1 COMMON MESSAGE

Conventionally used in industry

ORIGINAL SCREEN

FAIR FRIEND SCREEN

FAIR FRIED SELF DEVELOPED FUNCTION

Various information such as coordinates, spindle load, three-axis load, feedrates, machining programs and tool data is sorted and integrated in one single screen. Well organized and complete data presentation leads to an

enhancement of efficiency by 20%.

MACHINING FUNCTIONS

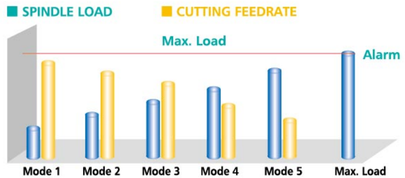
2 INTELLIGENT AUTO FEEDRATE ADJUSTMENT

Conventionally used in industry

WITHOUT SUCH FUNCTION
Workpiece, tool, and machine, etc. are not protected.

FAIR FRIED SELF DEVELOPED FUNCTION

1. Upon tool wear-out or breakage, spindle loading and cutting feedrate are automatically adjusted to protect workpiece, tool and the machine.
2. 5 levels of spindle loading mode for different tools and processing.
3. The cutting feedrate is automatically adjusted according to spindle loading.
4. When the spindle reaches the maximum loading, the machine stops immediately and an alarm occurs.



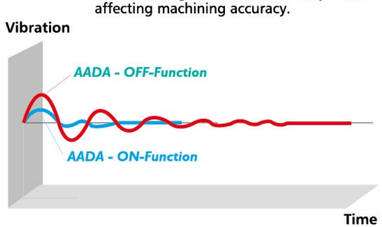
3 AUTO ACCELERATION / DECELERATION ADJUSTMENT

Conventionally used in industry

WITHOUT SUCH FUNCTION
When loading varies, vibration may occur, affecting machining accuracy.

FAIR FRIED SELF DEVELOPED FUNCTION

1. Establish spindle speed curves based on actual loading tests and theoretical verifications.
2. AADA function automatically monitors loading variations and adjusts spindle running speed accordingly to achieve minimum vibration, extremely smooth operation and so to keep the machine at an optimal condition all the time.
3. Through FAIR FRIEND's HMI workload can be preset to achieve instant and responsive performance in acceleration / deceleration adjustment.



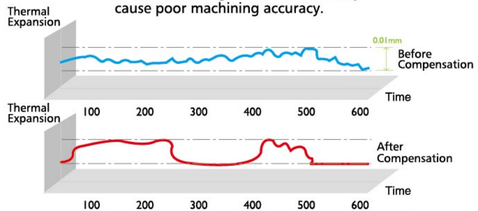
4 AUTO THERMAL EXPASION COMPENSATION

Conventionally used in industry

WITHOUT SUCH FUNCTION
In case thermal growth occurs, it may cause poor machining accuracy.

FAIR FRIED SELF DEVELOPED FUNCTION

1. Real-time thermal elongation compensation function for X, Y and Z axes maximizes machining accuracy.
2. Through FAIR FRIEND's specially designed HMI, operator is able to input machining time constants and thermal growth variation to build thermal deformation models for automatic thermal compensation.
3. A thermal compensation model can be built according to pre-settings for spindle thermal deformation. After converting A/D signals, automatic compensation for thermal elongation is performed.



5 MULTI MODE PROCESSING SELECTION

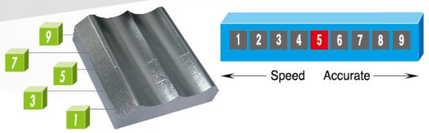
Conventionally used in industry

WITHOUT SUCH FUNCTION
In general, one machine only provides one type of standard parameters. Adjustment for optional machining condition requires assistance of highly skilled technician.

Process section	Process mode	Tool type	Speed	Feedrate	Work time	Surface roughness	Circularity
Mode 1	Precision machining	Ball tool (R2)	S8000	F2700	6m14s	1.46μm	1.8μm
Mode 3					7m33s	1.25μm	1.6μm
Mode 5					9m34s	1.20μm	1.2μm
Mode 7					21m06s	1.78μm	9μm
Mode 9					29m16s	0.68μm	7μm

FAIR FRIED SELF DEVELOPED FUNCTION

1. With the aid of FAIR FRIEND's specially designed HMI, optimal machining performance is achieved by easy setup, requiring no highly skilled technician for complicated calibrations.
2. Speed-priority, accurate-priority and standard modes are available to choose from according to workpiece and machining conditions.
3. The function provides 9 modes of setting configurations to meet various machining conditions.



6 INTELLIGENT RIGID TAPPING

Conventionally used in industry

WITHOUT SUCH FUNCTION
In general, one machine only provides one type of standard parameters. When higher tapping quality is required, it needs assistance of a highly skilled technician.

FAIR FRIED SELF DEVELOPED FUNCTION

Without requiring highly skilled technician, operator can setup for rigid tapping of various diameters. It can also reduce cost of after-sales service.

MACHINING PROGRAM

7 APC WORKING PROGRAM SELECTION

Conventionally used in industry

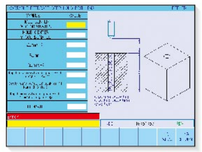
WITHOUT SUCH FUNCTION
Customer would spend considerable time modifying machining programs.

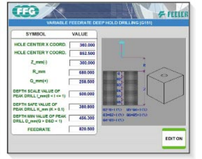
FAIR FRIED SELF DEVELOPED FUNCTION

On machines that equipped with APC, operator can use this function to edit different machining programs on table A and B respectively. The time for program modification is shortened by more than 20%.

8 VARIABLE FEEDRATE DEEP HOLE DRILLING

Conventionally used in industry



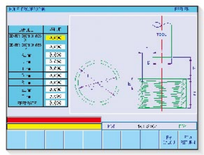


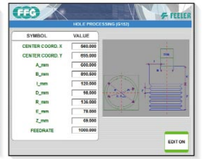
FAIR FRIED SELF DEVELOPED FUNCTION

On machines that equipped with APC, operator can use this function to code different machining programs on table A and B respectively. The time for program modification is shortened by more than 20%.

9 BIG HOLE PROCESSING

Conventionally used in industry





FAIR FRIED SELF DEVELOPED FUNCTION

The diagnosis interface provides easy, user-friendly operation and more than 60% time cutoff on program coding.

WITHOUT SUCH FUNCTION
Customer would spend considerable time for coding machining programs.

FAIR FRIEND SELF-DEVELOPED HMI

10 ROUNDNESS PROCESSING

Conventionally used in industry

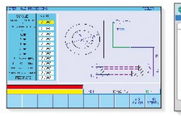
FAIR FRIED SELF DEVELOPED FUNCTION

The diagnosis interface provides easy, user-friendly operation and more than 40% time cutoff on program coding.

WITHOUT SUCH FUNCTION
Customer would spend considerable time coding machining programs.

11 STEP HOLE PROCESSING

Conventionally used in industry



FAIR FRIED SELF DEVELOPED FUNCTION

The diagnosis interface provides easy, user-friendly operation and more than 50% time cutoff on program coding.

WITHOUT SUCH FUNCTION
Customer would spend considerable time modifying machining programs.

DIAGNOSIS

12 MACHINE SPECIFICATIONS DESCRIPTIONS

Conventionally used in industry

WITHOUT SUCH FUNCTION
Machine specifications are shown in separat screens. Searching for specifications is time-e consuming.

FAIR FRIED SELF DEVELOPED FUNCTION

This function provides detailed machine specifications such as the maximum spindle speed, the maximum rapid traverse, motor types, and system versions, etc. It is convenient for operator to conduct operation and maintenance, saving operation time up to 30%.

13 PLC I/O ADDRESS

Conventionally used in industry

FAIR FRIED SELF DEVELOPED FUNCTION

Clear and well-organized display of PLC I/O operational instructions and status enables user conduct maintenance and troubleshooting without looking into manual book. Maintenance time-saving up to 50% can be achieved.

FAIR FRIEND SCREEN

14 SPINDLE SPEED RECORD

Conventionally used in industry

WITHOUT SUCH FUNCTION
Operator needs to keep a record by himself.

FAIR FRIED SELF DEVELOPED FUNCTION

This function enables operator to understand the spindle condition, and perform prevention and maintenance in advance to keep the spindle at the best situation.

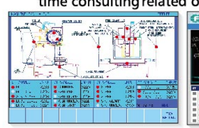
15 MACHINE PLC I/O LAYOUT

Conventionally used in industry

WITHOUT SUCH FUNCTION
Operator would spend considerable time consulting related operation manuals.

FAIR FRIED SELF DEVELOPED FUNCTION

Visualizing, schematic drawings for PLC I/O accesses provide clear and informative instructions. Operator doesn't need to check in the manual book all the time while maintenance time is reduced by 25%.



16 PREVENTIVE MAINTENANCE NOTICE

Conventionally used in industry

WITHOUT SUCH FUNCTION
Operator needs to consult related operation manuals and record notices by himself.

FAIR FRIED SELF DEVELOPED FUNCTION

The function offers automatic instructions and reminders for regular maintenance by week, by month and by year, ensuring extensive machine lifetime and smooth running.

TROUBLE SHOOTING

17 TOOL ARM SINGLE TEST

Conventionally used in industry

Operator needs to spend time either looking into the manual or memorizing M codes.

FAIR FRIED SELF DEVELOPED FUNCTION

Operator is able to complete tool arm installation or replacement by following the instructions from the HMI, without requiring the manual or memorizing data at all. 30% test time is saved.

18 TOOL ARM TROUBLESHOOTING

Conventionally used in industry

Operator needs to spend time either looking into the manual or memorizing M codes.

FAIR FRIED SELF DEVELOPED FUNCTION

This function effectively shortens troubleshooting time of tool change failure which occurs when emergency stop or power-off, from 15 minutes down to 30 seconds. **15 min → 30 sec**

19 RIGID TAPPING TROUBLESHOOTING

Conventionally used in industry

Operator needs to spend time either looking into the manual or memorizing M codes.

FAIR FRIED SELF DEVELOPED FUNCTION

When emergency stop or power-off, troubleshooting of tapping error without damage of tapping parts would take about 20 minutes normally. Following the instructions of Feeler HMI, it would reduce time-consuming down to 30 seconds. **15 min → 30 sec**

TOOL TABLE

20 MULTI FUNCTION TOOL TABLE

Conventionally used in industry

FAIR FRIEND SCREEN

FAIR FRIED SELF DEVELOPED FUNCTION

Information including tool list, tool lifetime reference, list of large heavy duty tools, tool length compensation and so on is integrated and displayed in a single screen providing convenient and efficient tool management as well as saving 30% operation time.

MEASURE

21 RECTANGULAR FROM 4 POINTS MEASUREMENT

Conventionally used in industry

FAIR FRIED SELF DEVELOPED FUNCTION

Measurement of rectangular workpiece center point only takes one step, which offers extra operational convenience and cuts down 10% working time.

MAXIMUM CIRCLE FROM 3 POINTS MEASUREMENT

More steps and time are required for measuring center point of rectangular workpieces.

22 Circular 3-Point Centering

Conventionally used in industry

FAIR FRIED SELF DEVELOPED FUNCTION

Centering function for circular work piece is done in one operation with 15% less time required.

Simply in manual way or by multiple processes in position probing, time consuming.

23 Edge Centering

Conventionally used in industry

FAIR FRIED SELF DEVELOPED FUNCTION

Centering or length measuring function for the edge of rectangular work piece is done in one operation, the position value can be set into program at the same time, 15% time saving.

Simply in manual way or by multiple processes in position probing, time consuming.

24 Corner Coordinates Measurement

Conventionally used in industry

FAIR FRIED SELF DEVELOPED FUNCT

Centering function for rectangular work piece is done in one operation, the corner coordinate values can be set into program at the same time. 15% time saving.

Simply in manual way or by multiple processes in position probing, time consuming.

OTHER FUNCTIONS

25 M CODE LIST

Conventionally used in industry

WITHOUT SUCH FUNCTION

Need to consult operation manual or memorize it.

FAIR FRIED SELF DEVELOPED FUNCTION

The M code list can be quickly displayed upon request, so the operator doesn't waste time looking into the operational manual and waste time.

26 T CODE REQUEST LIST OF WORKING PROGRAM

Conventionally used in industry

WITHOUT SUCH FUNCTION

Need to check visually which may cause error and time waste.

FAIR FRIED SELF DEVELOPED FUNCTION

Allows to search for all tool numbers in machining program: Operator is able to check and ensure operations running on correct programs, thus to avoid colliding.

27 PARTICULAR REFERENCE MOTION POINT

Conventionally used in industry

WITHOUT SUCH FUNCTION

Customer needs to spend considerable time for coding machining programs.

FAIR FRIED SELF DEVELOPED FUNCTION

Operator is allowed to define X, Y and Z axes with specific positions (i.e. Reference Point 1, 2, 3, etc.) without program coding.

Up to 60% operation time is saved.

28 PLC SOFTWARE KEY ADDED

Conventionally used in industry

INSUFFICIENT QUANTITY

Additional hardware keys and wiring are required at extra cost.

FAIR FRIED SELF DEVELOPED FUNCTION

In case some operational units are mounted and require extra control keys, these virtual, software keys are capable of meeting the need. Therefore, the cost for taking up optional equipment is lowered by eliminating additional hardware keys and wiring.

29 CALCULATOR

Conventionally used in industry

WITHOUT SUCH FUNCTION

Operator have to prepare a calculator.

FAIR FRIED SELF DEVELOPED FUNCTION

Handy calculator function is provided for added operational convenience.

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