**Manuals+** — User Manuals Simplified.

# Danfoss KP 61 Temperature Switches Thermostat Installation Guide

**Contents**
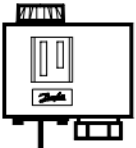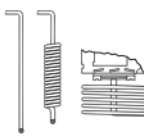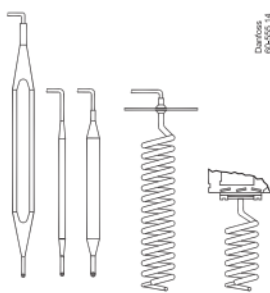
**Danfoss KP 61 Temperature Switches Thermostat**

## MODELS

KP 61, KP 62, KP 63, KP 68, KP 69 vapor charge KP 71, KP 73, KP 75, KP 77, KP 79, KP 81 adsorption charge (cross ambient)



**KP 61, KP 62, KP 63, KP 68, KP 69** vapor charge
**KP 71, KP 73, KP 75, KP 77, KP 79, KP 81** adsorption charge (cross ambient)
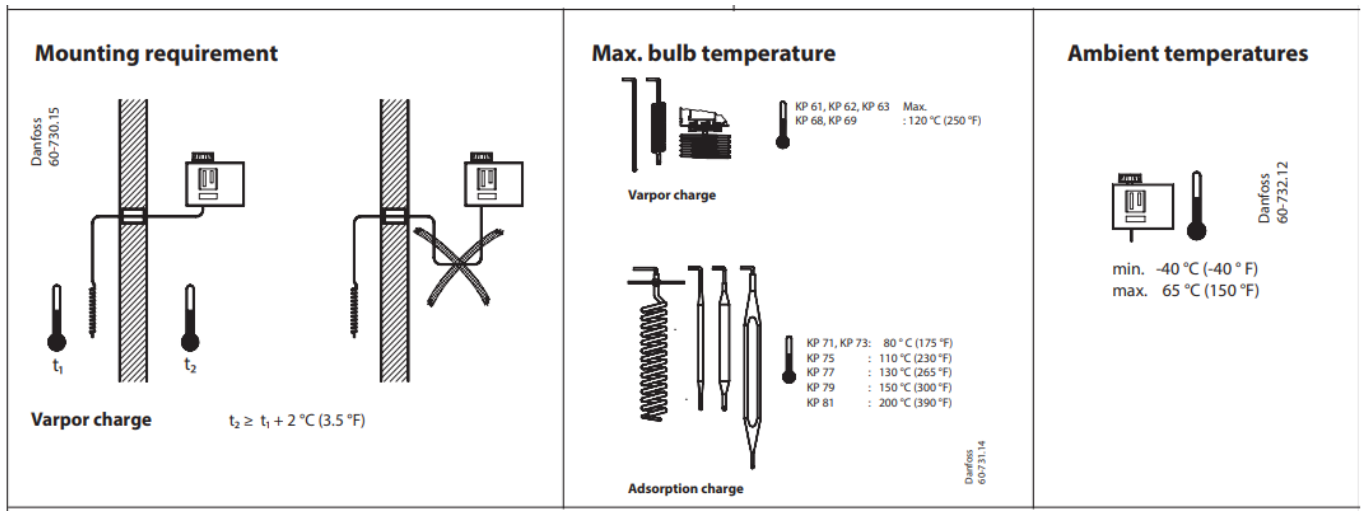
**Types**

Auto reset

Manual reset
(w/o hand knob)

Auto reset
w/ hand switch

**Bulb types**

Varpor charge

Adsorption charge

## Installation

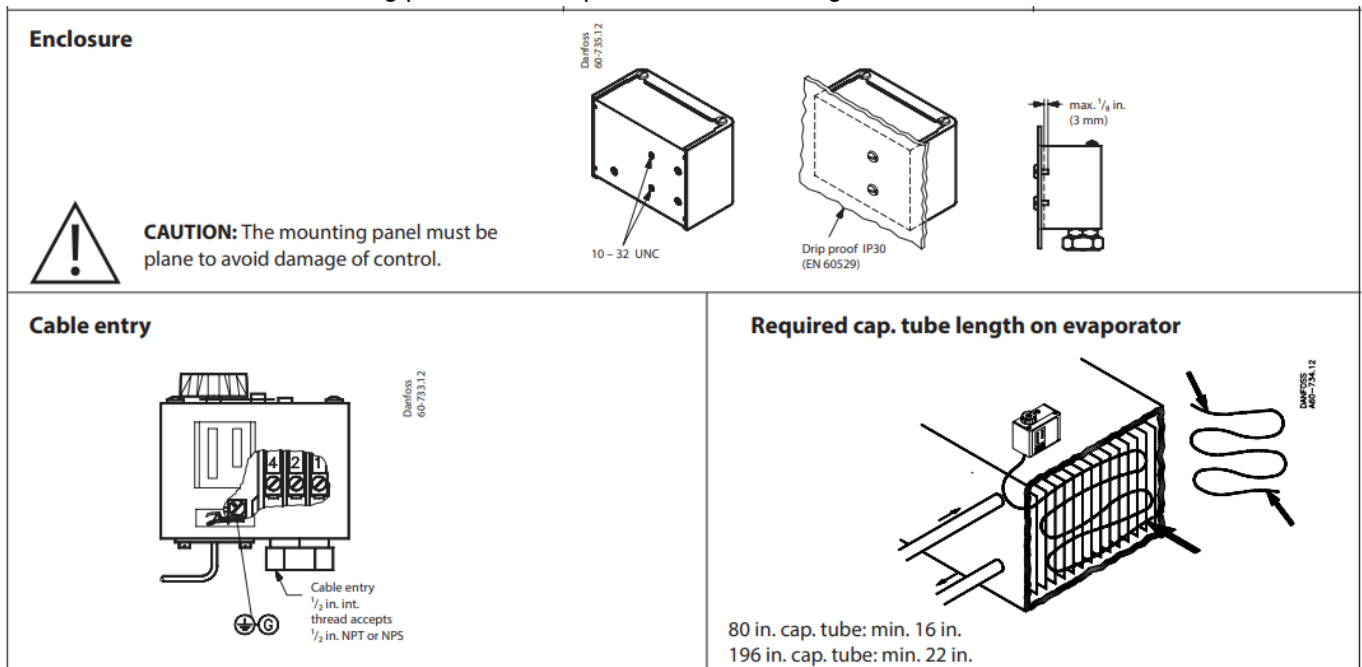**Mounting requirement**
**Max. bulb temperature**
**Ambient temperatures**

| Mounting requirement | Max. bulb temperature | Ambient temperatures |
|---|---|---|

**Mounting requirement**

Danfoss 60-730.15

t₁    t₂

**Varpor charge**    $t_2 \geq t_1 + 2\,°C\ (3.5\,°F)$

**Max. bulb temperature**

Varpor charge

KP 61, KP 62, KP 63    Max.
KP 68, KP 69        : 120 °C (250 °F)

KP 71, KP 73:  80 °C (175 °F)
KP 75    : 110 °C (230 °F)
KP 77    : 130 °C (265 °F)
KP 79    : 150 °C (300 °F)
KP 81    : 200 °C (390 °F)

**Adsorption charge**

Danfoss 60-731.14

**Ambient temperatures**

Danfoss 60-732.12

min.  -40 °C (-40 ° F)
max.  65 °C (150 °F)

## Enclosure

⚠ **CAUTION:** The mounting panel must be plane to avoid damage of the control.

**Enclosure**

Danfoss 60-735.12

⚠ **CAUTION:** The mounting panel must be plane to avoid damage of control.

10 – 32 UNC

Drip proof IP30
(EN 60529)

max. ¹/₈ in.
(3 mm)

**Cable entry**

Danfoss 60-733.12

Cable entry
¹/₂ in. int.
thread accepts
¹/₂ in. NPT or NPS

**Required cap. tube length on evaporator**

DANFOSS 60-734.12

80 in. cap. tube: min. 16 in.
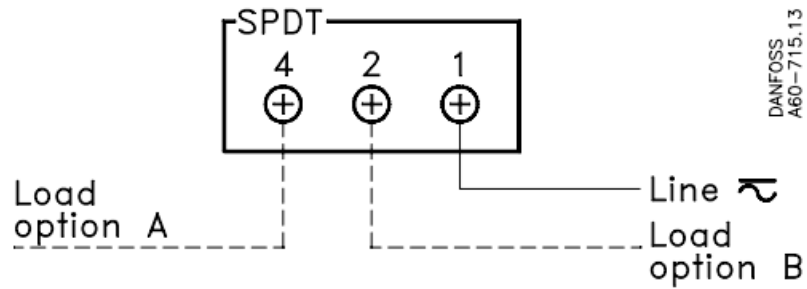196 in. cap. tube: min. 22 in.

## Wiring

⚠ **CAUTION:** Disconnect power supply before wiring connections are made to avoid possible electrical shock or damage to equipment.
All wiring should conform to the National Electrical Code and local regulations.
**Terminal block**

## Terminal block

**CAUTION:** Use terminal screws furnished inthe contact block.
Use tightening torque 20 lb. in. (2.3 Nm). Use copper wire only.
**Contact load ratings**

- 120V a.c. 16 FLA, 96 LRA
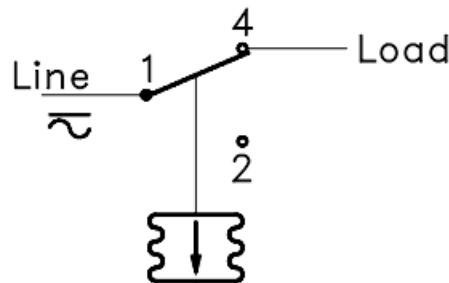- 240V a.c. 8 FLA, 48 LRA
- 240V d.c. 12W pilot duty

**Load Option A**
CUT-OUT on temperature drop

**Wire terminals 1 – 4:**
CUT-IN = High Set Point (HSP) see "Setting"
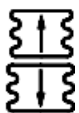CUT-OUT = Low Set Point (LSP) see "Setting"



Terms 1 – 4 close on temperature rise
Terms 1 – 4 open on temperature drop

**Example:** CUT-IN = 10 °C (50 °F)

CUT-OUT = 4.5 °C (40 °F) This means CUT-IN = HSP = 10 °C (50 °F) and CUT-OUT = LSP = 4.5 °C (40 °F)

**Note:**


= Bellows movement on pressure rise
= Bellows movement on pressure drop

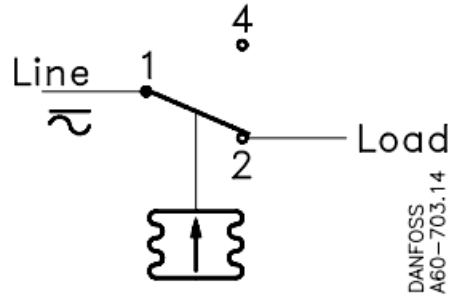The free terminal can be used for signal purpose.

## Load Option B

CUT-OUT on temperature rise

**Wire terminals 1 – 2:**

CUT-IN = Low Set Point (LSP) see "Setting"
CUT-OUT = High Set Point (HSP) see "Setting"



Terms 1 – 2 close on temperature drop
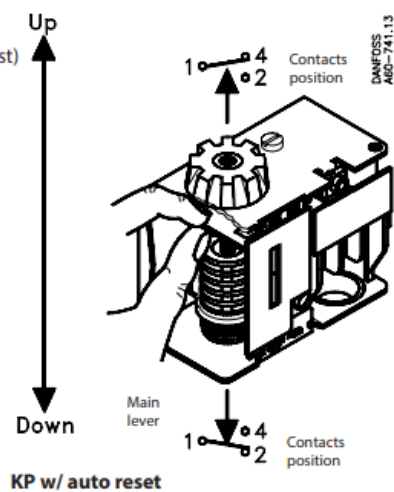Terms 1 – 2 open on temperature rise

**Example:** CUT-IN = 0 °C (32 °F)

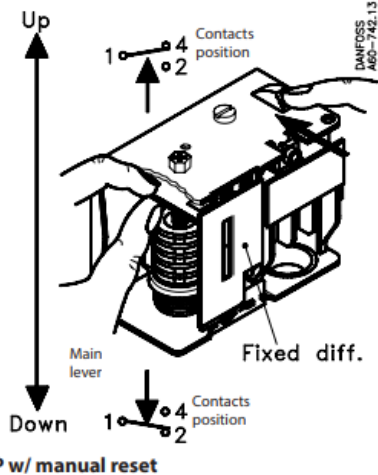CUT-OUT = 10 °C (50 °F) This means CUT-IN = LSP = 0 °C (32 °F) and CUT-OUT = HSP = 10 °C (50 °F)



**Manual tripping**
(Electrical contacts/wiring test)

Up

Contacts position

**Note:**
use FINGERS ONLY!
(Do NOT use screwdriver)

Main lever

Down

Contacts position

**KP w/ auto reset**

**Note:**
use FINGERS ONLY!
(Do NOT use screwdriver)

Up

Contacts position

Main lever

Fixed diff.

Down

Contacts position

**KP w/ manual reset**

**Note:**
Push manual reset knob during manual tripping.
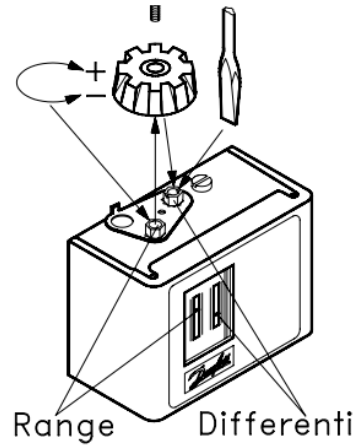
**Manual reset**
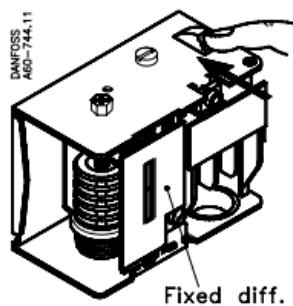
Fixed diff.

To resume control operation after safety cut-out, push reset knob as indicated.

**Note:**
Man. reset is possible only after a temperature rise of fixed differential (example 5.4 °F)

## Adjustment spindles location

**Note**

Remove lockplate before thermostat adjustment. Replace lockplate after adjustment (if desired).



**RANGE**
See printed instruction on top of control

increase temp. (warmer): turn CW

decrease temp. (colder): turn CCW

(use adjustment knob)

**DIFFERENTIAL**
See printed instruction on top of control

Increase: turn CW

decrease: turn CCW

(use adjustment knob or screwdriver)

## Determination of differential

For KP w/ vapor charge and auto. reset (KP 61, KP 62, KP 63, KP 68, KP 69): Use graphs to determine correct differential.

## Determination of differential

For KP w/ vapor charge and auto. reset (KP 61, KP 62, KP 63, KP 68, KP 69): Use graphs to determine correct differential.



**KP 61 KP 62**



**KP 63**
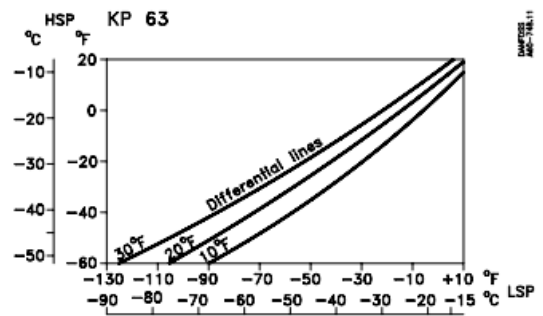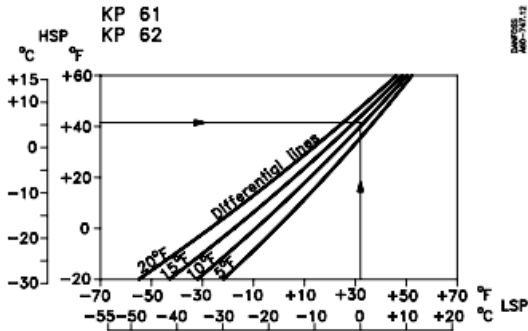
Example:
HSP = 5.6 °C (45 °F) =>     DIFF (from graph):
LSP = 0 °C (32 °F)              7.2 °C (13 °F) (value which has to be
                                            set on diff. scale).



**KP 68 KP 69**
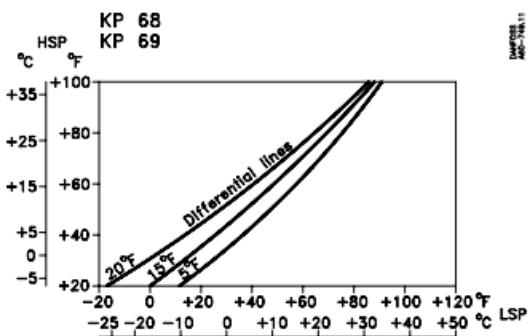
For KP w/ adsorption charge (KP 71, KP 73, KP 75, KP 77, KP 79, KP 81):
The differential will be HSP less LSP

Example:          HSP  –  LSP  =  DIFF.
                       7 °C  –  5 °C  =  2 °C
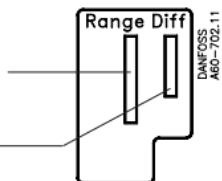                       (45 °F)(35 °F) (10 °F)

**Note:**
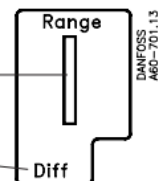| (Load Option A) | | (Load Option B) |
|---|---|---|
| CUT-IN   = HSP | or | CUT-IN   = LSP |
| CUT-OUT = LSP | | CUT-OUT = HSP |
| See "Wiring" | | |

## Setting

For KP 61, KP 62, KP 63, KP 68, KP 69, KP 71, KP 61 and KP 71 w/man. reset KP 73, KP 75, KP 77, KP 79 and KP 81 w/auto reset

1. Adjust range spindle to desired HIGH SET POINT (use hand knob)

2. Adjust differential spindle to desired DIFFERENTIAL

**Note:**

To find correct differential, see "Determination of differential"

HIGH SET POINT minus DIFFERENTIAL equals LOW SET POINT

Example:
| HSP | – | DIFF. | = | LSP |
|-----|---|-------|---|-----|
| 7 °C | – | 5 °C | = | 2 °C |
| (45 °F) | | (10 °F) | | (35 °F) |

1. Adjust range spindle to desired LOW SET POINT

2. DIFFERENTIAL is fixed. Value printed on scale plate

HIGH SET POINT minus DIFFERENTIAL equals LOW SET POINT

Example:
| HSP | – | DIFF. | = | LSP |
|-----|---|-------|---|-----|
| 3 °C | – | 3 °C | = | 0 °C |
| (37.4 °F) | | (5.4 °F) | | (32 °F) |

**Note:**

To findthe  correct differential, see "Determination of differential"

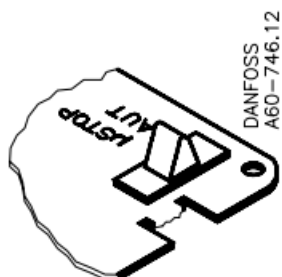**HIGH SET POINT minus DIFFERENTIAL equals LOW SET POINT**

**Example:**

HSP – DIFF. = LSP
7 °C – 5 °C = 2 °C
(45 °F) (10 °F) (35 °F)

**Example:**

HSP – DIFF. = LSP
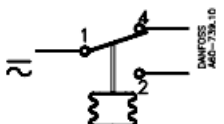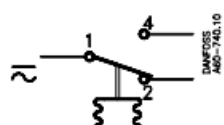3 °C – 3 °C = 0 °C
(37.4 °F) (5.4 °F) (32 °F)

**KP w/ hand switch**

**CAUTION:**

- Hand switch breaks the circuit by a micro contact gap.
- Use hand switch for service on refrigeration parts only
- Cut out the main switch before service on the electrical parts

| Switch position | Contacts position |
| --- | --- |
| Aut. | Automatic control operation  |
| µ Stop | 1 and 2 are closed  |

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## Documents / Resources
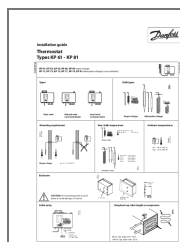
 **Danfoss KP 61 Temperature Switches Thermostat** [pdf] Installation Guide
KP 61, KP 62, KP 63, KP 68, KP 69, KP 71, KP 73, KP 75, KP 77, KP 79, KP 81, KP 61 Temperature Switches Thermostat, KP 61, Temperature Switches Thermostat, Switches Thermostat, Thermostat

## References

- **User Manual**