



Inclusion Plotter - Diamond Processing

QP Code: G&J/Q4203

Version: 3.0

NSQF Level: 4

GJSCI || Gem Jewellery Skill Council of India, 4th Floor, Business Facilitation Centre, SEEPZ SEZ,
Andheri (E)

Mumbai 400096 || email:standards.qa@gjsci.org

Contents

G&J/Q4203: Inclusion Plotter - Diamond Processing	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
G&J/N9902: Maintain health and safety at workplace	5
G&J/N4201: Dop the diamond	9
G&J/N4203: Plot the Inclusions	13
Assessment Guidelines and Weightage	18
<i>Assessment Guidelines</i>	18
<i>Assessment Weightage</i>	19
Acronyms	20
Glossary	21

G&J/Q4203: Inclusion Plotter - Diamond Processing

Brief Job Description

Individuals on this job use different technologies such as M-Box, Immersion Glass (IG) and Galaxy, based on Helium/Sarin software, to view and manually or automatically plot different types of inclusions such as cloud, surface cavities, blind spots, pin point inclusion, 3D, flat cracks, curved cracks. Inclusion plotting helps the planner to determine that can be achieved in the cut stone, which will determine its ultimate value. Hence, precision is important in this job. Also known as Sorter or Plotter, the inclusion plotter plots different types of inclusions in a diamond on the computer model.

Personal Attributes

The job requires the individual to have: attention to details; good eyesight; ability to work for long hours in sitting position in front of the computer; high level of concentration; and a lot of patience

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [G&J/N9902: Maintain health and safety at workplace](#)
2. [G&J/N4201: Dop the diamond](#)
3. [G&J/N4203: Plot the Inclusions](#)

Qualification Pack (QP) Parameters

Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Diamond Planning
Country	India
NSQF Level	4
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/ 7313.1201

Minimum Educational Qualification & Experience	10th Class with 3 Years of experience relevant experience OR I.T.I ((After 10th)) with 1 Year of experience with 1-year relevant experience OR 12th Class with 1 Year of experience relevant experience OR NSQF level 3- Spectrum Operator with 2 years of relevant experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	
Version	3.0

G&J/N9902: Maintain health and safety at workplace

Description

This OS unit is about being aware of, communicating and taking steps towards minimizing potential hazards and dangers of accidents on the job and maintaining health and safety at workplace.

Elements and Performance Criteria

Health and safety in work area

To be competent, the user/individual on the job must be able to:

- PC1.** identify and use appropriate protective clothing/equipment for specific tasks and work
- PC2.** identify hazardous job activities in his/her job and communicate the possible causes of risks or accidents in the workplace
- PC3.** carry out safe working practices while dealing with hazards to ensure safety of self and others
- PC4.** identify and avoid doing any tasks or activities in a wrong posture
- PC5.** practice appropriate working postures to minimise occupational health related issues

Fire safety

To be competent, the user/individual on the job must be able to:

- PC6.** use the appropriate fire extinguishers on different types of fire
- PC7.** demonstrate rescue techniques applied during fire hazard
- PC8.** demonstrate good housekeeping in order to prevent fire hazards
- PC9.** demonstrate the correct use of any fire extinguisher

Emergencies, rescue and first aid procedures

To be competent, the user/individual on the job must be able to:

- PC10.** administer appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.
- PC11.** respond promptly and appropriately to an accident or medical emergency
- PC12.** participate in emergency procedures such as raising alarm, safe evacuation, correct means of escape, correct assembly point etc.,

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys policies on: safety and hazards and personnel management
- KU2.** names and location of documents that refer to health and safety in work place
- KU3.** reporting structure
- KU4.** meaning of hazards and risks
- KU5.** health and safety hazards commonly present in the work place and related precautions
- KU6.** various dangers associated with use of electrical equipment
- KU7.** preventative and remedial actions to be taken in case of exposure to toxic material
- KU8.** methods of accident prevention

- KU9.** how different chemicals react and the related hazards
- KU10.** how to use machines and tools without causing any accident
- KU11.** importance of using protective clothing/ equipment while working
- KU12.** precautionary activities to prevent the fire accident
- KU13.** various causes of fire
- KU14.** techniques of using different fire extinguishers
- KU15.** different materials used for extinguishing fire
- KU16.** rescue techniques applied during a fire hazard
- KU17.** various types of safety signs and their meaning
- KU18.** appropriate basic first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.,
- KU19.** casualty lifting in case of an accident caused to a person

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and comprehend basic content to read labels, charts, signages
- GS2.** read and comprehend basic english to read manuals of operations
- GS3.** communicate effectively the risk of not following safety measures
- GS4.** respond to emergencies/accidents, by taking an appropriate and timely decision
- GS5.** organize work schedule, work area, tools, equipment and material to minimize health and safety risk
- GS6.** ensure appropriate action in case of any emergencies, accidents or fire at the work location
- GS7.** analyze untoward incidents from the past and implement correct use of machines, tools or hazardous chemicals
- GS8.** critically analyze the processes carried out by self and colleagues in the department to spot potential hazards and safety issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Health and safety in work area</i>	1	7	-	-
PC1. identify and use appropriate protective clothing/equipment for specific tasks and work	-	2	-	-
PC2. identify hazardous job activities in his/her job and communicate the possible causes of risks or accidents in the workplace	-	1	-	-
PC3. carry out safe working practices while dealing with hazards to ensure safety of self and others	-	1	-	-
PC4. identify and avoid doing any tasks or activities in a wrong posture	-	2	-	-
PC5. practice appropriate working postures to minimise occupational health related issues	1	1	-	-
<i>Fire safety</i>	-	6	-	-
PC6. use the appropriate fire extinguishers on different types of fire	-	1	-	-
PC7. demonstrate rescue techniques applied during fire hazard	-	2	-	-
PC8. demonstrate good housekeeping in order to prevent fire hazards	-	1	-	-
PC9. demonstrate the correct use of any fire extinguisher	-	2	-	-
<i>Emergencies, rescue and first aid procedures</i>	2	4	-	-
PC10. administer appropriate first aid procedure to victims wherever required eg.in case of bleeding, burns, choking, electric shock etc.	-	1	-	-
PC11. respond promptly and appropriately to an accident or medical emergency	1	2	-	-
PC12. participate in emergency procedures such as raising alarm, safe evacuation, correct means of escape, correct assembly point etc.,	1	1	-	-
NOS Total	3	17	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N9902
NOS Name	Maintain health and safety at workplace
Sector	Gem & Jewellery
Sub-Sector	Jewellery Retail, Cast and diamonds-set jewellery
Occupation	Appraising and Valuation
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQ Clearance Date	24/02/2022

G&J/N4201: Dop the diamond

Description

This OS unit is about fixing rough diamond on dop or stage or die pin or mould using adhesives, as per the marking and for plotting the inclusions in a diamond

Scope

The scope covers the following :

- This unit/task covers the following:
- Doping the rough diamond on the stage or pin
- Achieving Productivity

Elements and Performance Criteria

To be competent, the user/individual on the job must be able to:

- PC1.** ensure accurate fixing of rough as per the plotting technique
- PC2.** ensure accurate alignment and level the rough as per marking
- PC3.** clean rough as instructed
- PC4.** create mould as per the size of the rough
- PC5.** ensure that there are no inclusion and cavities on the upside and downside of the fixed rough
- PC6.** achieve the productivity in terms of carats or number of pieces as set by the company
- PC7.** ensure timely delivery for further processing
- PC8.** ensure no damage to the rough diamond is caused during fixing, removal or cleaning process

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys policies on: acceptable limits of weight loss; incentives; delivery standards; safety practices and hazards; security and performance measurement
- KU2.** nondisclosure of confidential information provided by the company either orally or in writing marked as confidential
- KU3.** liability arising out of loss, theft, or inadvertent disclosure of confidential information
- KU4.** work flow involved in companys diamond processing
- KU5.** importance of the individuals role in the workflow
- KU6.** reporting structure
- KU7.** issue return procedures followed by the company
- KU8.** basic characteristics of a diamond
- KU9.** cleaning the rough surface prior to doping or fixing using sodium hydroxide solution heated to 1000c and water respectively
- KU10.** how the rough needs to be fixed along the marking to achieve the plotting objective
- KU11.** accurate fixing of roughs on dop/stage/mould as per plotting technique

- KU12.** heat requirements such temperature, duration for different adhesives
- KU13.** cleaning techniques of the rough using different chemicals and ultrasonic cleaner
- KU14.** melting the immersion glass and mould making procedure for ig
- KU15.** potential work hazards
- KU16.** various tools and machines such as vacuum pump oven etc to be used for the fixing process, its hazards and maintenance
- KU17.** use of magnifying camera with screen or an eye glass in order to check alignment
- KU18.** to work in a safe environment, i.e., without injuries
- KU19.** to avoid finger prints on the mould
- KU20.** to apply whitener properly

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** to document work done for status and performance appraisal
- GS2.** read and understand the reading on different meters/scales
- GS3.** read the manuals for machines
- GS4.** read descriptions on the diamond packets/ bags
- GS5.** discuss task, schedules, and work-loads with co-workers and supervisors
- GS6.** understand instructions and report problems
- GS7.** share work load as required
- GS8.** assist others who require help
- GS9.** make decisions pertaining to the order of fixing roughs in the pins/stage
- GS10.** decide the heating requirements
- GS11.** judge the required quantum of gas in the machine
- GS12.** decide the size required for the mould
- GS13.** choose the direction of fixing in case the marking is not provided
- GS14.** plan and organize the tools work desk for efficient work management
- GS15.** minimize damage or loss of any diamond during the doping process
- GS16.** identify the factors such as quality of the glue, tools and machines used, that contribute to the fixing of roughs
- GS17.** suggest improvements in order to reduce loss
- GS18.** spot process disruptions and delays

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	5	15	-	-
PC1. ensure accurate fixing of rough as per the plotting technique	1	1	-	-
PC2. ensure accurate alignment and level the rough as per marking	1	3	-	-
PC3. clean rough as instructed	-	2	-	-
PC4. create mould as per the size of the rough	1	2	-	-
PC5. ensure that there are no inclusion and cavities on the upside and downside of the fixed rough	1	3	-	-
PC6. achieve the productivity in terms of carats or number of pieces as set by the company	-	2	-	-
PC7. ensure timely delivery for further processing	-	1	-	-
PC8. ensure no damage to the rough diamond is caused during fixing, removal or cleaning process	1	1	-	-
NOS Total	5	15	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N4201
NOS Name	Dop the diamond
Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Diamond Planning
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	24/11/2017
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

G&J/N4203: Plot the Inclusions

Description

This OS unit is about using manual or automatic technology to plot various inclusions in the rough on a computer model to help in planning

Scope

The scope covers the following :

- This unit/task covers the following:
- Preparing the rough for plotting
- Operating the plotting machine and software
- checking the quality of plotting Achieving productivity

Elements and Performance Criteria

Preparing the rough for plotting

To be competent, the user/individual on the job must be able to:

- PC1.** check, determine and mark the diamond for fixing on the stage or die pin
- PC2.** ensure that there are no inclusion and cavities on the upside and downside
- PC3.** assess that the marking is correct for the plotting required
- PC4.** check the alignment of the fixed rough on the holder with respect to marking
- PC5.** detect the inclusions which are not marked automatically by the machine

Operating the Plotting Machine and Software

To be competent, the user/individual on the job must be able to:

- PC6.** ensure accurate placement of the dop / stage in the machine
- PC7.** ensure accurate scanning of the rough for plotting inclusions
- PC8.** ensure accurate download and share files server
- PC9.** rectify any faulty plotting done by auto plotter on the diamond

Checking the quality of Plotting

To be competent, the user/individual on the job must be able to:

- PC10.** ensure accurate marking of rough for fixing
- PC11.** ensure accurate plotting of all inclusions, with no mistakes and need for re-work
- PC12.** ensure correct bagging and labelling of the roughs before returning

Achieving productivity

To be competent, the user/individual on the job must be able to:

- PC13.** achieve the productivity in terms of carats or number of pieces as set by the company
- PC14.** achieve timely delivery for further processing
- PC15.** maintain cycle time
- PC16.** minimize damage, weight loss and breakage

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policies on: acceptable limits of weight loss; incentives; delivery standards; safety practices and hazards; security and performance measurement
- KU2.** nondisclosure of confidential information provided by the company either orally or in writing marked as confidential
- KU3.** liability arising out of loss, theft, or inadvertent disclosure of confidential information
- KU4.** work flow involved in company's diamond processing
- KU5.** importance of the individual's role in the workflow
- KU6.** reporting structure
- KU7.** issue return procedures followed by the company
- KU8.** 4cs of a diamond and its characteristics
- KU9.** marking and fixing of a rough
- KU10.** laser mapping
- KU11.** model making
- KU12.** cavity mapping
- KU13.** operating the m-box, ig and galaxy machines
- KU14.** using the different plotting software used for helium and sarin technologies
- KU15.** colour grading of a diamond
- KU16.** different type of inclusions in a diamond
- KU17.** spectrum operations
- KU18.** potential work hazards
- KU19.** computer operations
- KU20.** file sharing on the server
- KU21.** use of various scopes in diamond processing
- KU22.** how to apply whitener on rough to cover all surfaces
- KU23.** repair work

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** document work done for status and performance appraisal
- GS2.** report diamond losses via documentation as per company policy
- GS3.** read the manuals for operating machines and software
- GS4.** read descriptions on the diamond packets/ bags
- GS5.** discuss task lists, schedules, and work-loads with co-workers
- GS6.** understand instructions and report problems
- GS7.** share work load as required
- GS8.** assist others who require help
- GS9.** train the helpers to learn plotting
- GS10.** differentiate different type of inclusions, e.g. decide what is a cloud
- GS11.** decide which inclusions are important and must be plotted

- GS12.** use auto plotting for a particular stone, if manual is too time consuming
- GS13.** decide colour and clarity
- GS14.** make marking for fixing
- GS15.** to plan work for maximum productivity
- GS16.** suggest improvements in order to reduce loss
- GS17.** rectify defects occurred in plotting
- GS18.** assess accuracy of the marking for fixing and alignment of fixed rough
- GS19.** assess accuracy of plotting
- GS20.** identify solutions to avoid delays because of machine failure
- GS21.** spot process disruptions and delays

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Preparing the rough for plotting</i>	2	6	-	-
PC1. check, determine and mark the diamond for fixing on the stage or die pin	-	1	-	-
PC2. ensure that there are no inclusion and cavities on the upside and downside	1	1	-	-
PC3. assess that the marking is correct for the plotting required	1	1	-	-
PC4. check the alignment of the fixed rough on the holder with respect to marking	-	1	-	-
PC5. detect the inclusions which are not marked automatically by the machine	-	2	-	-
<i>Operating the Plotting Machine and Software</i>	4	9	-	-
PC6. ensure accurate placement of the dop / stage in the machine	1	3	-	-
PC7. ensure accurate scanning of the rough for plotting inclusions	1	3	-	-
PC8. ensure accurate download and share files server	1	1	-	-
PC9. rectify any faulty plotting done by auto plotter on the diamond	1	2	-	-
<i>Checking the quality of Plotting</i>	2	9	-	-
PC10. ensure accurate marking of rough for fixing	1	3	-	-
PC11. ensure accurate plotting of all inclusions, with no mistakes and need for re-work	-	4	-	-
PC12. ensure correct bagging and labelling of the roughs before returning	1	2	-	-
<i>Achieving productivity</i>	1	7	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. achieve the productivity in terms of carats or number of pieces as set by the company	1	1	-	-
PC14. achieve timely delivery for further processing	-	2	-	-
PC15. maintain cycle time	-	2	-	-
PC16. minimize damage, weight loss and breakage	-	2	-	-
NOS Total	9	31	-	-

National Occupational Standards (NOS) Parameters

NOS Code	G&J/N4203
NOS Name	Plot the Inclusions
Sector	Gem & Jewellery
Sub-Sector	Diamond Processing
Occupation	Diamond Planning
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	24/11/2017
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
G&J/N9902.Maintain health and safety at workplace	3	17	-	-	20	10
G&J/N4201.Dop the diamond	5	15	-	-	20	30
G&J/N4203.Plot the Inclusions	9	31	-	-	40	60
Total	17	63	-	-	80	100

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.