

Instruction Sheet for the Candidate

Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Metal Die Casting Operations
Purpose of Assessment	Formative Assessment
Candidate Details	Name _____ Registration/Roll Number _____
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within 04 Hrs. time frame (for practical demonstration & assessment):</p> <ul style="list-style-type: none"> • Arrange material for die (Cold Chambered High pressure) casting • Conduct pre-operational checks on machine • Prepare the high pressure die casting molds • Operate die casting machine (Cold chambered high pressure) • Inspect final product • Perform Workplace cleaning
Time: 04 Hrs.	During a practical assessment, under observation by an assessor, you are required to
Minimum Evidence Required	<p>Arrange material for die (Cold Chambered High pressure) casting</p> <p>P1. Interpret the drawing/process sheet for material requirement P2. Select tools and equipment. P3. Prepare the melting furnace as per SOPs (Crucible). P4. Prepare holding furnace as per SOPs (Crucible) P5. Set die casting machine parameters as per job specification.</p> <p>Conduct pre-operational checks on machine</p> <p>P1. Inspect all electrical connections. P2. Check all mechanical fittings of mould (Bush water leakage nozzles etc.) coolants, lubricants, pastes, gate breaking fixture etc. P3. Check operation of emergency switches. P4. Check plunger rod tip moment, cooling system P5. Check cleaning, de-scaling of cooling lines of mould P6. Check and maintain proper lubrication of plunger rod, sleeve, mould P7. Check air pressure of safety door, spray head P8. Check all water connection.</p> <p>Prepare the high pressure die casting molds</p>

	<p>P1. Lift mould with standard lifting equipment.</p> <p>P2. Place the mould between both sides (fixed and movables) of mould pattern</p> <p>P3. Align mould in the center of platen.</p> <p>P4. Connect hydraulic and water connections.</p> <p>P5. Clamp mould with bolts/ hydraulic couplings</p> <p>P6. Check spray head nozzles position as per mould, core requirements</p> <p>P7. Apply die releasing agent/paste spray/beads.</p> <p>P8. Make a three to shots on intensification on off position for preheating of mould</p> <p>Operate die casting machine (Cold chambered high pressure)</p> <p>P1. Set all operating parameters of machine as per SOP</p> <p>P2. Adjust quantity of molten metal from holding furnace in machine ladle as per mould size for auto liddle</p> <p>P3. Check all lubrication of mould, tip, tie bars on auto</p> <p>P4. Pour the casting material in the sleeve of plunger rod</p> <p>P5. Preheat mould with burner</p> <p>P6. Make dehydration of molten material in holding furnace</p> <p>P7. Preheat mould sleeve by pouring molten metal in sleeve</p> <p>P8. Proceed with die casting operation on auto run</p> <p>P9. Break risers, air vents, flashes, gate of mould breaking fixture of mould</p> <p>P10. Make air blow on mould face, spray die release agent in mould with spray head/manual spray gun and dry with air as per mould requirement</p> <p>P11. Monitor operations to ensure compliance with job requirements.</p> <p>Inspect final product</p> <p>P1. Perform visual inspection for defects, if any.</p> <p>P2. Check dimensions of the product as per drawing for first production only</p> <p>P3. Check part on checking fixture if any</p> <p>P4. Complete inspection report.</p> <p>Perform Workplace cleaning</p> <p>P1. Maintain all check sheets and work instructions.</p> <p>P2. Perform cleaning and de-scaling of mould cooling lines, machine and floor after job completion.</p> <p>P3. Perform Lubrication on slides, tie bar and mould.</p> <p>P4. Apply anti-rust spray/cleaning agent.</p> <p>P5. Store the tools and equipment.</p> <p>P6. Return excess material to store.</p> <p>P7. Transfer waste material into designated area.</p>
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Self-Assessment Checklist

Candidate Name	
Registration No.	
Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Metal Die Casting Operations
Purpose of Assessment	Formative Assessment
Assessment Task	<ul style="list-style-type: none"> • Arrange material for die (Cold Chambered High pressure) casting • Conduct pre-operational checks on machine • Prepare the high pressure die casting molds • Operate die casting machine (Cold chambered high pressure) • Inspect final product • Perform Workplace cleaning

I can.....

Performance Criteria	Yes	No
P1. Interpret the drawing/process sheet for material requirement	<input type="checkbox"/>	<input type="checkbox"/>
P2. Select tools and equipment.	<input type="checkbox"/>	<input type="checkbox"/>
P3. Prepare the melting furnace as per SOPs (Crucible).	<input type="checkbox"/>	<input type="checkbox"/>
P4. Prepare holding furnace as per SOPs (Crucible)	<input type="checkbox"/>	<input type="checkbox"/>
P5. Set die casting machine parameters as per job specification.	<input type="checkbox"/>	<input type="checkbox"/>
P6. Inspect all electrical connections.	<input type="checkbox"/>	<input type="checkbox"/>
P7. Check all mechanical fittings of mould (Bush water leakage nozzles etc.) coolants, lubricants, pastes, gate breaking fixture etc.	<input type="checkbox"/>	<input type="checkbox"/>
P8. Check operation of emergency switches. P4. Check plunger rod tip, moment, cooling system	<input type="checkbox"/>	<input type="checkbox"/>
P9. Check cleaning, de-scaling of cooling lines of mould	<input type="checkbox"/>	<input type="checkbox"/>
P10. Check and maintain proper lubrication of plunger rod, sleeve, mould	<input type="checkbox"/>	<input type="checkbox"/>
P11. Check air pressure of safety door, spray head	<input type="checkbox"/>	<input type="checkbox"/>
P12. Check all water connection.	<input type="checkbox"/>	<input type="checkbox"/>
P13. Lift mould with standard lifting equipment.	<input type="checkbox"/>	<input type="checkbox"/>
P14. Place the mould between both sides (fixed and movables) of mould pattern	<input type="checkbox"/>	<input type="checkbox"/>

P15. Align mould in the center of platen.	<input type="checkbox"/>	<input type="checkbox"/>
P16. Connect hydraulic and water connections.	<input type="checkbox"/>	<input type="checkbox"/>
P17. Clamp mould with bolts/ hydraulic couplings	<input type="checkbox"/>	<input type="checkbox"/>
P18. Check spray head nozzles position as per mould, core requirements	<input type="checkbox"/>	<input type="checkbox"/>
P19. Apply die releasing agent/paste spray/beads.	<input type="checkbox"/>	<input type="checkbox"/>
P20. Make a three to shots on intensification on off position for preheating of mould	<input type="checkbox"/>	<input type="checkbox"/>
P21. Set all operating parameters of machine as per SOP	<input type="checkbox"/>	<input type="checkbox"/>
P22. Adjust quantity of molten metal from holding furnace in machine ladle as per mould size for auto liddle	<input type="checkbox"/>	<input type="checkbox"/>
P23. Check all lubrication of mould, tip, tie bars on auto	<input type="checkbox"/>	<input type="checkbox"/>
P24. Pour the casting material in the sleeve of plunger rod	<input type="checkbox"/>	<input type="checkbox"/>
P25. Preheat mould with burner	<input type="checkbox"/>	<input type="checkbox"/>
P26. Make dehydration of molten material in holding furnace	<input type="checkbox"/>	<input type="checkbox"/>
P27. Preheat mould sleeve by pouring molten metal in sleeve	<input type="checkbox"/>	<input type="checkbox"/>
P28. Proceed with die casting operation on auto run	<input type="checkbox"/>	<input type="checkbox"/>
P29. Break risers, air vents, flashes, gate of mould breaking fixture of mould	<input type="checkbox"/>	<input type="checkbox"/>
P30. Make air blow on mould face, spray die release agent in mould with spray head/manual spray gun and dry with air as per mould requirement	<input type="checkbox"/>	<input type="checkbox"/>
P31. Monitor operations to ensure compliance with job requirements.	<input type="checkbox"/>	<input type="checkbox"/>
P32. Perform visual inspection for defects, if any.	<input type="checkbox"/>	<input type="checkbox"/>
P33. Check dimensions of the product as per drawing for first production only	<input type="checkbox"/>	<input type="checkbox"/>
P34. Check part on checking fixture if any	<input type="checkbox"/>	<input type="checkbox"/>
P35. Complete inspection report.	<input type="checkbox"/>	<input type="checkbox"/>
P36. Maintain all check sheets and work instructions.	<input type="checkbox"/>	<input type="checkbox"/>
P37. Perform cleaning and de-scaling of mould cooling lines, machine and floor after job completion.	<input type="checkbox"/>	<input type="checkbox"/>
P38. Perform Lubrication on slides, tie bar and mould.	<input type="checkbox"/>	<input type="checkbox"/>
P39. Apply anti-rust spray/cleaning agent.	<input type="checkbox"/>	<input type="checkbox"/>
P40. Store the tools and equipment.	<input type="checkbox"/>	<input type="checkbox"/>
P41. Return excess material to store.	<input type="checkbox"/>	<input type="checkbox"/>
P42. Transfer waste material into designated area.	<input type="checkbox"/>	<input type="checkbox"/>

Candidate's Signature_____ Assessor's Signature_____

Date: _____

Assessors Judgment Guide

Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Metal Die Casting Operations
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Signature: _____
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor _____ Assessor's code: _____ Signature: _____

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment		✓					
Other Requirement							

Observation Checklist

Assessment Task		<ul style="list-style-type: none">• Arrange material for die (Cold Chambered High pressure) casting• Conduct pre-operational checks on machine• Prepare the high pressure die casting molds• Operate die casting machine (Cold chambered high pressure)• Inspect final product• Perform Workplace cleaning		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Interpret the drawing/process sheet for material requirement			
2.	Select tools and equipment.			
3.	Prepare the melting furnace as per SOPs (Crucible).			
4.	Prepare holding furnace as per SOPs (Crucible)			
5.	Set die casting machine parameters as per job specification.			
6.	Inspect all electrical connections.			
7.	Check all mechanical fittings of mould (Bush water leakage nozzles etc.) coolants, lubricants, pastes, gate breaking fixture etc.			
8.	Check operation of emergency switches. P4. Check plunger rod tip, moment, cooling system			
9.	Check cleaning, de-scaling of cooling lines of mould			
10.	Check and maintain proper lubrication of plunger rod, sleeve, mould			
11.	Check air pressure of safety door, spray head			
12.	Check all water connection.			
13.	Lift mould with standard lifting equipment.			
14.	Place the mould between both sides (fixed and movables) of mould pattern			
15.	Align mould in the center of platen.			
16.	Connect hydraulic and water connections.			

17.	Clamp mould with bolts/ hydraulic couplings			
18.	Check spray head nozzles position as per mould, core requirements			
19.	Apply die releasing agent/paste spray/beads.			
20.	Make a three to shots on intensification on off position for preheating of mould			
21.	Set all operating parameters of machine as per SOP			
22.	Adjust quantity of molten metal from holding furnace in machine ladle as per mould size for auto liddle			
23.	Check all lubrication of mould, tip, tie bars on auto			
24.	Pour the casting material in the sleeve of plunger rod			
25.	Preheat mould with burner			
26.	Make dehydration of molten material in holding furnace			
27.	Preheat mould sleeve by pouring molten metal in sleeve			
28.	Proceed with die casting operation on auto run			
29.	Break risers, air vents, flashes, gate of mould breaking fixture of mould			
30.	Make air blow on mould face, spray die release agent in mould with spray head/manual spray gun and dry with air as per mould requirement			
31.	Monitor operations to ensure compliance with job requirements.			
32.	Perform visual inspection for defects, if any.			
33.	Check dimensions of the product as per drawing for first production only			
34.	Check part on checking fixture if any			
35.	Complete inspection report.			
36.	Maintain all check sheets and work instructions.			
37.	Perform cleaning and de-scaling of mould cooling lines, machine and floor after job completion.			
38.	Perform Lubrication on slides, tie bar and mould.			

39.	Apply anti-rust spray/cleaning agent.			
40.	Store the tools and equipment.			
41.	Return excess material to store.			
42.	Transfer waste material into designated area.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Qualification	National Vocational Certificate in Metal Forming & Processing Level 4
Competency Standard	Perform Metal Die Casting Operations
Purpose of Assessment	Formative Assessment
Candidate Details	Name: _____ Registration/Roll Number: _____ Candidate Signature: _____
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: _____ Assessor's code: _____ Signature of the Assessor: _____

Candidate's response is not required to be identical, but similar concepts and/or keywords must be used. Oral questioning may be used to clarify candidate understanding of topic and its application.

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)		Satisfactory	Not Satisfactory
1.	Define die casting process.		
2.	Define temperature and melting point.		
3.	Define die casting defects.		

4.	Define fit & limit system		
5.	Describe types of casting.		
6.	Describe die casting material.		

Feedback to the Candidate
Candidate's Signature_____ Assessor's Signature _____