

## QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR INFRASTRUCTURE EQUIPMENT INDUSTRY

### What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

#### Contact Us:

Infrastructure  
Equipment Skill Council  
Email ID

[:standards@iescindia.co](mailto:standards@iescindia.com)

[m](mailto:standards@iescindia.com)

Ph no: +91 80 4212  
6666



### Contents

1. Introduction and Contacts..... Page no. 1
2. Qualifications Pack.....Page no.2
3. OS Units.....Page no.2
4. Glossary of Key Terms .....Page no.3

### Introduction

## Qualification Pack - Hydra Crane Operator

<b>SECTOR:</b>	INFRASTRUCTURE EQUIPMENT
<b>SUB SECTOR:</b>	Equipment Operations
<b>OCCUPATION:</b>	Operator
<b>REFERENCE ID:</b>	IES/Q0108
<b>ALIGNED TO:</b>	NCO-2004/ 8333.18

**Brief Job Description:**A Hydra Crane Operator operates a moving crane to lift, move, position, and reposition loads. Responsible for operating Tele handler to move, locate, relocate, stack & count merchandise.

**Personal Attributes:**This job requires the individual to have good hand eye coordination as also comply with industry regulations. Willingness to work, strong work ethics, and courteous behavior with co – workers are equally desirable. He should also be physically agile, strong, have good eye sight and not suffer from colour-blindness.

<b>Job Details</b>	<b>Qualifications Pack Code</b>	<b>IES/Q0108</b>		
	<b>Job Role</b>	<b>Hydra Crane Operator</b>		
	<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
	<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>16/02/15</b>
	<b>Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>31/03/15</b>
	<b>Occupation</b>	<b>Operator</b>	<b>Next review date</b>	<b>31/03/17</b>
	<b>Job Role</b>	<b>Hydra Crane Operator</b>		
<b>Role Description</b>	A Hydra Crane Operator operates a moving crane to lift, move, position, and reposition loads. Responsible for operating Tele handler to move, locate, relocate, stack & count merchandise.			
<b>NSQF level</b>	4			
<b>Minimum Educational Qualifications*</b>	Preferably Class VIII			
<b>Maximum Educational Qualifications*</b>	NA			
<b>Training</b> (Suggested but not mandatory)	Certification Training in Hydra Crane operations preferred. Must have a valid Heavy Commercial Vehicle Driving License (HCV)			
<b>Experience</b>	In lieu of minimum qualification, the incumbent should have 2 years of experience inoperating hydra crane.			
<b>Applicable National Occupational Standards (NOS)</b>	<p><b>Compulsory</b></p> <ol style="list-style-type: none"> <li><a href="#">IES/N0122Carry out pre-operation checks on hydra crane</a></li> <li><a href="#">IES/N0123Operate Hydra Crane</a></li> <li><a href="#">IES/N0124Perform routine maintenance and troubleshooting of Hydra Crane</a></li> <li><a href="#">IES/N7601Comply with worksite health and safety guidelines</a></li> </ol> <p><b>Optional:</b> N.A.</p>			
<b>Performance Criteria</b>	As described in the relevant OS units			

Definition

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses 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.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential to fulfil achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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; he/she needs to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria 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 Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification 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 find the required one.
Scope	Scope is the 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 the quality of required performance.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform up to the required standard.

Acronyms	Keywords /Terms	Description
	OS	Occupational Standard(s)
	NOS	National Occupational Standard(s)
	QP	Qualifications Pack
	NSQF	National Skill Qualifications Framework
	ITI	Industrial Training Institute
	HCV	Heavy Commercial Vehicle
	SHE	Safety Health and Environment
	SOP	Standard Operating Procedure
	TBD	To Be Determined

# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to prepare the Hydra crane for operation.

National Occupational Standards

IES/N0122

Carry out pre-operation checks on hydra crane

National Occupational Standard

<b>Unit Code</b>	IES/N0122
<b>Unit Title (Task)</b>	Carry out pre-operation checks on hydra crane
<b>Description</b>	This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to prepare the Hydra crane for operation.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Pre-operation checks</li> <li>• Documentation and Reporting</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Pre- operation checks</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Adhere to time limits given by supervisor</p> <p>PC2. Inspect the crane body to ensure that the components are free of cracks and wear</p> <p>PC3. Checks that all decals are legible and in place as per operation manual</p> <p>PC4. Examine the hydraulic oil level to ensure no leaks and oil level are as per manufacturer's indicator</p> <p>PC5. Examine battery fluid to ensure proper fluid level as per manufacturer's indicator</p> <p>PC6. Check the tyre pressure and lug nut torque to make sure they are as per manufacturer's indicator</p> <p>PC7. Confirm for no engine oil leaks and proper fuel and fluid levels, as per manufacturer's indicator</p> <p>PC8. Check the holding and control breaks to ensure that they are functioning properly</p> <p>PC9. Get the following components checked for areas for damage, improperly installed or missing parts as per the manufacturer 's manual:</p> <ul style="list-style-type: none"> <li>• Electrical components, wiring and electrical cables</li> <li>• Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds.</li> <li>• Tires and wheels</li> <li>• Trailer lights and reflectors</li> <li>• Parking brake, and electric braking system (including the breakaway system)</li> <li>• Drive wheel and motor</li> </ul> <p>PC10. Check to ensure that the following components as per operation manual:</p> <ul style="list-style-type: none"> <li>• Hoist</li> <li>• Wheels</li> <li>• Limit switches</li> <li>• Pins, nuts, bolts and other fasteners</li> <li>• Hitch components</li> <li>• Safety chains</li> </ul>

National Occupational Standards

IES/N0122

**Carry out pre-operation checks on hydra crane**

	<ul style="list-style-type: none"> <li>• Engines their fuel systems and related components</li> <li>• Hoist</li> <li>• Personal protective devices</li> </ul> <p>PC11. Check and ensure that all structural and other critical components are present as per operation manual</p> <p>PC12. Approve that all associated fasteners and pins are in place and properly tightened as per operation manual</p> <p>PC13. Inspect entire machine for:</p> <ul style="list-style-type: none"> <li>• Cracks in welds or structural components</li> <li>• Excessive rust, corrosion or oxidation</li> <li>• Dents or damage to machine</li> </ul>
<p><b>Documentation and Reporting</b></p>	<p>PC14. Maintain a checking/maintenance logbook to record all activities performed before starting the excavator</p> <p>PC15. Report defects precisely to the supervisor if beyond scope of his role</p>
<p><b>Knowledge and Understanding (K)</b></p>	
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to Breakdown &amp; Maintenance services</p> <p>KA2. The performance standards &amp; procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Escalation matrix for reporting unresolved problems</p> <p>KA5. Timeframe in which the complaint/problem should be resolved</p> <p>KA6. Work target and review mechanism with supervisor for obtaining/giving feedback related to performance process</p> <p>KA7. Location of tools</p> <p>KA8. Contact person in case of queries on procedure or products</p> <p>KA9. Location and process for storage and disposal of waste material</p> <p>KA10. Safety Policy of the company</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Hydra cranes and its use and function</p> <p>KB2. Introduction to engine, transmission, their use and function</p> <p>KB3. Different types of hydraulic mechanisms</p> <p>KB4. Significance of greasing and oiling parts of crane that need routine lubrication</p> <p>KB5. Instrument panel, their location and operation</p> <p>KB6. Hoists and its extensions</p> <p>KB7. Controls, levers and switches in order to operate the crane properly</p> <p>KB8. Engine, Hydraulic &amp; Electrical functions of a mobile crane</p> <p>KB9. Visual checks to identify damage, defects, cracks or leaks beforehand</p>
<p><b>Skills (S)</b></p>	
<p><b>A. Core Skills / Generic Skills</b></p>	<p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Record any deviations/ incidents as per prescribed norms</p> <p><b>Reading Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. Read and comprehend basic English to read manuals of operations</p>



National Occupational Standards

IES/N0122

**Carry out pre-operation checks on hydra crane**

	SA3. Read instructions, guidelines/procedures/rules related to the worksite and equipment operations
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to:
	SA4. Give clear instructions to co-workers, subordinates and other personnel
	SA5. Use correct technical terms while interacting with supervisor
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to:
	SB1. Decide when to conduct maintenance checks
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to:
	SB2. Work with supervisors/ team mates to carry out work related tasks
	SB3. Plan work according to the required schedule and location
	SB4. Plan for cleaning and lubricating the hydra crane every day
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to:
	SB5. Provide service of the highest order to ensure customer satisfaction
	<b>Problem Solving</b>
	The user/ individual on the job needs to know and understand how to:
SB6. Identify immediate or temporary solutions to resolve mechanical issues	
SB7. Judge when to seek assistance from supervisor	
<b>Analytical Thinking</b>	
The user/ individual on the job needs to know and understand how to:	
SB8. Identify cause and effect relations in his area of work	
<b>Critical Thinking</b>	
The user/ individual on the job needs to know and understand how to:	
SB9. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently	

**NOS Version Control**

<b>NOS Code</b>	<b>IES/N0122</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>16/02/15</b>
<b>Industry Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>31/03/15</b>
<b>Occupation</b>	<b>Operator</b>	<b>Next review date</b>	<b>31/03/17</b>

[Back To Top](#)

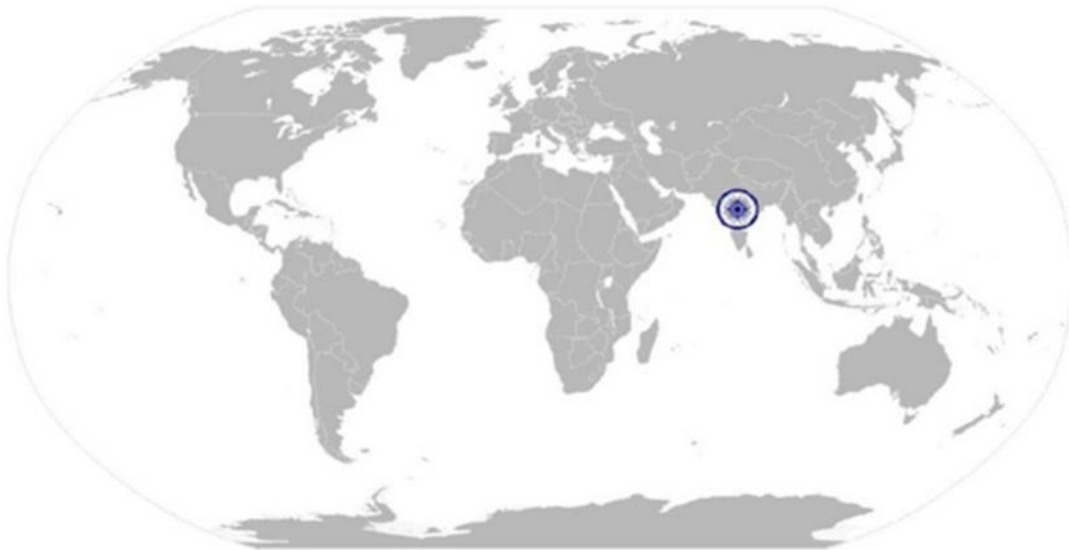


IES/N0123

Operate Hydra Crane

---

# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for operating a Hydra Crane.

**IES/N0123**

**Operate Hydra Crane**

<b>Unit Code</b>	<b>IES/N0123</b>
<b>Unit Title (Task)</b>	<b>Operate Hydra Crane</b>
<b>Description</b>	This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for operating a Hydra Crane.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Start Hydra Crane operations</li> <li>• Loading and hauling of the load</li> <li>• Stacking</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Start Hydra Crane operations</b>	To be competent, the user/individual on the job must be able to: PC1. Plan and organize the job according to given instructions PC2. Position the hook to attach sling, shackle and chains as per operation's manual PC3. Start the engine as per operation's manual PC4. Check the assembly and ensure that relevant safety measures as per safety guidelines taken PC5. Use the emergency stop button to disable all power to the hydra crane in case of a crisis, as per operator manual
<b>Loading and hauling of the load</b>	PC6. Ensure safe working load as per operation manual PC7. Check wind speeds are within the crane's operational limits PC8. Select the appropriate boom, jib, as per the load, site and lift conditions PC9. Ensure appropriate boom extension as per operation manual PC10. Hoist and release the load at a small height to check the holding and control breaks are functioning properly, ahead of the actual lifting PC11. Carry out lifting of load in coordination with rigger as per the requirement PC12. Monitor stability whilst moving a load PC13. Ensure good visibility of both ends of the crane arm at all times PC14. Ensure no obstacles, personnel or other obstructions during lifting operation PC15. Look out for people working and hazards such as trenches, potholes and cables PC16. Adhere to time limits given by the supervisors PC17. Perform in-operation visual checks on critical temperature and pressure gauges as per operation manual PC18. Select and use the right type of brake in different situations and conditions as per the operation manual PC19. Ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed PC20. Utilize judiciously various signaling devices available in the crane PC21. Keep a safe distance from other plant or vehicles PC22. Work safely in accordance with operational requirements and associated Safe Systems of Work
<b>Stacking</b>	PC23. Discharge the load safely at the position and in the manner designated

**IES/N0123**

**Operate Hydra Crane**

	<p>by the supervisor</p> <p>PC24. Follow the instructions by the rigger</p> <p>PC25. Operate and control the boom and extensions as per operation manual</p> <p>PC26. Ensure lay down area is sufficient in size to accommodate load</p> <p>PC27. Ensure lay down area is clear of any obstruction and</p> <p>PC28. Ensure that no other operators travel on or stand near the Hydra Crane</p> <p>PC29. Inform supervisor/rigger of any problems while operating the Hydra Crane</p> <p>PC30. Shut down and secure the machine properly when it is unattended</p>
<b>Knowledge and Understanding (K)</b>	
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to Breakdown &amp; Maintenance services</p> <p>KA2. The performance standards &amp; procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Escalation matrix for reporting unresolved problems</p> <p>KA5. Timeframe in which the complaint/problem should be resolved</p> <p>KA6. Work target and review mechanism with supervisor for obtaining/giving feedback related to performance process</p> <p>KA7. Location of tools</p> <p>KA8. Contact person in case of queries on procedure or products</p> <p>KA9. Location and process for storage and disposal of waste material</p> <p>KA10. Safety Policy of the company</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Equipment load capacity limitations</p> <p>KB2. Methods to read load charts and accurately determine the load to be lifted</p> <p>KB3. The causes of equipment related accidents and associated preventative measures</p> <p>KB4. The manufacturer's criteria for equipment operations</p> <p>KB5. The manufacturer's criteria for equipment modifications</p> <p>KB6. Usage of attachments available as ad-ons with the main crane</p> <p>KB7. Method of appropriate rigging hardware and slings</p> <p>KB8. Usage of Different types of rigging configurations</p> <p>KB9. Load hook-up points</p> <p>KB10. Types of material, methods and tools involved in the construction or repair of buildings, roads, heavy engineering equipment, oil wells, metro etc. where cranes are used.</p> <p>KB11. Techniques of hoisting operation</p> <p>KB12. Method of safe rigging</p> <p>KB13. The method of checking holding and control brakes</p> <p>KB14. Usage of rigging hardware and tool</p> <p>KB15. Multi-crane operations</p> <p>KB16. Conditions and hazards that may impact crane stability</p> <p>KB17. Crane tipping prevention techniques.</p> <p>KB18. Methods to communicate through hand signals</p>

## IES/N0123

## Operate Hydra Crane

	<p>KB19. Government rules and other rules prescribed under safety standards related to crane operations</p> <p>KB20. Introduction to engine, transmission, their use and function</p> <p>KB21. Different types of hydraulic mechanisms</p> <p>KB22. Instruments panel, their location and operation</p> <p>KB23. Controls, levers and switches in order to operate the Hydra Crane properly</p> <p>KB24. Visual checks to identify damage, defects or leaks beforehand</p> <p>KB25. Usage of All safety signs and other emergency signals</p> <p>KB26. The location and use of the emergency stop button</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. Record any deviations/ incidents as per prescribed norms
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. Read and comprehend basic English to read manuals of operations SA3. Interpret stakes and signage on the road and during worksite operations SA4. Read instructions, guidelines/procedures/rules related to the worksite and equipment operations
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to: SA5. Give clear instructions to co-workers, subordinates and other personnel SA6. Use correct technical terms while interacting with supervisor
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to: SB1. Assess for any damage/faulty component in the hydra crane and take action accordingly SB2. Decide when to perform appropriate driving operations i.e. forward, reverse, 'U' turn, tight spot
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to: SB3. Work with supervisors/ team mates to carry out work related tasks SB4. Plan work according to the required schedule and location
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to: SB5. Provide service of the highest order to ensure customer satisfaction
	<b>Problem Solving</b>
	The user/ individual on the job needs to know and understand how to: SB6. Identify immediate or temporary solutions to resolve mechanical issues SB7. Judge when to seek assistance from supervisor
	<b>Analytical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB8. Identify possible ways to improve operational efficiency SB9. Suggest methods to avoid accidents/errors while operating machine
<b>Critical Thinking</b>	

## IES/N0123

## Operate Hydra Crane

	The user/ individual on the job needs to know and understand how to: SB10. Analyse, evaluate and apply the information gathered from observation,experience,reasoning, or communication to act efficiently
--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## NOS Version Control

<b>NOS Code</b>	<b>IES/N0123</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>16/02/15</b>
<b>Industry Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>31/03/15</b>
<b>Occupation</b>	<b>Operator</b>	<b>Next review date</b>	<b>31/03/17</b>

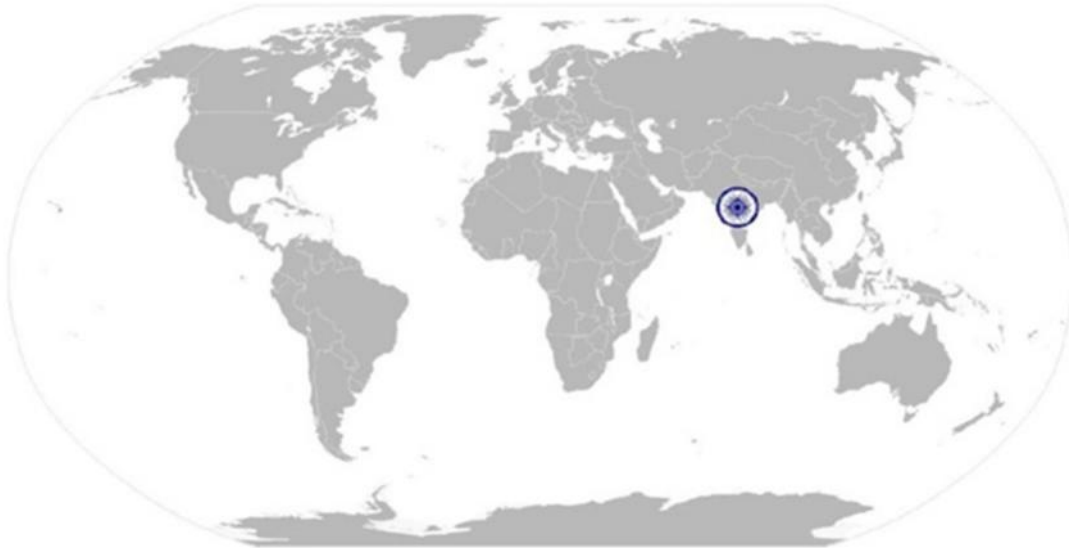
[Back To Top](#)



**IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane**

---

# National Occupational Standard



## Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting on the Hydra Crane.



**IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane**

National Occupational Standard

<b>Unit Code</b>	<b>IES/N0124</b>
<b>Unit Title (Task)</b>	<b>Perform routine maintenance and troubleshooting of Hydra Crane</b>
<b>Description</b>	This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting on the Hydra Crane.
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Routine maintenance</li> <li>• Basic diagnostics and troubleshooting</li> <li>• Documentation and Reporting</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Routine maintenance</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Assess the right service schedule by tracking machine operating hours</p> <p>PC2. Check Crane Structure and the following accessories as per operation &amp; maintenance manual</p> <p>PC3. Check Crane structure for deformed, cracked or corroded members in the structure and boom.</p> <ul style="list-style-type: none"> <li>• Loose bolts or rivets.</li> <li>• Excessive wear on brake and clutch system parts.</li> <li>• Deformed wedges.</li> <li>• Defective cotter keys, pins and guardrails.</li> </ul> <p>PC4. Check for the following in hydraulic system of Cranes as per operation &amp; maintenance manual:</p> <ul style="list-style-type: none"> <li>• Deterioration or leakage in air or hydraulic systems</li> <li>• Safe and effective operation on hoses, pumps and motors</li> <li>• Levels of fluid</li> <li>• Air cleaners for replacement or cleaning</li> </ul> <p>PC5. Check for the following Control Mechanisms and Monitoring Devices as per operation &amp; maintenance manual</p> <ul style="list-style-type: none"> <li>• Cables, brakes and levers for poor adjustment or excessive wear.</li> <li>• Marking on the load/radius indicator over full range.</li> <li>• Load moment indicator,</li> <li>• Boom angle indicator,</li> <li>• Boom length indicator and</li> <li>• Anti two-block system</li> </ul> <p>PC6. Check wire ropes for wear and tear</p> <p>PC7. Check the following in the main boom as per operation manual</p> <ul style="list-style-type: none"> <li>• lift cylinder(s)</li> <li>• telescoping cylinder(s)</li> <li>• hydraulic hoses / tubing &amp; fittings</li> <li>• holding device</li> <li>• boom sections alignment</li> <li>• auxiliary boom head structure</li> </ul> <p>PC8. Check the following in the Lattice boom extension</p>

**IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane**

	<ul style="list-style-type: none"> <li>• Boom</li> <li>• extension alignment</li> <li>• cords</li> <li>• lattices</li> <li>• end connections</li> </ul> <p>PC9. Replenish coolants, lubricants and fluids as per operation &amp; maintenance manual</p> <p>PC10. Grease all greasing pins and pivot points as per operation &amp; maintenance manual</p> <p>PC11. Check battery levels and condition of the terminals and carry out minor adjustments as per manufacturer's indicators</p> <p>PC12. Check and maintain the tire rims, air pressure, wheel nuts and treads as per manufacturer's indicators</p>
<b>Basic diagnostics and troubleshooting</b>	<p>PC13. Track machine operating hours to assess the right service schedule</p> <p>PC14. Complete timely and legibly daily/ weekly maintenance sheets as provided by the company</p> <p>PC15. Ensure that suitable props/ support devices are used while performing maintenance</p> <p>PC16. Ensure that no maintenance task on the engine is performed when running or still hot</p> <p>PC17. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel</p> <p>PC18. Diagnose the problem</p> <p>PC19. Handle and dispose waste based on environmental guidelines at the work place</p>
<b>Documentation and Reporting</b>	<p>PC20. Follow reporting procedures as laid down by the employer</p> <p>PC21. Complete all documentation in the prescribed standards in a timely manner</p> <p>PC22. Report and escalate problems/ incidents as required in a timely manner</p> <p>PC23. Report defects precisely to the supervisor if beyond scope of his role</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to Breakdown &amp; Maintenance services</p> <p>KA2. The performance standards &amp; procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Escalation matrix for reporting unresolved problems</p> <p>KA5. Timeframe in which the complaint/problem should be resolved</p> <p>KA6. Work target and review mechanism with supervisor for obtaining/ giving feedback related to performance process</p> <p>KA7. Location of tools</p> <p>KA8. Contact person in case of queries on procedure or products</p> <p>KA9. Location and process for storage and disposal of waste material</p> <p>KA10. Safety Policy of the company</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Various components of the equipment and their functions</p>

**IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane**

	<p>KB2. Control and switches needed to operate the Hydra crane properly</p> <p>KB3. Basic physics and mechanics involved in various functions of the Hydra crane</p> <p>KB4. Common defects and general causes of breakdown</p> <p>KB5. The optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature</p> <p>KB6. Possible sources of any unusual sound emanating from the engine</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. Record any deviations/ incidents as per prescribed norms
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. Read and comprehend basic English to read manuals of operations SA3. Read instructions, guidelines/procedures/rules related to the worksite and equipment operations
	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to: SA4. Give clear instructions to co-workers, subordinates and other personnel SA5. Use correct technical terms while interacting with supervisor
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to: SB1. Decide when to conduct maintenance checks SB2. Evaluate the decision and conduct basic trouble shooting
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to: SB3. Work with supervisors/ team mates to carry out work related tasks SB4. Plan work according to the required schedule and location SB5. Plan for regular maintenance on a daily basis before machine operations
	<b>Customer Centricity</b>
	The user/ individual on the job needs to know and understand how to: SB6. Provide service of the highest order to ensure customer satisfaction
	<b>Problem Solving</b>
	The user/ individual on the job needs to know and understand how to: SB7. Identify immediate or temporary solutions to resolve mechanical issues SB8. Judge when to seek assistance from supervisor
	<b>Analytical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB9. Identify possible ways to improve operational efficiency SB10. Check for damages and diagnose common problems in the hydra crane and take relevant action
	<b>Critical Thinking</b>
The user/ individual on the job needs to know and understand how to: SB11. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently	

## IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane

### NOS Version Control

<b>NOS Code</b>	<b>IES/N0124</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>Infrastructure Equipment</b>	<b>Drafted on</b>	<b>16/02/15</b>
<b>Industry Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>31/03/15</b>
<b>Occupation</b>	<b>Operator</b>	<b>Next review date</b>	<b>31/03/17</b>

[Back To Top](#)

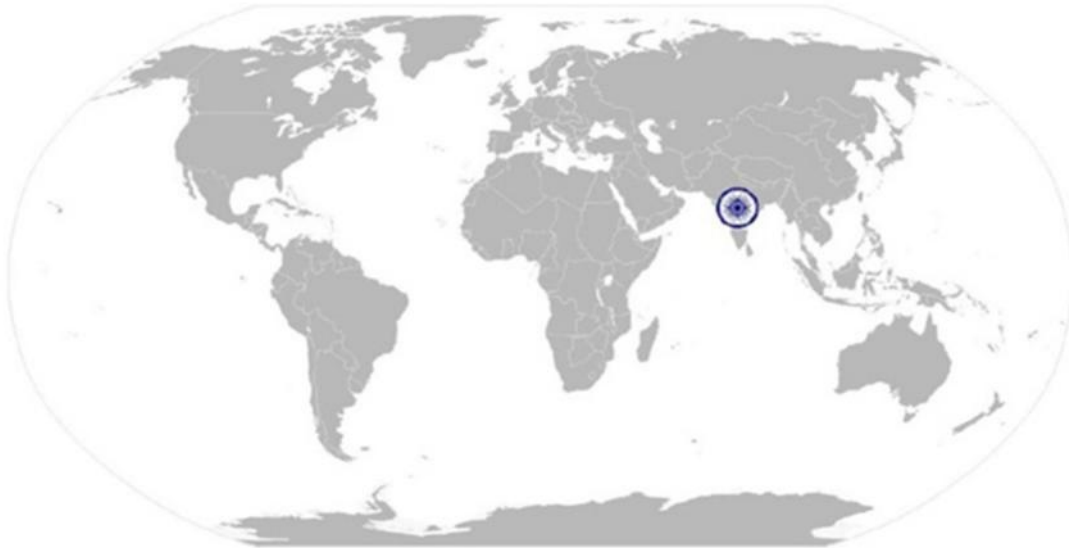


IES/N7601

Comply with worksite health and safety guidelines

---

# National Occupational Standard



## Overview

This unit is about adhering to health and safety requirements at the worksite during equipment operations.

IES/N7601

**Comply with worksite health and safety guidelines**

National Occupational Standard

<b>Unit Code</b>	IES/N7601
<b>Unit Title (Task)</b>	Comply with worksite health and safety guidelines
<b>Description</b>	This unit is about adhering to health and safety requirements at the worksite during equipment operations.
<b>Scope</b>	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Worksite health and safety</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Worksite health and safety</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site</p> <p>PC2. Use Personal Protective Equipment (PPE) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection</p> <p>PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk</p> <p>PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines</p> <p>PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines</p> <p>PC6. Follow safety regulations and procedures with regard to worksite hazards and risks</p> <p>PC7. Operate various grades of fire extinguishers, as applicable</p> <p>PC8. Support in administering basic first aid and report to concerned team members, as required, in case of an accident</p> <p>PC9. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility</p> <p>PC10. Record and report details related to operations, incidents or accidents, as applicable</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Health, safety, environmental(HSE) and security related policies/ guidelines of the organization and the worksite</p> <p>KA2. The importance of complying with health, safety, environmental and security guidelines at the worksite and during operations</p> <p>KA3. Contact details of personnel responsible for Health, Safety and environment (HSE) related matters</p> <p>KA4. Location of worksite storage, SHE team and safe assembly points</p> <p>KA5. Concerned personnel to reach out in case of emergencies and accidents/ incidents</p> <p>KA6. Reporting and documentation procedures for HSE and security matters</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Manufacturer's guidelines related to health and safety requirements</p> <p>KB2. Common types of health, safety, environment and security risks related</p>



IES/N7601

## Comply with worksite health and safety guidelines

	<p>to the worksite and operations</p> <p>KB3. Types, use and importance of Personal Protective Equipment (PPE) and other safety gear</p> <p>KB4. Safe working practices to avoid common hazards and risks</p> <p>KB5. Guidelines for transport, storage and disposal of hazardous materials and waste</p> <p>KB6. Types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown</p> <p>KB7. Knowledge of safe lockdown/ stop of machinery use in case of emergencies and incidents/ accidents</p> <p>KB8. Types of fire extinguishers and their use</p> <p>KB9. Common injuries and appropriate basic first aid treatment eg. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries</p>
<b>Skills (S)</b>	
<b>A. Core Skills / Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to:
	SA1. Document and report any health and safety related incidents/ accidents
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to:
	SA2. Read and comprehend basic English to read manuals of operations SA3. Read all organizational and equipment related health and safety manuals and documents SA4. Read instructions, guidelines/procedures/rules related to the worksite and equipment operations
<b>B. Professional Skills</b>	<b>Oral Communication (Listening and Speaking Skills)</b>
	The user/ individual on the job needs to know and understand how to:
	SA5. Give clear instructions to co-workers, subordinates and other personnel SA6. Use correct technical terms while interacting with supervisor
	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to:
	SB1. Make an appropriate timely decision in responding to emergencies/accidents in line with organizational/ worksite guidelines SB2. Use correct PPE and other safety gear while at the worksite
	<b>Plan and Organize</b>
	The user/ individual on the job needs to know and understand how to:
	SB3. Work with supervisors/ team mates to carry out work related tasks SB4. Plan work according to the required schedule and location
	<b>Customer Centricity</b>
The user/ individual on the job needs to know and understand how to:	
SB5. Build and maintain positive and effective relationships with colleagues and customers	
<b>Problem Solving</b>	
The user/ individual on the job needs to know and understand how to:	
SB6. Seek appropriate assistance from other sources to resolve problems	
<b>Analytical Thinking</b>	

**IES/N7601**

**Comply with worksite health and safety guidelines**

	The user/ individual on the job needs to know and understand how to: SB7. Assess the intensity of the fire accident and operate fire extinguishers
	<b>Critical Thinking</b>
	The user/ individual on the job needs to know and understand how to: SB8. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

## NOS Version Control

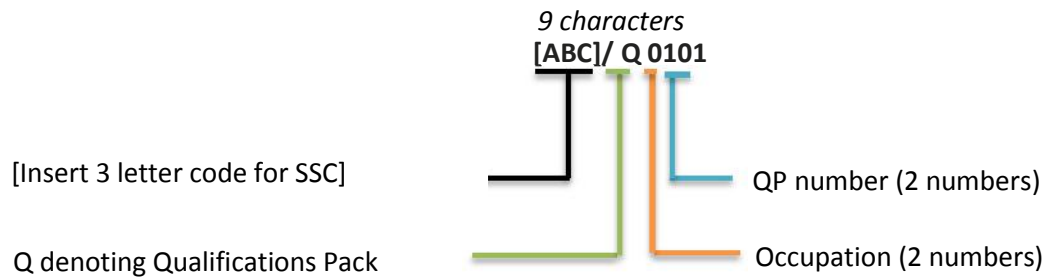
<b>NOS Code</b>	<b>IES/N7601</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Sector</b>	<b>INFRASTRUCTURE EQUIPMENT</b>	<b>Drafted on</b>	<b>16/02/15</b>
<b>Industry Sub-sector</b>	<b>Equipment Operations</b>	<b>Last reviewed on</b>	<b>31/03/15</b>
<b>Occupation</b>	<b>Operator</b>	<b>Next review date</b>	<b>31/03/17</b>

[Back To Top](#)



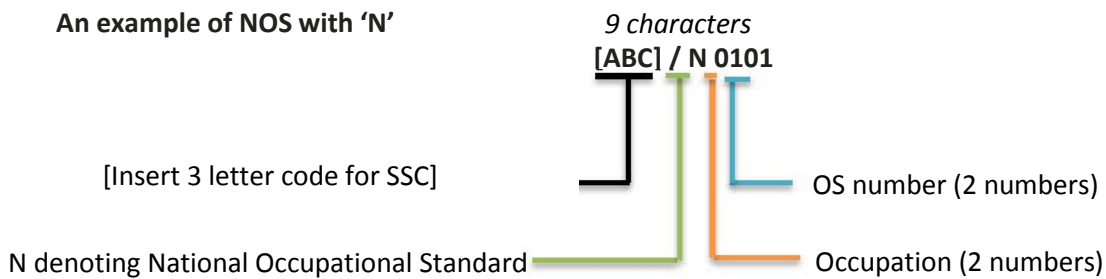
Nomenclature for QP and NOS units

### Qualifications Pack



### Occupational Standard

An example of NOS with 'N'



*Nomenclature for QP and NOS units*

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Equipment Operations	1 to 10
Equipment Service and spares	11 to 20
Equipment Production	21 to 40
Equipment Sales	41 to 50
Equipment Financing	51 to 55
Core Enablers	56 to 65
Other Enablers	66 to 75
Common Occupations	76 to 85

Sequence	Description	Example
Three letters	Industry name	IES
Slash	/	/
Next letter	Whether <b>QP</b> or <b>NOS</b>	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

### CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Hydra Crane Operator

**Qualification Pack** IES/Q0108

**Sector Skill Council** Infrastructure & Equipment

#### Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each 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 PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 50% aggregate
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

NOS	Performance Criteria	Marks Allocation			
		Total Mark	Out Of	Theory	Practical
IES/N0122 Carry out pre-operation checks on hydra crane	PC1. Adhere to time limits given by supervisor	45	2	0	2
	PC2. Inspect the crane body to ensure that the components are free of cracks and wear		3	1	2
	PC3. Checks that all decals are legible and in place as per operation manual		3	1	2
	PC4. Examine the hydraulic oil level to ensure no leaks and oil level are as per manufacturer's indicator		3	0	3
	PC5. Examine battery fluid to ensure proper fluid level as per manufacturer's indicator		3	0	3
	PC6. Check the tyre pressure and lug nut torque to make sure they are as per manufacturer's indicator		3	0	3
	PC7. Confirm for no engine oil leaks and proper fuel and fluid levels, as per manufacturer's indicator		3	0	3

	PC8. Check the holding and control breaks to ensure that they are functioning properly		3	0	3
	PC9. Get the following components checked for areas for damage, improperly installed or missing parts as per the manufacturer 's manual: • Electrical components, wiring and electrical cables • Hydraulic power unit, reservoir, hoses, fittings, cylinders and manifolds. • Tires and wheels • Trailer lights and reflectors • Parking brake, and electric braking system (including the breakaway system) • Drive wheel and motor		4	1	3
	PC10. Check to ensure that the following components as per operation manual: • Hoist • Wheels • Limit switches • Pins, nuts, bolts and other fasteners • Hitch components • Safety chains • Engines their fuel systems and related components • Hoist • Personal protective devices		4	1	3
	PC11. Check and ensure that all structural and other critical components are present as per operation manual		3	1	2
	PC12. Approve that all associated fasteners and pins are in place and properly tightened as per operation manual		2	0	2
	PC13. Inspect entire machine for: • Cracks in welds or structural components • Excessive rust, corrosion or oxidation • Dents or damage to machine		4	1	3
	PC14. Maintain a checking/maintenance logbook to record all activities performed before starting the excavator		2	0	2
	PC15. Report defects precisely to the supervisor if beyond scope of his role		3	1	2
		Total	45	7	38
IES/N0123 Operate Hydra Crane	PC1. Plan and organize the job according to given instructions	70	3	1	2
	PC2. Position the hook to attach sling, shackle and chains as per operation's manual		3	0	3



PC3. Start the engine as per operation's manual	2	0	2
PC4. Check the assembly and ensure that relevant safety measures as per safety guidelines taken	2	0	2
PC5. Use the emergency stop button to disable all power to the hydra crane in case of a crisis, as per operator manual	3	1	2
PC6. Ensure safe working load as per operation manual	2	0	2
PC7. Check wind speeds are within the crane's operational limits	1	1	0
PC8. Select the appropriate boom, jib, as per the load, site and lift conditions	3	0	3
PC9. Ensure appropriate boom extension as per operation manual	3	1	2
PC10. Hoist and release the load at a small height to check the holding and control breaks are functioning properly, ahead of the actual lifting	3	0	3
PC11. Carry out lifting of load in coordination with rigger as per the requirement	3	0	3
PC12. Monitor stability whilst moving a load	2	0	2
PC13. Ensure good visibility of both ends of the crane arm at all times	2	0	2
PC14. Ensure no obstacles, personnel or other obstructions during lifting operation	3	1	2
PC15. Look out for people working and hazards such as trenches, potholes and cables	2	0	2
PC16. Adhere to time limits given by the supervisors	2	0	2
PC17. Perform in-operation visual checks on critical temperature and pressure gauges as per operation manual	2	0	2
PC18. Select and use the right type of brake in different situations and conditions as per the operation manual	3	1	2
PC19. Ensure that walkway rules e.g. operating the crane within the permissible/ allocated areas are followed	2	0	2
PC20. Utilize judiciously various signaling devices available in the crane	2	0	2
PC21. Keep a safe distance from other plant or vehicles	2	0	2
PC22. Work safely in accordance with operational requirements and associated Safe Systems of Work	2	0	2

	PC23. Discharge the load safely at the position and in the manner designated by the supervisor	3	0	3	
	PC24. Follow the instructions by the rigger	2	0	2	
	PC25. Operate and control the boom and extensions as per operation manual	3	0	3	
	PC26. Ensure lay down area is sufficient in size to accommodate load	2	0	2	
	PC27. Ensure lay down area is clear of any obstruction and	2	0	2	
	PC28. Ensure that no other operators travel on or stand near the Hydra Crane	2	0	2	
	PC29. Inform supervisor/rigger of any problems while operating the Hydra Crane	2	0	2	
	PC30. Shut down and secure the machine properly when it is unattended	2	0	2	
	<b>Total</b>	<b>70</b>	<b>6</b>	<b>64</b>	
IES/N0124 Perform routine maintenance and troubleshooting of Hydra Crane	PC1. Assess the right service schedule by tracking machine operating hours	60	3	1	2
	PC2. Check Crane Structure and the following accessories as per operation & maintenance manual		2	0	2
	PC3. Check Crane structure for deformed, cracked or corroded members in the structure and boom. • Loose bolts or rivets. • Excessive wear on brake and clutch system parts. • Deformed wedges. • Defective cotter keys, pins and guardrails.		4	1	3
	PC4. Check for the following in hydraulic system of Crane as per operation & maintenance manual: • Deterioration or leakage in air or hydraulic systems • Safe and effective operation on hoses, pumps and motors • Levels of fluid • Air cleaners for replacement or cleaning		4	1	3

PC5. Check for the following Control Mechanisms and Monitoring Devices as per operation & maintenance manual <ul style="list-style-type: none"> <li>• Cables, brakes and levers for poor adjustment or excessive wear.</li> <li>• Marking on the load/radius indicator over full range.</li> <li>• Load moment indicator,</li> <li>• Boom angle indicator,</li> <li>• Boom length indicator and</li> <li>• Anti two-block system</li> </ul>	4	1	3
PC6. Check wire ropes for wear and tear	2	0	2
PC7. Check the following in the main boom as per operation manual <ul style="list-style-type: none"> <li>• lift cylinder(s)</li> <li>• telescoping cylinder(s)</li> <li>• hydraulic hoses / tubing &amp; fittings</li> <li>• holding device</li> <li>• boom sections alignment</li> <li>• auxiliary boom head structure</li> </ul>	4	1	3
PC8. Check the following in the Lattice boom extension <ul style="list-style-type: none"> <li>• Boom</li> <li>• extension alignment</li> <li>• cords</li> <li>• lattices</li> <li>• end connections</li> </ul>	4	1	3
PC9. Replenish coolants, lubricants and fluids as per operation & maintenance manual	2	0	2
PC10. Grease all greasing pins and pivot points as per operation & maintenance manual	2	0	2
PC11. Check battery levels and condition of the terminals and carry out minor adjustments as per manufacturer's indicators	3	1	2
PC12. Check and maintain the tire rims, air pressure, wheel nuts and treads as per manufacturer's indicators	3	0	3
PC13. Track machine operating hours to assess the right service schedule	2	0	2
PC14. Complete timely and legibly daily/ weekly maintenance sheets as provided by the company	2	0	2
PC15. Ensure that suitable props/ support devices are used while performing maintenance	2	0	2
PC16. Ensure that no maintenance task on the engine is performed when running or still hot	2	0	2

	PC17. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		2	0	2
	PC18. Diagnose the problem		3	1	2
	PC19. Handle and dispose waste based on environmental guidelines at the work place		2	0	2
	PC20. Follow reporting procedures as laid down by the employer		2	0	2
	PC21. Complete all documentation in the prescribed standards in a timely manner		2	0	2
	PC22. Report and escalate problems/ incidents as required in a timely manner		2	0	2
	PC23. Report defects precisely to the supervisor if beyond scope of his role		2	0	2
		Total	60	8	52
IES/N7601 Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site	25	3	1	2
	PC2. Use Personal Protective Equipment (PPE) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection		3	0	3
	PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk		3	1	2
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		3	1	2
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	0	2
	PC6. Follow safety regulations and procedures with regard to worksite hazards and risks		2	0	2
	PC7. Operate various grades of fire extinguishers, as applicable		2	0	2
	PC8. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		2	0	2
	PC9. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		3	1	2

	PC10. Record and report details related to operations, incidents or accidents, as applicable		2	0	2
		Total	25	4	21