

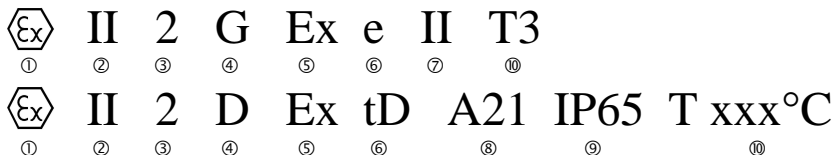


SERVICE AND EXPLOITATION INSTRUCTION MANUAL

**for three-phase, explosion-proof, increased safety,
squirrel - cage induction motors:
of frame size 56, 63, 71, 80,
according to requirements of
ATEX Directive 94/9/EC**

GENERAL INFORMATION

Marking of explosion-protected apparatus:



Specific ATEX markings:

- ① specific marking of explosion protection
- ② equipment Group ATEX (for use in hazardous areas)
- ③ equipment Category ATEX (for use in Zone 1 and Zone 21 areas category)
- ④ for use in flammable Gas/Vapour (G) or Combustible Dust Substances (D)

Marking required by the standards used under ATEX and IECEx

- ⑤ indicates that the product corresponds to one or more of the types of protection which are subject of the specific standards listed in general requirements standards
- ⑥ Indicates the type of protection used for flammable gas / combustible dust
- ⑦ gas group
- ⑧ areas category
- ⑨ ingress protection level
- ⑩ temperature class (for flammable gas) / maximum surface temperature (for combustible dust)

Temperature class	Ignition temperature range of the mixture	Permissible surface temperature of the electrical equipment
T1	>450°C	450°C
T2	>300°C ... ≤ 450°C	300°C
T3	>200°C ... ≤ 300°C	200°C
T4	>135°C ... ≤ 200°C	135°C
T5	>100°C ... ≤ 135°C	100°C
T6	> 85°C ... ≤ 100°C	85°C

Apparatus for hazardous areas with the presence of explosive dusts, gases, vapors or mists

Zone	Apparatus category	Marking
0	1	II 1 G
1	2	II 2 G
2	3	II 3 G

Zone	Apparatus category	Marking
20	1	II 1 D
21	2	II 2 D
22	3	II 3 D

Areas are classified with regard to the probability of a potentially explosive atmosphere being present and the length of time for which it is likely to exist.

Guideline figures		Flammable atmosphere present continuously	Flammable atmosphere present intermittently	Flammable atmosphere present abnormally	Standards
IEC/CENELEC/ EUROPE	Gas	Zone 0	Zone 1	Zone 2	EN 60079-0:2006 EN 60079-7:2007
	Dust	Zone 20	Zone 21	Zone 22	EN 61241-0:2006 EN 61241-1:2004

1. TECHNICAL DESCRIPTION

General description of the designation of FSE “BESEL” S.A. electric motors:

Ex S (K , L) h 80 - 4 B 1
 (a) (b) (c) (d) (e) (f) (g) (h)

(a) – Explosion-proof motor

(b) – Type of motor

S – three phase motor

(c) – Mounting type according to IEC

(no letter) – foot

K – flange

L – foot + flange

(d) – Series frame size

g – for frame sizes 56 and 63

h – for frame sizes 71 and 80

(e) – Motor frame size according to IEC (56, 63, 71, 80)

(f) – Number of poles - 2, 4, 6

(g) – Frame length for frame sizes 56 to 80

A – the shortest

B

C

D – the longest

(h) – Size of flange (if key code (c) = K or L)

(no letter) – flange IM B5 (big)

1 – flange IM B 14/1 (medium)

2 – flange IM B14/2 (small)

The explosion-proof, increased safety squirrel-cage induction motors of frame size 56, 63, 71, 80 are low power enclosed motors.

The motors are manufactured in a way that there is increased safety in case of presence of excessive temperature, existence of arcs and sparks both inside the motor and on its surface during normal work.

Motors are designed for temperature class T3 which means that the maximal temperature of any part of the motor can not exceed + 200°C (under the most unfavorable but permissible conditions) or for temperature class T4 – maximal temperature can not exceed + 135°C.

The temperature class depends on the kind of explosive atmosphere which surrounds the motor.

Motors are intended to work in zones areas:

- 1 -  II 2 G
- 21 -  II 2 D

where dangerous explosive atmosphere is likely to occur (but not in the area where methane occurs).

Parts of motor housing are made of aluminum alloy EN AC-44300 (EN 1706:1998) with magnesium contents $\leq 6\%$ apart from the fan cover which is made of steel sheet.

In the terminal box there is a terminal board which is used for connecting the motor to the mains.

The terminal box is equipped with a cable gland M20x1,5 (and M16x1,5 for PTC thermistors), with holder or without, through which the power lead should be inserted and sealed.

The maximum voltage is 420V 50Hz if the motor has built-in PTC thermistors.

The maximum voltage is 690V 50Hz.

There are neutral terminals on the housing and in the terminal box which are used for neutral earthing or grounding of the motor.

Motors are intended to work in a horizontal position of the shaft.

They can work in perpendicular position with the shaft end downwards or upwards provided the axial load of the bearings is not too large and comes from the weight of a rotor, a pulley, a toothed wheel, relatively light clutch or the fan which is fixed on the motor shaft.

Temperature range of the environment in which the motors can operate varies from -20°C to + 40°C.

2. INSTALLATION INSTRUCTIONS

The motor housing protects the motor from being penetrated by a solid body or water in the range defined in EN 60034-5 Standard.

The terminal compartment is in type of explosion protection Ex e. In order to assure a degree of protection of at least IP54 for Gas or IP66 for Dust, certified cable entries shall be used that are suitable for the application and correctly installed.

The electrical connection of the permanently connected cable shall be made in a certified enclosure in type of protection flameproof enclosure “d” or increased safety “e”.

The cable entry may be used only for fixed installations. The user shall ensure adequate clamping of the cable.

In areas with inflammable dust, the gland can be used only for threaded holes.

The cable entry is designed for use in normal industrial atmosphere.

The installation of the cable gland has to be done by properly qualified persons and only with the appropriate tools.

Unused apertures shall be closed with suitable blanking elements.

Motors intended for use in explosive gas atmospheres.

The motor shall be provided with a three-phase inverse-delay overload protective device that not only monitors the motor current but also disconnects the stalled motor within the above mentioned times t_E .

The motor shall only be used for continuous service, involving easy and infrequent starts which do not produce appreciable additional heating.

Motors intended for use in the presence of combustible dust.

The built-in winding (option in $\text{Ex} 2 \text{ II G}$) PTC thermistors (DIN 44081 or 44082 ...°C) in combination with a protective device shall be installed in the motor circuits in such a way that operation of the PTC thermistors leads to switching-off of the motor.

The ...°C is the temperature of the PTC thermistor.

The maximum voltage is 420V 50Hz.

Each motor must be protected against overload and short-circuit.

There is a direct-on starting used in motors.

They can operate when voltage deviations do not exceed $\pm 5 \%$ and frequency do not exceed $\pm 2 \%$ of the motor rated values. All of the rated data refer to the rated voltage.

If voltage and frequency exceed of the rated values motors should not be started.

Each motor must be protected against electric shock in accordance with currently valid regulations.

Parts of a driven device coupled to the motor shaft directly should be balanced dynamically with the accuracy of 5 μm , not less.

2.1. ACTIVITIES BEFORE THE INSTALLATION OF A MOTOR

Before you mount the motor to a driven device:

- a) check if the rotor turns freely,
- b) check if parts of a device which is coupled to the motor shaft are balanced dynamically with the required accuracy,
- c) put on parts of a motored device sliding or pushing them lightly without exerting pressure on bearings. Otherwise you will cause damage. At the same time the motor **shaft should be supported on the non-drive end stiffly** so that the pressure should not cause either damage of bearings or damage of a spring washer which cancels axial play of the rotor,
- d) after fixing the motor to a device check whether there is the minimal distance (14 mm) between the fan cover and other parts and whether the holes in the cover are not stopped down,
- e) check if supply cable is additionally protected against being pulled out (in motors equipped with cable glands without holders).

Caution:

Access of cooling air to the motor housing cannot be made difficult.

2.2. CONNECTING THE MOTOR TO THE MAINS

2.2.1. Three-phase motors made for voltage base 230/400 V can be connected:

- a) to the mains with line-to-line voltage: $3 \times 400 \text{ V} \pm 5 \%$ $50\text{Hz} \pm 2 \%$ when the motor winding is star connected (Y),
- b) to the mains with line-to-line voltage: $3 \times 230 \text{ V} \pm 5 \%$ $50\text{Hz} \pm 2 \%$ when the motor winding is delta connected (Δ).

The motors are made as single-speed with the pole number $2p = 2, 4, 6$.

The ways of winding connection and connecting them to the mains are presented on wiring diagrams in the annex No. 1 of this Manual.

The wiring diagram is on the inside of the lid of a terminal box.

2.2.2. Before you connect the motor check:

- a) if the rated voltage and frequency of the motor corresponds to the voltage of the mains - see item 2.2.1
- b) if winding connections on the terminal board are consistent with a wiring diagram,
- c) if neutral earthing and protective grounding of the motor is correct and firm,
- d) **if the motor has the right overload protection whose time-current characteristic guarantees that the motor will be disconnected from supply voltage in a time shorter than the specified time t_E when the current is equal to starting current,**

t_E – time in which alternating-current winding will heat up from the temperature of rated conditions and with maximal environment temperature to the limit temperature

- e) if the motor has the right protection against short circuit (a fuse or an electromagnetic breaker),
- f) if resistance of the motor insulation in the cool state is not lower than 20 M Ω ,
- g) if the direction of motor rotation is consistent with the direction of driven device rotation, in typical motors the direction is clockwise when you look from the shaft end,

Cautions:

1. In case of moistening (when the resistance of the motor insulation is lower than 20 M Ω) dry in the temperature not higher than 353 K (+ 80°C).
2. When the motor operates pay attention to how it works and disconnect the motor from the mains in following cases:
 - over-oscillation of the motor (excessive oscillation),
 - considerable decrease of rotational speed,
 - considerable heating of motor and bearings
3. In any case, in motors of all types the earth terminal should be stringently connected with earth conductor (wire).
4. The insulation should be removed from the earth wire 10-12 mm in length, the wire end should be twisted and screwed to the earth terminal applying screwing torque that amounts to 2 Nm.

3. PERIODICAL INSPECTIONS AND MAINTENANCE OF A MOTOR

Each operating motor should be inspected periodically:

- minor inspection - every 12 months,
 - main inspection :
 - motors of synchronous rotational speed $n_s = 3000$ rpm after 4000 working hours
 - motors of synchronous rotational speed $n_s = 1500$ rpm after 6000 working hours
 - motors of synchronous rotational speed $n_s = 1000$ rpm after 7000 working hours
- but at least every 3 years.

In motors where drive end shields (DE shields) are in direct contact with an oil filling the driven device (for example a gear box) it is necessary to replace a seal (simmering).

The intervals of replacement of the seal are the following:

- If the oil that fills up the gear box reaches the temperature up to 60°C the replacement should be carried out every 9 000 hours of the device operation;
- If the oil that fills up the gear box exceeds the temperature 60°C the replacement should be carried out every 6 000 hours of the device operation;

3.1. MINOR INSPECTION

Minor inspection includes the following activities:

- a) visual inspection and cleaning of the motor and protecting apparatus without disassembly if visual inspection does not reveal such necessity,
- b) measurement of the resistance of motor winding insulation,
- c) measurement of the effectiveness of neutral earthing or the resistance of protective grounding,
- d) measurement of the resistance of feed installation insulation
- e) verification of setting of thermal protection.

3.2. MAIN INSPECTION

Main inspection includes the following activities:

- a) disassembly of the motor which consists in performing operations mentioned below in the following order:
 - unscrewing of the three bolts fixing the fan cover
 - removing of the fan from the shaft by means of a puller
 - unscrewing of the three bolts that fasten bearing shields
 - taking off bearings from the motor shaft by means of a bearing puller or by tapping a wooden hammer on riser heads that stick out of shields
 - removing of the rotor and bearings
 - taking off bearings from the motor shaft by means of a bearing puller only in case they must be replaced (**bearings must be absolutely replaced after 40000 hours of work**).

In motors two-sided closed ball bearings type 2Z are applied.

They do not need lubricating (bearings are prelubricated).

Frame size	Type of bearing
56	6201 2Z
63	6202 2Z
71	6203 2Z
80	6204 2Z

- in case of penetration of motor interior by the oil (operation of the motor with the gear box) - remove the oil and clean up the motor inside;
 - replace the simmering;
 - regenerate the shaft at the point of contacting with the simmer ring.
- b) checking the conditions of a stator winding which must be cleaned carefully and blown through with compressed air. On winding ends there must not be any damaged places, winding ends must be stiffen. If necessary they should be covered with insulating varnish PK-155 which does not contain a solvent and dried in the temperature not higher than 373 K (+ 100°C),
 - c) checking of insulation resistance between particular phases of the windings and between windings and a motor housing,

- d) **repair (re-winding) can be done only with the acceptance of BESEL S.A. when full information including execution, impregnation and methods of testing after the repair of windings is received,**
- e) **verification of setting of protected against overload,**
- f) **it is unacceptable to replace any parts of motor and modification of motor without the acceptance of FSE „BESEL” SA.**

Caution:

A high-voltage test can be conducted only by a specialist who has required authorizations.

- g) Motor reassembly is performed in reverse order than the disassembly.
All activities connected with disassembly, inspection and reassembly should be performed without damaging of windings, motor housing, endshields and other parts of the motor.

4. ACCEPTANCE TEST AFTER INSPECTION OR REPAIR

After inspection and remounting the motor should be subjected to the following examinations:

- a) to measure winding resistance,
- b) to control if the connections are correct,
- c) to measure insulation resistance in cool state,
- d) to carry out a 2 hours' no-load running test of the motor and if it is possible to carry out a test of a rated loaded motor. The test must be long enough for the motor temperature to stop rising in a visible way.

The above researches must be conducted according to the EN 60034-1 standard.

Caution:

After reparation the routine test according to clause 7.1 of EN 60079-7 shall be carried out. Each motor shall be subjected to the dielectric strength test of EN 60034-1 clause 8 using a voltage of 1000V + twice the rated voltage with a minimum of 1500V during 60 seconds between the windings under test and the frame of the motor, with the core and the windings not under test connected to the frame.

- 60 seconds with $(1000 + 2 \times \text{rated voltage})$ V a.c. r.m.s.
or
- between 3 and 5 seconds with $1,2 \times (1000 + 2 \times \text{rated voltage})$ V a.c. r.m.s.

Inspections and acceptances of explosion-proof, increased safety motors ought to be carried out by experienced personnel which is trained in range of different kinds of explosion protections, adequate regulations and general rules of zone of danger classification.

5. TRANSPORT

Motors must be transported only under cover that protects them against getting wet or damp.

Motor cartons should guarantee appropriate protection against mechanical damages, shocks and dust.

During transport they should guarantee proper protection against damages of the shaft end, terminal box, fan cover and varnish coat.

Motors should be transported in crates, metallic pallets or carton boxes.

Motors must not move inside containers which must be stuck.

5.1. MOTOR WEIGHTS

Motor weights are different for different types of the same frame sizes - according to outputs, mounting forms and added specific details.

approximate motor weights as a function of stacking length (A, B).

Frame size of motors	Stacking length	
	A	B
	Weight (kg)	
56	3,0	3,4
63	3,6	4,2
71	5,3	6,2
80	8,0	9,5

6. STORAGE

Motors should be stored in dry airy containers free from gases, liquids and caustic vapors which are harmful for the winding insulation and parts of the motor.

Motors must not be kept in rooms where fertilizers, chlorinated lime, acids and chemical agents etc. are gathered.

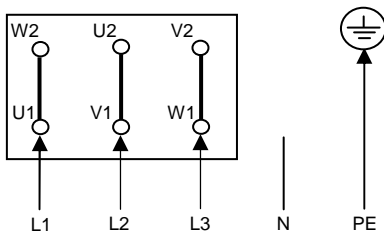
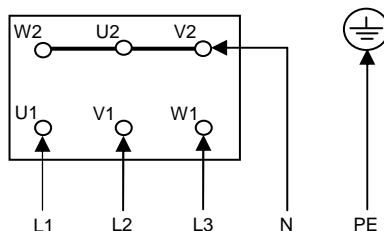
The temperature of the environment where motors are stored must not be lower than 278 K (+5 °C) and relative humidity must not exceed 70 %.

Motors stored after warranty period should be renovated which includes:

- a) outside cleaning of the motor,
- b) checking if bearings operate in a correct way and if not damaged bearings must be replaced,
- c) measurement of the winding insulation resistance (in cool state) and if it is lower than 20 MΩ motors must be dried in a temperature not higher than 353 K (+80°C).

The shaft end must be protected against corrosion by the layer of corrosion preventing grease or an easily removed varnish.

Annex No.1

delta connected Δ star connected Y **Marking**- Manufacturer Address

FSE "BESEL" S.A.
ul. Elektryczna 8
49-300 Brzeg
POLAND

- CE 0344

CE
0344

- CE mark indicates compliance with all applicable CE directives

- identification number of the Notified Body responsible for the surveillance of the Quality management system of the production site

Number of the certificate

KEMA

- Notified Body

03

- Year of Issuance

ATEX2180

- EC Type Examination Certificate with sequence number 2180

X

- Certificate number Suffix

- rated parameters

Marking label (for example).

FSE BESEL S.A. ul. Elektryczna 8 49-300 Brzeg POLAND		
Motor 3~ Type <input type="text" value="ExSh80-2B"/> IP <input type="text" value="55"/>	Ins.cl F \oplus <input type="text" value="1,1"/> kW \oplus Duty S <input type="text" value="1"/>	
<input type="text" value="2780"/> rpm Ex e II T3 T4	<input type="text" value="2780"/> rpm t_E <input type="text" value="7,2"/> s <input type="text" value=""/>	
A <input type="text" value="4,15 / 2,4"/> I _a /I _N <input type="text" value="5,5"/> η <input type="text" value="75,0"/> % t_E <input type="text" value="7,2"/> s <input type="text" value=""/>	V <input type="text" value="230 / 400"/> T/Y <input type="text" value="50"/> Hz	
<input type="text" value=""/>	S/N <input type="text" value="1234567"/>	<input type="text" value="2007"/> y
KEMA 03ATEX2180	EN 60079-0,	EN 60079-7

FSE BESEL S.A. ul. Elektryczna 8 49-300 Brzeg POLAND		
Motor 3~ Type <input type="text" value="ExSh80-2B"/>	Ins.cl F \oplus Ex tD A21 IP <input type="text" value="65"/> T <input type="text" value="120"/> °C \oplus Duty S <input type="text" value="1"/>	
<input type="text" value="1,1"/> kW Ex e II T3 T4 I _a /I _N <input type="text" value="5,5"/>	<input type="text" value="2780"/> rpm t_E <input type="text" value="7,2"/> s <input type="text" value=""/>	
<input type="text" value="4,15 / 2,4"/> A <input type="text" value="230 / 400"/> V <input type="text" value="50"/> Hz	<input type="text" value="2780"/> rpm η <input type="text" value="75,0"/> %	
<input type="text" value=""/>	S/N <input type="text" value="1234567"/>	<input type="text" value="2007"/> y
KEMA 03ATEX2180	EN 60079-0,	EN 60079-7

EC-Type Examination Certificate KDB 07ATEX057

Marking	⊕ II 2 G			
Motor type	ExSg56-2A	ExSg56-2B	ExSg56-4A	ExSg56-4B
Rated output (kW)	0,09	0,12	0,06	0,09
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	0,33	0,47	0,27	0,38
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,68	0,62	0,60	0,62
Rated speed (rpm)	2800	2810	1400	1390
Insulation class	F	F	F	F
I_A/I_N	3,7	3,9	3,25	3,1
t_E for T3 (s)	50,0	40,0	80,0	55,0
t_E for T4 (s)	20,0	15,0	35,0	21,0

EC-Type Examination Certificate KEMA 03ATEX2176

Marking	⊕ II 2 G / D			
Motor type	ExSg63-2A	ExSg63-2B	ExSg63-4A	ExSg63-4B
Rated output (kW)	0,18	0,25	0,12	0,18
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	0,5	0,7	0,5	0,6
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,82	0,82	0,67	0,69
Rated speed (rpm)	2710	2770	1380	1370
Insulation class	F	F	F	F
I_A/I_N	4,0	4,4	3,4	3,7
t_E for T3 (s)	39,5	25,8	50,3	41,1
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	100°C	110°C	100°C	110°C

EC-Type Examination Certificate KEMA 03ATEX2176

Marking	⊕ II 2 G			
Motor type	ExSg63-6B			
Rated output (kW)	0,06			
Rated voltage (V±5%)	400			
Rated current (A)	0,55			
Rated frequency (Hz±5%)	50			
Power factor	0,50			
Rated speed (rpm)	920			
Insulation class	F			
I_A/I_N	1,9			
t_E for T3 (s)	70,5			
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	-			

EC-Type Examination Certificate KEMA 03ATEX2177				
Marking	Ⓔ II 2 G / D			
Motor type	ExSg63-2A	ExSg63-2B	ExSg63-4A	ExSg63-4B
Rated output (kW)	0,18	0,18	0,12	0,18
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	0,5	0,6	0,5	0,6
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,82	0,72	0,67	0,69
Rated speed (rpm)	2710	2840	1380	1370
Insulation class	F	F	F	F
I_A/I_N	4,0	5,2	3,4	3,7
t_E for T4 (s)	14,0	11,5	18,6	14,2
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	100°C	90°C	100°C	110°C

EC-Type Examination Certificate KEMA 03ATEX2178				
Marking	Ⓔ II 2 G / D			
Motor type	ExSh71-2A	ExSh71-2B	ExSh71-4A	ExSh71-4B
Rated output (kW)	0,37	0,55	0,25	0,37
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	1,0	1,4	0,8	1,3
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,90	0,86	0,69	0,59
Rated speed (rpm)	2680	2720	1350	1350
Insulation class	F	F	F	F
I_A/I_N	4,0	4,4	3,7	3,6
t_E for T3 (s)	18,2	12,0	41,7	20,4
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	140°C	140°C	110°C	130°C

EC-Type Examination Certificate KEMA 03ATEX2178				
Marking	Ⓔ II 2 G / D			
Motor type	ExSh71-6A	ExSh71-6B		
Rated output (kW)	0,18	0,25		
Rated voltage (V±5%)	400	400		
Rated current (A)	0,8	1,0		
Rated frequency (Hz±5%)	50	50		
Power factor	0,66	0,70		
Rated speed (rpm)	890	870		
Insulation class	F	F		
I_A/I_N	2,8	2,8		
t_E for T3 (s)	26,0	22,1		
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	150°C	150°C		

EC-Type Examination Certificate KEMA 03ATEX2179

Marking	⊕ II 2 G / D			
Motor type	ExSh71-2A	ExSh71-2B	ExSh71-4A	
Rated output (kW)	0,25	0,37	0,18	
Rated voltage (V±5%)	400	400	400	
Rated current (A)	0,7	1,0	0,7	
Rated frequency (Hz±5%)	50	50	50	
Power factor	0,80	0,75	0,57	
Rated speed (rpm)	2830	2850	1400	
Insulation class	F	F	F	
I_A/I_N	5,4	5,8	4,2	
t_E for T4 (s)	11,8	8,8	19,2	
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	90°C	100°C	100°C	

EC-Type Examination Certificate KEMA 03ATEX2180

Marking	⊕ II 2 G / D			
Motor type	ExSh80-2A	ExSh80-2B	ExSh80-4A	ExSh80-4B
Rated output (kW)	0,75	1,1	0,55	0,75
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	1,8	2,4	1,6	2,1
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,83	0,88	0,72	0,74
Rated speed (rpm)	2760	2780	1370	1370
Insulation class	F	F	F	F
I_A/I_N	4,7	5,5	3,4	4,6
t_E for T3 (s)	10,5	7,2	16,5	20,0
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	110°C	120°C	140°C	130°C

EC-Type Examination Certificate

	KEMA 03ATEX2180		KEMA 03ATEX2180	
Marking	⊕ II 2 G / D		⊕ II 2 G	
Motor type	ExSh80-6A	ExSh80-6B	ExSh80-6C/220	ExSh80-6C/220A
Rated output (kW)	0,37	0,55	0,75	0,80
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	1,3	1,7	2,1	2,3
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,66	0,72	0,73	0,70
Rated speed (rpm)	910	880	910	910
Insulation class	F	F	F	F
I_A/I_N	3,0	3,1	4,1	4,0
t_E for T3 (s)	30,0	22,0	21,3	14,0
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	130°C	150°C	-	-

EC-Type Examination Certificate KEMA 03ATEX2181				
Marking	⊕ II 2 G / D			
Motor type	ExSh80-2A	ExSh80-4A	ExSh80-4B	ExSh80-6B
Rated output (kW)	0,55	0,37	0,55	0,37
Rated voltage (V±5%)	400	400	400	400
Rated current (A)	1,4	1,3	1,7	1,3
Rated frequency (Hz±5%)	50	50	50	50
Power factor	0,78	0,58	0,64	0,60
Rated speed (rpm)	2850	1420	1420	940
Insulation class	F	F	F	F
I_A/I_N	6,0	4,1	5,5	4,0
t_E for T4 (s)	6,2	11,0	11,5	18,0
Temp. limiting switches (in motors Ex tD A21 IP65 T....)	90°C	100°C	120°C	90°C

„BESEL” S.A.
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DEKRA Certification B.V.
 Utrechtseweg 310,
 6812 AR Arnhem
 P.O. Box 5185,
 6802 ED Arnhem
 The Netherlands
 Registered Arnhem 09085396
 Tel. +31 26 3 56 20 00
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EC DECLARATION OF CONFORMITY

The Manufacturer: **Fabryka Silników Elektrycznych „BESEL” S.A.**
Elektryczna 8 49-300 Brzeg, POLAND


Hereby declare that the products:

- 3-phase induction machines series: ExS(K,L)g56- ...

 **II 2 G**

and

- 3-phase induction machines series: ExS(K,L)g63- ..., ExS(K,L)h71- ..., ExS(K,L)h80- ...
 ExSKg63-../131, ExSKhR63-../156, ExSKhR71-../131, ExSKhR71-../156, ExSKhR80-../131,
 ExSKhR80- ../156, ExSh80-6C/220, ExSh80-6C/220A

 **II 2 D/G**

provided with CE marking of conformity complies with the provisions of ATEX Directive 94/9/EC and Low Voltage Directive 2006/95/EEC of 12th December 2006.

and are in conformity with the following standards:

- Polish Standard	PN-EN 60034-1	- European Standard	EN 60034-1
	PN-EN 60079-0		EN 60079-0
	PN-EN 60079-7		EN 60079-7
	PN-EN 61241-0		EN 61241-0
	PN-EN 61241-1		EN 61241-1

By design the machines, considered as components, comply with the requirements of ATEX Directive 94/9/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

Certification: Notified Body No 0344:

DEKRA Certification B.V, Utrechtseweg 310, 6812 AR Arnhem, P.O. Box 5185, 6802 ED Arnhem, The Netherlands, Registered Arnhem 09085396, Tel. +31 26 3 56 20 00, Fax +31 26 3 52 58 00, www.dekra-certification.com, ex.nl@dekra.com

EC-Type Examination Certificate Number:

for components	KEMA 03ATEX2175 U	
for frame size 56	KDB 07ATEX057	for T3/T4
for frame size 63	KEMA 03ATEX2176	for T3
	KEMA 03ATEX2177	for T4
for frame size 71	KEMA 03ATEX2178	for T3
	KEMA 03ATEX2179	for T4
for frame size 80	KEMA 03ATEX2180	for T3
	KEMA 03ATEX2181	for T4

Production Quality Assurance Notification KEMA 03ATEXQ3369 Issue 3

Manufacturer's statement:

The machines with installed above products should be declared in conformity with the Machinery Directive

Date: 04.01.2011

Signed by: Andrzej Wiczorek

Title: Chief Designer