NAVISTAT

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for the measurement of pressure and temperature.



Applications

- Shipbuilding
- Engine manufacturing
- Railways

Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65
- Any mounting position possible

12/2025
Data sheet H72111r
Subject to change

Technical Data			
Designation of application	Thermostat for shipbuilding	Switching differential	Not adjustable
Measuring range	-10°C ... +80°C to +40°C ... +300°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	Marine EU RO MR Type Approval

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trafag controls india pvt ltd

Ordering information/type code

		XXX .	XX	XX	XXX	XX	XXXX	XXXX	XX	XX
Custom build code	Controller, increased vibration resistance	471 .	23							
	Controller, high vibration resistance [1]	471 .	26							
	Temperature switch with locking, high vibration resistance [2]	472 .	12							
Range	**Range [°C]** / **Sensor max. [°C]**									
	-10 ... 80 [3] / 85			95						
	+20 ... 110 / 115			23						
	+20 ... 150 / 165			31						
	+20 ... 230 / 250			24						
	+40 ... 300 / 330			53						
Sensor	See table "Ordering-no. for sensors"				XXX					
Fixing	Version B (remote sensing version)					27				
	Version K (direct mounting version) [1]					14				
	Grubscrew locked with spacer (cooling element) (for direct mounting version)					18				
Protection tube	See data sheet www.trafag.com/H72163						XXXX			
Protection tube length [2]	Length G see data sheet www.trafag.com/H72163							XXXX		
Accessories	Switchpoint fixed and sealed upon customer's request								88	
	Switchpoint preset upon customer's request, no guarantee on switching accuracy								83	
	Switchpoint adjustment please indicate when ordering: - Switchpoint [°C] - Increasing or decreasing									
	Screwed cable gland M20x1.5 (EN 50262)								07	
	Screwed cable gland M24x1.5 (DIN 89280)								27	
	Capillary tube protection: Flexible metal tube, brass nickel-plated								90	
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) **L = XXXX** Standard length: L = 3000 mm with flexible metal tube									

[1] Media max. 150°C in continuous operation
[2] No protection tube or
Protection tube length ≤ 150 mm: High vibration strain, class B
Protection tube length > 150 mm: General vibration strain, class A
[3] Only for type 471

Ordering no. for sensors

		Sensor material	
Range	Sensor-Ø	Stainless steel	Copper
95, 23	7.0 mm	321	322
	9.0 mm	–	332
	12.0 mm	–	342
31	7.0 mm	121	122
	9.0 mm	–	132
	12.0 mm	–	142
24, 53	7.0 mm	021	022
	9.0 mm	–	032
	12.0 mm	–	042

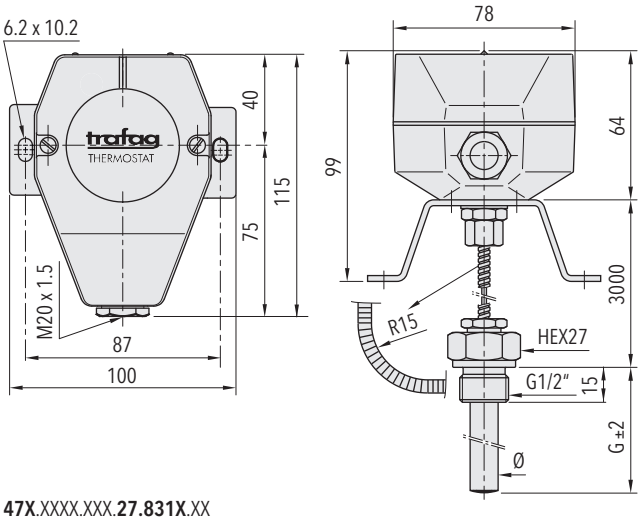
Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Protection tube diameter [mm]	Protection tube length [mm]	Switching differential [°C]	Sensor max. [°C]
ISN11011	471 2323 332 27 8317 0110 90	+20 ... +110	12	110	4.5 (fixed)	115
ISN11015	471 2323 322 27 8316 0150 90	+20 ... +110	10	150	4.5 (fixed)	115
ISN11065	471 2323 342 27 8319 0065 90	+20 ... +110	15	65	4.5 (fixed)	115
ISN15011	471 2331 132 27 8317 0110 90	+20 ... +150	12	110	10 (fixed)	165
ISN15015	471 2331 122 27 8316 0150 90	+20 ... +150	10	150	10 (fixed)	165
ISN15065	471 2331 142 27 8319 0065 90	+20 ... +150	15	65	10 (fixed)	165
ISNT11011	471 2323 332 14 1417 0110	+20 ... +110	12	110	4.5 (fixed)	115
ISNT11015	471 2323 322 14 1416 0150	+20 ... +110	10	150	4.5 (fixed)	115
ISNT11065	471 2323 342 14 1419 0065	+20 ... +110	15	65	4.5 (fixed)	115
ISNT15011	471 2331 132 14 1417 0110	+20 ... +150	12	110	10 (fixed)	165
ISNT15015	471 2331 122 14 1416 0150	+20 ... +150	10	150	10 (fixed)	165
ISNT15065	471 2331 142 14 1419 0065	+20 ... +150	15	65	10 (fixed)	165

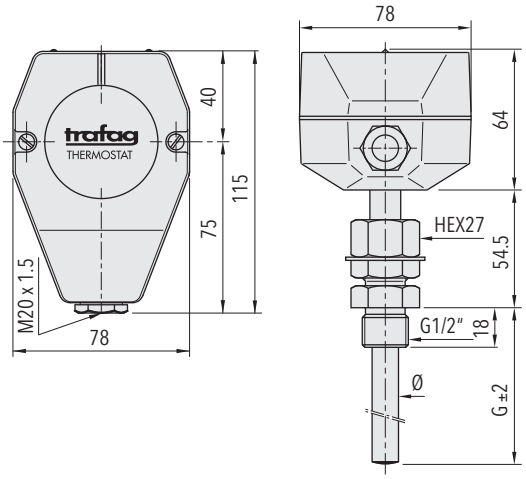
Specifications		
Accuracy	Repeatability	± 0.5 % FS typ.
	Stability typ.	± 1 % FS typ.
	Scale accuracy typ.	± 2 % FS typ.
	Switching differential	See table
	Switching point	Temperature compensated with bimetal switch lever
Environmental conditions	Ambient temperature	Range +45°C ... +250°C: -30°C ... +70°C Range > + 250°C: -10°C ... +70°C
	Storage temperature	-40°C ... +85°C
	Protection	IP65
	Humidity	IEC 60068-2-30 (damp heat, cyclic, 100 % RH @ +55°C)
	Vibration [1)]	Class B: 2 ... 25 Hz ± 1.6 mm, 25 ... 100 Hz 4 g Class A: 2 ... 13.2 Hz ± 1 mm, 13.2 ... 100 Hz 0.7 g
	Shock	50 g / 11 ms
Mechanical data	Sensor housing	See ordering information
	Filling	Liquid
	Protection tube	See ordering information
	Housing	AlSi9Cu3, coated
	Screwed cable gland	Brass nickel-plated
	Installation	any position
	Weight	~ 950 g
Microswitch	Rating	See table
	Resistance of insulation	> 10 MΩ @500 VDC
	Dielectric strength	2 kV terminal ground
	Life time (mechanical)	Microswitch 12/23/26: 0.3 Mio. cycles
Electrical connection	Cable gland	M20x1.5 Cable-Ø 4...10 mm
	Terminal screw	3 x 1 ... 2.5 mm²

[1)] See protection tube length in the ordering information

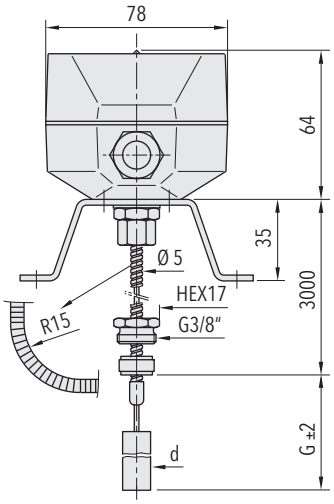
Dimensions



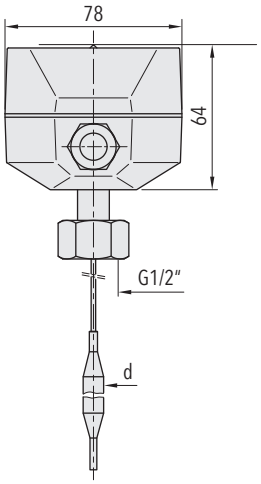
47X.XXXX.XXX.**27.831X**.XX



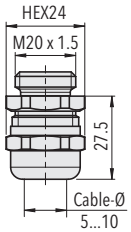
47X.XXXX.XXX.**14.141X**.XX



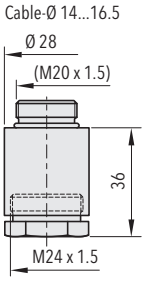
Version B / without protection tube



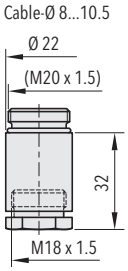
Version K / without protection tube



47X.XXXX.XXX.XX.XXXX.XXXX.**07**
M 20x1.5



47X.XXXX.XXX.XX.XXXX.XXXX.**27**
M 24x1.5



47X.XXXX.XXX.XX.XXXX.XXXX.**40**
M 18x1.5

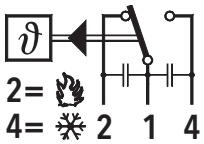
Switching differential typ.

Measuring range	[°C]	-10 ... +80	+20 ... +110	+20 ... +150	+20 ... +230	+40 ... +300
Sensor max.	[°C]	85	115	165	250	330
Microswitch 23: Switching differential not adjustable	[°C]	4.5	4.5	10	12	16
Microswitch 26: Switching differential not adjustable	[°C]	7.5	7.5	19	22.5	>25
Microswitch 12: Switching differential (limiter)	[°C]	(7.5)	(7.5)	(19)	(22.5)	(>25)

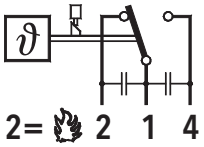
Electrical data switch

		Rating Resistive Load (Inductive Load)	
Type	**Features**	**AC**	**DC**
12	Temperature switch with locking	125 V 15 (1.5) A 250 V 15 (1.25) A 500 V 10 (0.75) A	250 V 0.3 (0.2) A 125 V 0.75 (0.4) A 30 V 15 (1.5) A 14 V 15 (1.5) A
23	Controller; average switching differential	125 V 15 (1.5) A 250 V 15 (1.25) A 500 V 10 (0.75) A	250 V 0.3 (0.05) A 125 V 0.6 (0.1) A 30 V 15 (1.5) A 14 V 15 (1.5) A
26	Controller; large switching differential	125 V 15 (1.5) A 250 V 15 (1.25) A 500 V 10 (0.75) A	250 V 0.3 (0.2) A 125 V 0.75 (0.4) A 30 V 15 (1.5) A 14 V 15 (1.5) A

Electrical Connection



Switch 23/26

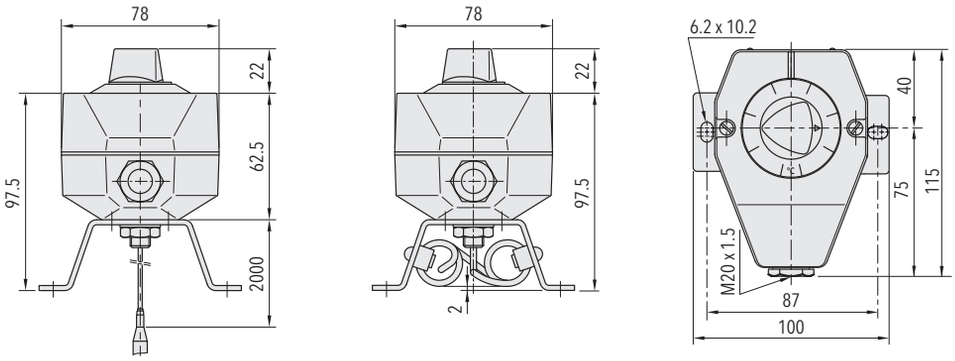


Switch 12/Limiter

Additional information

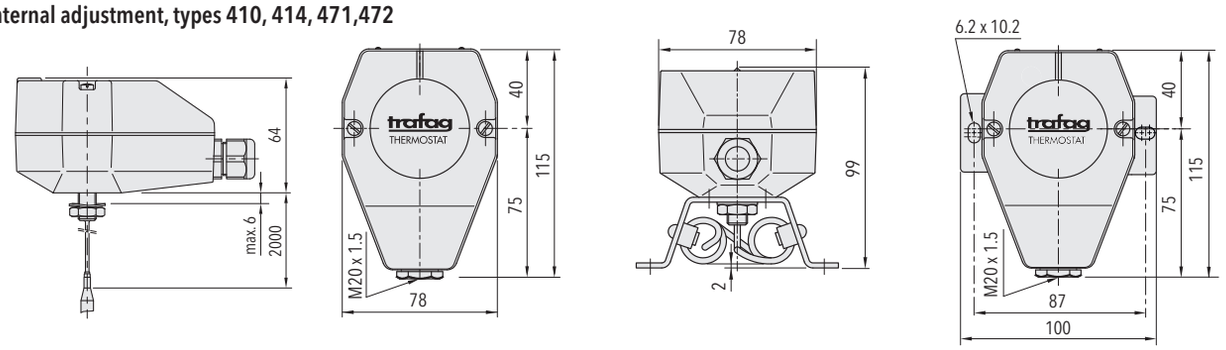
Documents	Data sheet	www.trafag.com/H72111
	Instructions	www.trafag.com/H73111

Typ External adjustment, type 404, 412



Related documents	
404/414	www.trafag.com/H72110
410/412	www.trafag.com/H72138
409/419	www.trafag.com/H72116
471/472	www.trafag.com/H72111

Typ Internal adjustment, types 410, 414, 471,472

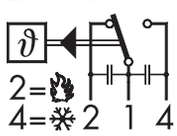


Electrical data switch

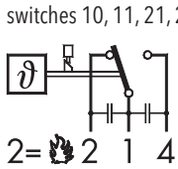
Type	Features	Rating Resistive Load (Inductive Load) AC	DC
10	Small switching differential, not adjustable	125 V, 10 (1.5) A 250 V, 10 (1.25) A	250 V, 0.2 (0.02) A 125 V, 0.4 (0.03) A 30 V, 2 (1) A 14 V, 15 (2.5) A
11	Average switching differential, not adjustable	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.25 (0.03) A 125 V, 0.5 (0.05) A 30 V, 6 (1.5) A 14 V, 15 (1.5) A
12	Average switching differential, high vibration resistance	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.3 (0.2) A 125 V, 0.75 (0.4) A 30 V, 15 (1.5) A 14 V, 15 (1.5) A

Type	Features	Rating Resistive Load (Inductive Load) AC	DC
21	Gold plated contacts, not adjustable	24 V, 0.1(0.1) A 12 V, 1 (1) A 5 V, 2 (2) A	24 V, 0.1(0.1)A 12 V, 1 (1) A 5 V, 2 (2) A
25	Adjustable standard switching differential	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.25 (0.03) A 125 V, 0.5 (0.05) A 30 V, 6 (1.5) A 14 V, 15 (2.5) A
24	Adjustable large switching differential	125 V, 15 (1.5) A 250 V, 15 (1.25) A 500 V, 10 (0.75) A	250 V, 0.3 (0.2) A 125 V, 0.75 (0.4) A 30 V, 15 (1.5) A 14 V, 15 (1.5) A

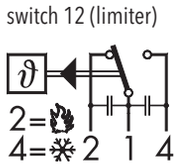
Electrical connections



switches 10, 11, 21, 23, 24, 25



switch 12 (limiter)



Optional with Capacitor(s) over Pin 1-2, Pin 1-4, Pin 1-2 / 1-4

Switchpoint ranges

Product	Code	Range [°C]	Sensor max. [°C]
I/IS 404/414	**01**	-30 ... +40	45
IS...R 410/412	**07**	-10 ... +25	60
ISN/ISNT 471/472	**09**	0 ... +35	70
	11	+10 ... +45	85
	13	+10 ... +80	100
	94	-10 ... +35	70
	95	-10 ... +80	85
IA/IAS 409/419	**02**	-30 ... +30	
	06	-30 ... +50	
	10	-30 ... +70	
	12	0 ... +60	

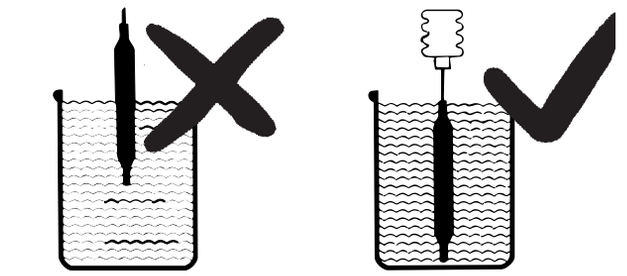
Code	Range [°C]	Sensor max. [°C]
20	+5 ... +95	105
23	+20 ... +110	115
31	+20 ... +150	165
24	+20 ... +230	250
53	+40 ... +300	330
54	+70 ... +350	380

Ambient temperature	Storage temperature
Range: ≤ +45°C: -30°C ... +50°C +45°C ... +250°C: -30°C ... +70°C > + 250°C: -10°C ... +70°C (Important: Temperature at sensor may not exceed maximum sensor temperature)	Range: ≤ +40°C: -30 ... +50°C > +40°C: -30 ... +85°C
-30 ... +40	Range:
-30 ... +50	≤ +40°C: -30 ... +50°C
-30 ... +70	> +40°C: -30 ... +85°C"
-30 ... +70	

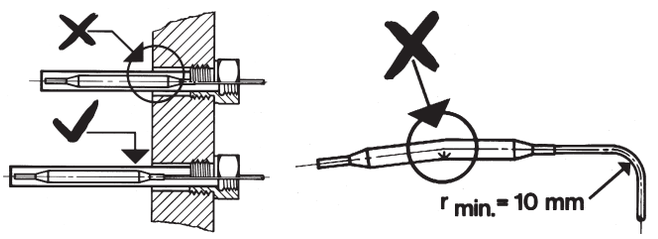
We reserve the right to make alternations as technical progress may warrant.

H73111d *Trafag AG 01/2022*

Mounting of sensor



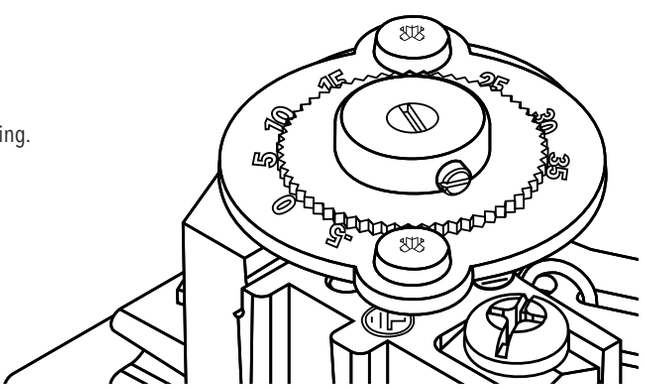
The sensor must be fully immersed in the media to have accurate switching and reproducible response times.
The capillary tube should not be immersed in media.
Thermal effects on the capillary tube will affect the switching point.



If the protection tube is filled with heat-conducting oil to improve the heat transfer, the thermal expansion of the oil over the whole temperature range must be considered.

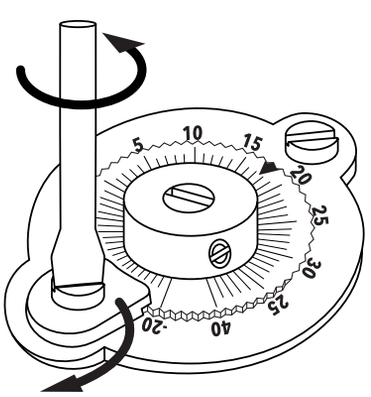
Adjustment of switch point

1. Immerse sensor in calibrated bath or dry block.
   Set environmental conditions for capillary tube similar to target application.
2. Wait approx. 1 hour to ensure constant condition of sensor, capillary tube and housing.
3. Adjust switchpoint (release switchpoint locking befor adjusting).
   Increasing switchpoint: slowly turn set point screw clockwise from lower to higher temperatures until the microswitch clicks.
   Decreasing switchpoint: slowly turn set point screw counter-clockwise from higher to lower temperatures until the microswitch clicks.
4. In case the indicated temperature on the dial differs too much from the set temperature, the dial can be adjusted according page 3 of this instruction. (online version only, www.trafag.com/H73111)



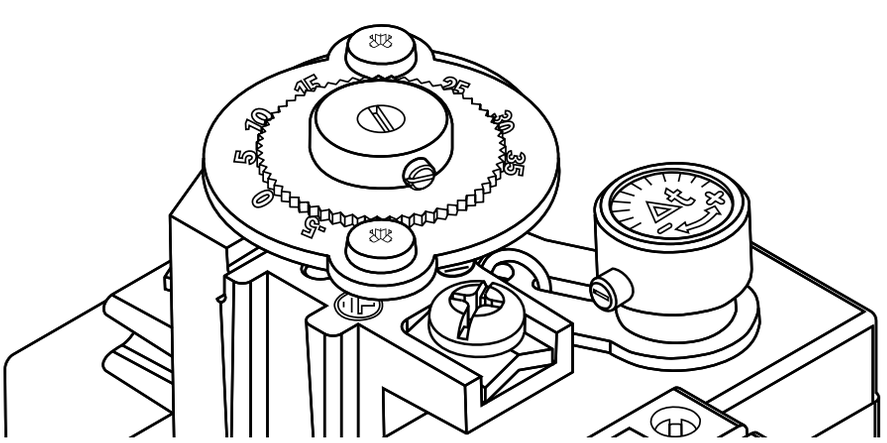
Release of switchpoint locking

To adjust the switch point, the switchpoint locking must be released before turning the set point screw. After completing the adjustment, the switchpoint must be locked again.



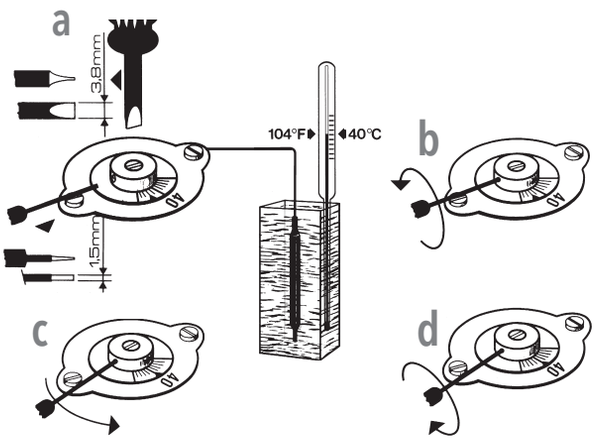
Adjustable switching differential

The differential can be set by turning the knurled knob on the operating lever. The knurled knob is equipped with a scale. Turning to the left (direction of arrow +) increases the differential. Turning to right (direction of arrow –) decreases the differential. The adjustment of the differential only affects the lower switchpoint, the upper switch point remains unchanged.



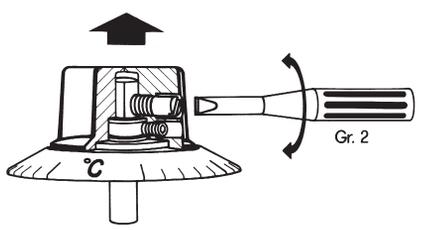
Adjustment of switchpoint indicator scale

Instruments with internal setpoint adjustment

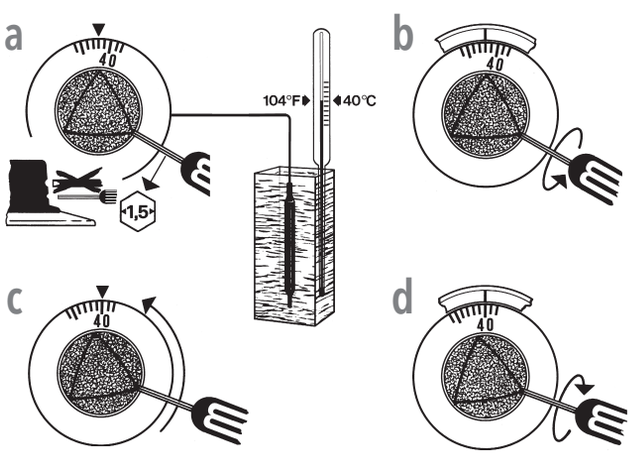


Instruments with external setpoint adjustment

1. Release the setpoint knob



2. Adjust the scale based on a reference temperature



3. Fix the setpoint know again

