Product Data Sheet
Electronic Condensate Drain CDE..L..

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Field of application

Condensate drains of the CDE..L.. are designed for removing compressed air condensate not containing aggressive substances. This means that the liquids produced in the compressed air system will automatically be discharged to an atmospheric pressure level while ensuring no loss of compressed air.

Features

In principle, condensate is always produced in a compressed air system. It occurs in the form of quantities of liquid, mainly consisting of water with some amounts of oil, or in the form of concentrated liquids, separated by filtration. The result often is rust formation and corrosion within the compressed air system leading to additional contamination of the condensate. To avoid condensate carryover and thus prevent the compressed air from being contaminated with coarse pollutions, the condensate must be removed immediately and directly from the compressed air system using condensate drains. Condensate drains of the CDE..L.. series have an integrated condensate collecting vessel separated from the compressed air flow to which the condensate is discharged and where it is stored temporarily. The condensate collecting vessel contains a wear-free, magnetic float level sensor controlled by an electronic control system.

A condensate pilot controlled solenoid diaphragm valve is connected to the condensate collecting vessel. It is protected by an upstream dirt screen. When reaching the maximum level, the control system activates the solenoid valve and the condensate is drained. When reaching the minimum level, the control system closes the solenoid valve before any compressed air may escape (electronic level-controlled, loss-free condensate drain). All models of CDE..L.. condensate drains have a removable, screw connected condensate inlet and outlet as well as a pluggable connection for power supply. The models CDE6LC to CDE500LC additionally offer a potential free alarm contact, models CDE8LC to CDE500LC a second, bottom condensate inlet. The condensate drains comply with the requirements of the Pressure Equipment Directive 2014/68/EU respectively EMC Directive 2004/108/EC.

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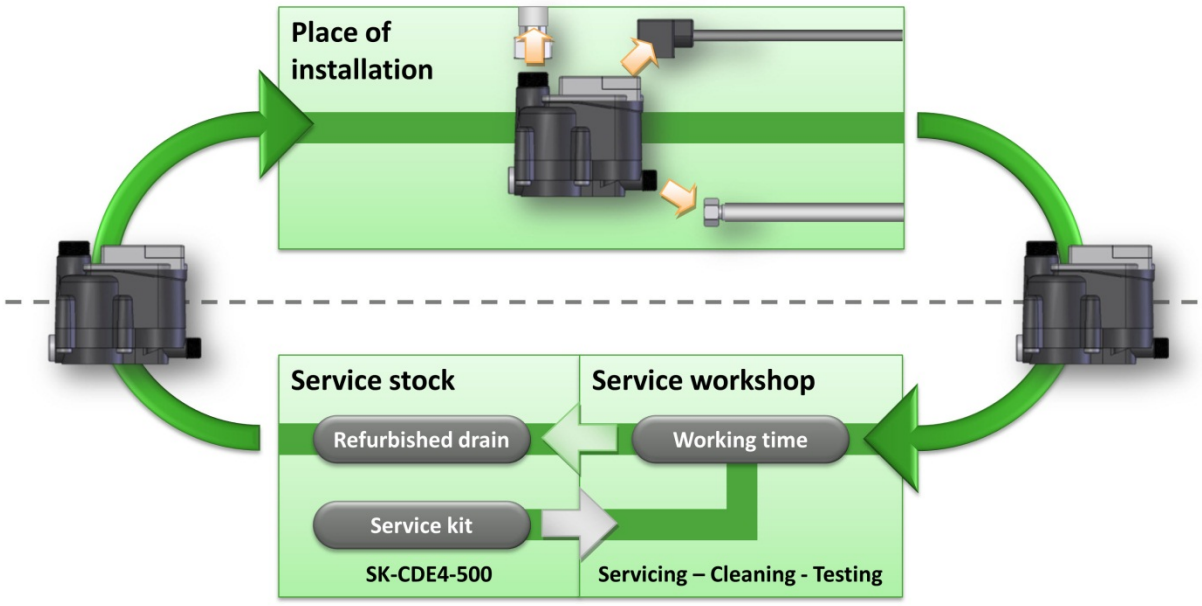
Service-Refurbishing-Concept

The design of CDE..L.. condensate drains allows the application of a unique service refurbishing concept.
In general a condensate drain requires for a proper operation the following connections:

- condensate inlet
- [possibly vent line]
- condensate outlet
- power supply

All mentioned connections can be easily removed directly at the CDE..L.. condensate drain due to a screw- or plug-type design. This means the condensate drain can be easily and quickly removed from or placed at its place of installation.
Most times there are limited possibilities and uncomfortable conditions for proper servicing and cleaning a condensate drain at the place of installation. So the idea is, presupposing the approval of the customer, to simply replace a condensate drain that's overdue to service by an already fully refurbished and tested condensate drain.



This service refurbishing concept offers benefits for the end user as well as the end user's service partner and it's service department:

- reduced service time and so reduced down time of the compressed air station
- a proper serviced, cleaned and tested condensate drain is taken back into operation
- service work is carried out at more suitable and comfortable conditions in the service workshop (of the service partner) with direct access to all tools, testing facilities, etc.
- possibility for a proper and effective cleaning due to direct access to suitable cleaning facilities in the service workshop (of the service partner)

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Basic data

Model	Nominal volume flow (VN)*1	Nominal condensate quantity	Min./Max. operating pressure	Min./Max. operating temperature
CDE4L	250 m³/h	2.2 litres/h	1 - 16 bar	+2°C - +65°C
CDE6LC	380 m³/h	3.3 litres/h		
CDE8LC	500 m³/h	4.4 litres/h		
CDE16LC	1,000 m³/h	8,8 litres/h		
CDE40LC	2,500 m³/h	22 litres/h		
CDE160LC	9,600 m³/h	84 litres/h		
CDE500LC	30,000 m³/h	264 litres/h		

*1 - refers to 1 bar(a) and 20°C at 7 bar operating pressure, intake air of compressor 25°C at 60% relative humidity, 35°C compressed air discharge temperature of aftercooler

Features	CDE4L	CDE6LC	CDE8LC	CDE16LC	CDE40LC	CDE160LC	CDE500LC
Integrated dirt screen	■	■	■	■	■	■	■
Top inlet with screwed connection	■	■	■	■	■	■	
Top inlet revolving		■	■	■	■	■	
Bottom condensate inlet			■	■	■	■	■
Electronic control	■	■	■	■	■	■	■
Microprocessor control		■	■	■	■	■	■
Potential free alarm contact		■	■	■	■	■	■
External receiver							■

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Volume flow conversion factors

«F1» - Climate factor (intake temperature and relative humidity of compressors suction air)

	15°C	20°C	**25°C**	30°C	35°C	40°C	45°C
50%	7.25	9.76	12.99	17.11	22.35	28.83	36.90
60%	8.70	11.71	**15.59**	20.54	26.82	34.60	44.28
70%	10.15	13.66	18.19	23.96	31.30	40.37	51.66
80%	11.60	15.61	20.78	27.38	35.77	46.13	59.04
90%	13.05	17.56	23.38	30.81	40.24	51.90	66.42

«F2» - System factor aftercooler (operating pressure and compressed air discharge temperature of aftercooler)

	4 bar	5 bar	6 bar	**7 bar**	8 bar	9 bar	10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar
15°C	2.90	2.42	2.07	1.81	1.61	1.45	1.32	1.21	1.12	1.04	0.97	0.91	0.85
20°C	3.90	3.25	2.79	2.44	2.17	1.95	1.77	1.63	1.50	1.39	1.30	1.22	1.15
25°C	5.20	4.33	3.71	3.25	2.89	2.60	2.36	2.17	2.00	1.86	1.73	1.62	1.53
30°C	6.85	5.70	4.89	4.28	3.80	3.42	3.11	2.85	2.63	2.44	2.28	2.14	2.01
35°C	8.94	7.45	6.39	**5.59**	4.97	4.47	4.06	3.73	3.44	3.19	2.98	2.79	2.63

«F3» - System factor refrigeration dryer (operating pressure and pressure dew point of fridge dryer)

	4 bar	5 bar	6 bar	**7 bar**	8 bar	9 bar	10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar
3°C	1.35	1.13	0.97	**0.85**	0.75	0.68	0.62	0.56	0.52	0.48	0.45	0.42	0.40
5°C	1.55	1.29	1.10	0.97	0.86	0.77	0.70	0.64	0.59	0.55	0.52	0.48	0.45
7°C	1.76	1.47	1.26	1.10	0.98	0.88	0.80	0.73	0.68	0.63	0.59	0.55	0.52
10°C	2.13	1.77	1.52	1.33	1.18	1.06	0.97	0.89	0.82	0.76	0.71	0.67	0.63

«F4» - System factor downstream filter (downstream of fridge dryer)

	4 bar	5 bar	6 bar	**7 bar**	8 bar	9 bar	10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar
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Calculation of the converted volume flow

	Converted volume flow VK	**Nominal required volume flow VN_{min}**
Aftercooler	*VK = VN / [0,1 x (F1 - F2)]*	*VN_{min} = VK x 0,1 x (F1 - F2)*
Fridge dryer	*VK = VN / [0,1 x (F2 – F3)]*	*VN_{min} = VK x 0,1 x (F2 – F3)*
Filter	*VK = VN x F4*	*VN_{min} = VK / F4*

VK : Converted volume flow calculated for the operating conditions
VN_{min}: Nominal required volume flow calculated for the operating conditions, based on the volume flow at operating conditions

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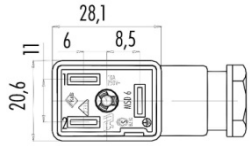
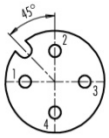
Maintenance rules

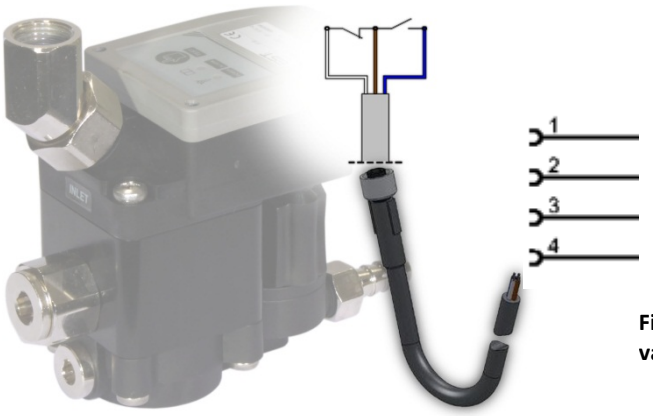
All models	Cleaning if required (depending on the contamination of the condensate), replacement of wear parts after one year (Service kit SK-CDE4-500L)

Product-specific data

Specification	
Backflow resistance*2	0.2 bar (corresponds to 2 m water column)
Valve cross-section	85 mm²
Electrical power supply	230 V (±10%) 50/60 Hz / 115 V (±10%) 50/60 Hz / 24 V DC (±10%)
Power consumption	10 VA
Protection Class	IP 65
Electrical connection	solenoid plug type B - 2+PE industrial standard 

*2 - in depressurised state

Potential free alarm contact	
Contact	NC / NO
Type of contact	Relay (normally activated ; non-activated in alarm mode)
Max. switching voltage (effective)	230 V AC/DC
Max. switching current (effective)	5 A AC/DC
Max. switching power (effective)	500 VA / 150 W
Electrical connection	female M12 connector A-coding 4-pole (e.g. SP-TMM/ECA5-M12) 



Brown	COM
White	NC
Blue	NO
Black	---

Figures referred to the non-activated relay in alarm mode!

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Materials

Component	
Housing (pressurised)	Valve- and top plate, main body CDE4L-CDE6LC: PA6 50% glass fibres (Polyamid) Receiver CDE8LC-CDE500LC: aluminium, hart coated External receiver CDED500LC: stainless steel
Housing (non-pressurised)	PA6 (Polyamid)
Level sensor	PET (Polyestertetrafluorat), foamed NBR
Valve, dirt screen	Stainless steel AISI304, AISI303, AISI430
Fittings	Brass, nickel plated
Diaphragm	FKM (Viton), PP (Polypropylen)
Sealing materials	NBR

Connections, dimensions and weight

Model	Connections of condensate inlet	Connection of condensate outlet	Height (A)	Width (B)	Depth (C)	Weight
CDE4L	1 x G 1/2	G 3/8	120 mm	60 mm	143 mm	0.4 kg
CDE6LC	1 x G 1/2	G 3/8	86 mm (107 mm)	69 mm	170 mm (148 mm)	0.5 kg
CDE8LC	2 x G 1/2	G 3/8	118 mm (140 mm)	69 mm	172 mm (151 mm)	0.6 kg
CDE16LC	2 x G 1/2	G 3/8	133 mm (155 mm)	69 mm	172 mm (151 mm)	0.7 kg
CDE40LC	2 x G 1/2	G 3/8	193 mm (215 mm)	69 mm	172 mm (151 mm)	1.2 kg
CDE160LC	2 x G 1/2	G 3/8	209 mm (230 mm)	121 mm	184 mm (162 mm)	2.8 kg
CDE500LC	G 1 ; 2 x G 1/2	G 3/8	281 mm	230 mm	492 mm	18 kg

Classification according to Pressure Equipment Directive 2014/68/EU for group 2 fluids

Model	Volume	Category	Commissioning inspection	Routine inspection
CDE4L	0.06 litres	---	---	---
CDE6LC	0.08 litres	---	---	---
CDE8LC	0.09 litres	---	---	---
CDE16LC	0.11 litres	---	---	---
CDE40LC	0.22 litres	---	---	---
CDE160LC	0.45 litres	---	---	---
CDE500LC	9.4 litres	I	---	---

Other Directives

Model	
All models	Directive 2004/108/EC for electromagnetic compatibility (EMC Directive)

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Models

CDE 4 L

CDE 6 LC

CDE 8 LC

CDE 16 LC

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Models

CDE 40 LC

CDE 160 LC

CDE 500 LC

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