

GS CONTROL PVT. LTD.

QUALITY ASSURANCE PLAN

ITEM: MOTOR CONTROL CENTER, POWER CONTROL CENTRE, DISTRIBUTION BOARD, AMF PANEL, LT PANEL & HT PANEL ETC.

S.No.	Component / Operation	Characteristics Checked	Classification	Method / Type of Check	Acceptance Norm	Format of Record	Agency
1	2	3	4	5	6	7	8
	MATERIAL INSPECTION						
1A	MILD STEEL FOR FABRICATION (SHEET STEEL & CHANNEL CRCA '0' GRADE)	A) Surface Finish	Major	Visual	IS:513/1973	GS CONTROL Inspection Record	GS CONTROL
		B) Sheet Metal Thickness	- do -	Measurement	Apprd Drgs IS:513/1973	- do -	- do -
		C) Dimensions	- do -	- do -	- do -	- do -	- do -
1B	Busbar Support SMC/ DMC	A) Type Of Support	Major	Visual	As per Application Drgs	GS CONTROL	GS CONTROL
		B) Dimensions	- do -	Measurement	- do -	- do -	- do -
		C) Surface Finish	- do -	Visual	- do -	- do -	- do -
		D) H.V. Test	- do -	Electrical	- do -	- do -	- do -
1C	BUSBAR	A) Size & Cross Section	- do -	Measurement	Apprd. Drwgs & Specifications IS : 5082/ 1897	GS CONTROL Inspection Record	GS CONTROL
	Main Busbar (Ver. & Hor.) Al / Cu	B) Resistivity / Conductivity	- do -	- do -	- do -	- do -	GS CONTROL
	Control Busbar Al/ Cu	C) Tensile Strength	- do -	Mechanical	- do -	- do -	- do -
1D	Hardware						
1	Bolt / Nuts / Plain Washer / Spring Washer	A) Dimensional Confirmity	Major	Measurement	IS : 1364/3063	GS CONTROL Inspection Record	GS CONTROL

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1	2	3	4	5	6	7	8
		B) Plating : Zinc / Cd	- do -	- do -	- do -	- do -	- do -
1E	Drawout Contact Assembly (Power & Aux. Contacts)	A) Surface Finish	- do -	Visual	- do -	- do -	- do -
		B) Rating Size	- do -	Measurement	- do -	- do -	- do -
1F	Paint	A) Finish (Shade) Viscosity	- do -	Visual	IS : 101/ IS : 5 & Shade no.631	GS CONTROL Inspection Record	GS CONTROL
		B) Routine Test	- do -	- do -	- do -	- do -	- do -
		C) Tape Test	- do -	Putting Tape	- do -	- do -	- do -
1G	Neoprene Rubber Gasket	A) Dimensional Conformity	- do -	- do -	Internal Std.	GS CONTROL Inspection Record	GS CONTROL
1H	Conductor / Wire	A) Verification of Cross Section make, Colour Code , Grade etc.	Major	Physical Verification / Measurement	- do -	- do -	- do -
		B) Thickness of Insulation	- do -	Physical Verification / Measurement	IS : 694	- do -	- do -
1I	Air Ckt Breaker (ACB)	A) Verification of Current rating	Major	Visual	Approved Drg	- do -	- do -
		B) Verification of Voltage Grade	- do -	- do -	- do -	- do -	- do -
		C) Mounting Arrangement & Dimensions	- do -	Measurement	- do -	- do -	- do -
		D) Setting Of Releases	- do -	Electrical	- do -	- do -	- do -

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1	2	3	4	5	6	7	8
		E) Voltage Rating of Closing Coil / Shunt / Trip / Under Voltage	- do -	Visual	- do -	- do -	- do -
		F) Anti Pumping / Trip Free Feature	- do -	Electrical	- do -	- do -	- do -
		G) Slow Costing	- do -	- do -	- do -	- do -	- do -
		H) Routine / Type Test	- do -	Electrical / Mechanical	As per IS : 2516	Manufacturer TC	Manufacturer
1J	Terminal for Power & Control	A) Size / Current rating	Major	Visual	Approved Drg.	GS CONTROL Inspection Record	GS CONTROL
		B) Connecting Arrangement	- do -	- do -	- do -	- do -	- do -
1K	Air Break Switch	A) Verification Of Voltage Grade	Major	Verification	IS : 4064 Approved Drg	GS CONTROL Inspection Record	GS CONTROL
		B) Current Rating	- do -	- do -	- do -	- do -	- do -
		C) Operating & Interlocking Arrangement	- do -	- do -	- do -	- do -	- do -
1L	HRC Fuses	A) Verification of Make , current rating, rupturing current	Major	Verification	IS : 9224	GS CONTROL Inspection Record	GS CONTROL
1M	Protective Relays	A) Mounting Detail Setting range Aux. Contact Pos.	Major	Physical verification	Approved Drg	GS CONTROL Inspection Record	GS CONTROL
		B) Operation	Critical	Test	- do -	- do -	- do -
1 N	Air Break Contactors / Timers / Time switches	A) Mounting Detail & Mechanical operation	Major	Physical verification	Approved Drg / IS : 2959	GS CONTROL Inspection Record	GS CONTROL

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1	2	3	4	5	6	7	8
		B) Current Rating / Make	- do -	- do -	- do -	- do -	- do -
		C) No. Of Contacts	- do -	- do -	- do -	- do -	- do -
1O	Current Transformer	A) Mounting Detail & Dimensions	Minor	Physical Verification	Approved Drg	GS CONTROL Inspection Record	GS CONTROL
		B) CT Ratio , Class Of Accuracy	Critical	Test	- do -	Manufacturer TC	Manufacturer
1 P	Indicating Instruments(Voltmeter, Ammeter, Frequency, KW, KWH, Meter etc.)	A) Mounting Detail & Dimensions	Minor	Physical Verification	Approved Drg	Manufacturer TC	Manufacturer
		B) Accuracy Class	Major	Visual	Approved drg IS : 1248 IS : 2419	- do -	- do -
		C) Routine / Type Test	Major	Electrical	Approved drg IS : 6875	Manufacturer TC	Manufacturer
1Q	Control Switch	A) Visual	Minor	Physical verification	Approved Drg	GS CONTROL Inspection Record	GS CONTROL
		B) Contact Rating AC / DC	Major	Visual	- do -	- do -	- do -
		C) Operational Test	- do -	Functional test	- do -	- do -	- do -
1R	Space Heater	A) Mounting Detail	Minor	Visual / Physical inspection	Approved Drg	GS CONTROL Inspection Record	GS CONTROL
		B) Verification of Volt / Watt Rating	Major	TEDT	- do -	- do -	- do -
1S	Indicating Light	A) Verification Of Voltage Grade	Major	Verification	Approved Drg / IS : 4795	GS CONTROL Inspection	GS CONTROL

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1	2	3	4	5	6	7	8
						Record	
		B) Series Resistance Value / TRF, ratio	- do -	- do -	- do -	- do -	- do -
1T	Voltage Transformer	A) Mounting Detail & Dimensions	Major	Measurement	Manufacturer Std	GS CONTROL Inspection Record	GS CONTROL
		B) PT Ratio, Class of Accuracy	- do -	Visual	- do -	- do -	- do -
		C) Verification of polarity	- do -	Electrical	- do -	- do -	- do -
		D) Routine / Type test	- do -	- do -	- do -	Manufacturer TC	Manufacturer
1U	Thermal Overload Relay	A) Verification of Rating & Contact Arrangement	Major	Electrical	Approved drg	GS CONTROL Inspection Record	GS CONTROL
		B) Current Setting	- do -	- do -	- do -	- do -	- do -
		C) Mounting Arrangement	- do -	- do -	- do -	- do -	- do -
		D) Re Setting arrangement	- do -	- do -	- do -	- do -	- do -
1V	MCB / MCCB	A) Verification of rating & Make	Major	Electrical	Approved drg	GS CONTROL Inspection Record	GS CONTROL
1W	Push Button	A) Verification of Rating & Contact Arrangement	Major	Electrical	Approved drg	GS CONTROL Inspection Record	GS CONTROL
		B) Mounting Arrangement	- do -	- do -	- do -	- do -	- do -
		C) Operational / Functional	- do -	- do -	- do -	- do -	- do -

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	INPROCESS INSPECTION						
2A	PANEL FABRICATION	A) Visual check for weld, dressing, deburing, straightness & dimensional control	Minor	Physical Verification	Internal Std.	Internal Inspection record	GS CONTROL
		B) Checking of Frame with Std. Trolley	- do -	Physical	- do -	- do -	- do -
		C) Checking of Trollies with standard fixtures	- do -	- do -	- do -	- do -	- do -
		D) Dimensions	- do -	Process (Physical check before assembly)	- do -	- do -	- do -
		E) Lifting Facilities	- do -	- do -	- do -	- do -	- do -
		F) Cable Entry	- do -	- do -	- do -	- do -	- do -
		G) Waviness	- do -	- do -	- do -	- do -	- do -
		H) Gasket Arrangement	- do -	- do -	- do -	- do -	- do -
2B	PRE- TREATMENT / PAINTING	A) Pre- Treatment of sheet steel	Minor	Physical Visual	Internal Std./ IS : 6005	GS CONTROL Inspection Record	GS CONTROL
		B) Final Painting	- do -	- do -	- do -	- do -	- do -
		- Paint Thickness	- do -	Measurement	- do -	- do -	- do -
		- Adhesiveness	- do -	Physical	- do -	- do -	- do -
		- Finish	- do -	Visual	- do -	- do -	- do -

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2C	Assembly	A) Alignment of Panel & Busbar	Major	Physical verification	IS : 101	Internal Inspection record	GS CONTROL
		b) Check for Busbar Mounting					
		1) Tightness of Busbar Joints	- do -	Physical test by Torque Wrench	Internal Std.	- do -	- do -
		2) Busbar Mounting on Insulators	- do -	- do -	- do -	- do -	- do -
		3) Busbar jointing Arrangement & Overlapping	- do -	- do -	- do -	- do -	- do -
		4) Busbar bending & Drilling	- do -	- do -	- do -	- do -	- do -
		5) Phase Identification & Clearance	Critical	Physical	- do -	- do -	- do -
		6) Busbar Sleeving & Colour Bends	Minor	Visual Check	- do -	- do -	- do -
		C) Check for CT Mounting					
		1) Mounting & Adequate Supports of CT	Major	Physical verification	- do -	- do -	- do -
		2) Provision for Shorting link on CT terminal	- do -	- do -	- do -	- do -	- do -
		D) Mechanical Interlocking Arrangement	- do -	Functional check	- do -	- do -	- do -

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		E) Check for Arrangement of Gasketing & Sealing by torch test	- do -	test	- do -	- do -	- do -
		F) Arrangement of Components & Terminations	- do -	Physical Verification	- do -	- do -	- do -
		G) Check for Interchangeability	- do -	Functional check	- do -	- do -	- do -
		H) Check for Smooth Movement of Trolley During Withdrawal / Insertion operation	Major	Functional Check	Internal Std	Internal Inspection record	GS CONTROL
		I) Check Trollies for isolate test service position	- do -	Physical	- do -	- do -	- do -
2D	Wiring	A) Proper Wire Clamping	Minor	Visual	Internal Std	Internal records	GS CONTROL
		B) Continuity & Ferruling as per wiring diagram	- do -	Visual / test	- do -	- do -	- do -
		C) Proper crimping of lugs / connections tightening at terminals & components	- do -	- do -	- do -	- do -	- do -
3A	Final Inspection	A) Verification of Component, Rating, Arrangement as per GA Drg make	Major	Physical Verification	Approved Drg IS : 8625/ IS : 4237/ IS : 2127	Internal records	GS CONTROL

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		B) Mounting Arrangement of name plate covers interchangeability of Modules	- do -	- do -	- do -	- do -	- do -
		C) Wiring Cubicle & Ckt. Function test , operation of indicating instruments wiring completeness	- do -	- do -	- do -	- do -	- do -
		D) Continuity test	- do -	Routine test	- do -	- do -	- do -
		E) HV / IR Test on both Power / Control Ckt	Critical	- do -	- do -	- do -	- do -
		F) Phase Indication	Major	Visual	Approved Drg IS : 8623 / IS : 4237 / IS : 2127	Internal Records	GS CONTROL
		G) Check for Busbar clearance , Tightness pf electrical / mechanical interlock	- do -	Visual / Physical verification of torque wrench	- do -	- do -	- do -
		H) Degree of protection by insertion of thin paper / light test	- do -	Test	- do -	- do -	- do -
		I) Final Painting					
		1) Shade	- do -	Visual	- do -	- do -	- do -
		2) Surface Finish	Minor	- do -	- do -	- do -	- do -
		3) Thickness	Major	Physical Verification	- do -	- do -	- do -
		4) Adhesion	- do -	- do -	- do -	- do -	- do -
		J) Space Heater					

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1	2	3	4	5	6	7	8
		1) Function	Major	Physical verification	Internal Specs	Inspection Record	GS CONTROL
		2) HV / IR test	- do -	Routine test	- do -	- do -	- do -
		3) Contact Resistance of D/O Components	- do -	Visual	- do -	- do -	- do -
		K) Degree of protection	- do -	Mechanical	- do -	- do -	- do -
		L) Temp. Rise Test	- do -	Electrical	- do -	Test Certificate	- do -
		M) Short Circuit Test	- do -	Visual	- do -	- do -	- do -