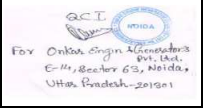
Onkar Engine & Generator P Limited
E14, Sector:63, Noida UP

FACTORY TEST REPORT AS PER IS 8978:1992 & IS 302-2-35:2011

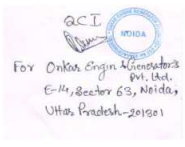
Product Description:- Electric Instantaneous Water Heater, Rated Voltage-230V, Rated Frequency-50Hz, AC, Degree of Protection-IPX1, Power Input-3000W, Rated Capacity-3ltr, Rated Pressure-0.6 Mpa, Closed type, Classs-1, Pollution Degree-I, Material of inner tank- S.S. tank grade 304.
Reference specification:- IS 8978:1992 & IS: 302-2-35:2011

S.NO	Requirements	Specification	Clause	Test Result
1	Classification	**i)** Water heater shall be class-I, class-II or class-III **ii)** Water heaters shall be atleast IPX1	Cl.6 of IS 302-2-35:2011	Class-I IPX1
2	Marking & Instructions	**i)** Appliance shall be marked with the: **a)** Rated voltage or rated voltage range in volts	Cl.7 of IS 302-2-35-2011	230V 50Hz, AC
		b) Symbol for nature of supply, unless the rated frequency is marked		
		c) Rated power input in watts or rated current in amperes.		3000W
		d) Name trade mark or identification mark of the manufacturer or responsible vendor		Onkar Engine & Genetator (P) Limited
		g) IP number according to degree of protection against ingress of water, other than IPXO.		IPX1
		h) Country of manufacture.		INDIA
		i) Appliances shall be marked with the rated pressure, in Pascals		0.6 Mpa
		j) When symbol are used they shall be as per Cl.7.6 of IS 302-1:2008		Satisfactory
		k) Except for type Z attachment terminal used for connection to supply mains shall be indicated by the letter N for neutral, and protective earthing terminal shall be indicated by symbol ⏚		Satisfactory
		l) The different positions of switches on stationary appliances and the different positions of controls on all appliances shall be indicated by figures, letters or other visual means.		Satisfactory
		i) The instructions for closed water heater shall be as per Cl.7.12 of IS: 302-1:2008 & IS 302-2-35:2011		Provided
		iv) If a pressure relief device is required for closed water heaters, the instructions shall state that it must be fitted during installation, unless it is incorporated in the appliance.		Incorporated
		v) The water inlet and the water outlet shall be indentified. The identification shall not be detachable parts, IF colors are used, blue shall be used for inlet and red for outlet.		Marked
		vi) The appliances may also be marked with the standard marks.		Not Marked
		vii) If it is necessary to take precautions during installation of the appliance, appropriate details shall be given.		Provided
		viii) For stationary appliances at least the name or trademark or identification mark of the manufactures or responsible vendor and the model or type reference shall be visible when the appliance is installed as in normal use.		Satisfactory
		ix) Controls intended to be adjusted during installation or in normal use shall be provided with an indication ('+' and '-') for the direction of adjustment.		('+' and '-') Indication Marked
		x) Instructions for use shall be provided with the appliances so that the appliances can be used safety.		Provided
		xii) For Type Y attachment , if the supply cord is damaged, it must be replaced by the manufactured, its service agent or similarly qualified persons order to avoid a hazard.		Provided
		xiii) The instructions for heating appliances incorporating a non-self resetting thermal cut-out i.e. rest by disconnection of the supply mains.		Provided
		xiv) The instructions for fixed appliances shall state how the appliance is to be fixed to its support.		Provided
		xv) The instruction for appliances connected to the water mains shall state.		Provided
		xvi) Instructions and other text required by this standard shall be written in an official language of the country in which the appliance is to be sold.		ENGLISH
		xvii) The marking shall be clearly legible & durable as per Cl.7.14 of IS: 302-1:2008.		Satisfactory
		xviii) Markings on the appliance shall be clearly discernible from the outside of the appliance but if necessary after removal of a		Satisfactory



3	Protection against access to live parts	Appliances shall be constructed and enclosed so that there is adequate protection against accidental contact with live parts.	Cl.8 of IS 302-2-35:2011	Satisfactory
4	Power input and current	The power input at normal operating temperature shall not deviate by +5 percent or 20 W (whichever is greater) -10 percent	Cl.10 of IS 302-2-35:2011	2942W
5	Heating	The appliances are operated until steady state conditions are established	Cl.11 of IS 302-2-35:2011	Satisfactory
		i) Wall, ceiling and floor of test corner Max-60 K		1.2 K
		ii) Terminal for external conductor Max-60 K		8.4 K
		iii) Rubber or PVC insulation of internal and external wiring, including supply cord.		-
		a) Without temperature rating 50 K		4.2 K
		iv) Ambient of switches, thermostats and temperature limiters.		-
		a) Without T-marking 30 K		5.9 K
		v) Room Temperature (°C)		27°C
6	Leakage current and electric strength at operating temperature	**i)** Leakage current Heating appliances are operated at 1.15 times the rated power input For Stationary Class-I heating appliance, 0.21 mA or 0.21 mA per KW rated Power input	Cl.13 of IS 302-2-35:2011	Satisfactory 0.019 mA
		ii) Electric Strength Water heater shall withstand 1000V for one minute. No breakdown shall occur during testing		Withstood the test Satisfactory
7	Moisture Resistance	**i)** The enclosure of appliance shall provide the degree of protection against moisture in accordance with the classification of appliances. Protection against dripping water There shall be no ingress of water into the appliance if any water has entered, it shall not - be sufficient to interfere with satisfactory operation of equipment	Cl.15 of IS 302-2-35:2011	IPX1 Satisfactory
		iii) Appliances shall be proof against humid conditions that may occur in normal use. The test is carried out for 48 hr in humidity cabinet with relative humidity not less than 90% & temperature shall between 15°C to 35°C		Satisfactory
8	Leakage current and electric strength	**i)** Leakage current For Stationary Class-I heating appliance, 0.21 mA or 0.21 mA per KW Rated Power Input **ii)** Electric Strength Appliance shall withstand at 1250 volt for one minute.	Cl.16 of IS 302-2-35:2011	0.029 mA Withsood the test
9	Abnormal Operation	**i)** Appliances shall be constructed so that as a result of abnormal or careless operation, the risk of fire, mechanical damge impairing safety or production against electric shock is obviated.	Cl.19 of IS 302-2-35:2011	Satisfactory
		ii) Durring the test the water heater shall not emit flames, molten metal, or poisonous or ignitable gas in hazardous amounts and temperature rise shall not exceed as follows a) Wooden supports, walls, ceiling and floor of the test corner 150 K (Max) b) Insulation of supply cord 150 K (Max)		Satisfactory 1.8 K 7.3 K
		iii) The appliances is tested under the conditions specified in 11 any control that limits the temperature during the test of 11 is short-circuited		Satisfactory
		vi) the water temperature shall be not exceeds. b) 140°C for closed water heater capacity exceeding 1 Liter After abnormal operation test the water heater shall withstand electric strength test at 1000 Volts for one minute		96°C Withstood the test
10	Mechanical Strength	Appliances, shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use. Water heater is subjected to three blows of spring hammer having impact energy of 0.5 joule Accessible parts of solid insulation shall have sufficient strength to prevent penetration by sharp implements. The insulation shall then withstand the electric strength test of 16.3 at voltage of 1250 V for one minute	Cl.21 of IS 302-2-35:2011	Withsood the test Satisfactory Withstood the test
		i) IF the appliance is marked with the first numeral of the IP system, the relevant requirements of IS/IEC 60259:2001 shall be		IPX1
		ii) For stationary, mean shall be provided to ensure all pole disconnections from the supply mains. Such means shall be one of the following: **a)** a supply cord fitted with a plug	QCI NOIDA For Onkar Engineering Generators Pvt. Ltd. E-14, Sector 63, Noida, Uttar Pradesh-201301	Supply Cord fitted With a Plug

		iii) The drain hole positioned so that the water can drain without impairing electrical insulation. The hole shall be at least 5mm in diameter or 20mm^2 area with a width of a least 3mm		Satisfactory 5.61mm
		iv) The rated pressure of closed water heater intended to be at 0.1 MPa		Satisfactory
		v) The rated pressure of closed water heaters intended to be supplied by a pressure reducing valve shall be at least 0.1MPa		Satisfactory
		vi) Appliances shall with stand the water pressure occurring is normal use Twice the rated pressure for closed water heaters		Satisfactory Withstood the test
		vii) Closed water heaters shall be supplied with a pressure device that prevents excessive pressure, It shall operate before the water pressure exceeds the rated pressure by more than 0.1 MPa.		Satisfactory
		viii) Closed water heaters shall incorporate a thermal cut-out that operates independently from a thermostat or flow switch. It shall only be possible to reset the thermal cut-out after removal of a non-detachable cover.		Satisfactory
		ix) Appliances for wall mounting shall have reliable provision for fixing to wall, independent of the connection to the water mains.		Satisfactory
		x) Appliances shall be constructed so that their electrical insulation cannot be affected by water that could condense on cold surfaces or by liquid that could leak from containers, hose, couplings and similar parts of the appliance.		Satisfactory
		xi) Appliances containing liquid or gases in normal use or having steam -producing devices shall incorporate adequate safeguards against the risk of excessive pressure		Satisfactory
		xii) For appliances having compartments to which access can be gained without the aid of a tool and that are likely to be cleaned in normal use.		No Compartment
11	Construction	**xiii)** It shall not be possible to reset voltage-maintained non-self -resetting thermal cut-outs by the operation of an automatic switching device incorporated within the appliance. Reset button of non-self-resetting xontrols shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazards	Cl.22 of IS 302-2-35:2011	Satisfactory
		xiv) Non-detachable parts that protect against access to live parts, moisture or contact with moving parts shall be fixed in a reliable manner and withstand the mechanical stress occurring during normal use		Satisfactory
		xv) Appliances shall have no ragged or sharp edges, other than those necessary for the functioning of the appliance, that could create a hazard for the user in normal use or during user		Satisfactory
		x) Current-carring parts and other metal parts, the corrosion of which chould result in a hazard, shall be resistant to corrosion under normal conditions of use.		No Corrosion obervated
		xvi) Thremal insulation shall not be used for basic insulation of internal wiring		Satisfactory
		xiii) Direct contact between live parts and thermal insulation shall be executively prevented unless such material is non-corrosive, non-hygroscopic and non-combustible.		Satisfactory
		xiv) Wood, Cotton, Silk, ordinary paper and similar fibrous or hygroscopic material shall not be used as insulation, unless impregnated		Satisfactory
		xv) Appliance shall not contain asbestos		No Asbestos
		xvi) Bare heating elements shall be supported so that the heating conductor is unlikely to come into contact with accessible metal parts, if they rupture		Satisfactory
		xvii) Appliances, other than those of Class III, shall be constructed so that sagging heating conductors cannot come into contact with accessible metal parts.		Satisfactory
		xviii) Condictive liquids that are or may become accessible in normal use shall not be in direct contact with live parts. Eleetrodes shall not be used for heating liquids.		Satisfactory
		xix) For constructions other than those of class - lll , handles , levers and knobs which are held or actuated in normal use shall not become live in the event of an insulation fault	QCI NOIDA For Onkar Singh Generators Pvt. Ltd. E-14, Sector 63, Noida, Uttar Pradesh-201301	Satisfactory
		xx) Appliances shall not have an enclosure that is shaped and decorated so that the appliance is likely to be treated as a toy by children.		Satisfactory

		xxi) Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use. Compliance is checked by connecting the appliance to a water supply having a static pressure equal to twice the maximum inlet water pressure or 1.2 Mpa, whichever is higher, for a period of 5 min. There shall be no leakage from any part, including any inlet water hose		Withstood the test Satisfactory
12	Internal Wiring	**i)** Wire ways shall be smooth & free from sharp edges.	CI.23 of 302-2-35:2011	Satisfactory
		a) Wires shall be protected so that they do not come into contact with burrs, cooling fins or similar edges which may cause damage to their insulation.		Satisfactory
		b) Holes in metal through which insulated wires pass shall have a smooth well- rounded surfaces or be provided with bushings.		Satisfactory
		d) Internal wiring and electrical connections between different parts of the appliance shall be adequately protected or		Satisfactory
		ii) Beads & Similar ceramic insulators on live wires shall be fixed or located so that they cannot change their position or rest on		Satisfactory
		iii) Different parts of an appliance that can move relative to each other in normal use or during the user maintenance shall not cause undue stress to electrical connections and internal conductors, including those providing earthing continuity.		Satisfactory
		iv) Bare internal Wiring shall be rigid & fixed so that, in normal use, clearances or creepage distances cannot be reduced below the values specified in 29		Satisfactory
		v) The insulation of internal Wiring shall withstand the electrical stress likely occur in normal use, A Voltage of 2000V is applied for 15min, There shall be no breakdown		Satisfactory Withstood the test
		vi) Conductors identified by the colour combination green/yellow shall only be used for earthing conductors.		Green Used
		vii) Aluminum wires shall not be used for internal wiring.		Satisfactory
		viii) Stranded conductor shall not be consolidated by lead-tin soldering.		No Soldering
		ix) The insulation and sheath of internal wiring, incorporated in external hose for the connection of an appliance to the water mains, shall be at least equivalent to that of PVC sheathed		Satisfactory
13	Components	**i)** Components **a)** Heating Element	CI.24 of IS 302-2-35:2011	3KW, 230V, 50Hz AC, ISI Marked, IS:4159
		b) Thermostat		20A, 240V, ac only, IS:3017, ISI Marked "Heatways" Brand
		c) Thermal cut-out		20A, 240V, ac only, 90±6°C "Heatways" Brand
		d) Supply cord		3Cx1.5 Sq.mm, IS:694, ISI Marked, "BONEX" Brand, CM/L-8530013316
		ii) Thermal cutouts incorporate in closed water heater shall comply with the requirement for type 2B controls in 13, 15, 16, 17 and 20 of IS: 60730-1 unless they tested with in the appliance.		Tested within appliances
		iii) The thermal cut-out or other protective device shall be non-self resetting and provide phase disconnection.		Satisfactory
		i) Appliances shall be provided with one of the following means for connection to the supply mains: Supply cord fitted with a plug.		Supply Cord Fiied With a plug
		ii) Appliance other than stationary appliances for multiple supply, shall not be provided with more than one means of connection to the supply mains. A voltage of 1250V of substantially sinusoidal wave form and having a frequency of 50Hz is applied for 1 min between each of connection to the supply mains.		Satisfactory Withstood the test

14	Supply Connection And External Flexible Cords	**iii)** Supply cord shall be assembled to the appliances by one of the following methods:- a) Type X attachment b) Type Y attachment and c) Type Z attachment	Cl.25 of IS 302-2-35:2011	Type Y attachment
		vi) Plug shall not be fitted with more than one flexible cords.		Satisfactory
		v) Supply cord shall not be lighter than as mentioned in Cl.25.7 of IS302-1:2008		Satisfactory
		vi) Conductor of supplycord shall have nominal cross-sectional area not less as in table 11 of IS:302-1:2008 Red-1.5mm^2 Black-1.5mm^2 Green-1.5mm^2		 1.5mm^2 1.5mm^2 1.5mm^2
		Conductor resistance: Red-13.3Ω/km, (Max) Black-13.3Ω/km, (Max) Green-13.3Ω/km, (Max)		 12.7Ω/km 12.5Ω/km 12.6Ω/km
		vii) Supply cord shall not be in contact with sharp point or edges of the appliance.		Satisfactory
		viii) The supply cord of class-I appliances shall have a green/yellow core that is connected to the earthing terminal of the appliance and to the earthing contact of the plug.		Green Connection
		ix) Conductors of the supply cords shall not be consolidated by tin-lead soldering.		No Soldering
		x)The insulation of the supply cords shall not be damaged when moulding the cord to part of the enclosure		Satisfactory
		xi) Inlet openings for supply cords shall be constructed so that the sheath of the supply cords can be introduced without risk of		Satisfactory
		xii) The cord shall withstand the cord grip test and torque applied as per Cl.25.15 of IS 302-1:2008		Withstood the test
		xii) For Type Y and Type Z attachment cord anchorages shall be adequate		Satisfactory
		xiv) Cord anchorages shall be arranged so that they are only accessible with aid of tool or shall be constructed so that the cord can only be fitted with aid of tool		Satisfactory
		xv) The insulated conductors of the supply cord for Type Y and Type Z attachment shall be additionally insulated from accessible metal parts by basic insulation.		Satisfactory
15	Terminals For External Conductors	**i)**Appliances shall be provided with terminals or equally effective devices for the connection of external conductor	Cl.26 of IS 302-2-35:2011	Satisfactory
		ii) Terminals for the connection of fixed wiring, including the earthing terminal, shall be located close to each other,		Satisfactory
		iii) For appliances having a Type Y Attachment or Type Z attachment, soldered, welded, crimped or similar connections may be used for the connection of external conductors.		Satisfactory
16	Provision For Earthing	**i)** Accessible metal parts of Class -I appliances that may become live in the event of an insulation fault, shall be permanently and reliably connected to an earthing terminal within the appliance or to the earthing contact of the appliance inlet. Earthing terminals and earthing contacts shall not be connected to the	Cl.27 of IS 302-2-35:2011	Satisfactory
		ii) For Class- I appliances, metal containers and other metal parts which are in contact with the water shall be permanently and reliably connected to the earthing terminal.		Satisfactory
		iii) The clamping means of earthing terminals shall be a adequately secured against accidental loosening		Satisfactory
		iv) All Parts of the earthing terminal intended for the connection for external conductors shall be such that there is no risk of		Satisfactory
		v) A current derived from source having no load voltage not exceeding 12 V (ac or dc) and equal to 1.5 times rated current of the appliance or 25 A, whichever is higher. The resistance calculated from the current and this voltage drop shall not exceed 0.1 Ω		0.048Ω
17	Screws And Connection	Screw 0.1 and connections shall comply with Cl.28 of IS 302-1:2008	Cl.28 of IS 302-2-35:2011	Satisfactory
18	Clearances, Creepage Distances And Soild Insulation	A force of 2 N is applied for bare conductor & 30 N for accessible surfaces to try to reduce clearances & creepage distances while making the measurements. **i)** Clearance shall not be less than 1.5 mm **ii)** Creepage distance shall not be less than 0.6 mm	Cl.29 of IS 302-2-35:2011	Satisfactory Passes the test Passes the test

19	Resistance To Heat And Fire	**i)** External parts of non-metallic material, parts of insulating material supporting live parts including connections, and parts of thermoplastic material providing supplementary or reinforced insulation, shall be sufficiently resistant to heat and shall be subjected to ball pressure test. **ii)** Parts of non metallic material shall be resistance to ignition and spread of fire. Compliance is checked by Glow wire test.	Cl.30 of IS 302-2-35:2011	Passes the test Passes the test
20	Resistance to Rusting	The appliances shall be adequately protected against rusting.	Cl.31 of IS 302-2-35:2011	Satisfactory
21	Radiation,Toxicity And Similar Hazards	Appliances shall not emit harmful radiation or present a toxic or similar hazard	Cl.32 of IS 302-2-35:2011	Satisfactory
22	Finish	The external finish used on metal component shall be of a heat and moisture resisting nature and shall not be adversely affected by variation in temperature occurring under normal operating condition.	Cl.10 of IS 8978:1992	Satisfactory
23	Finish	The external finish used on metal component shall be of a heat and moisture resisting nature and shall not be adversely affected by variation in temperature occurring under normal operating condition.	Cl.10 of IS 8978:1992	Satisfactory

Prepared By:

Approved By:

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