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Operating Instructions
Pneumatic Aerosol Filling Machine

General

Having purchased this pneumatic aerosol can filling machine, you are the owner of a unit of prime quality having the following features :

- All parts are protected against corrosion (stainless steel or zinc coated).
- Protective door made of unbreakable carbon glass,
- *Easy cleaning due to smooth casing surface*
- Filling quantity freely selectable.
- Many options are available.
- Easy to clean
- Safety-tested equipment in accordance with the applicable legal regulations.

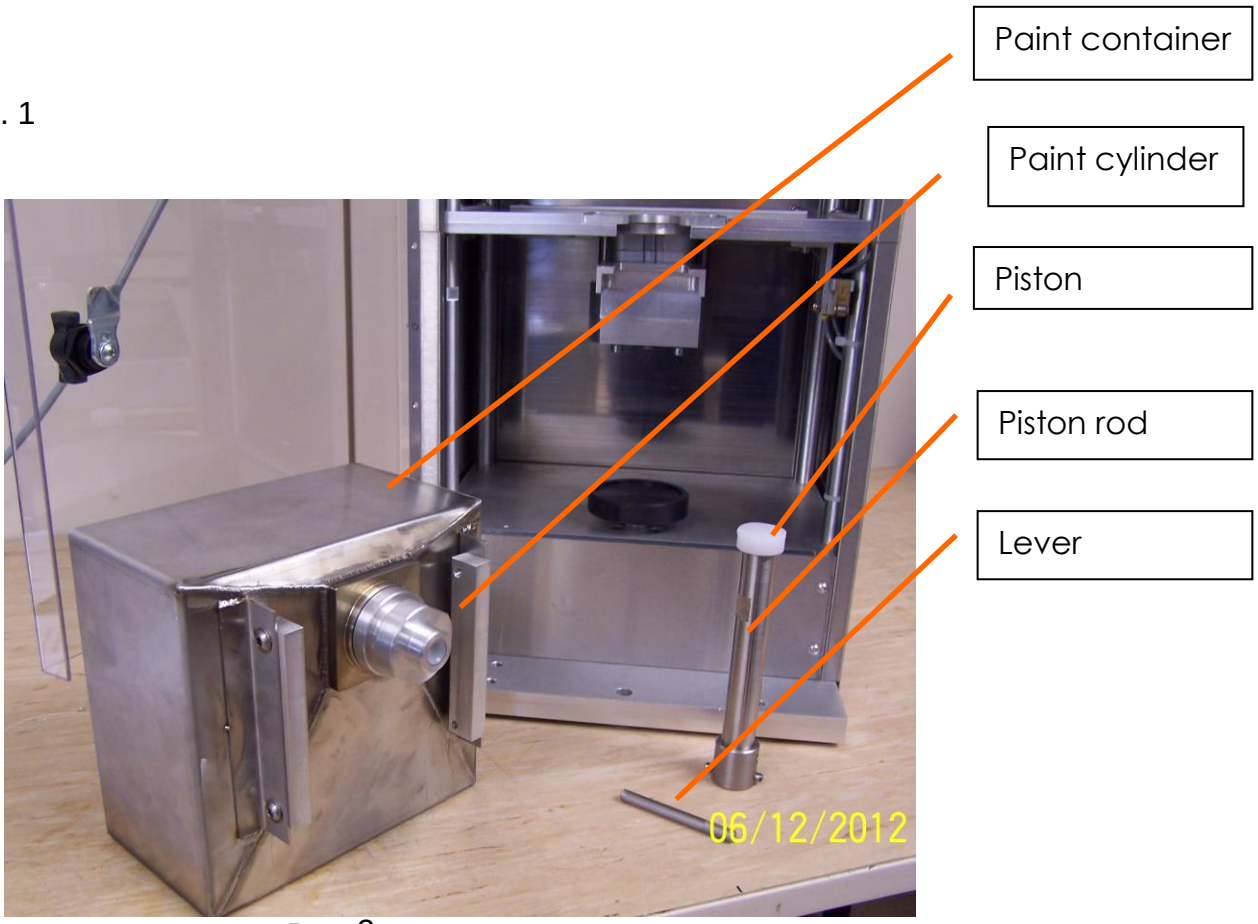
The following safety instructions must be observed when using the unit:

1. Wear protective eye glasses and breathing mask when working with the unit!
2. Ensure good ventilation !
3. Do not work with the protective door open!
4. Do not overfill cans because otherwise the cans may burst! The maximum permitted filling level is 160 ml !
5. Only fill permitted media. Permitted are varnishes, primers and related material such as hardeners, converters or thinners.
6. You must ensure that no material is used whose inflammation point is < 235°C.
7. Use only aerosol cans that were manufactured empty for posterior filling. **Do not fill several times!**
8. Observe the safety rules concerning the media to be filled!
9. Poisonous or carcinogenic materials or halogenated hydrocarbons are not allowed to be filled in aerosol cans!
10. Do not smoke, eat or drink during work!
11. Keep a fire extinguisher ready for use next to the place of utilisation!
12. You should only use oil-free, dry air at a pressure of between 2 to 8 bars, filtered at 5 µm.

Start-up

- Remove the unit from its packaging.
- Remove the protective cover sheet.
- Set up the unit in a vertical position.
- Connect the pneumatic hose and use the air connector to connect it to the air supply.
- Use four appropriate screws to mount the unit on the support sur- face. The best way of mounting the unit is to fix it on the support base available for this purpose (see list of accessories) which is also useful for subsequent attachments.
- Open the protective door and insert the paint container into the unit
- Your equipment is now ready for operation.

Fig. 1



Controls and indicators

The controls are in the upper part on the front of the unit.
The unit comes from the factory with the operating pressure set at 6 bars. If the pressure needs to be corrected, the upper cover must be removed. The pneumatic control is underneath. The pressure control is located at the air inlet on the outer left side (see fig. 3). A modification of the pressure is possible after unlocking the rotary knob (by pulling it up). A right turn increases the pressure whereas a left turn decreases it. After correcting, relock the knob (by pushing it down).

Attention!

The pressure downstream of the pressure control assembly is at the most as high as the supply pressure upstream!

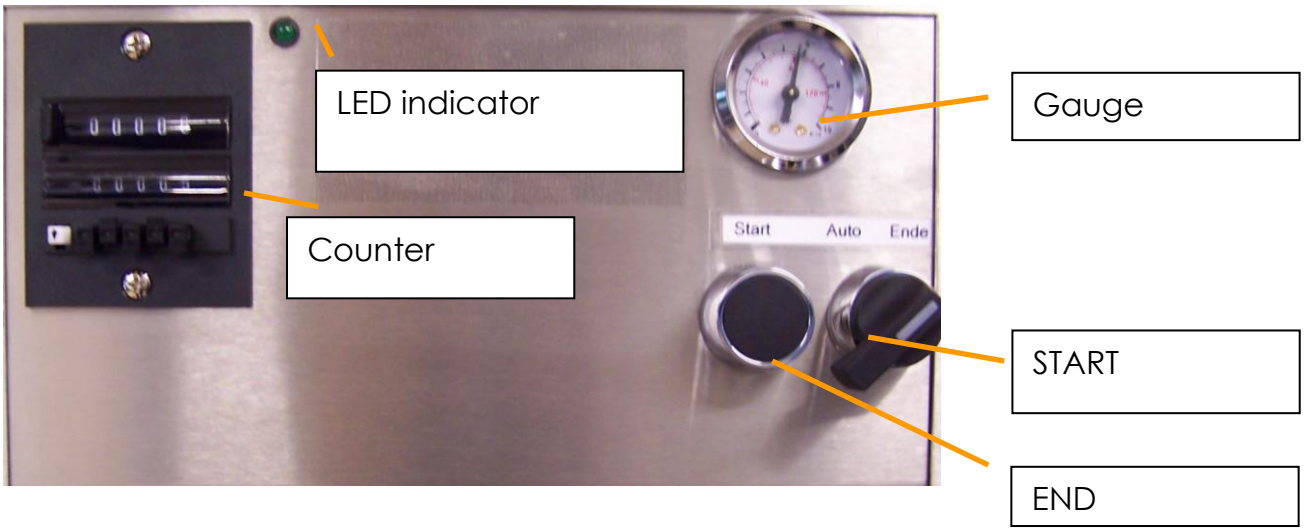


Fig. 2

These few elements allow for a very uncomplicated operation of this machine without any need for specialised training. You should however take care not to allow anybody but authorised persons who are familiar with using the relevant agents to operate the machine.

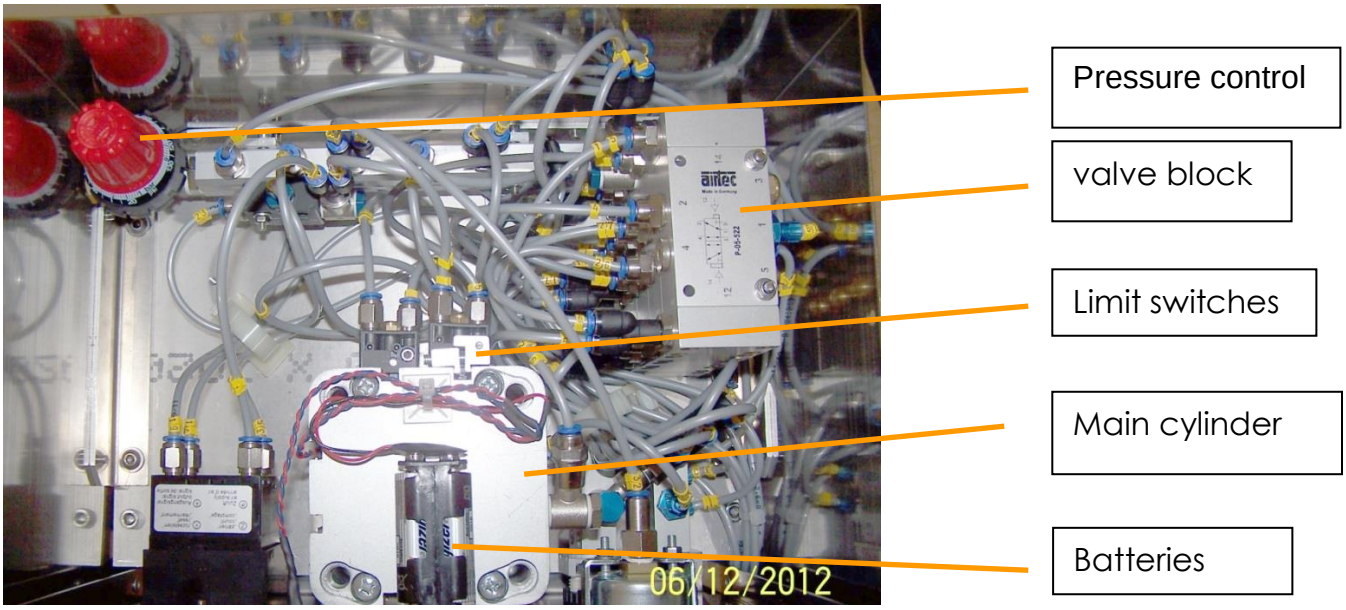


Fig. 3

Operation

- Remove the protective covers of the aerosol cans.
- Pull off the spray heads.
- Select the appropriate upper support part (see Fig.4).
- Place the upper part on the support base (see Fig.5)
- Select the fork suiting the spray can and mount it (see Fig. 6)
- Insert the paint container and the piston rod into the unit (see Fig 7).
- Insert the piston rod into the groove at the piston rod head an press upwards.
- Hold the piston rod head at the knurled the piston rod by the pin which is fitted in the hole in the piston rod until it locks into place (see fig. 8).

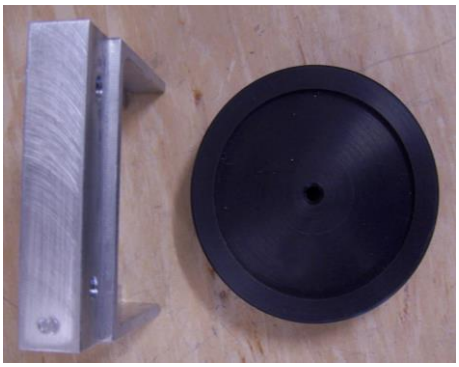


Fig. 4

Fig. 5

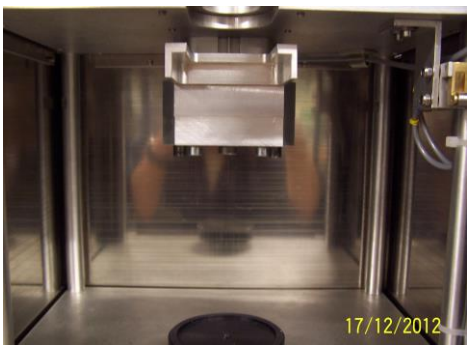


Fig. 6

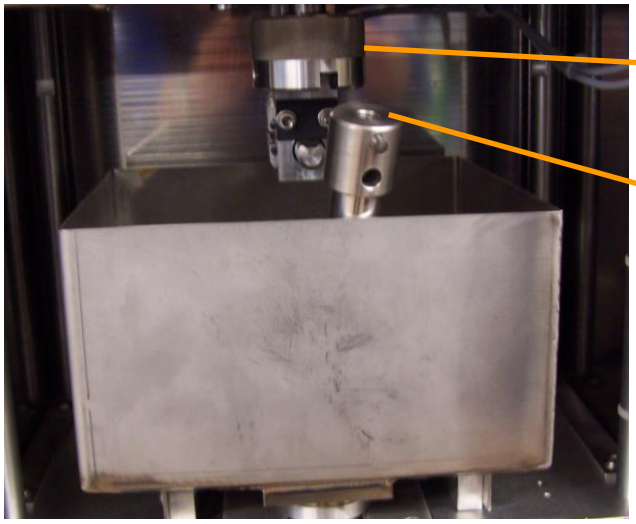


Fig. 7

Fig. 8

- Set the counter to the value 0001 (see description of counter in the separate document).
- Close the door.
- END – turn this switch to the left position.
- Push the START button
- The piston will do one stroke and stop in the cylinder area. The green LED display will be continuously illuminated.
- Open the door and turn the paint contain- er to the front position.
- Fill in the paint (see fig. 9)
- Turn the container back to its initial position.
- Put the can to be filled into the unit.
- Close the door and lock. The can will be pushed upward automatically as the door is closed.
- Alternativ you can also solve the piston rod head and turn the END-switch from AUTO to ENDE after closing the door. Afterwards you take out the paint container out oft he unit and fill it outside. After putting back the paint container in the unit, you have to lock the piston rod again. This procedure is good for filling out of big containers.

Fig. 9

- Set the counter to the required value i.e. the number of strokes corresponding to the quantity of paint to be filled in to the paint cylinder. Depending on the type of cylinder (3, 5 or 10 ml), different settings are required. The number of strokes is to be calculated using the formula below.

Number of strokes = required filling volume / size of the paint cylinder

The size of the paint cylinder is indicated on the surface on the lower edge. A 25l cylinder always comes with the initial delivery.

Attention !!
A wrong setting of the number of strokes may result in overfilling and bursting of the can.

- Press the START – button – the filling procedure runs automatically.
- When the green LED – display is continuously illuminated the filling pro cedure is completed.
- Open the door. The can is held on the base by the can detaching device and stands free in the ma- chine.
- Lift the can off the machine.
- Remove the can from the unit.
- Repeat the procedure until the required number of cans are filled or the paint supply is depleted.
  The paint supply must be sufficient for the piston to remain partly immersed when retracting. Otherwise the result would be filling errors. Supplementary filling is possible after each completed filling cycle.
- While the next filling procedure is running, dab the can valve clean with a cloth and remount the spray head and the protective cap of the can

- Use appropriate means such as adhesive labels to indicate the paint, date of filling, place of filling (stamp) and signature of the filling operator.
- If the filling procedure is interrupted by the door being opened (e.g. to eliminate a fault), it does not have to be restarted, but it continues after the door is closed)
- If the number-of-strokes setting is changed between two filling procedures, this new setting takes effect in the following filling cycle. Any such modification made while filling is in progress may entail malfunctions.
- When the filling procedure is completed, the piston rod head is detached after the last can has been removed.
- Close the door and turn the END switch to the right. The cylinder with the piston rod head moves to the upper end position (see Fig. 10).
- Open the door and remove the paint container with the remaining paint from the unit.

-Now the remaining paint can be emptied from the container (see Fig. 11).-

- Open the door and remove the paint container with the remaining paint from the unit.
- Now the remaining paint can be emptied from the container (see Fig. 11).
- Remove the piston rod with the rod from the paint cylinder. This is either done manually or by re-inserting the container into the unit.
- After changing the END switch position the piston rod head can be pulled downward and be refitted to the piston rod. After closing the door and turning the END switch back to the right position, the piston rod is pulled from the cylinder and can be removed from the piston rod head after the door has been opened.

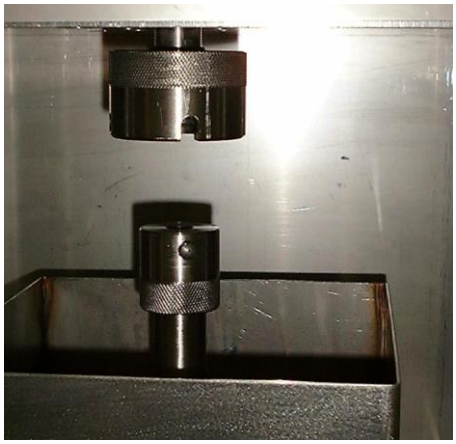


Fig. 10

Fig. 11

Attention!
Before removing the piston, place a cloth or a container on the base surface to capture the paint rest that might occur during removal.

Cleaning

- When the filling procedure is completed, the unit is to be cleaned immediately, because dried rests are hard to remove.
- Detach the piston by turning the piston rod to the left and clean the piston rod, the piston and, if required, the interior of the unit with a cloth and some solvent. If the machine has a Macrolon door do not apply any solvent.
- Detach the paint cylinder from the paint container and clean these parts as well, most thoroughly by immersing in a solvent bath or using a brush.

Replacing the piston

- Depending on the consistency of the media used and the related friction, the piston will be subject to wear. This will result in the leakage of liquid above the piston during filling. This can be best seen from traces of movements on the sur- face of the paint in the container. The piston must be replaced when this occurs.

Included in the scope of delivery are two spare pistons for replacement.

ATTENTION !!

Do not use a tool on the piston because the materials used are very sensitive and there is a risk of damage or deformation!!

Troubleshooting

Error/Fault	Cause	Elimination
Equipment does not start up	- Device in undefined status. - No air - No can in the machine	- Reset counter to 0 and close door. - Connect air supply - Insert can
Can lifter moves up, ma- chine stops working.	- Misadjustment or fault of limit switch oncan lifter. - Can does not have correct dimensions - Misadjustment or fault of upper limit	- Readjust or replace limit switch - Check up on can - Readjust or replace limit switch
Machine does a stroke but halts on lower posi- tion.	- Misadjustment or fault of upper limit switch of the main cylinder.	- Readjust or replace limit switch

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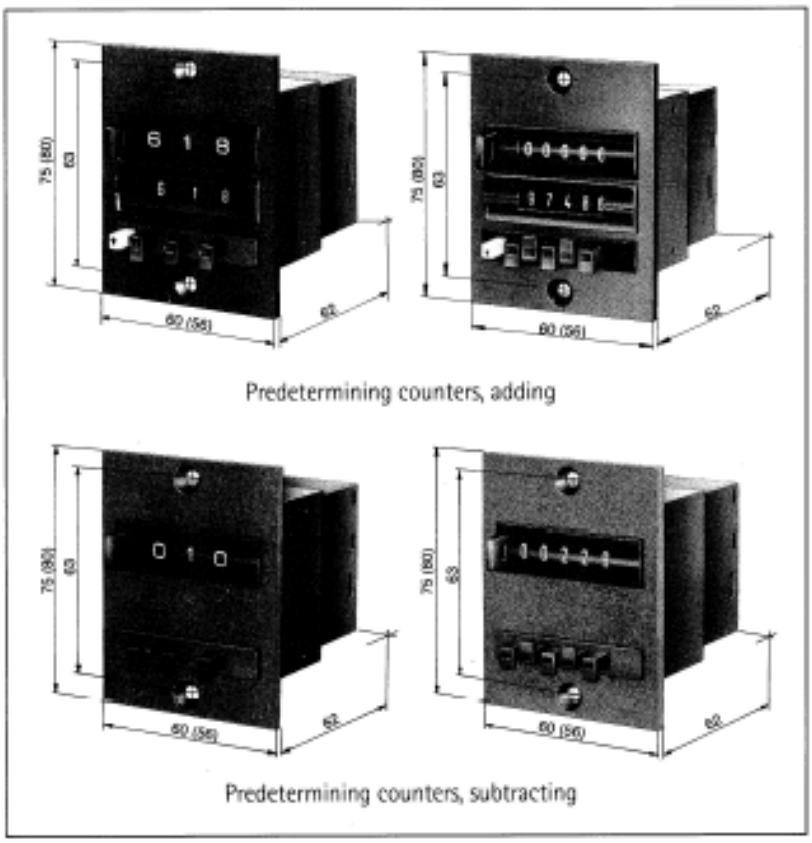


Operating instructions

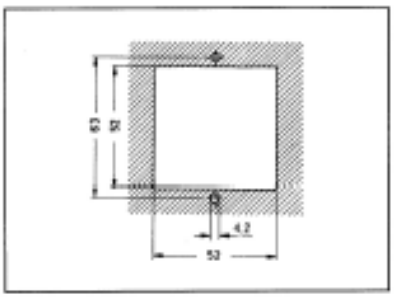
Pneumatic Predetermining Counters

Trouble-free reliable counting performance will only be assured if the notes in these instructions are read carefully and precisely adhered to.

Applications
Pneumatic present counters are used for controlling and monitoring operating sequences capable of being expressed as numbers in pneumatic circuits, systems or equipment.
After the counter has counted the preset number of pneumatic pulses, which can represent a number of items or a number of operating cycles, it emits a pneumatic output signal which is used to start the next following process or operation.

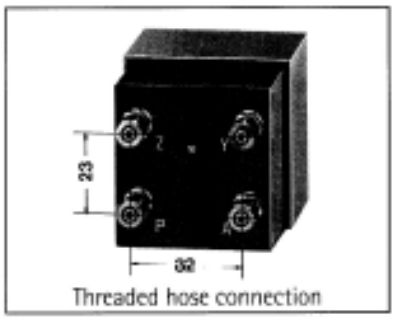
The preset value can be selected anywhere between 1 an 99 999.

Installation
These preset pneumatic counters are suitable for mounting in a front panel.
Panel cut-out: 52 mm x 52 mm
Hole separation (centres): 63 mm
Fastened by means of two countersunk screws (supplied), M 4 thread.



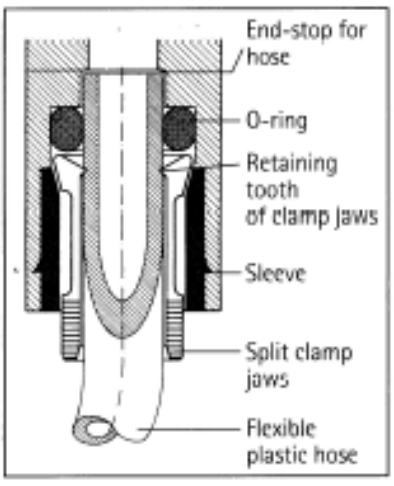
Note
Please check that the panel cut-out is large enough, and that the counter, when built in, is free of any mechanical tensions or strains.

Connector options
The predetermining counters are available either with thread or quick-plug connection.



Threaded connections
The thread connections M 5 rend possible to connect the predetermining counters with any kind of plastic tube by means of commercial screw fittings.

Rapid-fit connectors

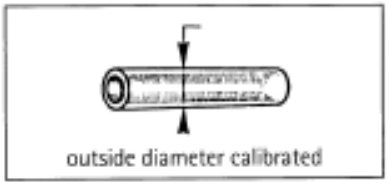


All hoses are simply pushed into the rapid-fit connections. Take care that the hose has been pushed right in as far as it will go, so that the O-ring inside provides a proper seal. To undo the hose, simple press on the guid ring (e.g. with as screwdriver) and at the same time pull the hose out.

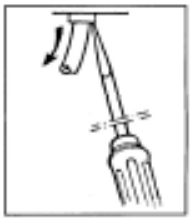
The hose used must be of precise calibrated outside diameter in accordance with the CETOP standard.

+ 0.05
diam. 4 mm
– 0.07

We recommend hoses of polyamide (e.g. brand 'Rilsan')



use a universal tool to undo the connection hose



use a screwdriver to undo the connected hose

Note
Take care to ensure that only calibrated hoses are used, that they have been cut exactly at right-angles, and that the hose is pushed right into the socket as far as it will go.

Working principle
The pneumatic preset counter consists of a mechanical drive system, a mechanical system of digit wheels, and a pneumatic limit switch. The count pulses for the counter are pneumatic (compressed-air) pulses which come from a pulse source. The connection Z is used to feed the compressed-air pulses onto the piston of the drive system. The rod of this piston operates a C-piece which is in loose contact with the actuating rocker, which it operates. Each compressed-air pulse causes the actuating rocker to move the 'units' digit wheel by one-half of a digit and at the same time to tension a spring, which, during the period of low pressure after the pulse, moves the digit wheel the remaining half-step onwards.

Output signal
The output signal is given when: air pressure is applied to connection P, the preset count has been reached, and the reset is not actuated.
On connection A the output signal stands till the counter is reset by push-button or pneumatically.

Note
The output signal A from the counter cannot be used directly to reset the counter (reset input Y).

Resetting
The counter can be reset either by pressing the reset pushbutton or by applying a pneumatic signal to connection Y.

Note
The resetting process (connecting Y) must be properly completed before Z is switched in again.

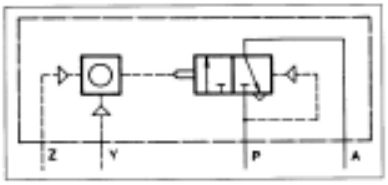
Input signals
The following forms of signal source for the count pulses (input Z) and the reset pulses (input Y) can be used:

- mechanically operated valves
- manually operated valves
- pneumatically operated valves
- electrically operated valves
- sensors (transducers)
- or general pneumatic signals, provided they are in the correct range of pressure and in the correct range of counting rate.

The count, or the reset operation is by applying presure to the corresponding input (Z or Y respectively) and releasing it again (3/2-way functioning).

Pneumatic resetting can only be carried out with no air pressure on the Z line. Any count pulses which arrive while the resetting signal is present will not be detected or counted.

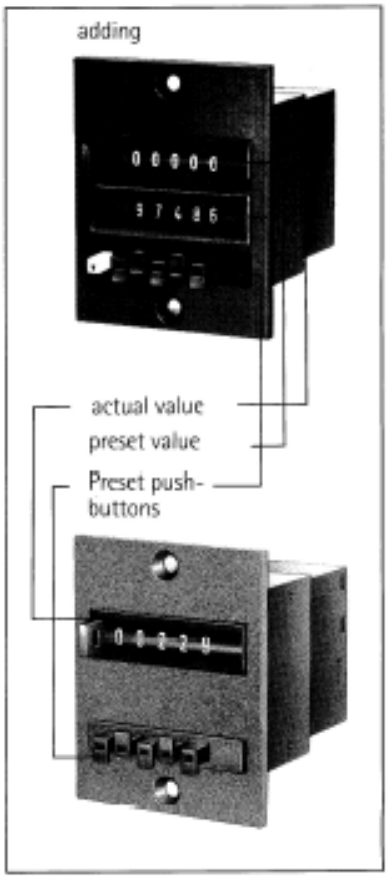
Connections



Z input for count pulse
Y input for reset pulse
P air input
A output signal (set time has elapsed)

Front view
of the pneumatic preset counter. Each digit of the preset count figure can be set independently.

Indication



Setting of adding predetermining counters
Turn white lever as shown by the arrow and hold it. Set the desired figures with the corresponding keys. Release white lever.

Setting of subtracting predetermining counters
Press reset button and at the same time enter the desired preset figure by means of the preset keys.

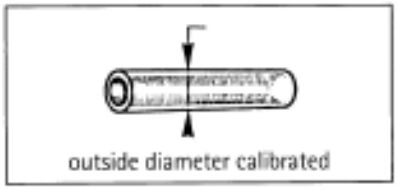
How to use the protective cover
If the counter is to be used in a very dirty environment, we strongly recommend that the protective cover be used. The protective cover can be opened after the key has been turned 1/4 of a revolution anticlockwise. The key cannot be withdrawn while the cover is unlocked.

Protection cover, protection class IP 55
as dust and splash water proof version, suited for all predetermining counters in front panel version with the front dimensions 60 x 75 mm.
By loosening the 2 fixing screws the predetermining counters can be fitted at any time with the protection cover.

The hose used must be of precise calibrated outside diameter in accordance with the CETOP standard.

+ 0.05
diam. 4 mm
– 0.07

We recommend hoses of polyamide (e.g. brand 'Rilsan')



use a universal tool to undo the connection hose

use a screwdriver to undo the connected hose

Note
Take care to ensure that only calibrated hoses are used, that they have been cut exactly at right-angles, and that the hose is pushed right into the socket as far as it will go.

Working principle
The pneumatic preset counter consists of a mechanical drive system, a mechanical system of digit wheels, and a pneumatic limit switch. The count pulses for the counter are pneumatic (compressed-air) pulses which come from a pulse source. The connection Z is used to feed the compressed-air pulses onto the piston of the drive system. The rod of this piston operates a C-piece which is in loose contact with the actuating rocker, which it operates. Each compressed-air pulse causes the actuating rocker to move the 'units' digit wheel by one-half of a digit and at the same time to tension a spring, which, during the period of low pressure after the pulse, moves the digit wheel the remaining half-step onwards.

Output signal
The output signal is given when: air pressure is applied to connection P, the preset count has been reached, and the reset is not actuated.
On connection A the output signal stands till the counter is reset by pushbutton or pneumatically.

Note
The output signal A from the counter cannot be used directly to reset the counter (reset input Y).

Resetting
The counter can be reset either by pressing the reset pushbutton or by applying a pneumatic signal to connection Y.

Note
The resetting process (connecting Y) must be properly completed before Z is switched in again.

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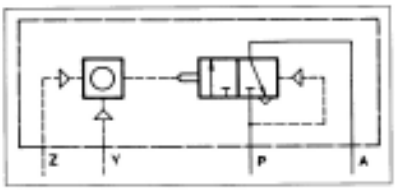

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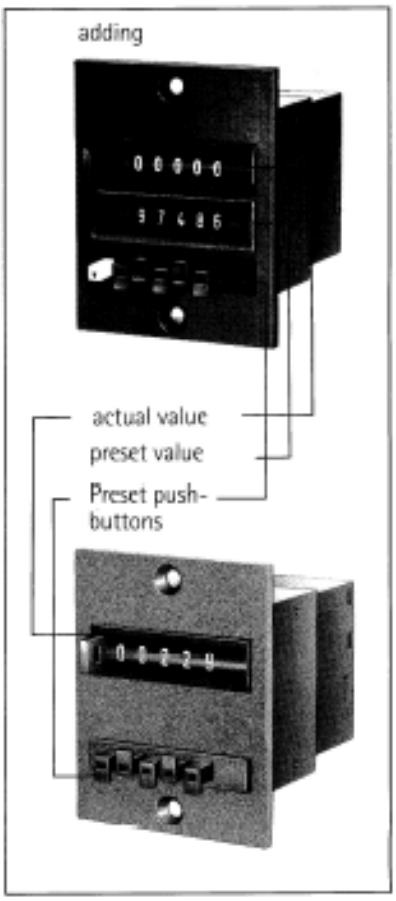

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