

Standard Quality Inspection and Test Plan

factory order/ customer order/ motor type/ pcs:

Test field address:

Innomotics, s.r.o.
Elektromotory Frenštát Branch
Markova 952
744 01 Frenštát pod Radhoštěm, Czech Republic

Innomotics GP General Purpose Motors
Innomotics SD Severe Duty Motors
Innomotics DP application-specific motors
Innomotics XP explosion-proof motors
Innomotics VSD4000 Line reluctance motors for SINAMICS converters
Innomotics VSD10 Line standard motors for converter operation

The IN LVM (Quality) Management System is based on the international standards ISO 9001, ISO 14001, ISO 50001, OHSAS 18001 and EN ISO/IEC 80079-34.

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Displayed option codes have to be ordered.

Option codes written in square brackets are internal test tags, not to mix with official order codes.

This ITP is not part of the user manual. All modifications (customizing) will provided only by the quality department according to the confirmed order.

Attention: Uncontrolled, when printed !

Responsible dept. IN LVM EU MF-FRE	Technical reference	Created by Randus L.	Approved by Randus L.	Project Standard	
	Document type Quality plan	Document state Released		Customer	
	Title Standard Quality and Inspection and Test Plan for Innomotics Frenstat	Document no. A5E45003709A			
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Participants

Abbreviation	Text	Meaning
01	manufacturer	Innomotics, factory FRE
02	supplier	Supplier of Innomotics
03	customer	Customer of Innomotics or his representative
04	third party	Customer B, Customer C, Third Party The mention of third parties is only for information about additional partners in the project supplier chain and have no influence to the contract conditions between Innomotics and the Innomotics customer; different requirements between the third parties are not part of the Innomotics order and will be not considered

Participation

Abbreviation	Text	Meaning
-	blank	Not applicable, only internal test
P	in process	Inspection performed by operator control
E	execute	Inspection performed by internal inspector
O	observed (spot witness)	The customer will be notified of the timing of the inspection or test at latest 10 days in advance; however, the inspection or test will be performed as scheduled; if the customer or his representative is not present, the manufacturer will proceed to the next step
H	hold point	Hold will be applied to the production schedule; only in conjunction with "W" in columns 03 or/and 04; remark: exception for certification by external authorities
W	witness (presence required, hold point)	Hold will be applied to the production schedule and the inspection or test will be carried out with the customer or his representative in attendance, the customer will be notified of the timing of the inspection or test at latest 10 days in advance. remark: a review of test certificates is included
R	review	For handover documents, certificates etc. Remarks: in conjunction with IR 2 a review is possible only in the factory, "R" in conjunction with "W" and "H" in the same line means not a "H" (hold) for "R" (review)

Certificate/Record

Abbreviation	Text	Meaning
TP	test plan	Test plans are written predominant in Czech language only. Names are beginning with Q.or IZ.. . They are exclusively for internal use and can be inspected at our factory.
IR 0	internal record	Internal test without reviewable document
IR 1	internal record	Internal test record with documentation without measured test results
IR 2	internal record	Internal test record with documentation with measured test results
		Remark: internal records are not for handover
2.1	Certificate EN 10204 2.1	Confirmation of compliance certificate according to EN 10204 without test results by manufacturer representative
3.1	Certificate EN 10204 3.1	Certificate according to EN 10204 with test results and approval by manufacturer representative
3.2	Certificate EN 10204 3.2	Certificate according to EN 10204 with test results and approval by customer representative

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1 Incoming inspection

1.1 Base material, semi-finished products or components

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054	IR 0	E			
Visual check	visual	MTU Roadmap					

1.2 Stator and rotor core lamination

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	electrical		IR 0 3.1 ¹	E R	E		

1.3 Cu material winding

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054	IR 0	E			
Visual check	visual	Roadmap		E			
Properties	mechanical		IR 2	E	E		
	electrical		3.1 ²	R			

1.4 Shaft material

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054	3.1 ³	R			
Visual check	visual	Roadmap					
Analysis	chemical				E		
Properties	mechanical						

¹ Option B88 3.1 material certificate based on EN 10204 for each batch, Customer gets 2.2 certificate based on EN 10204

² Option B87 3.1 material certificate based on EN 10204 for each batch. Customer gets 2.2 certificate based on EN 10204

³ Option B86 3.1 material certificate based on EN 10204 for each batch, Customer gets 3.1 certificate based on EN 10204

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1.5 Insulation material

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	electrical		IR 0 3.1	E R	E		

1.6 Space heaters and temperature sensors

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	electrical		IR 0	E			

1.7 Impregnating varnish

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	Viscosity Gel time		IR 2 3.1	E R	E		

1.8 Grease

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	Spectrum		IR 2 3.1	E R	E		

1.9 Paint

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	IZ_054 Roadmap	IR 0	E			
Visual check	visual						
Properties	Substance		IR 2	E			

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2 Inprocess inspection

2.1 Stator core winding

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	EN 60034-1 drawing object list Checking Procedures Q*	IR 2	E			
Visual check	visual						
Resistances of temp. detectors	electrical						
Sequence of poles and direction of rotation	electrical						
Electrical strength of temperature detectors/core	electrical						
Electrical strength of winding/core	electrical						
Resistance of stator winding	electrical						

2.2 Rotor complete

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	drawing object list Checking Procedures Q*	IR 0	P			
Visual check	visual						
Final balancing	mechanical	ISO 1940-1	IR 0	P			

Option	Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
					01	02	03	04
Inquiry	Balancing report			2.1	E		R	R

2.3 Machined parts

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
Identity check	visual	drawing object list Checking Procedures Q*	IR 0	P			
Visual and dimensional check	visual mechanical						
Water pressure test ⁴	mechanical	Procedures Q*	IR 2	P			
CMM dimensional check ⁵	mechanical	Procedures Q*	IR 2	E			
PTC Te ⁶	electrical	Procedures Q*	IR 2	E			

⁴ Only for motor protection Ex db IIC and optionally for Ex db IIB

⁵ Only for motor protection Ex db IIC and optionally for Ex db IIB

⁶ Only for motor protection Ex db IIB/IIC in case of VSD design

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2.4 Motor final assembly

Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
				01	02	03	04
All assembling parts free of damages	visual	drawing object list Checking Procedures Q*	IR 0	P			
Temperature sensors resistance check	electrical						
Bearing insulation check	electrical						
Final assembly check	visual		IR 0				

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3 Routine test - option B02 or B65 ⁷

Option	Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
					01	02	03	04
FZ01	Resistance of stator winding	electrical	EN 60034-1	3.1	E			
FZ02	Insulation resistances of stator winding and accessories	electrical	IEEE43:2013	3.1	E			
FZ49	No-load test	electrical	EN 60034-1	3.1	E			
FZ03	Short circuit test at rated current	electrical	EN 60034-1	3.1	E			
	Direction of rotation & phase sequence	mechanical	EN 60034-1	IR 0	E			
FZ21	High voltage test	electrical	EN 60034-1	3.1	E			
FZ23	Vibration test at free suspension, vibration velocity ⁸	mechanical	EN 60034-14	3.1	E			
	Check of accessories		EN 60034-1	3.1	E			
	Nameplate check		object list	IR 0	E			

⁷ routine test is performed for each motor

⁸ the information about measured vibrations is available on B02 only in case the option FZ23 is ordered.

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4 Type tests – option B82 or B83

Option	Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
					01	02	03	04
FZ04	Heat run at Pn	electrical	EN 60034-1	3.2 3.1	H E			
FZ17	No-load characteristic	electrical	EN 60034-2-1	3.2 3.1	H E			
FZ19	Short circuit characteristic	electrical	IEC/IEEE 112	3.2 3.1	H E			
FZ15	Load characteristic at constant voltage	electrical	EN 60034-2-1	3.2 3.1	H E			
FZ12	Calculation of efficiency	electrical	EN 60034-2-1	3.2 3.1	H E			

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5 Special test – on request

Option	Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
					01	02	03	04
FZ29	Noise measurement at no-load	noise	DIN EN ISO 1680	3.2 3.1	H E			
FZ30	Noise measurement at load	noise	DIN EN ISO 1680	3.2 3.1	H E			
FZ16	Speed-torque characteristic	mech./electr.	IEC/IEE 112	3.2 3.1	H E			
FZ26	Overspeed test: 1.2 nmax; 2 min.	mechanical	EN 60034-1	3.2 3.1	H E			
FZ48	Short time overload; 1,5 In – 2min. ; 1,6 Tn – 15 sec.	mech./electr.	EN 60034-1	3.2 3.1	H E			
FZ24	Vibration at rigid mounting	mech./electr.	EN 60034-14	3.2 3.1	H E			
FZ23	Vibration at free suspension	mech./electr.	EN 60034-14	3.2 3.1	H E			
FZ21	Withstand voltage	electrical	EN 60034-1	3.2 3.1	H E			
FZ02	Insulation resistance test	electrical	EN 60034-2-1	3.2 3.1	H E			
FZ39	Polarization index	electrical	EN 60034-27-4	3.2 3.1	H E			
FZ27	Measuring of weight	mech./electr.	According specification	3.2 3.1	H E			
MZ01	Paint thickness	mechanical	According specification	3.2 3.1	H E			
FZ38	Dimension measurement	mechanical	According drawing	3.2 3.1	H E			
FZ53	Photos of motor	-	-	-	H E			

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6 Finishing, motor complete

Option	Test and check	Procedure	Standard/ Specification	Certificate / Record	Participation			
					01	02	03	04
MZ01	Painting color and dry film thickness ⁹	visual mechanical	object list Checking Procedures Q*	IR 0	P			
	Final check including the nameplate control	Visual		IR 0				

⁹ The painting report is issued only in case the option MZ01 is ordered.

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