

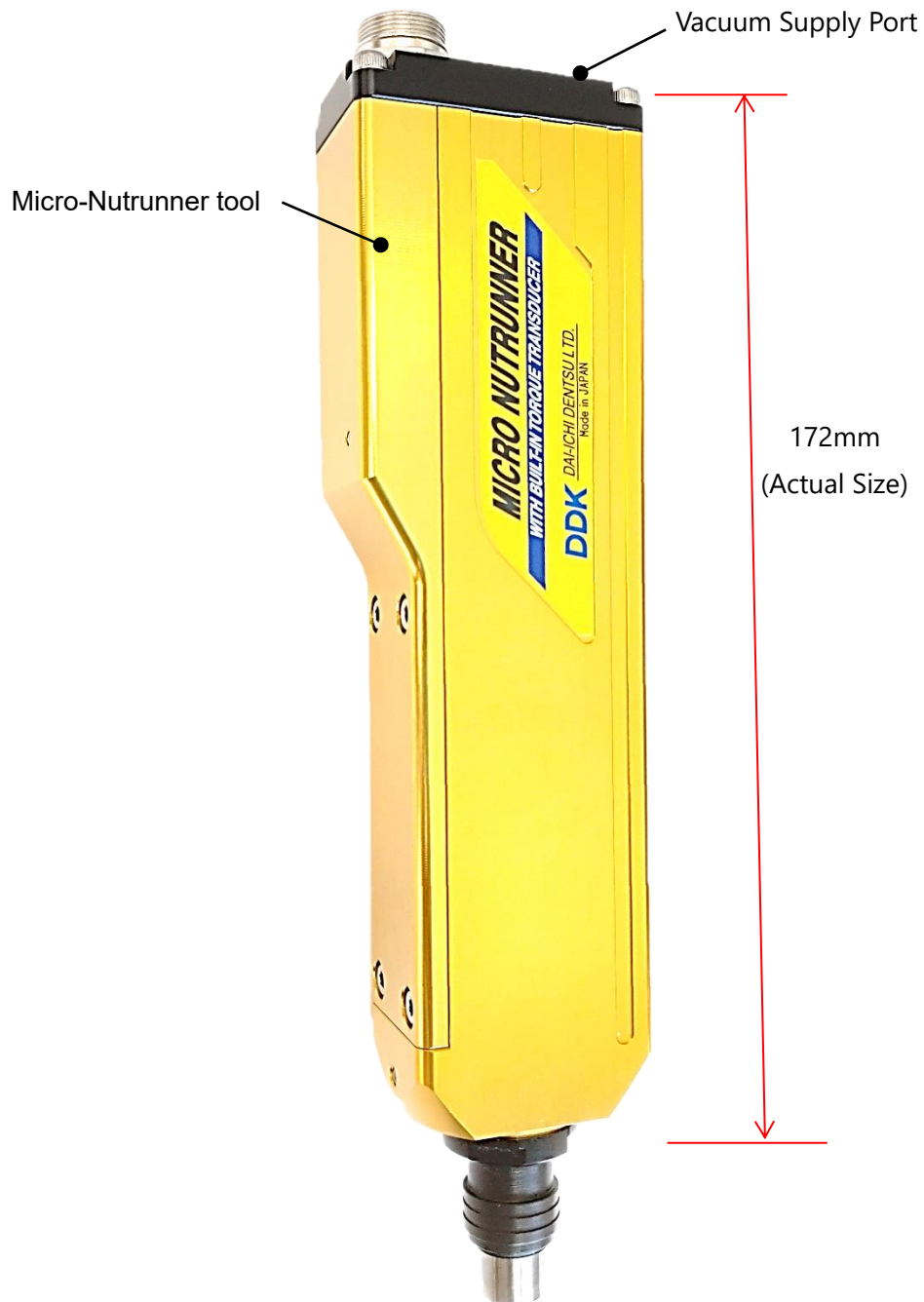
MICRO NUTRUNNER



Feature 1

Minimizing equipment height

- Compact tool ideal for tightening small screws
 - Minimizing installation space by integrating vacuum head into main body
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Feature 2

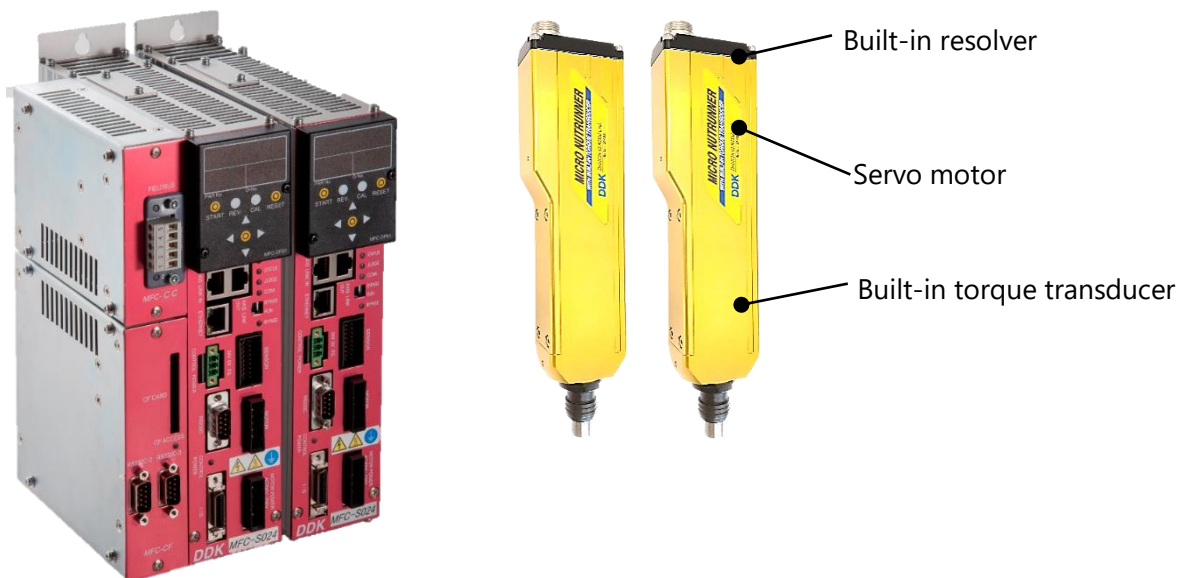
Torque accuracy unaffected by robot operation

- Minimizing the effect of external force on torque accuracy by integrating a torque transducer into the tool

Feature 3

Ultra-low torque detectable

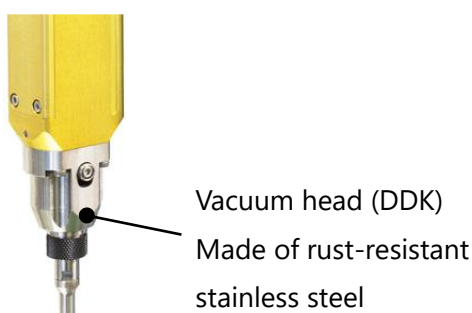
- Providing highly accurate tightening by using low-inertia servo motor
- Detecting Screw rotation angle by using built-in resolver
- Displaying torque with high resolution, 0.001 Nm



Feature 4

Vacuum head integrated into the main body (Option)

- Easy to install vacuum head to tool body
- Vacuum head tip designed to screw shape (replaceable tips)
- Supporting multi-materialization of small screws (corresponds to non-magnetic threads such as stainless steel and carbon)



Feature 5

Single Phase Power – No Transformer or 3 phase power required

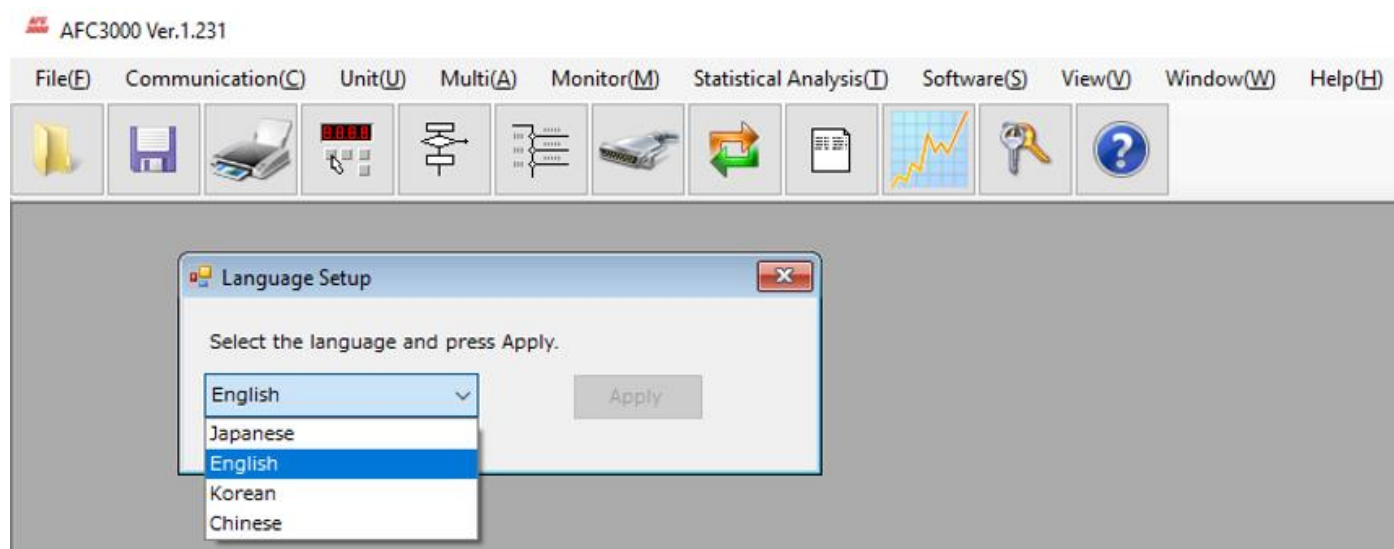
- 100 ~ 230VAC Single Phase plus 24VDC for control power

Feature 6

AFC3000 Software - Multiple Language Support

- Software has language in English, Japanese, Chinese and Korean
- Selectable in the software configuration

OS	Windows 7, 8, 10 (32/64bit)
Connection to PC	Ethernet

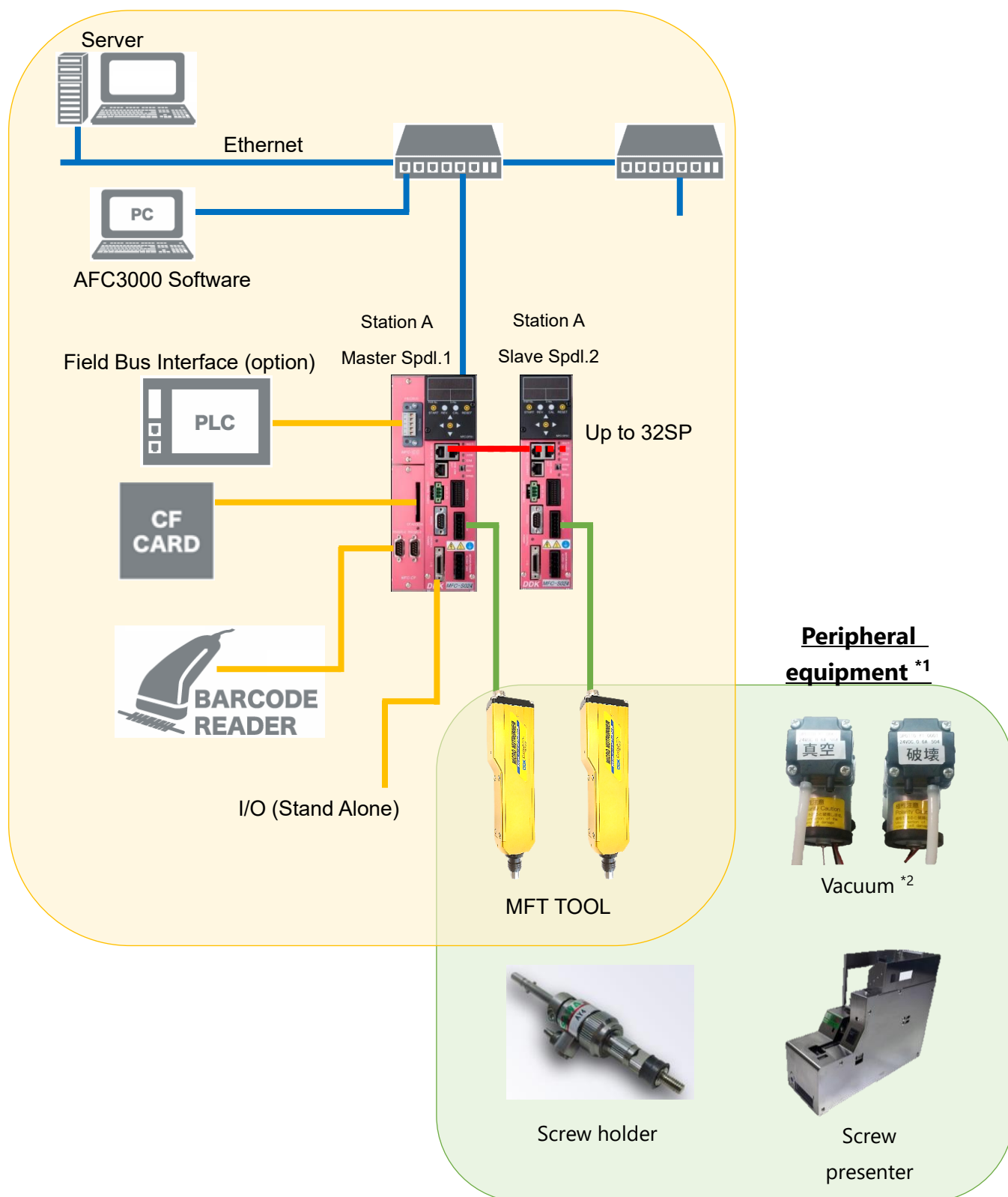


Feature 7

Now on AFC3000 Platform!

- Multi-Spindle connectable / controllable, Programmable Sequencing, Data monitoring / saving
- Fieldbus I/O Interfaces (Ethernet I/P, Profinet, Devicenet, CCLINK IE, etc.)
- AFC3000 Software

System Configuration



*1) Refer to “Peripheral equipment (Reference)” .

*2) Refer to “Vacuum specification” for an air circuit diagram of the optional vacuum mechanism.

Controller Specification



Item	Description
Model	MFC-S008
Input Power	Motor Power: Single Phase AC100-230V $\pm$ 10% 50/60Hz Control Power: DC24V $\pm$ 10% 0.5A
Number of Connected Spindles	Up to 32
External Communication	Ethernet: 1ch RS232C: 1ch Discrete I/O: 12points each (PNP/NPN Bi-Polarity)
Display • Operation	MFC-DP1: 7 segment LED indicator (6rows $\times$ 2 lines) Removable, function keys, result display, error code display, monitor display, various status LED
Monitor Function	Analog Output: Torque, angle pulse, current & speed
Fastening Control	Torque Method, Angle Method & Yield Method (option) Offset Check CW/CCW Fastening direction Spindle Synchronization
Judgment Function	Torque (Peak, Final), Angle, Time, Torque Rate (3 zones), Number of Revs., Snug Torque, Differential Angle
After Fastening Operations	Reduction of torque reaction, Reduction of socket sticking (1 pulse reverse), Torque recovery, Spindle Lock (Hold)
Quality • Safety Function	Self-Diagnostics : Tool ID Check, Cable disconnection check, Torque transducer zero / cal level check, Memory check, inter-spindle communication check Overload, Overheat, Overcurrent, power supply voltage, resolver, Current sensor checks
Sequence Function	No. of Sequences: 32 (with Multi setting) No. of Parameter sets: 32 (Torque, Angle, Speed & Time setting)

I/O Interfaces – Expansion Unit 1



Available I/O interfaces allows connection to the system PLC using the PLC communication method

Item	Model
Industrial Ethernet	MFC-EN: Ethernet/IP MFC-PN: PROFINET I/O MFC-EC: EtherCAT MFC-CI: CC-Link IE Field
Fieldbus	MFC-CC: CC-Link V2 MFC-DN: Device Net MFC-PB: Profibus DP-V1
Discrete I/O	MFC-DT: Extended I/O (32 points each)



Data Interface – Expansion Unit 2



Even without an upper level data server, data can easily be saved via compact flash (CF)

項目	内容
MFC-CF	Save Fastening data and torque curve data to CF (max. 32GB)
MFC-CFEN	Save Fastening data and torque curve data to CF (max. 32GB) Includes optional ethernet for special data protocols (Toolsnet、Q-das, Open Protocol compatible network module)

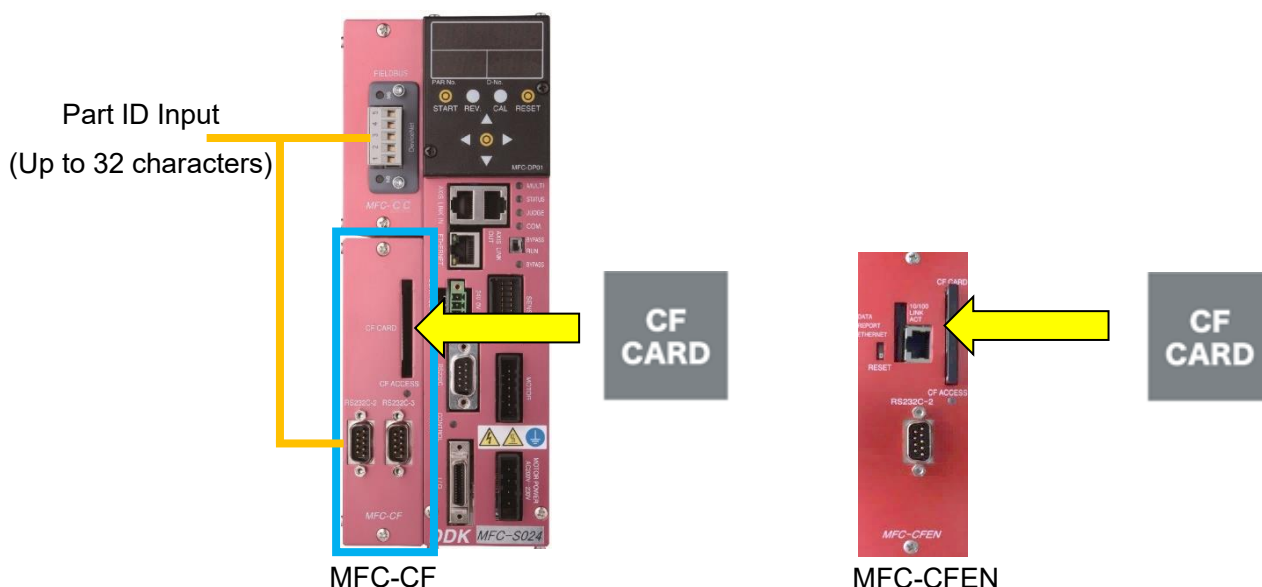
● Number of Storable Data Sets According to Capacity

・ Storage data format: Fastening results + Fastening waveform (180 degrees)

Storage Capacity	Approximately Number of Stored Data (Sets)					
	1Spdl.	2Spdl.	4Spdl.	8Spdl.	16Spdl.	32Spdl.
4GB	900,000	450,000	300,000	200,000	100,000	50,000
8GB	1,800,000	900,000	600,000	400,000	200,000	100,000
16GB	3,400,000	1,700,000	1,200,000	800,000	400,000	200,000
32GB	7,000,000	3,500,000	3,500,000	1,600,000	800,000	400,000

Link Part ID to Fastening Data

The RS232 input port allows you to send Part ID data to the controller to be 'married' to the fastening data (operation result and torque curve) each cycle. Part ID may also be sent via fieldbus interface messaging (Note: not all fieldbus interfaces support data messaging)



Automatic Configuration Backup File

Automatically back up the latest parameter file in the Compact Flash ® card (CF card) allowing quick recovery in case of failure. (This function is enabled when writing from the AFC3000 user console software).

Tool Specification



Model	Max. Torque [Nm]	Max. Speed [rpm]	Output Shaft [mm]	Weight [g]	Full Length [mm]
MFT-080M10-S1	0.8	2220	Hex.6.35	660	215.5
MFT-160M10-S	1.6	1250	Hex.6.35	680	215.5
MFT-240M10-S	2.4	800	Hex.6.35	680	215.5

Others

Item	Description
Pressing load at tightening	About 6.67N (=0.68 kgf) (*1)

*1: An example for M3 pan-head screw (MFT-080M10-S1)

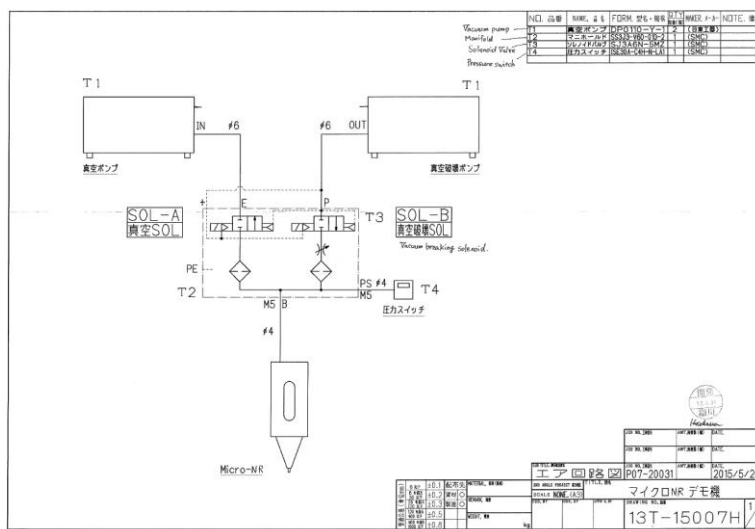
Vacuum specification



(Supplied by user) (An example for M3 pan-head screw)

Item	Reference screw pressure (negative pressure)	Reference nutrunner tool weight	Reference Vacuum Air Circuit Diagram
DDK vacuum	-30kPa ~ -50kPa (*2)	(920g) *1	Refer to the separate document "13T - 15007H 1/1".
SAWA vacuum	-80kPa ~	(720g) *1	

*1 Vacuum head shape changes the overall tool weight.



CE Marking

We would appreciate it if you would contact us about CE marking.



Our products shall be used with being installed into equipment. Therefore, our CE declaration of conformity shall fall within the scope of EC directives for an instrument incorporated in equipment. Our declaration shall give no guarantee in conformity of EC directives for your machines or whole equipment into which our products are installed. When your equipment into which our products are installed is exported to or used in regions of Europe as a finished product, you shall ensure your own CE declaration of conformity for the equipment.

Accessory

Item	Model	Description
Tool cable (robot)	C30-FT2-M *	Length : 3m,5m,10m
Control Power Cable	C30-DM2-M *	Length : 2m,5m
Drive Power Cable	C15-D1-M * -UC	Length : 2m,5m
I/O Cable	C30-SU1-M *	Length : 2m,3m
Spindle Adaptor 	11T-19013-T	Contact us for details Spring load : Max 18.4Nm (1.88kgf)
Base Unit 	14T-19034	Contact us for details Spring load(Top) : Max67.7Nm (6.9kgf) Spring load(Side) : Max60.8Nm (6.2kgf)
Vacuum Adaptor 	14T-19012	Contact us for details

Peripheral equipment (Reference)

Bit

Type	Size	Screw Size	Model	Contact information
Phillips	No.0	M1.4~M2.6	V-17 NO.0x7x75(3x30)	http://www.ohmiseiki.co.jp/
	No.1	M2~M2.6	V-17 NO.1x7x75(3.5x30)	
	No.2	M3~M5	V-17 NO.2x7x75(3.5x30)	
	No.1	M2~M2.6	RBA-E1H6.35SL100φ4x70	 https://sawahb.com/
	No.2	M3~M5	RBA-E2H6.35SL100φ4x70	
Torx	T6	M2	RB-ET6H6.35SL100φ4x70	
	T8	M2.6	RB-ET8H6.35SL100φ4x70	
	T10	M3	RB-ET10H6.35SL100φ4x70	
	T20	M4	RB-ET20H6.35SL100φ4x70	
	T25	M5	RB-ET25H6.35SL200φ4.6x20	

Screw holder

Image	Screw Size	Model	Contact information
	M2	R-AY2-E1H6.35SLG40L100	 https://sawahb.com/
	M2.6	R-AY2.6-E1H6.35SLG40L100	
	M3	R-AY3-E2H6.35SLG40L100	
	M4	R-AY4-E2H6.35SLG40L100	
	M5	R-AY5-E2H6.35SLG40L100	

Screw Presenter

Image	Contact information
Sems Screw M2~M5 	 https://sawahb.com/
	 http://www.ohtake-root.co.jp/

NOTE) Specifications and designs of the products are subject to change without notice due to improvements.



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