

Operating Instruction
-NDJ-5S-8S-9S
Digital Viscometer

CONTENT

1. Operating principle and Using	1
2. Main Technical Data	1
3. Application Environment	2
4. Structher and Installation	2
5. Using.....	3
6. Panel operation.....	3
7. Precaution.....	6
8. Packing list.....	8

1: Operating principle and Using

NDJ Series Digital Viscometer (NDJ-5S-8S-9S) is a smart instrument, depending on the technology of A 16-bit high-performance single chip, which has totally changed the previous rotor method. Stepper motor runs accurately and stably as the setting speed procedure. And then torque sensor will drive rotor rotation in a constant speed. When rotor suffers viscous resistance in the tested liquid, the viscosity of the tested liquid will show on the screen by testing and handling.

Compared with the same instrument, this one has the merit of high measure accuracy, stabled in rotate speed, wide working voltage (available in 110V, 220V, 50Hz, 60Hz) and so on. It is very convenient for users to choose the rotor and rotor velocity of the testing liquid correctly, because of the function of measured value occupies full range.

It can widely used to measure Dynamic Viscosity of solvent based adhesive, latex, biochemicals, oil paint, coating, cosmetic, printing ink, pulp, starch, food and so on.

2: Main Technical Data

1、NDJ-1S, NDJ-5S

Measurement range: 10mPa.S-100,000mPa.S(1mPa.S=1cp)

Measurement error: NDJ-1S: $\pm 5\%$, NDJ-5S: $\pm 3\%$,

Rotor types: 1#, 2#, 3# and 4# rotors(0# is optional accessory)

Rotor velocity: 6、12、30、60RPM/min

Dimensions: 95*130*155 (not including classis)

Net weight: 2kg (not including classis)

2、NDJ-8S

Measurement range: 10mPa.S-2,000,000mPa.S(1mPa.S=1cp)

Measurement error: $\pm 3\%$

Rotor types: 1#, 2#, 3# and 4# rotors(0# is optional accessory)

Rotor velocity: 0.3、 0.6、 1.5、 3、 6、 12、 30、 60RPM/min

Dimensions: 95*130*155 (not including classis)

Net weight: 2kg(not including classis)

3、 NDJ-9S

Measurement range: 10mPa.S-6,000,000mPa.S(1mPa.S=1cp)

Measurement error: $\pm 3\%$

Rotor types: 1#, 2#, 3# and 4# rotors(0# is optional accessory)

Measured Value will become larger as the rotor number grows

Rotor velocity: 0.1、 0.3、 0.6、 1.5、 3、 6、 12、 30、 60RPM/min

Dimensions: 95*130*155(not including classis)

Net weight: 2kg(not including classis)

3:Application Environment:

Environment temperature: $5^{\circ}\text{C} - 35^{\circ}\text{C}$

Relative humidity: $\leq 80\%$

Power supply: 220V, 50Hz; 110V, 60Hz

There is no electro magnetic interference, severe virbation, corrosive gas around the instrument.

4:Structure and Installation

(1) Structure

As follows:



(1) level babble (2) screen (3) cover (4) rotor protection frame
(5) the host base (6) operation key (7) rotor connector

(8) rotor (9) the host base horizontal knob

(2) Installation

1. You need to take classis, stanchion, lifting block and hand shank from the packing box. Screwing stanchions into the hole on the base. (The rack side must face to you), tiding the hand shank of viscomeler to the lifting block.
2. Adjust the tightness of up and down by swirling the up-down button, then put “T” block behind instrument into hand shank and screw them.
3. Adjust three level screws of the base to make the level bubble in the center of black circle.
4. Take off universal-joint protective cap under the main case.
5. Connect power

5:Operation

1. Prepare the liquid to be measured and put it into a round fat container or flat container with the diameter not smaller than 60mm, you need to control temperature of measured liquid correctly (It will influence viscometer directly)
2. Please reverse screw protection bracket beneath the main case.
3. Please choose the right rotor and contrarotate in the universal joint ofthe instrument
4. Adjust the lifting screw and put the rotor into the measured liquid till the level mark on the rotor reach the liquid surface.
5. Adjust the instrument in level again.
6. During the testing, the environment temperature must be stable to make sure the show value is accurate.

6: Panel operation

This instrument has eight keys: choosing rotor, setting rotor speed, ↑, ↓, stat, stop, search, confirm. Turn on the power switch, enter standby state.

Running interface

Rotor: 1#
Rotor speed: 6rpm/min
Viscometer: 377Mpa
Tem: 37.5°C

Attention: It will show viscometer and aperture angle percentage when running

Stop interface

Rotor: 4#
Rotor speed: 6rpm/min
This line will be update continually.
Tem: 24.5°C

Searching interface(3)

Rotor: 2#
Rotor speed: 12rpm/min
Finish searching
Aperture: 67.6%

Searching interface(4)

Rotor: 2#
Rotor speed: 6rpm/min
Please replace 2#
Aperture: 82.3%

Searching interface(5)

Rotor: 0#
Rotor speed: 60rpm/min
No fitting rotor or rotor
speed
Aperture: 24.5%

1. When you press the "start" key, it will enter running interface.
2. Press "choosing rotor" or "setting rotor speed" key, it will enter choosing rotor or speed interface.
3. Electrify is testing temperature and showing on.
4. The third line shows viscometer maximum.

Searching interface(6)

Rotor: 2#
Rotor speed: 12rpm/min
Finish searching
Aperture: 24.5%

1. When you press "rotor" or "rotor speed", the relevant number will shine.
2. Press "↑" or "↓", the relevant number will increase or decrease.
3. Press "confm", the relevant number will stop shining.
4. Press "start", the instrument will be in running state.

Searching interface(1)

Rotor: 1#
Rotor speed: 6rpm/min
Please choose rotor
Aperture: 00.0%

Searching interface(2)

Rotor: 1#
Rotor speed: 6rpm/min
Searching.....
Aperture: 17.3%

NDJ-1S , NDJ-5S range table

<div>Rotor Rotor speed</div>	0#	1#	2#	3#	4#
6rmb	100	1000	5000	20000	100000
12rmb	50	500	2500	10000	50000
30rmb	20	200	1000	4000	20000
60rmb	10	100	500	2000	10000

NDJ-8S , NDJ-9S range table

Rotor Rotor speed	0#	1#	2#	3#	4#
0.1rmb	6000	60000	300000	1200000	6000000
0.3rmb	2000	20000	100000	400000	2000000
0.6rmb	1000	10000	50000	200000	1000000
1.5rmb	400	4000	20000	80000	400000
3rmb	200	2000	10000	40000	200000
6rmb	100	1000	5000	20000	100000
12rmb	50	500	2500	10000	50000
30rmb	20	200	1000	4000	20000
60rmb	10	100	500	2000	10000

7: Precaution

1. Because η is viscosity's function, so the η measurement error should be controlled in $\pm 0.1^{\circ}\text{C}$ when the instrument works in the normal temperature.
2. Please look out the aperture angle percentage, its value should be kept 20%-85% . When the value is too high or too low, please change rotor or velocity. Otherwise, it will affect measurement accuracy.

3. The instrument should be used in the required range of voltage and frequency, Otherwise, it will affect measurement accuracy.
4. You should operate carefully when you put on or take off rotor. You just need to pull up the universal joints a little bit, forbidding pushing too hard.
5. After using, universal joints and rotor should be kept clean.
6. You need to drop the instrument slowly. You'd better hold it to avoid damage the axis because of vibration.
7. Universal joints should be put on protective cap when the instrument is moved or transported.
8. Turbid liquid, emulsion, high polymer material and some high viscosity liquid, which all belong non-Newtonian liquid. Their apparent viscosity and velocity are not linear relationship. So, when you use different rotors, velocity, and measurement time, their viscosity measurement may be different, not the mistake of instrument testing.
9. You will get accurate result when you do as following:
 - A. Control the tested liquid temperature accurately.
 - B. Keep environment temperature balance.
 - C. Rotor and the tested liquid must have the same temperature.
 - D. The bigger rotor, higher speed usually is used for low viscosity liquid, and high viscosity usually uses smaller, lower speed.
 - E. Keep the surface of rotor clean.

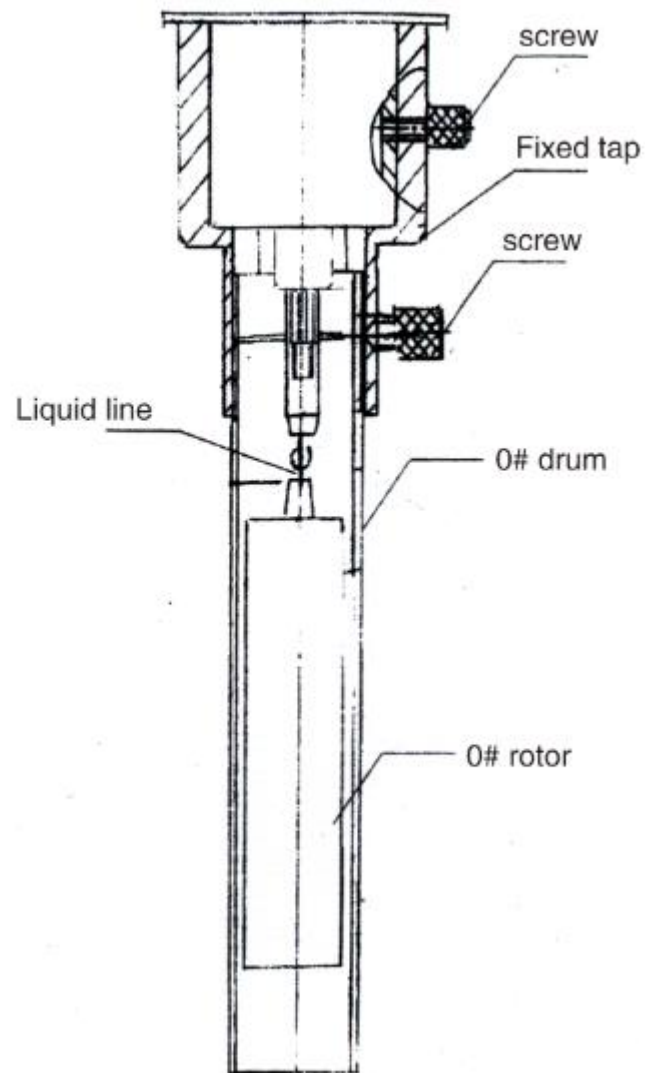
Attach: the installation step of 0#

- 1): The using of 0# must be followed as instrument operations. You will know the specification by picture.
- 2): Pouring 25-30mL tested liquid into sleeve which has bottom.
- 3): Put on the out sleeve from the bottom up and fix it. (Sleeve P9 has V-groove)
- 4): The same way to use sleeve. When the out sleeve and rotor are immersed in liquid, taking the out sleeve having V-groove inside as the liquid line of 0#.

Packing list

No.	Name	Number
1	NDJ series Digital Rotary Viscometer	1
2	Stanchion and lifting block	1
3	Protection bracket	1
4	Rotors, 1#, 2#, 3# and 4#	1
5	Power line	1
6	Operation manual	1
7	Quality certificate	1
8	Guarantee card	1

8: Attach



Installation step:

Screw 0# rotor (5); fixed tap of sleeve (2); Screw in screw (1) and fix it;

Put on size zero sleeve (4); Screw in screw (1) and fix it.