

(1) **Statement of Conformity**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**



(3) **Statement of Conformity Number:** TÜV CY 19 ATEX 0206182 X

(4) for the equipment: Variable Displacement axial piston pump
Type PVPCA* series

(5) of the manufacturer: **ATOS S.p.A.**

(6) Address: Via alla Piana, 57
21018 Sesto Calende (VA) – ITALY

Order number: 0206182

Date of issue: 2019-05-16

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this statement of conformity and the documents therein referred to.

(8) TÜV CYPRUS Ltd certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 19 0206182.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN ISO 80079-36:2016

EN ISO 80079-37:2016

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

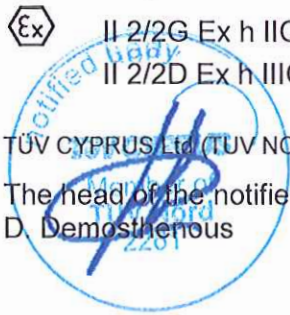
(11) This statement of conformity relates only to the design, examination and tests of the specified equipment in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

 II 2/2G Ex h IIC T5, T4 Gb, and/or
II 2/2D Ex h IIIC T100°C, T135°C Db

TÜV CYPRUS Ltd (TUV NORD Group),

The head of the notified body,
D. Demosthenous



TÜV CYPRUS (TUV NORD) Ltd,
2 Papaflessa Str., 2235 Latsia, Nicosia - P.O.Box: 20732, 1663 Nicosia, Cyprus
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Excerpts or changes shall be allowed by the TÜV CYPRUS Ltd

(13) **SCHEDULE**

(14) **Statement of Conformity No. TÜV CY 19 ATEX 0206182 X**

(15) Description of equipment

The PVPCA pumps are variable displacement axial piston pumps for high pressure operation. This type of pump is designed to be used with hydraulic oils according to DIN 51524... 535 or synthetic fluids having similar lubricating characteristics. The equipment is designed to operate both with dust and gas explosive atmosphere.

All the electrical equipment and the optional valves (electrical and non-electrical) must be separately ATEX certified for suitable hazardous atmosphere.

Allowable temperature range:

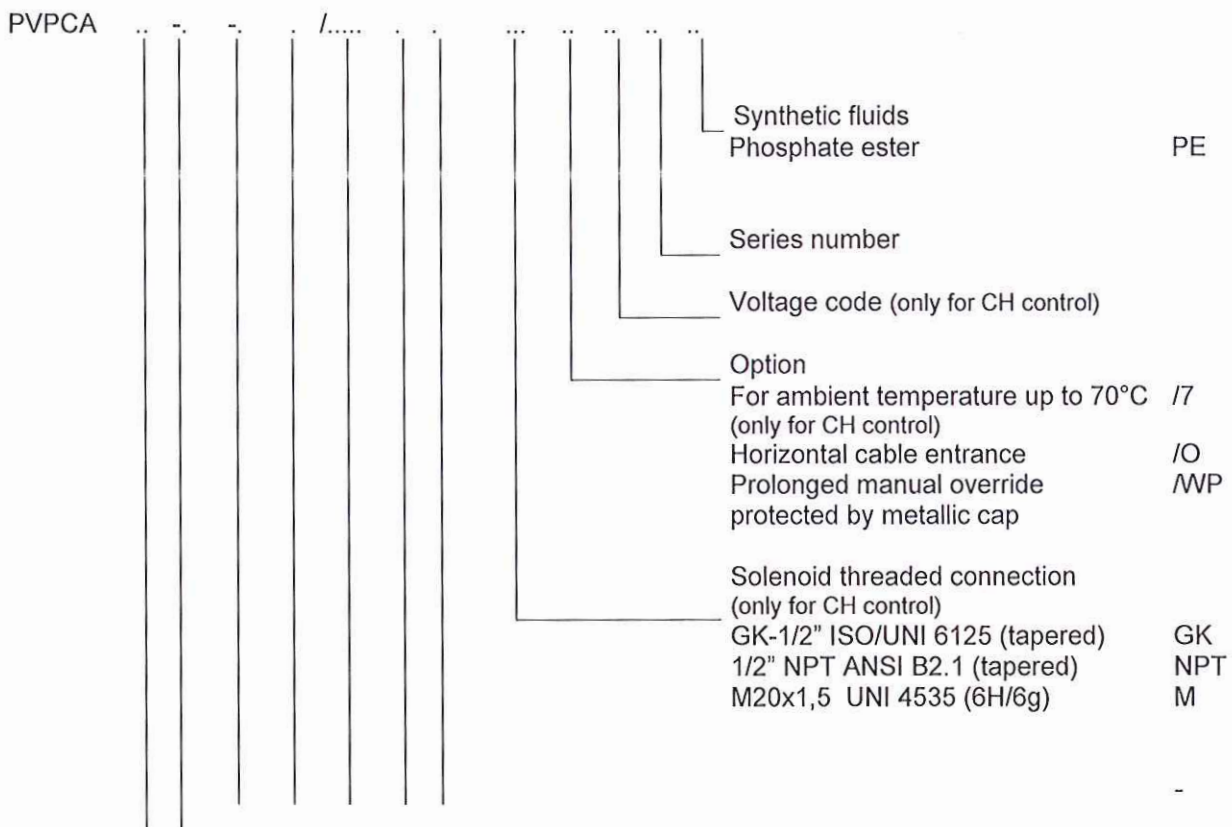
The admissible ambient temperature range is: -20°C \ +70°C.

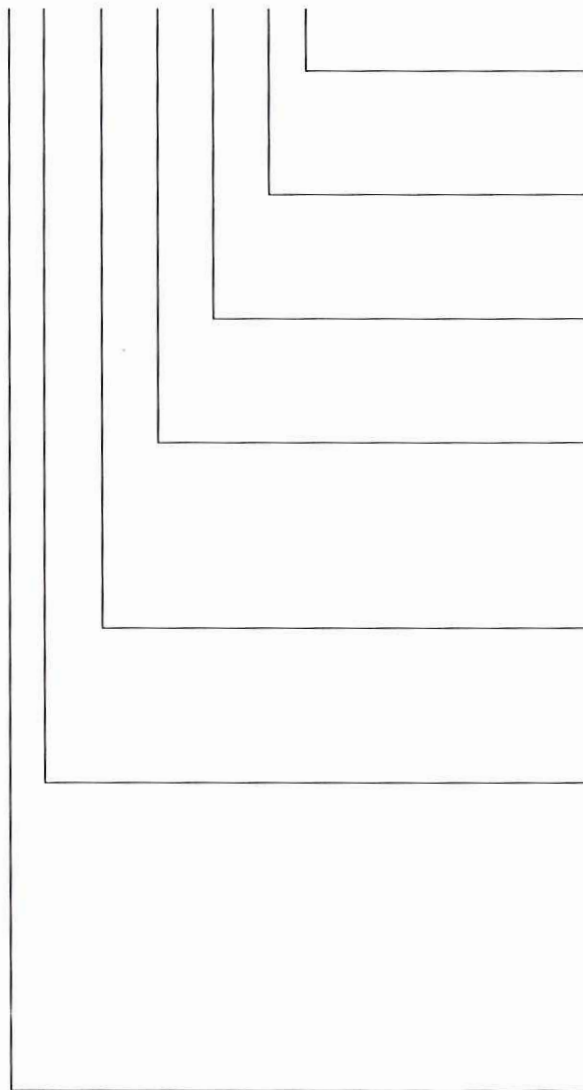
Maximum inlet fluid temperature range is: -20°C \ +80°C.

According to below operating temperature table.

Identification code:

The variable displacement axial piston pump identification code is composed as follow:



	Direction of rotation	
	colckwise	D
	counterclockwise	S
	Shaft	
	Keyed	1
	Splined	5
	Type of PVPCA	
	Max displacement of axial piston pump	
	29 cm ³ /rev	029
	46 cm ³ /rev	046
73 cm ³ /rev	073	
88 cm ³ /rev	090	
Size		
For displacement 029	3	
For displacement 046	4	
For displacement 073 and 090	5	
Type of control		
Manual pressure compensator	C	
Manual pressure compensator with venting	CH	
Remote pressure compensator	R	
Load sensing (pressure & flow)	L	
Constant power (combined pressure & flow)	LW	
Additional suffix for pumps with through shaft		
for coupling with PFEA-3* (only for PVPCA*-3*)	XA	
for coupling one PFEA-4* (only for PVPCA*-4*)	XB	
for coupling one PFEA-5* (only for PVPCA*-5*)	XC	

Ratings:

Main Characteristics

Installation position	Any position ^(*)
Loads on the shaft	Axial and radial loads are not allowed on the shaft. The coupling should be sized to absorb the power peaks
Fluid	ISO 16/13 Filters at 10 µm value with β ₁₀ ≥ 75
Recommended viscosity	Max at cold start During operation
	1000 mm ² /s 15-100 mm ² /s
Recommended pressure on inlet port	From -0,20 to +24 bar

(*) The drain port must be on the top of the pump. Drain line must be separated and unrestricted to the reservoir and extended below the oil level as far from the inlet as possible. Suggested maximum line length is 3m.

Operating temperature

Pump version	Ambient Temperature	Maximum inlet fluid temperature	Temperature class
Standard (NBR seal) and /PE	-20°C < T _{amb} < +60°C	+60°C	T5; T100 °C
/7 /PE	-20°C < T _{amb} < +70°C	+80°C	T4; T135 °C

Operating characteristics

Model	PVPCA-*-3029	PVPCA-*-4046	PVPCA-*-5073	PVPCA-*-5090				
Displacement [cm ³ /rev]	29	46	73	88				
Theoretical max flow at 1450 rpm [l/min]	42	66,7	105,8	127,6				
Max working pressure/ peak pressure [bar] ⁽¹⁾	280/350	280/350	280/350	250/315				
Max pressure on drain port [bar]	1,5	1,5	1,5	1,5				
Max torque on the first shaft [N/m]	Type 1 200	Type 5 190	Type 1 230	Type 5 330	Type 1 490	Type 5 620	Type 1 490	Type 5 620
Max permissible load on drive shaft [N]	F _{ax}	1000	1500	2000	2000			
	F _{rad}	1500	1500	3000	3000			
Speed rating [rpm] ⁽²⁾	600-3000	600-2600	600-2200	600-1850				

(1) Max pressure is 190 bar for /PE version.

(2) Max speed is 2000/1900/1600/1500 rpm for /PE version, respectively for the four sizes

Warning labels:

None.

Operating and maintenance manual No. X400-*/E.

(16) Test documents are listed in the test report No. 19 0206182.

Routine test:

None.

(17) Special conditions for safe use

- The presence of the fluid inside the pump must be monitored by a level indicator, the pump can't start to run if the inner of the pump is not complete full. The function of each ignition prevention system has to be tested before initial operation according to EN ISO 80079-37, section 6. The ignition prevention systems must be for the ignition prevention level IPL 1 (SIL 1) according to EN ISO 80079-37. The requirements of EN ISO 80079-37 must also be observed.
- It is responsibility of the user to verify that the maximum inlet fluid temperature doesn't exceed the value reports in the technical data.
- The maximum surface temperature has been calculated without taking into account a dust layer on the equipment and a safety factor.

(18) Essential Health and Safety Requirements

No additional ones. Assured by compliance with the standards set out in the [9].

(1) **Statement of Conformity**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**



(3) **Statement of Conformity Number:** TÜV CY 19 ATEX 0206193 X

(4) for the equipment: Fixed Displacement-Twelve-vanes pump
Type PFEA* series

(5) of the manufacturer: **ATOS S.p.A.**

(6) Address: Via alla Piana, 57
21018 Sesto Calende (VA) – ITALY

Order number: 0206193

Date of issue: 2019-05-16

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this statement of conformity and the documents therein referred to.

(8) TÜV CYPRUS Ltd certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 19 0206193.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN ISO 80079-36:2016

EN ISO 80079-37:2016

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This statement of conformity relates only to the design, examination and tests of the specified equipment in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:



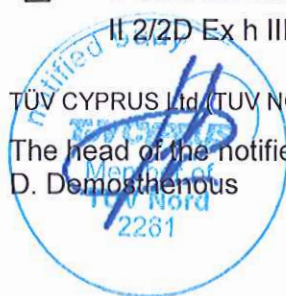
II 2/2G Ex h IIC T6, T5 Gb, and/or

II 2/2D Ex h IIIC T85°C, T100°C Db

TÜV CYPRUS Ltd (TUV NORD Group),

The head of the notified body,

D. Demosthenous



TÜV CYPRUS (TUV NORD) Ltd,
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(13) **SCHEDULE**

(14) **Statement of Conformity No. TÜV CY 19 ATEX 0206193 X**

(15) Description of equipment

The PFEA pumps are fixed displacement-twelve-vanes pumps, cartridge design with integral hydraulic balancing for high pressure operation and long service life. This type of pump is designed to be used with hydraulic oils according to DIN 51524... 535 or synthetic fluids having similar lubricating characteristics. The equipment is designed to operate both with dust and gas explosive atmosphere.

Allowable temperature range:

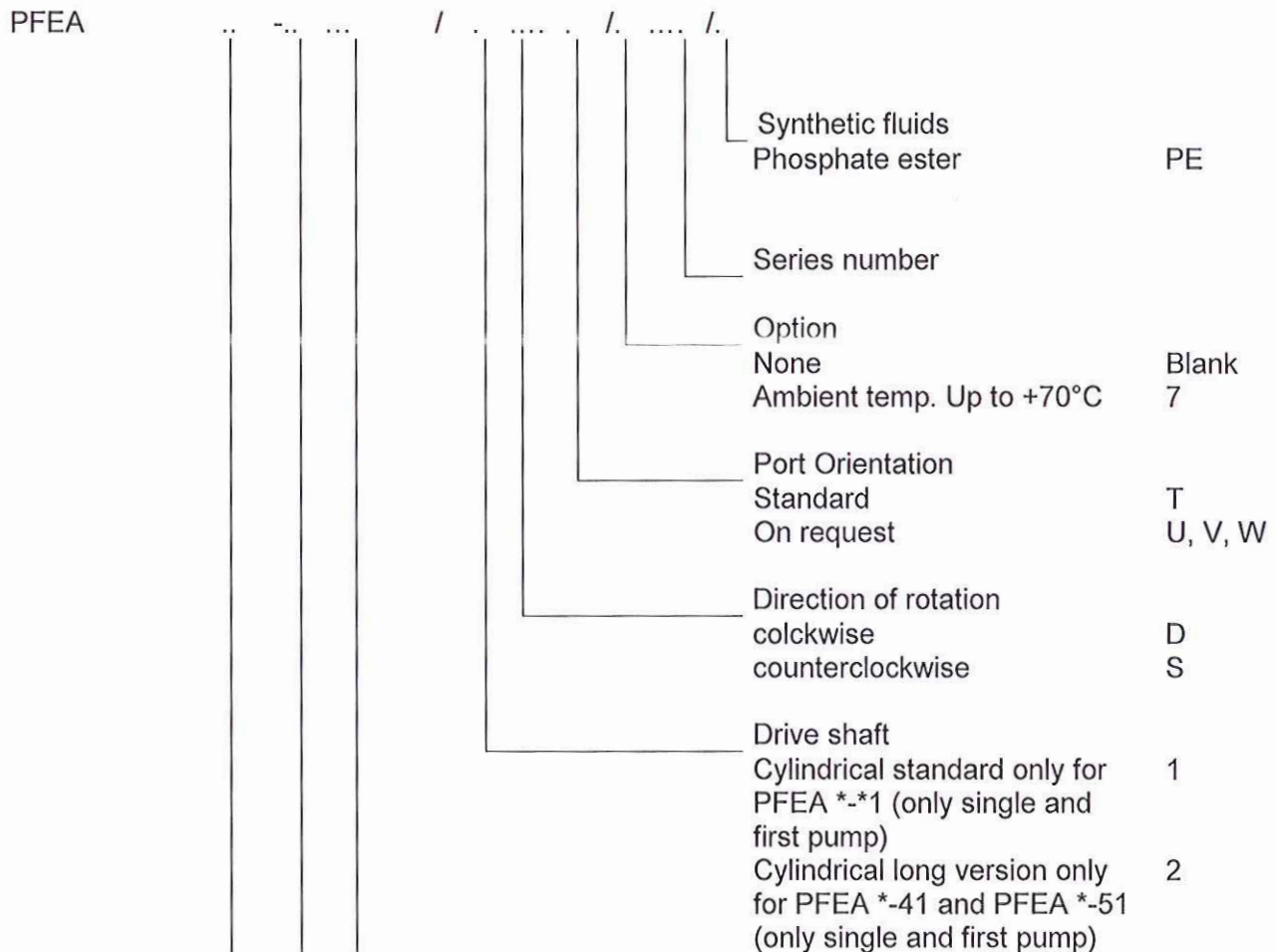
The admissible ambient temperature range is: $-20^{\circ}\text{C} \setminus +70^{\circ}\text{C}$.

Maximum inlet fluid temperature range is: $-20^{\circ}\text{C} \setminus +80^{\circ}\text{C}$.

According to below operating temperature table.

Identification code:

The fixed displacement-twelve-vanes pump identification code is composed as follow:



	Cylindrical for high torque applications for all types of PFEA (only single and first pump)	3
	Splined standard for all types of PFEA (any position)	5
	Splined for high torque applications for types PFEA*-31, PFEA*-32, PFEA*-41, PFEA*-42 (only single and first pumps)	6
	Displacement (cm ³ /rev)	
	010, 016, 022, 028, 036, 044	PFEA 31
	029, 037, 045, 056, 070, 085	PFEA 41
	090, 110, 129, 150	PFEA 51
	016, 022, 028, 036	PFEA 32
	045, 056, 070, 085	PFEA 42
	090, 110, 129, 150	PFEA 52
	Size	
		31
		41
		51
		32
		42
		52
	Additional suffix for pumps with through shaft	
	for coupling with PFEA-31	XA
	for coupling one PFEA-4* (only for PFEA-4 and PFEA-5*)	XB
	for coupling one PFEA-51 (only for PFEA-5*)	XC
	With through shaft, without rear flange	XO

Ratings:

Main Characteristics

Installation position	Any position								
Loads on the shaft	Axial and radial loads are not allowed on the shaft. The coupling should be sized to absorb the power peaks								
Fluid	Hydraulic oil as per DIN 51524...535 or synthetic fluids having similar lubricating characteristics.								
Recommended viscosity	<table border="0"> <tr> <td>Max at cold start</td> <td>800 mm²/s</td> </tr> <tr> <td>Max at full power</td> <td>100 mm²/s</td> </tr> <tr> <td>During operation</td> <td>24 mm²/s</td> </tr> <tr> <td>In at full power</td> <td>10 mm²/s</td> </tr> </table>	Max at cold start	800 mm ² /s	Max at full power	100 mm ² /s	During operation	24 mm ² /s	In at full power	10 mm ² /s
Max at cold start	800 mm ² /s								
Max at full power	100 mm ² /s								
During operation	24 mm ² /s								
In at full power	10 mm ² /s								
Recommended pressure on inlet port									
PFEA*-*1	From -0.15 to +1.5bar for speed up to 1800rpm From 0 to +1.5bar for speed over 1800 rpm								
PFEA*-*2	From 0 to +1,5 bar								

Operating temperature

Pump version	Ambient Temperature	Maximum inlet fluid temperature	Temperature class
Standard (NBR seal) and /PE	-20°C < T _{amb} < +60°C	+60°C	T6; T85 °C
/7 /PE	-20°C < T _{amb} < +70°C	+80°C	T5; T100 °C

Operating characteristics

Model	Displacement cm ³ /rev	Max. pressure ⁽¹⁾	Speed range ⁽²⁾ (rpm)
PFEA-31010	10.5	160 bar	800-2400
PFEA-31016	16.5	210 bar	800-2800
PFEA-31022	21.6		
PFEA-31028	28.1		
PFEA-31036	35.6		
PFEA-31044	43.7		
PFEA-41029	29.3		800-2500
PFEA-41037	36.6		
PFEA-41045	45.0		
PFEA-41056	55.8		
PFEA-41070	69.9		
PFEA-41085	85.3	800-2000	

PFEA-51090	90.0		800-2200
PFEA-51110	109.6		
PFEA-51129	129.2		
PFEA-51150	150.2		800-1800

(1) Max pressure is 160 bar for /PE version.

(2) Max speed is 1800 rpm for /PE version.

Model	Displacement cm ³ /rev	Max. pressure ⁽¹⁾	Speed range ⁽²⁾ (rpm)
PFEA-32016	16.5	210 bar	1000-2500
PFEA-32022	21.6	300 bar	1200-2500
PFEA-32028	28.1		
PFEA-32036	35.6		
PFEA-42045	45.0	280 bar	1000-2200
PFEA-42056	55.8		
PFEA-42070	69.9	250 bar	800-2000
PFEA-42085	85.3		
PFEA-52090	90.0	250 bar	1000-2000
PFEA-52110	109.6		
PFEA-52129	129.2		
PFEA-52150	150.2	210 bar	800-1800

(1) Max pressure is 160 bar for /PE version.

(2) Max speed is 1800 rpm for /PE version.

Warning labels:

None.

Operating and maintenance manual No. X400-*/E.

(16) Test documents are listed in the test report No. 19 0206193.

Routine test:

None.

(17) Special conditions for safe use

- The presence of the fluid inside the pump must be monitored by a level indicator, the pump can't start to run if the inner of the pump is not complete full. The function of each ignition prevention system has to be tested before initial operation according to EN ISO 80079-37, section 6. The ignition prevention systems must be for the ignition prevention level IPL 1 (SIL 1) according to EN ISO 80079-37. The requirements of EN ISO 80079-37 must also be observed.
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No additional ones. Assured by compliance with the standards set out in the [9].