BEKOMAT®

LEADING THE WAY IN CONDENSATE DRAINAGE

BEKO

SMALL DROPS WITH A POWERFUL IMPACT ON PRODUCTION RESULTS

BEKOMAT® electronically level-controlled condensate discharge without loss of compressed air

ALWAYS AND EVERYWHERE

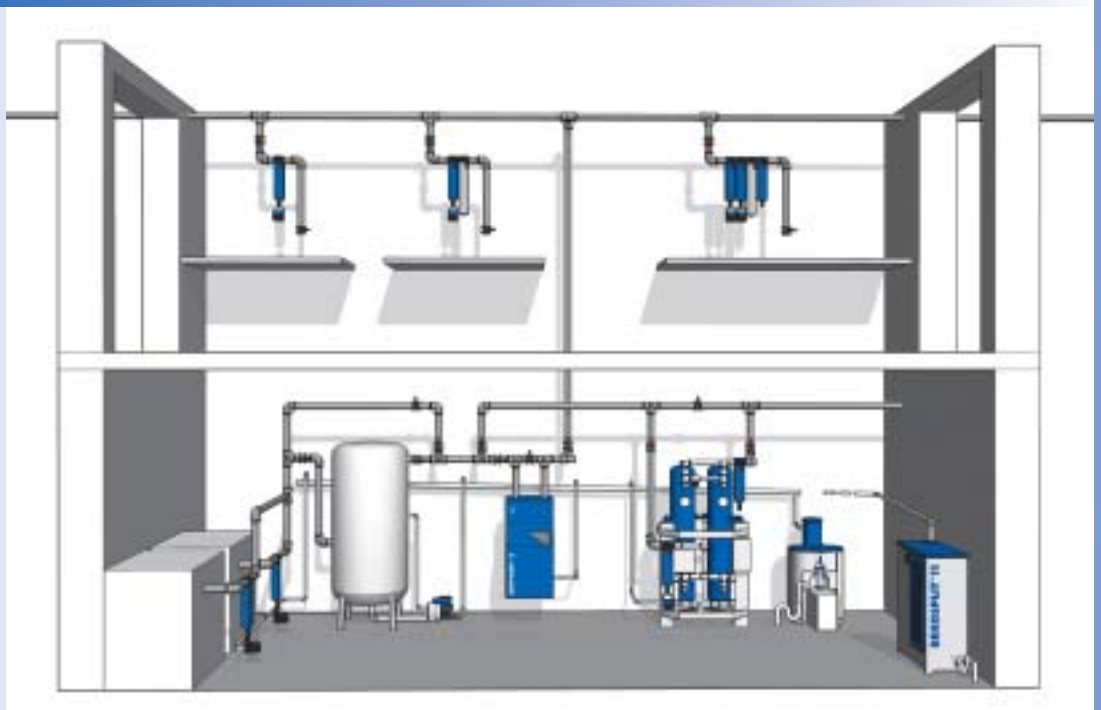
Condensate formation is unavoidable. It is always a "by-product" of compressed air generation and spreads throughout the entire compressed air network. Around two thirds of the condensate is produced in the aftercooler. The rest occurs anywhere in the network as the compressed air cools down. This problem is inherent in the system and can cause both damage and higher costs. The condensate may:

- be aggressive (pH value)
- carry dirt particles (pipe corrosion, pollution of the air)
- contain harmful substances (ambient air)
- be contaminated with oil (oil-lubricated compressors)

It must also be considered that the amount of compressed air condensate produced will vary according to the:

- temperature
- climate zone
- location above MSL
- relative atmospheric humidity
- distance from the sea
- compressed air flow rate

The solution is a condensate drainage system adapted to the actual amount produced. This will cut costs and prevent damage. BEKOMAT® condensate drains – designed for the electronically level-controlled discharge of the condensate in compressed air networks – functions without unnecessary loss of compressed air and with minimal energy input. Our customers are clearly convinced by the high economic - efficiency and reliability of the device: there are now more than 1,000,000 BEKOMAT® units installed worldwide.



+1:

+2:

+3:

+4:

+5:

+6:

NO UNNECESSARY LOSS OF COMPRESSED AIR

DISCHARGE ADAPTED TO CONDENSATE QUANTITY

SENSOR REGISTERS EVERY TYPE OF CONDENSATE

UNAFFECTED BY DIRT

LOW MAINTENANCE

FULLY AUTOMATIC MONITORING

A SOUND DECISION – AND OPTIMUM RESULTS

BEKOMAT® GUARANTEES A SHORT PAYBACK PERIOD

BEKOMAT® from BEKO has become the industrial standard because of its high reliability and particularly because it offers energy-saving operation without loss of compressed air. There are a number of very good technical reasons for this:

Compared with float drains, BEKOMAT® has decisive advantages, especially since it:

- functions unaffected by dirt, resulting in reliable operation
- is equipped with a fault signal
- requires very little maintenance
- has large cross-sections to prevent emulsification

BEKOMAT® also has decisive advantages over solenoid valves, especially since it:

- operates in accordance with the actual condensate quantity
- avoids unnecessary loss of compressed air
- is equipped with a fault signal
- has large cross-section value to prevent emulsification

BEKOMAT® FOR ALL OPERATING CONDITIONS:

A wide range of BEKOMAT® models makes it possible to select a suitable and cost-effective device for each particular application. The device can be adapted to all the usual supply voltages; the operating elements and the control system are protected to IP 65.

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OVERVIEW OF BEKOMAT®-MODELS AND APPLICATIONS

STANDARD BEKOMAT®

SPECIAL BEKOMAT®

STANDARD BEKOMAT®

BEKOMAT® 12, 13, 14, 16, 20, AND 21

- Compressor

  Around 60 percent of the total condensate is produced in the aftercooler of the compressor.

- Receiver

  More than 10 percent of the total condensate stems from the air receiver.

- Dryer

  Up to 25 percent of the total condensate separates from the vapour in the refrigeration dryer. Therefore, efficient drying requires equally efficient condensate drainage.

- Filter

  What is the use of a perfect filter if the condensate drain is not matched to the task or not functioning correctly? Our BEKOMAT® 20 FM with filter management has been designed specifically for monitoring the filter lifetime and indicating the need for filter element replacement.

SPECIAL BEKOMAT®

BEKOMAT® 3, 6, 8, AND 9

- Multistage compressor

  If the condensate from the intercoolers of a multistage compressor is not reliably removed, it will get into the next compressor stage.

  The BEKOMAT® LA/LP model prevents the impeller of turbo compressors coming under “drop attack” and eliminates condensate build-up and water hammer.

- Vacuum

  A device specifically developed for vacuum or pres sureless systems with operating pressures from 0.1 to 1.8 bar (abs.).

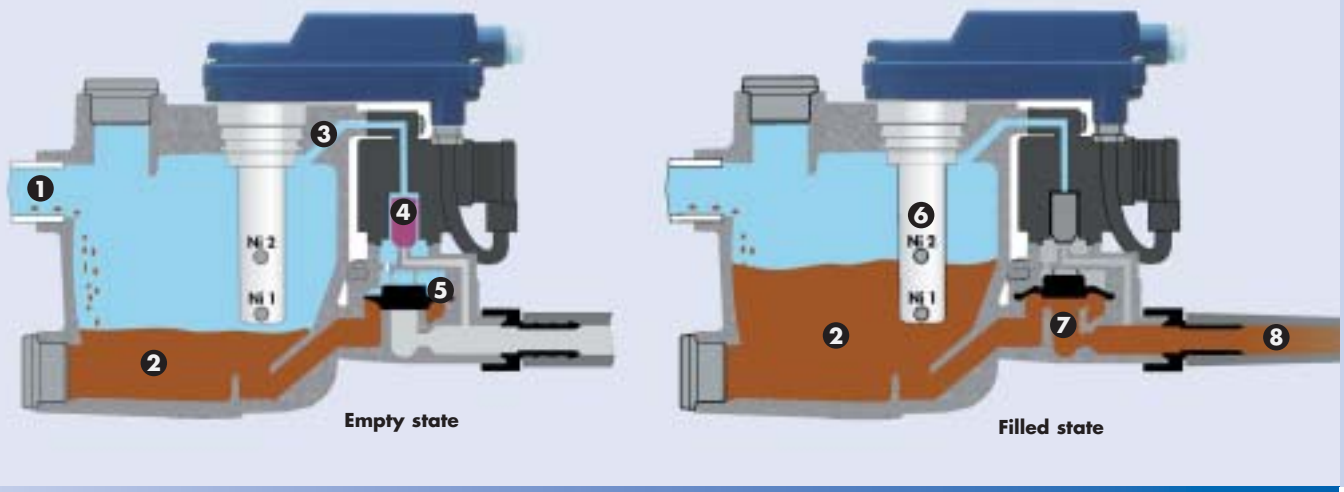
- Hazardous areas

  For application in hazardous areas where spark pre-vention is crucial. The device is rated for use in area II 2G EEx ib IIB T4, i.e., for explosion class II B and temperature class T4. Permissible fluids are: benzine, ethane, methane, town gas, butadine, ethyl alcohol, methanol, diesel fuel, ethylene, propane, petroleum, heating oil, and hydrogen sulphide.

- Stainless steel versions

  For the removal of highly aggressive condensates.

FUNCTIONAL DESCRIPTION
USING BEKOMAT® 14 AS AN EXAMPLE



Empty state:

Condensate trickles through the inlet opening ❶ and collects in the container ❷. The diaphragm valve is closed, since the pilot supply line ❸ and the solenoid valve ❹ ensure pressure compensation above the valve diaphragm ❺. The larger surface area above the diaphragm results in a high closing force, so that the valve seat is tight and leakproof.

Filled state:

When the container ❷ has filled with condensate and the capacitive level sensor ❻ signals at the maximum point, the solenoid valve is energized and the area above the valve diaphragm is vented. The valve diaphragm lifts off the valve seat ❼, and the pressure in the housing forces the condensate into the discharge pipe ❽.

The BEKOMAT® electronic system now calculates the discharge rate down to the minimum point and uses this figure to determine the exact valve opening period required. The valve will again be fully closed and leakproof before any compressed air can escape.

Should the condensate discharge fail to function properly (blocked discharge pipe, faulty diaphragm), the device will change to the alarm mode after 60 seconds. In this case, the red LED flashes and, if desired, the alarm signal is relayed via a potential-free contact. While in the alarm mode, the solenoid valve will open every 4 minutes for a period of 7.5 seconds. This ensures that a BEKOMAT® unit filled in an unpressurized state will, under pressure, automatically revert to normal operating conditions and thus clear the alarm.

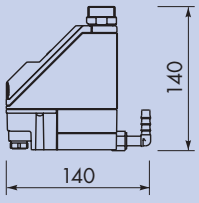
From the BEKOMAT® the condensate can flow for treatment into the ÖWAMAT® oil-water separator which is designed to deal with condensate contaminated with free and dispersed non-emulsified oil. In the case of stable emulsions, our BEKOSPLIT® emulsion splitting plant will clean up the condensate leaving only a minimum of waste for disposal. Either system will help your company to conform to the legal requirements concerning the treatment & discharge of compressed air condensate.

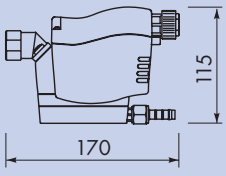
BEKOMAT®

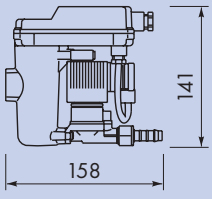
TECHNICAL INFORMATION AND DATA

STANDARD-BEKOMAT® 20, 21, 12

Model		20	20 FM	21	21 PRO	12	12 CO	12 CO PN63
Working pressure (bar)	**min.**	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	max.	16	16	16	16	16	16	63
Weight (kg)		0.7	0.7	0.7	0.7	0.8	0.8	0.9
Application-Area	ö/öf	ö/öf	ö/öf	ö/öf	ö	ö/öf	ö/öf	
Application		Cond. drain for separators and filters (also other drainage points)	Filter drain with filter management (also other drainage points)	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points
Connections	**Inlet**	1x G ½ 1x G ¾	1x G ½ 1x G ¾	1x G ½	1x G ½	2x G ½	2x G ½	2x G ½
	Outlet (Hose connector)	1x G ¼	1x G ¼	1x G ¼	1x G ¼	1x G ⅜	1x G ⅜	1x G ⅜
	(Hose di)	8-10 mm	8-10 mm	8-10 mm	8-10 mm	10-13 mm	10-13 mm	13 mm
Peak compressor performance		**5**	**(5)**	**5**	**5**	**8**	**8**	**8**
(m^3/min)		**4**	**(4)**	**4**	**4**	**6.5**	**6.5**	**6.5**
		2.5	**(2.5)**	**2.5**	**2.5**	**4**	**4**	**4**
Peak dryer performance		**10**	**(10)**	**10**	**10**	**16**	**16**	**16**
(m^3/min)		**8**	**(8)**	**8**	**8**	**13**	**13**	**13**
		5	**(5)**	**5**	**5**	**8**	**8**	**8**
Peak filter performance		**50**	**50**	**50**	**50**	**80**	**80**	**80**
(m^3/min)		**40**	**40**	**40**	**40**	**65**	**65**	**65**
		25	**25**	**25**	**25**	**40**	**40**	**40**







Please take the relevant climate zone into account when dimensioning your specific BEKOMAT® application, for example:

- Northern Europe, Canada, Northern USA, Central Asia
- Central and Southern Europe, Central America
- South East Asian coastal regions, Oceania, Amazon and Congo regions

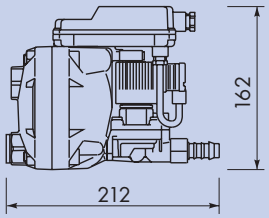
Temperature range: +1 to 60 °C

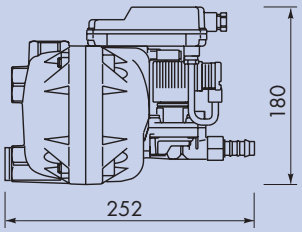
BEKOMAT® 12, 13, 14, 16 with heating system and – if provided with suitable insulation – potential application down to -25 °C.

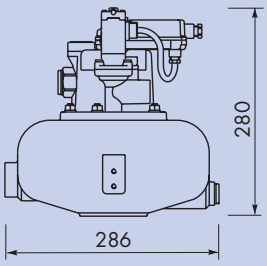
BEKOMAT®
TECHNICAL INFORMATION AND DATA

STANDARD-BEKOMAT® 13, 14, 16

Model		13	13 CO	13 CO PN25	13 CO PN40	14	14 CO	14 CO PN25	16 CO
Working pressure (bar)	min.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	max.	16	16	25	40	16	16	25	16
Weight (kg)		2.0	2.0	2.0	2.0	2.9	2.9	2.9	5.9
Application-Area		ö	ö/öf	ö/öf	ö/öf	ö	ö/öf	ö/öf	ö/öf
Application		Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points	Suitable for all drainage points
Connections	Inlet	2x G 1/2	2x G 1/2	2x G 1/2	2x G 1/2	3x G 3/4	3x G 3/4	3x G 3/4	2x G 3/4 1x G 1
	Outlet (Hose connector)	1x G 1/2	1x G 1/2	1x G 3/8	1x G 3/8	1x G 1/2	1x G 1/2	1x G 3/8	1x G 1/2
	(Hose di)	13 mm	13 mm	13 mm	13 mm	13 mm	13 mm	13 mm	
Peak compressor performance (m³/min)		35	35	35	35	150	150	150	1700
		30	30	30	30	130	130	130	1400
		20	20	20	20	90	90	90	1000
Peak dryer performance (m³/min)		70	70	70	70	300	300	300	3400
		60	60	60	60	260	260	260	2800
		40	40	40	40	180	180	180	2000
Peak filter performance (m³/min)		350	350	350	350	1500	1500	1500	
		300	300	300	300	1300	1300	1300	
		200	200	200	200	900	900	900	







BEKOMAT® 20 FM	like BEKOMAT® 20 but with filter management and potential-free contact
BEKOMAT® 21 PRO	like BEKOMAT® 21 but with potential-free contact and 3 LEDs
CO	hard coated
PN …	Designed for operating pressures above 16 bar: PN 25 – 25 bar, PN 40 – 40 bar, PN 63 – 63 bar
ö	oil-contaminated condensate
öf	oil-free, often aggressive condensate

For dimensioned drawings, operating instructions and detailed information about climate zones go to www.beko.de. We will also be happy to provide you with information about our large range of special BEKOMAT® models. Just get in touch with us.

BEKO

HIGH-QUALITY COMPRESSED AIR FOR

BEKOMAT®

The convincing concept for condensate discharge

ÖWAMAT®

Clean & safe oil-water separation. Super efficient with OEKOSORB® replacement filters

BEKOSPLIT®

Splitting plants for the reliable, economic and environmentally friendly treatment of emulsions

DRYPOINT®

The complete product range for compressed air drying: refrigeration dryers, adsorption dryers, membrane dryers

CLEARPOINT®

Flow-optimised, reliable filters and water separators for compressed air and industrial gas

BEKOFLOW®

Innovative, cost-cutting compressed air pipe system

BEKOBLIZZ®

Optimised cooling processes using deep-cooled, dry compressed air

EN ISO 9001:2000 DNV Certified Company

BEKO

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