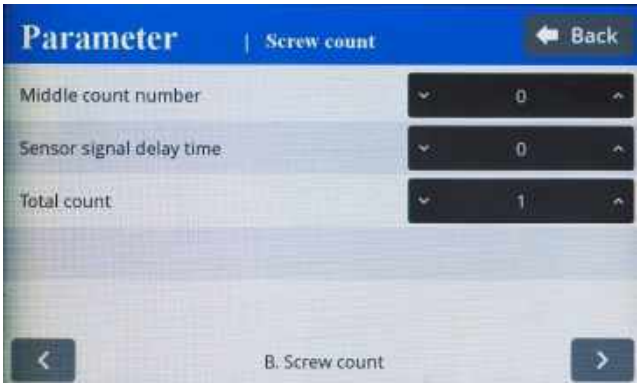
- If model barcode step data is set between 1 to 30 :
  It can go next step by receiving only barcode data scanned in setting menu 'Barcode(step)

- If model barcode step data is set 0 :
  It can go next step by receiving any barcode data
  Can be used to merged a part barcode with tightening results

7.11 Screw count settings

Screw count parameters are set for presets and models.





Sensor signal select : Count start(IN) / end(OUT)

1) No signal, auto start (Auto) - auto reset to total number after “0”

2) Sensor or switch with one trigger pulse - Count starts with only trigger pulse. Counting is valid until complete or reset. Reset calls count NG

3) One trigger pulse with timer for counting - Counting should be completed within the time of timer from the trigger pulse, otherwise count NG

4) One trigger pulse to start counting, another trigger pulse to stop counting and evaluate OK or NG. Any remaining number calls count NG

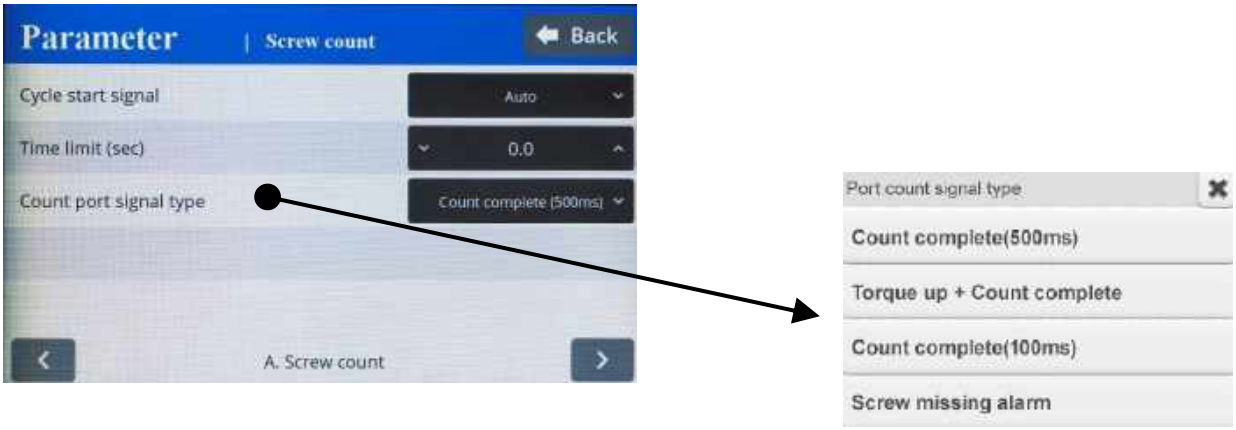
Time limit : only set if sensor signal is ‘start pulse+ time limit’
The fastening time limit from Count START for NG judgment.
The fastening work should be finished within the set time.
Otherwise, the work piece leave the working area

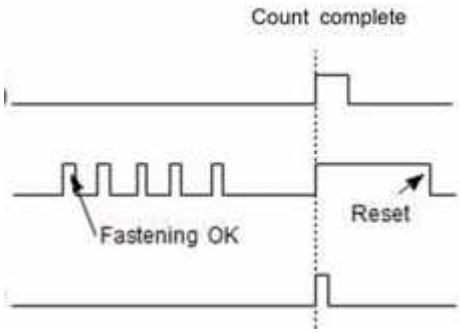
Total Count : this parameter is only used with Presets (not used for Model) – set value 0 to 99

Counting is set in Model with different values for each fastening step.

Middle count number :
When the count number is reaches to the middle count number, count complete signal out become ON till the total count is completed.
‘Port count signal type’ setting is ignored on this features.
‘0’ : no use.

Port Count signal (OUT) : count complete signal can be set with 4 different type of signals





Count complete(500ms)

Torque up + Count complete

Count complete(100ms)
Screw missing alarm

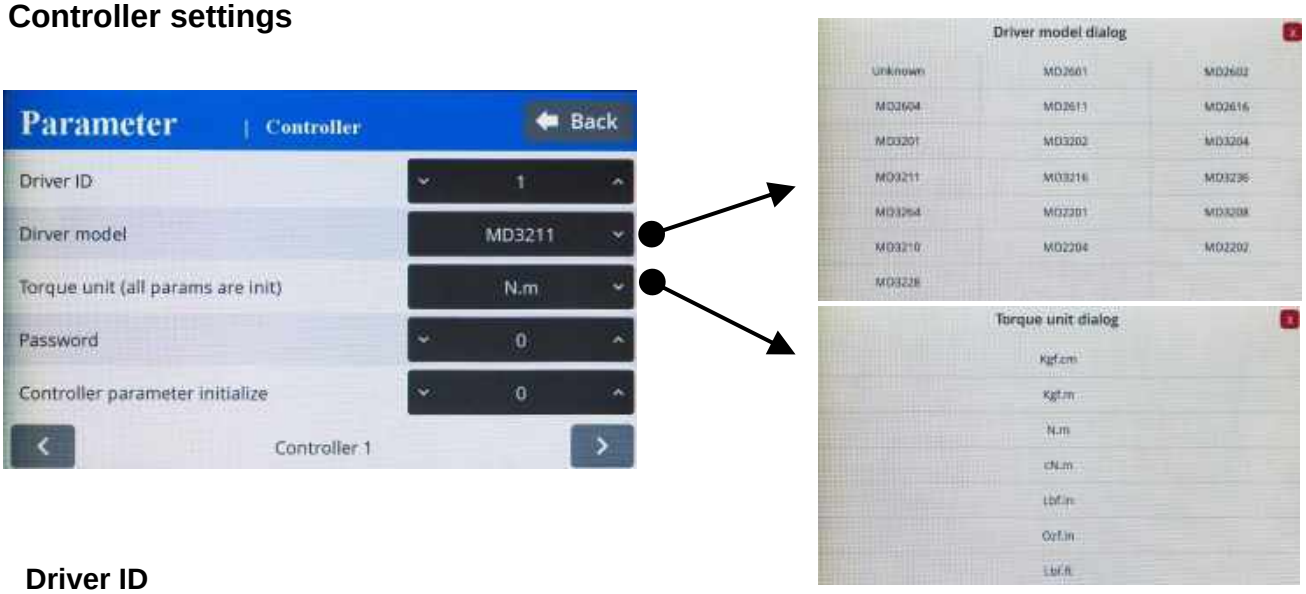
Count complete(500ms) : it provides 500ms of pulse type count complete signal after fasten all set numbers.

Torque up + Count complete : it provides every pulse(0.5sec) signal of torque OK and count complete signal after fasten all set numbers.
The count complete signal will be off after reset of count number when first screw of the new workpiece is tightened.

Count complete(100ms) : it provide a 100ms of pulse type count complete signal after fasten all set numbers.

Screw missing alarm : it provide a 100ms of pulse type alarm signal when screw missed in a cycle.

7.12 Controller settings



Driver ID

	Unit	Range	Initial
		1 ~ 99	1
Description	MDC ID used to identify ethernet data communication.		

Driver model

	Unit	Range	Initial
		Screwdriver list	Unknown
Description	Screwdriver model : to be specified previously to pair screwdriver with code 77.		

Torque unit

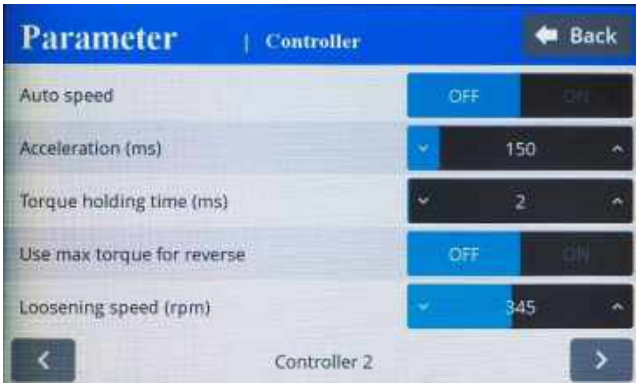
	Unit	Range	Initial
		Kgf.cm ~ Lbf.ft	N.m
Description	Kgf.cm / Kgf.m / cNm / Nm / ozf.in / lbf.in / lbf.ft Whenever the unit is changed, all parameters are initialized and controller should be reboot again.		

Password

	Unit	Range	Initial
		0 ~ 9999	0
Description	Password to access controller menu Factory setting password is ‘0’ at the initial.		

Controller parameter initialize

	Unit	Range	Initial
		0 to 9999	0
Description	Key in ‘77’ and press enter button. Flash the parameters back to factory settings - screwdriver is paired to controller.		



Autospeed

	Unit	Range	Initial
		OFF- ON	YES
Description	Provide the safe speed on the torque setting (P1 ~ P15). The speed is automatically calculated		

Acceleration

	Unit	Range	Initial
	ms	10 ~ 1000	150
Description	Slow start of motor to the target speed.		

Torque holding time

	Unit	Range	Initial
	ms	1 ~ 20	2
Description	Timelap torque is maintained after torque		

Use max torque for reverse

	Unit	Range	Initial
		OFF- ON	NO
Description	OFF : max loosening torque +20% selected preset torque target ON : full power loosening.		

Loosening speed

	Unit	Range	Initial
	rpm	Tool range	Max tool speed
Description	Tool reverse rotation speed		

Forward run time

	Unit	Range	Initial
	Sec	0 - 60	10
Description	Run limit to forward rotation – It prevent the continuous running over the preset time. The driver stops automaticaly at the preset time and provides the pattern NG with error code		

Reverse run time limit

	Unit	Range	Initial
	Sec	0 - 60	10
Description	Run limit to reverse rotation – It prevent the continuous running over the preset time. The driver stops automaticaly at the preset time and provides the pattern NG with error code		

Motor stall limit

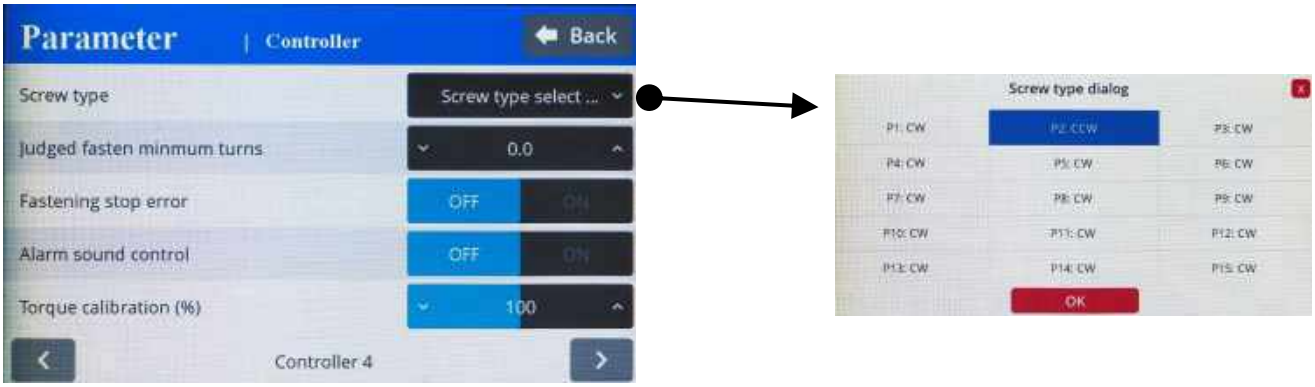
	Unit	Range	Initial
	Sec	0,1 – 0,5	0,2
Description	Immediate stop when motor is stalled.- It prevent the continuous time going against the motor stall for over heat protection		

Error display reset time

	Unit	Range	Initial
	sec	0 ~ 10	1,0
Description	Error display and reset after the below set time Value 0 : manual reset with RESET button		

Fastening OK signal time

	Unit	Range	Initial
	ms	0 ~ 500	0
Description	Signal output time setting longer than 150ms which is factory setting. Shorter time than factory setting doesn't work..		



Screw type

	Unit	Range	Initial
		CW - CCW	CW
Description	Set tightening rotation direction for each preset		

Judged fasten minimum turn

	Unit	Range	Initial
	turn	0 ~ 5	0
Description	Turns out of judgement		

Fastening stop error

	Unit	Range	Initial
		YES - NO	NO
Description	NO : does not create any NG when the tool stops without fully tightening by torque up.		

Alarm sound control

	Unit	Range	Initial
		YES NO	YES
Description	Activation of noise alarm – stops when reset (timer or manual)		

Torque calibration

	Unit	Range	Initial
	%	90 ~ 110	100
Description	It is the master calibration for whole range of tool. Saved in the tool memory and effective on another controller. The F/R switch should be at Reverse position before writing the new value. For details, please refer to chapter 8 – page 68		

Selection on panel

	Unit	Range	Initial
		OFF- ON	ON
Description	OFF : disable touch screen ON : allow touch screen use		

Reverse lock (handheld only)

	Unit	Range	Initial
		YES - NO	NO
Description	YES will disable the reverse rotation switch on screwdriver.		

Trigger start (handheld only)

	Unit	Range	Initial
		YES- NO	NO
Description	Trigger (⎍) start Enable/Disable with start lever		

Reverse start (handheld only)

	Unit	Range	Initial
		YES - NO	NO
Description	Reverse rotation switch can start the screwdriver in reverse by pushing it and stops by moving it back		

Preset # display when power on

	Unit	Range	Initial
		1 ~ 15	1
Description	Choice of initial preset selection on display when power on.		

RS232 select

	Unit	Range	Initial
		MODBUS - Barcode	MODBUS
Description	RS232 Port use : for data report or barcode reader **Please ensure that baudrate is set to correct value**		

Baudrate port com

	Unit	Range	Initial
	bauds	9600 ~ 230400	115200
Description	RS232 communication speed To be set as computer com port :115200 bauds for ParaMon or barcode reader setting : 9600 bauds		

Auto data output

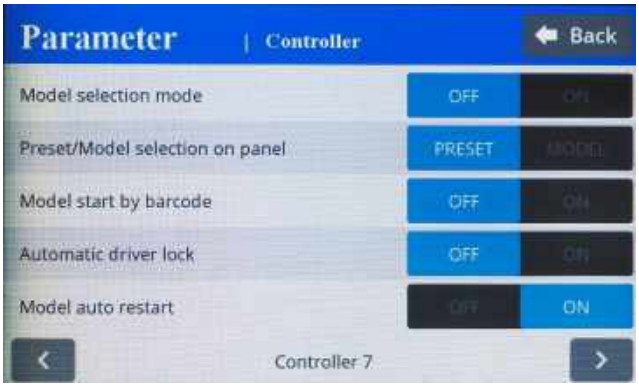
	Unit	Range	Initial
		YES - NO	NO
Description	Fastening data output automatically on every events as like run, For/Rev change, torque up, preset change, etc. Monitoring data come out through RS232 or Ethernet without data request command (port set controller page 8/9)		

Auto data output port

	Unit	Range	Initial
		RS232 - Ethernet	RS232
Description	Data output port selection for automatic report Auto data should be also set on (controller page 6/9)		

Protocol

	Unit	Range	Initial
		MODBUS - OPEN	MODBUS
Description	MODBUS : Communication protocol MODBUS on COM PORT OPEN : Communication protocol OPEN PROTOCOL (to be released) Refer to Protocol manual		



Model selection mode

	Unit	Range	Initial
		OFF- ON	OFF
Description	ON : model selection on operation screen or IO's OFF : Preset and MA/MB selection on operation screen or IO's		

Preset/Model selection on panel

	Unit	Range	Initial
		Preset - Model	Preset
Description	Allow Model or Preset selection on operation screen		

Model start by barcode (model)

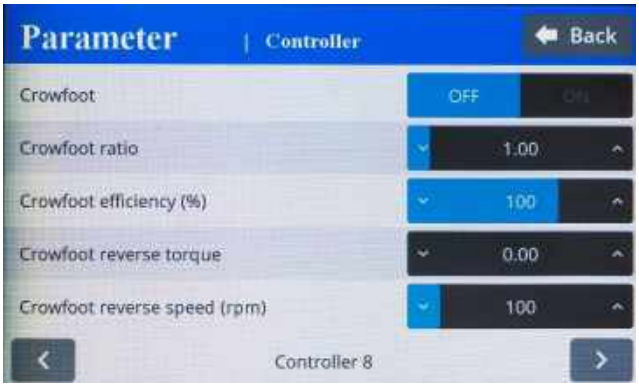
	Unit	Range	Initial
		OFF- ON	OFF
Description	ON : model start only after barcode scan OFF : model can start without bar code scan		

Automatic driver lock (model)

	Unit	Range	Initial
		OFF- ON	NO
Description	Driver can be locked in out of the process when the model mode is selected		

Model auto restart

	Unit	Range	Initial
		OFF- ON	OFF
Description	ON : model restart automatically after previous one is completed OFF : model restart when a model is selected		



Crowfoot

	Unit	Range	Initial
		OFF ON	OFF
Description	ON : activate crowfoot setting		

Crowfoot ratio

	Unit	Range	Initial
		0 to 10	1
Description	Crowfoot gear ratio including angle head		

Crowfoot efficency (%)

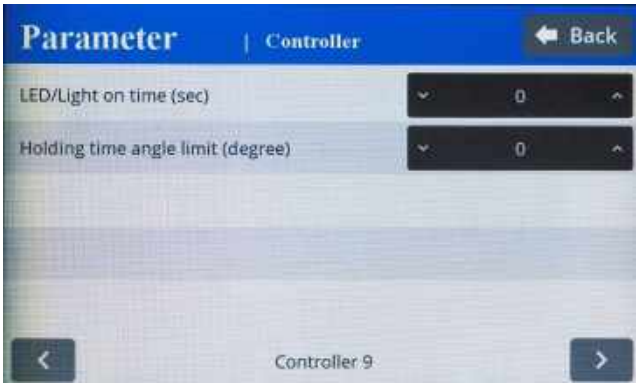
	Unit	Range	Initial
	%	0 to 150	100
Description	Crowfoot gear ratio including angle head		

Crowfoot reverse torque

	Unit	Range	Initial
	Set up in controller	Tool range	0
Description	For open crowfoot : max torque for return to open position detection		

Crowfoot reverse speed

	Unit	Range	Initial
	rpm	Tool range	100
Description	For open crowfoot : speed for return to open position		



Led/light on time

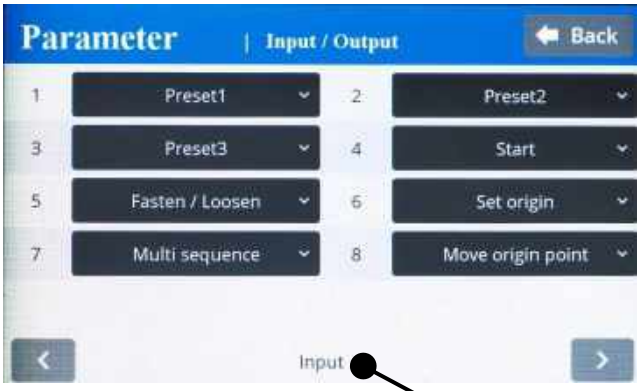
	Unit	Range	Initial
	sec	0 ~ 30	0
Description	Screwdriver LED lamp off timer (used only with pistols MDP) 0 = lamp off timer disable.		

Holding time angle limit

	Unit	Range	Initial
	degree	0 ~ 360	0
Description	Max angle monitoring during Torque holding time		

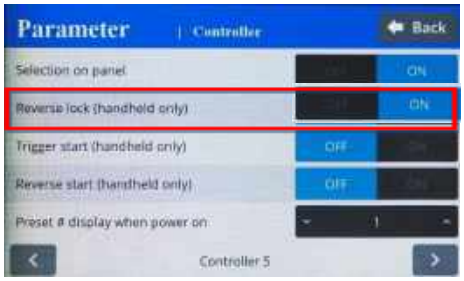
7.13 I/O settings

Inputs



Input function dialog		
None (Unassigned)	Preset Select 1	Preset Select 2
Preset Select 3	Start	Fasten / Loosen
Lock	Multi sequence	Alarm Reset
Count Start	Count Reset	Count Out
Preset Select 4	Model Cancel	Model Select 1
Model Select 2	Model Select 3	Model Select 4
F/L Switch enable	Set origin	Move origin point

F/L switch enable :
allow reverse by external input
when F/L switch is locked by controller setting



Absolute home bit/socket position
Set origin : Create the absolute home position monitored by motor angle encoder.
Move origin point : Bit socket position goes back to the home position

Outputs

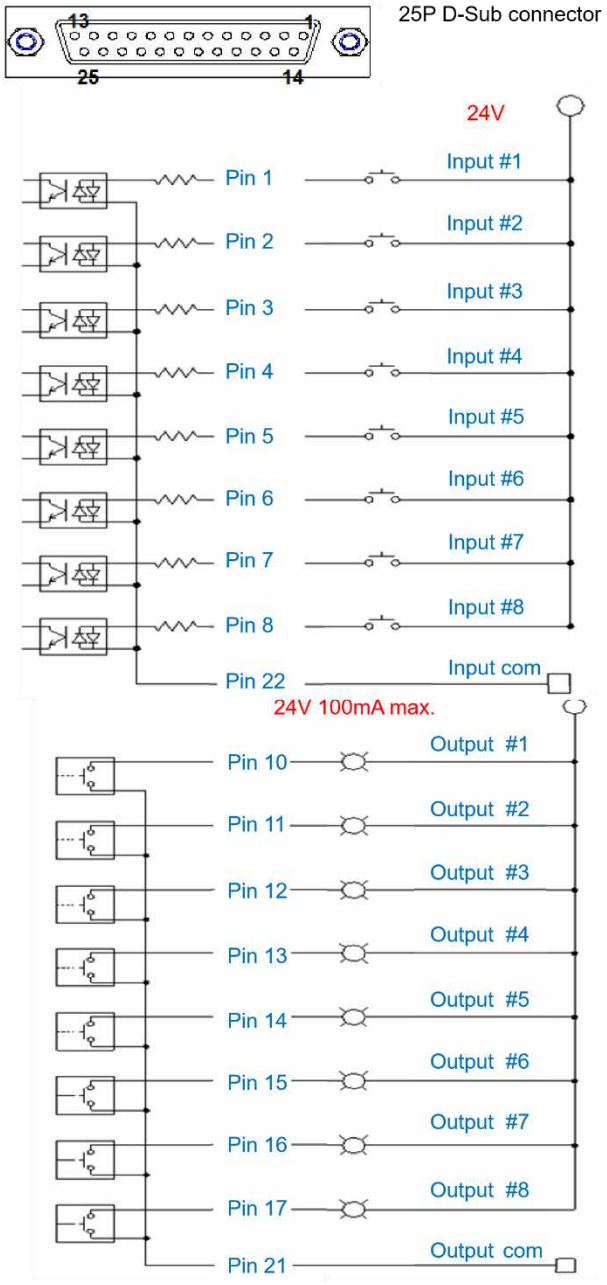
Output function dialog		
None (Unassigned)	Torque Up	Fastening OK
Ready	Run	Alarm
Status F/L	Count Complete	AL 1
AL 2	AL 3	Model Complete
Torque select 1	Torque select 2	Torque select 3
Torque select 4	Driver lock output	

MDC 25P I/O schematic

The digital I/O provide the free assignment feature for 8 Inputs and 8 Outputs.
Factory setting of I/O assignments are as following.

To validate changing I/O, turn the power OFF and ON again.

I/O connections



Factory settings

Pin No	Description	**Factory setting**
1	IN 1	Preset select 1
2	IN 2	Preset select 2
3	IN 3	Preset select 3
4	IN 4	Start
5	IN 5	Forward / Reverse
6	IN 6	Driver Lock
7	IN 7	Multi sequence
8	IN 8	Alarm Reset
9	*IN 9*	*Non assignable only Model*
10	OUT 1	Torque UP
11	OUT 2	Fastening OK
12	OUT 3	Ready
13	OUT 4	Motor RUN
14	OUT 5	Alarm
15	OUT 6	Status F/L
16	OUT 7	Count complete
17	OUT 8	Alarm 1
18	*IN 10*	*Non assignable only Model*
19	*IN 11*	*Non assignable only Model*
20	*IN 12*	*Non assignable only Model*
21	Out COM	
22	In COM	
23	*IN 13*	*Non assignable only Model*
24	*IN 14*	*Non assignable only Model*
25	*IN 15*	*Non assignable only Model*

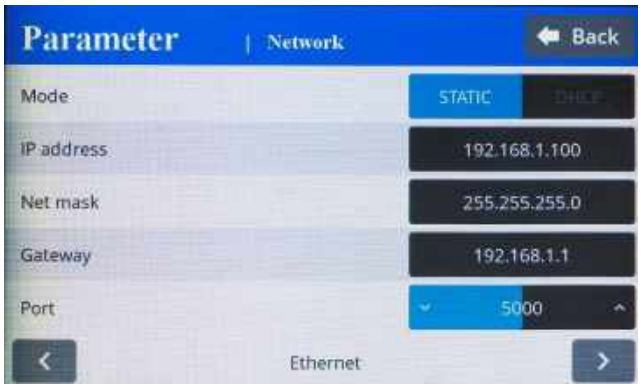
Binary coding with 5 inputs to select preset # and Mode (identical for Model)

Preset #	Input				
	Torque select 4	Torque select 3	Torque select 2	Torque select 1	Multi sequence
1	0	0	0	1	
2	0	0	1	0	
3	0	0	1	1	
4	0	1	0	0	
5	0	1	0	1	
6	0	1	1	0	
7	0	1	1	1	
8	1	0	0	0	
9	1	0	0	1	
10	1	0	1	0	
11	1	0	1	1	
12	1	1	0	0	
13	1	1	0	1	
14	1	1	1	0	
15	1	1	1	1	
Multi A	0	0	0	0	1
Multi B	0	0	0	1	1

◆ Binary coding with 3 outputs for error codes in 7 groups

Error code	Alarm 3	Alarm 2	Alarm 1
110,111,112,113,114,115,116,118,200,201,220	0	0	1
300,301,302,303,304,309	0	1	0
310,311	0	1	1
330,331	1	0	0
332	1	0	1
333,334,335,336, 337	1	1	0
400,401,500	1	1	1

7.14 Network settings



Mode

	Unit	Range	Initial
		STATIC - DHCP	STATIC
Description	STATIC : IP address should be set manually on controller DHCP : if controller is connected to a LAN with a DHCP router IP address will automatically given by LAN router		

IP address

	Unit	Range	Initial
	IPv4 adress		192.168.1.100
Description	Used with Static mode to set manualy IP address		

Net mask

	Unit	Range	Initial
			255.255.255.0
Description			

Gateway

	Unit	Range	Initial
			192.168.1.1
Description	Set LAN Router address		

Port

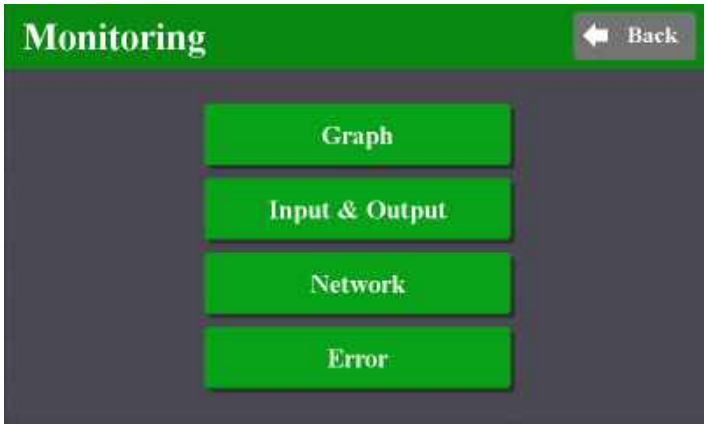
	Unit	Range	Initial
		0 to 9999	5000
Description	To be set for communication ParaMon software standard setting is port 5000		

7.15 Monitoring

To monitor fastening data and I/O status, Click

and go to

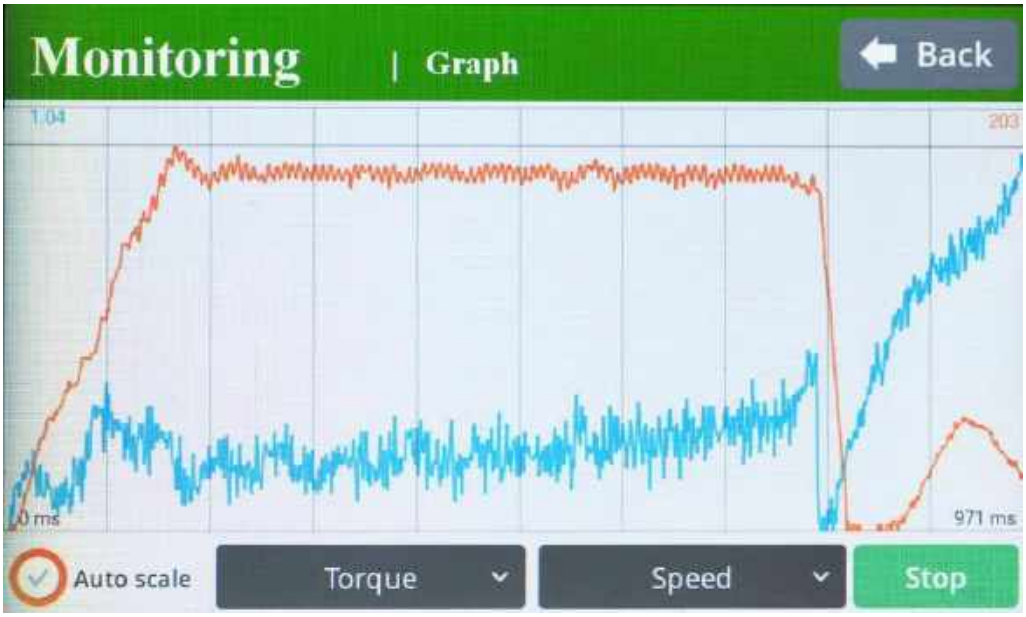
There are three(3) real-time monitoring menu and one error history.



- Graph : torque, Angle, Speed and current
- I/O : Input & output status
- Network : RS-232 & Ethernet settings
- Error : latest 8 error history

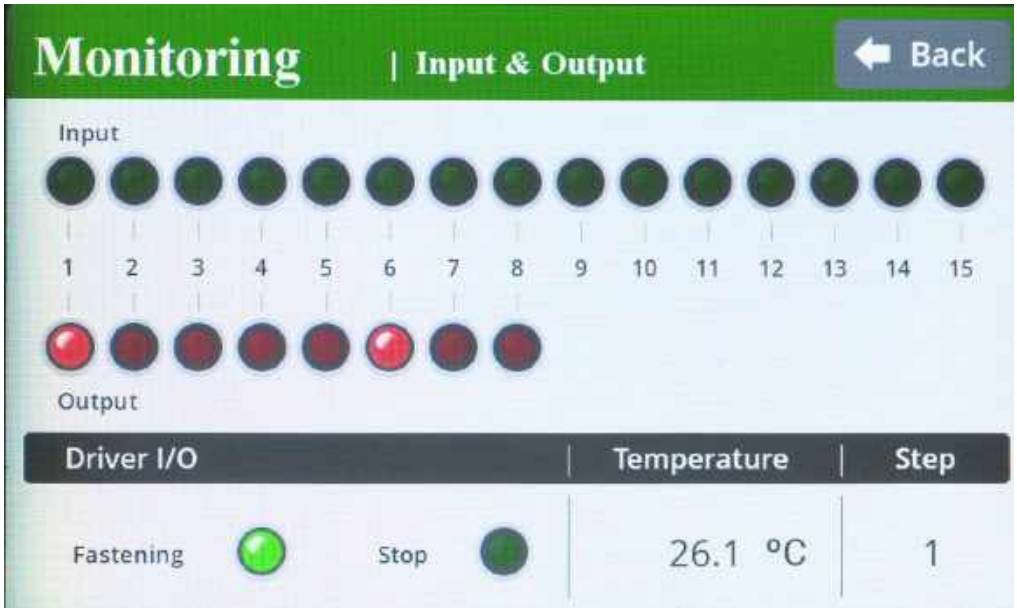
◆ **Graph (Torque curve) monitoring**

Two channel data curve for Current, Torque, Angle, Speed



The sampling rate is 1ms (0.001second) for maximum 400 data display. The latest 400 data display will be refreshed by moving left from right. Auto scale will display all data on one single screen by changing real-time sampling rate automatically.

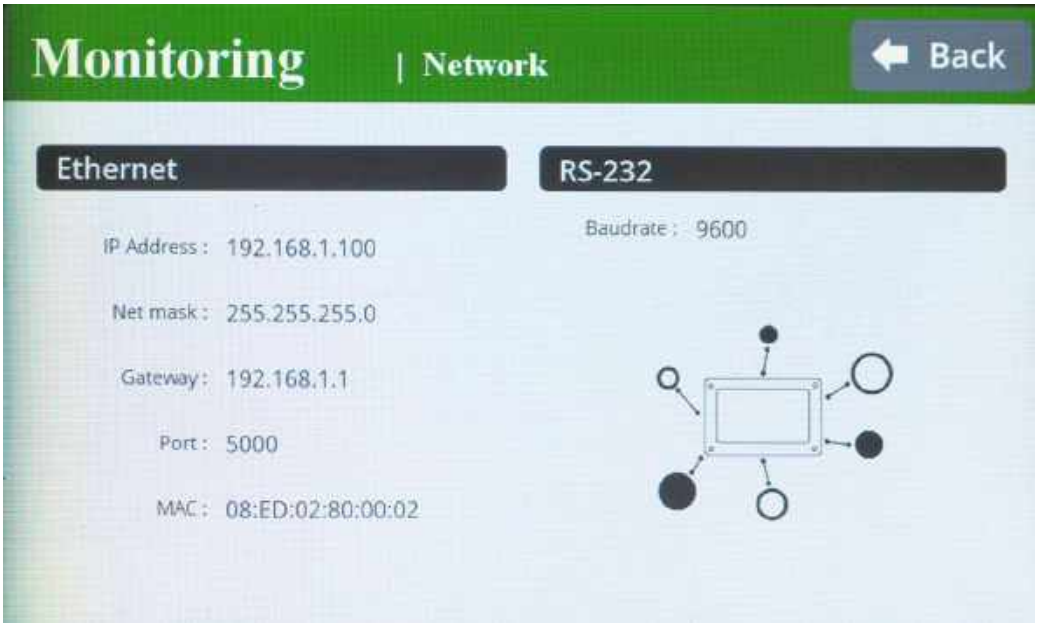
- **I/O Status monitoring**



The I/O & tool operation signals are displayed when they are activated

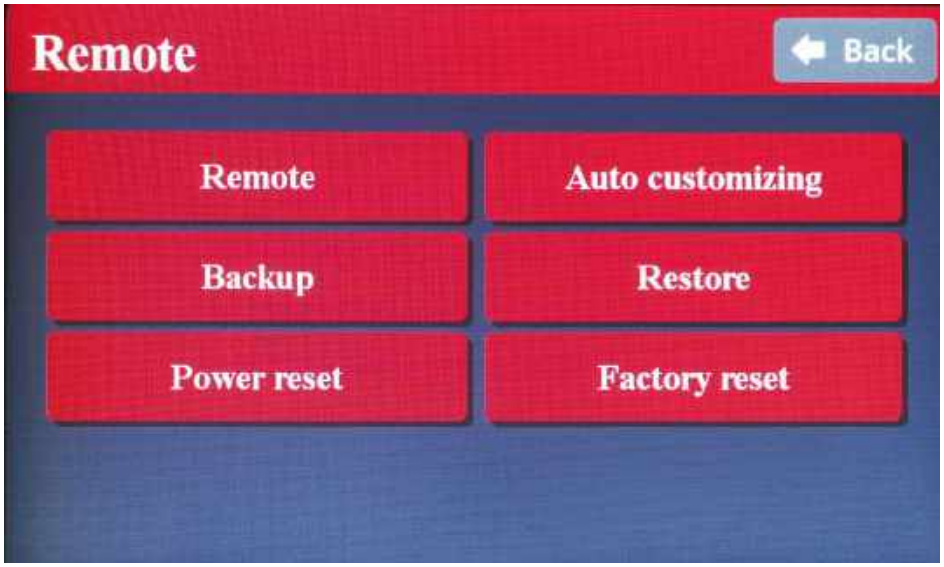
The temperature of the motor surface is also displayed.

- **Network setting**



7.16 Remote control & Auto customizing

Remote menu provides remote tool operation, Auto customizing parameters to have highest cycle time and resets. Click Menu, and REMOTE

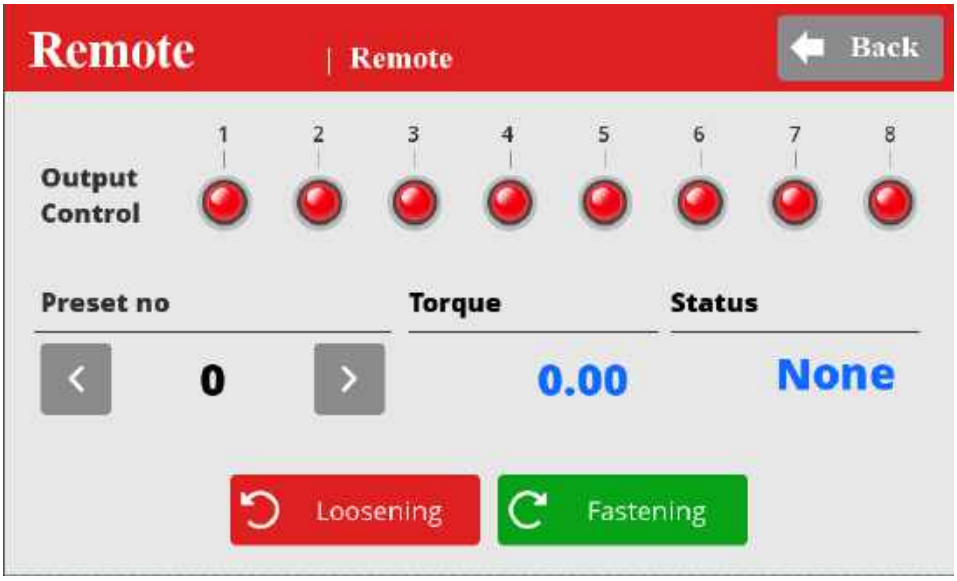


◆ **Remote**

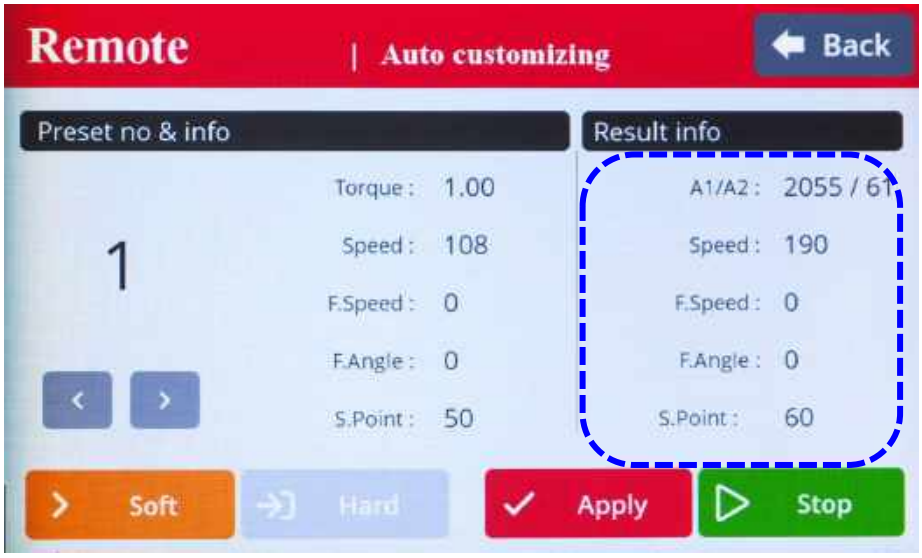
The tool and output signal can be operated remotely by click the screen.

It is useful feature to simulate the tools in automation integration. Easy to find the output wiring and tool test without PLC

- Preset selection
- Remote start tool in Fastening or Loosening direction
- Providing Output signals



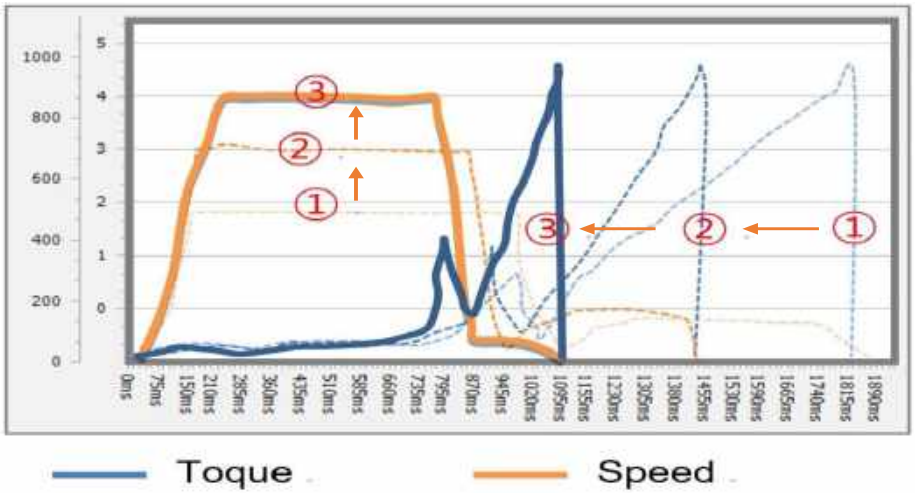
◆ Auto customizing parameters



Simulation & modification window

MD tool has the auto speed setting feature against torque setting not to provide any over torque by speed shock. This auto speed is safe speed on the hard joint condition. On the real application, this setting can be changed manually. Auto customizing feature provides most optimized parameter settings for saving cycle time on the real application.

Speed Torque



time

① Select Preset # to modify parameter settings

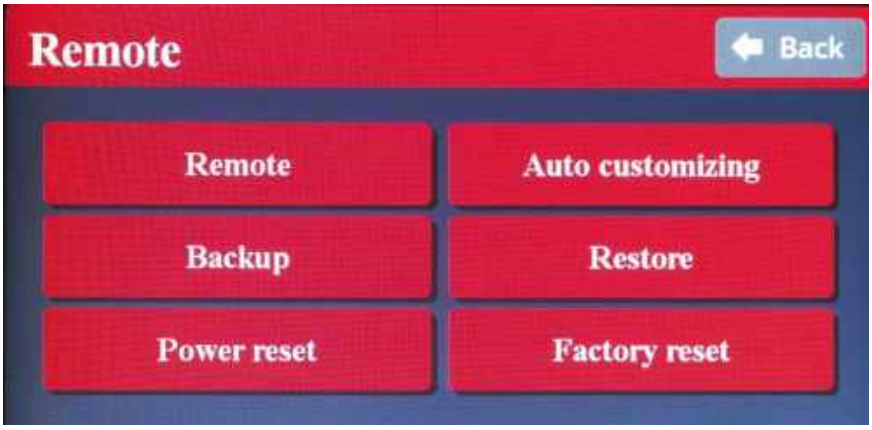
② Select one of Soft & Hard joint condition when it is obviously clear or both together when it is not clear to be clarified, then click START

③ Apply screw tightening several times until there is no more parameter changing on the simulation & modification window. Be sure that the fastening condition should be same during the process. The system changes parameter values by the previous fastening data.

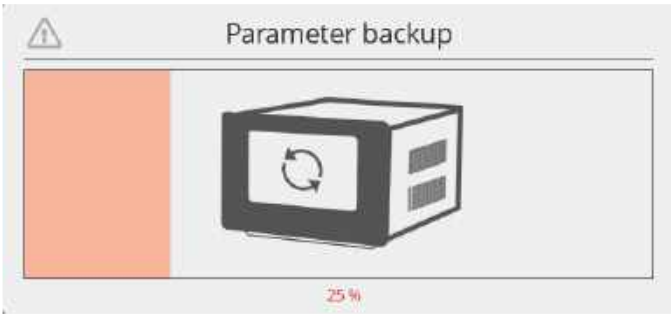
④ Once there is no more changes on the simulation & modification window, click STOP to finish testing.

⑤ Click APPLY to apply the settings on the simulation & modification window. The setting can be modified by manually before applying them.

7.17 Remote : Back up / Restore / Power Reset / Factory reset



- **Backup**



Parameter save in SD-Card.

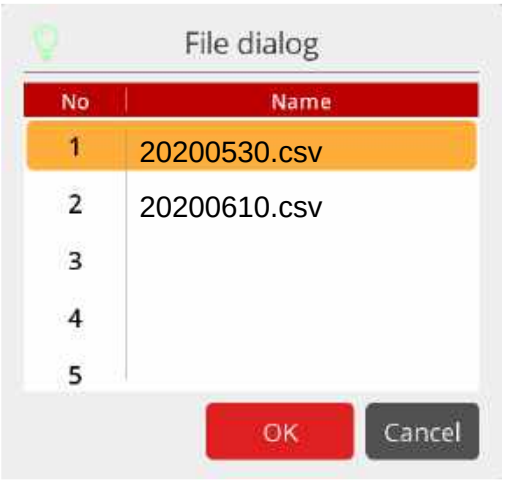
Save in SD-Card - PARAM folder.

Back up file name : yyyymmdd.csv

Only one file per day (latest backup erase previous one)

- **Restore**

Apply parameter backup file in SD-Card.



- **Power reset**

Power reset provide the equal effect of system rebooting by power OFF and ON of thecontroller. It refresh the booting by the softwar e without real power off.

- **Factory reset**

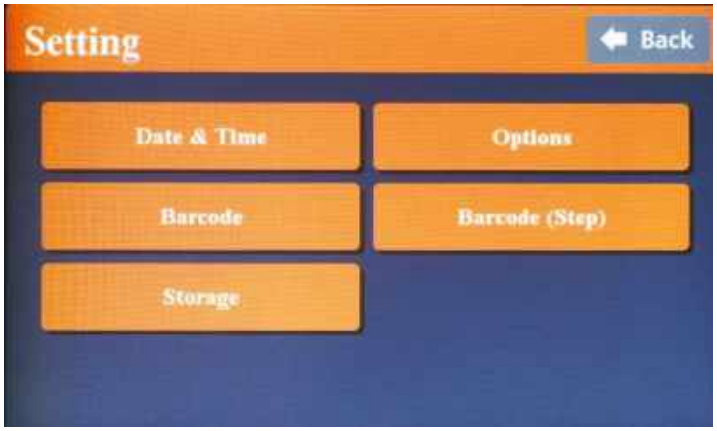
All parameters are reset to the factory setting.

7.18 General Settings : Date / Storage / Options

To modify Date, Time and backlight brightness ,

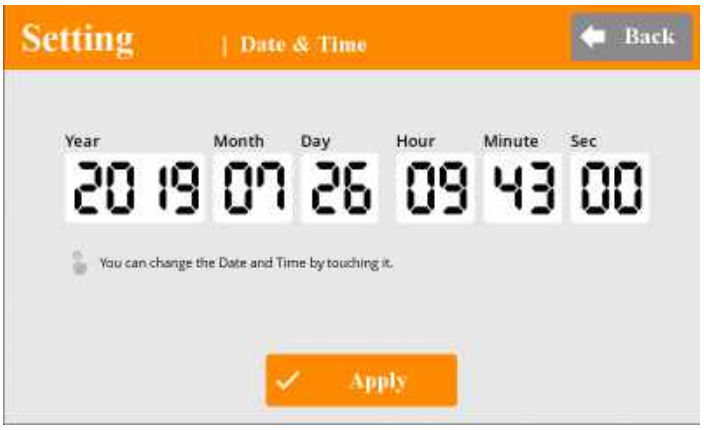
Click

, and



- **Date and time**

System date and time can be modified. yyyy-mm-dd hh:mm:ss



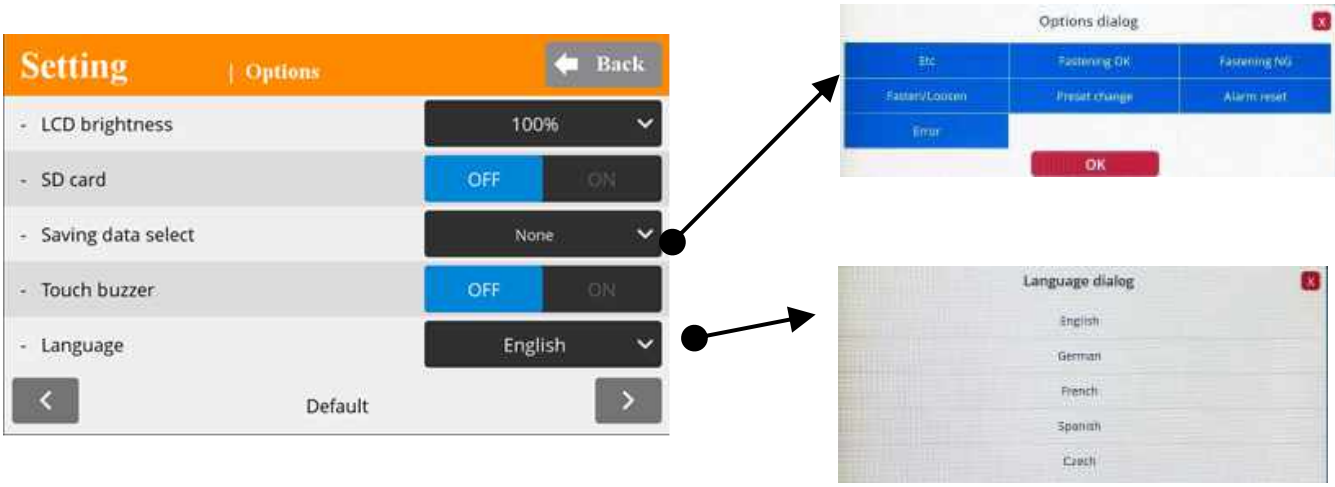
- **Storage**

Check SD card informations and available memory

<u>Important :</u>

Format will delete all datas saved on memory card – To avoid loosing datas please make a copy on a PC before.

◆ Options



LCD Brightness

	Unit	Range	Initial
		1-100	100
Description	Manual LCD backlight brightness adjustment		

Touch buzzer

	Unit	Range	Initial
		OFF ON	ON
Description	Touch screen sound desactivated or activated		

Language

	Unit	Range	Initial
		List	English
Description	Choose in a list of 5 languages : English, German,Franch, Spanish and Czech – change is applied is applied in the menu		

SD card

	Unit	Range	Initial
		OFF ON	OFF
Description	In order to save the fastening data, Select ON of SD card and select the items to be saved on the SD card ;		

Saving data select

	Unit	Range	Initial
		List	all
Description	Select the items to be saved on the SD card – SD card should be set ON to save selected data saved on SD card		

7.19 General Settings : Barcode & Barcode Step

The barcode information can select the Preset or Model by the setting.
In order to use barcode scanner, there are some parameters to be selected prior to the barcode setting.

[Controller menu] R2232C : Modbus / Barcode (O)
RS232C baud rate : Select right one for the scanner - usually 9600

Barcode data

Preset # Model # 1 to 15
MA=16 MB=17

Barcode registration # (total 30)

- Total number of barcode registration : up to 30
- Max number of barcode data length : 32 characters (including CR data)
- Registering process

1) Click “READ” and scan the barcode
2) Select the first and ending digit number from the scan data for registration
3) Select Preset # to be linked with the registered scan data
4) Click UP button to move the next registration and repeat the same process.

** Preset #16 and 17 in P.M# window works for Multi A and B

When Muti A or B is used, the operation window display contains the followings according to the sequence MA or MB > Step no. > Preset # (current preset #)

- “ Reset all “ button is used to clear all registration
- “ Reset Item “ button is used to clear the current scan data.

◆ **Barcode Step setting**

Only for barcode reading used in model barcode step.

Dialog menu Identical to Barcode (refer previous page).

Barcode registration # (total 30) – Max 32 characters each

-Barcode registration mean model barcode step setting value.

Ex: Model barcode step value set 1.
If read barcode registration 1 data then model change next step.

◆ **Note for barcode reader connection:**

Hardware connection on RS232 port :

Serial connection RS232 use only 2, 3 , 5 pins.
Pins 2 and 3 should be switched
External voltage supply is needed for RS232 barcode reader

Barcode reader setting :
see below default standard parameters

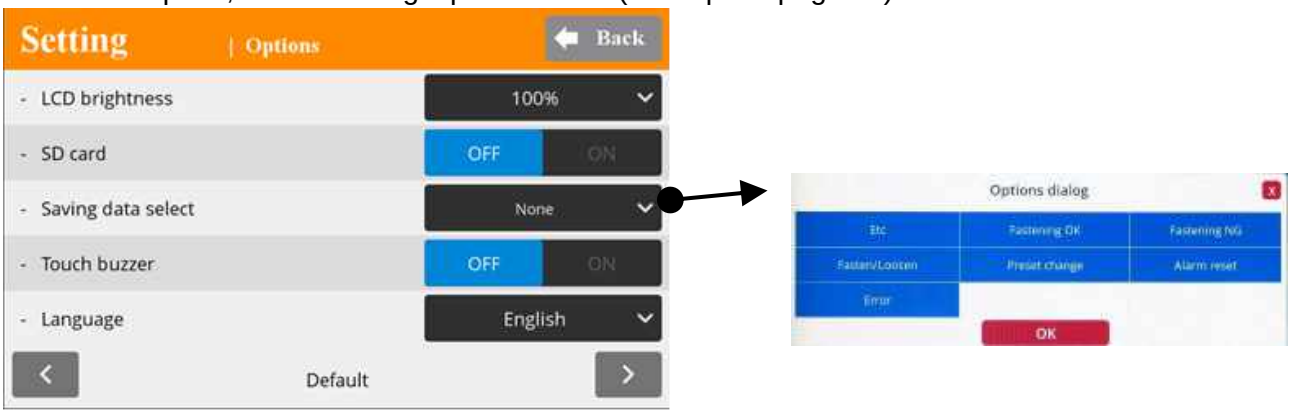
Parameter	Standard (Default)
Transmit Code ID	No
Data Transmission Format	Data as is
Suffix	CR/LF (7013)
Baud Rate	9600
Parity	None
Hardware Handshaking	None
Software Handshaking	None
Serial Response Time-out	2 Sec.
Stop Bit Select	One
ASCII Format	8-Bit

7.20 General Settings : SD memory card

SD memory card specification

SD card type	Size	Format
Industrial grade Class 10	Max 32GB	FAT32

To use this option, check Setting Options menu (description page 69)



System creates the folders of YEAR, MONTH automatically. And it creates one file in CSV format with the file name of DATE.

SD CARD > 2017 (folder) > 07 (folder) > 21 (file) ….. File name : 21.csv

The real time fastening data in Monitoring menu are stored together with the system clock time of the controller.

Clock time, Fastening time, Preset#, Target torque, Converted torque, Speed, A1, A2, A3 angles, Count no. Error code, Forward/Reverse, Status(OK), Snug angle

SD Memory card

- drvstate.txt
  - HISTORY → folder
    - YEAR → folder / one folder per year
      - MONTH → folder / one folder per month

- Date.csv → monitoring data file / one file per one day

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Time	Serial	Barcode	F_time	Preset	T_torque	C_torque	Speed	A1	A2	A3	Count	Error	F/L	Status	Snug angle
2	%16:11:27	16.11.0005	:B170728025201/3	0	1	10	0	214	0	0	0	5	0	0	0	0
3	16:11:30	16.11.0005	:B170601011304/10	0	2	10	0	214	0	0	0	5	0	0	0	0
4	16:11:33	16.11.0005	:B170728025201/3	0	1	10	0	214	0	0	0	5	0	0	0	0
5	16:12:11	16.11.0005	:B170728025201/3	699	1	5	5.14	113	381	8	389	4	0	0	1	0
6	16:12:13	16.11.0005	:B170728025201/3	650	1	5	5.08	113	336	16	352	3	0	0	1	0
7	16:12:15	16.11.0005	:B170728025201/3	1278	1	5	5.09	113	766	11	777	2	0	0	1	0
8	16:12:17	16.11.0005	:B170728025201/3	1000	1	5	4.94	113	581	9	590	1	0	0	1	0
9	16:12:19	16.11.0005	:B170728025201/3	1059	1	5	5.24	113	625	7	632	5	0	0	1	0
10	16:12:21	16.11.0005	:B170728025201/3	813	1	5	5.1	113	464	4	468	4	0	0	1	0
11	16:12:23	16.11.0005	:B170728025201/3	647	1	5	5.11	113	344	8	352	3	0	0	1	0
12	16:12:25	16.11.0005	:B170728025201/3	1029	1	5	4.95	113	597	13	610	2	0	0	1	0
13	16:12:26	16.11.0005	:B170728025201/3	1001	1	5	5.09	113	558	16	574	1	0	0	1	0
14	16:12:28	16.11.0005	:B170728025201/3	0	1	5	0	113	0	0	0	1	0	0	0	0
15	16:12:30	16.11.0005	:B170728025201/3	919	1	5	5.02	113	530	6	536	5	0	0	1	0
16	16:12:32	16.11.0005	:B170728025201/3	0	1	5	0	113	0	0	0	5	0	0	0	0
17	16:12:35	16.11.0005	:B170601011304/10	0	2	7.5	0	163	0	0	0	5	0	0	0	0
18	16:12:38	16.11.0005	:B170601011304/10	890	2	7.5	7.7	163	729	12	741	4	0	0	1	0
19	16:12:40	16.11.0005	:B170601011304/10	942	2	7.5	7.73	163	776	15	791	3	0	0	1	0
20	16:12:42	16.11.0005	:B170601011304/10	936	2	7.5	7.28	163	766	16	782	2	0	0	1	0
21	16:12:43	16.11.0005	:B170601011304/10	942	2	7.5	7.51	163	768	19	787	1	0	0	1	0

** The last scanning data is recorded together with every fastening data

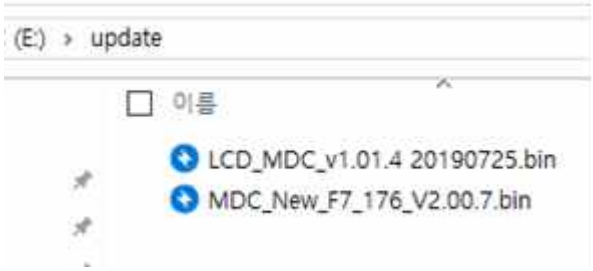
8. Firmware Upgrade

1) Remove the SD card for data saving and use the new SD card for firmware update only.
2) Create the folder “ Update “
3) And copy the firmware files in each folder
4) Insert the SD card, and power ON the controller, then it is updated automatically.

SD Memory card
update

MDC*.bin (MDC firmware file)

LCD*.bin (LCD firmware file)

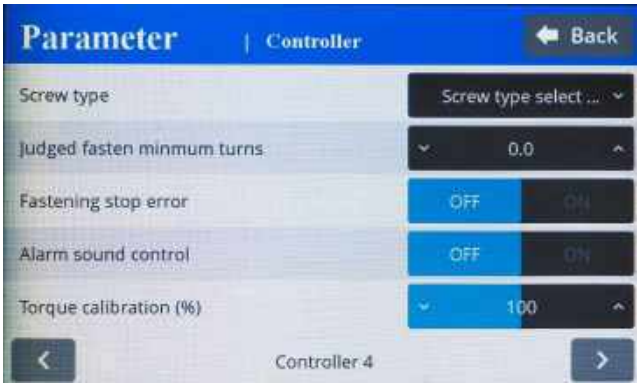


9. Torque calibration and compensation

◆ **Torque calibration** : It is the master calibration for whole torque range of the tool, saved in the tool memory. The F/R switch should be at Reverse position before writing the new value.

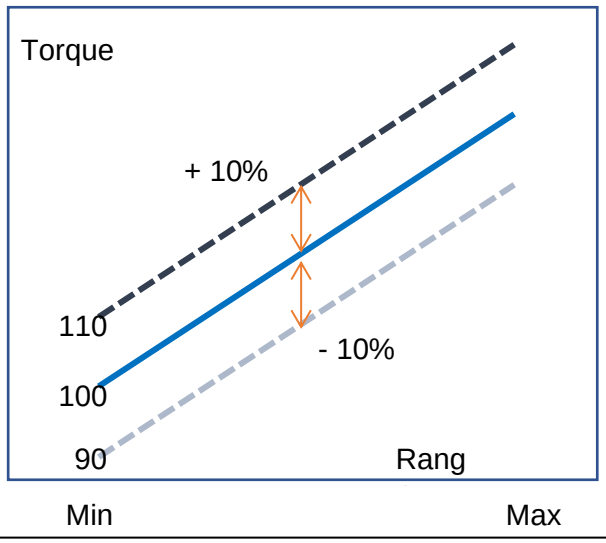
The torque calibration is required when :
- The torque reading on the torque meter is different with the setting
- Tool is repaired by replacing motor or gear mechanism
- If there is a big mass of the bit which is exceptional from the normal one, speed should be slower to reduce the inertia spike.

Torque calibration on the controller panel



When the reading on the torque meter 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 chip in the tool. So it can be still effective on other controller. Be sure that the different torque test conditions can make different torque reading.

- Type of the rundown simulation (Hard joint, semi-elastic or Soft joint)
- Rundown screw diameter
- Pressing pressure of the tool
- Washer, lubricant and run down screw material
- Tool speed : auto-speed should be used
- Low pass filter of the torque meter



A periodical torque calibration is required to keep the accuracy of fastening quality.

◆ **<u>Torque compensation</u>** : Individual torque tuning on each preset.
Saved in the controller

Torque compensation can be used when :

The reading on the torque meter is variable according to the fastening condition on each preset, and it should be decreased or increased together on other presets, the torque compensation is useful in parameter setting of each preset. The torque output can be adjusted in the selected preset ONLY. It does not influence to another presets.

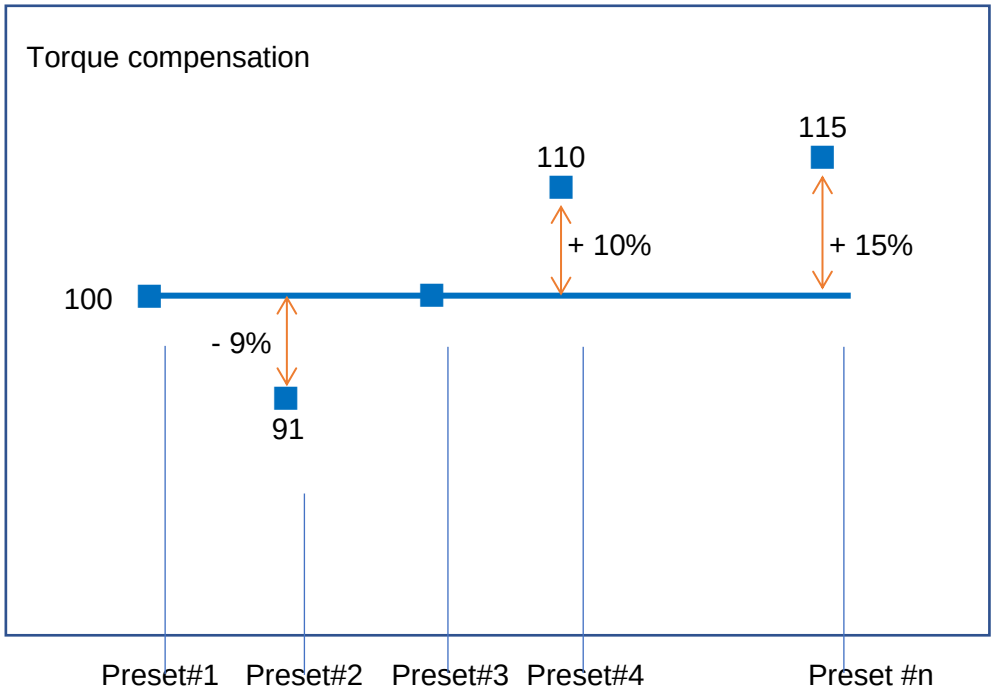
Torque compensation on the controller panel

Total adjustable range is +/- 20% (80% to 120%) for 15 presets.

It is additional tuning from the Torque Calibration. So the total adjustment is made by Torque calibration + Torque compensation.

Torque compensation value is stored in the controller memory, not the tool memory.

Some model of tool can have the limit of compensation in Min / Max according to the motor capacity. If the total value is over the capability, it does not work at all.



10. Error code

10.1 System error

Code	Error message	Description	How to reset
110	AD offset error	When the power of controller is ON, the current offset is out of range.	Reset and retry booting. If failed, repair is required
111	Under voltage	Undervoltage protection on SMPS power supply circuit.	
112	Over speed	Over rotation speed than the set value.	Check the cable connection.
113	Driver data read	Screwdriver parameter data read error	Reset and retry booting.
114	Screwdriver recognition error	The screwdriver is not compatible with the controller	A251 – Select driver
115	Controller recognition error	Program itself can not recognize the controller information.	A251 – Select driver
116	Com error related with I/O data	System failed to read the data from I/O port by communication issue	Reset and retry booting.
118	No motor rotation error	When motor rotation is not monitored	Reset and retry booting.
120	No SD card board	SD memory card option setting is enabled, but No SD card board detected	
121	SD card writing	Writing on the memory is not available.	
122	SD card failure	SD card board is damaged	
200	Parameter reading failure	It failed to read parameter at all. Check the EEP-ROM damage or communication failure	
201	Parameter Checksum error	The read parameter is wrong by the checksum routine	
220	Multi-sequence program error	Multi-sequence program is wrong	Multi-sequence program is wrong

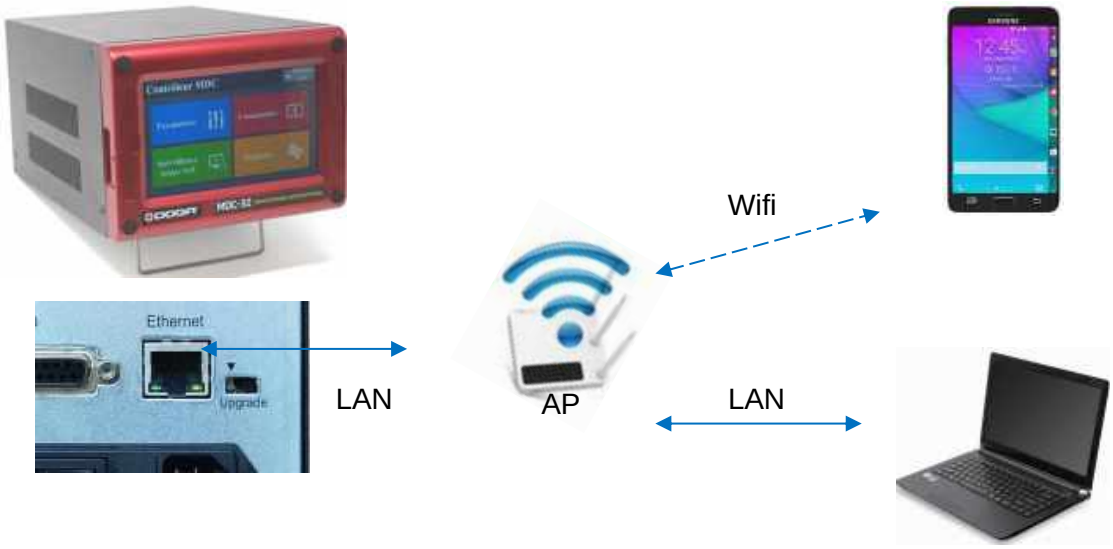
10.2 Fastening error by the pattern setting

Code	Error message	Description	How to reset
300	Run time limit (Forward)	Over time limit on A260	Resetting A260 value
301	Run time limit (Reverse)	Over time limit on A261	Resetting A261 value
302	Model setting error	Failure in Model programing	Resetting Model
303	Model cancel	The Model process is canceled	
304	Motor stall by loosening failure	Motor stall by loosening failure within time limit on A262	Resetting A262 value
309	Bit socket tray	Bit socket tray application error	
310	Time over in screw counting	Over the time limit of screw counting on A243	Resetting A243 value
311	Screw missing	When the work-piece moves out of the working area without complete number of fastening	
330	Min Angle error	Target torque reached before the Min angle	
331	Target angle setting error	Target torque reached over the Max angle	Resetting target angle
332	Angle over	Target torque reached over the Max angle	Resetting max angle
333	No torque complete	Operation stops before complete cycle of torque up by releasing lever trigger	
334	Engaging torque detection fail	The engaging torque is not detected in time or angle limit	
335	Converted torque error	Converted torque is out of torque limit (%)	Check min, max torque range
336	Over torque error	[AC/TM] Torque reached to the high limit of torque capacity	Resetting max torque
337	Torque up at free speed	Torque up occur at Free speed	
338	Thread tap max torque error	Over max torque at Thread tap	Resetting thread tap max torque
339	Thread tap min max range error	Thread tap setting min, max torque range invalid	
400	Ethernet port fail	Ethernet device IC initializing fail	
401	Ethernet socket error	Ethernet communication error related with socket	
500	Over temperature	Overtemperature over 80°C	

11.Web Server

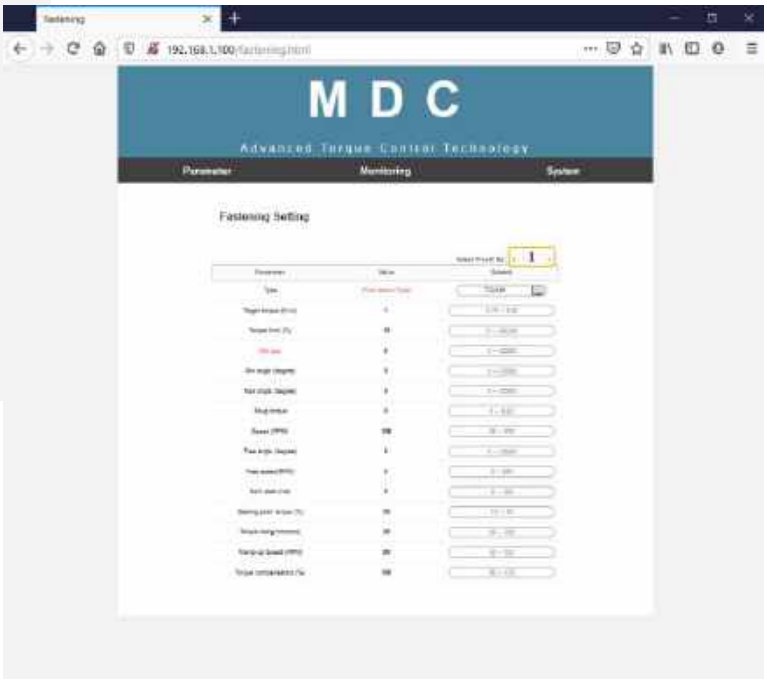
- Web server software is added in the MDC controller
- Web surfing program of Chrome or Firefox is more recommended.
- Access to the IP address of the MDC controller via the web browser on your PC.
- Parameter setting and monitoring are available on the web browser.

Ethernet connection layout



The same AP should be shared between MDC and the device (PC or Smartphone).

Open the web browser and Key in the IP address of the MDC controller



Web server log-in ID : mdc

Password : 0

12. Parameter details and factory setting

Firmware version v2.01.0 or later - LCDv1.01.7 or later

	Preset #	Parameter	Address	Factory setting
Fastening	1	TC/AM_AC/TM	1	0
		Torque	2	Auto
		Torque min/max (%)	3	0
		Target angle(degree)	4	0
		Min angle(degree)	5	0
		Max angle(degree)	6	0
		Snug torque	7	0
		Speed (rpm)	8	Auto
		Free fastenig angle(degree)	9	0
		Free fastenig speed(rpm)	10	0
		Soft start(1-300ms)	11	0
		Seating point (%) 10-90	12	Auto
		Torque rising rate(ms) 50-200	13	50
		Ramp up speed(rpm) 20-80% of max	14	Auto
		Torque compensation (%) 90-110	15	100
	2	TC/AM_AC/TM	16	0
		Torque	17	Auto
		Torque min/max (%)	18	0
		Target angle(degree)	19	0
		Min angle(degree)	20	0
		Max angle(degree)	21	0
		Snug torque	22	0
		Speed (rpm)	23	Auto
		Free fastenig angle(degree)	24	0
		Free fastenig speed(rpm)	25	0
		Soft start(1-300ms)	26	0
		Seating point (%) 10-90	27	Auto
		Torque rising rate(ms) 50-200	28	50
		Ramp up speed(rpm) 20-80% of max	29	Auto
		Torque compensation (%) 90-110	30	100
	3	TC/AM_AC/TM	31	0
		Torque	32	Auto
		Torque min/max (%)	33	0
		Target angle(degree)	34	0
		Min angle(degree)	35	0
		Max angle(degree)	36	0
		Snug torque	37	0
		Speed (rpm)	38	Auto
		Free fastenig angle(degree)	39	0
		Free fastenig speed(rpm)	40	0

	Preset #	Parameter	Address	Factory setting
		Soft start(1-300ms)	41	0
		Seating point (%) 10-90	42	Auto
		Torque rising rate(ms) 50-200	43	50
		Ramp up speed(rpm) 20-80% of max	44	Auto
		Torque compensation (%) 90-110	45	100
	4	TC/AM_AC/TM	46	0
		Torque	47	Auto
		Torque min/max (%)	48	0
		Target angle(degree)	49	0
		Min angle(degree)	50	0
		Max angle(degree)	51	0
		Snug torque	52	0
		Speed (rpm)	53	Auto
		Free fastenig angle(degree)	54	0
		Free fastenig speed(rpm)	55	0
		Soft start(1-300ms)	56	0
		Seating point (%) 10-90	57	Auto
		Torque rising rate(ms) 50-200	58	50
		Ramp up speed(rpm) 20-80% of max	59	Auto
		Torque compensation (%) 90-110	60	100
	5	TC/AM_AC/TM	61	0
		Torque	62	Auto
		Torque min/max (%)	63	0
		Target angle(degree)	64	0
		Min angle(degree)	65	0
		Max angle(degree)	66	0
		Snug torque	67	0
		Speed (rpm)	68	Auto
		Free fastenig angle(degree)	69	0
		Free fastenig speed(rpm)	70	0
		Soft start(1-300ms)	71	0
		Seating point (%) 10-90	72	Auto
		Torque rising rate(ms) 50-200	73	50
		Ramp up speed(rpm) 20-80% of max	74	Auto
		Torque compensation (%) 90-110	75	100
	6	TC/AM_AC/TM	76	0
		Torque	77	Auto
		Torque min/max (%)	78	0
		Target angle(degree)	79	0
		Min angle(degree)	80	0
		Max angle(degree)	81	0
		Snug torque	82	0
		Speed (rpm)	83	Auto
		Free fastenig angle(degree)	84	0
		Free fastenig speed(rpm)	85	0

	Preset #	Parameter	Address	Factory setting
		Soft start(1-300ms)	86	0
		Seating point (%) 10-90	87	Auto
		Torque rising rate(ms) 50-200	88	50
		Ramp up speed(rpm) 20-80% of max	89	Auto
		Torque compensation (%) 90-110	90	100
	7	TC/AM_AC/TM	91	0
		Torque	92	Auto
		Torque min/max (%)	93	0
		Target angle(degree)	94	0
		Min angle(degree)	95	0
		Max angle(degree)	96	0
		Snug torque	97	0
		Speed (rpm)	98	Auto
		Free fastenig angle(degree)	99	0
		Free fastenig speed(rpm)	100	0
		Soft start(1-300ms)	101	0
		Seating point (%) 10-90	102	Auto
		Torque rising rate(ms) 50-200	103	50
		Ramp up speed(rpm) 20-80% of max	104	Auto
		Torque compensation (%) 90-110	105	100
	8	TC/AM_AC/TM	106	0
		Torque	107	Auto
		Torque min/max (%)	108	0
		Target angle(degree)	109	0
		Min angle(degree)	110	0
		Max angle(degree)	111	0
		Snug torque	112	0
		Speed (rpm)	113	Auto
		Free fastenig angle(degree)	114	0
		Free fastenig speed(rpm)	115	0
		Soft start(1-300ms)	116	0
		Seating point (%) 10-90	117	Auto
		Torque rising rate(ms) 50-200	118	50
		Ramp up speed(rpm) 20-80% of max	119	Auto
		Torque compensation (%) 90-110	120	100
	9	TC/AM_AC/TM	121	0
		Torque	122	Auto
		Torque min/max (%)	123	0
		Target angle(degree)	124	0
		Min angle(degree)	125	0
		Max angle(degree)	126	0
		Snug torque	127	0
		Speed (rpm)	128	Auto
		Free fastenig angle(degree)	129	0
		Free fastenig speed(rpm)	130	0

	Preset #	Parameter	Address	Factory setting
		Soft start(1-300ms)	131	0
		Seating point (%) 10-90	132	Auto
		Torque rising rate(ms) 50-200	133	50
		Ramp up speed(rpm) 20-80% of max	134	Auto
		Torque compensation (%) 90-110	135	100
	10	TC/AM_AC/TM	136	0
		Torque	137	Auto
		Torque min/max (%)	138	0
		Target angle(degree)	139	0
		Min angle(degree)	140	0
		Max angle(degree)	141	0
		Snug torque	142	0
		Speed (rpm)	143	Auto
		Free fastenig angle(degree)	144	0
		Free fastenig speed(rpm)	145	0
		Soft start(1-300ms)	146	0
		Seating point (%) 10-90	147	Auto
		Torque rising rate(ms) 50-200	148	50
		Ramp up speed(rpm) 20-80% of max	149	Auto
		Torque compensation (%) 90-110	150	100
	11	TC/AM_AC/TM	151	0
		Torque	152	Auto
		Torque min/max (%)	153	0
		Target angle(degree)	154	0
		Min angle(degree)	155	0
		Max angle(degree)	156	0
		Snug torque	157	0
		Speed (rpm)	158	Auto
		Free fastenig angle(degree)	159	0
		Free fastenig speed(rpm)	160	0
		Soft start(1-300ms)	161	0
		Seating point (%) 10-90	162	Auto
		Torque rising rate(ms) 50-200	163	50
		Ramp up speed(rpm) 20-80% of max	164	Auto
		Torque compensation (%) 90-110	165	100
	12	TC/AM_AC/TM	166	0
		Torque	167	Auto
		Torque min/max (%)	168	0
		Target angle(degree)	169	0
		Min angle(degree)	170	0
		Max angle(degree)	171	0
		Snug torque	172	0
		Speed (rpm)	173	Auto
		Free fastenig angle(degree)	174	0
		Free fastenig speed(rpm)	175	0

	Preset #	Parameter	Address	Factory setting
		Soft start(1-300ms)	176	0
		Seating point (%) 10-90	177	Auto
		Torque rising rate(ms) 50-200	178	50
		Ramp up speed(rpm) 20-80% of max	179	Auto
		Torque compensation (%) 90-110	180	100
	13	TC/AM_AC/TM	181	0
		Torque	182	Auto
		Torque min/max (%)	183	0
		Target angle(degree)	184	0
		Min angle(degree)	185	0
		Max angle(degree)	186	0
		Snug torque	187	0
		Speed (rpm)	188	Auto
		Free fastenig angle(degree)	189	0
		Free fastenig speed(rpm)	190	0
		Soft start(1-300ms)	191	0
		Seating point (%) 10-90	192	Auto
		Torque rising rate(ms) 50-200	193	50
		Ramp up speed(rpm) 20-80% of max	194	Auto
		Torque compensation (%) 90-110	195	100
	14	TC/AM_AC/TM	196	0
		Torque	197	Auto
		Torque min/max (%)	198	0
		Target angle(degree)	199	0
		Min angle(degree)	200	0
		Max angle(degree)	201	0
		Snug torque	202	0
		Speed (rpm)	203	Auto
		Free fastenig angle(degree)	204	0
		Free fastenig speed(rpm)	205	0
		Soft start(1-300ms)	206	0
		Seating point (%) 10-90	207	Auto
		Torque rising rate(ms) 50-200	208	50
		Ramp up speed(rpm) 20-80% of max	209	Auto
		Torque compensation (%) 90-110	210	100
	15	TC/AM_AC/TM	211	0
		Torque	212	Auto
		Torque min/max (%)	213	0
		Target angle(degree)	214	0
		Min angle(degree)	215	0
		Max angle(degree)	216	0
		Snug torque	217	0
		Speed (rpm)	218	Auto
		Free fastenig angle(degree)	219	0
		Free fastenig speed(rpm)	220	0

	Preset #	Parameter	Address	Factory setting
		Soft start(1-300ms)	221	0
		Seating point (%) 10-90	222	Auto
		Torque rising rate(ms) 50-200	223	50
		Ramp up speed(rpm) 20-80% of max	224	Auto
		Torque compensation (%) 90-110	225	100
I/O	I/O (IN)	Input #1	226	1
		Input #2	227	2
		Input #3	228	3
		Input #4	229	4
		Input #5	230	5
		Input #6	231	6
		Input #7	232	7
		Input #8	233	8
	I/O (OUT)	Output #1	234	1
		Output #2	235	2
		Output #3	236	3
		Output #4	237	4
		Output #5	238	5
		Output #6	239	6
		Output #7	240	7
		Output #8	241	8
Screw count	Screw count	Sensor signal type 0 - 3	242	0
		Time limit (if P122-->2)	243	0
		Count complete OUT manage	244	0
		Middle count no. 0 - 99	245	0
		Sensor signal delay time (x10ms)	246	0
		Total count (screw no.)	247	5
Controller	Setting	Driver ID no.	250	1
		Driver model no. 1-99	251	selectable
		Torque unit	252	0
		Password 0-9999	253	0
		Parameter initialize to factory setting	254	0
		Auto speed on torque setting	255	1
		Motor acceleration (ms)	256	100
		Torque holding time(ms) 1-20	257	2
		Use max torque for Loosen	258	0
		Loosening speed (rpm)	259	Auto
		Run time limit / Forward (sec)	260	10
		Run time limit / Reverse (sec)	261	10
		Motor stall time limit (sec)	262	0,2
		Error display reset time	263	1
		Fastening complete signal OUT time	264	0
		Screw type	265	0
		Judge fastening min turns	266	0
		Fastening stop error	267	0

	Preset #	Parameter	Address	Factory setting
		Beep sound (Alarm)	268	1
		Torque compensation master (%) 90-110	269	100
		Selection on panel	270	0
		Reverse Lock	271	0
		Trigger start (Handheld only)	272	0
		Reverse start (Handheld only)	273	0
		Initial preset # when power ON	274	1
		RS232 port select	275	0
		COM port Baud rate	276	4
		Auto data output	277	0
		Auto update port	278	0
		Protocol	279	0
		Model select	280	0
		Preset change by Touch pannel	281	1
		Model start by barcoed	282	0
		Driver auto lock (for Model)	283	0
		Model auto restart	284	0
		Crowfoot Enable	285	0
		Crowfoot Ratio	286	1
		Crowfoot Efficiency	287	100
		Crowfoot Reverse torque	288	0
		Crwofoot Reverse speed	289	0
		Lamp on time	290	0
		Holding time angle limit	291	0
IP Address		Static / DHCP	307	0
		IP Address1	308	192
		IP Address2	309	168
		IP Address3	310	1
		IP Address4	311	100
		Net mask1	312	255
		Net mask2	313	255
		Net mask3	314	255
		Net mask4	315	0
		Gateway 1	316	192
		Gateway 2	317	168
		Gateway 3	318	1
		Gateway 4	319	1
		Port	320	5000
Multi SQ	PG1	MS PG 1	321	0
		MS PG 2	322	0
		MS PG 3	323	0
		MS PG 4	324	0
		MS PG 5	325	0
		MS PG 6	326	0
		MS PG 7	327	0

	Preset #	Parameter	Address	Factory setting
		MS PG 8	328	0
		MS PG 9	329	0
		MS PG 10	330	0
	PG2	MS PG 11	331	0
		MS PG 12	332	0
		MS PG 13	333	0
		MS PG 14	334	0
		MS PG 15	335	0
		MS PG 16	336	0
		MS PG 17	337	0
		MS PG 18	338	0
		MS PG 19	339	0
		MS PG 20	340	0
ERROR		ERROR 1	341	0
		ERROR 2	342	0
		ERROR 3	343	0
		ERROR 4	344	0
		ERROR 5	345	0
		ERROR 6	346	0
		ERROR 7	347	0
		ERROR 8	348	0
		Controller model	349	Auto
Model		Model data(150)	350 ~ 649	0
Advanced preset 1	Free reverse rotation	Speed (rpm)	650	0
		Angle (turn) 0 - 20	651	0
	Thread tapping	Min torque	652	0
		Max torque	653	0
		Speed (rpm)	654	0
		Finish Torque	655	0
		Angle start from Thread tapping	656	0
	Engaging torque detection	Speed (rpm)	657	0
		Torque(%)	658	0
		Angle limit (turn) 0 - 20	659	0
		Time limit (sec)	660	0
		Angle start from engaging	661	0
	Angel after torque up	Speed (rpm)	662	0
		Angle (degree) 0-3600	663	0
		Direction	664	0
Advanced preset 2	Free reverse rotation	Speed (rpm)	665	0
		Angle (turn) 0 - 20	666	0
	Thread tapping	Min torque	667	0
		Max torque	668	0

	Preset #	Parameter	Address	Factory setting
		Speed (rpm)	669	0
		Finish Torque	670	0
		Angle start from Thread tapping	671	0
	Engaging torque detection	Speed (rpm)	672	0
		Torque(%)	673	0
		Angle limit (turn) 0 - 20	674	0
		Time limit (sec)	675	0
		Angle start from engaging	676	0
	Angel after torque up	Speed (rpm)	677	0
		Angle (degree) 0-3600	678	0
		Direction	679	0
		...	...	...
Advanced preset 15	Free reverse rotation	Speed (rpm)	860	0
		Angle (turn) 0 - 20	861	0
	Thread tapping	Min torque	862	0
		Max torque	863	0
		Speed (rpm)	864	0
		Finish Torque	865	0
		Angle start from Thread tapping	866	0
	Engaging torque detection	Speed (rpm)	867	0
		Torque(%)	868	0
		Angle limit (turn) 0 - 20	869	0
		Time limit (sec)	870	0
		Angle start from engaging	871	0
	Angel after torque up	Speed (rpm)	872	0
		Angle (degree) 0-3600	873	0
		Direction	874	0
Firmware Version			875	Auto
Monitoring data	Alarm data	Alarm no.	3100	
		Waring no.	3101	
	Data updated on events (Start, F/L, Preset, Torque up)	Event count no. (1- 65,536)	3200	
		Fastening time (ms)	3201	
		Preset no.	3202	
		Target torque (* x 100)	3203	
		Converted torque (* x 100)	3204	
		Target speed (rpm)	3205	
		A1 (degree)	3206	
		A2 (degree)	3207	
		A3 (degree)	3208	
		Screw count value	3209	
		Error	3210	
		Forward / Loosening (F=0, L=1)	3211	

	Preset #	Parameter	Address	Factory setting
		Status (other = 0, Fastening complete = 1, Fastening NG (E330,332,333,334,335,336,337)= 2, F/L change = 3, Preset change = 4, Alarm reset = 5, Error(except fastening NG) = 6)	3212	
		Snug torque angle (degree)	3213	
		Barcode data 1 (LSB)	3214	
		Barcode data 2	3215	
		Barcode data 3	3216	
		Barcode data 4	3217	
		Barcode data 5	3218	
		Barcode data 6	3219	
		Barcode data 7	3220	
		Barcode data 8	3221	
		Barcode data 9	3222	
		Barcode data 10	3223	
		Barcode data 11	3224	
		Barcode data 12	3225	
		Barcode data 13	3226	
		Barcode data 14	3227	
		Barcode data 15	3228	
		Barcode data 16	3229	
		Barcode data 17	3230	
		Barcode data 18	3231	
		Barcode data 19	3232	
		Barcode data 20	3233	
		Barcode data 21	3234	
		Barcode data 22	3235	
		…….		
		Barcode data 30	3243	
		Barcode data 31	3244	
		Barcode data 32 (MSB)	3245	
	Realtime Data	Converted torque (* x 100)	3300	
		Speed (rpm)	3301	
		Motor current (mA)	3302	
		Current Preset #	3303	
		Torque up	3304	
		Fastening OK	3305	
		Ready	3306	
		Motor RUN	3307	
		Alarm no.	3308	

	Preset #	Parameter	Address	Factory setting
		Forward / Loosening (F=0, L=1)	3309	
		Screw count value	3310	
		Input status (MSB=IN 8, LSB=IN 1)	3311	
		Output status (MSB=OUT 8, LSB=OUT 1)	3312	
		Motor Temperature	3313	
		Molde No	3314	
		Current step #	3315	
		Total count	3316	
		Currnet step count	3317	
		Currnet Preset #	3318	
		Function	3319	
		Model Complete	3320	
Temporary parameter in RAM	Virtual Preset #1	TC/AM_AC/TM	3500	
		Torque	3501	
		Torque min/max (%)	3502	
		Target angle(degree)	3503	
		Min angle(degree)	3504	
		Max angle(degree)	3505	
		Snug torque(%)	3506	
		Speed (rpm)	3507	
		Free fastenig angle(degree)	3508	
		Free fastenig speed(rpm)	3509	
		Soft start(1-300ms)	3510	
		Seating point (%) 10-90	3511	
		Torque rising rate(ms) 50-200	3512	
		Torque holding time(ms) 1-20	3513	
		Torque compensation (%) 90-110	3514	
Temporary parameter in RAM	Virtual model #1	Model1 - 20	3535 - 3554	
Temporary parameter in RAM	Virtual advenced #1	advenced parameter no 1	3520 - 3534	
Remote control	Operation	Alarm reset	4000	
		Driver Lock 0 : Unlock 1: Lock all dirction 2 : Lock Loosening 3: Lock Fastening	4001	
		No use (Factory only)	4002	
		Remote start (0 : Stop, 1 : Start)	4003	

	Preset #	Parameter	Address	Factory setting
		Preset # change (Not available on RUN) Data : 1 - 15 for preset #1 - 15 16 for Multi sequence A 17 for Multi sequence B	4004	
		Forward / Loosening (F=0, L=1)	4005	
		Output test only (0 : off, 1 : on) (MSB=OUT 8, LSB=OUT 1) ex) 0xff : output 1 - 8 port all on ex) 0x0f : output 1 - 4 port on	4006	
		Output test enable (0 : disable, 1: enable)	4007	
		Model# change (Not available on RUN) Data: 1- 15 for preset# 1 - 15	4008	

★ Please refer to the operation manual of ParaMon PC software for details of parameter settings.

13.MODBUS COM protocol

MDC controller is capable of connecting to the host controller (Handy Loader, HMI, PLC, PC, etc.) through RS232 serial communication or Ethernet, allowing the user to use such functions as parameter change and data monitoring.

Please refer to dedicated instruction manual COM MODBUS protocol ref 60307

14.MAINTENANCE

14.1 LCD display calibration

To be done in case touch screen is inactive or detection area is inaccurate

On the operation screen, touch one point until 20sec.

Screen change to calibration mode (see below) :

Press on the first red dot for over 60 tick with a thin pen.

Press on the second red dot for over 60 tick with a thin pen.

Controller will reboot automatically.

14.2 Troubleshooting

If the device has a malfunction, it will display an alarm.
Check how to reset the alarm in the error code chapter 10.

Caution
All repair tasks requiring the box to be opened must be carried out by DOGA or a contractor authorized by DOGA.

If, despite reading this manual, you are unable to solve a problem, please contact the DOGA after-sales department.

My client area on www.doga.fr
Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales department contact** depending on the device type.

14.3 Phone support

For any questions about using the device

Please contact your technical salesperson

My client area on www.doga.fr
Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **technical salesperson contact** depending on the device type.

For any questions about repairs

Please contact your After-sales department contact.

My client area on www.doga.fr
Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales department contact** depending on the device type.

If your technician is unable to determine the cause of the problem remotely, they will give you the procedure to make the repair yourselves if possible.

14.4 After-sales returns

It is imperative that all returned equipment has a completed after-sales return form attached to the shipment.
The repair, maintenance, calibration or adjustment service cannot be initiated without this form.

Information
Compliance with this procedure means that your request will be processed quickly with reduced troubleshooting costs.
DOGA reserves the right to apply a trade-in discount and, when applicable, to invoice repair and packaging costs.

Download the after-sales return form

You can download the form using one of the following links:
http://service.doga.fr/syst/dogatech.nsf/liste/00184
https://www.doga.fr/en/our-services/industrial-maintenance

Information
You can use your own after-sales return form if it contains all the data required to work on your device as listed below.

Send your equipment

Returned parcels must be sent carriage paid to the following addresses depending on your transport mode:

Postal parcels	**Carrier parcels**
DOGA - Service SAV 8, avenue Gutenberg - CS 50510 78317 Maurepas Cedex, France	DOGA - Service SAV 11, rue Lavoisier 78310 MAUREPAS, France

14.5 On-site repair

Even though it seems convenient, on-site repair is seldom the best solution for transportable equipment. The conditions in which the trchnician will work are worst than in our workshops and technician travel expenses are costly.

If you require an on-site intervention, please contact the After-sales department.

My client area on www.doga.fr
Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales department contact** depending on the device type.

Our services will organize the intervention.

14.6 Warranty

DOGA guarantees its products for parts or manufacturing defects for 12 months.
To benefit from this parts and labor warranty, the following conditions must be met:

- The device must have been used in a professional context and in compliance with the normal use conditions described in this user manual.
- The device must not have suffered storage, maintenance or incorrect handling related damage.
- The device must not have been adapted or repaired by unqualified persons.

15.STANDARDS

15.1 Manufacturer details

Importer: DOGA

Address: ZA Pariwest

8 avenue Gutenberg CS 50510

78317 MAUREPAS CEDEX - FRANCE

15.2 Markings

MD / MDC	Equipment name
Type	Equipment reference
Serial no.	Unique equipment serial number
Mm/yyyy	Equipment month/year of manufacture (first digits of the S/N)
CE	Equipment designed and built in compliance with the requirements of European directives 2006/42/EU and 2014/30/EU
	All safety instructions and other instructions must be read

15.3 Transport and storage

Information

Your equipment may be damaged if you transport or store it in unsuitable conditions. Comply with the transport and storage information for your equipment.

Transport

Use a container suitable for the transport of the equipment in order to protect it from external influences.

Comply with the following instructions before each transport:

- Shut down the device
- Disconnect the power supply cord

Storage

Comply with the following instructions before storing:

- Shut down the device
- Disconnect the power supply cord
- Clean the device following the indications in the Maintenance section.
- Store it in a suitable container to protect it from dust and exposure to direct sunlight.
- Store it in a dry location at a temperature below 40°C.

15.4 WEEE recycling and end of service life

The symbol showing a crossed out trash container, when placed on an electric or electronic device, means that it should not be disposed of with household trash.

Collection solutions are the following:

Collection and recycling scheme

In compliance with the French Environmental Code covering professional Waste Electric and Electronic Equipment (WEEE) (art. R543-195 et seq.), DOGA is a member of ECOSYSTEM, an eco-organization approved by public authorities under the conditions defined by art. R564-197.

You can also benefit from collection and recycling system proposed by ECOSYSTEM for WEEE originating from the professional equipment marketed by DOGA. Further information on www.ecosystem.eco.

Collection points

Free collection points for used electric or electronic devices are available near your company.

Your local authorities can provide their addresses.

DOGA | ASSEMBLY TECHNOLOGY

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8, avenue Gutenberg - CS 50510
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