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I . Description

digitalYEWFLO Sizing Software provides comprehensive support for the selection, ordering, and start-up of operations of Vortex Flowmeter digitalYEWFLO series.

By entering the conditions of use, sizing calculations can be done automatically, with the results shown in graphic form and printed. By inputting flow conditions, various values can be automatically calculated to assist in input. Specifically, this entails automatic calculations for gas density; density and viscosity of superheated steam; temperature, pressure, density and viscosity of saturated steam; and saturated steam pressure of liquids. The program can output an order sheet after the required items have been input. Furthermore, the data control function can be used to efficiently manage multiple sizing operations in one file. There is also a start-up supporting function which compares values of flow conditions during start-up and during sizing.

[NOTE] For information about entering fluid conditions, conditions of the specification range of digitalYEWFLO: Please must be fulfilled (see General Specification GS01F06A00-01JA).

II . Operational Environment

1. Hardware

PC which runs on Windows XP/Windows 7

CD-ROM drive

At least 4 MB of hard disk spec

2. Software

OS : Windows XP/Windows 7

Font: Arial/Times New Roman (True Type font for print-out)

Internet Explorer 5.0 or greater is necessary to refer to HELP.

3. Printer

Any Windows XP/Windows 7 compatible printer

III . Set-up

This software can be run either from CD-ROM*. If it is to be used continuously, you should prepare a special directory on your local hard disk drive for it beforehand and copy the appropriate files into the new directory.

*If you are going to save the data, you will need hard disk drive.

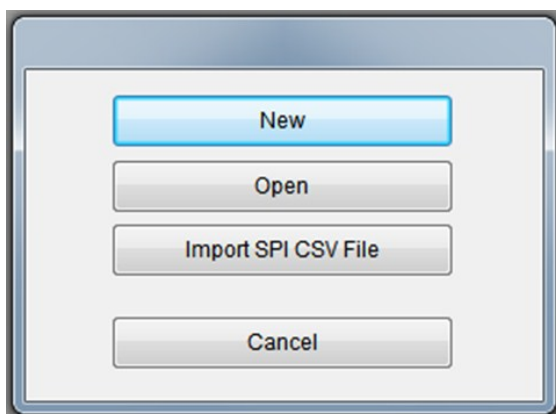


IV. Basic Operations

1. Start-up

Double-click the YEWFLO icon. When the software comes up, the title screen will be displayed.

After that, four buttons will be displayed: [NEW] and [OPEN]. Click the [NEW] button to begin a new sizing file, and the [OPEN] button to edit a file that has already been saved. [Import SPI CSV File] button is for the specific customers.



1-1. [NEW] operation

Clicking the [NEW] will open a new Sizing View screen. (For more information, please refer to "3. Sizing View.")

1-2. [OPEN] operation

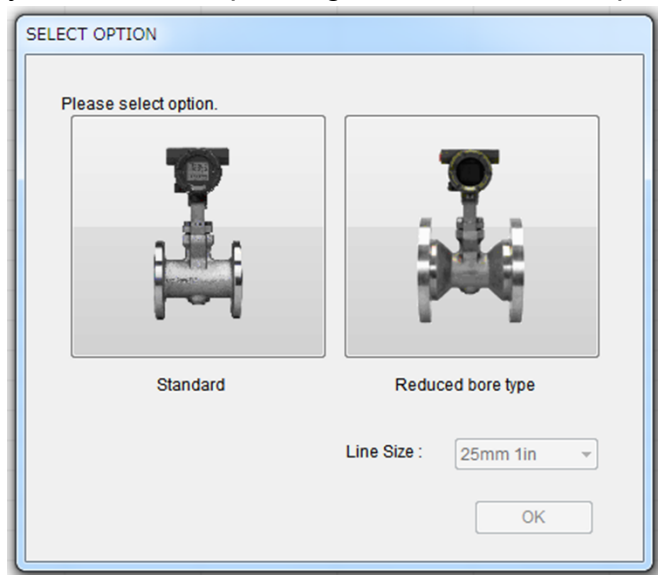
Clicking the [OPEN] button will open a dialog box for selecting the file. Select the file you desire, and then click the [OPEN] button. This will display the DATA View screen. (For more information, please refer to "5. DATA View.")

【Attention】

- * The file format has changed into '.ysd' by Ver5.00.
- * Please look at "7-5. Save and Load."

2. SELECT OPTION

Please select the options of the Standard or Reduced bore type. The input items in the Sizing View are changed by this selection. Therefore, please start sizing newly when you select the option again. Because The option can select only one time per one sizing.



2-1. Select "Standard" or "Reduced bore type"

Click either photo according to the object of sizing.

2-2. Plant Size

Select "Plant Size" from pull-down window, when you selected the Reduced bore type.

2-3. OK Button

Click "OK" button goes to Sizing View. "OK" button is available after three items has been selected.

3. Sizing View

This is a screen for inputting flow conditions necessary for selecting YEWFLO size. Please input in order from top to bottom. (Note: The following input items may change, depending on the selected conditions.) After all items have been entered, click the [Calculate] button to begin sizing calculations. After the sizing calculations have been completed, the Sizing View will switch over to the Select View, and the results of the calculations will be displayed.

[NOTE] Input/Output Range

As a specification of digitalYEWFLO, numbers can be set for parameters as follows basically (: It depends on items). On the basis of this, this program is rounding the output automatically or gives an error message in the output and input.

Specification Range:

1	~	32000
0.1	~	3200.0
0.01	~	320.00
0.001	~	32.000
0.0001	~	3.2000
0.00001	~	0.32000

If you want to set gauge pressure in the (gauge) the pressure value, in terms of (abs) absolute pressure as a parameter for factory internally, but this law will apply to the result, you may receive an error message appears.

[Sizing View]

The screenshot shows the 'Standard type' sizing view of the digitalYEWFLO Sizing Software. The interface includes a menu bar (File, View, Window, Help) and a toolbar. The main area contains several input fields and dropdown menus for configuring the sizing calculation. The 'Cord No.' field is set to 'New Data1' and the 'Tag No.' field is set to '2013/05/29'. The 'Reduced bore type' dropdown is set to 'Not Select'. The 'Fluid Type' dropdown is set to 'Gas' and the 'Scale' dropdown is set to 'Operating Condition'. The 'Fluid Name' dropdown is set to 'Air'. The 'Flow' section has 'Maximum' and 'Minimum' fields set to '0', with unit dropdowns for 'm3' and 'ft3'. The 'Temp.' section has 'Operating' and 'Maximum' fields set to '0', with a unit dropdown for 'degC'. The 'Pres.' section has 'Operating' and 'Minimum' fields set to '0', with unit dropdowns for 'gauge' and 'kPa'. The 'Deviation Factor' field is set to '1.0'. The 'Viscosity' field is set to '0', with a unit dropdown for 'mPa.s(cP)'. The 'Total Rate' field is set to '0', with a unit dropdown for 'm3/pulse'. The 'Pulse Rate' field is set to '0', with a unit dropdown for 'm3/pulse'. A 'Calculate' button is located at the bottom right of the form.

3-1. Code No. / Tag No.

If you are doing multiple sizings, this item allows you to manage the data individually. Since code numbers are used to classify data individually, please try to avoid overlap or redundancy. The tag numbers have no effect on sizing calculations, so please use them when necessary. (Tag numbers do not have to be entered.)

3-2. Date

The date sizing data are created will automatically be entered. When necessary, the date can be changed.

3-3. Reduced bore type

This window is linked to Option View. It is impossible to change this content.

3-4. Fluid Type

Please select fluid type from among "Gas", "Superheated Steam", "Saturated Steam", and "Liquid".

Since input items differ depending on the [Fluid Type] selected, this item, along with [Fluid Name] (next item) should be entered first.

Please note that when changing the [Fluid Type], data in the following input items will be resetted.

3-5. Scale Condition

Please select the scale condition. The flow rate will be entered as the value calculated under the setting condition. In addition, the density under standard conditions will be input as "0 °C 1 atm 0%" if you select either "Operating Condition" or "0 °C 1 atm 0%"; otherwise, the density will be entered as the scale condition that was chosen. (Applies only to gases.)

3-6. Line Size (for Reduced bore type only)

This window is linked to Option View. It is possible to change this content here.

3-7. Fluid Name

Fluid name can be chosen only when [Fluid Type] is either "Liquid" or "Gas". When a gas name is selected, the density of the gas under standard condition and operating condition will be automatically calculated. If you are entering all data manually, please select "Other Gas".

When you select "Other Gas", a column title [Other Fluid Name] will appear on the screen. If necessary, please type in the name of the fluid. If no fluid name is entered, the display will change to "Other Gas".

When a liquid name is entered, its saturated steam pressure will automatically be calculated. If "Water" is selected, its standard operational density and viscosity will automatically be calculated. If you are entering all data manually, please select "Other Liquid".

When you select "Other Liquid", a column titled [Other Fluid Name] will appear on the screen. When necessary, please type in the name of the fluid. If no fluid name is typed in, the display will change to "Other Liquid".

3-8. Flow Minimum/Maximum

For [Maximum], type in the upper limit of the liquid volume you want to measure; for [Minimum], type in the lower limit. If the fluid body is a "Gas", please enter the value that

was calculated by the Scale Condition.

Unit should be established separately for volume and mass, and for time.

3-9. Temp. Maximum/Operation

Please, enter the maximum temperature and the operating temperature of the fluid being measured. In the case of "Saturated Steam", the operating pressure will be converted if you enter the operating temperature.

In case of "Liquid", [Temp. Maximum] is not shown.

Select temperature from either Celsius (Centigrade) "degC" or Fahrenheit "degF" scale.

3-10. Pres. Operation/Minimum

Pressures of the fluid being measured should be entered for operating condition and minimum pressure. In the case of "Saturated Steam", the operating temperature is calculated automatically from the operating pressure that was entered.

In case of "Liquid", [Pres. Minimum] is not shown.

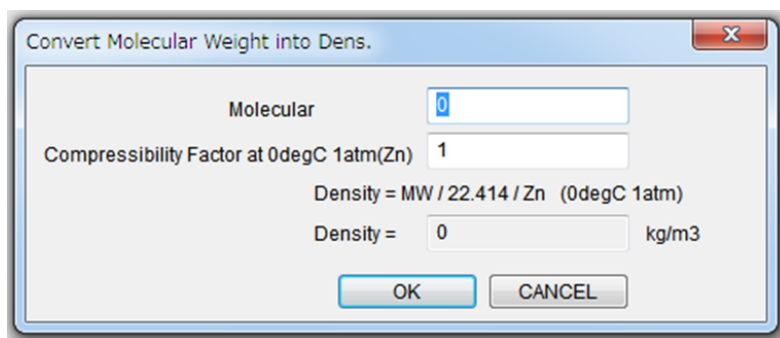
Before selecting the pressure unit, a unit should first be selected for either "abs" (absolute) pressure or "gauge" pressure.

3-11. Dens. Operation/Standard

In case of "Liquid" (except "Water"), please enter densities of the fluid under operating condition. In case of "Other Gas", choose the one from densities under operating and under standard using a button. Entering the one, another one is automatically calculated from operating temperature, standard pressure, etc.

Depending on the scale condition, density under standard conditions will be entered as the value in "0 °C 1 atm 0%" if you select either "Operating Condition" or "0 °C 1 atm 0%"; otherwise, the density will be entered as the value for the scale condition that was selected. (If there is no space for entry, the value will be calculated automatically).

In case of "Other Gas", the density can be entered using the molecular weight. If you select "Other Gas", "Convert Molecular Weight into Dens." button will appear to the right of the [Standard Density] column. Clicking the "Convert Molecular Weight into Dens." button will cause a dialog to pop up on the screen that will give instructions for entering the required [Molecular] weight and [Compressibility]. After a few calculations, the program will display density at 0 °C 1 atm 0% on the screen. By clicking [OK], the dialog box will close, and the density will be entered in the Density column under Standard Conditions.



3-12. Viscosity/Kinematic Viscosity

Please enter either the viscosity or kinematic viscosity, which will be determined by the selected unit. (If there is no space for entry, the value will be calculated automatically).

3-13. Deviation Factor

Please enter the deviation factor. The default value is 1. (Applies only to gases).

3-14. Total Rate

Set the total rate (flow rate per 1 flow unit/pulse). Default value is zero.

Flow units per pulse varies, depending on the flow rate units you selected.

If the value is 0, it does not set the parameters of the total rate function at the time of shipment.

3-15. Pulse Rate

Set the pulse rate (flow rate of 1 pulse per). Default value is zero.

Flow units per pulse varies, depending on the flow rate units you selected.

In setting maximum flow rate, set the output of the pulse does not exceed 10kHz. It is an error during the operation of the equipment is more than 10kHz.

If the value is 0, it does not set the parameters of the pulse rate function at the time of shipment.

3-16. Culculation

When you are finished, click the "Calculate" button.

digitalYEWFLOW - [Sizing View]

File View Window Help

Standard type

Cord No. Tag No.

Reduced bore type

Fluid Type Scale

Fluid Name

Flow Maximum
 Minimum

Temp. Operating
 Maximum

Pres. Operating
 Minimum

Deviation Factor

Viscosity

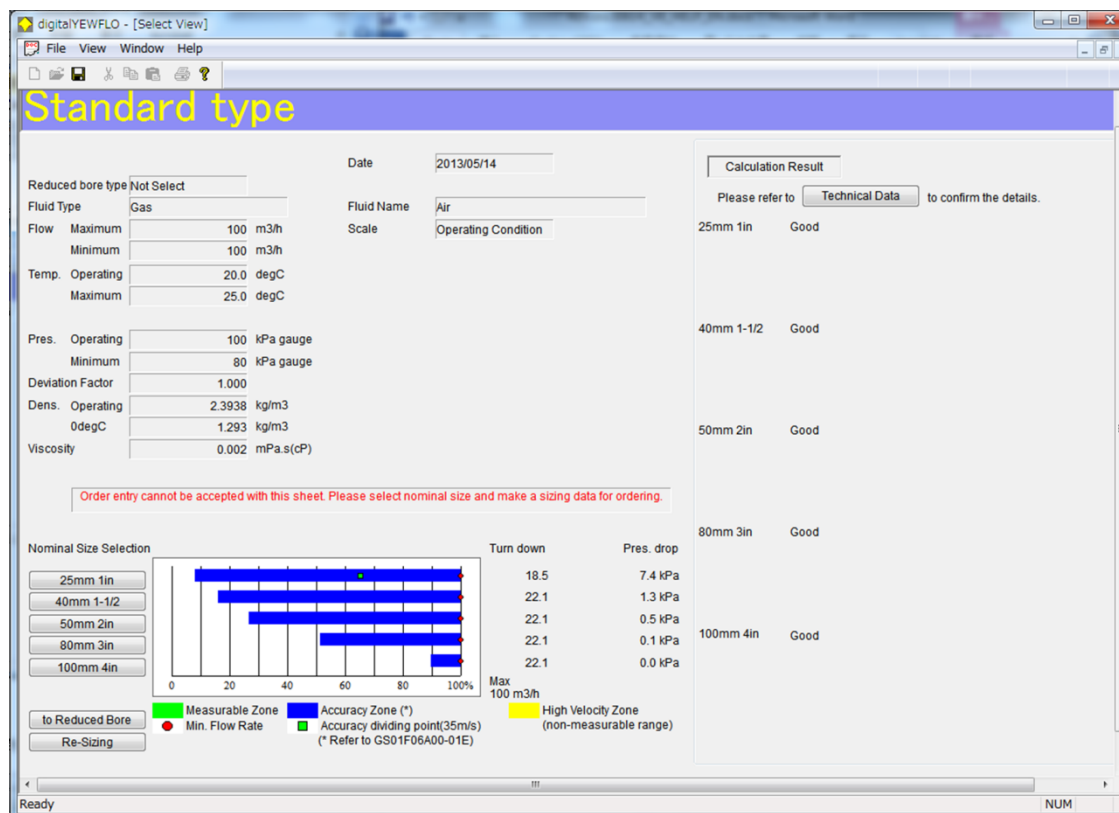
Total Rate m3/pulse

Pulse Rate m3/pulse

Ready NUM

4. Select View

Select View graphically displays the sizing result under the selected condition, then chooses the most suitable flowmeter size for selected conditions.



4-1. Display

The top part of the display shows the items needing to be entered for printing out the Selection Sheet. The middle part of the display shows the fluid conditions. The bottom part of the display shows the flow rate range that can be used for the flowmeter under the selected conditions. The graph is a bar graph which set the maximum flow rate at 100 %. The minimum flow rates are shown for the measurable range, the accuracy guaranteed zone. ■ is displays "Accuracy dividing point (35m/s)". In addition, "Turn down" and "Pressure drop" values needed to select size are shown to the right of the graph.

[Accuracy]

Guarantee conditions of liquid volumetric flow rate: the accuracy of a product before shipment in our water actual test facility. Totalized value of 2000 pulse or greater, straight pipe length: upper 10D or greater, lower 5D or greater, fluid temperature 20 +/- 10 degC.

Gas, Steam: The accuracy which is added up from liquid measurement accuracy. The accuracy is confirmed by actual measured value of typical nominal size.

4-2. Calculation Result

The calculation results are displayed on the right side of the window. If available "GOOD", otherwise it displays the reason and measures of inappropriate

If it can be produced at a flow rate range of accuracy out of the rule, the display shows "Caution" as "There is flow rate out of specification" the reason for the unsuitable..

4-3. Display Technical Data

Pressing [Technical Data] button, all detailed information about all size is a shown.

[Calculation Result] shows "Good", "Caution" or "No Good" if the size is available or not.

[Reason for NG] shows the reason of NG. It shows "Over size" when the minimum/maximum flow rate exceeds the specification flow rage.

[Minimum Pressure Cavitation are not generated] shows for liquid. The unit is "kPa abs".

Technical Data				
Detector Inner dia(mm & inch)	15mm 1/2in	25mm 1in	40mm 1-1/2	50mm 2in
Inner Diameter(mm)	14.6	25.7	39.7	51.1
Result(Good or NG)	No Good	No Good	No Good	No Good
Reason of NG	OVER FLO...	OVER FLO...	Over Size&...	Over Size&...
Reynolds Number at Setting Max Flowrate	144980661	82362554	53317825	41423046
Flow Velocity at Maximum Flowrate(m/s)	8296.061	2677.388	1122.010	677.229
Flow Velocity at Minimum Flowrate(m/s)	16.592	5.355	2.244	1.354
Accuracy 1.0% Min.Velocity from Viscosity(m/s)	5.781	4.336	3.616	3.616
Accuracy 0.75% Min.Velocity from Viscosity(m/s)	---	---	---	---
Flowrate at 35m/s (m3/h)	21.094	65.362	155.970	258.406
Max. Flowrate for Specified Accuracy (m3/h)	48.216	149.399	356.503	590.642
Min. Flowrate for Specified Accuracy(1.0%) (m3/h)	3.484	8.097	16.114	26.697
Min. Flowrate for Specified Accuracy(0.75%) (m3/h)	---	---	---	---
Minimum Measurable Flow Velocity(m/s)	5.781	4.336	3.616	3.616
Maximum Measurable Flowrate (m3/h)	48.216	149.399	356.503	590.642
Minimum Measurable Flowrate (m3/h)	3.484	8.097	16.114	26.697
Maximum span range (m3/h)	72.323	224.099	534.755	885.963
Minimum Pressure Cavitation are not generated	---	---	---	---

4-4. Size Selection

Please select the size from among those displayed, after considering the "Turn down" and "Pressure drop" values. After selecting size, click the appropriate button to the left of the graph. The Select View window will close, and Order View will be displayed for the size selected.

4-5. Re-Sizing to the same type

For re-sizing from Standard to Standard or from Reduced bore type to Reduced bore type, click "Re-Sizing" button goes to Sizing View.

4-6. Re-Sizing to the another type

For re-sizing from Standard to Reduced bore type or from Reduced bore type to Standard, click "To Reduced bore type" or "To Standard" button respectively goes to Sizing View.

5. Order View

Order View is used when sending an order for equipment whose size was selected with Select View. Please enter required information about the order, such as customer

name and model code.

The screenshot displays the 'digitalYEWFLOW - [Order View]' software interface. It features a menu bar (File, View, Window, Help) and a toolbar. The main area is divided into several sections:

- Order Information:** Fields for Cord No. (New Data1), Tag No., Agency, End User, Plant Name, Model Suffix Code, Shop Order No., Item No., Rgst No., Order No., and Quantity (1).
- Flow Conditions:** A table showing operating and maximum/minimum values for Flow (m3/h), Temp. (degC), Pres. (kPa gauge), and Viscosity (mPa.s(cP)).
- Detector Size Selection:** A graph showing the flow rate range (0 to 100%) and pressure drop (18.5 to 7.4 kPa). The graph includes zones for Measurable Zone, Accuracy Zone (*), and High Velocity Zone (non-measurable range).
- Buttons:** Re-Sizing, Print, and Sizing Data Output.

The status bar at the bottom indicates 'Ready' and 'NUM'.

5-1. Display

The top part of the display shows the items needing to be entered for an order. The middle part of the display shows the flow conditions that were entered. The bottom part a graphic representation of the flow rate range that was selected from the Select View screen.

5-2. Data Entry

The data that must be entered for an order include [Agency], [Customer], [End User], [Plant Name], [Model Suffix Code], and [Quantity]. Since this information is printed out as is on the order sheet, please check for mistakes.

Please match these data and contents of ordering systems.

5-3. Sizing Sheet

The information indicated on the Order View can be printed out on the Sizing Sheet. By choosing [File]-[Print] in the menu bar, you can print Sizing Sheet.

5-4. Re-Sizing to the same type

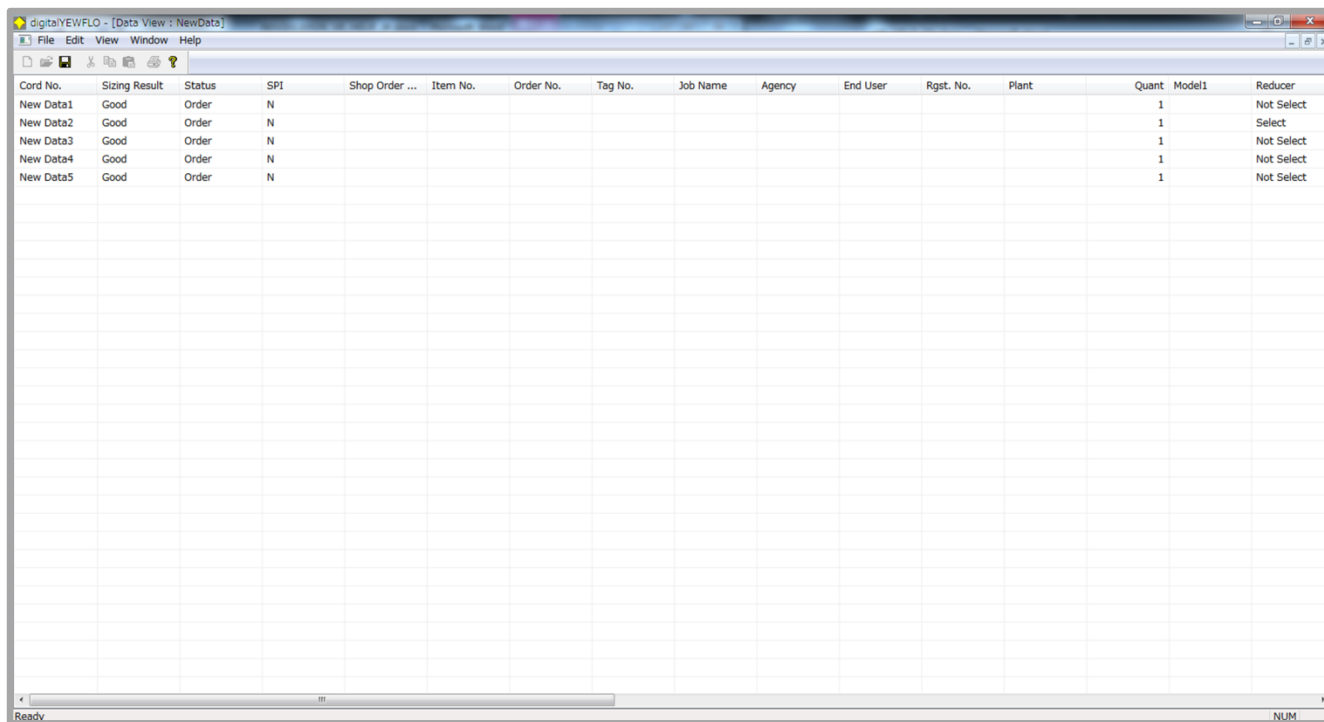
For re-sizing from Standard to Standard and from Reduced bore type to Reduced bore type, click "Re-Sizing" button goes to Sizing View.

5-5. Re-Sizing to the another type

For re-sizing from Standard to Reduced bore type or from Reduced bore type to Standard, click "To Reduced bore type" or "To Standard" button respectively goes to Sizing View.

6. Data View

DATA View manages all data, that is, sizing result and some other information in a single integrated file. One data size is displayed on one line. Operation conditions and all types of data are displayed on the screen. Data can be deleted, copied, and pasted.



Cord No.	Sizing Result	Status	SPI	Shop Order ...	Item No.	Order No.	Tag No.	Job Name	Agency	End User	Rgst. No.	Plant	Quant	Model1	Reducer
New Data1	Good	Order	N										1		Not Select
New Data2	Good	Order	N										1		Select
New Data3	Good	Order	N										1		Not Select
New Data4	Good	Order	N										1		Not Select
New Data5	Good	Order	N										1		Not Select

6-1. Display

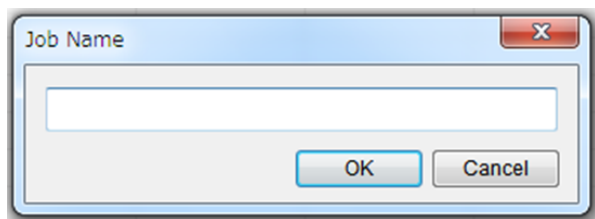
It displays a single line of data one Reviews. There are Code No., Sizing, include work state from the left, you can see the entire result in the input sizing work, was calculated.

6-2. Editing

In Data View, data can be deleted, copied, and pasted. When editing please make sure that there are no open data. If there are data displayed on other screens, you cannot edit. Unneeded data can be deleted by clicking [Code No.] on the far left-hand side and executing the [Edit]-[Cut] function. Selected data can be copied with the [Edit]-[Copy] function, and pasting can be done with the [Edit]-[Paste] function. When pasting, the space for Code No. is left blank to avoid redundancy of names, so please open the data and enter.

6-3. Setting Job Name

In Data View, you can set a Job name. This name will be printed on the Selection and Sizing Sheets. By entering [Edit]-[Job Name], a dialog for setting the Job name will appear on the screen. Once a Job name is set, click the [OK] button.



6-4. Save and Load

The form of the data file changed from Ver.5.00.

File format that can be used with Ver.5.00		
Version and File Type	Load	Save
Ver.5.00 ysd	OK	OK