

	<p style="text-align: center;">Specification for <b>LIMIT SWITCH</b> (Feeder Outlet Isolation Gate)</p>	<p style="text-align: center;">Spec. No. <b>GF-297/01</b></p>	<p style="text-align: center;">Page 1 / 1</p>
---	---	---	---

**TITLE SHEET**

**SPECIFICATION FOR  
LIMIT SWITCH  
(For Feeder Outlet Isolation Gate)**

Specification No. : GF-297  
PGMA : 67-283

Revision No. : 01  
Material Code : 964250060000

01	14.02.2002	Specification revamped	
00	01.07.1998	First Release	-sd-
<b>Rev. No.</b>	<b>Date</b>	<b>Revision Statement</b>	<b>Checked &amp; Approved</b>

	Name	Signature	Date
Prepared	S.Manivannan		
Checked	S.Selvaraju		
Approved	S.V.Sivaramulu		

	<b>Specification for</b> <b>LIMIT SWITCH</b> <i>(Feeder Outlet Isolation Gate)</i>	<b>Spec. No.</b> <b>GF-297/01</b>	<b>Page</b> <b>2 / 2</b>
---	--	--------------------------------------	-----------------------------

CI.No.	Characteristics	Requirement	Supplier's Compliance
<b>1.0</b>	<u>Site Condition's</u>		
<b>1.1</b>	Altitude above mean sea level	500 m	
<b>1.2</b>	Ambient temp. Condition	50°C	
<b>1.3</b>	Relative humidity	100%	
<b>1.4</b>	Atmosphere	Tropical Dusty, Salty, Corrosive, & Highly polluted	
<b>2.0</b>	<u>General</u>		
<b>2.1</b>	Application	Raw coal gate	
<b>2.2</b>	Type	Heavy duty, Side-Roller lever operated Lever length – 38mm Roller width – 6mm Roller dia – 16mm	
<b>2.3</b>	Contact Configuration	2NO + 2NC	
<b>2.4</b>	Contact rating	10amps at 250 V AC ; 0.5 amps at 250V DC	
<b>2.5</b>	Terminal Block	Suitable for 2.5 Sq.mm solid or std. Copper conductor	
<b>2.6</b>	Enclosure protection	Water, oil & dust proof enclosure IP 67 class of protection	
<b>2.7</b>	Cable entry	¾" BSP (F) – or suitable adapter shall be supplied to have ¾" BSP (F)	
<b>2.8</b>	Body material	Die-cast Aluminium	
<b>2.9</b>	Rotation of lever	Clockwise or Counter clockwise Convertible (CW & CCW)	
<b>2.10</b>	Paint / Finish	Corrosive resistance Grey Enamel finish	

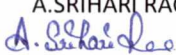


	<b>Specification for</b> <b>LIMIT SWITCH</b> <i>(Feeder Outlet Isolation Gate)</i>	<b>Spec. No.</b> <b>GF-297/01</b>	<b>Page</b> <b>3 / 3</b>
---	--	--------------------------------------	-----------------------------

<b>Cl.No.</b>	<b>Characteristics</b>	<b>Requirement</b>	<b>Supplier's Compliance</b>
3.0	<u>Accessories</u>	This includes, screws, bolts, nuts , base plates etc.,.	
4.0	<u>Inspection &amp; testing</u>	As per Quality plan CI : QAC : STD : QP: 05	
5.0	<u>Documents</u> 6sets of the following (After placement of Purchase Order)	1. T.C. for routine test 2. T.C. for type test 3. Catalogues	
6.0	<u>Packing</u>	Packing shall be as per packing procedure CI : QAC : PR : 04 & as per manufacturer std.	
<p>Note.</p> <ol style="list-style-type: none"> <li>1) Refer current valid list for revision status of quality plan, drg. No. &amp; packing procedure.</li> <li>2) In "Supplier's compliance" Column, supplier to indicate Yes, No or Not Applicable</li> </ol>			

**BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPPALLI**

**CONTROLS AND INSTRUMENTATION / FB  
QUALITY ASSURANCE**

**STANDARD PACKING PROCEDURE  
FOR  
ALL INSTRUMENTS AND MISCELLEANEOUS ITEMS  
(ELECTRICAL, ELECTRONIC AND PNEUMATIC)**

Rev	Date	Prepared	Checked	Approved	Revision History
00	01.01.96	Sd/-	Sd/-	Sd/-	Initial History
01	28.03.02	Sd/-	Sd/-	Sd/-	Department name changed
02	26.02.07	Sd/-	Sd/-	Sd/-	Revised after discussion with Shipping Dept.
03	17.12.16	A.SRIHARI RAO 	RM.VAIRAVAN 	S.DAKSHINAMOORTHY 	Revised to suit all type of instruments.

## 1. Scope

This procedure gives minimum guidelines to be complied with for packing of Electrical, Electronic and pneumatic Instruments. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for period more than one year.

## 2. Material for packing

The individual instrument shall be packed in carton box (specifically made for particular instrument) and grouped together inside a box made of wood or plywood as per National / International standard.

## 3. Packing

- Items shall be inspected for cleanliness immediately before packaging. Dirt, oil, residue, metal chips or other forms of contamination shall be removed.
- Adequate protection shall be provided against mechanical damage and atmospheric corrosion in transit and, for equipment suitable for outside storage, for prolonged storage at the site prior to installation.
- Water proof barrier material – high density polythene shall be used as a resistant to grease and water; it shall protect items from airborne and windblown soils.
- Desiccants like silica gel to be used inside the carton box. Silica gel shall conform to IS 3401. The gel is to be packed in sachets placed at different positions inside the components for absorbing moisture. The quantity of silica gel shall be adequate for storage period of one year.
- All tapped openings in equipment shall be plugged with plastic plugs to protect internal / external threads.
- Use a sturdy cardboard shipping carton, large enough for at least 3 inch foam padding around the instrument.
- Do not use loose plastic foam pieces, which can shift during transport.
- Secure the box flaps with packaging tape or box staples.

### 3.1) Marking & Labelling:

- Components and their containers shall be identified by marking. Shipping marks shall be on all sides of package. The shipping marks shall be at least 3 inches high where space permits. Markings are to be in black paint or ink depending on shade of the package surface.
- Cautionary symbols to be stenciled in red waterproof paint or ink.

**QA:CI:STD:PR:04 / Rev 03**

- The gap between job and the box shall be filled with suitable material like jute, coir, thermo coal, etc.
- For export packing additional care shall be taken as per contract requirements if applicable. Otherwise, suitable box made of seasoned wood and / or plywood sheets of required thickness shall be used with suitable sea worthy packing protection.

**4. Marking**

- After completing the packing, Stencil marking, as per dispatch instructions and symbol marking as per Annexure – I shall be made. Please ensure the box is stenciled with "FRAGILE ITEM", "HANDLE WITH CARE".

**5. Packing Slip**

- A copy of the packing slip, kept in a polythene cover shall be kept inside the box. Another copy of the packing slip, kept in a polythene cover shall be kept outside the box and firmly fixed to the case.

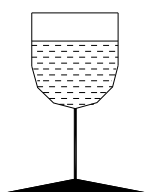
**6. Caution**

- Do not pack any other Mechanical items with this case.

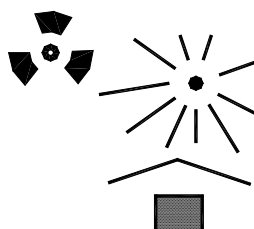
**7. General**

- These packing procedures are the minimum requirements in addition to the standard instructions mentioned in the Purchase Order and Specification.
- Deviation to meet the packing procedure requirements / non-clarity in packing approach in any quotation will be liable for rejection of offer.

ANNEXURE - 1



FRAGILE, HANDLE WITH CARE



PROTECT FROM HEAT AND RADIOACTIVE SOURCES



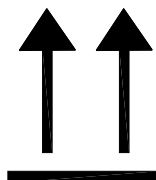
USE NO HOOKS

NOTE: The design of heavy goods packages cannot always resist top lifting by grabhooks.



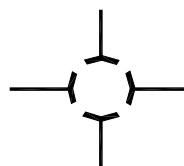
KEEP DRY

NOTE: Not all cases have waterproof internal liners; plywood used in the construction may not have a waterproof glue-line.



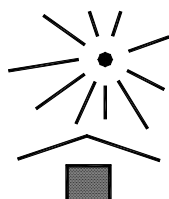
THIS WAY UP

NOTE: Certain designs of small cases make it difficult to distinguish top from bottom.



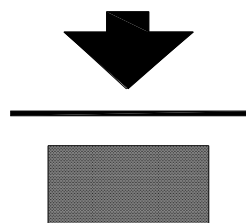
CENTRE OF GRAVITY

NOTE: This should be stencilled as a minimum on the two longest case sides (this information will normally be supplied by the manufacturer of the item(s) packed).



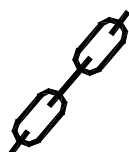
KEEP AWAY FROM HEAT

... kg max



STACKING LIMITATION

NOTE: The maximum load in kilograms should be marked above the arrow.



INTERNATIONAL "SLING HERE" SYMBOL



BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPPALLI-620014

STANDARD QUALITY PLAN FOR  
LIMIT SWITCHES





QA:CI:STD:QP:05

Rev: 04

Page: 1 of 3

### CONTROLS & INSTRUMENTATION/QA/FB

### STANDARD QUALITY PLAN FOR LIMIT SWITCHES

REV	DATE	PREPARED	REVIEWED		APPROVED	REVISION HISTORY
00	17.01.1990	Sd/-	Sd/-	Sd/-	Sd/-	Initial release
01	16.06.1997	Sd/-	Sd/-	Sd/-	Sd/-	Format revised
02	21.03.2002	Sd/-	Sd/-	Sd/-	Sd/-	Department name changed, CTQ requirement added & general revision
03	14.03.2007	Sd/-	Sd/-	Sd/-	Sd/-	General revision, format changed
04	20.02.2018	 V AVINASH	 A SRIHARI RAO	 V M SELVARAJ	 R M VAIRAVAN	Standards updation and format changed

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>TIRUCHIRAPPALLI-620014</b>	<b>STANDARD QUALITY PLAN FOR</b> <b>LIMIT SWITCHES</b>	<b>QA:CI:STD:QP:05</b>  <b>Rev: 04</b> <b>Page: 2 of 3</b>
---	--	---	--

S.No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of Record	Agency			Remarks
					M	B/C			M	B	C	
<b>A</b>	<b>FINISHED PRODUCT INSPECTION</b>											
<b>1</b>	<b>Routine Tests</b>	a) Verification of Make, Type & Model Number	Major	VISU	100%	10%	Purchase specification	IR	P	W	-	
		b) Dimension verification	Major	MEAS	100%	10%	Purchase specification	IR	P	W	-	
		c) Accessories verification	Major	VISU	100%	10%	Purchase specification	IR	P	W	-	
		d) Functional Test: Verification of contact change over	Major	ELEC	100%	10%	Manufacturer Standard	IR	P	W	-	
<b>2</b>	<b>Type Tests</b>	a) Degree of enclosure protection	Critical	ENVI	One of Design	One of Design	NEMA / IEC 60529	TC	V	V	-	
		b) Test for rated making & breaking capacity	Critical	MECH			IEC 60947	TC	V	V	-	
		c) Endurance Test	Critical	MECH			<b>No. of Cycles:6000</b> 6 – 10 cycles per minute of making and breaking at rated current.	TC	V	V	-	There shall be no damage at the end of test.

M- MANUFACTURER/ SUB-VENDOR; B - BHEL/ TPI ; C - CUSTOMER / TPI  
P - PERFORM ; W - WITNESS V - VERIFICATION OF DOCUMENTS ;



**B.NOTES:**

**1.LEGENDS:**

ENVI : Environmental                      MEAS : Measurement  
MECH : Mechanical                      TC : Test certificate  
VISU : Visual                                IR : Inspection Report  
THER : Thermal

- 2) Vendor shall arrange all the required facilities for routine tests at their works .  
Tests for which facilities are not available are to be carried out at recognized National Test Houses like ETDC/CIL/NPL/ERTL etc., at vendor cost.
- 3) Through Log Book / any other documents available at the vendor's works, it shall be possible to correlate the finished product with inspection carried out.
- 4) All Measuring and Testing Instruments shall be periodically calibrated from recognized test houses & certificates made available during inspection for verification.
- 5) Type test certificate shall not be earlier than 5 years from the date of Purchase enquiry.

- 6) Vendor to give tentative inspection program in advance and confirm exact date two weeks in advance for arranging BHEL's inspection.
- 7) Packing shall be as per "PACKING PROCEDURE "indicated in the specification.
- 8) If non-conformity is observed even in one number of the sample lot in any characteristic, inspection shall be carried out on 100% of the offered lot.

**C. REFERENCE STANDARDS:** (For Indicated Standards Refer the Latest Version)

IEC 60529 : Specification for Degree of protection provided by enclosure  
IEC 60947-1 : Low voltage switchgear & Controlgear- General Rules  
IEC 60947-5 : Low voltage switchgear & Controlgear- Switching elements