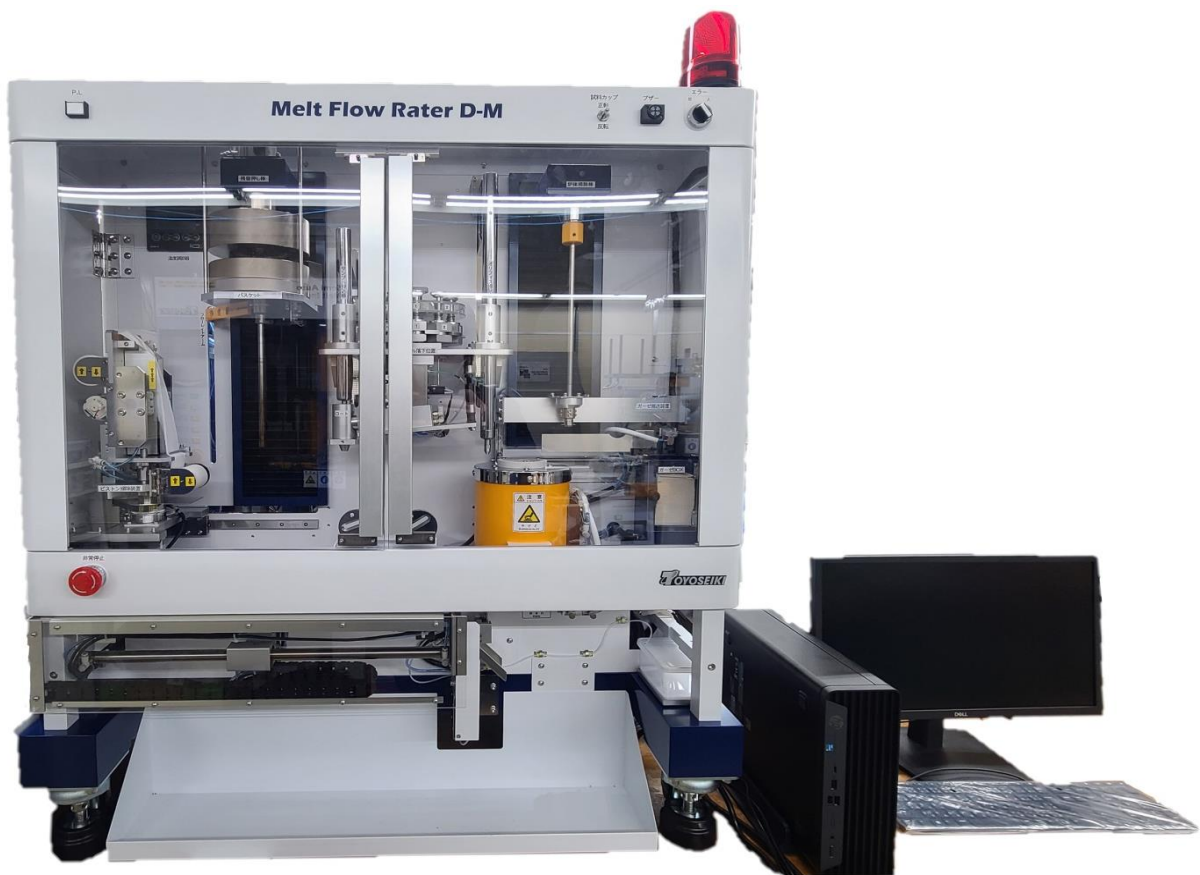


520 | Melt Flow Rater

Model D-M

Fully Automatic Melt Flow Index Tester



The **Melt Flow Rater** is designed for measuring of the Melt Flow Rate (MFR) and Melt Volume Rate (MVR) conforms to ISO 1133 and ASTM D1238 in fully automated mode. This machine follows a sequential operation from the loading of sample, testing, data processing to the cleaning of cylinder and performing the next test all on its own. This tremendously reduces the workload of the user who can go on to perform other job functions after loading in the samples.



Sample cups



Piston cleaning unit

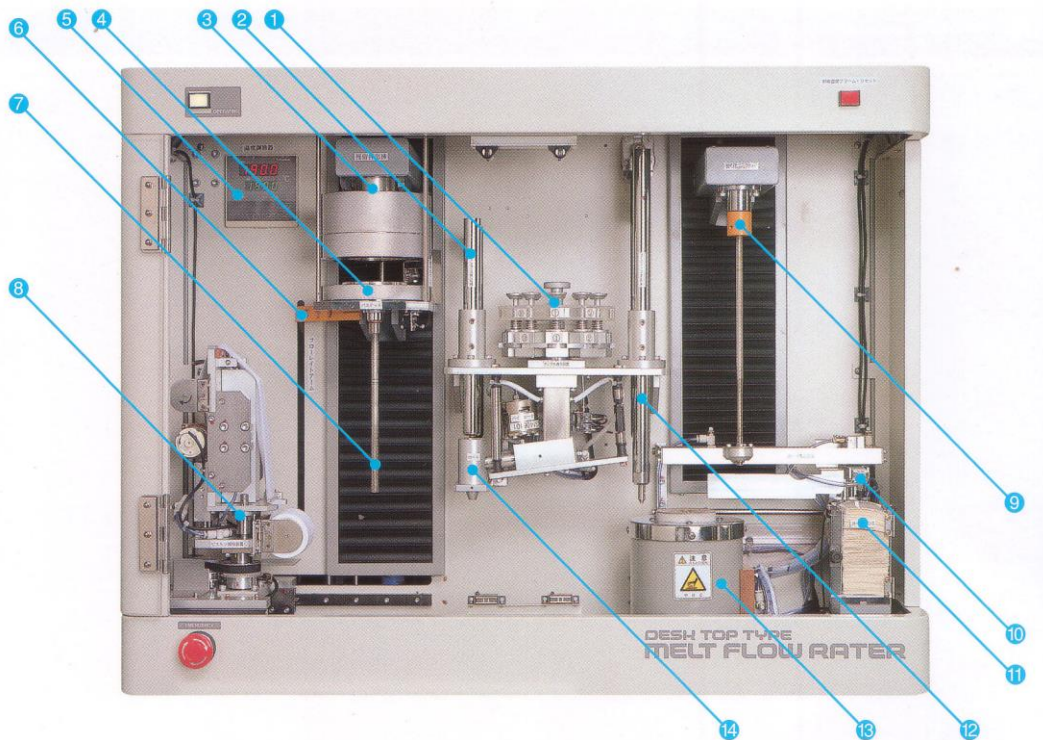


Cylinder cleaning unit

■ FEATURES

- Sample magazine for 10 test runs. (20 or 40 test runs optional)
- Method B can be measured automatically including piston, cylinder and orifice/die cleaning. (Automation of method A is available as an option)
- Contributes to labor saving, efficiency improvement, and reproducibility of measurement work.
- Space-saving desktop unit. (W960 x D680 x H1350mm, standard feature)

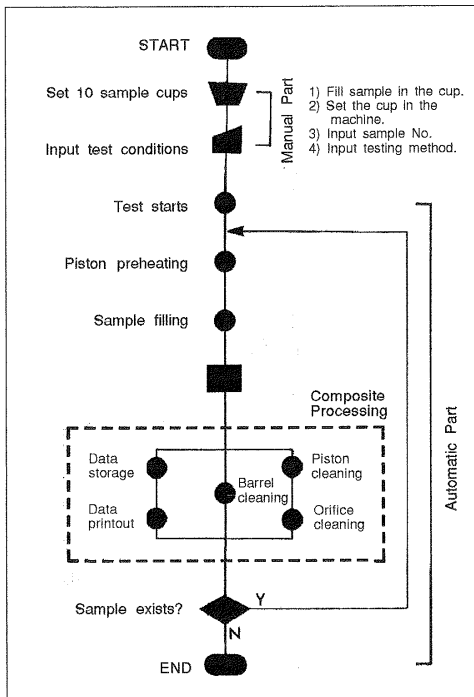
■ NAMES AND FUNCTIONS OF PARTS



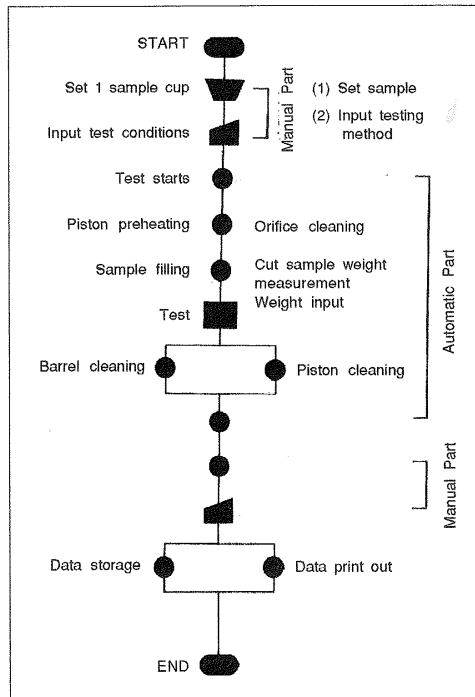
1	Sample cups table	<ul style="list-style-type: none"> ● Absorption of moisture by sample can be prevented by setting a dehydrator in the center of the table. ● Transparent cover assures sealing for dust proofing, preventing absorption of moisture and for monitoring of inside. ● Up to 10 sample cups can be mounted on the table. (Optional: 20 sample cups or 40 sample cups) ● Cup's bottom lid opens and sample drops.
2	Sample packing rod	<ul style="list-style-type: none"> ● After filling sample into the cylinder, bubbles are removed by pushing in the sample. ● Push in operation is performed two times.
3	Residue push-out unit	<ul style="list-style-type: none"> ● Pushes out excess amount of sample during preheating. ● Emptying residue after end of test.
4	Weight bucket	<ul style="list-style-type: none"> ● Intermediate piston hold and measurement operations are automatically performed according to the data input into the data processing unit.
5	Temperature controller	<ul style="list-style-type: none"> ● Controls barrel temperature with an accuracy of $\pm 0.1^{\circ}\text{C}$. ● Digital indication setting is controlled by the temperature input from the personal computer.
6	Piston displacement transducer	
7	Piston	
8	Piston cleaning unit	<ul style="list-style-type: none"> ● Cleans dirty surface of piston after end of test. ● Automatically winds up dirty part of the cloth after end of test.
9	Cylinder cleaning rod	<ul style="list-style-type: none"> ● Gauze is pushed into the barrel by means of cleaning rod and up/down movement can be selected up to 9 strokes. ● Cleaning rod moves up/down while rotating.
10	Cylinder cleaning gauze feeding unit	<ul style="list-style-type: none"> ● Gauze is automatically sent one by one on top of barrel from the gauze box. ● Vibration is applied to the sucking plate so that two gauzes pieces may not be fed at a time.
11	Cylinder cleaning gauze holder	<ul style="list-style-type: none"> ● *10 pieces of cylinder cleaning gauze can be set in the holder. (*Standard feature) ● Gauze is supplied automatically.
12	Orifice/die cleaning rod	<ul style="list-style-type: none"> ● Sample remaining inside the orifice is pushed out by means of a pin of same dimensions as the orifice/die.
13	Cylinder	<ul style="list-style-type: none"> ● Automatic shifting and setting at the 4 stations of test position, sample insertion position, orifice cleaning position and barrel cleaning position. ● At the bottom of the furnace is installed scissors for automatically cutting off pushed out sample, which is used in Method A.
14	Sample filling funnel	<ul style="list-style-type: none"> ● This funnel serves as a guide for inserting sample into the cylinder's sample hole. ● Vibration is applied to it for smooth flow of sample.

OPERATION

OPERATION IN BRIEF (Method B)

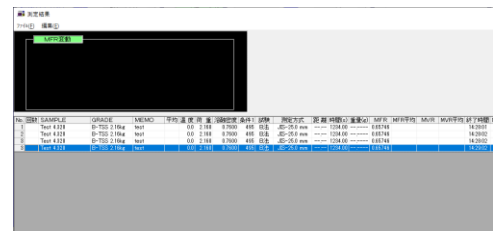
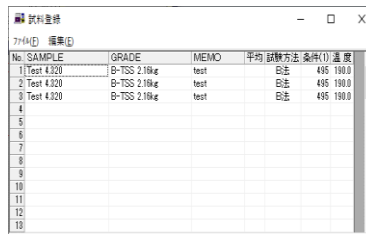
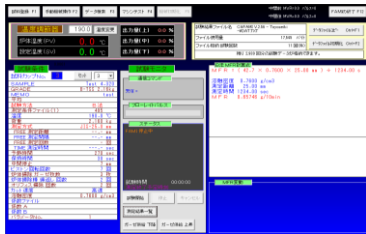


OPERATION IN BRIEF (Method A)



MENU, REGISTRATION, OPERATIONAL SCREEN

Note: English version software is available



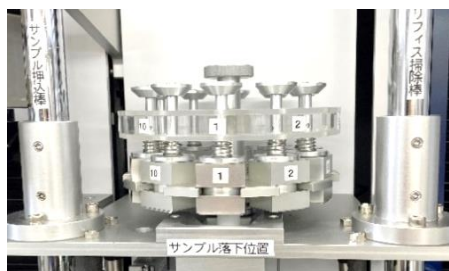
EXAMPLE OF MEASUREMENT RESULTS

MEASUREMENT RESULTS -METHOD B- Date: 04/08/03

Cup No.	Sample Name	Grade No.	Lot No.	Temp. (°C)	Interval Time (s)	Preheat Time (s)	Hold Time (mm)	Intermediate Stop (kg)	Load Cleaning (Times)	Met. Density (g)	Measurement Time (min)	MFR Value (g/10min)	
1	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	81.8	2.08313
2	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	82.2	2.07299
3	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	81.0	2.10370
4	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	82.2	2.07299
5	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	81.3	2.10313
6	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	83.3	2.04563
7	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	82.2	2.07299
8	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	81.7	2.08566
9	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	82.9	2.05549
10	SAMPLE-2	GRADE-2	LOT-2	190.0	JIS-4.00	270	30	5	2.16	3	1.0000	82.8	2.05549

■OPTIONS

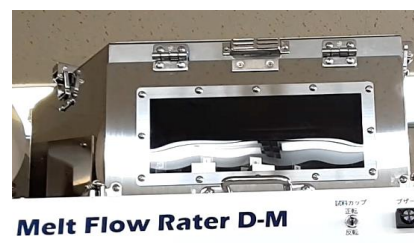
Sample cups table (Sample magazine)



10pcs. type (Standard feature)

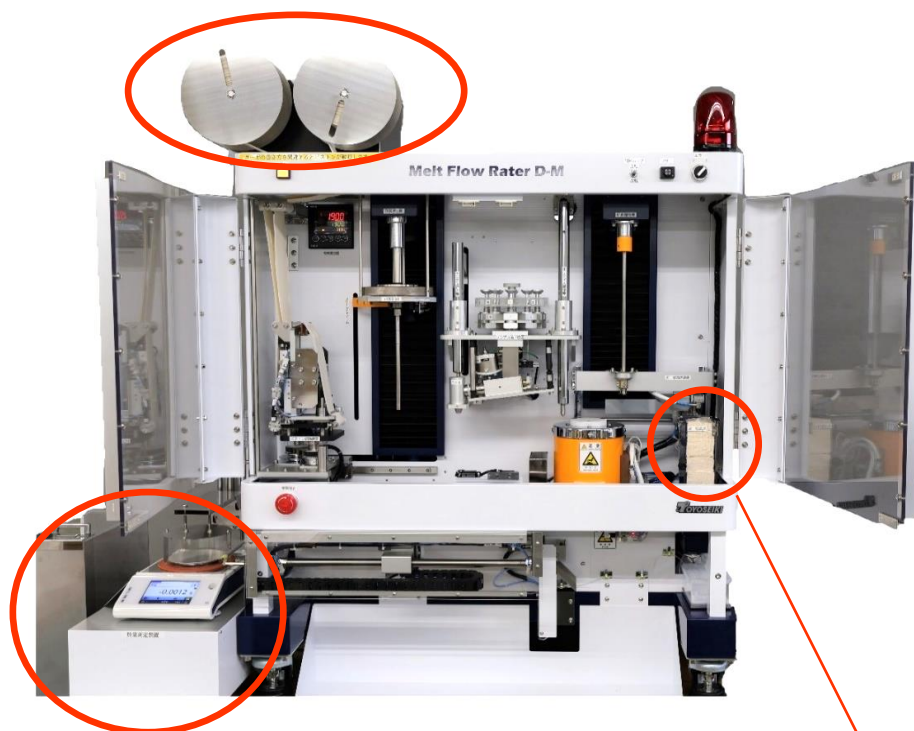


40 pcs. type (Optional)



Description	Model	Number of cups	Type of cup	Capacity (Approx.)	Sample cups table position	Large type piston cleaning gauze unit	Large type cylinder cleaning gauze unit
Table for 10 pcs. of sample cups	Standard	10	Standard size	6g	Inside the main unit	Optional (D-PCL)	Optional (D-FCL)
	D-10L	10	Large size	9g			
Table for 20pcs. of sample cups	D-20S	20	Standard size	6g	On the top panel of main unit	Comes standard	Comes standard
	D-20L	20	Large size	9g			
Table for 40pcs. of sample cups	D-40S	40	Standard size	6g			
	D-40L	40	Large size	9g			


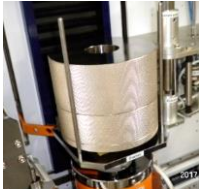


Large type piston cleaning gauze unit, D-PCL (Optional)



Large type cylinder cleaning gauze unit, D-FCL (Optional)

Method A automatic measurement unit, D-M-A (Optional)

	<p>Large type piston cleaning gauze unit, model D-PCL</p> <ul style="list-style-type: none"> ● Specifications with more consecutive piston cleaning cycles. ● Standard feature for 20pcs. and 40 pcs. sample cups table specifications. ● 1 bobbin of rolled gauze can clean a piston 80 times or more (Standard feature: approx. 20 times) ● 3 pcs. of spare bobbins (Large) included
	<p>Large type cylinder cleaning gauze unit, model D-FCL</p> <ul style="list-style-type: none"> ● 200 pcs. of dedicated cleaning gauze (55 x 55mm) can be loaded. ● Standard feature for 20pcs. and 40 pcs. sample cups table specifications.


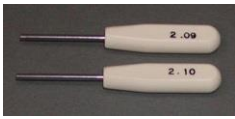
	<p>Automatic test load changing unit, model K</p> <ul style="list-style-type: none"> ● Option for sample cup 10pcs. specification (standard feature) ● Included as standard for 21.6kg specification
	<p>21.6kg test load specification, model D-HL</p> <ul style="list-style-type: none"> ● Test load: 2.16kg, 10.0kg, 21.6kg ● Automatic test load changing unit is included
	<p>Method A automatic measurement unit, model D-M-A</p> <ul style="list-style-type: none"> ● Automate a series of measurements. ● Sample collection → Mass measurement → Calculation of measurement results → Disposal of sample in disposal box ● Setting conditions: 1.0 to 999.9sec, measurement frequency: 1 to 3 times <p>Additional mechanism:</p> <ol style="list-style-type: none"> 1. Sample collection mechanism 2. Mass measurement balance unit 3. Sample disposal box with release agent sprayer <p>Note:</p> <ol style="list-style-type: none"> 1. Installed approx. 200 mm in front of the front of the main unit. 2. Depending on the material to be measured and the test conditions, measurement may not be possible.
	<p>Dry air supply unit, model D-A (External unit)</p> <ul style="list-style-type: none"> ● Unit that supplies dry air to the sample cup table section ● Power supply; Single-phase, AC100V, 50/60Hz, 5A (Separate power supply required) ● W550 x D400 x H450mm <p>Note: This function is to prevent moisture absorption again after drying in a dryer, etc., and is not a stand-alone function to dry samples.</p>



■ SPECIFICATIONS

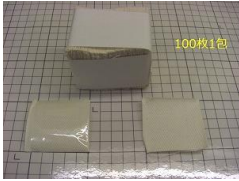




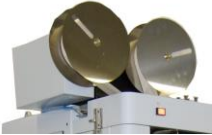
Model	D-M
Sample cups (Sample magazine)	<ul style="list-style-type: none"> ● 10 pcs. type...For 10 single tests (Standard feature) ● 20 pcs. type...For 20 single tests (Optional) ● 40 pcs. type...For 40 single tests (Optional)
Orifice/die	Ø2.095mm, 8mm length
Cylinder	Ø9.55mm
Temperature range	Max. 300°C
Test load range	<ul style="list-style-type: none"> ● 0.325kg, 2.16kg, 5.0kg, 10.0kg (Standard feature) ● 2.16kg, 10.0kg, 21.6kg (Optional)
Test method	<ul style="list-style-type: none"> ● Method B: Automatic ● Method A: Manual operation (Automatic optional)
Sample feeding	Automatic
Weight loading	Automatic
Test load changing	Manual operation (Automatic: Optional)
Cylinder cleaning	Automatic (Cleaning frequency range: 1 to 9 times) <ul style="list-style-type: none"> ● Cleaning gauze unit for 100pcs. (Standard feature) ● Cleaning gauze unit for 200pcs. (Optional)
Orifice/die cleaning	Automatic
Piston cleaning	Automatic (Cleaning frequency range: 1 to 9 times) <ul style="list-style-type: none"> ● Built-in bobbin (Standard feature)...can clean piston approx. 20 times ● Top mount large type bobbin (Optional)...can clean piston 80 times or more
Orifice/die cleaning rod cleaning	Automatic
Safety features	Emergency stop switch, Front door with cover switch, Over heat protection device, Red signal light, Error buzzer (ON/OFF switching)
Power requirement	Single-phase, AC100V, 50Hz or 60Hz, 1.5kVA (Others on request)
Compressed air	0.5 to 0.7MPa (Ø6mm hose joint)
Dimensions	<ul style="list-style-type: none"> ● W960 x D680 x H1350mm (Standard feature) ● W960 x D680 x H1470mm (with Large type piston cleaning gauze unit)
Weight	Approx. 320kg (excluding test loads)


■ ACCESSORIES / SPARE PARTS & OPTIONAL FEATURES

● Standard feature (10 pcs. of sample cups table spec.) ○ Optional

Name	Model (Part No.)	Photo	
Data processing unit (Software, PC, LCD monitor and Printer) Note: Office is not included.	-----		●
Piston, S50C type	2100385		●
Weight pan (0.325+0.045kg) <i>Note: In order to cancel reaction force of encoder, 0.045kg load is added.</i>	-----		●
Weight, 1.835kg (For 2.16kg)	-----		●
Weight, 2.84kg (For 5kg)	-----		●
Weight, 5kg (For 10kg)	-----		●
21.6kg test load specification (Comes with automatic test load changing unit)	D-HL		○
Orifice	2101005		●
O-Ring for orifice	1300109		●
Orifice/die gauge (Go/no go gauge)	2100330		●
Orifice/die cleaning rod (For manual operation)	-----		●

Orifice/die cleaning rod (For automatic operation)	-----		●
Drill brush for orifice/die cleaning rod	-----		●
Standard size sample cup (Capacity: approx. 6g)	-----		●
Large size sample cup (Capacity: approx. 9g)			○
Sample cups table for 10pcs. of large size sample cups option (comes with cups)	D-10L		○
Sample cups table for 20pcs. of standard size sample cups option (comes with cups, D-PCL, D-FCL)	D-20S		○
Sample cups table for 20pcs. of large size sample cups option (comes with cups, D-PCL, D-FCL)	D-20L		○
Sample cups table for 40pcs. of standard size sample cups option (comes with cups, D-PCL, D-FCL)	D-40S		○
Sample cups table for 40pcs. of large size sample cups option (comes with cups, D-PCL, D-FCL)	D-40L		○
Glass epoxy adiabatic material for S50C type piston	1100385		●

Cleaning gauze for cylinder cleaning (MOQ=100pcs/pack)	5140018		●
Roll gauze for piston cleaning	5140031		●
Orifice/die push-out rod	-----		●
Air hose (Ø6mm)	-----		●
Method A automatic measurement unit	D-M-A		○
Automatic test load changing unit	K		○
Dry air supply unit	D-A		○
Large type piston cleaning gauze unit	D-PCL		○

Large type cylinder cleaning gauze unit (200pcs.)	D-FCL		○
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Specifications are subject to change without notice.

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