

APPLICATION

- For control and remote measuring of temperature, pressure and humidity, when used in conjunction with the corresponding measuring transmitter (signal 0,2...1,0 bar).

INSTALLATION

- Suitable for panels, switch cabinet doors, cabinets (rail fixing) and walls.
- For panel mounting the bracket as shown in fig. 1 is provided.
- For rail and wall mounting the fixing bracket (4) is folded outwards and the complete insert is pulled out. The fixing holes for 6 mm \varnothing screws are located in the base of the case.
- The ambient temp. should not fall below 0 °C or rise above +55 °C.

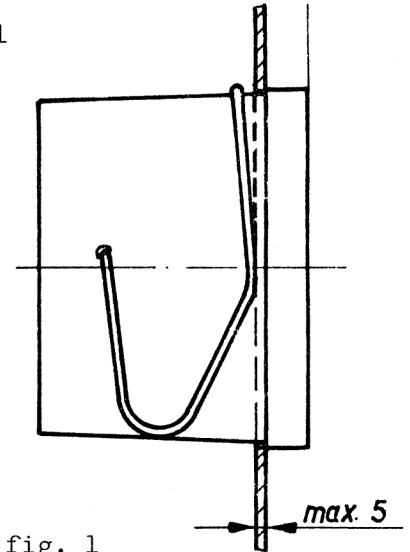


fig. 1

INSTALLATION OF GAUGES RESP. MEASURING CONNECTIONS

- A reference guide is on the inside of the door to mark measuring ranges of gauges and inputs.
- To assemble the gauge, remove covering hood (3) carefully, (corresponding reference number on the left of the cover) until the pipe, fixed on the rear, can be removed. Reconnect the pipe onto the gauge and press the complete unit into the corresponding cut-out.
- With the cascade controller RCP 31 are 2 pipes connected to the top cover plate. In the delivered condition the top measuring connection is used to measure the controlled variable (connection 4). When assembling a gauge the central pipe is connected to the gauge and the other pipe to the blank plug. The tubes mentioned must be changed over when the command variable (connection 5) must be indicated.
- After mounting of gauges remove insert and check that the pipes are not buckled.

CONNECTION

- The thoroughly cleaned pipes (6 x 1 mm) should be connected with a plastic nipple (G 1/8"). The pipe connections must be completely sealed. For sealing use PTFE strip or sealing stick (part no. 297169) but not loctite.
- The restrictors for the actual value detector (connections 3 and 4 are incorporated in the Centair Controller. It is preferred to use an external restrictor for the air supply to the control detector (connection 5).
- For information regarding the condition of the air supply 1,3 bar \pm 0,1 especially at low ambient temperatures, see Installation Instructions MV 01.1.

OPERATION

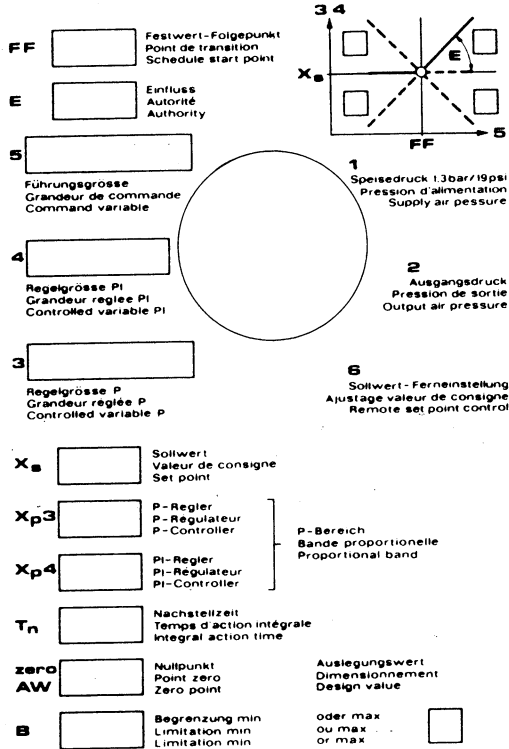
- The measuring transmitters connected to the control unit, convert the corresponding measuring values, within their setting ranges, into a pneumatic signal of 0,2...1 bar. These input signals are used for the indicating gauges as well as for the controller. The controller converts the input signals into the corresponding output signal.

For plant diagrams and characteristic curves see catalogue.

COMMISSIONING

- As a help for subsequent checks the note-table on the inside of the door should be lettered as follows:

- a) The adjusted values (short rectangular lettering labels)
- b) The measuring ranges (long rectangular lettering labels)
- c) Special functions (by ticking off the corresponding quadrat)



I = Control action of the characteristic of command variable or connecting of the limiter of type RCP 20.
 II = Control action of the controller

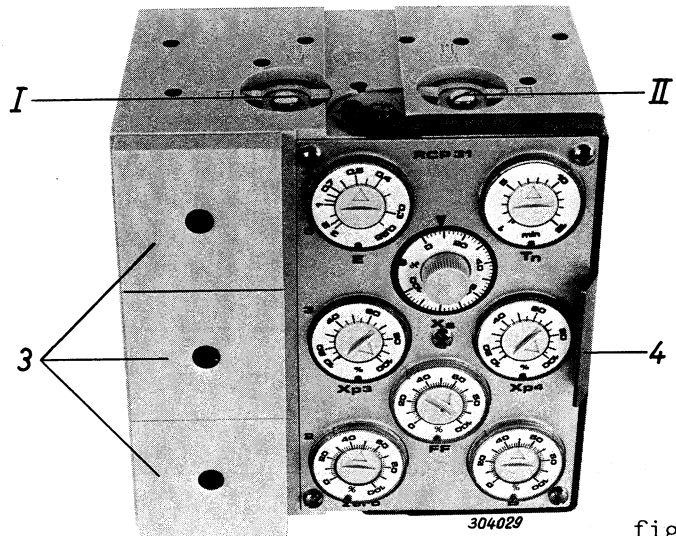


fig. 2

A Setting of the control action

- The control action can be set by turning the pointers on the top of the insert (see fig. 2, I and II).

B Setting of the proportional range

- The required P-range is set with the help of a coin on the setting knob Xp according to the type of control: Xp3 = P-range of P-controller, Xp4 = P-range of PI-controller.
- The P-range is expressed in %. The calculation of Xp in % is as follows:

$$Xp \% = \frac{100 \cdot Xp}{SP}$$

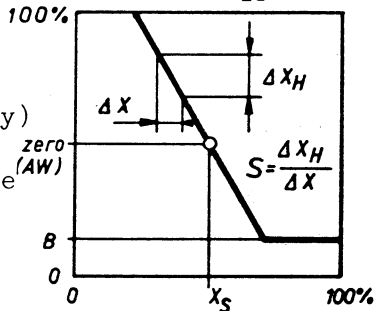
Xp = P-range in °C, bar, % r.h. etc.
 SP = Measuring span of measuring transmitter

- In case of cascade control (for types RCP 30 and 31 only) the characteristic slope S is also set by means of the adjuster Xp3. The following formula is used to calculate the set value (in %):

$$Xp \% = \frac{SP_4}{SP_3} \cdot \frac{100}{S}$$

- SP 3 = measuring span of the transmitter connection 3 (P)
- SP 4 = measuring span of the transmitter connection 4 (PI)
- S = see diagram

aux. control value X_H (connection 4)
 e.g. air temp. ϑ_{ZL}



main control value X (connection 3)
 e.g. exhaust air temp. ϑ_{FL}

C Setting of the "Zero" point (for types RCP 20, 21, 30 and 31 only)

Adjusting of the P-band makes the characteristic slopes of the P-controller turn around the "zero" point.

The latter is factory set to 0.6 bar (50 %) and it should only be altered if for the cascade control a defined design value (AW) is prescribed.

D Setting of the actual value "x_s"

- Hand setting in %:

A %age scale on the actual value setting knob x_s is fitted as standard. See nomogram page 4 for physical values of transmitted measuring signal.

- Hand setting in °C, bar, % r.h. etc:

Select the corresponding transmitter scale from the enclosed plastic bag. (see diagram or data-plate of the transmitter). Set actual value knob to 0 %. Remove scale cover with inserted paperscale (without turning the knob) with a pointed object. Insert new scale and fix to ensure that the setting knob is positioned at 0 %.

- Remote setting:

The actual value can also be set from 0 to 100 % with a pressure signal of 0,2...1,0 bar on input 6. In this case the setting knob x_s must be set to 0 %. Failing to do so will result in a minimum limitation of the setting x_s.

E Setting of the resetting time "T_n" (only for the types RCP 10, 11, 30 and 31)

The resetting time can be set at the setting facility T_n in minutes. The following rule applies: T_n = 3 times dead-time of the plant.

F Setting of the limiter "B" (only for the types RCP 20, 30 and 31)

Set the required minimum limit value on setting facility B. See nomogram page 4 for physical values of transmitted measuring signal.

For type RCP 20 the outlet pressure is limited. The limiter is in operation if the switch I on top of the insert is in position B.

For type RCP 30 and 31 the actual value of the PI-controller is limited (range = same as measuring transmitter input 4).

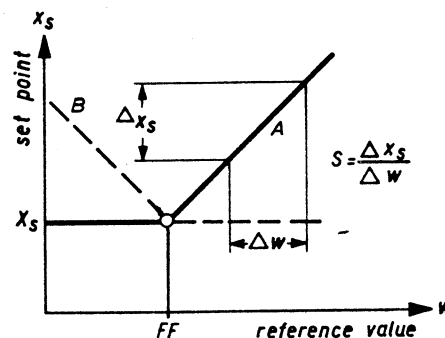
G Setting of the influence "E"

(only for the types RCP 11, 21 and 31)

The influence of the reference signal, input 5, regarding the control signal can be set as a factor on the setting facility E. The calculation of the influence E is according to the following formula:

$$E = \frac{SP \text{ (measuring span) reference transmitter}}{SP \text{ (measuring span) actual value transmitter}} \cdot S$$

Changing the control action selector I to position B will also change the control action of reference characteristic (dotted line).



H Setting of the schedule start point: FF

The start of a set-value change via the guide sensor must be set via the setting facility FF in %. See nomogram page 4 for physical values of governing transmitter (measuring transmitter input 5).

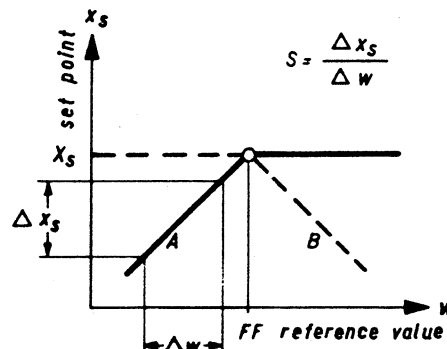
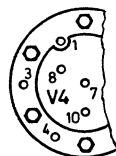
I Reference characteristic with max. limit

The characteristics shown on the right can be obtained simply by changing the connections of 2 tubes.

Setting and conversion is as described in paragraphs G and H.

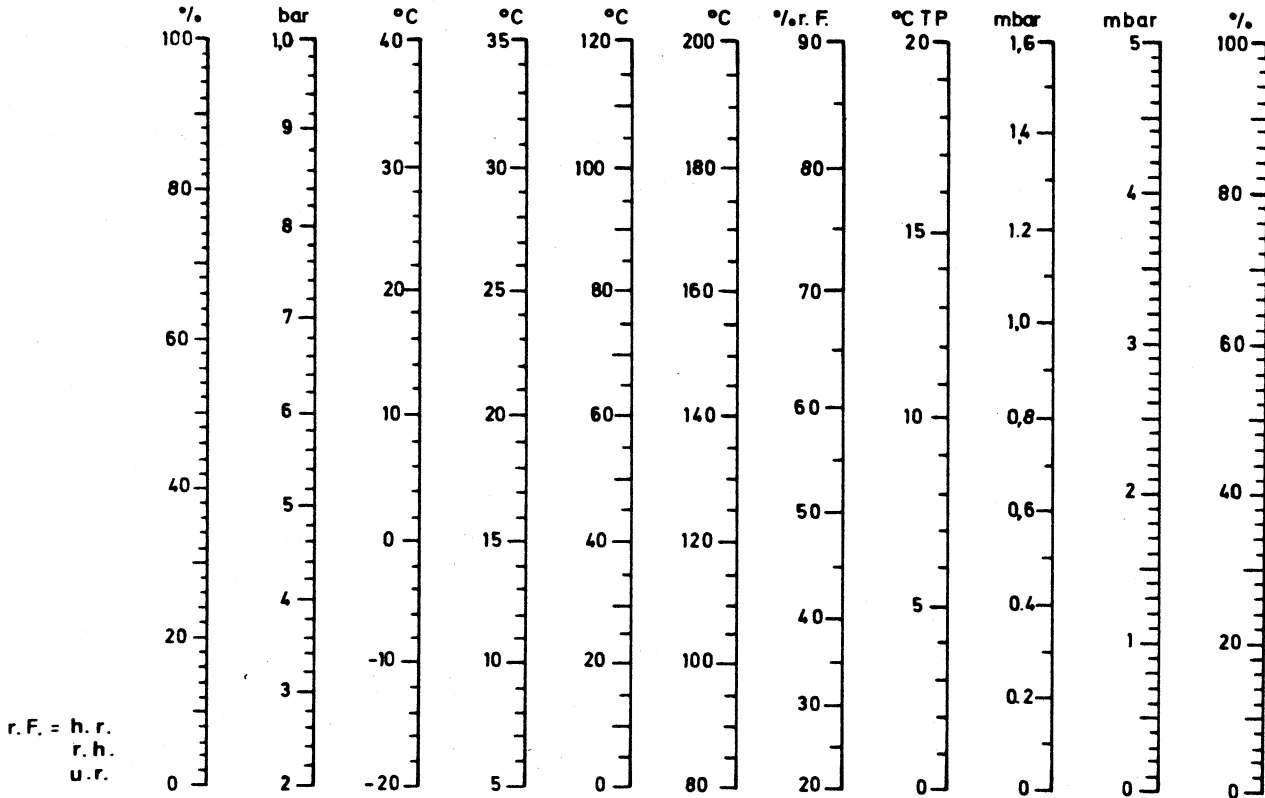
Changing the connections:

Remove main insert. The nipples in question are to be found on the amplifier behind the middle indicating gauge resp. measuring connection. Remove tube from nipple 1 and connect to blank nipple 10. Remove tube from nipple 8 and reconnect to the now free nipple 1. Tick off the selected function on the note-table (inside of the door)!



» CENTAIR «

Umrechnung der Messbereiche:
 Conversion des domaines de mesure:
 Conversion of measuring ranges:
 Conversione dei campi di misura:



RECALIBRATION

- Eventual recalibration as follows:

Adjuster x_s

Hold the knob tight and with a pointed object turn the scale at its circumference.

Adjuster FF, zero and B

Scale is repositioned by turning it at its circumference.

Adjusters E, T_n and X_p have fixed scales.