Hydraulic cylinders type CKA - for potentially explosive atmospheres

ATEX - ISO 6020-2 - nominal pressure 16 MPa (160 bar) - max 25 MPa (250 bar)

CKA cylinders are derived from standard CK (tab.B137) with certification according to ATEX 2014/34/EU. They are designed to limit the external surface temperature, according to the certified class, to avoid the self-ignition of the explosive mixtures potentially present in the environment. CKAM servovalves are equipped with ex-proof built-in digital magetostrictive position transducer. ATEX certified.

- Optional ex-proof proximity sensors, ATEX certified
- Bore sizes from 25 to 200 mm
- Up to 3 rod diameters per bore
- Strokes up to 5000 mm
- Single or double rod
- 15 standard mounting styles
- 5 seals options
- Attachments for rods and mounting styles, see section B500

For cylinder’s dimensions and options see tab. B137
For cylinder’s choice and sizing criteria see tab. B015

**Table BX400-4/E**

1. **ATEX CERTIFICATION**

<table>
<thead>
<tr>
<th>Cylinder type</th>
<th>Group</th>
<th>Equipment category</th>
<th>Gas/dust group</th>
<th>Temperature class (1)</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>CKA</td>
<td>II</td>
<td>2 GD</td>
<td>II C/III C</td>
<td>T85°C/T135°C (T6)</td>
<td>T6/T5, T4</td>
</tr>
<tr>
<td>CKA + ex-proof rod position transducer (2)</td>
<td>II</td>
<td>2 G</td>
<td>II B</td>
<td>T6/T5</td>
<td>1,2</td>
</tr>
<tr>
<td>CKA + ex-proof proximity sensors</td>
<td>III</td>
<td>2 G</td>
<td>III C</td>
<td>T85°C/T100°C</td>
<td>21,22</td>
</tr>
</tbody>
</table>

(1) Temperature class depends of the max fluid temperature and sealing system
(2) The rod position transducer is certified to work with explosive gas (cat. 2G) and dust (cat. 2D)

2. **MODEL CODE**

CAKA to ATEX 2014/34/EU dimensions to ISO 6020 - 2

Ex-proof position transducer
See section [ ]
- = omit if not requested
M= Digital magnetostrictive

Incorporated subplate (1)
- = omit if subplate is not requested
10 = size 06
20 = size 10
30 = size 16
40 = size 25

Bore size (1)
from 25 to 200 mm

Rod diameter (1)
from 12 to 140 mm

Second rod diameter for double rod (1)
from 12 to 140 mm, omit for single rod

Stroke (1)
up to 5000 mm ( 4000 mm for CKAM )

Mounting style (1)
C = fixed clevis
D = fixed eye
E = feet
G = front trunion
H = rear trunion
L = intermediate trunion
N = front flange
P = rear flange
S = fixed eye + spherical bearing
T = threaded hole + tie rods extended
V = rear tie rods extended
W = both end tie rods extended
X = basic execution
Y = front tie rods extended
Z = front threaded holes

REF. ISO
MP1 (4)
MP3 (4)
MS2
MT1
MT2 (4)
MT4 (6)
ME5
ME6 (4)
MX7
MX2
MX1
MX3
MX5

Sealing system, see section [ ]
1 = (NBR + POLYURETHANE) very high friction and low speeds
2 = (FKM + PTFE) very low friction and high speeds
3 = (NBR + PTFE) very low friction, single acting - pulling
4 = (NBR + PTFE) very low friction, single acting - pushing
5 = female thread
6 = light male thread
7 = female thread + light female thread
8 = rear sensor
9 = front sensor

Spacer (1)
0 = none
2 = 50 mm
4 = 100 mm
6 = 150 mm
8 = 200 mm

Cushioning (1)
0 = none
1 = rear only
2 = front only
3 = rear and front
8 = front only
9 = rear and front

(1) For details see table B137
(2) For spare parts request indicate the series number printed on the nameplate only for series < 30
(3) To be entered in alphabetical order
(4) Not available for double rod
(5) XV dimension must be indicated in the model code
(6) XV dimension must be indicated in the model code
3 CERTIFICATION
In the following are listed the cylinders marking according to Atex certification.
II 2/2G Ex h IIC T6, T4 Gb (gas)
II 2/2D Ex h IIC T85°C, T135°C Db (dust)
GROUP II, Atex
II = Group II for surface plants
2/2 = High protection (equipment category)
G = For gas, vapours
D = For dust
Ex = Equipment for explosive atmospheres
IIC = Gas group
IIIC = Dust group
T85°C/T135°C = Surface temperature class for dust, see section 🇧 🇪
T6/T4 = Surface temperature class for gas, see section 🇧 🇪
Gb/Db = ATEX certified for gas, vapours

4 INSTALLATION NOTES
Before installation and start-up refer to tab. X600
- The max surface temperature indicated in the nameplate must be lower than the following values:
  - Gas: 80% of gas ignition temperature
  - Dust: max value between dust ignition temperature - 75°C and 2/3 of dust ignition temperature
- The ignition temperature of the fluid must be 50°C greater than the max surface temperature indicated in the nameplate
- The cylinder must be grounded using the threaded hole on the rear head, evidenced by the nameplate with ground symbol. The hydraulic cylinder must be put at the same electric potential of the machine

5 EX-PROOF ROD POSITION TRANSDUCER
CODE: MI
CKA cylinders are available with “Balluff” Ex-proof rod position transducer. ATEX certified to
II 1/2 G Ex d IIC T6/T5 Ga/Gb
for gas and II 2D Ex tb IIC T85°C/T110°C Db IP 67 -40°C Td +65°C (T6) -40°C Ta +80°C (T5) for dust. Ex-proof transducers meet the requirements of the following european standard documentations:
II 1/2 G Ex d IIC T6/T5 Ga/Gb
II 2D Ex tb IIC T85°C/T110°C Db IP 67
EN 60079-0
EN 60079-1
EN 60079-26
The transducer housing is made in AISI 303.
For dimensions and details, contact our technical office.
For certification and start-up refer to the user’s guide included in the supply
The transducer is available with SIL certified on request

6 MAIN CHARACTERISTICS AND FLUID REQUIREMENTS
| Ambient temperature | -20°0 +70°C, -40° + 65°C for CKAM |
| Fluid temperature | -20°C + 70°C (T6), -20°C + 120°C (T4) for seals type 2 (*) |
| Max surface temperature | ≤ +85°C (T6) ≤ +135°C (T4) for seals type 2 (*) |
| Max working pressure | 16 MPa (160 bar) |
| Max pressure | 25 MPa (250 bar) |
| Max frequency | 5 Hz |
| Max speed (see section [7]) | 1 m/s (seals type 2, 4, 6, 7); 0,5 m/s (seals type 1) |
| Recommended viscosity | 15 + 100 mm²/s |
| Max fluid contamination level | ISO4496 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog |

Note: (*) Cylinders with seals type 2 may also be certified T6 limiting the max fluid temperature to 70°C

7 SEALING SYSTEM FEATURES
The sealing system must be chosen according to the working conditions of the system: speed, operating frequencies, fluid type and temperature. Additional verifications about minimm/maximum rod speed ratio, static and dynamic sealing friction are warmly suggested, see tab. B015
When single acting seals are selected (types 6 and 7), the not pressurized cylinder’s chamber must be connected to the tank. Contact our technical office for the compatibility with other fluids not mentioned below and specify type and composition.

8 EX-PROOF PROXIMITY SENSORS
CODES: R = front sensor; S = rear sensor
CKA cylinders are available with ex-proof proximity sensors, ATEX certified to
Ex II 3G Ex nA II T4
-25°C + 80°C. They meet the requirements of the following european standard documentations:
EN 60079-0, EN 60079-15.
Their functioning is based on the variation of the magnetic field, generated by the sensor itself, when the cushioning piston enters on its influence area, causing a change of state (on/off) of the sensors. The sensor housing is made in stainless steel.
For dimensions and details, contact our technical office.
For certification and start-up refer to the user’s guide included in the supply

Sensors technical data
| Ambient temperature | -25° + 80°C |
| Nominal voltage | 24 Vdc |
| Operating voltage | 10 + 30 Vdc |
| Max load | 200 mA |
| Repeatability | <5% |
| Protection degree | IP 68 |
| Max frequency | 1000 Hz |
| Max pressure | 25 MPa |