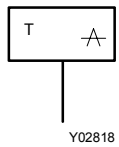
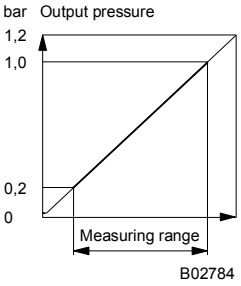
## TUP: Stem-type temperature transducer

For measuring the temperature of liquid or gaseous media in conjunction with pneumatic *centair* control systems.
Housing of light alloy; force-balance system with nozzle-ball. Measuring element: stainless-steel tubing Ø 6 mm, filled with expansion fluid; diaphragm box; lever system with spring converter. Cover of thermoplastic; compressed-air connection Rp ⅛, female thread.


| Type | Measuring range °C | Length of stem total mm | Length of stem active mm | Temp. range of sensor °C | Weight kg |
|---|---|---|---|---|---|
| **TUP 214 F001** | –20...40 | 304 | 201 | –25...70 | 0.16 |
| **TUP 224 F001** | 5...35 | 304 | 201 | –25...70 | 0.16 |
| **TUP 242 F001** | 0...120 | 214 | 112 | –25...150 | 0.15 |
| **TUP 262 F001** | 80...200 | 214 | 112 | –25...210 | 0.15 |

| | | | |
|---|---|---|---|
| Supply pressure [1] | | Time constant in air | 0.5 m/s 3.2 min |
| via external restrictor Ø 0.2 mm | 1.3 ± 0.1 bar | | 3.0 m/s 1.6 min |
| Output pressure | 0.2...1.0 bar | Influence of temp. at head | |
| Air consumption | 33 $l_n$/h | TUP 214, TUP 224 | 0.07 K/K |
| Linearity | < 2% | TUP 242, TUP 262 | 0.12 K/K |
| Time constant in water | | Permissible ambient temp. | 0...70 °C |
| without sheath | 12 s | Connection diagram | A02781 |
| with sheath | 70 s | Dimension drawing | M297632 |
| sheath and heat-conducting paste | 25 s | Fitting instructions | MV 23210 |




### Accessories

**0226807 300*** LW7 sheath of brass, 300 mm, for TUP 214/224 with R½ thread; max. 16 bar [2].
**0226807 225*** LW7 sheath of brass, 225 mm, for TUP 242/262 with R½ thread; LW7 max. 16 bar [2].
**0226811 300*** LW7 sheath of stainless-steel, 300 mm, for TUP 214/224 with G½ A; max. 25 bar [2].
**0226811 225*** LW7 sheath of stainless-steel, 225 mm, for TUP 242/262 with G½ A; max. 25 bar [2].
**0364263 000*** Welding bushing of steel, with G½ female thread; flat seal of copper [2].
**0364264 000*** Welding bushing of stainless-steel, with G½ female thread; flat seal of copper and Teflon (for aggressive media) [2].
**0297631 000*** Fixing flange of thermoplastic for direct fitting onto air duct.

*) Dimension drawing for accessory is available under the same number.

1) In the RCP and RPP 20 controllers, the restrictors Ø 0.2 mm are fitted at inputs 3 and 4.
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
2) See page 29.01 or 29.001 for further technical details.

### Operation

The expansion fluid in the immersion stem expands when heated and exerts a proportional pressure on the diaphragm box. This is converted by spring converter into a force acting on the force-comparison lever. The bleed-off nozzle-ball system converts this force into a pressure change. When the pressure is rising, the output pressure also rises.

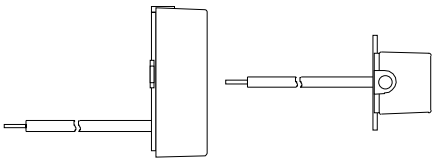
### Engineering and fitting instructions

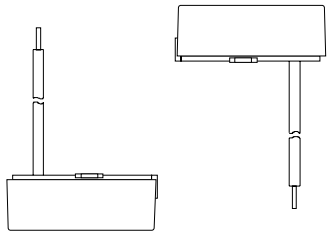
The positional effect can be negated by making the necessary adjustment of the screw in the centre of the diaphragm box. The tension of the spring converter should not be altered, because the measuring span is unaffected by either fitting or use.

### Technical information

Technical manual: *centair* system 304991 003

### Permissible fitting positions

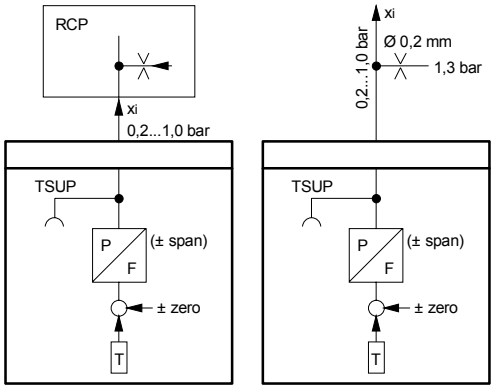




Lageeinfluss nachjustieren
Influence de la position de montage à ajuster
Adjust with screw

B02819

### Connection diagram

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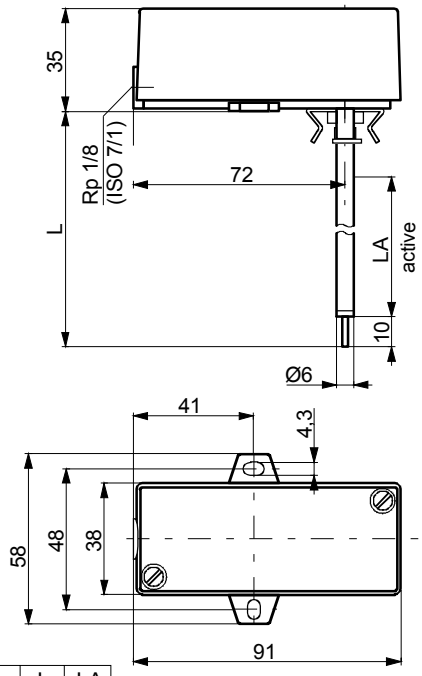
### Dimension drawing

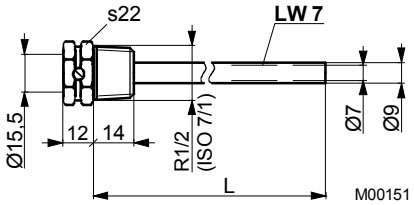



| TYP | L | LA |
|---|---|---|
| TUP 214 | 304 | 201 |
| TUP 224 | 304 | 201 |
| TUP 242 | 214 | 112 |
| TUP 262 | 214 | 112 |

M297632

### Accessories

226807/ . . .
226809/ . . .

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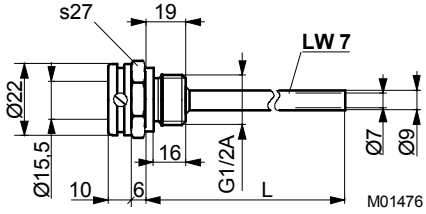
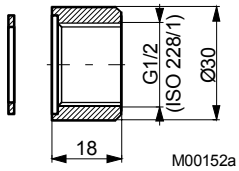
226811/ . . .



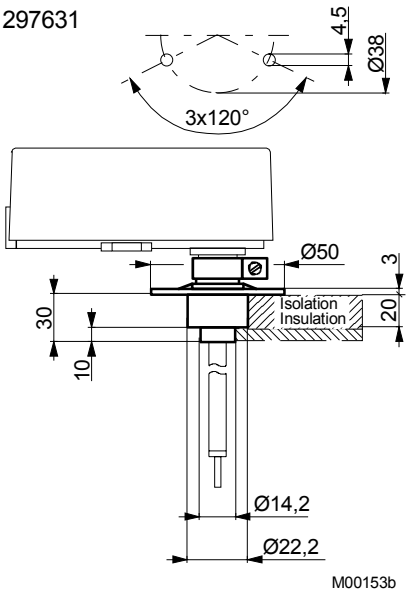

M01476

364263
364264




M00152a

297631

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