

*Advanced  
Computer Controlled  
Nutrunner*

Servo Nutrunners

Multi-type / Single-type

**AFC-1500** **SERIES**

# CHALLENGING THE FUTURE FOR FASTENING

ADAPTS TO AN  
OPEN NETWORK

THE SMALLEST AND LIGHTEST IN THE INDUSTRY  
HIGH PERFORMANCE, FULLY DIGITAL NUT RUNNERS

## AFC-1500 SERIES





# 3 PROPOSALS FOR FASTENING!

## Cost-Flexibility Performance

### ■Space Saving

The most advanced digital technology is used for the controller, and it was possible to succeed dramatically in reducing the number of parts. The Units have been made more compact along with the Control Panel which is also much more simple resulting in the overall possibility to reduce cost. In the wide range of requirements for fastening, we would like to promise our great solution by simple software selection, and easy selectable module on common hardware platform.

### ■Wiring Saving

Adapted global network system will reduce the number of wiring and build an advanced system. We have prepared a flexible control module for these needs. (Devise NET, Inter BUS, Profi BUS, CC link and others.)

## Visual Performance

### ■User Friendly Operation

In order to adapt the new FA field, we have prepared a flexible Man-Machine-Interface. With regards to setting up the system, in a wide range information such as fastening parameters, fastening result, analyzing data and maintenance data can be operated easily by using Windows base software.

Using an on-demand help function, the operator can be assisted. A PC or other display unit can be used depending on the needs. A stationary or portable selection can also be made.

## Quality Performance

### ■Total In-House Manufacturing

We are challenging to develop a complete manufacturing process include torque transducer which is the most sophisticated part of fastening system.

We are offering a quality trace certificate for assure fastening quality.

The system has a TOOL ID (ID information include Torque calibration, Product type, etc.) which also recognizes error settings through a FP function maximizing the total protection of the system.

The fastening system is guaranteed for quality and durability based on ISO5393.

Also a skilled service group perform preventive maintenance, modification, repairs, and after service.



# FEATURES FOR THE AFC-1500 SERIES

The AFC1500 system includes multi-unit, We have a simple solution to these new

## HARDWARE FUNCTION

- Control Interface :  
Discreet I/O, other types of Networks.
- Communication Interface :  
RS232C(COM1) Printer, PLC Data Output  
RS232C(COM2) Bar Code, ID System Input  
RS232C(COM3) General Display(Touch screen adapted)
- Spindle Control Communication :  
RS485 High speed exclusive communication 1CH  
User Console 1CH
- Signal for External Monitor :  
Torque, Angle pulse, Current
- TOOL ID Function :  
Equipped in Pre-amp

## SETTING FUNCTION ( by using user console )

- Free Format Data Out Function  
Output data selection and free format function will meet customers needs.  
Various layouts for output signals to a PLC, layouts for Quality•Maintenance information, etc. (Depending on the purpose a variety of combinations can be realized.)
- Graphical Setting Parameter Function  
Graphical presetting features are provided for simple and easy presetting.  
Setting through actual fastening image.
- Fastening sequences can be prepared simply for exclusive demands.

## FASTENING FUNCTION

- Fastening Method :  
Torque control, Angle control, Current control (CW / CCW)  
Function of torque recovery (Solution to torque reduction)
- Monitoring : Torque, Angle, Torque rate, Time, Current
- Fastening Sequence : 16 types, For each; max. 100 steps
- Fastening Parameter : 16 groups
- Fastening Range : 1Nm – 4000Nm
- Maximum Spindle Connections : 31spindles

## PROTECTION FUNCTION

- Torque transducer self-diagnoses
- Off-set torque checking
- Diagnoses of different types of Tool / Amp (Tool ID system)
- Equipped with Servo and motor protection function.  
(Over current, Over load, Abnormal voltage, Temperature abnormal, etc.)

### Environment

- A Compact and lightweight system. A system structure using a minimum amount of parts.
- Usage of minimum energy

### Cost

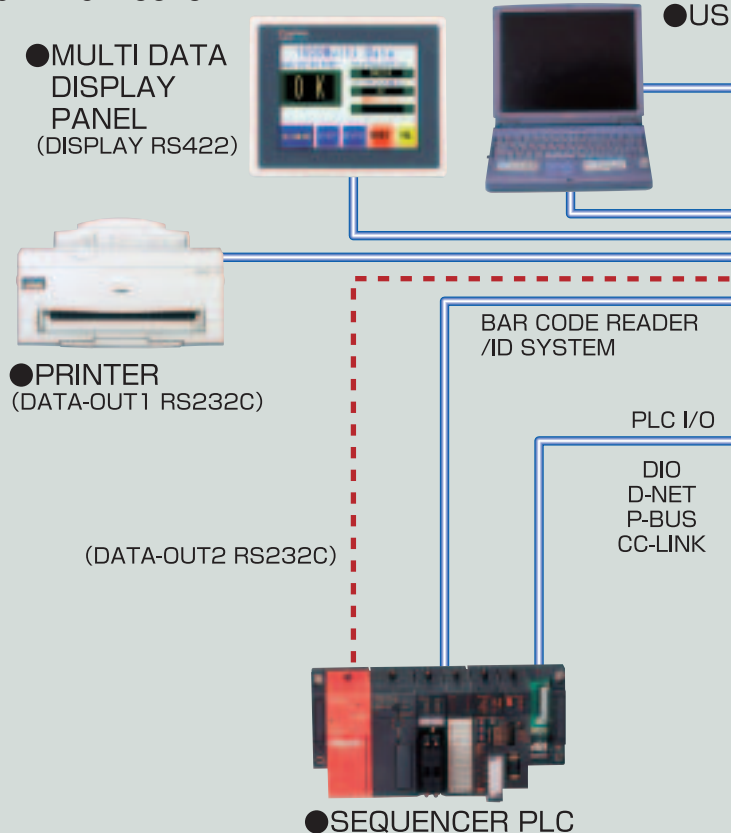
- A simple composition of hardware by simply building up
- All-In-One unit

### Reliability

- Protection Function
- Tool ID System
- Transducer with Pre-amp
- Resolver Motor

# Multi System

## SYSTEM STRUCTURE



### MULTI-UNIT

A maximum of 31 spindles, high speed multi-spindle controls can be used. A small, light body with several sequence functions provide a flexible communication function. A wide range of input voltage (AC100-220V or equivalent) and it is also environment friendly providing a low consumption electricity (15W) level. The communication function is the next generation of FA needs and a variety of controls and information networks such as Device-Net, Inter Bus, Profy-bus, AB Company Bus-system, CC link and others can be used by changing a limited amount of modules. In addition, we recommend wire savings as well.

### AXIS UNIT

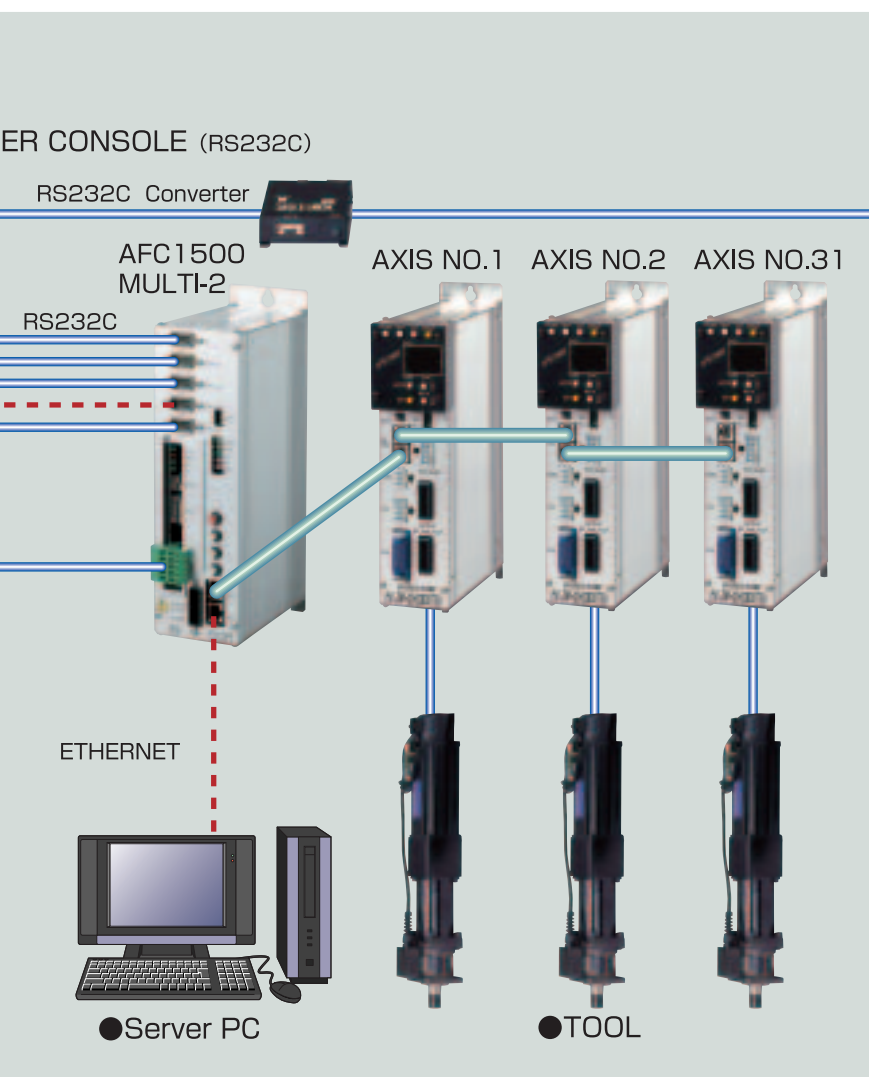
We are introducing a fully integration of servo and fastening control with the latest RISC-CPU technology. Fitted with an intelligent ID system on the Pre-amp of the Tool, this contributes to the high quality of fastening. Also considering the commonality of the unit for reduction of spare parts contributing.

### NUT RUNNER TOOL

The reliable PM servo motor has been equipped for nut runner system, also composed of a gear torque transducer which is certified at A class under ISO5393. (Durability test performed over 1 million continuous cycles.)

High level quality guaranteed by Tool ID system. Resolver used for angle monitoring, which does not use IC or electronic elements, is durable against vibration and dust/mist type of harsh environments allowing a wide range of usage. Motor and resolver cable integrated into one compact design which reduce the number of homerun cable.

axis unit, and tool for multi-fastening system.  
generation of fastening.



# Single Type

The Single type is composed of 3 items, axis unit, tool and homerun cable.

Economical control system which offers many of the features as the multi system.

Suited for 1 spindle (or few spindles), and conveniently used for robotics application.

A multi-spindle application can also be used by synchronized feature.

Parameter data can be entered by using the display panel mounted on front panel.

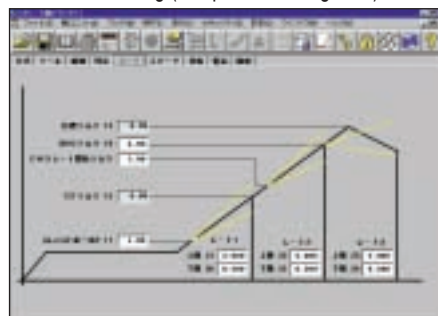
User console software is available.

For Windows  
**HMI** (Human Interface)  
**User Console**  
(English / Japanese / Chinese / Korean)

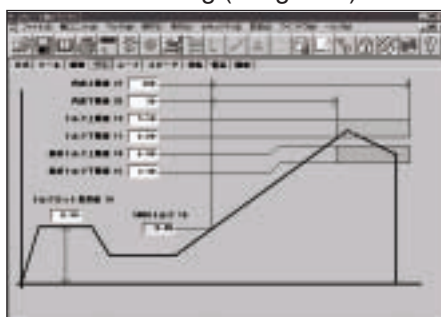
Sequence Setting Screen



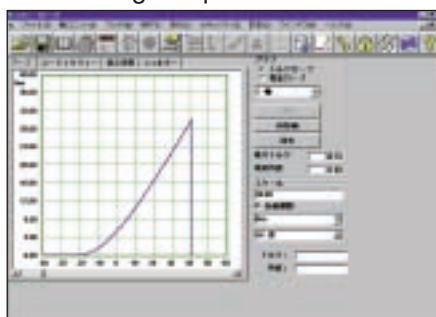
Parameter Setting (Torque Rate Judgment) Screen



Parameter Setting (Judgment) Screen



Fastening Torque Curves Screen



## Function Chart

- ① Parameter Setting
- ② Sequence Setting
- ③ Fastening Torque Curves
- ④ I/O Free Format Setting
- ⑤ Statistical Calculations
- ⑥ Data Save / Data Read / Printing
- ⑦ Tool Information
- ⑧ Others

Can be operated on DOS-V PC(WIN 95, 98, NT, ME, XP etc)



# TOOL·UNIT SPECIFICATIONS

※Detailed drawings are available on DXF file.

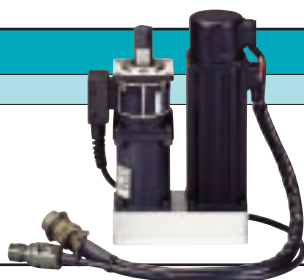
## STRAIGHT TYPE

Model	Max.Torque(Nm)	Max. RPM (rpm)	Total Length (mm)	Weight (kg)
NFT-201RM1-S	20	500	281	2.1
NFT-301RM2A-S	30	600	337	2.1
NFT-401RM1-S	40	250	281	2.1
NFT-801RM3-S	80	500	368	4.5
NFT-132RM3-S	130	395	377	5.5
NFT-202RM3-S	200	220	398	6.0
NFT-302RM3-S	300	150	416	9.0
NFT-502RM4-S	500	150	450	14.0
NFT-802RM4-S	800	95	516	15.0



## U TYPE

Model	Max.Torque(Nm)	Max. RPM (rpm)	Total Length (mm)	Weight (kg)
NFT-101RM1-SU	10	500	141	2.5
NFT-201RM1-SU	20	500	141	2.5
NFT-401RM1-SU	40	250	141	2.5
NFT-132RM3-SU	130	395	169	6.5
NFT-202RM3-SU	200	220	190	7.0
NFT-302RM3-SU	300	150	217	10.0



## ANGLE TYPE

Model	Max.Torque(Nm)	Max. RPM (rpm)	Head Length (mm)	Weight (kg)
NFT-201RM1-A55	30	320	37	3.9
NFT-401RM1-A55	55	160	37	3.9
NFT-801RM3-A130	120	320	46	9.0
NFT-132RM3-A250	170	250	57	10.0
NFT-202RM3-A250	250	140	57	11.5
NFT-302RM3-A550	455	99	75	14.5



### Motor cable direct type



## HIGH SPEED TYPE (Straight / Offset)

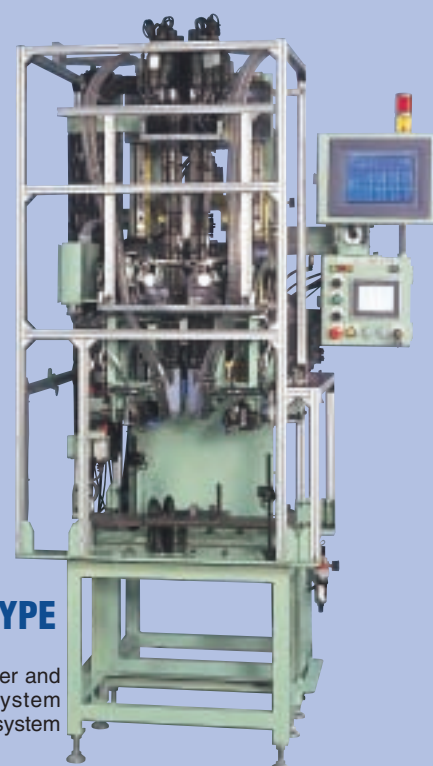
Model	Max.Torque(Nm)	Max. RPM (rpm)
NFT-051RM1-S/O	5	1100
NFT-101RM1-S/O	10	1100
NFT-201RM3-S/O	20	790
NFT-401RM3-S/O	40	790
NFT-601RM3-S/O	60	790

## APPLICATIONS



### COLUMN TYPE

Used for an automatic assembly line. We design and manufacturing different types of systems under customer's specifications. The handy type is also available.



### AUTOMATIC FEED TYPE (PARTS FEEDER)

The combination of a nut runner and an automatic bolt feeding system allows a complete automatic system for fastening. Various bolts and nuts can be automatically fed through the system.

## OFFSET TYPE



Model	Max.Torque(Nm)	Max. RPM (rpm)	Total Length (mm)	Weight (kg)
NFT-201RM1-O	20	500	358	2.7
NFT-301RM2A-O	30	600	436	3.0
NFT-401RM1-O	40	250	380	3.0
NFT-801RM3-O	80	500	457	6.8
NFT-132RM3-O	130	395	497	8.0
NFT-202RM3-O	200	220	533	9.5
NFT-302RM3-O	300	150	566	13.5
NFT-502RM4-O	500	150	642	23.0
NFT-802RM4-O	800	95	738	31.0

## SPINDLE ADAPTER



Model	Max.Torque(Nm)	Total Length (mm)	Stroke (mm)	Square Drive (mm)
S P 2 0 1	20	156	25	9.52
S P 4 0 1	40	180	40	9.52
S P 8 0 1	80	218	50	12.7
S P 2 0 2	200	237	50	15.8
S P 3 0 2	300	240	50	19.0
S P 5 0 2	500	269	50	25.4

※A custom-designed spindle available.

## LARGE TYPE



Model	Max.Torque(Nm)	Total Length (mm)	Max. RPM (rpm)	Weight (kg)
NFT-103RM5-S	1000	760	60	50.0
NFT-203RM5-S	2000	760	60	50.0
NFT-303RM5-S	3000	866	39	70.0
NFT-403RM5-S	4000	866	39	70.0

## UNIT

Model	Width (mm)	Height ( mm)	Depth ( mm)	Weight (kg)
MULTI-2	70	235	170	1.4
SAN3-24 (40/30Nm)	60	235	170	1.4
SAN3-40 (300Nm)	70	235	170	1.6
SAN3-120T (800Nm)	100	235	170	3.2
SAN3-120W (5000Nm)	123	235	170	3.5

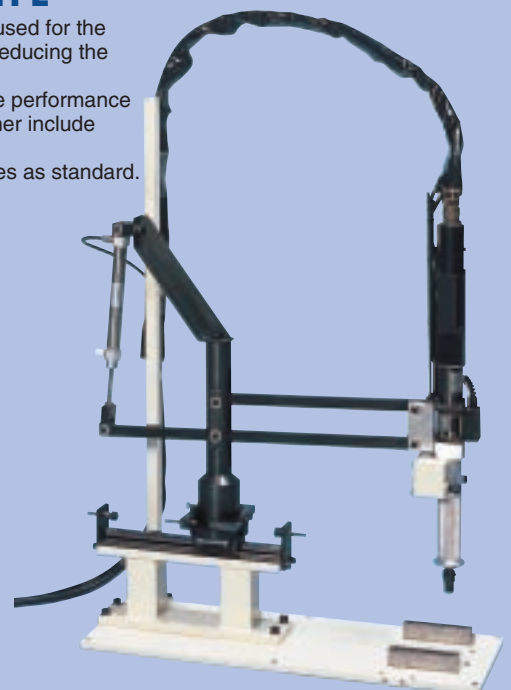


## SMOOTH ARM TYPE

The balancing cylinder is used for the smooth arm structure for reducing the operator load.

The system offer the same performance as the single type nut runner include fastening accuracy.

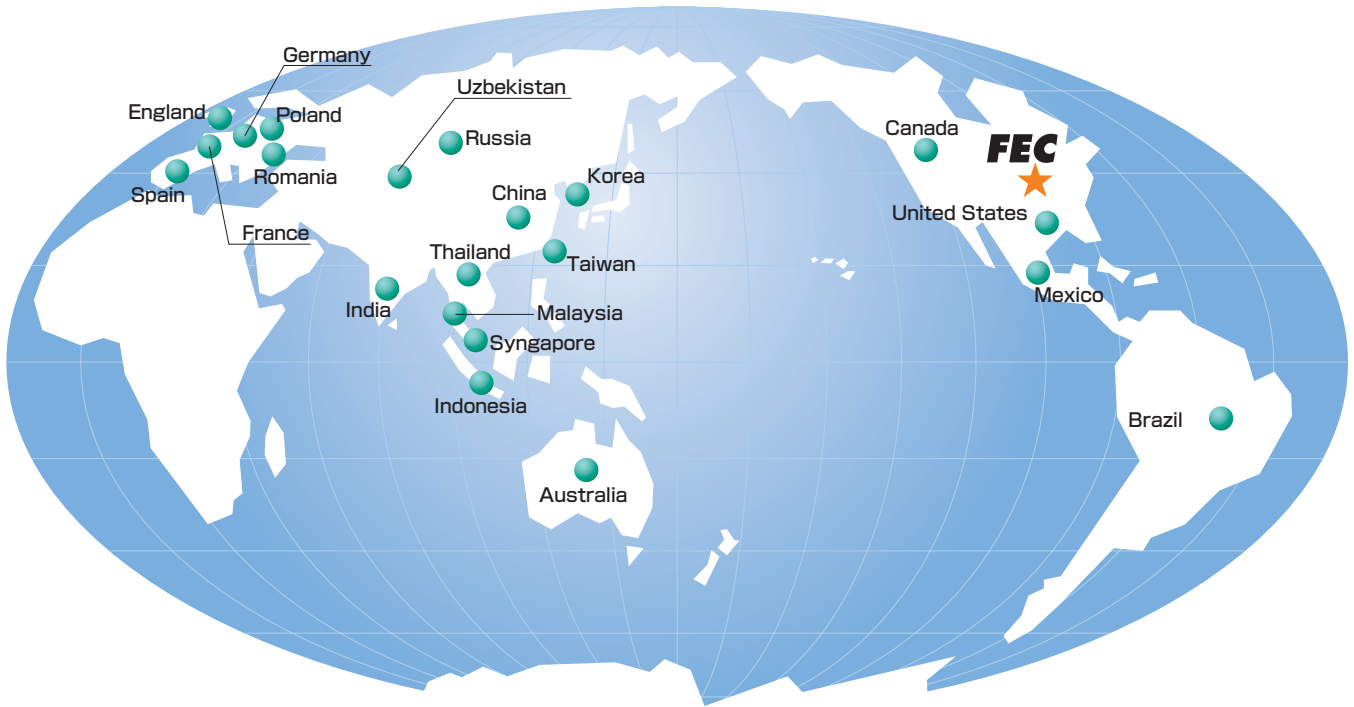
The FP function also comes as standard.



## ROBOT TYPE

The emphasis of this system is to be able to use the flexible fastening. Bolts or nuts can be fed by automatically. Can be mounted on multi articulated arm robot.

## GLOBAL DELIVERY MAP



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