



BARTEC VARNOST



**ELEKTROMOTORJI V
PROTIEKSPLOZIJSKI ZAŠČITI**

SQUIRREL-CAGE MOTORS



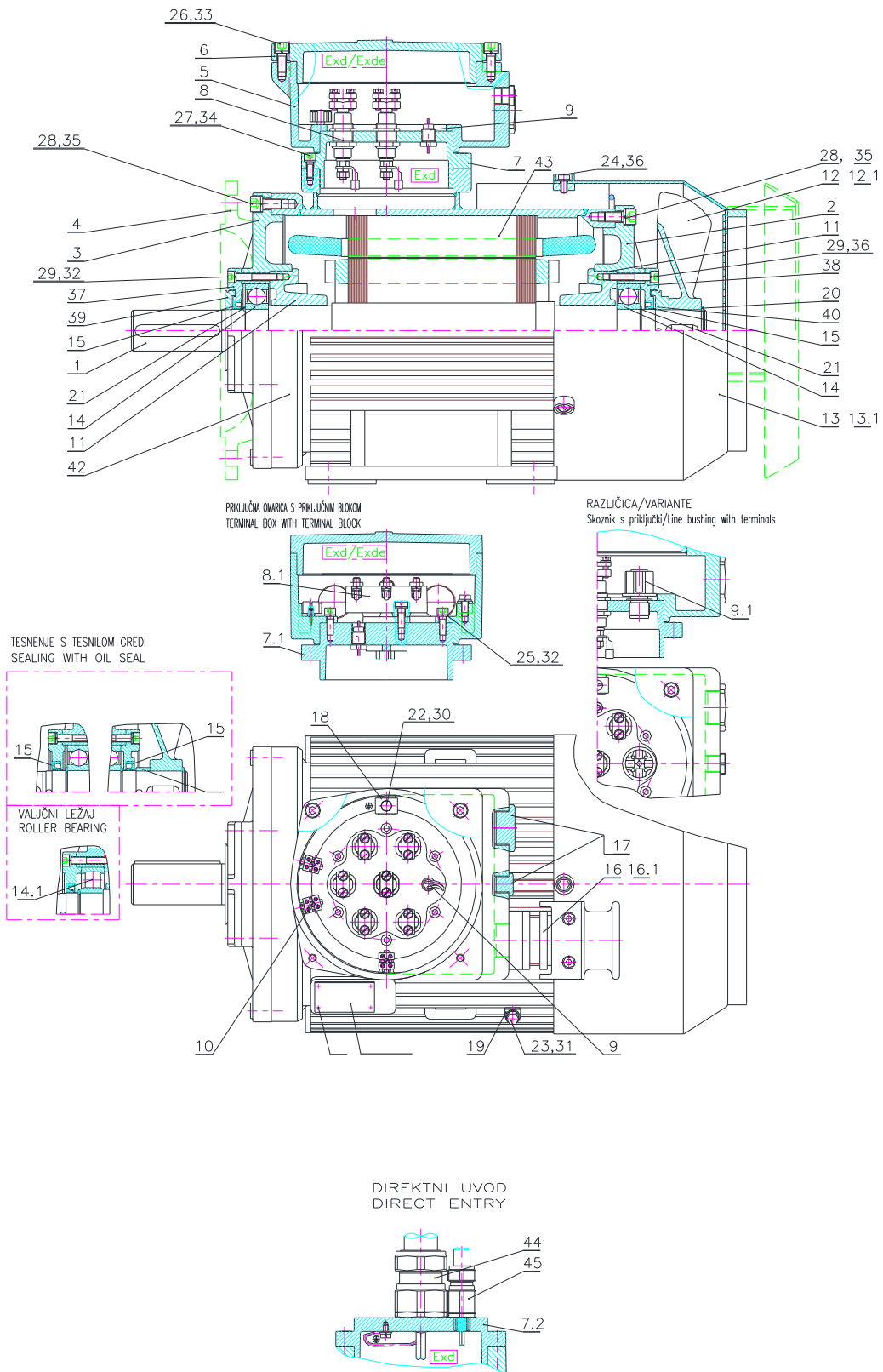
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3KTCR(P) 180 - 225

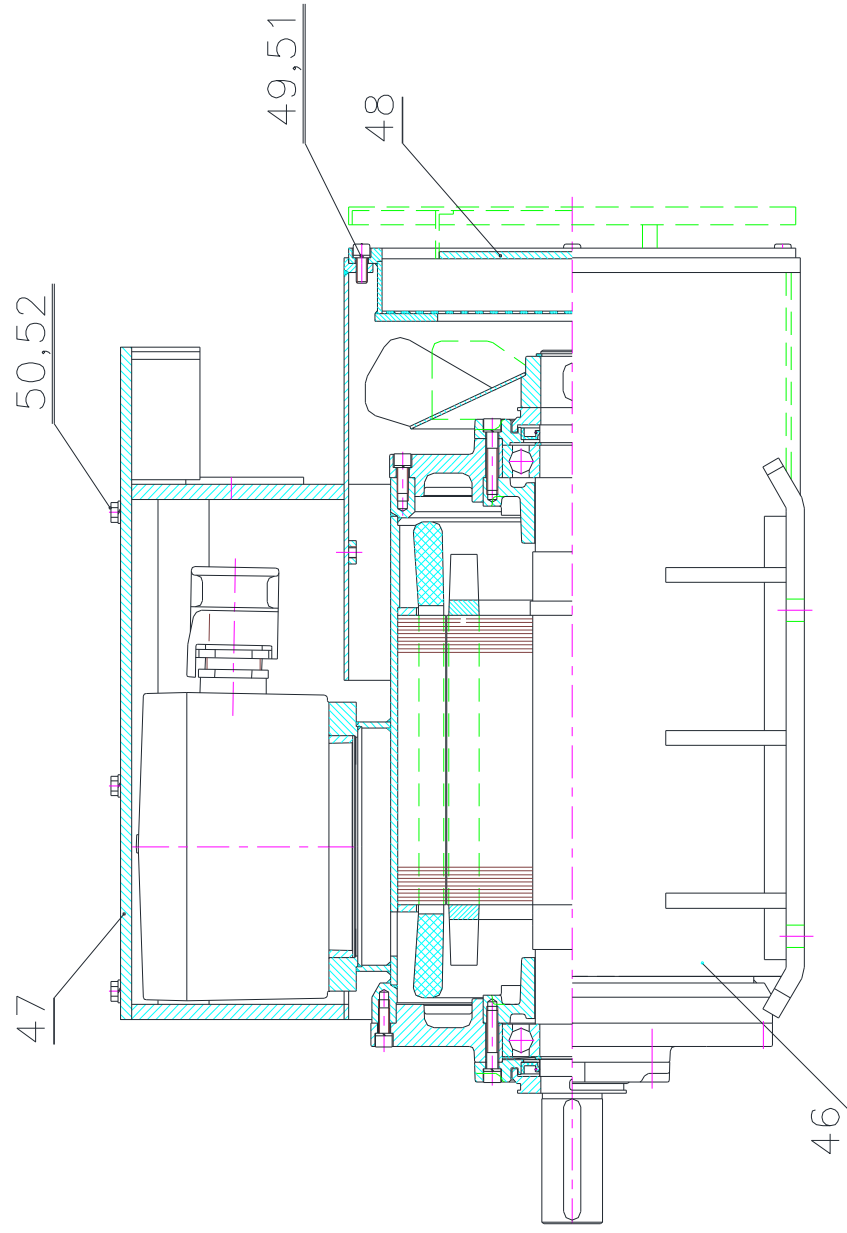


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NADOMESTNI DELI/SPARE PARTS 3KTCR180-225



ELEKTROMOTOR / ELECTROMOTOR 4KTCP180-225



PARTS LIST/ ERSATZTEILLISTE/ SEZNAM NADOMESTNIH DELOV	
TYPE : 3KTCR180, 3KTCR200, 3KTCR225	

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

1.	SHAFT ROTOR UNIT	1
	LAÜFER	
	ROTOR	

		3KTCR180	3KTCR200	3KTCR225
25360271	M2	*		
25360281	M4	*		
25360301	L4	*		
25360321	L6	*		
25360322	L8	*		
25400291	LA2		*	
25400311	LB2		*	
25400341	L4		*	
25400361	LA6		*	
25400381	LB6		*	
25400382	L8		*	
25440361	M2			*
25440421	S4			*
25440391	M4			*
25440441	M6			*
25440481	S8			*
25440461	M8			*

2.	END SHILD BS	1
	LAGERSCHILD BS	
	STATORJEV ŠČIT BS	

	3KTCR180	3KTCR200	3KTCR225
25361011	*		
25401020		*	
25441210			*

3.	END SHILD AS	1
	LAGERSCHILD AS	
	STATORJEV ŠČIT AS	

	3KTCR180	3KTCR200	3KTCR225
25361021	*		
25401050		*	
25441240			*

4.	END SHILD ASB5	1
	LAGERSCHILD ASB5	
	STATORJEV ŠČIT ASB5	

	3KTCR180	3KTCR200	3KTCR225
25361031	*		
25401080		*	
25441270			*

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

5.	TERMINAL BOX Ex	1
	KLEMMENKASTEN Ex	
	PRIKLJUČNA OMARICA Ex	

	3KTCR180-225
	*

6.	COVER Ex	1
	KLEMMENKASTENDECKEL Ex	
	POKROV PRIKLJUČNE OMARICE Ex	

	3KTCR180-225
	*

7.	TERMINAL PLATE	1
	ANSCHUSSPLATTE	
	VMESNA PLOŠČA	

	3KTCR180	3KTCR200-225
	*	*

7.1	TERMINAL PLATE	1
	ANSCHUSSPLATTE	
	VMESNA PLOŠČA	

	3KTCR180	3KTCR200-225
	*	*

7.2	TERMINAL PLATE DIRECT ENTRY	1
	ANSCHUSSPLATTE DE	
	VMESNA PLOŠČA DIREKTNI UVOD	

	3KTCR160	3KTCR180-225
	*	*

8.	TERMINAL STUD TOS	3(6)
	LEITUNGSDURCHFÜHRUNGEN TOS	
	PREVODNIK TOS	

	3KTCR180	3KTCR200-225
22620150	TOS 6	
22630150		TOS 8

8.1	TERMINAL BOARD Exe	1
	KLEMMBRETT Exe	
	PRIKLJUČNI BLOK Exe	

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

	4KTCR160-225
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9.	LINE BUSHING CTP M16x1.5	1
	ADERLEITUNGSDURCHFÜHRUNG PTC M16x1.5	
	SKUPINSKI PREVODNIK CTP M16x1.5	

9.1	LINE BUSHING CTP M24x1.5	1
	ADERLEITUNGSDURCHFÜHRUNG PTC M24x1.5	
	SKUPINSKI PREVODNIK CTP M24x1.5	

	3KTCR180-225
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10.	MINI TERMINAL Exe PTC	
	MINIKLEMME Exe PTC	
	MINI PRIKLJUČNI BLOK Exe PTC	

	4KTCR160-225
107773	

11.	INNER BEARING COVER	2
	LAGERDECKELINNEN	
	VMESNIK	

	3KTCR180	3KTCR200	3KTCR225
25361144	*		
25401233		*	
25441422			*

12.	FAN 2-poles	1
	LUFTER –2polig	
	VENTILATOR 2-polni	

	3KTCR180	3KTCR200	3KTCR225
25361117	*		
25401195		*	
25441385			*

12.1	FAN 4,6,8-poles	1
	LUFTER 4,6,8polig	
	VENTILATOR 4,6,8-polni	

	3KTCR180	3KTCR200	3KTCR225
25361115	*		
		*	
25441386			*

13.	FAN COVER	1
	LUFTERHAUBE	
	VENTILATORSKI ŠČIT	

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

	3KTCR180	3KTCR200	3KTCR225
25361099	*		
25401179		*	
25441365			*

13.1	FAN COVER WITH RAIN CUP IMV1/IMV5	1
	LUFTERHAUBE MIT REGENSCHUTZDACH IMV1/IMV5	
	VENTILATORSKI ŠČIT IMV1/IMV5	

	3KTCR180	3KTCR200	3KTCR225
25361105	*		
25401185		*	
25441375			*

14.	BEARING	2(1)
	LAGER	
	LEŽAJ	

	3KTCR180	3KTCR200	3KTCR225
R002942	63102ZC3		
R002921		63122ZC3	
R002939			63132ZC3

14.1	BEARING NU	1
	LAGER NU	
	LEŽAJ NU	

	3KTCR180	3KTCR200	3KTCR225
R002942	NU310 C3		
R002921		NU312 C3	
R002939			NU313 C3

15.	OIL SEAL DIN 3760 NBR	2
	DICHTRING DIN 3760 NBR	
	OLJNO TESNILO DIN 3760 NBR	

	3KTCR180	3KTCR200	3KTCR225
R005796	A50x72x10		
R003137		A60x80x10	
R004941			A65x90x10

16.	CABLE GLAND Exe	1
	KABELVERSCHRAUBUNG Exe	
	DOVODNICA Exe	

	3KTCR180	3KTCR200-225
011107 M40	*	
011108 M50		*

16.1	CABLE GLAND Exe CTP	1
	KABELVERSCHRAUBUNG Exe CTP	
	DOVODNICA Exe CTP	

	3KTCR180-225
011104 M20	*

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

17.	PLUG Exe		1
	VERSCHLUSSTOPFEN Exe		
	SLEPI ČEP Exe		

		3KTCR180	3KTCR200-225
006985	M20	*	*
012017	M40	*	
010566	M50		*

18.	EARTH PLATE		1
	ERDUNGSPLATTE		
	OZEMLJILNA PLOŠČICA		

		3KTCR180	3KTCR200-225
R002389		*	
R002369			*

19.	LACH WASHER		1
	SICHERUNGSSHEIBE		
	PRITRDILNA PLOŠČICA		

		3KTCR180-225
25321240		*

	CIRCLIPS EXTERIEUR DIN 471		
	EXTERNAL CIRCLIP DIN 471		
	SPRENGRING DIN 471		
	VSKOČNIK DIN 471		

20.			3KTCR180	3KTCR200	3KTCR225
	R002786	50	1		
	R002804	58		1	
	R002789	62			1

21.			3KTCR180	3KTCR200	3KTCR225
	R002786	50	2		
	R002788	60		2	
	R002790	65			2

	VIS A TETE FENDUE		
	SLOTTED HEAD BOLD AND SCREW		
	SCHLITZSCHRAUBEN		
	VALJNI VIJAK		

22.			3KTCR180	3KTCR200-225
	R002520	M6x10	1	
	R006739	M8x10		1

23.			3KTCR180-225	
	R006748	M8x16	1	

24.			3KTCR180	3KTCR200	3KTCR225
	R006748	M8x16	3	3	3

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

		VIS A TETE HEXAGONALE	
		HEXAGO SOCKET HEAD BOLD	
		INNERSECHKANTSCHRAUBEN	
		VIJAK S ŠESTROBO LUKNJO	

25.			3KTCR180-225
	R002553	M8x20	6

26.			3KTCR180-225
		M10x25	4

27.			3KTCR180-225
	R002553	M8x20	4

28.			3KTCR180	3KTCR200	3KTCR225
	R002565	M12x25	8	12	12

29.			3KTCR180	3KTCR200-225
	R002557	M8x50	8	
	R002591	M8x60		8

			SPRING VASHER	
			GLATTET FEDERING	
			VZMETNA PODLOŽKA	

30.			3KTCR180-225
	R002665	6	1

31.			3KTCR180-225
	R002684	8	1

32.			3KTCR180-225
	R002684	8	10

33.			3KTCR180-225
		10	4

34.			3KTCR180-225
	R002684	8	4

35.			3KTCR180	3KTCR200	3KTCR225
	R002764	12	8	12	12

36.			3KTCR180-225
	R002684	8	3

37.			BEARING COVER AS	1
			LAGERDECKEL AS	
			LEŽAJNI ŠČIT AS	

	3KTCR180	3KTCR200	3KTCR225
25360121	*		
25401272		*	
25441442			*

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

37.1	BEARING COVER AS-OIL SEAL	1
	LAGERDECKEL AS-DICHTRING	
	LEŽAJNI ŠČIT AS-OLJNO TESNILO	

	3KTCR180	3KTCR200	3KTCR225
	*		
		*	
			*

38.	BEARING COVER BS	1
	LAGERDECKEL BS	
	LEŽAJNI ŠČIT BS	

	3KTCR180	3KTCR200	3KTCR225
25360122	*		
25401273		*	
25441443			*

38.1	BEARING COVER BS-OIL SEAL	1
	LAGERDECKEL BS-DICHTRING	
	LEŽAJNI ŠČIT BS-OLJNO TESNILO	

	3KTCR180	3KTCR200	3KTCR225
	*		
		*	
			*

39.	LABYRINT SEAL AS	1
	SCHUTZRING AS	
	LABIRINTNO TESNILO AS	

	3KTCR 180	3KTCR 200	3KTCR 225
25361160	*		
25401260		*	
25441450			*

40.	LABYRINT SEAL BS	1
	SCHUTZRING BS	
	LABIRINTNO TESNILO BS	

	3KTCR 180	3KTCR 200	3KTCR 225
25361170	*		
25401270		*	
25441460			*

41.	RING BS	1
	RING BS	
	OBROČ BS	

	3KTCR 180	3KTCR 200	3KTCR 225
	*		
		*	
			*

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

42.	HOUSING
	GEHAUSE
	OHIŠJE STATORJA

	3KTCR 180	3KTCR 200	3KTCR 225
	*		
		*	
			*

43.	STATOR WINDING	1
	STATORPAKET MIT WICKLUNG	
	NAVIT STATORSKI PAKET	

	3KTCR 180	3KTCR 200	3KTCR 225
	*		
		*	
			*

44.	DIRECT CABLE ENTRIE BUSHING	1(2)
	ADERLEITUNGSDURCHFÜHRUNG DU	
	SKOZNIK DIREKTNI UVOD	

	3KTCR180	3KTCR200-225
	*	
		*

45.	PTC DIRECT CABLE ENTRIE BUSHING	1
	ADERLEITUNGSDURCHFÜHRUNG PTC DE	
	SKOZNIK PTC DIREKTNI UVOD	

	3KTCR180-225
	*

46.	HOUSING 3KTCP
	GEHAUSE 3KTCP
	OHIŠJE STATORJA 3KTCP

	3KTCR 180	3KTCR 200	3KTCR 225
	*		
		*	
			*

47.	COVER 3KTCP	1
	DECKEL 3KTCP	
	POKROV 3KTCP	

	3KTCP 180	3KTCP 200	3KTCP 225
25381760	*		
25421820		*	
25462100			*

ITEM No.	PART No.	DENOMINATION	QUANTITY
POS. Nr.	ARTIKEL Nr.	BEZEICHNUNG	ANZAHL
POZICIJA	RAZPOZNAVNA ŠT.	IME	KOLIČINA

48.	FAN CASTING 3KTCP		1
	LUFTER KAPPE 3KTCP		
	VENTILATORSKI ŠČIT 3KTCP		

	3KTCP 180	3KTCP 200	3KTCP 225
25381720	*		
25421680		*	
25461900			*

49.	HEXAGO SOCKET HEAD BOLD 3KTCP		4
	INNERSECHKANTSCHRAUBEN 3KTCP		
	VIJAK S ŠESTROBO LUKNJO 3KTCP		

002566	M12x30	*
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50.	HEXAGON BOLTS 3KTCP		6
	SECHSKANTSCHRAUBEN 3KTCP		
	VIJAK S ŠESTROBO GLAVO 3KTCP		

002395	M12x40	*
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	SPRING VASHER 3KTCP		1
	FEDERRING 3KTCP		
	VZMETNA PODLOŽKA 3KTCP		

51.	002764	12	4
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52.	002764	12	6
-----	--------	----	---

Pri naročilu nadomestnega dela, prosimo navedite:
 Pozicija, tip motorja, serijska številka.
 PRIMER:

1. _____ Rotor 3KTCR 180 M2 000000
--

When ordering spare parts, please state:
 Item No., motor type, serial No.
 EXAMPLE:

1. _____ Rotor 3KTCR 180 M2 000000
--

Bei Ersatzteil Bestellung sind folgende Angaben erforderlich:
 Ersatzteillbezeichnung Typ, Motornummer
 Serial Nr.
 BEISPIEL:

1. _____ Rotor 3KTCR 180 M2 000000
--

ATTENTION: THE SPARE PARTS WRITTEN IN BOLD LETTERS ARE SUBJECT TO DIMENSIONAL ACCURACY INSPECTION (SEE EN 60079-0: 2006, EN 60079-1: 2007).

OPOMBA: SESTAVNI DELI, NAPISANI Z POUČARJENIMI ČRKAMI SO POSEBEJ KONTROLIRANI (GLEJ EN 60079-0: 2006, EN 60079-1: 2007).

Navodila za montažo in priključitev ne zajemajo vseh posebnosti, ki se lahko pojavijo pri priključitvi in uporabi elektromotorja. Zahteva se, da elektromotor priključi in vzdržuje kvalificirana oseba (IEC 364).

1. TRANSPORT IN SKLADIŠČENJE

ELEKTROMOTORJE MORAMO TRANSPORTIRATI V POLOŽAJU, KOT SO PREDVIDENI ZA OBRATOVANJE! ELEKTROMOTORJE, KI JIH NE UPORABIMO TAKOJ, MORAMO SKLADIŠČITI V SUHEM PROSTORU.

2. UPORABA IN PROTIEKSPLOZIJSKA ZAŠČITA

Trifazni asinhronski elektromotorji v protieksplzijski izvedbi tipa 3KTCR so namenjeni za obratovanje v rudnikih.

Protieksplzijsko zaščito elektromotorjev sestavljajo:

- a) »nepredirni okrov« za ohišje elektromotorja in »povečana varnost« za priključno omarico, ki sta v skladu z zahtevami standardov: EN 60079-0:2006, EN 60079-1:2007 and EN 60079-7:2007. Na pokrovu priključne omarice je oznaka Ex.
- b) »nepredirni okrov« za ohišje elektromotorja in za priključno omarico, ki sta v skladu z zahtevami standardov EN 60079-0:2006 in EN 60079-1:2007. Na pokrovu priključne omarice je oznaka Ex.

Točna oznaka protieksplzijske zaščite je na napisni tablici.

3. NAMESTITEV (MONTAŽA) ELEKTROMOTORJA

MONTAŽO ELEKTROMOTORJA NAJ IZVEDE STROKOVNJAK, DA SE IZOGNEMO MOREBITNIM OKVARAM MED OBRATOVANJEM ZARADI NEPRAVILNE MONTAŽE.

These instructions for the installation and maintenance do not contain all particulars which might arise during the installation and application of the cage motor. We therefore insist on its being mounted and maintained by qualified persons (IEC 364).

1. TRANSPORT AND STORAGE

THE MOTORS ARE TO BE STORED IN A CLOSED AND DRY AREA. Should they be stored outdoors, it is important to protect them against bad weather conditions. During transport make sure that the usual precautions for this kind of material are respected. 3KTCR motors are to be handled with lifting-claw.

2. APPLICATION AND EXPLOSION PROTECTION

The explosion-proof asynchronous three-phase squirrel-cage motors of the type 3KTCR are designed for their application in mines

Explosion-proof motor versions are:

- a) "Explosion-proof enclosure" for the motor housing and "Increased safety" for the terminal box according to. EN 60079-0 2006, EN 60079-1:2007 and EN 60079-7:2007. The cover of the terminal box carries the Ex imprint.
- b) "Explosion-proof enclosure" for the motor housing and for the terminal box according to EN 60079-0:2006 and EN 60079-1:2007. The cover of the terminal box carries the Ex imprint.

The exact indication of the explosion protection can be found on the label.

3. INSTALLATION (MOUNTING) OF THE ELECTRIC MOTOR

THE ELECTRIC MOTOR MUST BE MOUNTED BY QUALIFIED PERSONS IN ORDER TO AVOID POSSIBLE DAMAGES DURING OPERATION CAUSED BY AN INCORRECT INSTALLATION.

Pri namestitvi elektromotorja moramo:

- upoštevati zahteve instalacijskih predpisov
- preveriti, če protieksplzijska zaščita elektromotorja ustreza okolju (cona, skupina plinov, temperaturni razred)
- preveriti kako okolje vpliva na delovanje elektromotorja (agresivno okolje, temperatura, prah itd.)
- upoštevati lokalne in tovarniške posebnosti ter zahteve
- zagotoviti uporabo pravega orodja in priprav
- upoštevati zahteve za varno obratovanje
- zagotoviti uporabo osebnih zaščitnih sredstev

Elektromotorji so izdelani tako, da brez dodatne zaščite lahko obratujejo v zmerno vlažni in prašni atmosferi s temperaturo od -20°C do $+40^{\circ}\text{C}$. V primeru, da je temperatura nižja kot -20°C , mora imeti motor vgrajene grelce (glej točko 4.).

Pri montaži (postavitvi) elektromotorja na prostem priporočamo, da ga zaščitimo pred neposrednimi sončnimi žarki. Na elektromotorju, ki obratuje v navpičnem položaju, moramo nad odprtini štita ventilatorja namestiti pokrov, za zaščito elektromotorja pred vdorom vode vzdolž osi.

Izolacija elektromotorjev je iz materialov, ki ne vpijajo vlage in je kvalitetno impregnirana, zato pravilno skladiščenih, novih elektromotorjev pred priključevanjem na omrežje, ni potrebno posebej preizkušati.

Pri montaži elementov, npr. sklopke, jermenice) na gred elektromotorja, je potrebno posebej paziti na ležaje. Aksialnih sil zaradi morebitnih udarcev ob montaži, ne smejo prevzeti ležaji.

4. PRIKLJUČEK NA OMREŽJE

POMEMBNO!

NAPRAVE V PROTIEKSPLOZIJSKI IZVEDBI SME MONTIRATI IN PRIKLJUČITI NA OMREŽJE LE STROKOVNO USPOSOBLJENA OSEBA, KI IMA DODATNO ZNANJE S PODROČJA PRITIEKSPLOZIJSKE ZAŠČITE.

The following rules must be observed during installation:

- strictly adhere to the installation instructions,
- check whether the explosion protection corresponds to the environment or not (sector, gas group, temperature group),
- check the effects of the environment on the operation of the electric motor (aggressive environment, temperature, dust ...),
- consider particulars and requirements of room/plant,
- make sure that the correct tools and devices are used,
- observe the motor safety instructions,
- make sure that the means for personal safety are used.

The electric motors are manufactured in such a way as to function in a mildly humid and dusty atmosphere under temperatures between -20°C and 40°C without requiring additional protection. If temperatures fall below -20°C , the motors must be equipped with space heaters and Exd terminal box. If mounted (installed) outdoors, the motors must be protected from direct sunlight. If the motor is mounted and operated in vertical position, the fan openings must be protected against the ingress of water by fixing the lid above them.

The insulation of the electric motors consists of water-resistant materials and high-quality coating. If stored correctly, it is therefore not necessary to carry out special tests before connecting the motor to the power supply.

When mounting the elements (such as clutch, pulley) onto the motor shaft, please pay particular attention to the bearings. The axial forces caused by possible impacts during installation must not have any effect on the bearings.

4. CONNECTION TO THE POWER SUPPLY

IMPORTANT!

THE EXPLOSION-PROOF VERSIONS MAY BE MOUNTED AND CONNECTED TO THE POWER SUPPLY BY QUALIFIED PERSONS ONLY; THE INSTALLER MUST HAVE ADDITIONAL KNOWLEDGE ABOUT EXPLOSION PROTECTION.

Pred priključitvijo elektromotorja na omrežje je potrebno preveriti:

- ali podatki na napisni tablici ustrezajo napetosti in frekvenci omrežja
- ali protieksplzijska zaščita motorja ustreza za okolje v katerem bo motor obratoval (skupina plinov in temperaturni razred).
- ali je instalacija (cevna ali kabelska) korektno izvedena

Elektromotorji se vrtijo desno, če fazne vodnike L1, L2, L3, priključimo na priključke U, V, W, (1U, 1V, 1W, oziroma U1, V1, W1). Spremembo smeri vrtenja dosežemo z zamenjavo priključnih mest dveh dovodnih faznih vodnikov.

Naslednji element se nahajajo na številkah:

- 10 – 11 ali 12 – 13: PTC termistor
14 – 15: NC termostat –
odpirajoč (normalno zaprt kontakt)
16 – 17: NO termostat –
zapirajoč (normalno odprt kontakt)

Navitja elektromotorjev imajo vgrajene temperaturne senzorje (PTC termistor DIN 44081). Odklopna naprava s katero so povezani, mora biti odobrena in nositi ustrezno oznako pooblaščen Ex institucije. Odklopna naprava ni eksplozijsko varna in mora biti instalirana zunaj eksplozijsko varnega območja (ali vgrajena v atestiranem eksplozijsko varnem ohišju). Oznaka ustreznosti služi le za potrditev skladnosti električnih veličin v povezavi s temperaturnimi senzorji in dovoljuje uporabo odobrene odklopne naprave v povezavi s PTC senzorji, ki ustrezajo zahtevam DIN 44081 za termično zaščito eksplozijsko varnih elektro naprav.

Grelci so priključeni na sponke 30 – 31 ali 32 – 33. Motorji z vgrajenimi grelci so označeni z dodatno tablico z imenskimi podatki grelnega sistema ali pa so ti podatki vključeni na tablici s podatki motorja. Krmiljenje mora zagotoviti, da napetost ni istočasno priključena na grelce in priključne sponke elektromotorja.

Priključek kabelskih žil na skoznike mora biti izveden posebej pazljivo. Izolacija kabelske žile naj bo čim bližje priključnemu mestu, vse žice finožičnatih žil pa morajo biti vpete na priključnem mestu.

Moment privitja priključkov na priključni blok ne sme presežati 7,5 Nm.

The following items must be checked before the electric motor can be connected to the mains power supply:

- that the data on the label correspond to voltage and frequency of the power supply,
- that the explosion protection indicated corresponds to the environment the electric motor will be operated in (gas group, temperature class),
- that the installation (pipes or cables) is carried out correctly.

The electric motors rotate clockwise when the phase conductors L1, L2 and L3 are connected to the terminals U,V,W (1U,1V,1W or U1,V1,W1). The direction may be changed by confusing the terminals of two phase conductors.

The following elements are connected to the terminals:

- 12 – 13 PTC 145°C built in
14 – 15 Thermostats NC (normally closed contact)
16 – 17 Thermostats NO (normally open contact)

The motors are equipped with temperature detectors (PTC thermistor DIN 44081 -). These temperature detectors are to be connected to a tripping unit with one of Ex Notified Bodies mark of conformity. The tripping unit is not protected against explosions and must therefore be installed outside of the hazardous area. The mark of conformity serves merely to confirm the adherence to the electrical data at the interface between the temperature detector circuit and the tripping device and to allow the application of both the tripping device with mark of conformity and the PTC contacts according to DIN 44081 for the thermal control of explosion-proof electric machines.

The space heaters are mounted to the terminals 30 – 31 (230V) or 32-33 (110V). Motors with space heaters are marked with an additional label indicating the nominal data of the heating system.

The electric control unit must make sure that the nominal motor voltage and the heater voltage are not present simultaneously.

Take particular care over the connection of the cable cores to the terminal board. The insulation of the cable cores should be close to the terminal, all wires of the flexible cores must be clamped to the terminal.

Pred priključitvijo na omrežje v priključni omarici kontroliramo:

- da v notranjosti priključne omarice ni prahu, žičnih ostankov in podobno
- da izvede priključitev strokovno usposobljena oseba, ki zagotavlja, da bodo električni spoji kvalitetni in vijaki primerno pritrjeni
- da je medsebojna zračna razdalja pri napetosti 690V ali 400 V, minimalno 10 mm, oziroma 14mm za 1000 V (za Exe izvedbo)
- da so neuporabne žice ločene in primerno pritrjene
- da so stične ploskve očiščene in rahlo namazane z brezislinsko mastjo
- da je kabel na uvodnici pravilno zatesnjen

Grelci so priključeni na priključkih 30 – 30 ali.... Motorji z grelci so označeni z dodatno napisno tablico, na katero so imenski podatki grelcev. Potrebno je zagotoviti,

5. ZAŠČITA ELEKTROMOTORJEV IN OBRATOVANJE

Pri postavitvi elektromotorja je vse vrteče dele potrebno zavarovati pred dotikom.

S stroji smejo opravljati samo kvalificirane osebe.

Pri trajnem obratovanju (oznaka S1), je motorsko zaščitno stikalo zadostna zaščita z ozirom na temperaturni razred, če ima vgrajeno ustrezno bimetalno zaščito, ki omogoča nastavev imenskega toka.

Pri obratovanju S2 (kratkotrajno obratovanje s trajno obremenitvijo) ali S3 (prekinjeno obratovanje) ter pri (frekvenčno reguliranem pogonu), obratovanje s frekvenčnim pretvornikom, morajo imeti trifazni kratkostični elektromotorji v vsakem navitju temperaturne senzorje, po enega v vsaki fazi (DIN 44 080, DIN 44 081, DIN 44 082).

Izklopna temperatura senzorjev je običajno 145°C. Odgovarjajoča odklopna naprava z oznako ustreznosti tvori skupaj s temperaturnimi senzorji ustrezen sistem zaščite z ozirom na zahtevani temperaturni razred.

Elektromotorji z dvema hitrostma vrtenja (dvoje ločenih navitij ali eno navitje v Dahlander stiku), morajo biti zaščiteni za vsako hitrost posebej.

The tightening torque of the connections on the terminal board must not exceed 7,5 Nm.

Prior to the mains connection, check the terminal box for the following items:

- there must not be any dust, pieces of wire or other foreign matters inside of the terminal box,
- the electrical connections must be carried out by qualified persons and the screws must be tightened correspondingly,
- that the mutual air distance is at least 10 mm for voltages of 400 V or 690 V, or 14mm for 1000V (for Exe version).
- that the unused wires are separated and fixed accordingly,
- that the contacting surfaces are clean and slightly lubricated with an acidfree grease,
- that the cable is sealed correctly at the cable entry.
- the unused openings must be sealed so as to guarantee that the flame-proof properties are maintained. The means foreseen to achieve this goal must be such so as to ensure that the sealing-plug can only be removed with the help of a tool.

5. PROTECTION OF THE ELECTRIC MOTORS AND OPERATION

Succeeding the installation of the electric motors, all rotating parts must be safely protected against contacts.

Only qualified personnel may handle the machines!

In the S1-mode of operation, the motor circuit-breaker is a sufficient device for the maintenance of the temperature class. To do so, it must be regulated to the rated current of the three-phase cage motor.

In both the S2- and S3- modes of operation and the converter operation, the three-phase cage motors must be equipped with 3 PTCs in each winding (DIN 44080, DIN 44081, DIN 44082). The nominal shutdown temperature of these PTCs are 145 °C. A corresponding shutdown device with the PTB mark of conformity (Lab. 3.43) completes the protective system for the maintenance of the temperature class

Ohišje elektromotorja mora biti povezano z zaščitnim vodnikom in ozemljeno. V priključni omarici je vijak za priključitev zaščitnega vodnika, na ohišju statorja pa je vijak za ozemljitev.

Če je elektromotor napaján preko frekvenčnega pretvornika, je potrebno preveriti, da nastavitev na pretvorniku ustreza deklariranemu območju na dodatni napisni tablici. Elektromotor mora biti varovan dvojno, to je z motorskim zaščitnim stikalom, ter s temperaturno zaščito. Izklopna naprava, vezana na temperaturno zaščito, mora biti v območju: $2k\Omega < R_o < 4k\Omega$, pri čemer je R_o – upornost izklopa. Motorsko zaščitno stikalo mora biti certificirano.

6. VZDRŽEVANJE

Elektromotorji so robustne konstrukcije in nezahtevni za vzdrževanje.

V rednih časovnih obdobjih (odvisno od okolja), je potrebno elektromotor očistiti, še posebej vhodne odprtine na ventilatorskem ščitu: tako zagotovimo zadosten pretok zraka za hlajenje.

Elektromotorji so opremljeni z zaprtimi trajno mazanimi ležaji. Življenjska doba ležajev je 25000 ur obratovanja dvopolnih elektromotorjev ($n_s=3000 \text{ min}^{-1}$) pri normalnih pogojih obratovanja ali 40000 ur obratovanja štiri in več polnih motorjev.

Redni kontrolni pregledi in kontrolne meritve, ki jih opravijo za ta dela usposobljene osebe, so ukrepi, s katerimi zmanjšamo možnost okvar in prekinitev obratovanja.

Vsako odstopanje od imenskih vrednosti (večji tok obratovanja, povečana temperatura, vibracije, neobičajni hrup ali vonj, reagiranje zaščitno – kontrolnih naprav itd.) so znak, da s pogonom nekaj ni v redu! Da bi se izognili večji okvari, ki bi lahko neposredno ali posredno povzročila večjo škodo na materialnih dobrinah ali se poškodovalo osebje, je potrebno o teh pojavih takoj obvestiti odgovorno osebo.

Electric motors with two velocities (two separate windings or one winding in Dahlander coupling) must have a separate protection for each speed. The housing of the electric motor must be connected to the protective conductor, and earthed. The terminal box contains the screw for the connection of the conductor, the earthing screw sits on the stator housing.

If the electric motor is supplied via the frequency converter, please make sure that the settings on the converter correspond to the data indicated on the supplementary label. The electric motor must be double-protected, i.e. with the motor circuit-breaker and the temperature protection. The shutdown device connected to the temperature protection must be in the range of $2k\Omega < R_o < 4k\Omega$ with R_o representing the shutdown resistance. The shutdown device must be certified.

6. MAINTENANCE

Electric motors have a robust structure and need no particular maintenance.

The motor must be cleaned in regular intervals (depending on the environment), especially the entry openings on the fan as to guarantee a sufficient air flow for the cooling system.

Electric motors feature closed and prelubricated bearings. The life span of the bearings is 25000 service hours for two-way electric motors ($n_s=3000 \text{ min}^{-1}$) under normal operating conditions or 40000 service hours for four- and multiple-way motors. Regular inspections and control measurements carried out by qualified persons are ways to reduce damages and possible standstills.

Each deviation from the nominal values (such as higher load current, increased temperatures, vibrations, unusual noise or smell, reactions of protective devices) must be understood as signal that something is out of order! To prevent consequential damages on machines or people, please inform the person responsible immediately on the appearance of such deviations.

7. POPRAVLJANJE

ELEKTROMOTORJE V
PROTIEKSPLOZIJSKI IZVEDBI SME
POPRAVLJATI SAMO
PROIZVAJALEC ALI POOBLAŠČENA
DELAVNICA.

OSEBE, KI RAZSTAVLJAJO ALI
POPRAVLJAJO Ex APARATE, MORAJO
BITI STROKOVNO USPOSOBLJENE IN
IMETI DODATNO ZNANJE S PODROČJA
PROTIEKSPLOZIJSKE ZAŠČITE.

Pri razstavljanju elektromotorja je potrebno paziti, da ne poškodujemo ploskev, ki tvorijo Ex reže!

Po popravilu elektromotorja morajo tehnične zahteve elektromotorja ostati v skladu s certifikatom.

Če se pri popravilu ugotovi, da »nepredirni okrov« ne ustreza več zahtevam protieksplzijske zaščite in zahtevam v certifikatu, se mora s tega elektromotorja odstraniti znak protieksplzijske zaščite.

8. MOMENT PRIVITJA VIJAKOV /SCREW TIGHTENING TORQUE

Tabela 1.: Moment privitja vijakov Ex ohišja. Material vijakov 8.8 ali A4-70.

Table 1: Tightening torque: Ex enclosure. Tightening torques for screws of the strength class 8.8 and A4-70.

Navoj Thread	Moment privitja (Nm) Tightening torque (Nm)	Navoj Thread	Moment privitja (Nm) Tightening torque (Nm)
M4	2.3	M12	66
M5	4.6	M14	105
M6	7.9	M16	160
M8	19	M20	330
M10	38	M24	560

Tabela 2.: Moment privitja vijakov - električni priključki.

Table 2.: Tightening torque: for electrical connections

Navoj Thread	Moment privitja (Nm) Tightening torque (Nm)	Navoj Thread	Moment privitja (Nm) Tightening torque (Nm)
M4	1.2	M10	10
M5	2	M12	15.5
M6	3	M16	30
M8	6	M20	52

7. REPAIRS

ELECTRIC MOTORS FOR EXPLOSIVE AREAS
MAY BE REPAIRED EXCLUSIVELY BY THE MANUFACTURER OR OUR AUTHORIZED REPRESENTATIVE.

THOSE WHO DISASSEMBLE AND REPAIR THE EX MACHINES MUST BE HIGHLY QUALIFIED AND DISPOSE OF ADDITIONAL KNOWLEDGE CONCERNING EXPLOSION PROTECTION.

When disassembling the electric motor please pay attention not to damage the surfaces forming the Ex protection!

When repairing the electric motor all components must correspond to the PTB-documentation.

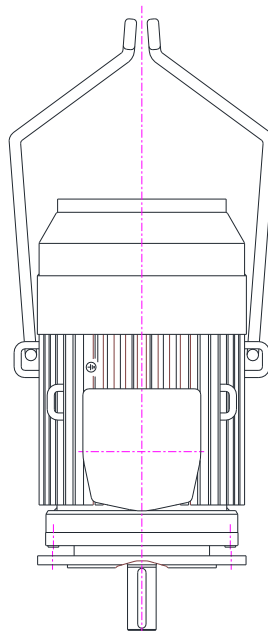
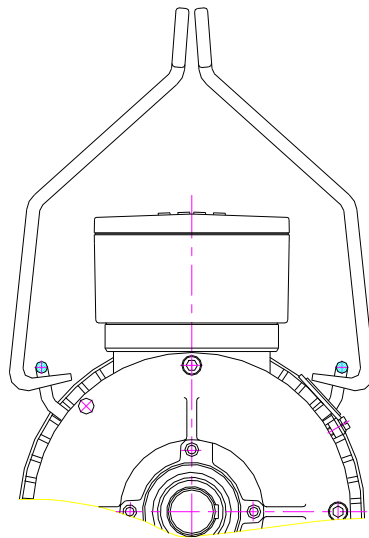
If it becomes clear during repairs that the »explosion-proof enclosure« no longer corresponds to the requirements on the explosion protection and specified in the certification, the mark for explosion protection must be cancelled from this motor

MESTA ZA PRENAŠANJE MOTORJA tip 3KTCR

/ LIFTING POINTS FOR MOTOR LIFT /

8. PRENAŠANJE ELEKTROMOTORJEV / HANDLE

- 3KTCR 180 - 225 - S KAVLJI / WITH HOOKS (glej sliko / see picture)



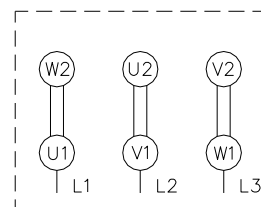
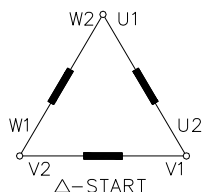
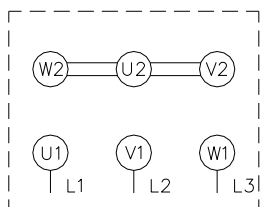
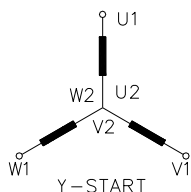
IM V1

SCHEMA DE RACCORDEMENT/ ANSCHLUSS SCHALTBILD/ CONNECTION DIAGRAM

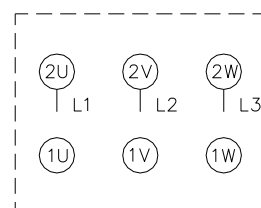
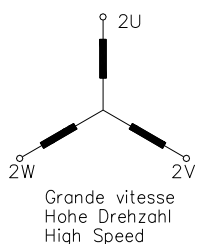
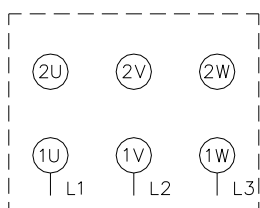
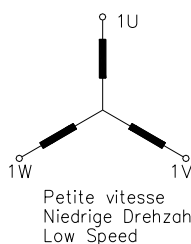
BOITE A BORNES / KLEMMENKASTEN / TERMINAL BOX

3KTC R Ex d - Ex de

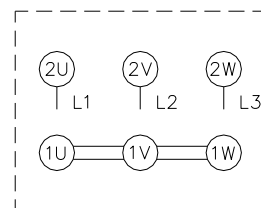
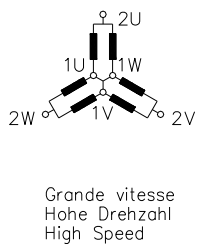
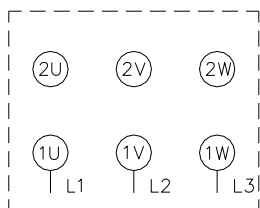
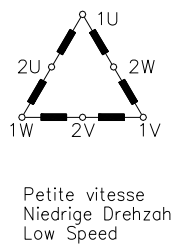
DEMARRAGE DIRECT/ DIREKT ANLAUF/ D.O.L. STARTING



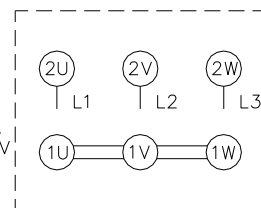
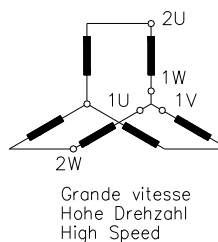
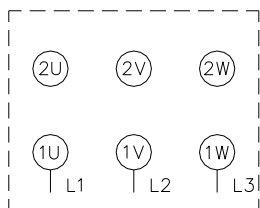
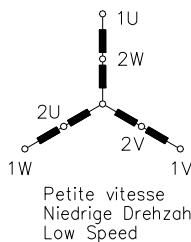
MOTEUR A POLES COMMUTABLES/ POLUMSCHALTBAR/ POLE-CHANGING WINDING



COUPLAGE DAHLANDER/ DAHLANDER SCHALTUNG/ POLE CHANGING WINDING (DAHLANDER)



COUPLAGE-DAHLANDER/ DAHLANDER-SCHALTUNG/ POLE-CHANGING WINDING (DAHLANDER)



10 - 11	SONDE CTP	THERMISTOR PTC	KALTLEITER PTC
10 - 11			
14 - 15	IPSOHERME TEMPERATURFÜHLER BIMETALLIC TEMPERATURE SENSOR	NC NORMALEMENT FERME/ NORMALLY CLOSED/ ÖFFNER	
16 - 17		NO NORMALEMENT OUVERT/ NORMALLY OPEN/ SCHLIESSE	
20 21 22 23	SONDE THERMOMETRIQUE PT100 WIDERSTANDTHERMOMETER PT100 RESISTANCE THERMOMETER PT100		
30 - 31	RESISTANCE DE RECHAUFFAGE/ STILLSTANDHEIZUNG/ HEATERS	230V	
32 - 33		110V	



Translation

EU-Type Examination Certificate Supplement 1

Change to Directive 2014/34/EU

2 Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

3 EU-Type Examination Certificate Number: **BVS 15 ATEX E 075 X**

4 Product: **Flameproof electric motors type 3KTC 180-225
3KTCR 180-225-**, 3KTCP 180-225 and 4KTC 250-315,
4KTCR 250-315-**, 4KTCP 250-315**

5 Manufacturer: **BARTEC VARNOST, d.o.o.**

6 Address: **Cesta 9. avgusta 59, 1410 Zagorje ob Savi, Slovenia**

7 This supplementary certificate extends EC-Type Examination Certificate No. BVS 15 ATEX E 075 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 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 products 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. BVS PP 15.2162 EU.

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

EN IEC 60079-0:2018	General requirements
EN 60079-1:2014	Flameproof enclosure "d"
EN 60079-7:2015	Increased Safety "e"

Except in respect of those requirements listed under item 18 of the appendix.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. 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 2G Ex db IIC T* Gb	or	II 2G Ex db eb IIC T* Gb	or
	II 2G Ex db IIB T* Gb	or	II 2G Ex db eb IIB T* Gb	or
	I M2 Ex db I Mb	or	I M2 Ex db eb I Mb	

*) see parameters

DEKRA Testing and Certification GmbH
Bochum, 2019-07-03

Signed: Jörg-Timm Kilisch

Managing Director

Page 1 of 8 of BVS 15 ATEX E 075 X / N1

This certificate may only be reproduced in its entirety and without any change.



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Phone +49 234 3696-400, Fax +49 234 3696-401, e-mail DTC-Certification-body@dekra.com



13 **Appendix**

14 **EU-Type Examination Certificate**

**BVS 15 ATEX E 075 X
Supplement 1**

15 **Product description**

15.1 **Subject and type**

Flameproof electric motors type 3KTC 180-225, 3KTCR 180-225, 3KTCP 180-225 and 4KTC 250-315, 4KTCR 250-315, 4KTCP 250-315

Type designation to *(1)KT*(2)*(3) *(4)*(4)*(4) *(5)*(5) *(6)/(*)6) - *(7)*(7)

- 1): Motor generation
 - 3: Third generation
 - 4: Fourth generation
- 2): Explosion Group
 - B: Flameproof enclosure for Group IIB
 - C: Flameproof enclosure for Group IIC
- 3): Enclosure variant
 - R: Mining motor with standard housing
 - P: Mining motor with screened housing
- 4): Frame size
 - 180 180 mm
 - 200 200 mm
 - 225 225 mm
 - 250 250 mm
 - 280 280 mm
 - 315 315 mm
- 5): Length of stator assembly
- 6): Quantity of poles
- 7): Swan neck execution

15.2 **Description**

With this supplement the certificate is changed to Directive 2014/34/EU.
(Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of Directive 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

Reasons for the supplement:

- Change to the new Directive 2014/34/EU
- Update to the current standards
- Version with extended connecting tube between connection box and motor (swan neck execution)



Page 2 of 5 of BVS 15 ATEX E 075 X / N1
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Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49 234 3696-400, Fax +49 234 3696-401, e-mail DTC-Certification-body@dekra.com



Description of Product

The enclosures of the flameproof electric motors are made of welded steel and cast iron and have a mounting place for terminal boxes.

The shaft will be fixed with ball bearings.

A terminal compartment in type of protection Flameproof Enclosure "d" or Increased Safety "e" or a direct cable entry is used for electrical connection of the motor. For electric power input into the motor compartment, separately certified cable glands or conductor bushings are used.

The cooling of the motor is realised by an external fan that is made of steel or aluminium (only Group II). The fan is driven by the electrical machine itself.

Optionally a space heater can be mounted inside the stator housing.

For direct temperature monitoring the winding of the motor is equipped with temperature sensors (thermistors according DIN 44081 respectively DIN 44082). The sensors are connected in series.

Optionally the temperature at the bearings could be monitored separately certified resistance thermometers (Pt100).

The sensors respectively the thermometers will be connected to a trigger unit which is certified for this purpose.

The maximum permissible ambient temperatures are $-50\text{ }^{\circ}\text{C}$ to $60\text{ }^{\circ}\text{C}$. This temperature range may be limited as a result of the selected terminal boxes and components, or the electrical design.

If the motor is converter-fed the converter must be of type voltage-source converter with pulse width modulation.

The motor is also available in a version with extended connecting tube between connection box and motor.

15.3 Parameters

15.3.1 Electrical parameters

15.3.1.1 Circuits of the flameproof electric motors

Rated voltage ¹			
3KTC 180 – 225	up to	690	V AC
3KTCR(P) 180 – 225; 4KTC 250 – 315; 4KTCR(P) 250 – 315	up to	1100	V AC
Rated rotational speed	500	up to	3600 min ⁻¹
Rated rotational speed (with converter)	150	up to	5800 min ⁻¹
Frequency (mains)		50 / 60	Hz
Frequency (converter)	5	up to	87 Hz
Duty type	S1	up to	S9

Rated power			
Frame size			
180	up to	22	kW
200	up to	37	kW
225	up to	45	kW
250	up to	55	kW
280	up to	90	kW
315	up to	250	kW

¹ In case of converter-fed: Voltage of the fundamental wave measured at the motor terminals. This voltage must not be decreased by 10 %, taken into account the minimum converter input voltage and the voltage drop caused by the supply line and an optional sinus filter.

15.3.1.2 Electrical parameters (voltage-source converter)

Maximum permitted input voltage	Rated voltage of the motor	V
Minimum switching frequency		1.2 kHz
Current limiting value		$1.5 \times I_N$
Maximum overload time / Time for operation below minimum frequency ²		60 s
Output frequency		up to 87 Hz

² The maximum overload time and the permitted time for operation below the minimum output frequency are in relation with a period of 10 minutes.

15.3.1.3 Monitoring circuit

Temperature sensors (ptc thermistors)	According to the specifications given in the certificate of the trigger unit and the electrical design.
Circuits of the resistance thermometer (Pt100)	According to the specifications given in the certificate of the trigger unit and the electrical design.

15.3.2 Thermal ratings

Permitted ambient temperature range			
Motor type	Group II Ex db	Group II Ex db eb	Group I Ex db / Ex db eb
3KTC180 - 225	$-50\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_a \leq +40\text{ °C}$
4KTC250 - 315			
3KTCR180 - 225			
4KTCR250 - 315			
3KTCP180 - 225			
4KTCP250 - 315			

The electrical data, the temperature class, the surface temperature and the ambient temperature range of the respective version is determined by a routine test carried out by the manufacturer.

16 Report Number

BVS PP 15.2162 EU, as of 2019-07-03

17 Special Conditions for Use

17.1 The lengths of the flameproof joints are in parts longer and the gaps of the flameproof joints are in parts smaller than the values of table 2 and 3 of EN 60079-1:2014. For information of the dimensions of the flameproof joints contact the manufacturer.

17.2 Fasteners with a minimum yield stress of 640 N/mm² must be used for the closing of the flameproof enclosure.

17.3 Motors which have to be equipped with a direct temperature control must be monitored by a separate certified trigger unit.

17.4 Before setting-up operation it has to be ensured that no inadmissible over voltage caused by converter supply may occur at the terminals of the motor.

Clearances and creepage distances inside the terminal box do not permit an overvoltage cause by the converter which increase:

- $3.1 \times U_N$ for rated voltages $\leq 600\text{ V}$
- $2.04 \times U_N$ for rated voltages $> 600\text{ V}$ and $\leq 1100\text{ V}$

The insulating system of the motor may require an additional limitation of a periodic over voltage.

Page 4 of 5 of BVS 15 ATEX E 075 X / N1
This certificate may only be reproduced in its entirety and without any change.



DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9. For this product the standard EN IEC 60079-0:2018 is equivalent to the harmonized standard EN 60079-0:2012 + A11:2013 in terms of safety.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2019-07-03
BVS-Wlo/Mu A 20180372


Managing Director





IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEX BVS 15.0066X	Issue No.:	0	Certificate history:
Status:	Current			
Date of Issue:	2015-09-10	Page 1 of 4		
Applicant:	BARTEC VARNOST, d.o.o. Cesta 9. avgusta 59 1410 Zagorje ob Savi Slovenia			
Electrical Apparatus:	Flameproof electric motors type 3KTC 180-225, 3KTCR 180-225, 3KTCP 180-225 and 4KTC 250-315, 4KTCR 250-315, 4KTCP 250-315			
Optional accessory:				
Type of Protection:	Equipment protection by flameproof enclosures "d", Equipment protection by increased safety "e"			
Marking:	Ex db IIC T* Gb or Ex db e IIC T* Gb or Ex db IIB T* Gb or Ex db e IIB T* Gb or Ex db I Mb or Ex db e I Mb *) See Parameters			
Approved for issue on behalf of the IECEx Certification Body:	Dr. F. Eickhoff			
Position:	Deputy Head of Certification Body			
Signature: (for printed version)				
Date:	2015-09-10			

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany

 **DEKRA**
DEKRA EXAM GmbH



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 15.0066X

Date of Issue: 2015-09-10

Issue No.: 0

Page 2 of 4

Manufacturer: **BARTEC VARNOST, d.o.o.**
Cesta 9. avgusta 59
1410 Zagorje ob Savi
Slovenia

Additional Manufacturing location
(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
[DE/BVS/ExTR15.0069/00](#)

Quality Assessment Report:
[SI/SIQ/QAR11.0003/02](#)



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 15.0056X

Date of Issue: 2015-09-10

Issue No.: 0

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General product information:

Subject and Type

Flameproof electric motors type 3KTC 180-225, 3KTCR 180-225, 3KTCP 180-225 and 4KTC 250-315, 4KTCR 250-315, 4KTCP 250-315

Type designation to ¹⁾KT²⁾3) ⁴⁾4) ⁵⁾5) ⁶⁾6)

- 1) Motor generation
 - 3: Third generation
 - 4: Fourth generation
- 2) Explosion group
 - B: Flameproof enclosure for group IIB
 - C: Flameproof enclosure for group IIC
- 3) Enclosure variant
 - R: Mining motor with standard housing
 - P: Mining motor with screened housing
- 4) Frame size
 - 180 180 mm
 - 200 200 mm
 - 225 225 mm
 - 250 250 mm
 - 280 280 mm
 - 315 315 mm
- 5) Length of stator assembly
- 6) Quantity of poles

CONDITIONS OF CERTIFICATION: YES as shown below:

1. The lengths of the flameproof joints are in parts longer and the gaps of the flameproof joints are in parts smaller than the values of table 2 and 3 of EN 60079-1:2014. For information of the dimensions of the flameproof joints contact the manufacturer.
2. Fasteners with a minimum yield stress of 640 N/mm² must be used for the closing of the flameproof enclosure.
3. Motors which have to be equipped with a direct temperature control must be monitored by a separate certified trigger unit.
4. Before setting-up operation it has to be ensured that no inadmissible over voltage caused by converter supply may occur at the terminals of the motor.
Clearances and creepage distances inside the terminal box do not permit an overvoltage cause by the converter which increase:
 - 3.1 x UN for rated voltages ≤ 600 V
 - 2.04 x UN for rated voltages > 600 V and ≤ 1100 VThe insulating system of the motor may require an additional limitation of a periodic over voltage.



IECEx Certificate of Conformity

Certificate No.: IECEx BVS 15.0066X

Date of Issue: 2015-09-10

Issue No.: 0

Page 4 of 4

EQUIPMENT(continued):

Description

The enclosures of the flameproof electric motors are made of welded steel and cast iron and have a mounting place for terminal boxes.

The shaft will be fixed with ball bearings.

A terminal compartment in type of protection Flameproof enclosure "d" or Increased safety "e" or a direct cable entry is used for electrical connection of the motor. For electric power input into the motor compartment, separately certified cable glands or conductor bushings are used.

The cooling of the motor is realised by an external fan that is made of steel or aluminium (only group II). The fan is driven by the electrical machine itself.

Optionally a space heater can be mounted inside the stator housing.

For direct temperature monitoring the winding of the motor is equipped with temperature sensors (thermistors according DIN 44081 respectively DIN 44082). The sensors are connected in series. Optionally the temperature at the bearings could be monitored separately certified resistance thermometers (Pt100).

The sensors respectively the thermometers will be connected to a trigger unit which is certified for this purpose.

The maximum permissible ambient temperatures are -20 °C to 60 °C. This temperature range may be limited as a result of the selected terminal boxes and components, or the electrical design.

If the motor is converter-fed the converter must be of type voltage-source converter with pulse width modulation.

Parameters



See Annex

Annex: [BVS_15_0066X_BartecVamost_Annex.pdf](#)



EU-Konformitätserklärung EU Declaration of conformity

Hersteller: **BARTEC VARNOST d.o.o.**
 Manufacturer:
 Adresse: **Cesta 9. Avgusta 59**
 Address: **1410 Zagorje ob Savi**
Slovenia
 Produktbezeichnung: **Druckfeste elektrische Motoren**
 Product: **Flameproof electric motors**

Kennzeichnung / Marking	Motor typ Motor type	EG-Baumusterprüfbescheinigung EC-Type Examination Certificate	Year of CE-marking
 II 2 G Ex db IIC T4-T6Gb or II 2 G Ex db eb IIC T4-T6Gb II 2 G Ex db IIB T4-T6Gb or II 2 G Ex db eb IIB T4-T6Gb	3KTC 180-225 4KTCB 180-225 4KTC 250-315 4KTCB 250-315	BVS 15 ATEX E 075 X	2015
 I M2 Ex db I Mb or I M2 Ex db eb I Mb	3KTCR 180-225 3KTCP 180-225 4KTCR 250-315 4KTCP 250-315		

Benannte Stelle / Notified Body (ExNB): 0158, DEKRAEXAM GmbH, Dinnendahlstrasse 9, 44809 Bochum, Germany

Das bezeichnete Produkt stimmt mit den Vorschriften folgender Europäischer Richtlinien überein/
 The products are in conformity with provisions of the following Council Directives:

Directive 2014/34/EU und/ and 2011/65/EU

In Bezug auf Produktkategorien sind die Motoren in Übereinstimmung mit den Bestimmungen der folgenden harmonisierten Normen/
 In respect of product categories the motors are in conformity with provisions of the following harmonized standards:

EN 60079-0:2018 EN 60079-1:2014 EN 60079-7:2015

Das bezeichnete Produkt ist zum Einbau in eine andere Maschine bestimmt. Die Inbetriebnahme ist solange untersagt, bis die Konformität des Endproduktes mit der Richtlinie 2006/42/EG festgestellt ist.
 The indicated product is intended for fitting into a machine. The conformity of the end product according to the Directive 2006/42/EC has to be established by the commissioning party when the motor is fitted to the machinery.

Note: Bei der Installation von Motoren für Umrichterbetrieb, zusätzliche Anforderungen müssen in Bezug auf den Motor sowie die Installation eingehalten werden. Motoren, die mit einer direkten Temperaturüberwachung ausgerüstet sein müssen, müssen über eine gesondert bescheinigte Auslöseeinheit überwacht werden. Vor der Inbetriebnahme ist sicherzustellen, dass bei Umrichterspeisung an den Klemmen des Motors keine unzulässig hohen Überspannungen auftreten.
 When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation. Motors, which have to be equipped with a direct temperature control must be monitored by a separate certified trigger unit. Before setting-up operation it has to be ensured that no inadmissible over voltage caused by converter supply may occur at the terminals of the motor

Die Reparatur der zünddurchschlagsicheren Spalte mit den Werten in den Tabellen 1 und 2 der EN 60079-1 ist nicht erlaubt. Informationen zu den Abmessungen sind beim Hersteller zu erfragen.
 The repair of the flameproof joints with the values in tables 1 and 2 of EN 60079-1 is not allowed. For information of the dimensions of the flameproof joints contact the manufacturer.

Diese Erklärung liegt in der alleinigen Verantwortung des Herstellers.
 This Declaration is issued under the sole responsibility of the manufacturer.

Signed by 
 Title **Janez Gajski**
Technical Manager
 Date **8.7.2019**

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VS-02 02 153D

UVOD

Bartec Varnost je zavezana k spoštovanju okoljske politike. V Bartec Varnost neprenehoma skrbimo, da so izdelki okolju prijazni in pri načrtovanju upoštevamo njihovo življenjsko dobo in način predelave po njenem izteku. Izdelki, izdelovalni procesi ter tudi logistika so načrtovani tako, da upoštevajo okoljske vidike. Bartec Varnost ima vzpostavljen sistem varovanja okolja, certificiran po standardu ISO 14001, ki je učinkovito orodje pri varovanju okolja.

Priložena navodila služijo kot priporočila za okolju prijazno reciklažo po izteku življenjske dobe. Dolžnost kupca je, da zagotavlja, da so upoštevane zahteve lokalne skupnosti. Navodila ne vsebujejo vseh zahtev strank, zato je potrebno pridobiti dodatno dokumentacijo v projektni dokumentaciji.

MATERIALI, KI JIH VSEBUJE STANDARDNI ELEKTROMOTOR

Materiali, ki jih vsebuje standardni elektromotor so:

	Ohišja iz jeklene litine	Ohišja iz varjene jeklene pločevine
Jeklo	46%	82%
Baker	16%	11%
Jeklena litina	31%	1%
Materiali za izolacijo	3%	3%
Drugo	4%	3%

RECIKLAŽA MATERIALOV ZA EMBALAŽO

Takoj, ko izdelek pride na mesto vgradnje, je potrebno odstraniti material, ki služi za embalažo.

- Vse dele iz lesa je mogoče sežgati,
- Za nekatere države je potrebno embalažo za transport z ladjo izdelati iz impregniranega lesa, ki ga je potrebno reciklirati v skladu z lokalnimi zahtevami,
- Materiale iz plastike je mogoče reciklirati,
- Zaščito pred korozijo s katero je zaščen izdelek med transportom, je potrebno odstraniti z razmastili in čistilnimi krpami. Onesnažene čistilne krpe je potrebno odstraniti v skladu z zahtevami zakonodaje in zahtev lokalne skupnosti.

PRAVILNO RAZSTAVLJANJE ELEKTROMOTORJEV

Razstavljanje elektromotorjev je osnovna naloga pri recikliranju, enako zahtevna kot samo sestavljanje. Glede na zahtevnost terja izkušeno in izučeno osebo, ki bo delo opravila strokovno in varno.

LOČEVANJE RAZLIČNIH MATERIALOV

OHIŠJE, OHIŠJA LEŽAJEV, ŠČITI IN VENTILATORJI

Vsi ti sestavni deli so narejeni iz konstrukcijskega jekla, ki se mora reciklirati v skladu z zahtevami lokalne skupnosti. Vsa dodatna oprema, kabli, priključki kot tudi ležaji, se morajo odstraniti preden se material pretopi.

SESTAVNI DELI, KI VSEBUJEJO ELEKTRIČNO IZOLACIJO

Stator in rotor sta glavna sestavna dela, ki vsebujeta tudi elektro izolacijske materiale. Izdelek pa sestavljajo še druge komponente, ki prav tako vsebujejo podobne materiale, ki jih je potrebno obravnavati po enakih postopkih. To so različni skozniki, ki se uporabljajo v priključni omarici, vzbujevalniki, napetostni in tokovni transformatorji, priključni kabli, razne žice in kondenzatorji. Nekatere od teh komponent se uporabljajo le v sinhronskih motorjih, druge pa se porabljajo le v zelo specialnih napravah.

Po izteku življenjske dobe izdelka, so njegovi deli neuporabni. Nekateri deli, predvsem stator in rotor, vsebujejo velik delež bakra, ki ga lahko izločimo s pravilnim postopkom toplotne predelave, pri katerih organski materiali, ki so uporabljeni kot izolatorji, zgorijo. Da se zagotovi pravilno zgorevanje hlapov, mora imeti peč za gorenje ustrezno predgrevalno enoto. Da se zagotovi minimalno emisijo med procesom toplotne predelave, je potrebno izpolnjevati naslednje pogoje:

POSTOPEK

Temperatura: 380-420°C (716...788°F)

Čas segrevanja: Ko se obdelovanec segreje na

90% ciljne temperature, ga je

potrebno zadrževati na tej temperaturi minimalno pet ur.

POSTOPEK PO IZGOREVANJU BINDER (VKLJUČENIH) HLAPOV

Temperatura: 850-920°C (1562...1688°F)

Čas zgorevanja: Plini, ki jih vsebuje izdelek, se morajo zadržati najmanj tri sekunde v zgorevalni komori.

OPOMBA: Emisija vsebuje v glavnem O₂-, CO-, C NO_x-, -, NO_x-, C_x H_x-, pline in mikro prah. Upravljalca procesa predelave zagotavlja, da je postopek v skladu z zahtevami lokalne skupnosti in zakonodajo.

OPOMBA: Proces zgorevanja in rokovanje z opremo za izgorevanje zahteva posebno pozornost in znanje, da ne pride do požara ali eksplozije. Ker se pri tem uporabljajo različne naprave in postopki, ni mogoče zahtevati, da Bartec-Varnost izdela navodila za rokovanje in postopke za različne naprave. Zato mora prevzeti odgovornost za ustrezno izvajanje postopka stranka.

NEVARNI ODPADKI

Olje in mast iz sistema za mazanje predstavlja

nevarne odpadke in se mora z njimi postopati v skladu z zahtevami lokalne skupnosti.

NENEVARNI ODPADKI

S celotnim izolacijskim materialom je potrebno ravnati kot z nenevarnimi odpadki.

Introduction

Bartec Varnost d.o.o. is committed to its environmental policy. Bartec Varnost d.o.o. continuously strives to make its products more environmentally sound by applying results obtained in recyclability and life cycle

analyses. Products, manufacturing processes and even logistics have been designed to take environmental aspects into account. Bartec Varnost d.o.o. environmental management system, certified to ISO 14001, is the tool for carrying out the environmental policy.

The following instructions should only be seen as recommendations for environmentally sound disposal of machines. It is the customer's responsibility to ensure that local regulations are followed. Some customer-specific items may not be included in this User's Manual. Additional documentation will be found in the project documentation.

Average material content

The average material content used in the manufacturing of the electrical machine is as follows:

	Cast iron frame induction machines	Modular steel frame induction machines
Steel	46 %	82 %
Copper	16 %	11 %
Cast iron	31 %	1 %
Plastics, rubber, insulation materials etc.	3 %	3 %
Other	4 %	3 %

Recycling of packaging material

Once the machine has arrived on site, the packaging material will need to be removed.

- Any wood packaging can be burned
- For some countries, the packaging used for shipping by sea is made of impregnated wood that must be recycled according to local regulations
- Plastic material around the machine can be recycled
- Any anti-corrosive agent covering the machine surface can be removed using a petrol based detergent and a cleaning rag. The rag must be disposed of in accordance with local regulations.

Dismantling of the machine

Dismantling the machine is a basic procedure as it is assembled with bolts. However, due to the weight, it requires an operator trained in handling heavy components to prevent dangerous situations.

Separation of different materials

Frame, bearing housing, covers and fan

These parts are made of structural steel, which can be recycled according to local instructions. All the auxiliary equipment, cabling as well as bearings have to be removed before melting the material.

Components with electrical insulation

The stator and the rotor are the main components, which include electrical insulation materials. There are, however, auxiliary components which are constructed of similar materials and which are hence dealt with in the same manner. This includes various insulators used in the terminal box, exciter, voltage and current transformers, power cables, instrumentation wires, surge arrestors and capacitors. Some of these components are used only in synchronous machines and some are used only in a very limited number of machines.

All these components are in an inert stage once the manufacturing of the machine has been completed. Some components, in particular the stator and the rotor, contain a considerable amount of copper which can be separated in a proper heat treatment process, where the organic binder materials of the electrical insulation are gasified. To ensure a proper burning of then fumes, the oven shall include a suitable after burning unit. The following conditions are recommended for the heat treatment and for the after burning to minimize the emissions from the process:

Heat treatment

Temperature: 380-420°C (716...788°F)

Duration: After obtaining 90% of the target temperature, the object shall stay a minimum of five hours at his temperature.

After burning of the binder fumes

Temperature: 850-920°C (1562-1688°F).

Flow rate: The binder fumes shall stay a minimum of three seconds in the burning chamber

NOTE: The emission consists mainly of O₂-, CO-, CO₂-, NO_x-, C_xH_y-gases and microscopic particles. It is on the user's responsibility to ensure that the process complies with the local legislation.

NOTE: The heat treatment process and the maintenance of the heat treatment equipment require special care in order to avoid any risk for fire hazards or explosions. Due to various installations used for the purpose it is not possible for Bartec Varnost to give detailed instructions of the heat treatment process, or the maintenance of the heat treatment equipment and these aspects must be taken care of by the customer.

Permanent magnets

If the permanent magnet synchronous machine is melted down as a whole, nothing needs to be done to the permanent magnets.

If the machine is dismantled for more thorough recycling and if the rotor must be transported after it, it is recommended that the permanent magnets are demagnetized. The demagnetization is done by heating the rotor in the oven until the permanent magnets reach a temperature of +300 °C (572°F).

WARNING: Magnetic stray fields, caused by an open or disassembled permanent magnet synchronous machine or by a separate rotor of such a machine, may disturb or damage other electrical or electromagnetic equipment and components, such as cardiac pacemakers, credit cards and equivalent.

Hazardous waste

The oil from the lubrication system is a hazardous waste and has to be handled according to local instructions.,

Land fill waste

All insulation material can be handled as a not hazardous waste.

BARTEC VARNOST

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**VS – 11 01 128/A
29.7.2022**