

# New Product Development



**Gilard**  
Application Programmers

# New Product Development

The life span of products are reducing.

Customers' need for newer models with more features is increasing.

As such the importance of good New Product Development (NPD) team, systems and Process cannot be over emphasized for any growing Company.



# Expectations from a good NPD Process 1/2

- Designing and Developing based on established APQP systems

- Include Function Study, QFD, FMEA, Control Plans, Process Sheets etc.

- Handling and Completing more projects per unit of time.

- Right First Time
- Reduction in Time to Market

- Easy and seamless transfer of project to Production

- Include studies of Process Capability, Checking Aids, Calibration and MSA



# Expectations from a good NPD Process 2/2

- Team Activity, wherein many members can work simultaneously

- Involve Cross Functional teams : QA, CAD, LAB, Production Purchase, PLM, Toolroom, HR

- Stage wise control of Design Documents

- Supply chain logistics, including Packing, Inspection & Movement

- Clarity in workload sharing with defined accountability / define skills required.

- All verification and Validation activities done and PPAP documentation made



# G.A.P OSM NPD Module

- The New Product Development or the NPD module developed by us is based on practical hands on work experience of over 50 years.
- It is based on the requirements of APQP.  
**Advanced product quality planning (or APQP)** is a framework of procedures and techniques used to develop products in industry, particularly the automotive industry. It is quite similar to the concept of Design for Six Sigma (DFSS).

# G.A.P OSM NPD Module

- It has been developed and validated over many years based on learnings and guidance from some of the world best Companies like : Toyota, Honda, Mitsubishi, Denso, Asahi etc.
- It guides the User thru all the required steps and simultaneously creates all the required PPAP documentation.

**Production Part Approval Process (PPAP)** is used in the automotive supply chain for establishing confidence in the production processes and is often require to be submitted to the customer.

In the following slides, we shall share some of the activities performed by G.A.P-OSM NPD module by showing actual screen shots.




# G.A.P-OSM NPD Module



The screenshot displays the G.A.P-OSM NPD Module web interface. At the top left, the logo for GAP OSM is shown, with the text "Gilard Electronics Pvt Ltd" and "Self Diagnostics : TBC = 0.00" below it. A central banner features a technical drawing of a mechanical part with the words "new", "product", and "design" overlaid. To the right of the banner is the "Gilard explore more..." logo. Below the banner, a navigation menu includes "Home", "Sales", "Finance", "NPD", "Stores", "QA", "Purchase", "HRD", "PLM", "e-CAPA", "Dashboard", "TPM", "Mfg.", "IGI", "FGI", "TECH Support", "Payroll", "Doc Control", "Tool Room", "PCMD", and "NBD". The "NPD" menu is expanded, showing "Reporting", "User Functions", and "Supervisor Options". The main content area is titled "NPD" and features a large graphic of two hands holding a globe with a small green plant growing from it, with the text "Product Development" overlaid. At the bottom, a footer contains links for "Sitemap", "User", "Administrator", "Super Administrator", "Main Module", "Raise a Ticket", "View Tickers", "Data Exporter", "Readme", "Add Page to Favourite", "Function file", and "Help [F2] [Esc]".



# Project Initiation



Gilard Electronics Pvt Ltd  
Self Diagnostics : TBC = 0.00



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GAP Awesome Search.....


Home Sales Finance **NPD** Stores QA Purchase HRD PLM e-CAPA Dashboard TPM Mfg. IGI FGI TECH Support Payroll Doc Control Tool Room PCMD NBD

Reporting [➔](#)  
User Functions [➔](#)  
Supervisor Options [➔](#)

### NEW PROJECT INITIATION [Review open projects](#)


Date:	16-11-2017	IDC No.:	--Select IDC NO----
Product Description:	<input type="text"/>		
Product Purpose:	<input type="text"/>		
Customer Part No.	<input type="text" value="Enter cust. Part no."/>	Product No. allocated:	<input type="text"/> <a href="#">Verify if this product number already exist</a>
Annual Qty:	<input type="text"/>	Project Life Expected:	<input type="text"/>
Sale Price:	<input type="text"/>	Target Cost:	<input type="text"/>
Target date of Completion:	<input type="text"/>		
Project Designated to:	--select--		
Annual Revenue:	<input type="text" value="0"/>	Lifetime Revenue:	<input type="text" value="0"/>
Development Charges	<input type="text"/>	Advance( against PO) :	<input type="text"/> Balance(before bulk shipment) : <input type="text"/>

[Save and Exit](#) [Cancel](#)


Sitemap | User | Administrator | Super Administrator| Main Module | Raise a Ticket | View Tickers | Data Exporter | [Readme](#) | Add Page to Favourite | Function file| Help [F2]  [Esc]




# Projects Listing



**Gilard Electronics Pvt Ltd**  
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Home Sales Finance NPD Stores QA Purchase HRD PLM e-CAPA Dashboard TPM Mfg. IGI FGI TECH Support Payroll Doc Control Tool Room PCMD NBD

NPD | User Function | Work on projects

List of Projects

S.No.	Date	Customer	Product No.	Skill Matrix	Product Description	Status							
						BOM	Drg.	DRC	Tool Design	Tooling	Tool trial	Ver.	final
1	28-09-2016	C4415-LUCAS- TVS LIMITED	2519-RMS	NA	Regulator Moulding		●						
2	02-11-2016	C10056-NIDEC INDIA PVT. LTD	2214-03N	NA	RADIATOR RESISTOR	●	●						
3	02-11-2016	C7749-SUBROS LTD	2302-01S	NA	RESISTOR BLOWER	●	●						
4	02-11-2016	C2883-HONDA MOTOR INDIA PVT.LTD.	997-18S	NA	PLUG	●	●						
5	02-11-2016	C2883-HONDA MOTOR INDIA PVT.LTD.	995-07S	NA	RECEPTACLES (240V-6A)	●	●						
6	02-11-2016	C2883-HONDA MOTOR INDIA PVT.LTD.	997-08S	NA	RECEPTACLES (250V-15A)	●	●						
7	02-11-2016	C6146-PREET TRACTORS PVT. LTD.	762-03PR	NA	BRAKE LIGHT SWITCH								
8	02-11-2016	C10026-IFB AUTOMOTIVE PVT. LTD.	2214-01I	NA	RADIATOR RESISTOR	●	●						
9	02-11-2016	C10022-KINETIC ELECTRIC MOTOR CO PRIVATE LIMITED	2214-03K	NA	RADIATOR RESISTOR	●	●						

[Back](#)

Sitemap | User | Administrator | Super Administrator | Main Module | Raise a Ticket | View Tickers | Data Exporter |
Readme
| Add Page to Favourite | Function file | Help [F2] | [Esc]




# Working on Individual Product

The screenshot shows the GAP OSM web application interface. At the top, there is a navigation bar with the GAP OSM logo, a search bar, and the user name 'Sanjiv Singh [User]'. Below the navigation bar, there is a main content area with a header 'NPD | User Function | Work on projects'. The main content area is divided into several sections:


- Product Information:** A table with columns for Product Code, Description (RADIATOR RESISTOR), Project I/C, Customer Code, Customer Name, and Customer Part No.
- Purpose:** A text field containing 'RESISTOR FOR RADIATOR FAN TO CONTROL FAN SPEED.'
- Cost and Revenue:** A table with columns for Target Date, Sale Cost, Target Cost, Annual Qty., Project Life Expected, Annual Revenue, and Lifetime Revenue.
- Drawing and Picture:** Two large sections for uploading drawings and pictures. The drawing section shows a technical drawing of a radiator resistor. The picture section shows a photograph of the physical component.
- Navigation and Tools:** A bottom navigation bar with buttons for Part list, Costed BOM, Functions, DFMEA, Assy Process and skill development, PFC, PFMEA, Control Plan, PPAP, Inspection Sheet, PDI, Layout Inspection Sheet, DVP, Performance Test, SCM, PND, Status, and Project Sign Off.




# Functions Identification & Study



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NPD | User Function | Work on projects | Functions

Product Functions of 750-02(Door Switch)

Sr.No	Main Function	Specific Needs																
		Enter new function based specific need <span style="float: right;"></span>																
1.		<p><b>Air Tightness:</b> Cut off the wire at the front of the connector and joint the tube at the section and then measure the air tightness with pressure from the tube in the water. <b>Measurement:</b> The door switch should be placed at 10cm Depth from the water surface and the compressed air of 9.8 Mpa (0.1 kgf/cm<sup>2</sup>) should be added for 30 sec. If the air is not leaked for 30 sec, Another compressed air of 9.8 Mpa (0.1 kgf/cm<sup>2</sup>) should be added and repeat the above steps. The air tightness should be more than 98 Mpa (0.1 kgf/cm<sup>2</sup>)</p>																
2.		Contact point shall be coated with EL-363 Grease. <span style="float: right;"> QFD</span>																
3.		Continuous Activation : Shall withstand rated load for at least 48 Hrs. <span style="float: right;"> QFD</span>																
		<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Depends on</th> <th>Raw Material</th> <th>Process</th> <th>Dimension</th> </tr> </thead> <tbody> <tr> <td>0750-00-01-WIRE HARNESS</td> <td>AVS 0.5 Wire-</td> <td></td> <td></td> </tr> <tr> <td>0750-27-12-STOPPER TERMINAL</td> <td>-</td> <td></td> <td>Silver Plating 2 Micron</td> </tr> <tr> <td>0750-27-14-FLOATING TERMINAL</td> <td>-</td> <td></td> <td>Silver Plating 2 Micron</td> </tr> </tbody> </table>	Depends on	Raw Material	Process	Dimension	0750-00-01-WIRE HARNESS	AVS 0.5 Wire-			0750-27-12-STOPPER TERMINAL	-		Silver Plating 2 Micron	0750-27-14-FLOATING TERMINAL	-		Silver Plating 2 Micron
Depends on	Raw Material	Process	Dimension															
0750-00-01-WIRE HARNESS	AVS 0.5 Wire-																	
0750-27-12-STOPPER TERMINAL	-		Silver Plating 2 Micron															
0750-27-14-FLOATING TERMINAL	-		Silver Plating 2 Micron															
4.		<p><b>DURABILITY:</b> Requirement of items 1,2 &amp; 4 shall be met after 40,000 cyce operation at 12V,2A under the following conditions: Stroke: 8 mm, Operation cycle Rate:15/Min.</p>																
		<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Depends on</th> <th>Raw Material</th> <th>Process</th> <th>Dimension</th> </tr> </thead> <tbody> <tr> <td>0750-02-15-SPRING</td> <td>-</td> <td></td> <td>Spring Constant 394±10% N/M</td> </tr> <tr> <td>0750-27-12-STOPPER TERMINAL</td> <td>Vicker Hardness 110 VPN Min.-</td> <td></td> <td>Silver Plating 2 Micron</td> </tr> <tr> <td>0750-27-14-FLOATING TERMINAL</td> <td>Vicker Hardness 110 VPN Min.-</td> <td></td> <td>Silver Plating 2 Micron</td> </tr> </tbody> </table>	Depends on	Raw Material	Process	Dimension	0750-02-15-SPRING	-		Spring Constant 394±10% N/M	0750-27-12-STOPPER TERMINAL	Vicker Hardness 110 VPN Min.-		Silver Plating 2 Micron	0750-27-14-FLOATING TERMINAL	Vicker Hardness 110 VPN Min.-		Silver Plating 2 Micron
Depends on	Raw Material	Process	Dimension															
0750-02-15-SPRING	-		Spring Constant 394±10% N/M															
0750-27-12-STOPPER TERMINAL	Vicker Hardness 110 VPN Min.-		Silver Plating 2 Micron															
0750-27-14-FLOATING TERMINAL	Vicker Hardness 110 VPN Min.-		Silver Plating 2 Micron															




# Quality Function Deployment


 explore more...		Quality Function Deployment of 781-01-NEUTRAL SAFETY SWITCH (NC TYPE)		Date : 17th of November 2017 Time : 10:01:45 AM User : Sanjiv Singh																					
Gilard Electronics Pvt Ltd																									
Part List	Random/Vibration Test according to ISO 16750-3:2003 for 32 hours	Low Temperature Test for Storage at -40°C for 24 hours	Control the Switching Point and Operating Stroke	Operating Force 16 N +/- 20 % for Contact breaking and 25 N +/- 20 % for Full Stroke	Overload Forces. 100 N applied 10 mm from the tip of the switch in any direction.	Mounting	Terminal Fitting with Coupler at customer end	Corrosion Resistance: ISO 16750-4 for 250 hours	Tightening Torque: 50 Nm (max)	ROHS compliant	Contact Bounce	Insulation Resistance ( Minimum 10 MOhms initially and 1 M Ohms after Any Test)	High Voltage Flash 0.5 KV RMS for 60 secs	Voltage Drop ( max 100 mv initial and max 250 mv after tests )	Endurance Test: Total :5 lac cycles   First 4 .40 lacs at room temperature , then 50000 at (+) 90° C and then 10000 at (-) 40° C. Cycle time 1 sec ON and 3 Sec OFF.	Slow Decrease of Supply Voltage from 32 V to 0 V and Slow Increase of Supply Voltage from 0 V to 32 V, applying at change rate of 0.5*-0.1 V/min.	Leak Test @ 1 Bar , no leakage is allowed.	Visual ( There should be no burrs and Sharp edges)	IP69K	Free Fall Test	Low Temperature Test for Operation at -40°C for 24 hours	High Temperature Test for Storage at 90°C for 48 hours	High Temperature Test for Operation at 90°C for 96 hours		
0781-01-01-PLUNGER			D					R																SS410	
0781-21-10-ADAPTOR			D		D	PD		R												RP					Hardness of Material
0781-52-08-ASSEMBLY TERMINAL			D				PD					R	D												0052-00-14
0781-21-07-PIN			D																						
0781-02-03-SPRING COMPRESSION (BIG)				D																					
0781-02-16-SPRING COMPRESSION (SMALL)				D							D		D												
0781-42-02-HOLDER						RP																			Nylon ( Stayn TW371 Natural ). No regrind




# Design Validation Plan



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Self Diagnostics : TBC = 0.00



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TECH Support
Payroll
Doc Control
Tool Room
PCMD
NBD

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Design Validation Plan of 750-02(Door Switch)

Performance

Enter the test name GAP it

Test	Method	Specification		Checked By	Instrument	Time for testing	No. of Samples	Select to del.
		Initial	Final					
Rating	<input type="text"/>	12 Volts,2An	12 Volts,2An	Self	--Select instrument			<input type="checkbox"/>
Insulation Rasistance	<input type="text"/>	1M Ohms	1M Ohms	Self	IT-INSULATION TE	1Day		<input type="checkbox"/>
Voltage Drop	<input type="text"/>	0.1 V	0.25 V	Self	--Select instrument	1Day		<input type="checkbox"/>
Operating Force	<input type="text"/>	300(-150 )G	500(+200 )G	Self	--Select instrument	1Day		<input type="checkbox"/>


Endurance

Enter the test name GAP it

Test	Method	Specification		Checked By	Instrument	Time for testing	No. of Samples	Select to del.
		Initial	Final					
Durability	<input type="text"/>	12 Volts,2An	12 Volts,2An	Self	--Select instrument	4Day		<input type="checkbox"/>
Vibration Resistance	<input type="text"/>			Customer	--Select instrument			<input type="checkbox"/>
Continuous Activation	<input type="text"/>			Self	--Select instrument	3 Days		<input type="checkbox"/>




# Performance Test Sheet


		DVP-Performance Testing of 750-02			Date: 16-11-2017	
		(Door Switch)			Time 04:48:30pm	
Part Name:	750-02-Door Switch	Customer:	C7453-SML ISUZU LIMITED	Rectangular Snip		
Performance Test(Initial)						
S.no.	Test	Method	Equipment	Specification		
				Specified	Observed	Result
1	Rating	12Volts,2Amperes		12 Volts,2Amperes		
2	Insulation Rasistance	1M Ohms	IT006-INSULATION TESTER	1M Ohms		
3	Voltage Drop	0.1 V Max (Before Test) & 0.25 V Max (After Test)		0.1 V		
4	Operating Force	300(-150) gf Intial Force , 500 (+200) gf After 8 mm Stroke		300(-150 )Gf		
Climatic/Endurance Test						
1.Durability						
<b>Test:</b>		Durability				
<b>Method:</b>		Shall Fullfill Above Sr. No.2,3,4 after 40000 cycles, Conditions: 12V,2A Stroke 8 mm Operation Cycle Rate-15 SPM				
<b>Equipment :</b>						
Performance(Final)						
S.no.	Test	Method	Equipment	Specification		
				Specified	Observed	Result
1	Rating	12Volts,2Amperes		12 Volts,2Amperes		
2	Insulation Rasistance	1M Ohms	IT006-INSULATION TESTER	1M Ohms		




# Product Cost Sheet



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Doc Control
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PCMD
NBD
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**NPD | User Function | Work on projects**

**BILL AND COST OF MATERIAL**

Cat No. : 750-02

Description : Door Switch

Sub Assy : N

Team :

Production per Man Day : 0

S.No.	Part No.	Description	Source	Qty Per Piece	Unit	Is it a Sub Assy	Purchase Cost	Raw Material Cost	Process Cost	Finishing Cost	Total Cost	Amount
6	0750-02-15	SPRING	Purchase	1	NOS	N	0.45	0	0	0	0.45	0.45
7	0750-60-19	GLUED FOAM	Purchase	1	NOS	N	0	0	0	0.00	0	0
	0060-03-01	SELF ADHESIVE GLUED FOAM (G)	Purchase	0	MTR		0	0	0	0	0	
8	0016-02-01	Solder Wire (1.0mm dia) lead free	Purchase	0.05	GMS	N	1.68	0	0	0	1.68	0.084
9	0016-01-01	HYBRID#6633 SOLDER CONDITIONER	Purchase	0.02	MLT	N	0.2025	0	0	0	0.2025	0.00405
10	0750-00-01	WIRE HARNESS	Purchase	1	NOS	N	0	0	0	0	0	0
11	0080-04-22	ARALDITE (HARDENER & RESIN)	Purchase	1.5	GMS	N	0	0	0	0	0	0
<b>TOTAL</b>							<b>0.54</b>	<b>0.57</b>	<b>0.16</b>	<b>1.31</b>		

[Edit](#)

**1. TOTAL RMC COST : 0.54 + 0.57** 1.11

ICC COST @ 7.0000 % OF RMC COST 0.08

**2. TOTAL PROCESSING COST 0.16 + 1.31 + 0** 1.47

O.H @ 20.0000 % PROCESS COST 0.29

PROFIT @ 20.0000 % OF PROCESS COST 0.29


**TOTAL : 3.24**

Assembly Cost : 0


SELLING PRICE LIST		
CUSTOMER CODE	RATE	REALIZABLE RATE
C7453	67.00	3.3 ✓




# Part List with details



Gilard Electronics Pvt Ltd  
Self Diagnostics : TBC = 0.00





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**NPD | User Function | Work on projects**

### Part List

Item Description: NEUTRAL SAFETY SWITCH (NC TYPE)

Item No.: 781-01

Drawing available: Y

Design Plan No.:

Prepared by: Sanjiv Singh-D0003

Customer: PRICOL LIMITED

Action Required:

Sub Assy:

Prod. per MAN day:


Assy. Cost:

[save](#)


S.No.	Part No.		Description	Qty/Pc.	Sub Assy (Y/N)?	Item Source	Cost	Drawing/SPCN no.	Drawing Available	Click to Del.
1	0781-42-02	<a href="#">Design Review</a>	HOLDER	1	N	Inhouse	0	07814202.jpg	Y	
2	0781-02-03	<a href="#">Design Review</a>	SPRING COMPRESSION (BIG)	1	N	Purchase	0	07810203.jpg	Y	
3	0781-70-04	<a href="#">Design Review</a>	O-RING (BIG)	1	N	Purchase	0	07817004.jpg	Y	
4	0781-42-05	<a href="#">Design Review</a>	HOLDER BUSH	1	N	Inhouse	0	07814205.jpg	Y	
5	0781-70-06	<a href="#">Design Review</a>	O-RING (SMALL)	1	N	Purchase	0	07817006.jpg	Y	
6	0781-21-07	<a href="#">Design Review</a>	PIN	1	N	Inhouse	0	07812107.jpg	Y	
7	0781-52-08	<a href="#">Design Review</a>	ASSEMBLY TERMINAL	1	N	Inhouse	0	07815208.jpg	Y	
8	0781-21-09	<a href="#">Design Review</a>	TERMINAL	2	N	Inhouse	0	07812109.jpg	Y	
9	0781-21-10	<a href="#">Design Review</a>	ADAPTOR	1	N	Purchase	0	07812110.jpg	Y	
10	0781-52-11	<a href="#">Design Review</a>	BUSH COVER	1	N	Inhouse	0	07815211.jpg	Y	
11	0781-27-12	<a href="#">Design Review</a>	FLAT CONTACT TERMINAL	2	N	Inhouse	0	07812712.jpg	Y	




# Development Status Review



**Gilard Electronics Pvt Ltd**  
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**NPD | User Function | Work on projects**

**Status of 2197-2124 (BATTERY SWITCH DPDT 24 V)** R-Required, S-Submitted, A-Approved

[Progressive Log](#)

Part No.	Drawing			Make/Buy	Source/RM source			Process	DRC			Tool No.	Tool Design			Tooling			Trial			Verification		
	R	S	A		R	S	A		R	S	A		R	S	A	R	S	A	R	S	A	R	S	A
Start Date	27-01-2018								27-01-2018				01-02-2018			05-02-2018			15-02-2018			15-02-2018		
EDC	11-02-2018								28-01-2018				03-03-2018			22-03-2018			06-04-2018			06-04-2018		
0016-02-01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Buy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		15-12	29-12			01-12	01-12			01-12	01-12												01-12	
0074-00-29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Buy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		22-05	22-05			22-05	22-05			22-05	22-05												22-05	
0074-00-33	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Buy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		22-05	22-05			22-05	22-05			22-05	22-05												22-05	
0080-01-52	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0080-02-28	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Buy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		26-03	26-03			22-03	26-03			22-03	09-02												26-03	
0080-02-29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Buy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Not required	Not Required	Not Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		26-03	26-03			22-03	26-03			22-03	09-02												26-03	



# Defining the Process

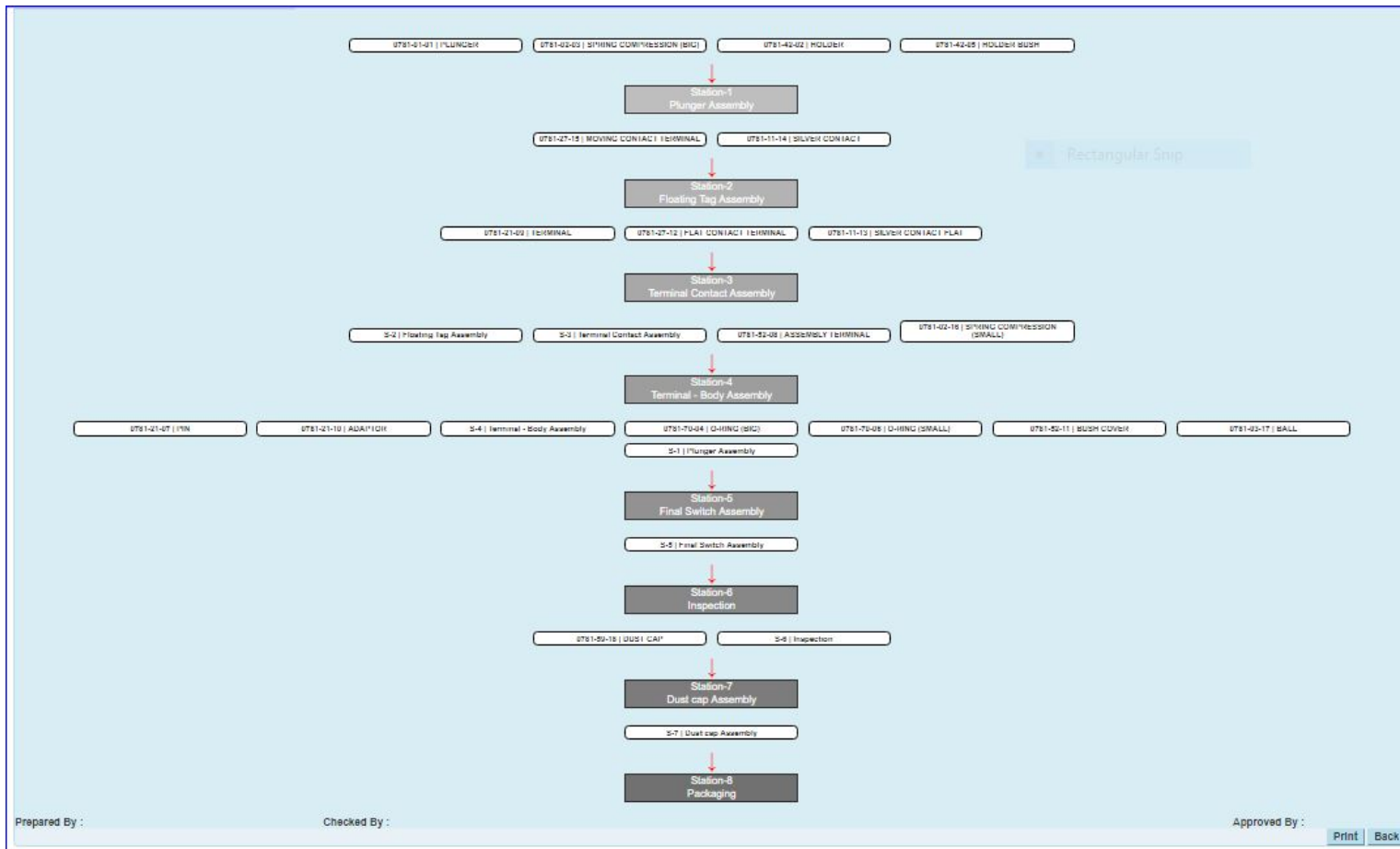
NPD | User Function | Work on Projects | PFC

**Process Flow Chart Of 781-01-NEUTRAL SAFETY SWITCH (NC TYPE)**


S.No.	Station No.	Process Name	Inputs	Add	Delete
1	S-1	Plunger Assembly	0781-01-01 (PLUNGER) 0781-02-03 (SPRING COMPRESSION (BIG)) 0781-42-02 (HOLDER) 0781-42-05 (HOLDER BUSH)	-Add- ▼	-Del- ▼
2	S-2	Floating Tag Assembly	0781-27-15 (MOVING CONTACT TERMINAL) 0781-11-14 (SILVER CONTACT)	-Add- ▼	-Del- ▼
3	S-3	Terminal Contact Assembly	0781-21-09 (TERMINAL) 0781-27-12 (FLAT CONTACT TERMINAL) 0781-11-13 (SILVER CONTACT FLAT)	-Add- ▼	-Del- ▼
4	S-4	Terminal - Body Assembly	S-2 (Floating Tag Assembly) S-3 (Terminal Contact Assembly) 0781-52-08 (ASSEMBLY TERMINAL) 0781-02-16 (SPRING COMPRESSION (SMALL))	-Add- ▼	-Del- ▼
5	S-5	Final Switch Assembly	0781-21-07 (PIN) 0781-21-10 (ADAPTOR) S-4 (Terminal - Body Assembly) 0781-70-04 (O-RING (BIG)) 0781-70-06 (O-RING (SMALL)) 0781-52-11 (BUSH COVER) 0781-03-17 (BALL) S-1 (Plunger Assembly)	-Add- ▼	-Del- ▼
6	S-6	Inspection	S-5 (Final Switch Assembly)	-Add- ▼	-Del- ▼
7	S-7	Dust cap Assembly	0781-59-18 (DUST CAP) S-6 (Inspection)	-Add- ▼	-Del- ▼
8	S-8	Packaging	S-7 (Dust cap Assembly)	-Add- ▼	-Del- ▼




# Process Flow Chart




# Process FMEA work sheet



**Gilard Electronics Pvt Ltd**  
Self Diagnostics : TBC = 0.00





Sanjiv Singh [User] [signout](#)

Pending Approvals

GAP Awesome Search.....

Home Sales Finance **NPD** Stores QA Purchase HRD PLM e-CAPA Dashboard TPM Mfg. IGI FGI TECH Support Payroll Doc Control Tool Room PCMD NBD

**NPD | User Function | Work on projects | Partlist | Child part detail | DFMEA**

**Process Failure Mode And Effects Analysis (PFMEA)** [Child Part PFMEA](#)

Item No.:	781-01	FMEA Number:	781-01	Description	NEUTRAL SAFETY SWITCH (NC TYPE)	
Process Responsibility	E2336(Talwinder Singh)	Date (Orig.):	17-11-2017	Date (Rev.):	17-11-2017	
Core Team:	Maninderjit Singh-E2324(DES)		Manvinder Kaur-E2227(HRD)		Prepared by	E2336(Talwinder Singh)
<a href="#">Add core team member</a>						<a href="#">Save</a>

If RPN >100,improvement is required. If SEVERITY=9 and RPN >36,improvement is required. If SEVERITY=8 and RPN >72,improvement is required.

Function	Potential Failure Mode	Potential Effects of Failure	Current Control		S	O	D	RPN	Improve RPN	Select to delete
			Occurrence	Detection						
Terminal - Body Assembly	Terminal not resting properly on its original position	Change in pre travel and over travel of the component	1. Length of terminal head is more	1. Inspection of Terminal by IGI	8	2	5	80	<input type="checkbox"/>	<input type="checkbox"/>
Plunger Assembly	1. Pre travel changes 2. Holder and Holder	Components gets dis-assembled and does not work	1. Length of plunger is less or more	1. 5 samples are approved	8	2	6	96	<input type="checkbox"/>	<input type="checkbox"/>
Final Switch Assembly	1. Flaring of adaptor is not proper	assembled piece will get dis-assembled on	1. Stroke length of press is not proper	1. 5 samples approval 2. Inspection of 10	8	2	5	80	<input type="checkbox"/>	<input type="checkbox"/>
Inspection	1. Pre travel and over	1. Does not work properly	1. Fatigue of Worker	1. Inspection of 10	8	2	5	80	<input type="checkbox"/>	<input type="checkbox"/>



it's awesome!



# Process FMEA print-out

Item no.		Description	NEUTRAL SAFETY SWITCH (NC TYPE)	Design Responsibility	Talwinder Singh(E2336)	Prepared By	Sanjiv Singh							
Date(Revision)	17-11-2017	Date(Original)	17-11-2017	Core Team	Maninderjit Singh-E2324(DES)	Manvinder Kaur-E2227(HRD)								
Function	Potential Failure Mode	Potential Effects of failure	Current Control				Improved Control							
			Occurrence	Detection	S	O	D	RPN	Occurrence	Detection	S	O	D	RPN
Terminal - Body Assembly	Terminal not resting properly on its original position	Change in pre travel and over travel of the component	1. Length of terminal head is more 2. Stroke length of press is not proper	1. Inspection of Terminal by IGI 2. 5 samples are approved 3. Gauge provided	8	2	5	80			1	1	1	1
Plunger Assembly	1. Pre travel changes 2. Holder and Holder bush cracks	Components gets dis-assembled and does not work	1. Length of plunger is less or more 2. Material is not as per specification 3. Material gets over heated	1. 5 samples are approved 2. Specification sheet of material is provided.	8	2	6	96			1	1	1	1
Final Switch Assembly	1. Flaring of adaptor is not proper	assembled piece will get dis-assembled on pressing of plunger with force	1. Stroke length of press is not proper	1. 5 samples approval 2. Inspection of 10 Pieces by inspector every AWO	8	2	5	80			1	1	1	1
			1. Fatigue of	1. Inspection of 10 samples by										



# Special Characteristics Matrix

		<b>Special Characteristics Matrix</b>			Date : 8th of June 2018 Time : 11:48:15 AM User : Sanjiv Singh				
Special characteristics is a product characteristics that can affect safety or compliance with Regulation, fit function, performance or subsequent process of product. Special characteristic can be classified as :									
(1) Safety Characteristics (S) : Are those which affects the product safety, operator safety and compliance with regulatory requirements. (2) Product Characteristics (A) : Are those which affect the aesthetics of product. (3) Fit and Function characteristics (F) : Are those which affect fit and function of product. (4) Environmental characteristics (E) : Are those which are affected by the environment.									
Item number	750-02	Description	Door Switch	Customer	C7453-SML ISUZU LIMITED				
Date(Original)	27-12-2017	Date(Revision)	24-03-2018	Responsibility:	Atul Vashisth (E2242)				
Core Team	Amandeep Singh Mann (E2244), NPD Neeraj Chand (E2317), NPD								
S.No.	Part No.	Dimension with Tolerance	SPL.CHR	Source Of SPL. CHAR.	Control of SPL. CHAR.				Action
					Marking in Drawing	Put in Control Plan	Put in Process Sheet	Conduct (cp / cpk)	
1.	0750-02-15	30.8±0.3	<F>	Function Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
2.		Wire Dia. 0.5 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
3.		No. of Turns-17	<F>	Function Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
4.		Spring Constant- 420N/M	<F>	Function Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
5.		5.0±0.1 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
6.	0750-27-12	5.5±0.1 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL
7.		2.3±0.1 mm	<F>	CAPA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DEL
8.		7.8±0.2 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DEL
9.		2.7±0.1 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DEL
10.		1.8±0.1 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DEL
11.		5.2±0.1 mm	<F>	Function Study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEL





# PDI Sheet



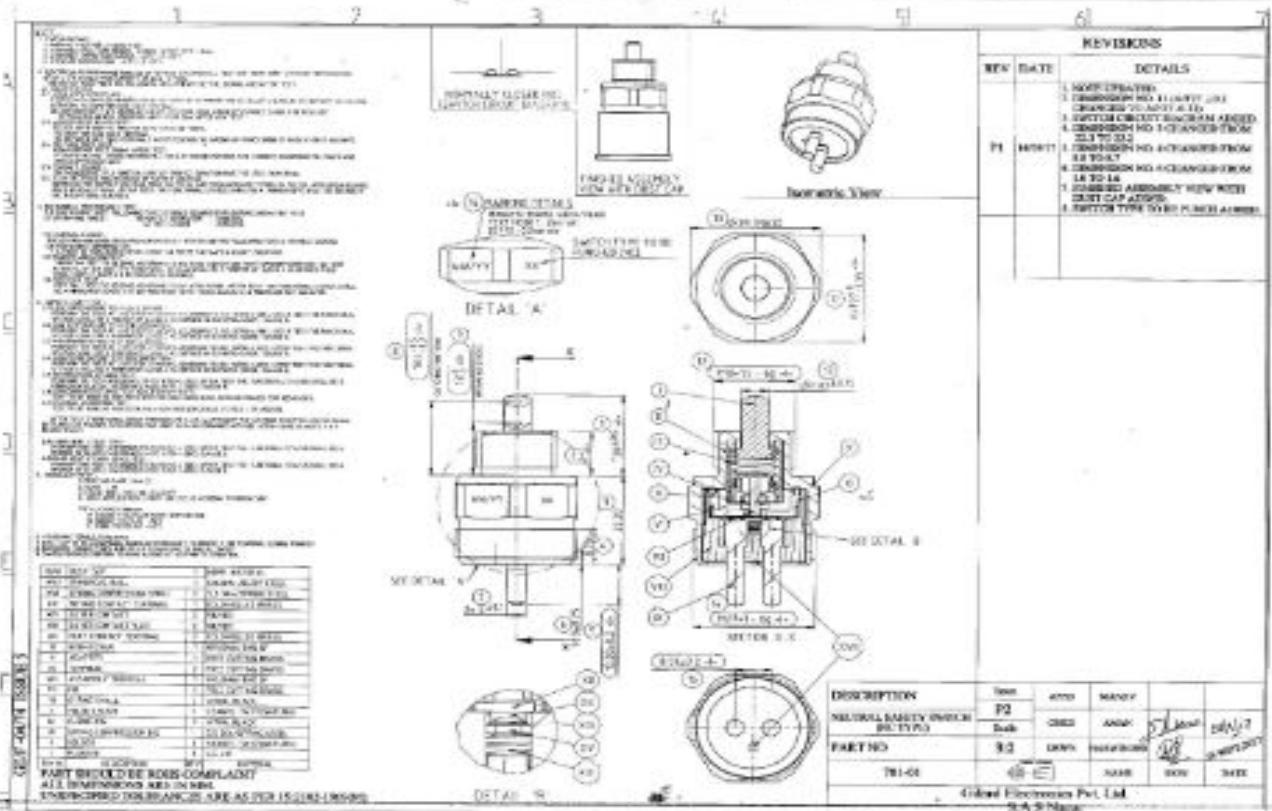
POI of 781-01

Date: 17-11-2017

(NEUTRAL SAFETY SWITCH (NC TYPE))

Time: 10:32:43am

GE Part:	781-01	Customer:	CI00524/INCOIL LIMITED
Part Name:	NEUTRAL SAFETY SWITCH (NC TYPE)		



REVISIONS		
REV	DATE	DETAILS
01	18/07/17	1. MODIFIED PARTS 2. DIMENSION NO. 11 CHANGED FROM 20 TO 22 3. SWITCH CONTACTS CHANGE FROM 22 TO 23 4. DIMENSION NO. 12 CHANGED FROM 10 TO 11 5. DIMENSION NO. 14 CHANGED FROM 27 TO 28 6. DIMENSION NO. 15 CHANGED FROM 8 TO 8.00 7. CHANGED ASSEMBLY VIEW WITH 10 SET CAP ACTION 8. SWITCH TYPE TO BE PLUG IN TYPE


REV	DATE	DESCRIPTION
01	18/07/17	INITIAL RELEASE
02	18/07/17	MODIFIED PARTS
03	18/07/17	MODIFIED PARTS
04	18/07/17	MODIFIED PARTS
05	18/07/17	MODIFIED PARTS
06	18/07/17	MODIFIED PARTS
07	18/07/17	MODIFIED PARTS
08	18/07/17	MODIFIED PARTS
09	18/07/17	MODIFIED PARTS
10	18/07/17	MODIFIED PARTS
11	18/07/17	MODIFIED PARTS
12	18/07/17	MODIFIED PARTS
13	18/07/17	MODIFIED PARTS
14	18/07/17	MODIFIED PARTS
15	18/07/17	MODIFIED PARTS
16	18/07/17	MODIFIED PARTS
17	18/07/17	MODIFIED PARTS
18	18/07/17	MODIFIED PARTS
19	18/07/17	MODIFIED PARTS
20	18/07/17	MODIFIED PARTS
21	18/07/17	MODIFIED PARTS
22	18/07/17	MODIFIED PARTS
23	18/07/17	MODIFIED PARTS
24	18/07/17	MODIFIED PARTS
25	18/07/17	MODIFIED PARTS
26	18/07/17	MODIFIED PARTS
27	18/07/17	MODIFIED PARTS
28	18/07/17	MODIFIED PARTS
29	18/07/17	MODIFIED PARTS
30	18/07/17	MODIFIED PARTS
31	18/07/17	MODIFIED PARTS
32	18/07/17	MODIFIED PARTS
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41	18/07/17	MODIFIED PARTS
42	18/07/17	MODIFIED PARTS
43	18/07/17	MODIFIED PARTS
44	18/07/17	MODIFIED PARTS
45	18/07/17	MODIFIED PARTS
46	18/07/17	MODIFIED PARTS
47	18/07/17	MODIFIED PARTS
48	18/07/17	MODIFIED PARTS
49	18/07/17	MODIFIED PARTS
50	18/07/17	MODIFIED PARTS

DESCRIPTION	REV	APPD	MAINT	CHKD	APPD	CHKD
NEUTRAL SAFETY SWITCH (NC TYPE)	02					
PART NO	02	DRWS	REVISIONS			
781-01						


S.no.	Parameter	Test method	Equipment	Acceptance	Samples				
					S1	S2	S3	S4	S5
<b>Appearance</b>									
18	MARKING DETAILS								
<b>Layout</b>									
1	DIMENSION	EC		20(+0.5)(-0.5)					
2	DIMENSION			11(+0.2)(-0.2)					
5	DIMENSION			10.00(+0.2)(-0.2)					
11	DIMENSION (A1)			27(+0.33)					
12	DIMENSION (M18 X 1.5 -BG)								
14	DIMENSION (M27 X1 -BG)								
15	DIMENSION			8.00(+0.2)(-0.2)					
<b>Performance</b>									
8	DIMENSION (SWITCHING POINT ON)			18.4(+0.5)(-0.5)					
9	DIMENSION (OPERATING STROKE)			13(-1)					

[Yes] [Back]


# Skills Required / G.a.p review



Gilard Electronics Pvt Ltd  
Self Diagnostics : TBC = 0.00



Pending Approvals



Sanjiv Singh [User] [signout](#)

GAP Awesome Search.....

Home
Sales
Finance
NPD
Stores
QA
Purchase
HRD
PLM
e-CAPA
Dashboard
TPM
Mfg.
IGI
FGI
TECH Support
Payroll
Doc Control
Tool Room
PCMD
NBD

NPD | User Functions | Work on Projects

Define Process, Stations & Skills for : 781-01 NEUTRAL SAFETY SWITCH (NC TYPE) --Select item to copy ▾

Unskilled ●
Medium Sikilled ●
High Skilled ●
Critical ●

Contact HRD Department to create team for this item.

Sr.No.	Station No.	Process Name	Skill Required	
1.	S-1	Terminal - Body Assembly	●	
2.	S-1	Plunger Assembly	●	
3.	S-2	Final Switch Assembly	●	
4.	S-3	Inspection	●	
5.	S-4	Dust cap Assembly	●	
6.	S-5	Packaging	●	

Sr.No	Ecode	Name	Dep	Sec.	Skill
1.	E0103	Neelam Devi	ASS	TEAM B	High Skill ▾
2.	E0923	Amarjit Kaur	ASS	TEAM B	High Skill ▾
3.	E0982	Bhavana	ASS	TEAM B	High Skill ▾
4.	E1253	Bhupinder Kaur	ASS	TEAM B	High Skill ▾
5.	E1734	Gursharan Kaur	ASS	TEAM B	Medium S ▾
6.	E0980	Karamjeet Kaur	ASS	TEAM B	High Skill ▾
7.	E1310	Pratima Gupta	ASS	TEAM B	Unskilled ▾
8.	E1658	Rajni	ASS	TEAM B	Medium S ▾
9.	E1512	Roshani	ASS	TEAM B	Medium S ▾
10.	E1378	Sapna Devi	ASS	TEAM B	Medium S ▾
11.	E1965	Sheetal Kumari	ASS	TEAM B	Unskilled ▾

[Update Skills](#)



# Skill Development Plan

 <small>Gilard Electronics Pvt Ltd</small>		Skill Level PLanning Sheet For Series 781-01					Date:17-11-2017		
Sr.No	E-Code	Name	As Is	Terminal - Body	Plunger Assembly	Final Switch	Inspection	Dust cap	Packaging
1	E0103	Neelam Devi	H	●	●	●	○	●	●
2	E0923	Amarjit Kaur	H		●				
3	E0980	Karamjeet Kaur	H		●				
4	E0982	Bhavana	H		●				
5	E1253	Bhupinder Kaur	H		●				
6	E1310	Pratima Gupta	U	●		○	●	●	
7	E1378	Sapna Devi	M		○	●			
8	E1512	Roshani	M		○	●			
9	E1658	Rajni	M		○	●			
10	E1734	Gursharan Kaur	M		○	●			
11	E1965	Sheetal Kumari	U	●		○	●	●	

Print Preview | Back



# PPAP documentation

The screenshot displays the Gilard Electronics PPT system interface. At the top left, the logo for GAP OSM is shown with the text "Gilard Electronics Pvt Ltd" and "Self Diagnostics : TBC = 0.00". A central banner features the text "new Product design" over an image of mechanical parts. The top right corner includes the "Gilard explore more..." logo and a user profile for "Sanjiv Singh [User]" with a "signin" button. Below the banner is a search bar labeled "GAP Awesome Search" and a "Pend" status indicator. A navigation menu contains various departmental links: Home, Sales, Finance, NPD, Stores, QA, Purchase, HRD, PLM, e-CAPA, Dashboard, TPM, Mfg., IGI, FGI, TECH Support, Payroll, Doc Control, Tool Room, PCMD, and NBD. The main content area is titled "PPAP Index" and contains 13 numbered, color-coded buttons representing different documentation types: 1. PPAP Checksheet (yellow), 2. PSW (orange), 3. Checking Aids (Instruments, Equipment and Gauges) (light green), 4. Process Capability Studies (pink), 5. Raw Material Suppliers (light green), 6. Child Part Suppliers (olive), 7. In-House Produced Parts (yellow), 8. Process Control Documents (LPA, Patrol Card, Process Sheet) (red), 9. Packing Standard (yellow), 10. Appearance Approval Report (pink), 11. Photo BOM (yellow), 12. Technical Sheet (orange), and 13. Raise Indents (green). At the bottom, a grid of smaller buttons lists various project management and quality control tasks: Part list, Costed BOM, Functions, DFMEA, Assy Process and skill development, PFC, PFMEA, Control Plan, PPAP, Inspection Sheet, PDI, Layout Inspection Sheet, DVP, Performance Test, SCM, PND, Status, and Project Sign Off.



# Thank you for your interest

- Please drop in an e-mail at :

[sanjiv@gaposm.com](mailto:sanjiv@gaposm.com) or

Call us at :

+91-9888111773

and talk to Mr.Sanjiv Singh to discuss the steps forward.

