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ENGINEERING
TOMORROW



Data Sheet

Pressure switch Type **RT**

For industrial and marine applications



RT pressure switches incorporate a pressure controlled, single-pole change over switch where the contact position depends on the pressure in the connection port and the set value.

The RT series consists of pressure switches, differential pressure switches and pressure switches for neutral zone regulation, all for general use within the industrial and marine segments. The series also covers safety pressure switches dedicated for steam boiler plants.

For installations in which operation is particularly critical from safety and economic points of view, the use of fail-safe pressure switches is recommended.

The use of gold-plated contacts is also recommended in such installations, provided operation involves only a few switching cycles or signal currents and voltages.

Features:

- Simple design
- High accuracy
- High repeatability
- Long operation life time
- Available with all major marine approvals
- Safety Integrity Level: SIL 2 according to IEC 61508

Portfolio overview

Overview / Survey

Figure 1: Overview / Survey

0	5	10	15	20	25	30[bar]	Range p _s [bar]	Type
<div style="text-align: center; border: 1px solid black; padding: 5px;">A</div>							-1-0	RT 121
							0-0.3	RT 113
							0.1-1.1	RT 112
							0.2-3	RT 110
							-0.8-5	RT 1 / RT 1A
							0.2-6	RT 200
							1-10	RT 116
							4-17	RT 5 / RT 5A
							10-30	RT 117
							<div style="text-align: center; border: 1px solid black; padding: 5px;">B</div>	
0-2.5	RT 33B / RT 35W							
1-10	RT 30AW / RT 30AB / RT 30AS							
2-10	RT 31W / RT 31B / RT 31S							
5-25	RT 19W / RT 19B / RT 19S							
5-25	RT 32W / RT 32B							
<div style="text-align: center; border: 1px solid black; padding: 5px;">C</div>							-0.8-5	RT 1 AL
							0.2-3	RT 110L
							0.2-6	RT 200L
							4-17	RT 5AL
							10-30	RT 117L
<div style="text-align: center; border: 1px solid black; padding: 5px;">D</div>							-1-6	RT 266AL
							-1-6	RT 263AL
							-1-9	RT 262AL / RT 262A
							-1-18	RT 260AL / RT 260A
							-1-36	RT 260A
							-1-36	RT 265A
		Δp = 0.0 - 0.9 bar						
		Δp = 0.1 - 1.0 bar						
		Δp = 0.1 - 1.5 bar						
		Δp = 0.5 - 4.0 bar						
		Δp = 0.5 - 6.0 bar						
		Δp = 1.0 - 6.0 bar						

- A Standard pressure switches
- B Pressure switches for steam plant approved by TÜV
- C Pressure switches with adjustable neutral zone
- D Differential pressure switches



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Table 1: Examples of RT types

RT 113	RT 116	RT 262 A
For manual setting; cover with windows	For tamper proof; cap and blank cover	Differential pressure switch

Product specification

Technical data

Table 4: Technical data

Designation	RT pressure switches
Ambient temperature	In general -50 – 70 °C Diaphragm version -10 – 70 °C TÜV approved -40 – 70 °C
Media temperature	In general -50 – 100 °C Diaphragm version -10 – 90 °C TÜV appr. -40 – 150 °C
Contact system	Single-pole changeover switch (SPDT), see Figure 22
Contact load	<i>Alternating current:</i> AC-1: 10A, 400 V AC 3: 4A ⁽¹⁾ , 400 V AC-15: 3A ⁽¹⁾ , 400 V
Contact material: AgCdO	<i>Direct current:</i> DC-13: 12 W, 220 V (see Figure 23)
Special contact system	See Spare parts and accessories
Cable entry	2 PG 13.5 for 6 – 14 mm diameter cables
Solid / stranded	0.2 – 2.5 mm ²
Flexible, without ferrules	0.2 – 2.5 mm ²
Flexible, with ferrules	0.2 – 1.5 mm ²
Tightening torque	max. 1.5 Nm
Enclosure	IP66 acc. to IEC 529 and EN 60529. Units supplied with external reset. IP54. The thermostat housing is made of bakelite acc. to DIN 53470 Cover is made of polyamide.

⁽¹⁾ According to EN12953-9 and EN12952-11 standards the contact load must not be higher than AC-3: 2A, 400 V and AC-15: 1A, 400 V.

Figure 22: Contact system

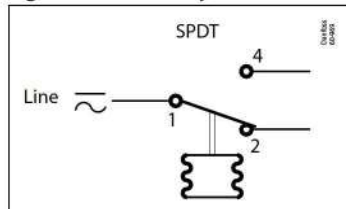
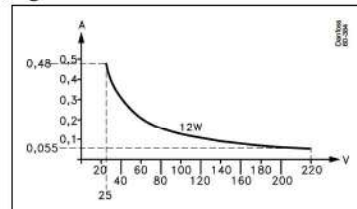


Figure 23: Direct current



Materials in contact with the medium

Table 5: Materials in contact with the medium

Material	Part	W .no.	DIN	RT 1	RT 1A	RT 5	RT 5A	RT 110	RT 112	RT 113	RT 116	RT 117	RT 121	RT 200 / RT 200L	RT 260A	RT 260A / RT 262A / RT 262AL	RT 260AL	RT 265A	RT 263AL RT 266AL
Stainless steel 18/8	Bellows	1.4306	17440	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
Stainless steel 17/7	Spring	1.4568	17224	x						x		x	x	x					
Brass	Housing	2.0402	17660			x		x	x		x	x	x	x					
Brass	Bellows ring	2.0321	17660			x		x	x		x	x	x	x					
Free-cutting steel	Flare connection	1.0718	1651	x															
Deep-drawn steel (nick-plated surface)	Housing	1.0338	1623	x	x		x								x	x	x	x	x



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Pressure switch, type RT

Material	Part	W.no.	DIN	RT 1	RT 1A	RT 5	RT 5A	RT 110	RT 112	RT 113	RT 116	RT 117	RT 121	RT 200 / RT 200L	RT 260A	RT 260A / 262A / RT 262AL	RT 260AL	RT 265A	RT 263AL / RT 266AL
Non-alli. carbon steel C 20	Weld connect. for connection	1.0402	1652		x		x								x	x	x	x	x
Aluminium	Gasket	3.0255	1712		x		x			x					x	x	x	x	x
NBR rubber	Diaphragm									x									
Deep-drawn steel (surface DIN 50961 weld connection Fe/Zn 5C)	Diaphragm housing with welded connector	1.0338	1623							x									
Spring thread	Spring	1.1250	17223		x														

Table 6: Materials in contact with the medium, PED approved switches

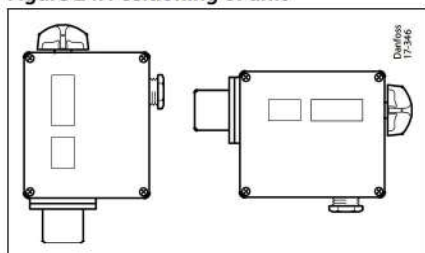
Material	Part	W.no.	DIN	RT 19W / RT 19B / RT 19S	RT 30AW / RT 30AB / RT 30AS	RT 31W / RT 31B / RT 31S	RT 32WB	RT 33B / RT 35W	RT 112 W
Stainless steel 18/8	Bellows	1.4301	17440	x	x	x	x	x	x
Stainless steel 17/7	Orifice	1.4305	17440	x	x				
Steel C 15	Connector	1.0401	1652	x	x				
Deep-drawn steel + Ni	Bellows ring	1.0338	1623	x	x	x	x	x	x
Stainless steel 17/7	Bellows spring	1.4568	17224		x			x	
Stainless steel	Ring	1.4305	17440		x				
Deep-drawn steel + Ni	Housing	1.0338	1623	x	x	x	x	x	x
Stainless steel	Bellows connect.	1.4305	17440			x			
Stainless, weldable freecutting steel	Connector	1.4301	17440			x	x	x	x
Deep-drawn steel + Sn	Spring guide	1.0338	1623					x	
Brass	Housing	2.0402	17660						
Brass	Bellows ring	2.0321	17660						

Installation

RT units have two mounting holes which become accessible when the front cover is removed. Units fitted with switch 017-018166⁽¹⁾ must be installed with the setting knob upwards. When installing differential pressure switches, the low pressure side (marked LP) must be installed upwards.

The other pressure switches in the RT series can be installed in any position, expect that on plant subjected to severe vibrations it is advantageous to have the screwed cable entry downwards.

Figure 24: Positioning of unit



Pressure connection

When fitting or removing pressure lines, the spanner flats on the pressure connection should be used to apply counter-torque.

¹ Contact system with snap-action contact. See [Spare parts and accessories](#).



Pressure switch, type RT

Steam plant

To protect the pressure element against temperature in excess to the maximum temperature of the medium 150 °C (RT 113 90 °C), the insertion of water-filled loop is recommended.

Water systems

Water in the pressure element is not harmful, but if frost is likely to occur a water-filled pressure element may burst. To prevent this happening, the pressure control can be allowed to operate on an air cushion.

Media resistance

Refer **Materials in contact with the medium**. If seawater is involved, diaphragm pressure switches types KPS 43, KPS 45 and KPS 47 are recommended.

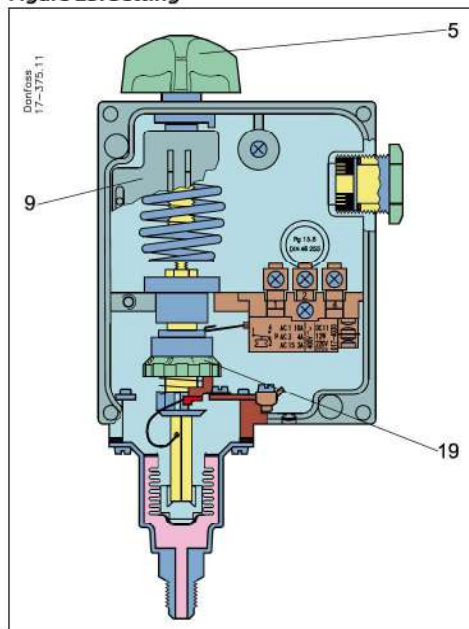
Pulsations

The pressure switch must be connected in such a way that the pressure element is affected by pulsations as little as possible. A damping coil can be inserted (see **Spare parts and accessories**). With strongly pulsating media, diaphragm pressure switches types KPS 43, KPS 45 and KPS 47 can be advantageous.

Setting

The range is set by using the setting knob (5) while at the same time reading the scale (9). Tools must be used to set pressure switches fitted with a seal cap.

Figure 25: Setting



5	Setting knob
9	Range scale
19	Differential setting disc

In units having a fixed differential, the difference between cut-in and cut-out pressures is of course determined. On units having an adjustable differential the front cover must be removed. The differential disc (19) must be set in accordance with the diagram (see **Figure 26: Obtainable differential disc scale**)

Selection of differential

To ensure that the plant functions properly, a suitable differential pressure is necessary. Too small a differential will give rise to short running periods with a risk of hunting. Too high a differential will result in large pressure oscillations.

Differential scale values are guiding.



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Pressure switch, type RT

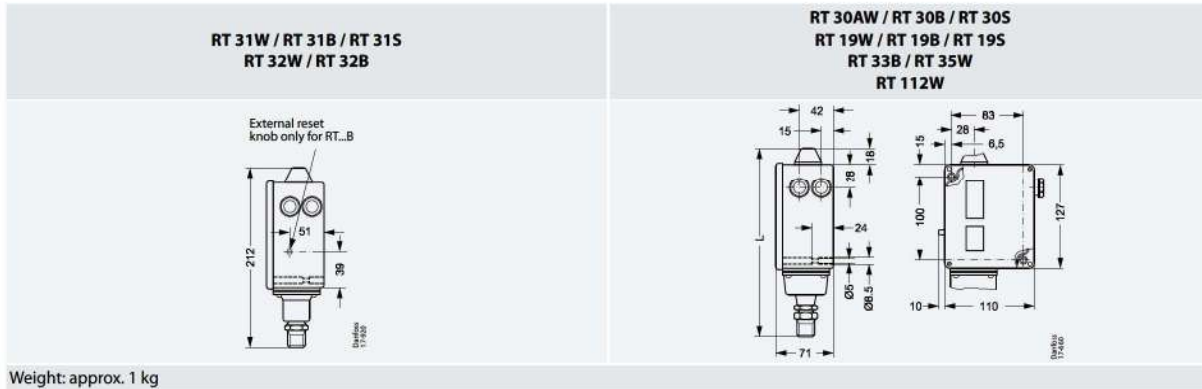


Table 8: Overall length

RT types	Length
RT 30AW / RT 30B / RT 30S	L = 225
RT 19W / RT 19B / RT 19S	L = 228
RT 33B / RT 35W	L = 221
RT 112W	L = 210
RT 31W / RT 31B / RT 31S	L = 212
RT 32W / RT 32B	L = 212



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Ordering

When ordering, please state type and code number.

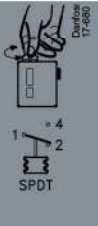
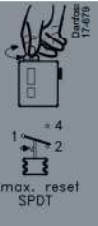
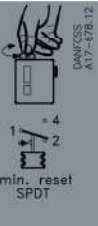

The type designation for the letters below means:

A Unit suitable for ammonia

L Unit with neutral zone

Pressure switches

Table 9: Pressure switches

Regulation range [bar]	Adjustable/ fixed mechanical differential [bar]	Max. working pressure PS [bar]	Max. test pressure Pe [bar]	Pressure connection ISO 228/1	Code no.				Type
									
-1 - 0	0.09 - 0.4	7	8	G 3/8 A	017-521566 ⁽¹⁾	-	-	-	RT 121
0 - 0.3	0.01 - 0.05	0.4	0.5	G 3/8 A	017-519666 ⁽¹⁾	-	-	-	RT 113
0.1 - 1.1	0.07 - 0.16	7	8	G 3/8 A	017-519166 ⁽¹⁾	-	-	017-519366	RT 112
0.1 - 1.1	0.07	7	8	G 3/8 A	-	017-519266	-	-	RT 112
0.2 - 3	0.08 - 0.25	7	8	G 3/8 A	017-529166 ⁽¹⁾	-	-	017-529266	RT 110
0.2 - 3	0.08	7	8	G 3/8 A	-	-	017-511066	-	RT 110
-0.8 - 5	0.5 - 1.6	22	25	7/16-20 UNF	017-524566 ⁽¹⁾	-	-	-	RT 1
-0.8 - 5	0.5	22	25	7/16-20 UNF	-	-	017-524666	-	RT 1
-0.8 - 5	0.5 - 1.6	22	25	G 3/8 A ⁽²⁾	017-500166 ⁽¹⁾	-	-	-	RT 1A
-0.8 - 5	0.5	22	25	G 3/8 A ⁽²⁾	-	-	017-500266	-	RT 1A
-0.8 - 5	1.3 - 2.4	22	25	G 3/8 A ⁽²⁾	017-500766	-	-	-	RT 1A
0.2 - 6	0.25 - 1.2	22	25	G 3/8 A	017-523766 ⁽¹⁾	-	-	017-524066	RT 200
0.2 - 6	0.25	22	25	G 3/8 A	-	017-523866	017-523966	-	RT 200
1 - 10	0.33 - 1.30	22	25	G 3/8 A	017-520366 ⁽¹⁾	-	-	017-520066	RT 116
1 - 10	0.33	22	25	G 3/8 A	-	017-520466	017-519966	-	RT 116
4 - 17	1.2 - 4	22	25	G 3/8 A ⁽²⁾	017-525566 ⁽¹⁾	-	-	-	RT 5
4 - 17	1.2 - 4	22	25	G 3/8 A	-	-	-	017-525366	RT 5
4 - 17	1.2	22	25	G 3/8 A ⁽²⁾	-	017-509466 ⁽³⁾	-	-	RT 5
4 - 17	1.2 - 4	22	25	G 3/8 A ⁽²⁾	017-504666 ⁽¹⁾⁽³⁾	-	-	-	RT 5A
4 - 17	1.3	22	25	G 3/8 A ⁽²⁾	-	017-504766 ⁽³⁾	-	-	RT 5A
10 - 30	1 - 4	42	47	G 3/8 A	017-529566 ⁽¹⁾	-	-	017-529666	RT 117

⁽¹⁾ Preferred versions.

⁽²⁾ Supplied with $\varnothing 6 / \varnothing 10$ mm weld nipple.

⁽³⁾ With seal cap.

Pressure switches with adjustable neutral zone



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Table 10: Pressure switches with adjustable neutral zone

Regulation range [bar]	Mechanical differential [bar]	Adjustable neutral zone [bar]	Max. working pressure PS [bar]	Max. test pressure Pe [bar]	Pressure connection	Code no.	Type
-0.8 - 5	0.2	0.2 - 0.9	22	25	G 3/8 A ⁽²⁾	017L003366 ⁽¹⁾	RT 1A1
0.2 - 3	0.08	0.08 - 0.2	7	8	G 3/8 A	017L001566	RT 110L
0.2 - 6	0.25	0.25 - 0.7	22	25	G 3/8 A	017L003266	RT 200L
4 - 17	0.35	0.35 - 1.4	22	25	G 3/8 A ⁽²⁾	017L004066	RT 5AL
10 - 30	1	1 - 3.0	42	47	G 3/8 A	017L004266	RT 117L

Pressure switch, type RT

⁽¹⁾ Preferred versions.

⁽²⁾ Supplied with $\varnothing 6 / \varnothing 10$ mm weld nipple.

Differential pressure switches

Table 11: Differential pressure switches

Regulation range (Δp) [bar]	Mechanical differential [bar]	Adjustable neutral zone [bar]	Operation range for LP bellows [bar]	Max. working pressure, PS [bar]	Max. test pressure Pe [bar]	Pressure connection ISO 228/1	Code no.	Type
0 – 0.9	0.05	0.05 – 0.23	-1 – 6	7	8	G 3/8 A ⁽²⁾	017D008166	RT 266AL
0.1 – 1.0	0.05	0.05 – 0.23	-1 – 6	7	8	G 3/8 A ⁽²⁾	017D004566	RT 263AL
0.1 – 1.5	0.1	0.1 – 0.33	-1 – 9	11	13	G 3/8 A ⁽²⁾	017D004366	RT 262AL
0.1 – 1.5	0.1	–	-1 – 9	11	13	G 3/8 A ⁽²⁾	017D002566⁽¹⁾	RT 262A
0 – 0.3	0.035	–	-1 – 10	11	13	G 3/8 A ⁽²⁾	017D002766 ⁽³⁾	RT 262A
0.5 – 4	0.3	0.3 – 0.9	-1 – 18	22	25	G 3/8 A ⁽²⁾	017D004866	RT 260AL
0.5 – 4	0.3	–	-1 – 18	22	25	G 3/8 A ⁽²⁾	017D002166⁽¹⁾	RT 260A
0.5 – 6	0.5	–	-1 – 36	42	47	G 3/8 A ⁽²⁾	017D002366	RT 260A
1.5 – 11	0.5	–	-1 – 31	42	47	G 3/8 A ⁽²⁾	017D002466	RT 260A
1 – 6	0.5	–	-1 – 36	42	47	G 3/8 A ⁽²⁾	017D007266 ⁽⁴⁾	RT 265A

⁽¹⁾ Preferred versions.

⁽²⁾ Supplied with $\varnothing 6 / \varnothing 10$ mm nipple.

⁽³⁾ Non-snap action contacts (see [Spare parts and accessories](#), contact system 017-018166).

⁽⁴⁾ With SPST and SPDT contact system for alarm and cut off function at 0.8 and 1 bar.

Pressure switches for steam plant




The designation letters mean:

A	Units suitable for ammonia
B	Safety units with external reset
S	Safety units with internal reset
W	Units for control purposes



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Table 12: Pressure switches for steam plant, PED approved acc. to EN 12953-9 and EN 12952-11

Regulation range [bar]	Adjustable/ fixed mechanical differential [bar]	Max. working pressure PS [bar]	Max. test pressure Pe [bar]	Pressure connection ISO 228/1	Code no.			Type
								
For rising pressure								
0.1 – 1.1	0.07	7	8	G ½ A	017-528266	–	–	RT 112W
0 – 2.5	0.1	7	8	G ½ A	017-528066	–	–	RT 35W
1 – 10	0.8	22	25	G ½ A	017-518766	–	–	RT 30AW
1 – 10	0.6	22	25	G ½ A	–	017-518866	–	RT 30AB
1 – 10	0.4	22	25	G ½ A	–	017-518966⁽¹⁾	–	RT 30AS
5 – 25	1.2	42	47	G ½ A	017-518166	–	–	RT 19W
5 – 25	1	42	47	G ½ A	–	017-518266	–	RT 19B
5 – 25	1	42	47	G ½ A	–	017-518366	–	RT 19S
For falling pressure								
0 – 2.5	0.1	7	8	G ½ A	–	–	017-526266	RT 33B
2 – 10	0.3 – 1	22	25	G ½ A	017-526766	–	–	RT 31W
2 – 10	0.3	22	25	G ½ A	–	–	017-526866	RT 31B
2 – 10	0.3	22	25	G ½ A	–	–	017-526966	RT 31S
5 – 25	0.8 – 3	42	47	G ½ A	017-524766	–	–	RT 32W