



KKT KRAUS®
REFRIGERATION & AIR CONDITIONING

KKT Water Chiller for

ONCOR Avant-Garde Linear Accelerator

ONCOR Impression PLUS Linear Accelerator

PRIMUS PLUS Linear Accelerator

ONCOR Impression Linear Accelerator

PRIMUS Linear Accelerator



KPC 115-L-U/S	(480V/3Ph/60 Hz)
KPC 107-L-U/S	(480V/3Ph/60 Hz)
KPC 115-L-S	(380-415V/3Ph/50 Hz)
KPC 107-L-S	(380-415V/3Ph/50 Hz)

Siemens Medical Solutions USA, Inc.
Oncology Care Systems Group



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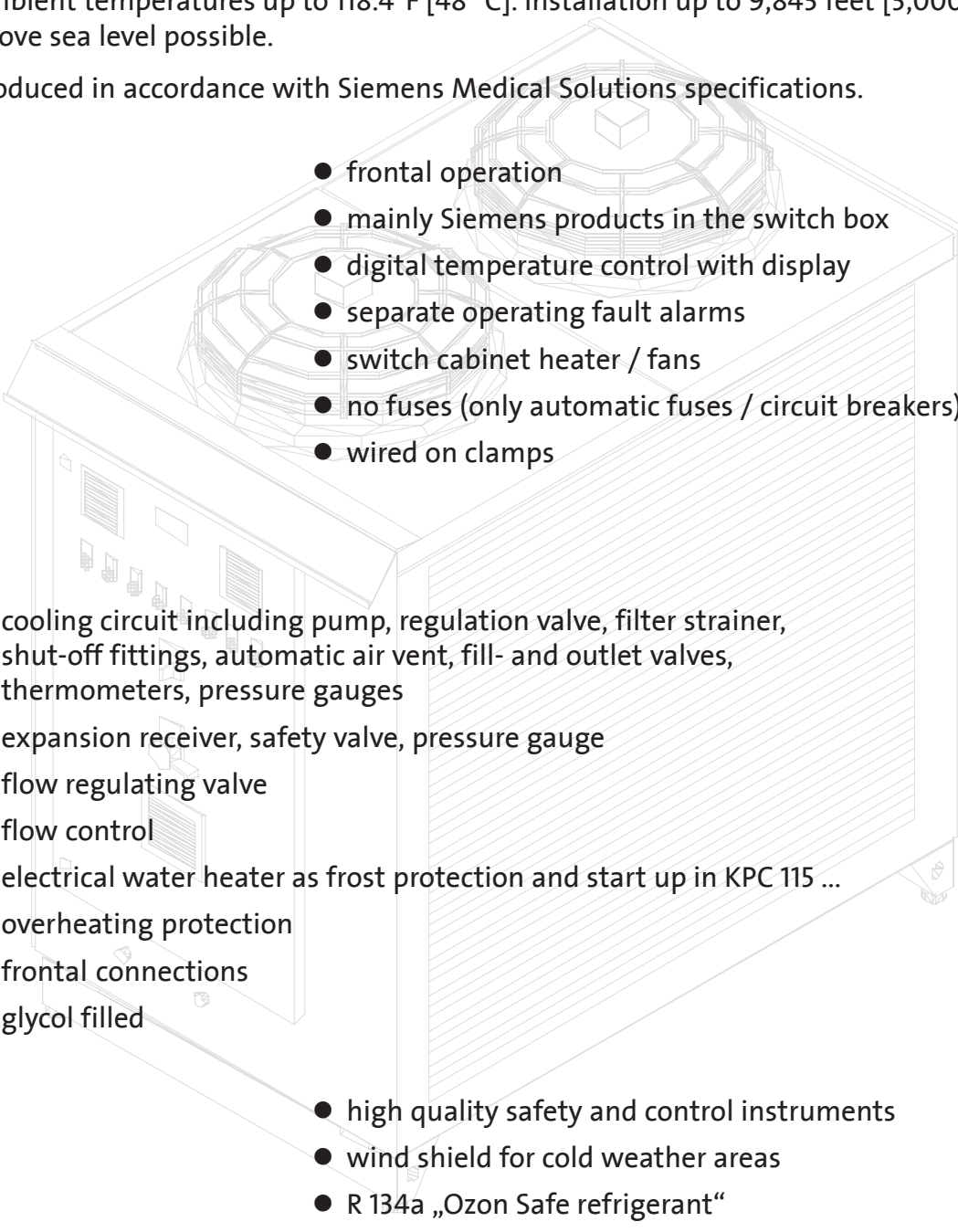
description KKT waterchiller - Outdoor Version

The KKT Waterchillers are conceived, developed and produced as a compact system for select models of the ONCOR™ Avant-Garde, ONCOR Impression and PRIMUS® Linear Accelerators . They are suitable for outdoor installations.

Chiller suitable for power supply 380-415V/3Ph/50Hz and 480V/3Ph/60 Hz (UL approved).

Ambient temperatures up to 118.4°F [48° C]. Installation up to 9,843 feet [3,000 m] above sea level possible.

Produced in accordance with Siemens Medical Solutions specifications.

- 
- frontal operation
 - mainly Siemens products in the switch box
 - digital temperature control with display
 - separate operating fault alarms
 - switch cabinet heater / fans
 - no fuses (only automatic fuses / circuit breakers)
 - wired on clamps
 - cooling circuit including pump, regulation valve, filter strainer, shut-off fittings, automatic air vent, fill- and outlet valves, thermometers, pressure gauges
 - expansion receiver, safety valve, pressure gauge
 - flow regulating valve
 - flow control
 - electrical water heater as frost protection and start up in KPC 115 ...
 - overheating protection
 - frontal connections
 - glycol filled
 - high quality safety and control instruments
 - wind shield for cold weather areas
 - R 134a „Ozon Safe refrigerant“

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ONCOR™ is a trademark of Siemens Medical Solutions

nameplate KPC 115-L-U/S

 KKT KRAUS [®] REFRIGERATION & AIR CONDITIONING		Industriestraße 23a D-91207 Lauf Tel. +49(0)9123/174-01 Fax +49(0)9123/824-41	
		0036	
 US		LISTED COMMERCIAL PROCESSING WATER COOLER 22DA OUTDOOR USE	
Manufacturer	KKT Kraus Klimatechnik GmbH		
Model	KPC 115 L-U/S		
Produce-No.:			
Date of manufacture			
Electrical rating	480V/60Hz/3		
Minimum supply circuit ampacity	26 A		
Overcurrent protective device	41 A		
	Amp Rating	Quantity	
Compressor	15.2 A	1	
Condenser Fan Motor	1.0 A	2	
Water Pump	1.5 A	1	
Heating Element	2.2 A	1	
Control Circuit	1.6 A	1	
Refrigerant	R134a		
System 1	15kg	33.02lb	
Design pressure			
High side	20.48bar	297psig	
Low side	9.93bar	144psig	
High pressure switch off	19.0bar	275psig	

technical data

Waterchiller
designed for

Typ KPC 115-L-U/S outdoor use
ONCOR Avant-Garde Linear Accelerator
ONCOR Impression PLUS Linear Accelerator
PRIMUS PLUS Linear Accelerator

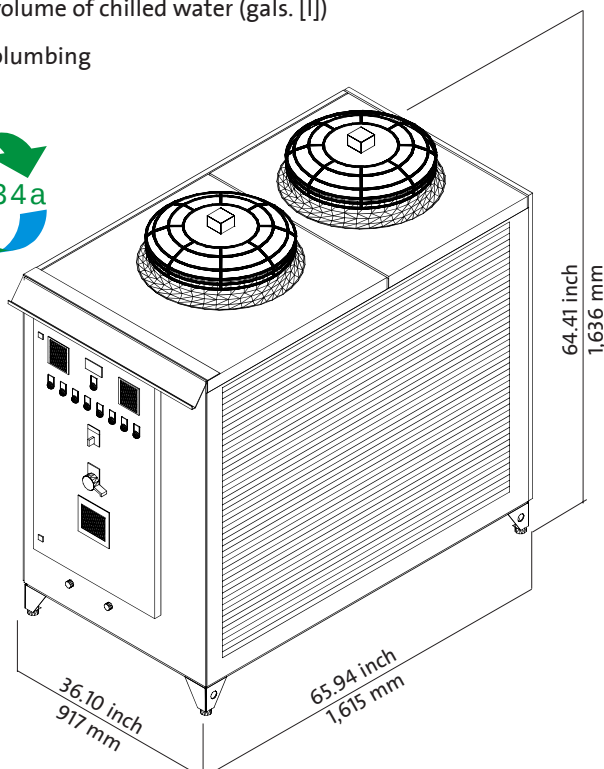


standard device

standard
construction

note

nominal cooling capacity (Btu/hr [kW])	102,455	[30.0]	t_{ou} 76°F / t_a 118°F
refrigeration medium	R 134a		
quantity of compressors	1		
max. compressor capacity (HP [kW])	18.0	[13.4]	
volume of condenser airflow (m³/s [m³/h])	5.0	[18,000]	
number of axial fans (piece)	2		
condenser fan motor (HP [kW])	1.54	[1.15]	
max. ambient air temperature (°F [°C])	+118	[+48]	
cooling medium ¹⁾	PCW/AFN	PKW/AFN	AFN = 38% ethylene or propylene glycol rate
min. ambient air temperature (°F [°C])	-4.0	[-20]	
outlet water temperature			
minimum (°F [°C])	60	[16]	
optimum (°F [°C])	65	[18]	
maximum (°F [°C])	77	[25]	
temperature stability (K)	< 1.0		by RAD on
max. flow rate of cooling medium (gpm [l/min])	14.5	[55.0]	
ext. pump pressure (psig [bar])	71.1	[4.9]	Grundfos CR 3
pump power (HP [kW])	1.5	[1.1]	
noise level (dB[A])	65		about 16.4 ft [5m] distance
power supply (V/Ph/Hz) ²⁾	480/3/60		tolerance -14/+10%V/±1Hz
full load amps (A)	26		
form of protection	IP 54		
volume of chilled water (gals. [l])	1.06	[4.0]	only chiller
plumbing	1¼"		



shipping weight (lb [kg])	1,860	[844]
operation weight (lb [kg])	1,433	[650]

[....] = alternate units

¹⁾WARNING !

The 38% glycol rate depends not on the local ambient temperature !!!
Do not use automotive antifreeze

²⁾WARNING !

Do not connect chiller KPC 115-L-U/S to 380V power.
Incorrect power input can damage the chiller.

nameplate KPC 107-L-U/S

	KKT KRAUS® REFRIGERATION & AIR CONDITIONING	Industriestraße 23a D-91207 Lauf Tel. +49(0)9123/174-01 Fax +49(0)9123/824-41	
			0036
LISTED			
UL® US COMMERCIAL PROCESSING WATER COOLER			
22DA			
OUTDOOR USE			
Manufacturer	KKT Kraus Klimatechnik GmbH		
Model	KPC 107-L-U/S		
Produce-No.:			
Date of manufacture			
Electrical rating	480V/60Hz/3		
Minimum supply circuit ampacity	23 A		
Overcurrent protective device	35 A		
	Amp Rating	Quantity	
Compressor	11.9 A	1	
Condenser Fan Motor	1.0 A	1	
Water Pump	1.5 A	1	
Control Circuit	3.8 A	1	
Refrigerant	R134a		
System 1	7.0kg	15lb	
Design pressure			
High side	20.48bar	297psig	
Low side	9.93bar	144psig	
High pressure switch off	19.00bar	275psig	

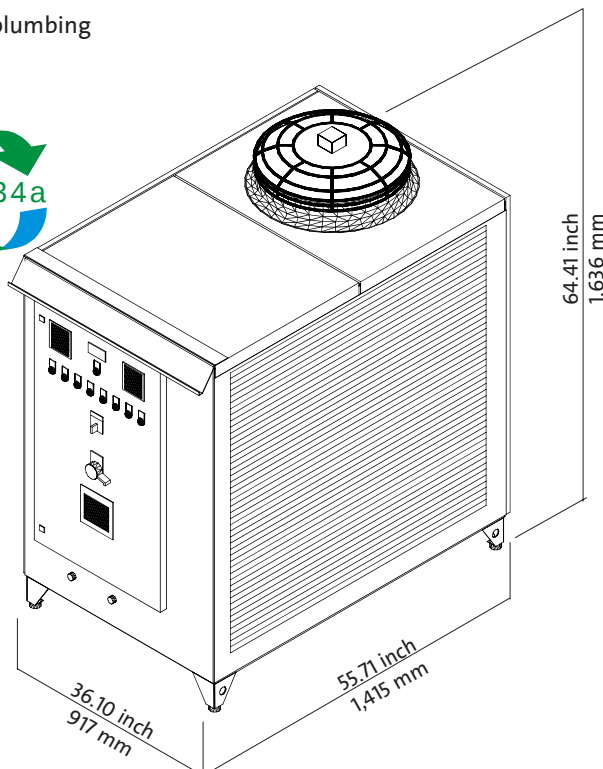
technical data

Waterchiller
designed for

Typ KPC 107-L-U/S outdoor use
ONCOR Impression Linear Accelerator
PRIMUS Linear Accelerator



standard device	standard construction		note
nominal cooling capacity (Btu/hr [kW])	34,835	[10.2]	t_{ou} 61°F / t_a 118°F
refrigeration medium	R 134a		
quantity of compressors	1		
max. compressor capacity (HP [kW])	8.5	[6.3]	
volume of condenser airflow (m³/s [m³/h])	2.9	[10,500]	
number of axial fans (piece)	1		
condenser fan motor (HP [kW])	1.54	[1.15]	
max. ambient air temperature (°F [°C])	+118	[+48]	
cooling medium ¹⁾	PCW/AFN	PKW/AFN	AFN = 38% ethylene or propylene glycol rate
min. ambient air temperature (°F [°C])	-4.0	[-20]	
outlet water temperature			
minimum (°F [°C])	50	[10]	
maximum (°F [°C])	77	[25]	
temperature stability (K)	< 1.0		by RAD on
max. flow rate of cooling medium (gpm [l/min])	9.3	[35.0]	
ext. pump pressure (psig [bar])	59.5	[4.1]	Grundfos CR 3
pump power (HP [kW])	1.0	[0.75]	
noise level (dB[A])	63		about 16.4 ft [5m] distance
power supply (V/Ph/Hz) ²⁾	480/3/60		tolerance -14/+10%V/±1Hz
full load amps (A)	23		
form of protection	IP 54		
volume of chilled water (gals. [l])	0.92	[3.5]	only chiller
plumbing	1"		



shipping weight (lb [kg]) 1,662 [754]

operation weight (lb [kg]) 1,235 [560]

[....] = alternate units

¹⁾WARNING !

The 38% glycol rate depends not on the local ambient temperature !!!
Do not use automotive antifreeze

²⁾WARNING !

Do not connect chiller KPC 107-L-U/S to 380V power.
Incorrect power input can damage the chiller.

nameplate KPC 115-L-S

		KKT KRAUS®	Industriestraße 23a D-91207 Lauf Tel. +49(0)9123/174-01 Fax +49(0)9123/824-41	
		REFRIGERATION & AIR CONDITIONING		0036
COMMERCIAL PROCESSING WATER COOLER OUTDOOR USE				
Manufacturer	KKT Kraus Klimatechnik GmbH			
Model	KPC 115-L-S			
Produce-No.:				
Date of manufacture				
Electrical rating	380-415V/50Hz/3			
Minimum supply circuit ampacity	32 A			
Overcurrent protective device	40 A			
Refrigerant	R134a			
System 1	15.0kg		33.02lb	
High pressure switch off	19.0bar		275psig	

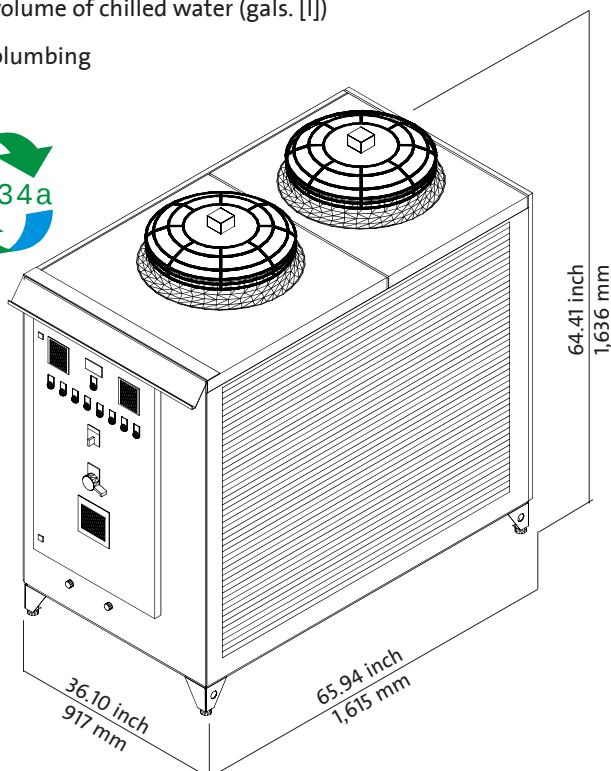
technical data

Waterchiller
designed for

Typ KPC 115-L-S outdoor use
ONCOR Avant-Garde Linear Accelerator
ONCOR Impression PLUS Linear Accelerator
PRIMUS PLUS Linear Accelerator



standard device	standard construction		note
nominal cooling capacity (Btu/hr [kW])	95,625	[28.0]	t_{ou} 76°F / t_a 118°F
refrigeration medium	R 134a		
quantity of compressors	1		
max. compressor capacity (HP [kW])	18.0	[13.4]	
volume of condenser airflow (m³/s [m³/h])	4.6	[16,500]	AFN = 38% ethylene or propylene glycol rate
number of axial fans (piece)	2		
condenser fan motor (HP [kW])	1.06	[0.79]	
max. ambient air temperature (°F [°C])	+118	[+48]	
cooling medium ¹⁾	PCW/AFN	PKW/AFN	by RAD on Grundfos CR 3
min. ambient air temperature (°F [°C])	-4.0	[-20]	
outlet water temperature			
minimum (°F [°C])	60	[16]	
optimum (°F [°C])	65	[18]	about 16.4 ft [5m] distance tolerance -10/+10%V/±1Hz
maximum (°F [°C])	77	[25]	
temperature stability (K)	< 1.0		
max. flow rate of cooling medium (gpm [l/min])	14.5	[55.0]	
ext. pump pressure (psig [bar])	79.8	[5.5]	only chiller
pump power (HP [kW])	1.5	[1.1]	
noise level (dB[A])	65		
power supply (V/Ph/Hz)	380-415/3/50		
full load amps (A)	32.0		shipping weight (lb [kg]) 1,905 [864] operation weight (lb [kg]) 1,477 [670]
form of protection	IP 54		
volume of chilled water (gals. [l])	1.06	[4.0]	
plumbing	1¼"		



[....] = alternate units

**¹⁾WARNING ! The 38% glycol rate depends not on the local ambient temperature !!!
Do not use automotive antifreeze**

nameplate KPC 107-L-S

	KKT KRAUS® REFRIGERATION & AIR CONDITIONING	Industriestraße 23a D-91207 Lauf Tel. +49(0)9123/174-01 Fax +49(0)9123/824-41	
			0036
COMMERCIAL PROCESSING WATER COOLER OUTDOOR USE			
Manufacturer	KKT Kraus Klimatechnik GmbH		
Model	KPC 107-L-S		
Produce-No.:			
Date of manufacture			
Electrical rating	380-415V/50Hz/3		
Minimum supply circuit ampacity	17 A		
Overcurrent protective device	25 A		
Refrigerant	R134a		
System 1	7.0kg	15.0lb	
High pressure switch off	19.0bar	275psig	

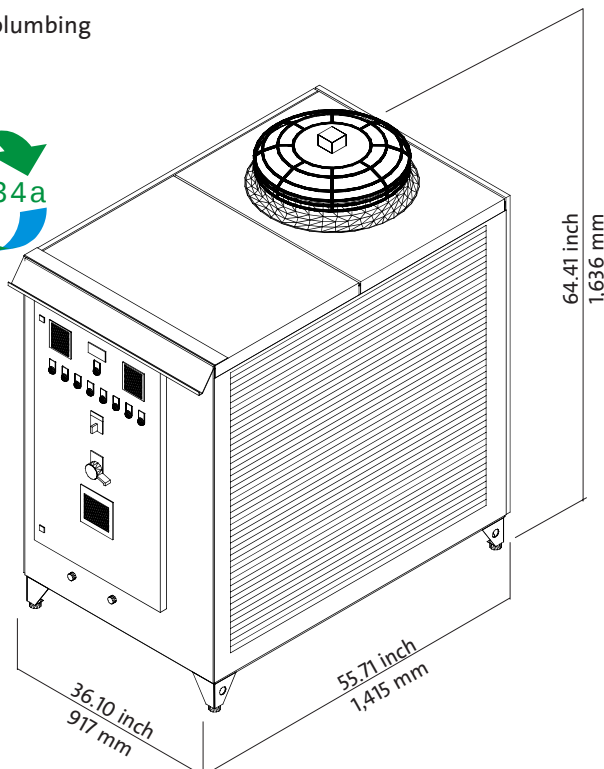
technical data

Waterchiller
designed for

Typ KPC 107-L-S outdoor use
ONCOR Impression Linear Accelerator
PRIMUS Linear Accelerator



standard device	standard construction		note
nominal cooling capacity (Btu/hr [kW])	35,176	[10.3]	$t_{ou} 65^{\circ}\text{F} / t_a 118^{\circ}\text{F}$
refrigeration medium	R 134a		
quantity of compressors	1		
max. compressor capacity (HP [kW])	7.1	[5.2]	
volume of condenser airflow (m^3/s [m^3/h])	2.6	[9,200]	AFN = 38% ethylene or propylene glycol rate
number of axial fans (piece)	1		
condenser fan motor (HP [kW])	1.06	[0.79]	
max. ambient air temperature ($^{\circ}\text{F}$ [$^{\circ}\text{C}$])	+118	[+48]	
cooling medium ¹⁾	PCW/AFN	PKW/AFN	by RAD on Grundfos CR 3
min. ambient air temperature ($^{\circ}\text{F}$ [$^{\circ}\text{C}$])	-4.0	[-20]	
outlet water temperature			
minimum ($^{\circ}\text{F}$ [$^{\circ}\text{C}$])	50	[10]	
maximum ($^{\circ}\text{F}$ [$^{\circ}\text{C}$])	77	[25]	about 16.4 ft [5m] distance tolerance -10/+10%V/ $\pm 1\text{Hz}$
temperature stability (K)	< 1.0		
max. flow rate of cooling medium (gpm [l/min])	9.3	[35.0]	
ext. pump pressure (psig [bar])	59.5	[4.1]	
pump power (HP [kW])	1.0	[0.75]	only chiller
noise level (dB[A])	63		
power supply (V/Ph/Hz)	380 - 415/3/50		
full load amps (A)	17.0		
form of protection	IP 54		only chiller
volume of chilled water (gals. [l])	0.92	[3.5]	
plumbing	1"		



shipping weight (lb [kg]) 1,662 [754]

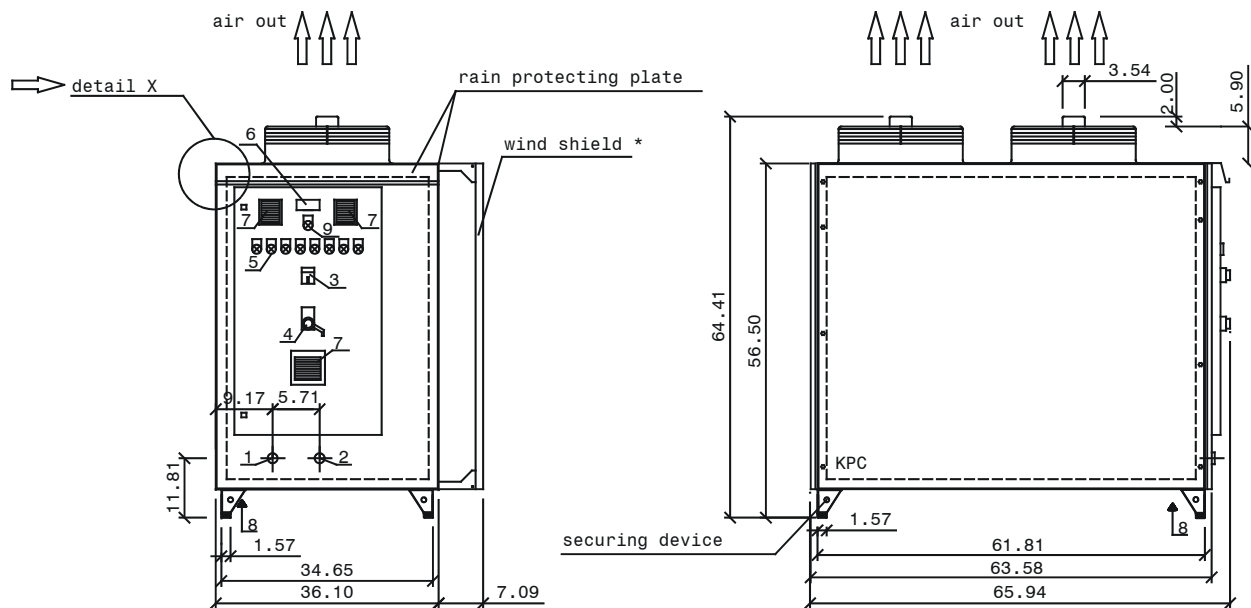
operation weight (lb [kg]) 1,235 [560]

[....] = alternate units

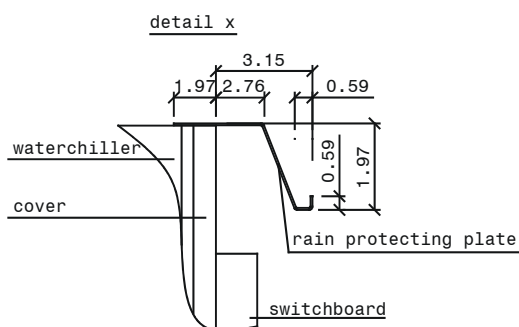
¹⁾ **WARNING ! The 38% glycol rate depends not on the local ambient temperature !!!**

Do not use automotive antifreeze

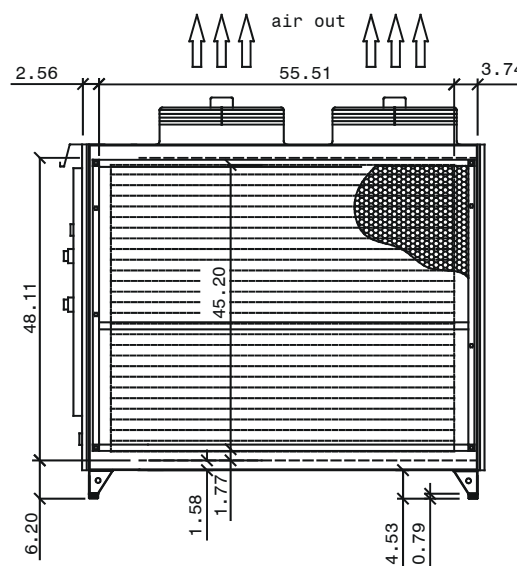
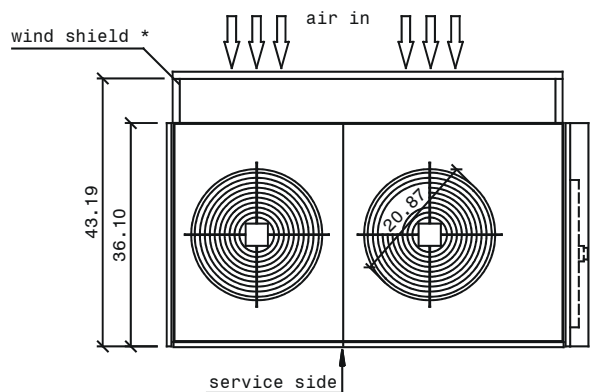
dimensions KPC 115 (inch)



dimensions in inch

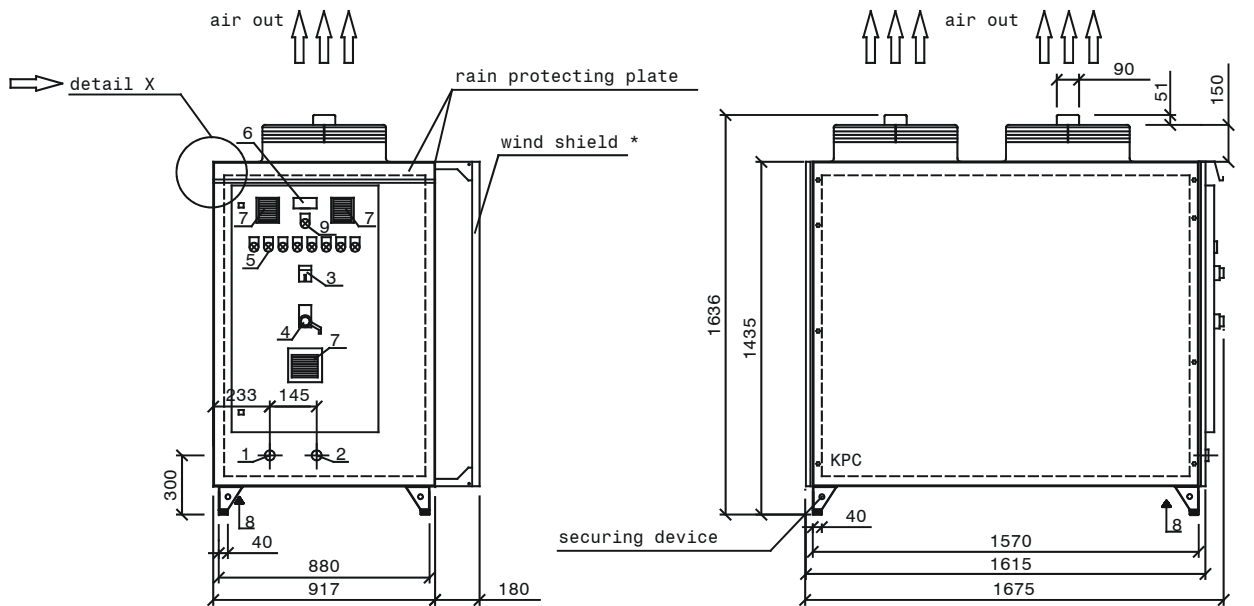


- 1 = water return from transfer station 1 1/4" internal
- 2 = water supply to transfer station 1 1/4" internal
- 3 = control switch
- 4 = main switch
- 5 = signal lamps
- 6 = temperature controller
- 7 = switchboard ventilation
- 8 = cable passage (max. 1.5inch)
- 9 = reset overheating water

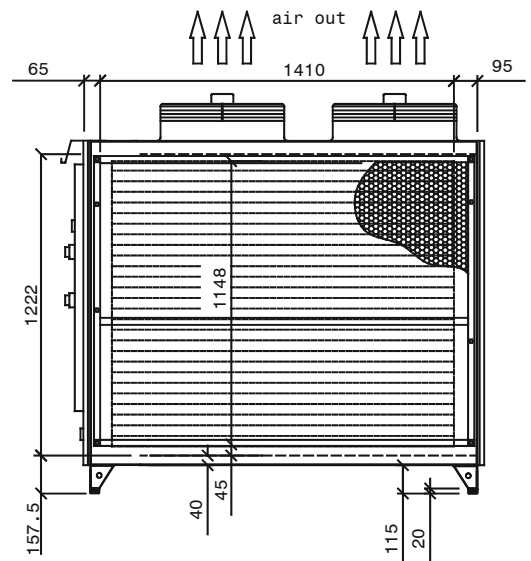
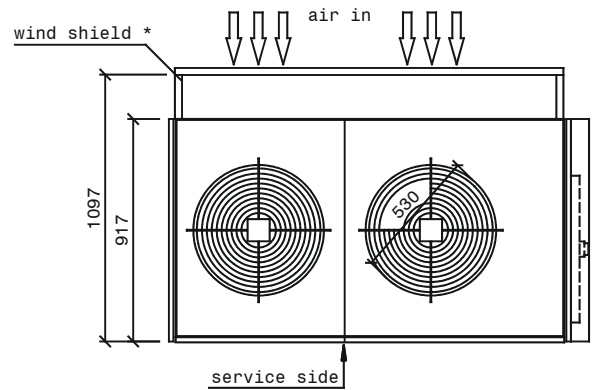
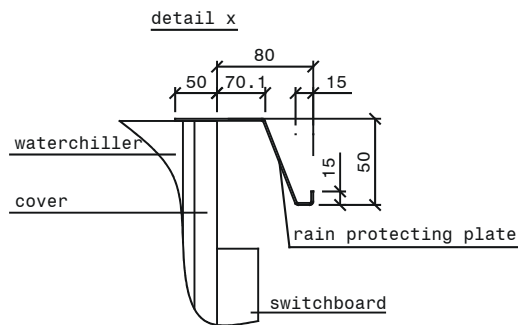


* Installation in coordination with KKT service partner!

dimensions KPC 115 (mm)



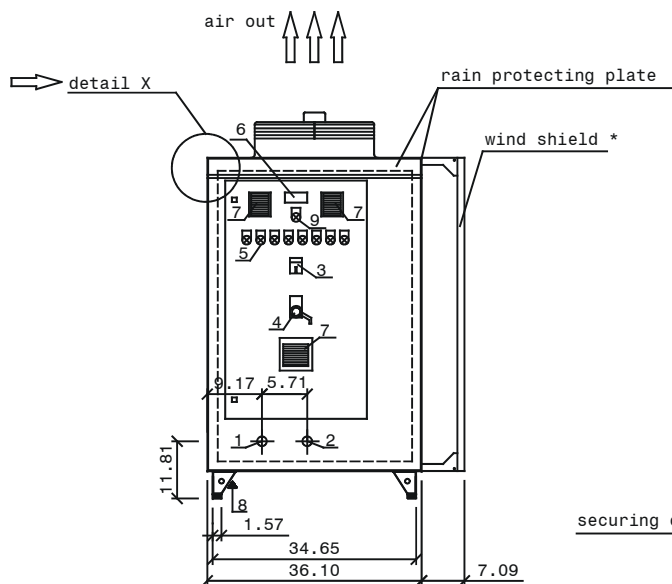
dimensions in inch



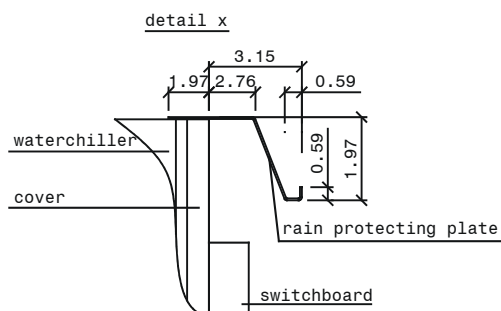
- 1 = water return
from transfer station 1 1/4" internal
- 2 = water supply
to transfer station 1 1/4" internal
- 3 = control switch
- 4 = main switch
- 5 = signal lamps
- 6 = temperature controller
- 7 = switchboard ventilation
- 8 = cable passage (max. 1.5inch)
- 9 = reset overheating water

* Installation in coordination with KKT service partner!

dimensions KPC 107 (inch)

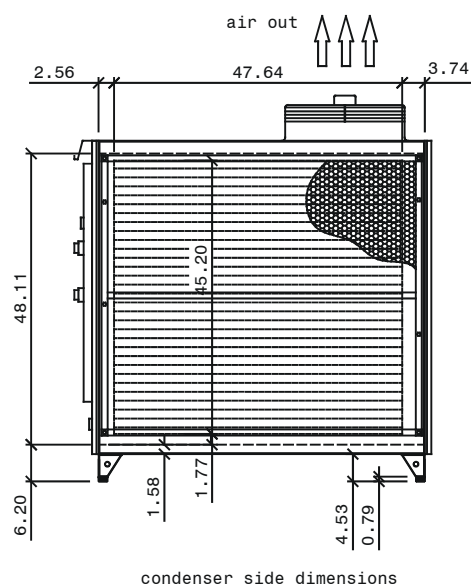
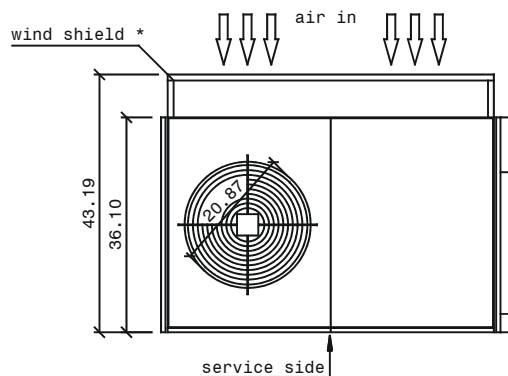
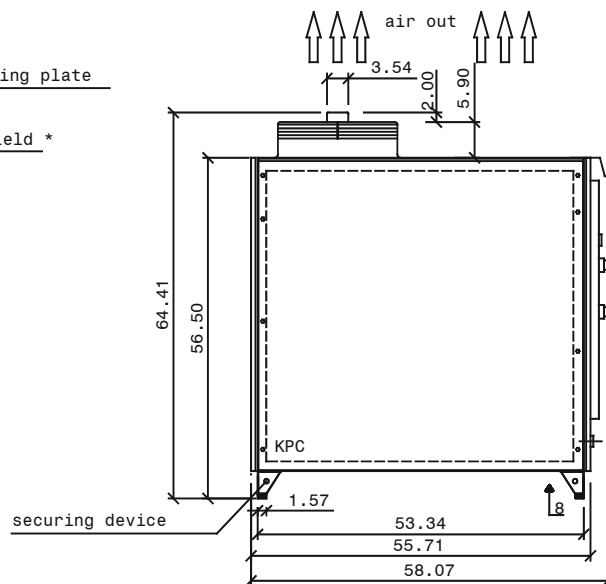


dimensions in inch

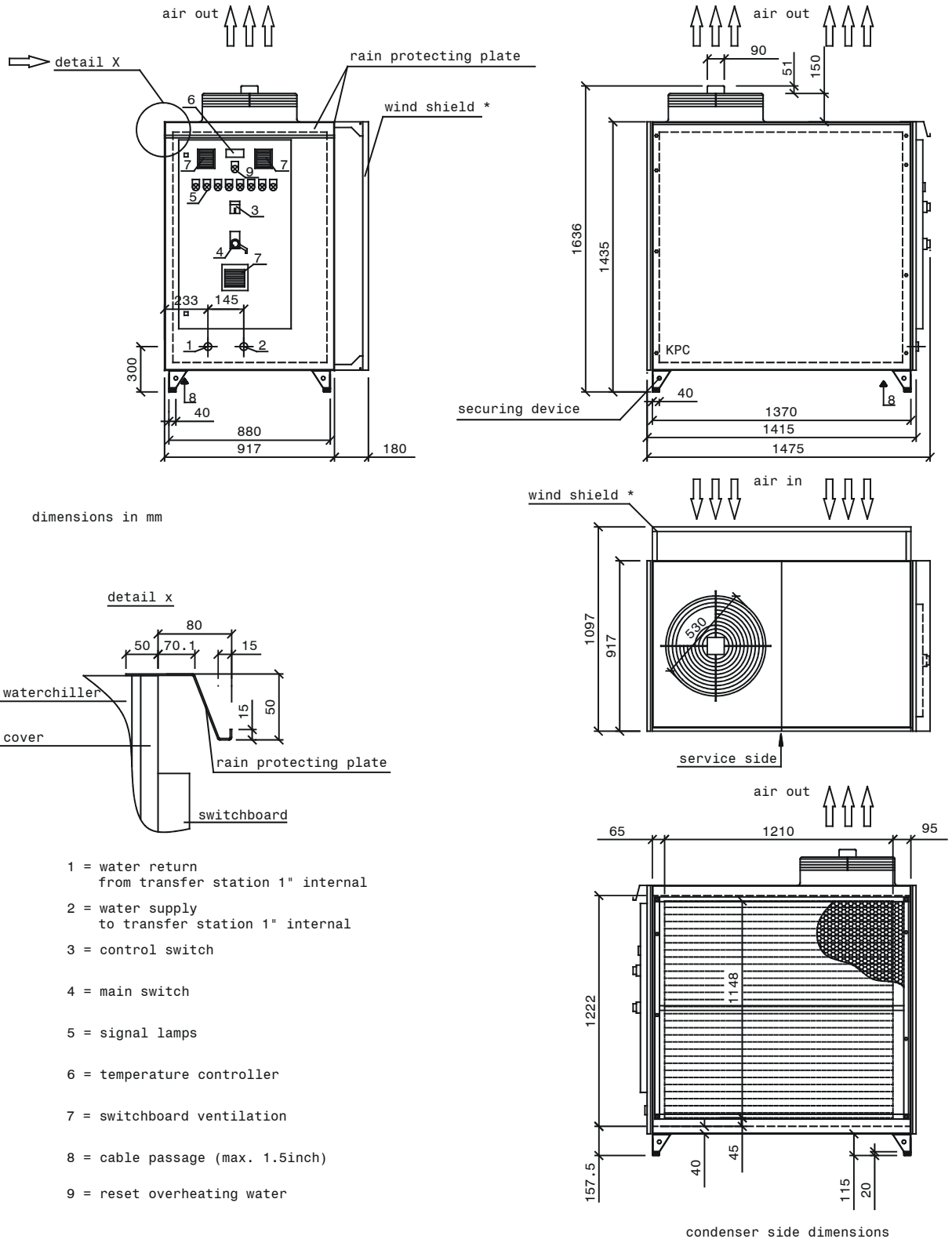


- 1 = water return from transfer station 1" internal
- 2 = water supply to transfer station 1" internal
- 3 = control switch
- 4 = main switch
- 5 = signal lamps
- 6 = temperature controller
- 7 = switchboard ventilation
- 8 = cable passage (max. 1.5inch)
- 9 = reset overheating water

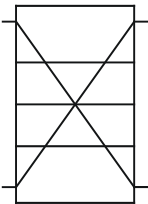
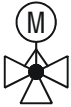
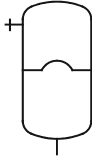
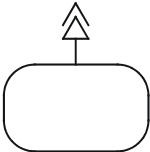
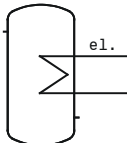
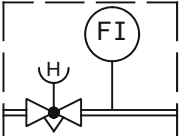
* Installation in coordination with KKT service partner!



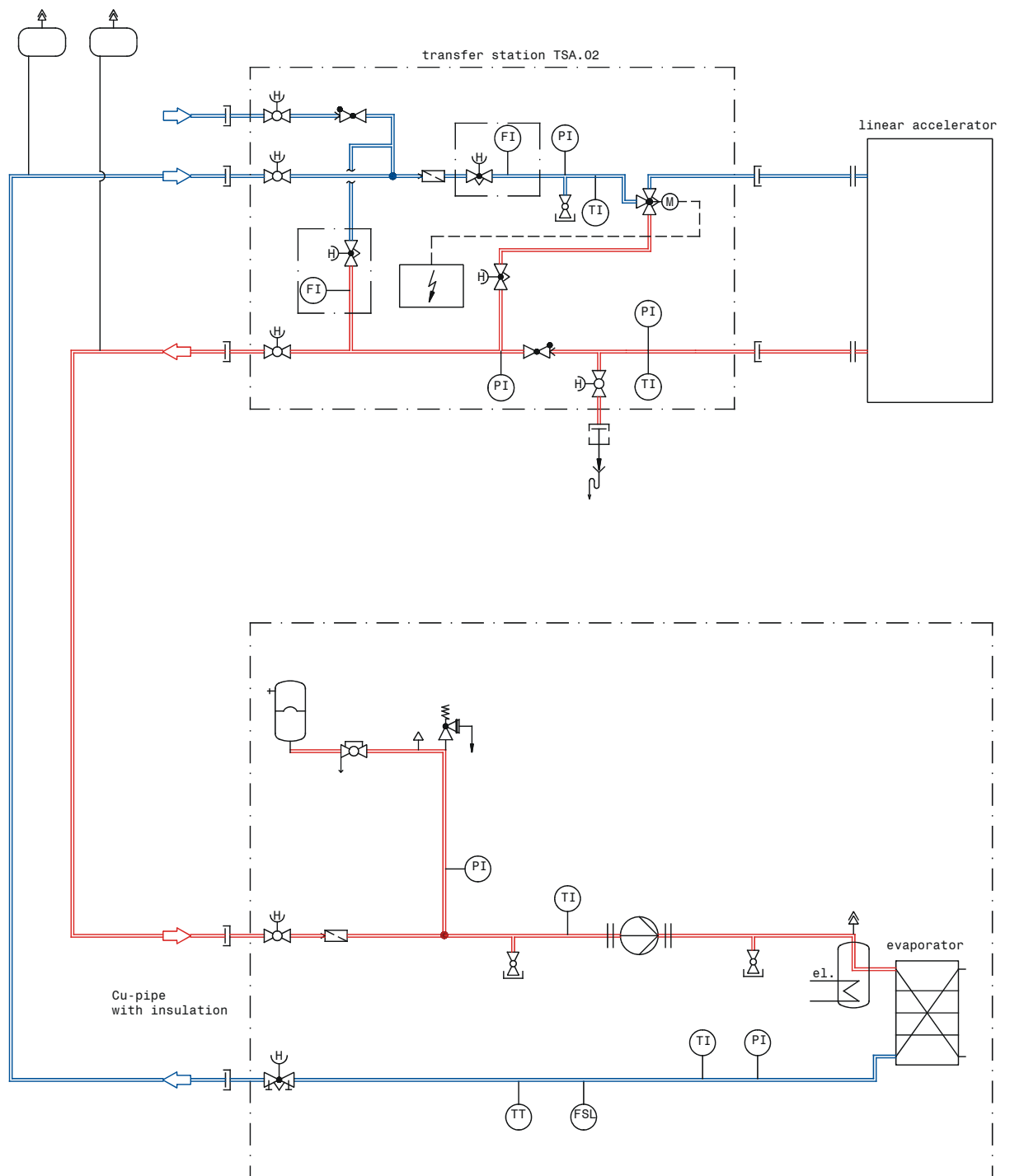
dimensions KPC 107 (mm)



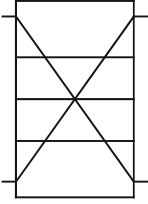
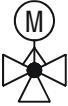
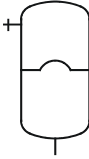
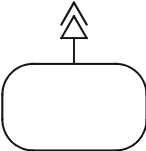
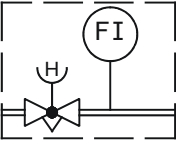
key: cold water- / glycol diagram

	evaporator		safety relief valve (water)
	linear accelerator		three-way valve with motor (24V AC) and spring-controlled
			high pressure pump
	shut-off valve		expansion receiver
	pressure adjusting valve		thermometer
	flow regulating valve		pressure gauge
	filter strainer		switch box
	shut-off valve with cap		air receiver with automatic air vent
	filling and draining cock		medium heater
	non-return valve		water flow meter with adjusting valve
	manual air vent		
	automatic air vent		

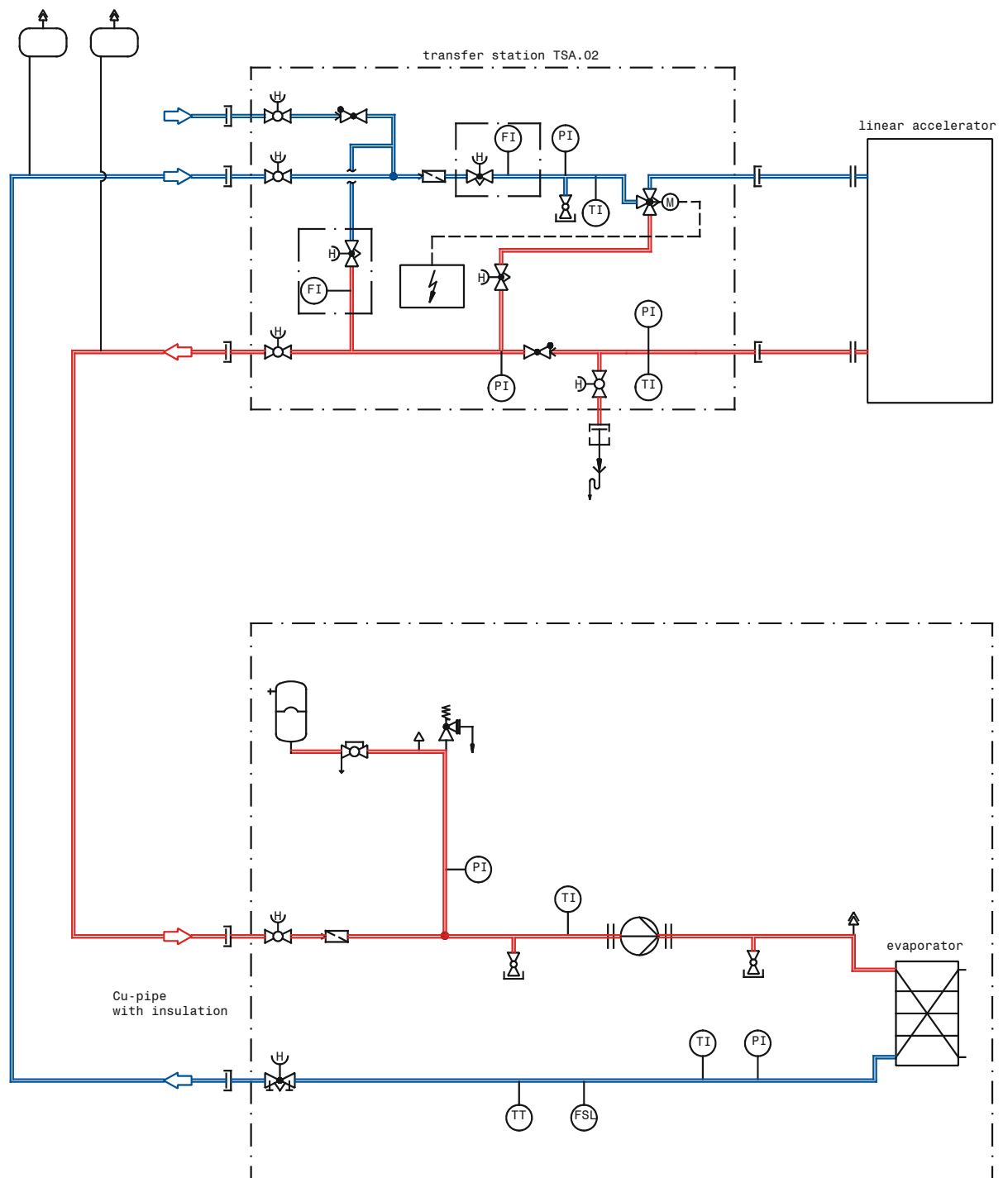
cold water- / glycol diagram KPC 115 ...



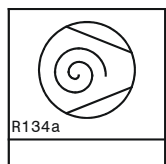
key: cold water- / glycol diagram

	evaporator		safety relief valve (water)
	linear accelerator		three-way valve with motor (24V AC) and spring-controlled
			high pressure pump
	shut-off valve		expansion receiver
	pressure adjusting valve		thermometer
	flow regulating valve		pressure gauge
	filter strainer		temperature sensor
	shut-off valve with cap		flow meter
	filling and draining cock		switch box
	non-return valve		air receiver with automatic air vent
	manual air vent		water flow meter with adjusting valve
	automatic air vent		

cold water- / glycol diagram KPC 107 ...



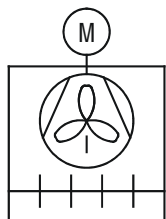
key: refrigerant diagram



compressor



crankcase heating



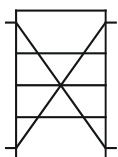
condenser with fan
and motor



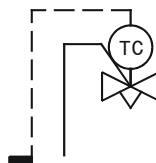
Rotolock valve



solenoid valve



evaporator



thermostatic
expansion valve



refrigerant shut-off valve
with cap



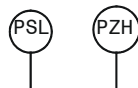
pressure gauge with
shut-off valve



vibration absorber



refrigerant non-return valve



low-/high pressure switch



refrigerant dehydrator



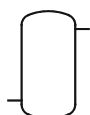
pressure control



inspection gauge with
moisture indicator



pressure sensor



receiver



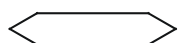
hot gas line



liquid line



suction gas line



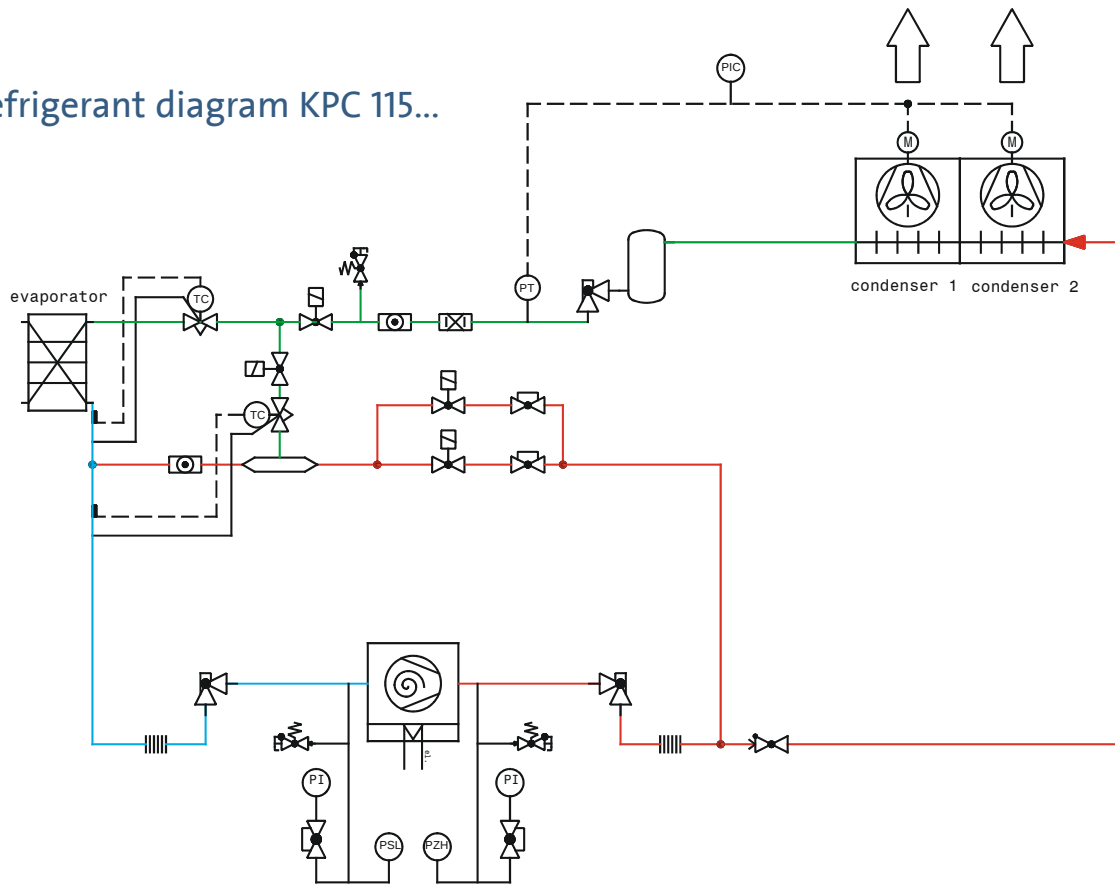
pipe expansion



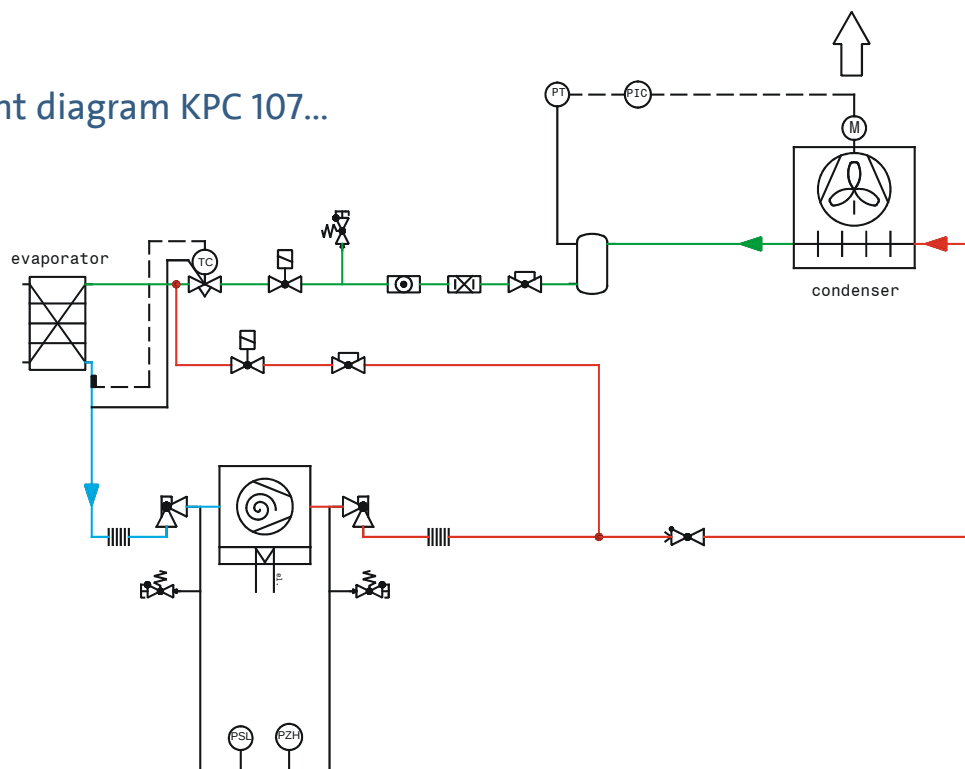
Schrader valve

refrigerant diagram

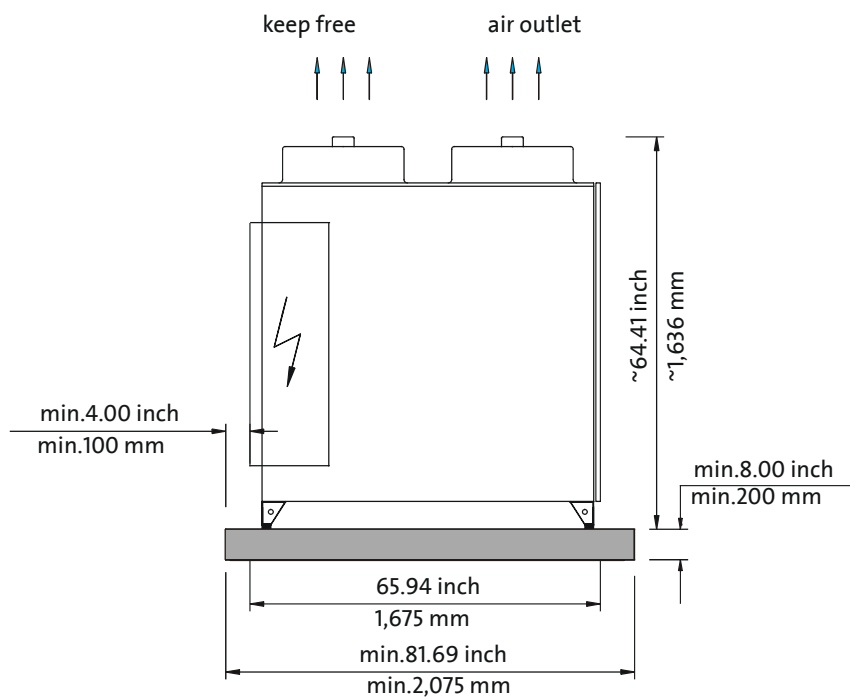
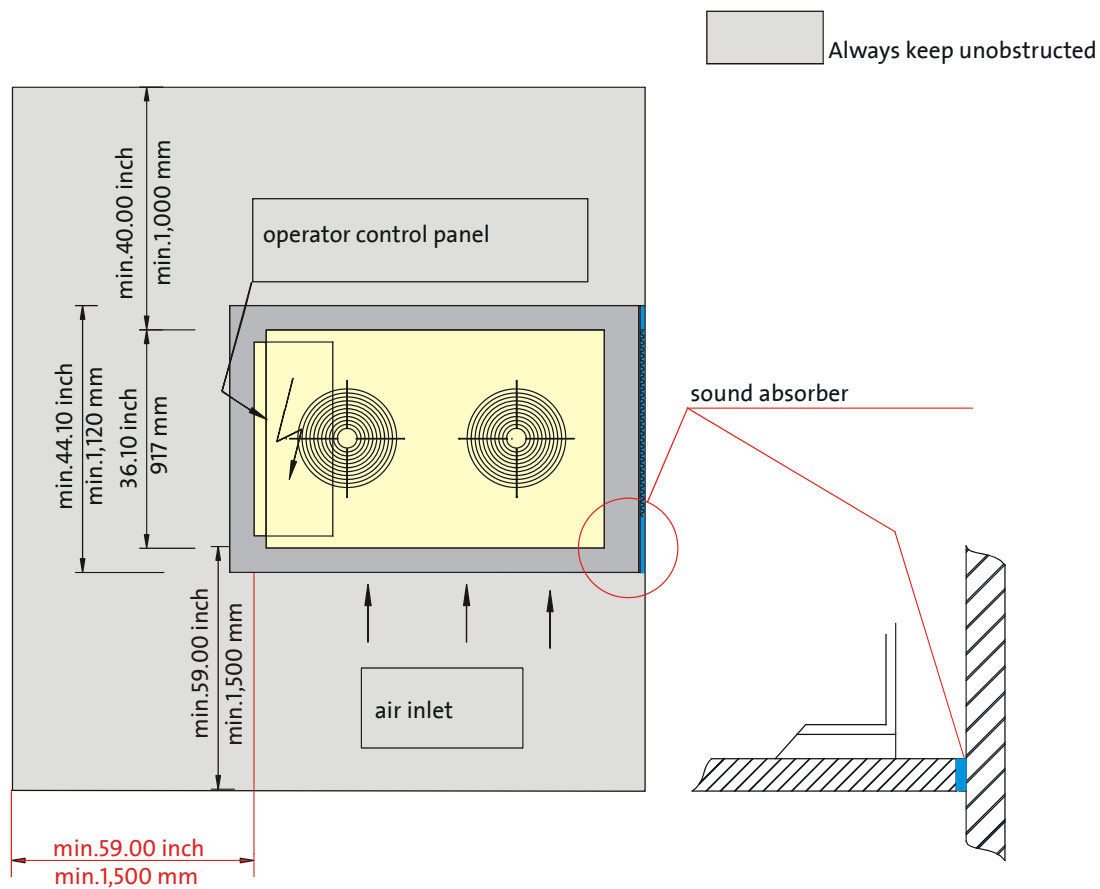
refrigerant diagram KPC 115...



refrigerant diagram KPC 107...



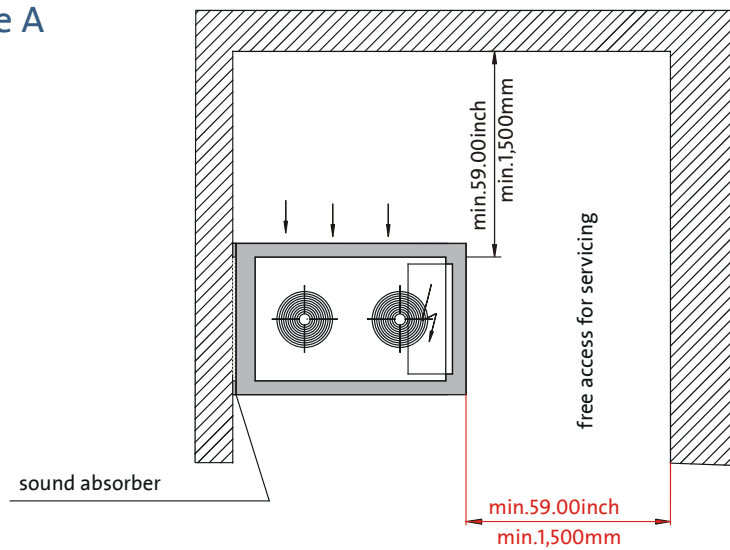
waterchiller installation



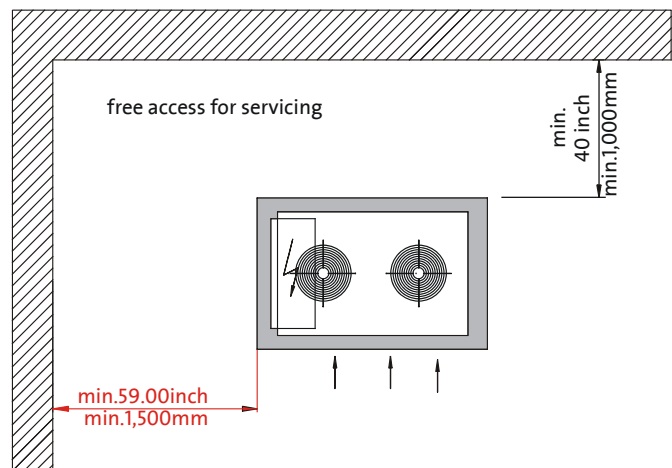
Dimensions for the concrete bed should be adjusted according to local circumstances.

waterchiller installation

installation example A

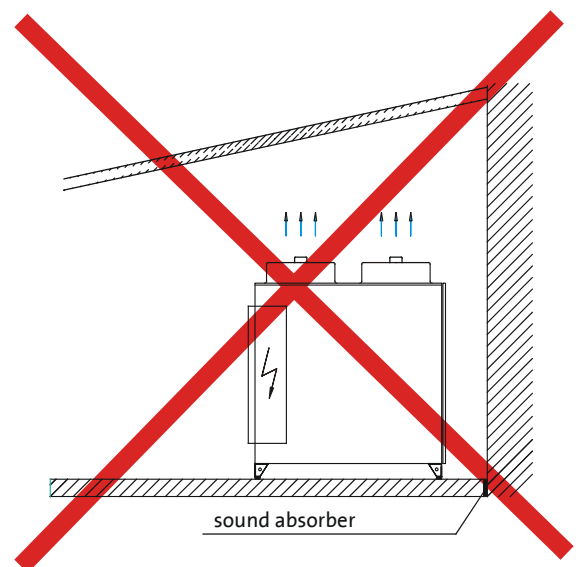


installation example B



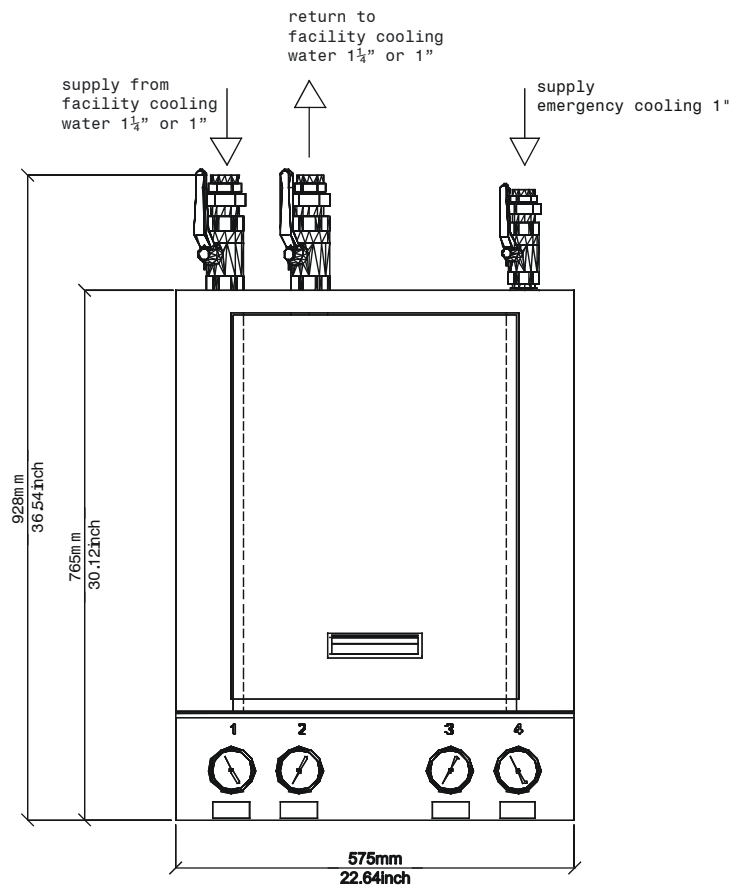
installation example C

Air outlet keep free!

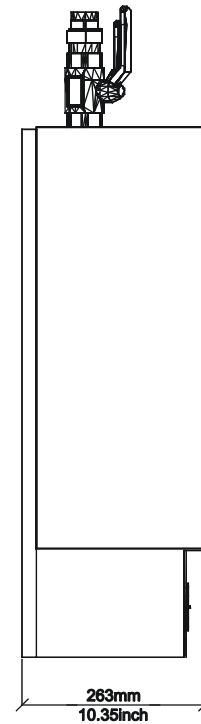


transfer station

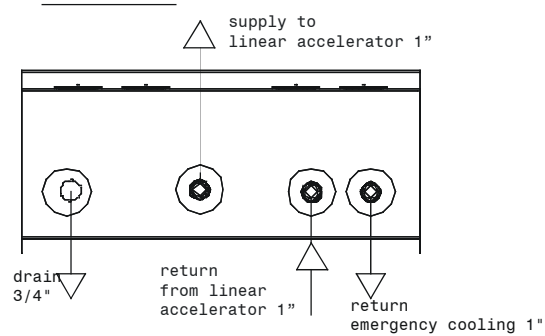
Front view



Left view

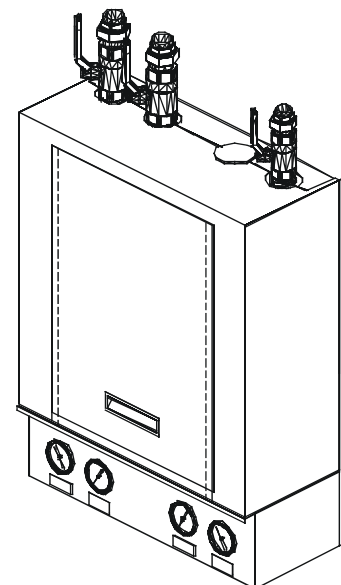


Bottom view



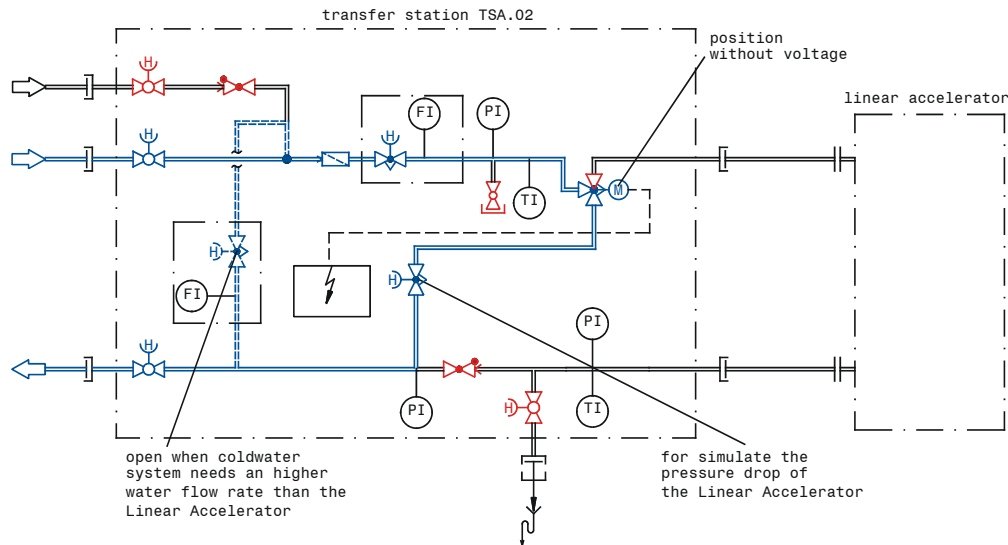
- 1 = temperature gauge supply
- 2 = pressure gauge supply
- 3 = pressure gauge return
- 4 = temperature gauge return

Operation weight (1b 79.4 / Kg 36)
 Pipe and fittings inside humidity covered!

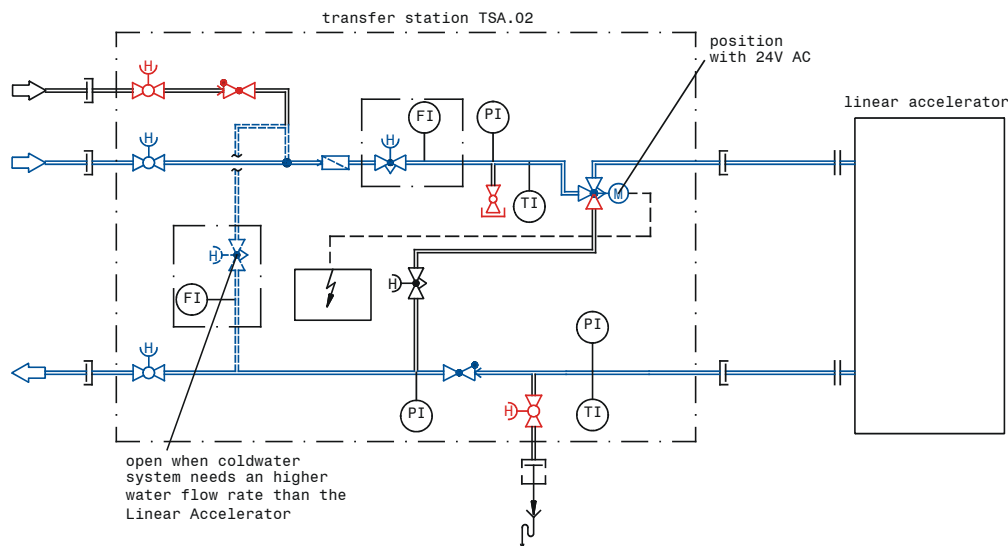


transfer station

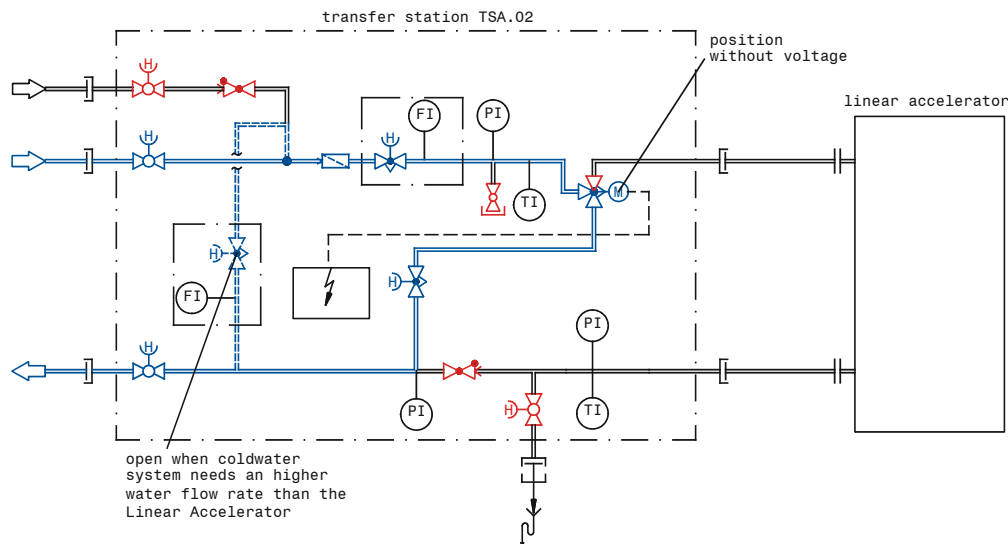
1. regulating phase



2. operation phase - Linear Accelerator needs cooling (24V AC)

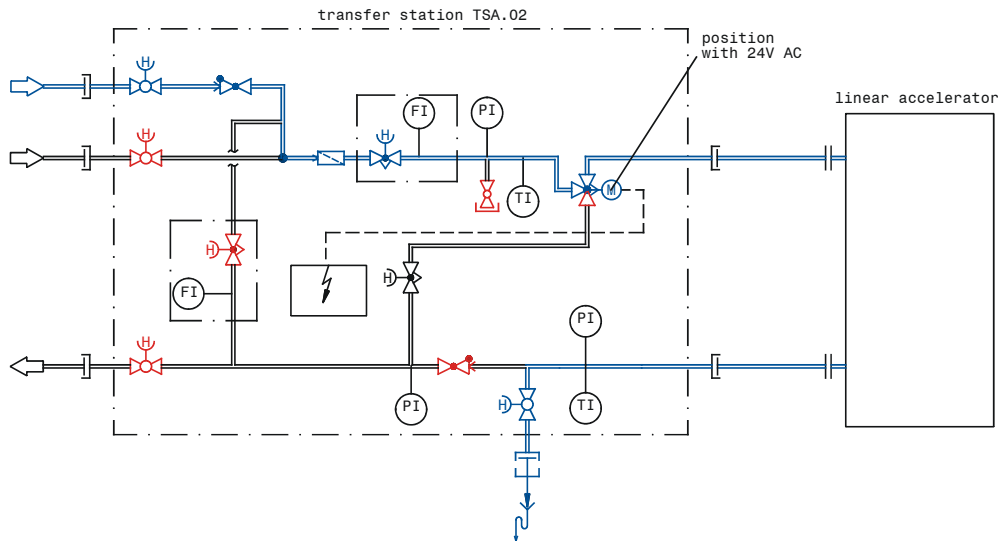


2.1. operation phase - Linear accelerator „power off“ (no 24V AC)

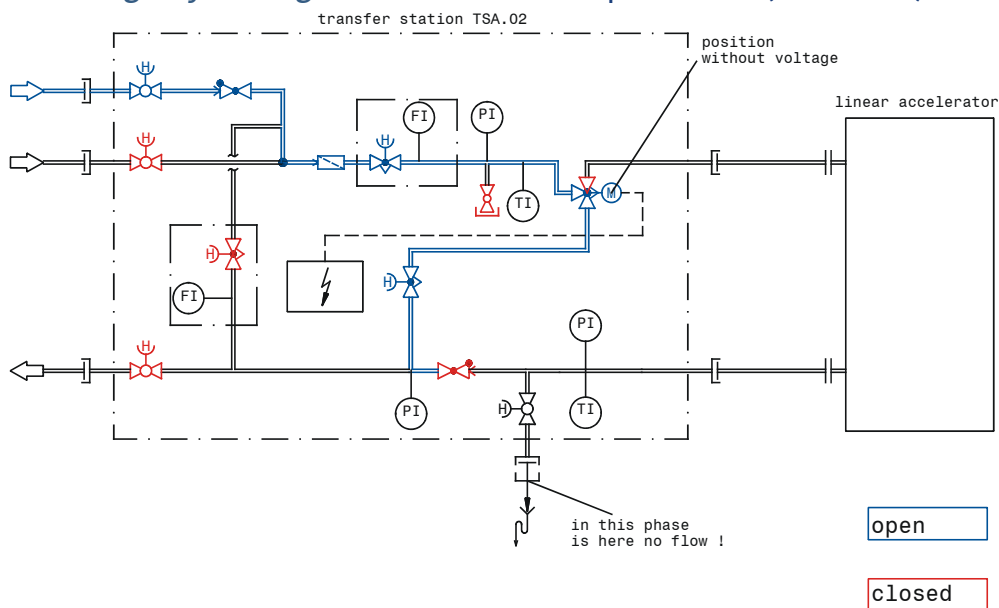


transfer station

3. emergency cooling - Linear Accelerator needs cooling (24V AC)



3.1. emergency cooling - Linear Accelerator „power off“ (no 24V AC)



The following procedure prevents pressure surges!

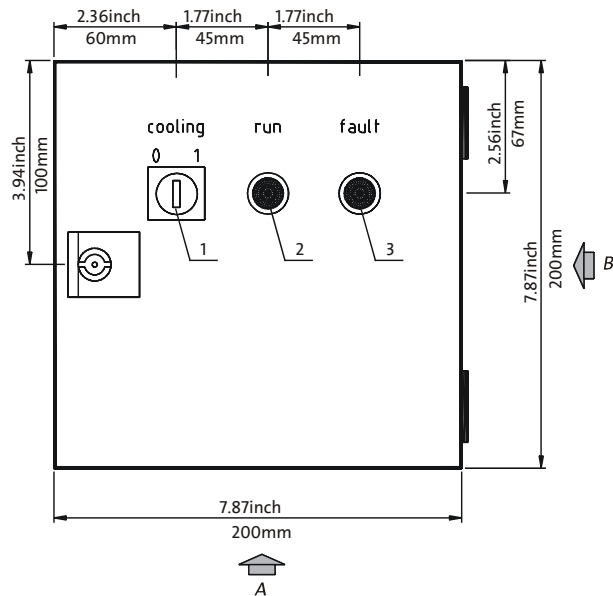
During the alternation of „operating phase“ to „emergency cooling“ first the water supply valve and then the water return valve must be closed.

During the alternation of „emergency cooling“ first the water return valve and then the water supply must be closed.

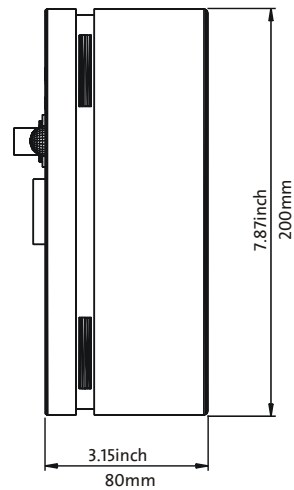
After „emergency cooling“ test the percent of the necessary glycol (ethylene glycol or propylene glycol)! Do not use automotive ANTI-FREEZE

remote control panel

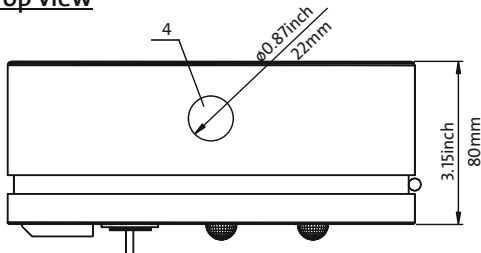
Front view



Left view



Top view



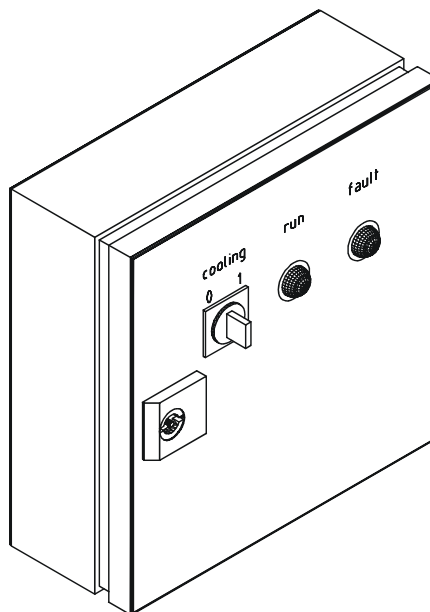
1 = control switch

2 = lamp "run"

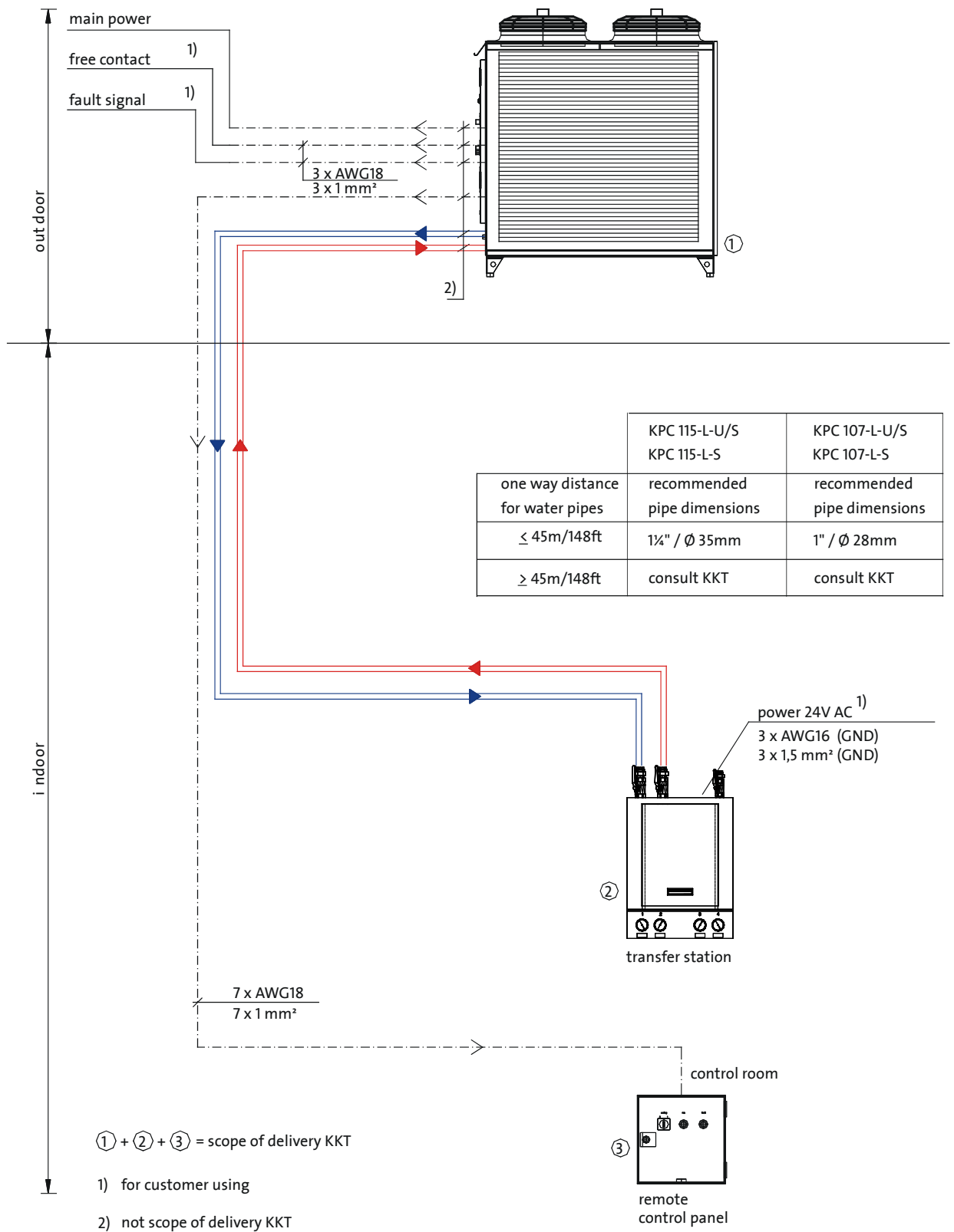
3 = lamp "fault"

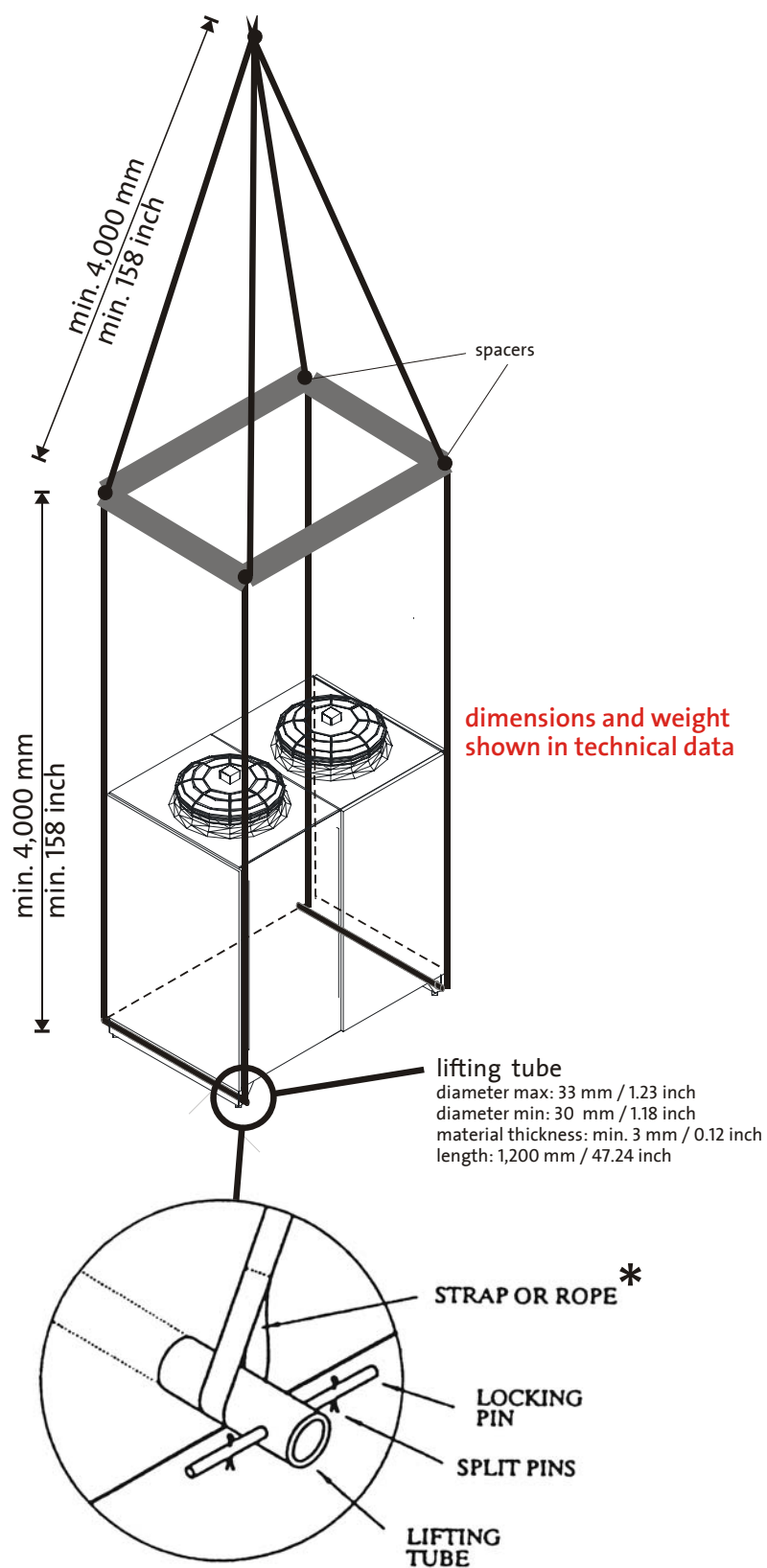
4 = power supply

operation weight (lb[kg])4.6[2.1]



overview of outdoor waterchiller transfer station / remote control panel





* Attention: don't use metal rope !!

Technical development
may cause changes of configuration

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