

L&T SWITCHGEAR

SAFE & SURE

REQUIREMENTS FOR THE SERVICE CENTRE



LARSEN & TOUBRO LIMITED

► REQUIREMENTS

AREA REQUIREMENT

A min. of 200 sq. ft. is recommended.

POWER REQUIREMENT

FOR TEST BENCH:

(Test benches as per L&T's design)

Supply voltage	–	Single phase 180-270V ac, 3 phase - 415V
Frequency	–	50 Hz
Consumption	–	3.5KW (depending on size of test bench)
Cable rating	–	32 A

A suitable three pin socket of 20A rating should be provided near the test bench.

An ELCB should be provided for shock protection.

FOR LIGHTING AND FANS :

As is required for number of fittings and fans installed in the service centre.

For COMPUTERS / FAX MACHINE / INTERNET:

As is required to be installed in the service centre.

OTHER ESSENTIAL REQUIREMENTS

1.3.1 TEST BENCH

1.3.2 TOOLS

All tools, equipment and products for service should be kept neatly and in allotted places. Following is the recommended list of tools.

LIST OF TOOLS

1)	Double end spanner 6/7,8/9,10/11,12/13,14/15,16/17,18/19,20/22	1 set
2)	Ring spanner 6/7,8/9, 10/11,12/13,14/15, 16/17,18/19,20/23	1 set
3)	Screw Driver Blade type Taparia No 936,826,827,912,828,936	1 each
4)	Screw Driver Philip head type Taparia std size 0,1 and 2	1 each
5)	Nui drivers 5.5mm,8mm,10,13	1 each
6)	Tube spanner 10/11, 12/13	1 each
7)	Hammer-Ball pen type 500gms	1 No.
8)	Adjustable spanner 1/4 inch and 1/2 inch	1 each
9)	Allen key-Complete set Unbrako/TVS make	1 set
10)	Torque Wrench 0.3-7 Kgm	1 No.
11)	Suitable extension rods 150mm and 300mm	1 each
12)	Complete set of hexagonal sockets	1 set
13)	Screw driver attachment	1 No.
14)	reeler gauge 0.1 mm to 1.0 mm	1 set
15)	Soldering Iron 25W 240V	1 No.
16)	Long Nose plier 8 inch	1 No.
17)	Side cutter with wire insulation remover Taparia make	1 No.
18)	Crimping tool suitable for non insulated lugs up to 6sqmm	1 No.

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|-----|---|-------|
| 19) | Taparia make combination plier 6 inch | 1 No. |
| 20) | T type 5mm Allen key shank length 120mm or 150mm | 1 No. |
| 21) | T type 6mm Allen key shank length 300mm | 1 No. |
| 22) | T type No10 hexagon socket shank length 300mm | 1 No. |
| 23) | Nylon hammer of 1" dia and 8" length | 1 No. |
| 24) | Grip plier | 1 No. |
| 25) | Reverse Circlip plier | 1 No. |
| 26) | Wire circlip plier 3mm,4mm,5mm,6mm,8mm | 1 No. |
| 27) | Needle file set JK Brand | 1 Set |
| 28) | Digital, True RMS Clamp meter/multimeter, possible to measure following Rishabh/MECO make | 1 No. |
| | AC Volts upto 1000V | |
| | AC millivolts | |
| | AC current up to 600A | |
| | DC current | |
| | DC Volts upto 500V | |
| | Resistance Ohms/Kilo Ohms/Mega Ohms | |
| | Continuity | |
| 29) | Digital Infra red ,Laser, Non contact type Thermometer of RAYTECH make | 1 No. |
| 30) | Digital megger 500V | 1 No. |
| 31) | Continuity tester-Battery powered | 1 No. |
| | Suitable Tool Kit for carrying above Tools | |
| * | It is desired that required Equipments must be sent to Authorised Calibration Agencies for Calibration check once in a year. ASC will also maintain records for the same. | |

1.3.3 DISPLAY BOARD

The board should be as per the design supplied by L&T and should display L&T Switchgear Service Centre.

1.3.4 FIRST AID KIT

1.3.5 FIRST AID CHART

1.3.6 FIRE EXTINGUISHER

1.3.7 COMMUNICATION

It is desirable that good communication facilities such as Telephone, Fax, Mobile Phone, e mail ID, are available.

MANPOWER

- Service Centre should be manned by a qualified Technician (Engineer/Diploma Holder) and must have been trained at L&T Training Centre. See page no. for training details
- Technician should have PWD Licence / Electrical Contractor Licence & it is desired that ASC / IASC should also have Works Contract Permit / Licence
- ASC / IASC must be registered with Local Sales Tax/Service Tax/ Income Tax/PF/ESICS/Authority.

► GUIDE LINES FOR OPERATION OF SERVICE CENTRE

RECEIVING COMPLAINT MATERIAL

Complaint reported should be noted and entered in register.

Service technicians observations should also be noted in register.

Fill up the job order form with complete data as per the enclosed formats.

Customer copy of job order form to be filled customers signature obtained and handed over to customer

If more time is required to carry out repairs collect materials, inform customers likely date of delivery

Check with customer if quotation is required for repairs

Send quotation for estimated repair jobs and obtain customers approval before proceeding with jobs

WORKING ON COMPLAINT MATERIAL

Complaint unit to be checked/tested in test bench available.

For procedure to test various products the relevant service manual must be referred to. Parts replacement, if required, should be according to recommended practices.

Product to be tested & checked as per instructions in service manual for ACBs

Repair register to be filled up with job details

Fill up job order/ bill copy with job details

Fill up job order/ bill copy details of repair work carried out

Fix sticker on product after filling job no and date.

STORAGE OF COMPLAINT MATERIAL / SPARES COMPLAINT MATERIAL

Complaint material should be stored neatly and in a orderly manner. Material should be suitably tagged with work order no. for easy identification Products which cannot be put back in use must be destroyed to avoid misuse before being sold as scrap. Items like hardware may be salvaged

SPARES

Adequate quantity of spares should be stocked in the service centre.

Non-standard spares particularly of ACBs should be kept separately in the service centre and identified as such. These are not for loose sale but will be used for completing service jobs.

An inventory of spares should be kept and closely monitored. We recommend a separate stock register be kept, preferably computerised.

Replenishment should be ordered well in advance so that service jobs do not get delayed for want of spares.

RETURN OF MATERIAL TO CUSTOMER

Inform customer material ready for collection, if customer had left material with you.
Prepare bill & deliver when customer presents bottom copy of customers work order copy Obtain acknowledgment
For repairs carried out at the site, obtain customers acknowledgment in same work order that complaint has been rectified.

SENDING MATERIAL TO BRANCH

Defective material found to be within the guarantee period should be sent to the branch office for further action. (18 Months from manufacturing date or 12 months from the date of installation, whichever is earlier).
Complaints which may be due to manufacturing defects should also be sent to branch office.
Details of such complaints should be entered in the repair register
After receiving a report from the branch please enter the relevant details in the register.

REPORTS TO BRANCH OFFICE

Ensure that the following documents/reports are sent to the local branch office.
Branch copy of work order / bill copy / Service or Visit report copy / job card.
For out-station complaints copy of service technicians visit report / service report / job card.
It is desired that all calls be entered in PC. and Output for the month be sent to Branch.

RECORDS TO BE KEPT AT SERVICE CENTRE

The following data should be available at the service centre
File copy of work order / bill copy / Service - Visit report copy.
Copy of customers acknowledgment on job completion
Copy of service technicians visit report for out-station complaints
Repair register duly filled (this could also be in the form of a print out)
Inventory register of service centre spares (could be computerised)
Pending order list of spares with job nos.

▶ TRAINING

RECOMMENDED PROGRAMMES AT TRAINING CENTRE

L & T has two training centres exclusively for low tension switchgear at Pune & Lucknow. We recommend that service centre technician attends the programmes given below. This will ensure that you provide high quality service to your customers. Separate programmes for service centre technicians will also be announced from time to time. You may send your nomination to the branches or directly to the addresses given below.

PROGRAMME NAME	CONTENTS	FOR WHOM	DURATION
ILTS: INTRODUCTION TO LOW/TENSION SWITCHGEAR	Exposure to fundamentals of LV Switchgear	Fresh Graduates/Diploma Engineers & those who want to enhance/ refresh their	4 Days
SAME: SWITCHGEAR APPLICATIONS FOR MECHANICAL ENGINEERS	Understanding the mechanism, Operation & Application of LV Switchgear	Mechanical Engineers in Project/ Materials/ Maintenance function	4 Days
SMW: SWITCHGEAR MAINTENANCE WORKSHOP	"HANDS-ON" training in Preventive Maintenance	Electricians and ITI Technicians with 2 or more years experience	5 Days
BMW: BREAKER MAINTENANCE WORKSHOP	"HANDS-ON" training on overhauling of Air Circuit Breakers.	Technicians with 3-4 or more years experience. Advanced programme to SMW	4 Days
C-POWER*/BMW-ADVANCED	"HANDS-ON" training on complete overhauling of Air Circuit Breakers.	Already attended BMW/Those interested in Detail Maint. Aspect of ACS	6 Days
LVSM: LOW VOLTAGE SWITCHGEAR MAINTENANCE	Selection & Installation of L.V. Switchgear, Preventive maintenance & testing procedures with 'HANDS ON' practice.	Graduate / Diploma Engineers with 3-8 years or more experience	4 Days
BME: BREAKER MAINTENANCE FOR ENGINEERS	Selection & "HANDS-ON" training on overhauling of Air Circuit Breaker	Engineers with 3-4 years or more experience. Advanced programme for LVSM Participants.	4 Days
EDSA: ELECTRICAL DESIGN OF SWITCHGEAR ASSEMBLY	Good practices in designing panels, proper Switchgear & busbar selection	Consultants, Panel Builders, Project/ Purchase / Maintenance Engineers & Contractors.	4 Days
RSEE: REQUIREMENT FOR SYSTEM AND EQUIPMENT EARTHING	Guidelines for system & equipment earthing including selection of earth conductor, earth electrode etc.	Consultants, Panel Builders, Project/ Purchase / Maintenance Engineers & Contractors.	2 Days
DCC: DESIGN OF CONTROL CIRCUITS	Good practices in Control Circuit equipment selection & Design	Consultants, Panel Builders, Project/ Purchase / Maintenance Engineers & Contractors.	3 Days
RPM: REACTIVE POWER MANAGEMENT	L.V. Capacitors, Power factor Correction, Study of harmonics.	Consultants, Panel Builders, Project/ Purchase / Maintenance Engineers & Contractors.	3 Days
PR : PROTECTIVE RELAYING	Protective Relays-role & functions in Distribution System, emerging concepts, setting & testing of Micro-Processor based relays.	Consultants, Panel Builders, Project/ Purchase / Maintenance Engineers & Contractors.	3 Days

*ONLY AT STC LUCKNOW

Throughout industry, Electrical energy is utilised in various ways. It is the responsibility of the Engineering department to ensure its availability at various load centres reliably, efficiently and safely.

Proper selection & maintenance of L.V. Switchgear is therefore one of the most important activities for the department.

Traditionally certain methods have been used to select, maintain and test L.V. Switchgear. Our programmes will help participants to expand their skills with new and positive approach in selection & maintenance. Participants will receive 'hands-on' training backed by intensive lecture sessions and audiovisual demonstration.

The L&T Switchgear Training Centres at Pune and Lucknow are the only facilities of their kind in India. The centres have state-of-the-art training facilities, well-equipped workshops and testing systems.

The programmes at these training centres would provide a foundation for evaluation of existing practices and offer professional guidance for developing a new and integrated action plan for the selection & maintenance of the Low Voltage Distribution System.

Contact Nearest Stockist / Branch Office or Directly

STC-LUCKNOW

C6-C7, U.P.S.I.D.C., Sarojini Nagar,
Lucknow - 226 008.
Tel.: (0522) 2437591, 2437728
Fax: (0522) 2437592, 2223813
e-mail: stc-lucknow@Intebg.com

STC-COONOR

Ooty-Coonor Main Road
Ketti, Nilgiris- 643243
Tel.: (0423) 2517107 / 2517158
e-mail: stc-coonor@Intebg.com

STC-PUNE

T-156/157, M.I.D.C., Bhosari,
Pune - 411026.
Tel.: (020) 7120037/653
Fax: (020) 7122933/1221,624910.
e-mail: stc-pune@Intebg.com

► COMPLAINT REGISTER

Complaints received by ASC are recorded in Complaint Register and attended by Service Engineer / Service Technicians. The Register shall contain the following information :

1. Sr. Number
2. Name of Customer / Stockist/ Dealer
3. Product Description
4. Customer / Stockist Challan Number & Date
5. Nature of Complaint
6. Complaint reported by /Date
7. Complaint Received by / date
8. Complaint Attended by / Date
9. Service report Number & Date
10. Details of feedback to L&T / Customer
11. Status of Complaint

The Register shall also contain following information if Complaint material is required to be sent back to respective manufacture:

- Complaint Proforma Number & Date
- Challan Number / Despatch details & Date
- Details of Material received back
- Details of material return back to Customer
- Feedback to Customer & Date

► COMPLAINT PROFORMA

ASC NAME:	BRANCH BKC	REGION	SERVICE RPT No. & DATE	
	PRODUCT	No. OF UNITS	ASC No:	
SDP REF. No. SV		No. OF UNITS SENT:	BATCH CODE:	
CUSTOMER				
COMPLAINT (AS OBSERVED BY CUSTOMER):				
COMPLAINT (AS OBSERVED BY ASC PERSONNEL):				
APPLICATION:	PERIOD OF SERVICE		LOAD: Max.	
VARIATION IN SYSTEM VOLTAGE: NA	SIZE OF CONDUCTOR		FAULT LEVEL AT SITE	
ENVIRONMENTAL CONDITION AT SITE DUSTY/FLUFFY/CORROSIVE/ <u>NORMAL</u>	TERMINATION DETAILS			
ANY OTHER RELEVANT INFORMATION:		NAME		
		SIGNATURE	DATE	
COMPLAINT/COMPLETE DATA RECEIVED BY BRANCH:				



LARSEN & TOUBRO LIMITED

ELECTRICAL STANDARD PRODUCT, ABEB 1, PSW, POWAI, MUMBAI 400 072

TEL: 022 2858 1156

Fax: 022 28581112

► MONTHLY REPORT

ASC Name Address	Tel:	Month:
	Cell:	Year
		Date
Email		

Information about Trained staff Engineer / Technicians	1- 2- 3- 4-
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PARTICULARS

Pending order's as on last day of Month	Servicing	Product Complaint	Retrofitting	Mysore products	Traded products
Orders received during the Month	Servicing	Product Complaint	Retrofitting	Mysore products	Traded products
Orders Completed During the Month	Servicing	Product Complaint	Retrofitting	Mysore products	Traded products
Pending order's as on last day of Month	Servicing	Product Complaint	Retrofitting	Mysore products	Traded products
Business due to: Servicing (Service Charges) Product Complaint Retrofitting Mysore Product Traded Products Spares used for Repairs Total:	During the Month			Cummulative	

Help required for

- Customer Visit
Specify Customer details
 - SPARES Required
 - Closing Retrofitting Job case:
Specify Customer details
- Any other Info.

▶ **FORMAT FOR MYSORE PRODUCTS COMPLAINTS/REPAIR ITEMS**

ELECTRICAL STANDARD PRODUCTS

Branch _____ E-mail address of Branches _____

Branch. Ref. No. _____ Date: _____

Material Sent by _____ Courier Doc. _____ Dt. _____

Stockist/Customer _____

Product type: _____

Sl.No. of product _____

Complaint as observed by customer: _____

Complaint as observed as per ESP Service Engineer:

ESP BRANCH HEAD

ACKNOWLEDGEMENT FROM MYSORE FACTORY

Complaint Acknowledgement Number _____ Date _____

Complaints as observed by Mysore Factory

Action Taken: ☐ Repaired & Sent back

☐ Not Repairable new materials sent to stockist/customer

Materials sent by Docket No _____ Date _____