

## STANDARD QUALITY ASSURANCE PLAN FOR EDUCTOR AND ACCESSORIES (PORTABLE AND FIXED TYPE)

 <b>MINISTRY OF DEFENCE / DGQA</b> DIRECTORATE OF QUALITY ASSURANCE (WP), NEW DELHI – 110023	<b>EDUCTOR AND ACCESSORIES (PORTABLE AND FIXED TYPE)</b> STANDARD QAP NO. DGQA/DQA(WP)/EDUCTOR/51/2024/REV-0		
<b>APPENDIX-A</b> Technical Inspection / Trials in form of SQAP Part II (Refers to Page No. 12)			

SL. NO.	MATERIALS / COMPONENTS AS PER SOTR/ QA ACTIVITY	CHARACTERISTICS / TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	FORMAT OF RECORD	ACTION BY QAE	REMARKS
<b>SECTION I: VERIFICATION OF DRAWINGS / DOCUMENTS</b>								
1.1.0	Drawings & Documents	GA drawings and detailed bill of material (DBOM)	-	PO & SOTR /TNC Minutes	PO & SOTR/ TNC Minutes	List of approved binding drawings	R	Drawing duly approved by Design Professional & Inspection Authority (or by Command for MO orders) to be verified. Manufacturing drawings will be vetted by QA Rep with reference to approved GA drawings and DBOM at OEM premises.
<b>SECTION II: RAW MATERIAL INSPECTION</b>								
2.1.0	Casted components (i) Body/ Diffuser (ii) Nozzle Box/Suction Chamber (iii) Venturi Nozzle / Nozzle	(i) Pouring with integral test bar	100%	PO & SOTR / TNC Minutes/ Approved drawing	Conformity specifications	IR	R	<u>Review.</u> If casting is done with integral test bar, review of documents by QA rep. <u>Witness.</u> If casting is undertaken without integral test bar, pouring to be witnessed by QA rep through virtual mode (live streaming) or submission of videography with time stamp by firm to QA Rep.

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	(iv) Protective Cap (v) Female Instantaneous Coupling (vi) Screw type coupling (full bore) (Applicable as per DBOM)	(ii) Material Identification & Stamping  (iii) Physical Mechanical & Chemical Properties	100%	PO & SOTR / TNC Minutes/ Approved drawing	Conformity to specifications	IR	W* through virtual mode/ physical	* Refer to requirement at SI no. 7 & 8 (Page No. 8).
		One Sample/ Heat			Conformity to specifications	NABL TC	R	
<b>BOUGHT OUT ITEMS/ COTS (Applicable as per approved drawings/DBOM)</b>								
2.2.0	Nozzle Retainer, Brass Chain, Tally Plate, Strainer, Gaskets/ Seal/ Packing, Fasteners etc.,	Product Identification	100%	PO & SOTR/ TNC Minutes/ Approved drawing	Conformity to approved drawing	STC/ SDoc (Coc)	R	Virtual/ Physical inspection of components to be undertaken along with review of STC /SDoC (CoC) by QA rep as per the approved drawing before final assembly either at raw material stage or hydro test stage as per SQAP sl. no. 2.3.0 (ii) or in-process stage of inspection, as feasible.
2.3.0	Suction Hose/ Discharge Hose for Eductor	(i) VI, DI & Verification of STC  (ii) Hydraulic Pressure Test for Hose assembly (1.5 x WP of Hose)	100%	PO & SOTR/ TNC Minutes/ Approved drawing	Conformity to approved drawing and specification	IR & STC	W through virtual mode/ physical	No of components/ items (under Bought out/ COTS items) may vary from design to design. This list is indicative only. Actual components/ items would be as per approved DBOM/ drawings
					No indication of failure or leakage for period of 01 minutes	IR	W through virtual mode/ physical	

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<b>3.0.0 SECTION III: IN PROCESS INSPECTION</b>								
3.1.0	(i) Body/Diffuser (ii) Nozzle Box/ Suction Chamber (iii) Venturi Nozzle/ Nozzle (iv) Protective Cap (v) Female Instantaneous Coupling (vi) Screw type coupling full bore	(i) Sand Blasting (casted surface only)  (ii) Visual & Dimensional inspection  (iii) DPT on machined Surfaces (Applicable as per approved drawings/ Specification)  (iv) Screw type coupling full bore	100%  100%	PO & SOTR / TNC Minutes /Approved drawing  Conformity to approved drawings	SA 2.5	SDoC (CoC)	R	All NDT activities carried out as per HQ DQA(WP) letter no. 12575/POLICY/DGQA/WP- TC dated 25 Mar 22.
3.2.0	Eductor Assembly	Performance Check (Suction capacity as per specified suction head, discharge head & motive head)	100%	PO & SOTR / TNC Minutes / Approved drawing & Approved ATP	Conformity to approved drawing	IR	R	Measuring parameters like motive pressure, motive flow rate, suction lift, discharge pressure, discharge flow rate, suction capacity to be checked as per the approved drawing

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<b>4.0.0 SECTION IV: FINAL INSPECTION</b>								
4.1.0	Eductor Assembly	(i) Visual Inspection  (ii) Overall Dimensions  (iii) Hydraulic Pressure Test	100%  100 % by firm & as per IS 2500 by QA Rep  100 %	PO & SOTR/ TNC Minutes/ Approved drawing  PO & SOTR/ TNC Minutes/ Approved drawing  PO & SOTR/ TNC Minutes/ Approved drawing	Conformity to approved drawing  No visible leak or reduction in pressure for period of 15 minutes  Conformity to approved drawing	IR  IR  IR	W through physical  W through physical  W through physical	Unless otherwise specified, Inspection Level-II as per IS 2500 Part-I and AQL 1.5 shall be used
		(iv) Performance Check as per approved ATP (Suction capacity as per specified suction head, discharge head & motive head)	One per Lot/ Type	PO & SOTR/ TNC Minutes/ Approved drawing & Approved ATP	Conformity to approved drawing	IR	W through physical	Measuring parameters like motive pressure, motive flow rate, suction lift, discharge pressure, discharge flow rate, suction capacity to be checked as per the approved drawing. Firm should submit graphical representation of total head against suction flow rate for appropriate water suction at each driving head and flow rate.
		(v) Weight Measurement	100%	PO & SOTR/ TNC Minutes/ Approved drawing	Conformity to approved drawing	Weight Certificate	W through virtual mode/ physical	
		(vi) Marking, Packing & Preservation	100%	Conformity to app. drawing & Standards	IR			

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4.2.0	Submission of as-made drawings/ SDoC and other documentation, as applicable	Verification	100%	PO & SOTR/ TNC Minutes/ Approved drawing	As built drawings are approved and completeness of documents	As Built drawings, SDoC (CoC) etc., as applicable	R	For Shipyard Orders, after manufacture of first piece is completed, an "As-Built" drawing incorporating all changes is to be made and to be vetted by Inspection agency. The same to be forwarded to the drawing approving authority for final approval.
4.3.0	Submission of Form-4	Correctness	100%	PO & SOTR	Error free	Form 4	Issue of Form 4	SDoC (CoC) shall be submitted by the firm as per the format given at Annexure-I of DGQA SoP on SDoC (Ref No. DGQA/STD/002-23)