



**National Accreditation Board for
Testing and Calibration Laboratories**
(A Constituent Board of Quality Council of India)



CERTIFICATE OF ACCREDITATION

DELTA LABORATORY

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

80-B, Prem Nagar, Indore, Madhya Pradesh

in the field of

TESTING

Certificate Number TC-5229 (Reprinted on 16.03.2017 in lieu of T-1959)

Issue Date 01/04/2016



Valid Until 31/03/2018

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

N. Venkateswaran
Program Director

Anil Relia
Chief Executive Officer



National Accreditation Board for Testing and Calibration Laboratories

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SCOPE OF ACCREDITATION

Laboratory Delta Laboratory, 80-B, Prem Nagar, Indore, Madhya Pradesh

Location 1: 80-B, Prem Nagar, Indore, Madhya Pradesh

Location 2: B-5, Scheme No. 51, Indore, Madhya Pradesh

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5229 (Reprinted on 16.03.2017 in lieu of Page 1 of 13
T-1959)

Validity 01.04.2016 to 31.03.2018 Last Amended on 08.02.2017

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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ELECTRICAL TESTING

Location 1				
I.	ELECTRICAL MATERIALS- CONDUCTORS			
1.	Aluminium Stranded Conductors		IS 398 (Part 1): 1996 (RA 2012)	
	Aluminium Conductors, Galvanized Steel Reinforced		IS 398 (Part 2): 1996 (RA 2012)	
	Aluminium Alloy Stranded Conductors		IS 398 (Part 4): 1994 (RA 2009)	
	Round Aluminium Conductors		IS 6162 (Part 1): 1971 (RA 2013)	
	Rectangular Aluminium Conductors		IS 6162 (Part 2): 1971 (RA 2013)	
		Freedom from defects, Stranding, Application of paper, Overlapping, Arrangement of layers of paper	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 6.1, 9 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 7.1,10 IS 398 (Part 4): 1994 (RA 2009) Cl. No. 6.1, 9 IS 6162 (Part 1): 1971 (RA 2013) Cl. No. 2.5,4,7,6 IS 6162 (Part 2): 1971 (RA 2013, Cl. No. 2.6, 6	Qualitative

R. Johri

Ravi Johri
Convenor

N. Venkateswaran

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Program Director



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Laboratory

Delta Laboratory, 80-B, Prem Nagar, Indore, Madhya Pradesh

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Validity 01.04.2016 to 31.03.2018

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Dimensional Measurement	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 12.2 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.2 IS 398 (Part 4): 1994 (RA 2009) Cl. No. 7 IS 6162 (Part 1): 1971 (RA 2013) Cl. No. 4.2. 7 IS 6162 (Part 2): 1971 (RA 2013) Cl. No. 4.7	0.10 mm to 150 mm
		Tensile Strength/ Breaking Load	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 12.3 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.3 IS 398 (Part 4): 1994 (RA 2009 Cl. No. 12.2 IS 6162 (Part 1): 1971 (RA 2013) Cl. No. 4.4 IS 6162 (Part 2): 1971 (RA 2013) Cl. No. 4	20 N to 25 kN
		Resistance Test	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 12.5 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.6 IS 398 (Part 4): 1994 (RA 2009) Cl. No. 12.4 IS 6162 (Part 1): 1971 (RA 2013) Cl. No. 4.3 IS 6162 (Part 2): 1971 (RA 2013) Cl. No. 4	0.10 mΩ to 19.99 Ω

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Lay Ratio	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 12.6 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.8 IS 398 (Part 4): 1994 (RA 2009) Cl. No. 9.2	1 to 50
		Wrapping Test	IS 398 (Part 1): 1996 (RA 2012) Cl. No. 12.4 IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.5 IS 6162 (Part 1): 1971 (RA 2013) Cl. No. 4.5	0.5 mm to 5 mm
		Elongation Test	IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.4.2 IS 398 (Part 4): 1994 (RA 2009) Cl. No. 12.3 IS 6162 (Part 1): 1971 (RA 2013, Cl. No. 4.4 IS 6162 (Part 2): 1971 (RA 2013) Cl. No. 4	1 % to 100 %
		Torsion Test	IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.4.1	0.3 mm to 4.2 mm
		Mass of Zinc Coating	IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.7.2 IS 4826: 1979 (RA 2011) Cl. No. 4.1, IS 6745: 1972 (RA 2011) Cl. No. 5 (by Stripping Method)	(10 g to 2000 g)/m ²
		Uniformity of Zinc Coating	IS 398 (Part 2): 1996 (RA 2012) Cl. No. 13.7.2 IS 4826: 1979 (RA 2011) Cl. No. 4.2, IS 2833: 1986 (RA 2011), Cl. No. 4	Qualitative

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
II.	CABLES AND ACCESSORIES			
1.	PVC Insulated Cables for working voltages upto 1100 V		IS 694: 2010 IS 694: 1990 (RA 2005)	
	PVC Insulated Heavy duty Electric Cables for working voltage upto 1100 volt		IS 1554 (Part 1): 1988	
	Cross linked Polyethylene Insulated PVC Sheathed Cables for working voltage upto 1100 V		IS 7098 (Part 1): 1988	
	Aerial Bunched Cables for working voltage upto 1100 V	Application & Construction of Conductors/Tape Insulation/Inner & Outer Sheath/ Screen/ Separator/Armouring wires/ Cores, Covering, Colour, Marking, Core Identification, Durability, Legibility Freedom from defect	IS 14255:1995 IS 694: 1990 (RA 2010) Cl. No. 10.4, 11, 12, 13 IS 694: 2010, Cl. No. 4.1, 5.2, 8.2, 11, 11.1, 11.2, 12 IS 1554 (Part 1): 1988 (RA 2010) Cl. No. 8, 9, 10, 11, 12, 13, 14 IS 3975: 1999 (RA 2009) Cl. No.11 IS 7098 (Part 1): 1988 (RA 2010) Cl. No. 8, 9, 10, 11, 12, 13,	Qualitative

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			14 IS 8130: 2013, Cl. No. 4.3, 6 IS 14255: 1995 (RA 2010) Cl. No. 6, 7, 8, 9	
		Dimensional Measurement	IS 694: 1990 (RA 2010) Cl. No. 10, 13.3, 14 IS 694: 2010, Cl. No. 5.3, 8.3, 9 IS 1554 (Part 1): 1988 (RA 2010) Cl. No. 9.2, 12.3, 13.3, 14.4 IS 3975: 1999 (RA 2009) Clause.7 IS 7098 (Part 1): 1988 (RA 2010) Cl. No. 9.2, 12.3, 13.3, 14.3 IS 8130: 2013, Cl. No. 6.4.3, 6.5.3 IS 10810 (Part 6): 1984 (RA 2011) Cl. No. 8 IS 14255: 1995 (RA 2010) Cl. No. 7.2	0.10 mm to 150 mm
		Annealing Test	IS 10810 (Part 1): 1984 (RA 2011) Cl. No. 8	1 % to 100 %
		Tensile Strength/ Breaking Load of Aluminium Conductor & Armouring Wire	IS 1608: 2005 (RA 2011) Cl. No. 10.1.2 IS 10810 (Part 2): 1984 (RA 2011) Cl. No. 8 IS 10810 (Part 37): 1984 (RA 2011) Cl. No. 8	20 N to 25 kN

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T-1959)

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Wrapping Test of Aluminium Conductor & Armouring wire	IS 1755: 1983 (RA 2011) Cl. No. 5 IS 10810 (Part 3): 1984 (RA 2011) Cl. No. 8 IS 10810 (Part 39): 1984 (RA 2011) Cl. No. 8	0.5 mm to 5 mm
		Resistance Test	IS 10810 (Part 5): 1984 (RA 2011) Cl. No. 8 IS 10810 (Part 42): 1984 (RA 2011) Cl. No. 8	0.10 mΩ to 19.99 Ω
		Tensile Strength of Insulation & Sheath	IS 10810 (Part 7): 1984 (RA 2011) Cl. No. 8	20 N to 2500 N
		Elongation at Break	IS 10810 (Part 7): 1984 (RA 2011) Cl. No. 8	5 % to 1000 %
		Ageing in Air Oven	IS 10810 (Part 11): 1984 (RA 2011) Cl. No. 8	20 N to 2500 N
		Loss of Mass Test	IS 10810 (Part 10): 1984 (RA 2011) Cl. No. 8	50 °C to 135 °C 0.01 mg/sq.cm to 10 mg/sq.cm
		Shrinkage Test	IS 10810 (Part 12): 1984 (RA 2011) Cl. No. 8	0.5 % to 50 %
		Heat Shock Test	IS 10810 (Part 14): 1984 (RA 2011) Cl. No. 8	Qualitative
		Hot Deformation Test	IS 10810 (Part 15): 1984 (RA 2011) Cl. No. 8	5 % to 100 %
		Cold Bend Test	IS 10810 (Part 20): 1984 (RA 2011) Cl. No. 8	Qualitative
		Cold Impact Test	IS 10810 (Part 21): 1984 (RA 2011) Cl. No. 8	Qualitative
		Hot Set Test	IS 10810 (Part 30): 1984 (RA 2011) Cl. No. 8	0.5 % to 250 %

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Water Absorption Test	IS 10810 (Part 33): 1984 (RA 2011) Cl. No. 8 (Gravimetric)	50 °C to 90 °C 0.01 mg/sq.cm to 10 mg/sq.cm
		Insulation Resist/ Volume Resistivity Test	IS 10810 (Part 43): 1984 (RA 2011) Cl. No. 8	10 MΩ to 10 ⁹ MΩ
		High Voltage Test (at Room Temperature)	IS 694: 1990 (RA 2010) Clause.16.3 IS 694: 2010, Cl. No. 10.2 IS 1554 (Part 1): 1988 (RA 2010) Cl. No. 16.2 IS 7098 (Part 1): 1988 (RA 2010) Cl. No. 16.2 IS 10810 (Part 45): 1984 (RA 2011) Cl. No. 8 IS 14255: 1995 (RA 2010) Cl. No. 11.2	1 kV to 10 kV
		Additional Ageing Test	IS 694: 1990 (RA 2010) Clause.16.6 IS 694: 2010, Cl. No. 10.9	1 kV to 6 kV
		High Voltage Test	IS 694: 1990 (RA 2010) Clause.16.2 IS 694: 2010 Cl. No. 10.1 IS 1554 (Part 1): 1988 (RA 2010) Cl. No. 16.3 IS 10810 (Part 45): 1984 (RA 2011) Cl. No. 8 (Water Immersion)	1 kV to 10 kV (AC) 1 kV to 3 kV (DC)
		Flammability Test	IS 10810 (Part 53): 1984 (RA 2011) Cl. No. 8	10 mm to 475 mm 1 s to 100 s
		Thermal Stability Test	IS 5831: 1984 (RA 2011) Appendix. B IS 10810 (Part 60): 1988 (RA 2010) Cl. No. 8	1 min to 300 min

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Torsion Test	IS 1717: 2012 (RA 2012) Clause.7 IS 10810 (Part 38): 1984 (RA 2011) Cl. No. 8	0.3 mm to 4.2 mm dia.
		Mass of Zinc Coating	IS 6745: 1972 (RA 2011, Cl. No. 5 IS 10810 (Part 41): 1984 (RA 2011) Cl. No. 8 (by Stripping Method)	(10 g to 2000 g)/m ²
		Uniformity of Zinc Coating	IS 2633: 1986 (RA 2011) Cl. No. 4 IS 10810 (Part 40): 1984 (RA 2011) Cl. No. 8	Qualitative
		Adhesion Test of Steel Wire	IS 4826: 1979 (RA 2011) Cl. No. 5.2	Qualitative
		Elongation of Al. Alloy Wire	IS 14255: 1995 (RA 2010) Cl. No. 11.3	1 % to 100 %
		Bending Test	IS 10810 (Part 50): 1984 (RA 2011) Cl. No. 8 IS 14255: 1995 (RA 2010) Cl. No. 11.4	Qualitative
III.	MEASURING INSTRUMENTS - ELECTRICAL AND ELECTRONIC (STATIC) ENERGY METERS			
1.	ac Static Watt-hour Meters ac Static Transformer operated Watt-hour & VAR-hour Meters	Test of Starting Condition	IS 13779: 1999 (RA 2009) Cl. No. 12.14 IS 14697: 1999 (RA 2009) Cl. No. 12.13	30 V to 300 V 1 mA to 120 A

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Test for No-load Condition	IS 13779: 1999 (RA 2009) Cl. No. 12.13 IS 14697: 1999 (RA 2009) Cl. No. 12.12	30 V to 300 V
		A.C. High Voltage	IS 13779: 1999 (RA 2009) Cl. No. 12.7.6.3 IS 14697: 1999 (RA 2009) Cl. No. 12.7.6.3	1 kV to 10 kV
		Insulation Resistance Test	IS 13779: 1999 (RA 2009) Cl. No. 12.7.6.4 IS 14697: 1999 (RA 2009) Cl. No. 12.7.6.4	10 MΩ to 10 ⁹ MΩ
		Test of Meter Constant	IS 13779: 1999 (RA 2009) Cl. No. 12.15 IS 14697: 1999 (RA 2009) Cl. No. 12.14	30 V to 300 V 1 mA to 120 A
		Test on Limits of Error	IS 13779: 1999 (RA 2009) Cl. No. 11.1 IS 14697: 1999 (RA 2009) Cl. No. 11.1	30 V to 300 V 1 mA to 120 A
		Test of Repeatability of Error	IS 13779: 1999 (RA 2009) Cl. No. 12.17 IS 14697: 1999 (RA 2009) Cl. No. 12.16	30 V to 300 V 1 mA to 120 A
		Test of Power Consumption	IS 13779: 1999 (RA 2009) Cl. No. 12.7.1 IS 14697: 1999 (RA 2009) Cl. No. 12.7.1	0.1 VA to 20 VA 0.1 W to 20 W

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	LOCATION 2			
I.	TRANSFORMERS & REACTORS			
1.	Distribution Transformers 11 kV, upto 315 kVA	Measurement of Winding Resistance	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.2 IS:11171-1985, Reaf-2011, Cl. 13.2	1 mΩ to 2 kΩ
	Current Transformers 11 & 33 kV, upto 400/5A	Measurement of Voltage Ratio & Check of Phase Displacement	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.3 IS:11171-1985, Reaf-2011, Cl. 13.2	5 to 136
	Voltage Transformers 11 & 33 kV	Measurement of Short Circuit Impedance and Load Loss	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.4 IS:11171-1985, Reaf-2011, Cl. 13.2	1 W to 5 kW
	Dry Type Transformers 11 kV, upto 315 kVA	Measurement of No-load Loss and Current	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.5 IS:11171-1985, Reaf-2011, Cl. 13.2	1 W to 1 kW
		Measurement of Insulation Resistance	IS:1180(Pt.1)-2014, Cl. 21.2	500 to 2500 V DC, 1 MΩ to 20 GΩ
		Induced Over Voltage Withstand Test	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.3)-2009, Cl. 12.1 IS:3156(Pt.1)-1992, Reaf-2012, Cl. 9.3.1.2 IS:11171-1985, Reaf-2011, Cl. 15	HV- 22 kV, LV- 1000 V, 100 Hz
		Separate Source Voltage Withstand Test	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.3)-2009, Cl. 11 IS:11171-1985, Reaf-2011, Cl. 14	2 to 76 kV

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Temperature Rise Test	IS:1180(Pt.1)-2014, Cl. 21.3 IS:2026(Pt.2)-2010, Reaf-2015, Cl. 5	1 to 70 °C, 100 W to 5 kW, 1 to 25 A
		Pressure Test (Routine Test)	IS:1180(Pt.1)-2014, Cl. 21.5	10 to 100 kPa
		Oil Leakage Test	IS:1180(Pt.1)-2014, Cl. 21.5	5 to 100 kPa
		Verification of Terminal Marking and Polarity	IS:2705(Pt.1)-1992, Reaf-2012, Cl. 9.2 IS:3156(Pt.1)-1992, Reaf-2012, Cl. 9.2	Visual Examination
		Power Frequency Dry Withstand Test	IS:2705(Pt.1)-1992, Reaf-2012, Cl. 9.3, 9.4 IS:3156(Pt.1)-1992, Reaf-2012, Cl. 9.3, 9.4	2 to 76 kV
		Determination of Errors	IS:2705(Pt.2)-1992, Reaf-2012, Cl. 7.1.1 IS:2705(Pt.3)-1992, Reaf-2012, Cl. 7.1.1 IS:3156(Pt.2)-1992, Reaf-2012, Cl. 8.2.1	Upto CT/PT Cl. 0.1
		Over Voltage Inter Turn Test	IS:2705(Pt.1)-1992, Reaf-2012, Cl. 9.5	0.1 to 5 A
		Composite Error	IS:2705(Pt.3)-1992, Reaf-2012, Cl. 7.2.2	0.01 to 15 %

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
II.	Cables & Accessories			
1.	PVC Insulated Heavy duty Electric Cables for working voltage from 3.3 kV to 11 kV Crosslinked Polyethylene Insulated PVC Sheathed Cables for working voltage from 3.3 kV to 33 kV	High Voltage Test	IS:1554(Pt.2)-1988, Reaf-2010, Cl.19.7 IS:7098(Pt.2)-2011, Cl.20.7	2 to 76 kV
III.	SWITCHGEAR EQUIPMENTS			
1.	Carriers & Bases in Rewirable Type Electrical Fuses for voltages upto 650 V Low Voltage Switchgear and Controlgear Assemblies	High Voltage Test Insulation Resistance Test	IS 2086-1993, Reaf-2014, Cl.9.8 IS 8623(Pt.1)-1993, Reaf-2013, Cl.8.2.2 IS 2086-1993, Reaf-2014, Cl.9.7 IS 8623(Pt.1)-1993, Reaf-2013, Cl.8.3.4	2 to 76 kV 500 to 2500 V DC, 1 MΩ to 20 GΩ

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
AT SITE				
I.	TRANSFORMER AND INDUCTORS			
1.	Distribution Transformers 11 kV, upto 500 kVA	Measurement of Winding Resistance	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.2 IS:11171-1985, Reaf-2011, Cl. 13.2	1 mΩ to 2 kΩ
	Dry Type Transformers 11 kV, upto 315 kVA	Measurement of Voltage Ratio & Check of Phase Displacement	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.3 IS:11171-1985, Reaf-2011, Cl. 13.2	5 to 136
		Measurement of Short Circuit Impedance and Load Loss	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.4 IS:11171-1985, Reaf-2011, Cl. 13.2	1 W to 5 kW
		Measurement of No-load Loss and Current	IS:1180(Pt.1)-2014, Cl. 21.2 IS:2026(Pt.1)-2011, Cl. 10.5 IS:11171-1985, Reaf-2011, Cl. 13.2	1 W to 1 kW
		Measurement of Insulation Resistance	IS:1180(Pt.1)-2014, Cl. 21.2	500 to 2500 V DC, 1 MΩ to 20 GΩ
		Temperature Rise Test	IS:1180(Pt.1)-2014, Cl. 21.3 IS:2026(Pt.2)-2010, Reaf-2015, Cl. 5	1 to 70 °C, 100 W to 5 kW, 1 to 35 A
		Pressure Test (Routine Test)	IS:1180(Pt.1)-2014, Cl. 21.5	10 to 100 kPa
		Oil Leakage Test	IS:1180(Pt.1)-2014, Cl. 21.5	5 to 100 kPa

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