

OPERATING MANUAL

for the

fitech

Flowmeter PM 43

Flow measuring equipment

Type: PM-4300-29-N

Equipment No. 13 780.29

Prior to the first use, please follow the instructions under the
“CLEANING” section of this Operating Manual on page 6!

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fitech-Flowmeter

Applications of the **fitech**-Flowmeter

The **fitech**-Flowmeter is used for measuring the flow of high-viscous, pasty products. Depending on the product to be measured, different size nozzles may be used, however, the standard-size nozzle has a 4 mm hole, H7.

Introduction to the Operating Manual

This Operating Manual includes information on the safety, use and maintenance requirements of the **fitech**-Flowmeter.

It is to be thoroughly studied and understood by the operator of the equipment as well as all staff using the **fitech**-Flowmeter. Specific instructions and training must be provided in order to ensure a safe operation of the equipment.

The Flowmeter has been built according to the latest technical standards in all respects, also its safety. The use of the measuring equipment, although rather simple, may cause grievous physical injury to personnel working with it, should operating instructions not be followed. **Fitech** excludes any responsibility for damages or injuries whatsoever that may result from non-compliance with or non-comprehension of these instructions. Furthermore, all requirements by the operator of the plant himself and any locally applicable statutory laws, regulations, etc. that might be applicable must be adhered to.

Please note that this Operating Manual does not provide instructions on repairs that go beyond maintenance of the plant.

Safety, operation and maintenance

CAUTION: Regulations of use of laboratory equipment etc., labour laws in force at the place where the equipment is used must be strictly adhered to!

CAUTION: The Flowmeter is operated with compressed air. All necessary caution when using it is to be employed!

Protect your body against harmful incidents, your eyes with the appropriate safety glasses or goggles, the hands with the appropriate safety gloves, etc.

CAUTION: All required safety measures must be in place during the entire use of the equipment!

CAUTION: Ensure no pre-set limits are exceeded!

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Place of operation

The Flowmeter is to be carefully unpacked and checked. Should you notice any transport damage please inform us immediately. We will replace damaged parts as quickly as possible.

CAUTION: The use of a damaged Flowmeter may be the cause of grievous physical injuries to personnel operating it. fitech declines any responsibility for injuries or damages connected with a damaged Flowmeter!

To operate it, the Flowmeter is to be placed on a strong, level base (such as a solid table). For its operation a connection to compressed air only is required. Please make sure that the air supplied is dry and filtered, air pressure supplied must not exceed 5.5 bar.

Depending on where the Flowmeter is placed and space is available, the products measured, etc., additional safety measures may need to be taken or installed. Prior to its first use the operator checks the place of operation and the surrounding area thoroughly and implements additional safety measures if necessary.

Operation

Prior to its first operation, the following points must be checked:

- All screwed connections are fastened tightly, either manually where indicated, or by using the correct tools.
- All air pressure connections and fastenings are tight.
- Make sure the safety relief valve is operating properly and release follows when pressure exceeds 6 bar. Thereafter, its function must be checked periodically, also according to local as well as owner's regulations.
- The threads of the manually screwed parts like nozzle (Pos.5), nozzle carrier (Pos. 4) and measuring cylinder (Pos. 3) must be lubricated with an appropriate lubricant (such as fat). In no case must it contain Silicon and the properties of the greasing agent must be compatible with the product to be measured. The same applies each time the equipment is cleaned after measuring a product.

Preparations for measuring

CAUTION: During measuring no fastenings may ever be loosened or disconnected. The Flowmeter must be completely pressureless by switching the hand valve (Pos. 8) to OFF and checking that the pressure gage shows zero pressure!

Proceed as follows:

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1. Choose size of nozzle in accordance with the product to be measured and screw chosen nozzle (Pos. 5) manually and solidly into the nozzle carrier (Pos. 4).
2. Remove measuring cylinder (Pos. 3) from pressure cylinder (Pos. 2) by unscrewing manually. Turning the measuring cylinder upside down, the pressure plate (Pos. 6) slides out of the cylinder. Ensure it is not dropped on to a hard surface!
3. Make sure that nozzle (Pos. 5) has been screwed tightly into the nozzle carrier (Pos. 4) and latter one has been tightly screwed into the measuring cylinder (Pos. 3), tightening is to be done manually only.
4. Now fill measuring cylinder (Pos. 3) from the top with the product you intend to measure by pressing out a cartridge or filling from an other vessel. Ensure that no air bubbles are locked into the product to be measured. Leave enough room to place the pressure plate (Pos. 6) above the material.
5. Screw measuring cylinder (Pos. 3) manually tightly onto the pressure cylinder (Pos. 2). Make sure O-ring (Pos. 16) is properly positioned on the pressure cylinder so as to exclude an air leak.

CAUTION: The parts mentioned (nozzle, nozzle carrier, measure and pressure cylinders) are precision parts with very fine threads. When screwing together take care not to set threads canted against each other. All parts, including the pressure plate should be handled with care at all times.

Measurement

6. First set the Flowmeter to the desired pressure. This is attained by positioning the hand lever (Pos. 8) to 'pressure' and by subsequently adjusting pressure shown on the pressure gage (Pos. 7) to the desired pressure by adjusting the pressure regulator (Pos. 9) accordingly.
7. Position your laboratory scales, together with a vessel into which the measured product may flow, under the nozzle, tare the scales.
8. The measuring of the flow is done by starting simultaneously a stop-watch and switching the pressure on with the hand valve (Pos. 8) to ON. After reaching the desired measuring period switch off both simultaneously again, the stop-watch and the pressure valve (Pos. 8).

Please note that since the amount pressed through the nozzle is generally small, it offers you the possibility to get two to three measurements for comparison.

CAUTION: Should the product to be measured react with humidity in the air used for flow measurements, it is up to you to decide on whether to use dried air or rather nitrogen!

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Cleaning

With the conclusion of the flow measurements, the Flowmeter is to be thoroughly cleaned. Follow these steps:

- Ensure that the Flowmeter is not under pressure by making certain that hand valve (Pos. 8) is in OFF-position. Make sure reading on pressure gage is nill, then remove compressed air connection.
- Unscrew all manually screwed parts (nozzle, nozzle carrier and measuring cylinder), remove pressure plate.
- Use only cleaning agents that are compatible with the product measured and which will not harm any of the metal parts, especially the pressure plate.
- Clean the threads of the parts, including the pressure cylinder, thoroughly. It is important however, that the threads are greased again prior to remounting the parts. Use only grease which does not contain any parts of Silicon and which will not react with products to be measured. Remount cleaned and greased parts as indicated under 'Preparation for measurements'.

Your Flowmeter is now ready for further measurements, store in a well protected and clean spot.



Please call us in case of any questions or queries you might have connected with these operating instructions. We will endeavour to assist you as much as possible.

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fitech-Flowmeter – Spare parts list

Position	Description
1	Support 1.4301.G
2	Pressure cylinder 242.40.50.1.4301
3	Measurement cylinder (without cooling jacket) 90.40.50
4	Nozzle carrier 27.60.M12
5	Nozzle 2.6 mm H7 / Nozzle 4 mm H7
6	Pressure plate B.39.9.21
7	Pressure gage R ½", 0 to 6 bar 0.6. 160
8	Hand valve VHB 3/2
9	Pressure regulator R ¼", A 1000
10	Muffler R ½" / G
11	Safety release valve R ¼", K 2738.06 (pre-set to 6 bar)
12	Air pressure connection
13	Hose PE.550/300
14	Pipe CU 7.8
15	Plastic star handle with metal insert M10
16	O-ring Viton 34.59 x 2.62

