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Schema di certificazione
CESI-ATEX

[1] EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 2014/34/EU**

[3] EU-Type Examination Certificate number:

CESI 17 ATEX 026X

[4] **Product:** Submersible electric pumps and mixers series F180

[5] **Manufacturer:** FAGGIOLATI PUMPS S.p.A

[6] **Address:** Via Papa Giovanni XXIII, 31 – 62100 Macerata

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and Council of 26 February 2014, certifies that this Product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Product intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX- B7019529.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0: 2012 + A11: 2013; EN 60079-1: 2014;
EN 13463-1: 2009; EN 13463-5: 2011; EN 13463-8: 2003**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the Product is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EU-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified Product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this Product. These are not covered by this certificate.

[12] The marking of the Product shall include the following:

II 2 G Ex c k db IIB T4 Gb

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Date 11 October 2017 - Translation issued the 11th October 2017

Prepared

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Verified

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Approved

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CESI S.p.A.

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Business Area Certification

Il Responsabile

(Roberto Piccin)

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Schedule

[14] **EU-TYPE EXAMINATION CERTIFICATE n. CESI 17 ATEX 026X**

[15] **Description of Product**

Submersible electric pumps and mixers series F180 with explosion-proof dry motor and mechanical part (hydraulic) with protection by constructional safety "c" and by liquid immersion "k".

The submersible electric pumps are used for pumping sewage water and suspended solid bodies, emptying septic tanks and cesspool.

The submersible mixers are used to mix, homogenize and carry in suspension viscous materials, heavy sludge and liquid containing solid particles.

The details of the constructional characteristics of each machine model are shown in the descriptive documents attached to this certificate.

The submersible electric pumps series F180 are identified by a code as follows:

Example: **G410R6V1-M64AA6**

Code	Identification of the code
G	Type of material: Bronze (B), Duplex (D), Super Duplex (E), Cast iron (G), Hastelloy (H), Alloy (J), Spheroidal cast iron (S), AISI 316Ti (T), AISI 316 (X), AISI 316L (Y)
4	Number of Poles: 2, 4, 6, 8, 10
10	Motor size: IEC 71 (71), IEC 90 (09), IEC 100 (10), IEC 112 (11), IEC 132 (13), IEC 160 (16), IEC 180 (18)
R	Power supply (rated voltage / starting): 500/865V 60Hz 3ph (A), 500V 50Hz 3ph (C), 400V 60Hz 3ph (D), 460/796V 60Hz 3ph (E), 575/995V 60hz 3ph (F), 440/762V 60Hz 3ph (H), 110V 60Hz 3ph (K), 230V 60Hz 3ph (L), 230V 50Hz 1ph (M), 230V 60Hz 1ph (N), 480/830V 60Hz 3ph (O), 415/718V 50Hz 3ph (P), 500/865V 50Hz 3ph (Q), 400/690V 50Hz 3ph (R), 230/400V 50Hz 3ph (S), 400V 50Hz 3ph (T), 230/400V 60Hz 3ph (U), 600V 60Hz 3ph (V), 400/690V 60Hz 3ph (W), 208/360V 60Hz 3ph (Y)
6	Number of blades
V	Impeller version: Vortex (V), Single channel (M), Multichannel "High efficiency" (H), Channels (C), Drainage (D), Grinder (T), Sand Vortex (S), Kut-all (J)
1	Impeller size
-	-
M	Outlet dimension (in mm): 1"1/4 (D), 1"1/2 (F), 2" (G), 32 (H), 40 (J), 50 (K), 65 (L), 80 (M), 100 (P), 125 (R), 150 (S), 200 (T), 250 (V), 300 (W)
64	Free passage (mm)
A	Variants of liquid type or special voltage Cast iron G250 or GS400 (A), Bronze impeller and stainless steel shaft (H), Seal and O-Ring Viton (J), Stainless steel impeller and shaft (K), J+K (L), Treatment against corrosion (M), Increased motor (S), combinations of variants mentioned above and/or optional accessories or special voltage (X,Y,Z)
A	Installation variants: Cable H07RNF (A), Cable NSSHoJ (J), Cooling jacket (M), Motor suitable for inverter (E)*
6	Motor protection: Ex cast iron and bronze protection (6), Ex stainless steel protection (8)

* variant for only motor size 160 and 180 (the other electric motors are designed to be suitable both for power supply and inverter).

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Schedule

[14] **EU-TYPE EXAMINATION CERTIFICATE n. CESI 17 ATEX 026X**

[15] **Description of Product** (*follows*)

The submersible mixers series F180 are identified by a code as follows:

Example: **GM19A409T1-4T6KA6**

Code	Identification of the code
G	Type of material: Bronze (B), Duplex (D), Super Duplex (E), Cast iron (G), Hastelloy (H), Alloy (J), Spheroidal cast iron (S), AISI 316Ti (T), AISI 316 (X), AISI 316L (Y)
M19	Maximum propeller diameter (cm)
A	Number of blades: 2 blades (A), 3 blades (B)
4	Number of Poles: 4, 6, 8
09	Motor size: IEC 90 (09), IEC 100 (10)
T	Power supply (rated voltage / starting): 500/865V 60Hz 3ph (A), 500V 50Hz 3ph (C), 400V 60Hz 3ph (D), 460/796V 60Hz 3ph (E), 575/995V 60hz 3ph (F), 440/762V 60Hz 3ph (H), 110V 60Hz 3ph (K), 230V 60Hz 3ph (L), 480/830V 60Hz 3ph (O), 415/718V 50Hz 3ph (P), 500/865V 50Hz 3ph (Q), 400/690V 50Hz 3ph (R), 230/400V 50Hz 3ph (S), 400V 50Hz 3ph (T), 230/400V 60Hz 3ph (U), 600V 60Hz 3ph (V), 400/690V 60Hz 3ph (W), 208/360V 60Hz 3ph (Y)
1	Propeller tilt
-	-
4	Accessories material: Acciaio Zincato (0), DUPLEX 4A (1), INOX AISI304 (4), INOX AISI316/L (6)
T	Type of application: With conveyor for mixer pump (category 9) (N), With flanged conveyor for mixer pump (category 9) (F), Preset for guide rail (T), Preset for guide rail and conveyor (C), Preset for vertical orientation (V), Preset for vertical orientation with conveyor (W)
6	Guide rail diameter (series 6) Tubes guide (Series 9): Palo 2" (2), Palo 50x50 (5), Palo 60x60 (6), Palo 80x80 (8), Palo 100x100 (1)
K	Variants of liquid type or special voltage: Standard (A), Bronze impeller and stainless steel shaft (H), Seal and O-Ring Viton (J), Stainless steel impeller and shaft (K), J+K (L), Treatment against corrosion (M), Increased motor (S), combinations of variants mentioned above and/or optional accessories or special voltage (X,Y,Z)
A	Installation variants: Cable H07RNF (A), Cable NSSHoJ (J)
6	Motor protection: Ex cast iron and bronze protection (6), Ex stainless steel protection (8)

The machines series F180 are provided with integral cable glands in the enclosure.

The closing of unused hole in the motor enclosures size 71 is realised by the manufacturer by means of a plug blocked with threads sealant.

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[14] EU-TYPE EXAMINATION CERTIFICATE n. CESI 17 ATEX 026X

Electrical characteristics

- Maximum rated power: 50.1 kW (electric pumps)
4,9 kW (mixers)

The rated power of the various types of motors as a function of size, type of supply and all other electrical characteristics of plate prescribed by EN 60034 standards series are shown in the descriptive documents annexed to this certificate with the following limits.

- Duty: S1
- Insulation class: H (t. B)
- Ambient temperature: -20 ÷ +45 °C

Mains supply:

- Maximum rated voltage: 995 V
- Rated frequency: 50 / 60 Hz
- Maximum rated speed: 3600 rpm (electric pumps)
1800 rpm (mixer)

Inverter supply (quadratic torque load):

- Maximum rated voltage: 690 V
- Maximum peak voltage: 973 V
- Frequency range: 35 ÷ 60 Hz
- Maximum rated speed: 3600 rpm (electric pumps)
1800 rpm (mixer)

The machines series F180 are equipped, inside the stator winding, with thermal detectors. The thermal detectors are calibrated for cut off the supply at 130 °C; the resetting of the supply shall not be automatic.

Performance characteristics

- Maximum head: 100 m
- Maximum flow: 500 l/s
- Maximum reaction thrust: 490 N
- Maximum fluid density: 1,2 Kg/dm³
- Maximum immersion depth: 20 m (electric pumps)
10 m (mixer)

Warning label

“Warning: see instructions”

“Do not use the feeding cable to move the pump/mixer”

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[14] **EU-TYPE EXAMINATION CERTIFICATE n. CESI 17 ATEX 026X**

[16] **Report n. EX-B7019529**

Routine tests

The manufacturer is exempted from the overpressure test on the motor enclosure, since they have been submitted to an overpressure test at a pressure corresponding to 4 times the reference pressure and respectively:

- 2350 kPa on the motor enclosures with center height 71, 90 and 100
- 3300 kPa on the motor enclosure with center height 112
- 4200 kPa on the motor enclosure with center height 132
- 4450 kPa on the motor enclosure with center height 160
- 3700 kPa on the motor enclosure with center height 180

[17] **Special conditions for safe use**

- The product series F180 shall always operate completely submerged by the liquid. The user shall ensure that in any operational condition the machine is completely submerged by using appropriate level regulation systems, capable of ensuring full immersion even in case of faults or anomalies.
- The flamepaths are specified in the manufacturer drawings. For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.
- The machine provided with the cables permanently connected, shall have these cables protected against the risk of damage due to mechanical stresses. The end connections shall be made according to one of the types of protection indicated in the EN 60079-0 standard and in accordance with the installation rules in force in the site of installation.
- When the machine provided with cables permanently connected has these cables protected with "PVC" sheath. During cleaning shall be taken into account the risk of electrostatic charges.
- In case of disassembly of the motor the subsequent assembly of the enclosure shall be made using screws in accordance to the ISO 4762 and having the following characteristics.
 - For cast iron enclosure
"Use screws of property class A2-70 UNI EN ISO 3506-1"
 - For stainless-steel and bronze enclosures
"Use screws of property class A4-70 UNI EN ISO 3506-1"
 - For Duplex or SuperDuplex stainless-steel enclosures
"Use screws SAF 2205 F51 with minimum yield stress of 450 MPa and minimum tensile strength of 655 MPa"

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Schedule

[14] **EU-TYPE EXAMINATION CERTIFICATE n. CESI 17 ATEX 026X**

[18] **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements has been assured by compliance to the following standards:

EN 60079-0: 2012 + A11:2013 - Explosive atmospheres - Part 0: Equipment- General requirements;

EN 60079-1: 2014 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosure 'd';

EN 13463-1: 2009 - Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements;

EN 13463-5: 2011 - Non-electrical equipment for use in potentially explosive atmospheres - Part 5: Protection by constructional safety "c";

EN 13463-8: 2003 - Non-electrical equipment for use in potentially explosive atmospheres - Parte 8: Protection by liquid immersion "k"

[19] **Descriptive documents (prot. EX- B7019551)**

- Technical note n. F180 Rev. 6 (18 pg.)	dated	30.08.2017
- Drawing n. EXDISEGNOF180 Rev. 1	dated	27.07.2017
- Drawing n. Serie motori M3 Rev. 7	dated	27.07.2017
- Drawing n. Serie motori M6 Rev. 9	dated	27.07.2017
- Drawing n. Serie M18 Rev. 6	dated	27.07.2017
- Drawing n. Serie M50 Rev. 8 (4 pg.)	dated	27.07.2017
- Drawing n. EXDISDESCF180 Rev. 2 (18 pg.)	dated	30.08.2017
- Drawing n. 16476 Rev. 2	dated	13.09.2017
- Drawing n. 13431 Rev. 1	dated	22.03.2012
- Drawing n. 07487 Rev. 2	dated	17.07.2017
- Drawing n. 54.10254 Rev. 3	dated	17.07.2017
- Drawing n. 54.06951 Rev. 3	dated	24.07.2017
- Drawing n. 54.06952 Rev. 2	dated	24.07.2017
- Drawing n. 5406331 Rev. 3	dated	24.05.2012
- Drawing n. 5406345 Rev. 1 (3 pg.)	dated	08.11.2007
- Risk analysis n. EXARDIRF180 Rev. 1 (5 pg.)	dated	27.07.2017
- Risk analysis n. P7.3M24 Rev. 1 (4 pg.)	dated	04.08.2017
- Risk analysis n. ESTR_CE_F180 Rev. 2 (2 pg.)	dated	28.08.2017
- Safety instructions n. LIBEXF180 Rev. 4 (24 pg.)	dated	09.2017
- Safety instructions n. MIXEXF180 Rev. 1 (23 pg.)	dated	09.2017

One copy of all documents is kept in CESI files.