Vibrating Screen Installation Standard Operating Procedure

For Screen Installation Technicians — All Sites

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Owner **Engineering Division**	Approved By **David Waller — Head of Engineering**
Applies To **All Screen Installation Technicians**	Classification **Internal Use — Controlled Document**

& CRITICAL SAFETY NOTICE

This procedure must be reviewed in full prior to commencing any screen installation activity. Non-compliance with this SOP may result in serious injury, equipment damage, or fatality. All personnel must hold current EA Technician Certification (EA-CERT-002) before performing unsupervised installation.

1. PURPOSE & SCOPE

This Standard Operating Procedure (SOP) defines the mandatory process for the safe and correct installation of vibrating screens at mining, quarrying, and processing sites serviced by Elastomers Australia Pty Ltd. It applies to all screen types manufactured by Elastomers Australia including polyurethane panel screens, rubber modular screens, high-frequency screens, and banana screens (multi-slope).

This document supersedes EA-SOP-001 Rev. 4.1 (June 2025) and all previous versions. All technicians must re-sign the competency acknowledgement form (EA-FORM-007) upon receipt of this revision.

2. APPLICABLE STANDARDS & LEGISLATION

- AS/NZS 4024.1 — Safety of Machinery (all applicable parts)
- AS 2550.5 — Cranes and hoists — Safe use
- AS 3000 — Wiring rules (electrical isolation procedures)
- Work Health and Safety Act 2011 (Cth) and applicable state WHS legislation
- Mining Operations Plan (MOP) requirements for site-specific access
- Elastomers Australia Safe Work Method Statement: EA-SWMS-018
- Client site-specific induction requirements (to be obtained prior to site entry)

3. ROLES & RESPONSIBILITIES

3.1 Lead Installation Technician

- Holds EA-CERT-002 (Screen Installation) and site-specific inductions
- Responsible for pre-installation inspection and risk assessment sign-off
- Supervises all team members during installation and conducts final inspection
- Completes EA-FORM-009 (Installation Completion Report) upon job close-out

3.2 Assistant Technicians

- Must hold current EA-CERT-001 (General Technician) at minimum
- Operate under direct supervision of Lead Technician at all times
- Responsible for tooling, panel management, and torque documentation

3.3 Site Engineering Contact

- Provides site-specific hazard register and Permit to Work (PTW)
- Approves isolation of plant prior to installation commencement
- Receives handover documentation upon completion

4. PRE-INSTALLATION REQUIREMENTS

4.1 Personal Protective Equipment (PPE)

All personnel on-site during screen installation must wear the following PPE as a minimum. Additional requirements may be imposed by the site safety management plan.

- Hard hat (AS/NZS 1801 compliant) — mandatory at all times on-site
- Safety glasses with side shields (AS/NZS 1337)
- Steel-capped safety boots (AS/NZS 2210.3)
- High-visibility vest or shirt (Class D/N — Day & Night rated)
- Leather work gloves rated for panel handling (cut-resistant minimum)
- Hearing protection (Class 5 minimum) when within 10m of operating plant
- Dust mask (P2 minimum) when dry screening or in high-dust environments
- Full-body harness (AS/NZS 1891.1) if working at heights > 1.8m

4.2 Tools & Equipment Checklist

The following tools must be present and in serviceable condition before commencing work. Technician to sign EA-FORM-011 (Tool Inspection Record) prior to mobilisation.

- Calibrated torque wrench (range: 50–350 Nm) — calibration certificate current
- Impact driver (18V minimum) with M16, M20, M24 sockets
- Panel alignment bars (2× minimum, 600mm length)
- Rubber mallet (1.5 kg) for panel seating — no metal hammers on panels
- Panel lifting hooks (load-rated, SWL stamped) — minimum 2 per panel type
- Spirit level (600mm digital preferred)
- Thread lubricant (Molykote P-37 or approved equivalent)
- Loctite 243 (medium-strength thread locker) for all tension bolts
- Steel ruler and marker for panel position marking
- Camera or tablet for photographic documentation (required)

4.3 Documentation Required On-Site

- Current Permit to Work (PTW) — obtained from site engineering
- Isolation Certificate — LOTO (Lock Out Tag Out) confirmation from site electrician
- EA-FORM-009 (Installation Completion Report) — blank copy
- EA-FORM-011 (Tool Inspection Record)
- Screen panel layout drawing (site-specific, EA Drawing Number on job sheet)
- Material Safety Data Sheets (MSDS) for all chemicals on-site

5. PLANT ISOLATION — LOTO PROCEDURE

& CRITICAL SAFETY NOTICE

Plant must be fully isolated, locked out and tagged out (LOTO) before any personnel approach the screen deck. DO NOT commence installation on any energised plant. Verify isolation with a voltage tester before touching any electrical components.

Obtain Permit to Work (PTW)
Contact site engineering and confirm a valid PTW is issued for screen installation work. PTW must specify isolation requirements and work boundary.

2 **Identify All Isolation Points**
With site electrician, identify all isolation points: main drive motor, vibration motors (typically 2–4 per screen), hydraulic tensioning system (if fitted), and spray bars (if fitted).

3 **Apply Locks and Tags**
Each technician applies personal lock (red) to each isolator. Lead Technician applies group lock hasp. Attach EA-tagged danger tag to each isolation point — do not remove until work is complete.

4 **Verify Zero Energy State**
Use calibrated voltage tester to verify zero voltage at motor terminals. Manually attempt to rotate drive shaft. Confirm no stored energy in springs or counterweights. Sign Isolation Certificate.

6. SCREEN PANEL REMOVAL (IF APPLICABLE)

Where existing panels are being replaced, the removal procedure must be completed before new panel installation. Panels must not be mixed on the deck during the removal/installation transition.

1. **Remove Tension Bolts**
   Using torque wrench, break all tension bolts in the section to be replaced. Remove bolts and store in labelled container — do not mix sizes.
2. **Remove Side Tensioners**
   Loosen and remove side tensioner bars. Note orientation for reinstallation — photograph before removal.
3. **Panel Extraction**
   Using panel lifting hooks rated for the panel weight (see panel spec sheet for weight per panel type), extract panels from the deck. Two-person lift for panels > 20 kg. Use panel cart for transport.
4. **Deck Inspection**
   With panels removed, inspect sub-deck structure for cracking, wear, or corrosion. Photograph any defects and report to Lead Technician. Do not continue if structural defects are found — contact EA Engineering.

7. NEW PANEL INSTALLATION

7.1 Panel Identification & Verification

Before installing any panel, verify the following against the panel layout drawing. Installation of incorrect panel types will void the screen performance warranty and may cause equipment failure.

- Panel part number matches drawing — check embossed moulding code on panel reverse
- Panel aperture size correct for the screening application (check with site metallurgist if uncertain)
- Panel material correct (polyurethane vs rubber — do not interchange without engineering sign-off)
- Panel orientation correct — non-symmetric panels have directional markings
- Panel is free from manufacturing defects — inspect for voids, tears, or delamination

7.2 Step-by-Step Panel Installation

1. **Apply Lubrication to Sub-Deck Rails**
   Apply thin coat of panel lubricant (water or approved rubber lubricant) to sub-deck cross members. Do not use petroleum-based lubricants — causes rubber degradation.
2. **Position First Panel (Feed End)**
   Start installation at the feed end (top of slope). Lower panel onto sub-deck rails using lifting hooks. Align panel peg/slot with sub-deck moulding using alignment bars.
3. **Seat Panel Fully**
   Using rubber mallet, tap along edges of panel to ensure full seating. Panel must sit flush with adjacent panels — check with steel ruler. Gap tolerance: < 2mm.
4. **Install Side Tensioner Bars**
   Slide tensioner bar over panel pins from discharge end toward feed end. Ensure bar is fully engaged before applying tension. Reference EA Drawing EA-DRW-418 for tensioner bar orientation by screen model.
5. **Apply Tension Bolts**
   Insert tension bolts with thread lubricant (Molykote P-37). Hand-tighten first pass. Using calibrated torque wrench, apply torque in cross pattern to specification (see Table 7.1 below).
6. **Torque Verification**
   After full torque application, re-check all bolts in sequence. Mark each verified bolt head with paint pen.

Record torque readings on EA-FORM-009.

7 **Progress to Next Panel**
Continue installation from feed end to discharge end, row by row. Never leave partial rows — complete each row before moving to the next.

TABLE 7.1 — TORQUE SPECIFICATIONS BY BOLT SIZE

Bolt Size	Material	Dry Torque (Nm)	Lubricated Torque (Nm)	Re-torque Interval
M16	Grade 8.8	180 Nm	135 Nm	8 hours operation
M20	Grade 8.8	360 Nm	270 Nm	8 hours operation
M24	Grade 8.8	620 Nm	465 Nm	8 hours operation
M16	Grade 10.9	250 Nm	190 Nm	4 hours operation
M20	Grade 10.9	490 Nm	370 Nm	4 hours operation

8. POST-INSTALLATION INSPECTION & SIGN-OFF

8.1 Visual Inspection Checklist

Lead Technician must complete the following visual inspection before requesting client sign-off. All items must pass. Any failed item must be rectified before sign-off is granted.

- All panels seated flush — no raised edges, gaps < 2mm between panels
- All tension bolts at correct torque (verified with torque wrench, marked)
- No tools, bolts, or foreign objects left on screen deck or below screen structure
- LOTO devices removed — all personal locks removed by respective technicians
- Screen structure free from damage — no new cracks, weld failures, or deformation observed
- All guards and safety barriers reinstated to original position
- Work area cleared — no debris within 5m of screen structure
- Waste panels, packaging, and consumables removed from site to designated waste point

8.2 Operational Test Run

1. **Notify Control Room**
   Notify site control room and operator that test run is requested. Confirm all personnel are clear of screen structure and surrounding area (minimum 5m exclusion zone).

2. **First Start — Observe for 5 Minutes**
   Allow screen to reach operating speed. Observe from safe distance. Look for: unusual vibration patterns, panel movement, bolt loosening, abnormal noise.

3. **Stop and Re-Inspect**
   Stop screen after 5 minutes. Allow to come to complete rest before approaching. Re-check torque on all tension bolts (first re-torque after initial operation is expected — refer Table 7.1).

4. **Second Start — Extended Run**
   If all checks pass, restart screen for extended run of 30 minutes minimum. Observe for full duration. Document any observations on EA-FORM-009.

9. DOCUMENTATION & HANDOVER

Upon completion of installation and successful test run, the Lead Technician must complete all documentation before leaving site. Incomplete documentation constitutes a non-conformance under EA Quality System QMS-001.

- Complete EA-FORM-009 (Installation Completion Report) — all sections mandatory
- Attach photographic evidence: before, during, and after installation (minimum 12 photos)
- Record all panel part numbers, lot numbers, and quantities installed
- Record torque readings for all bolts (or confirm "all per spec" with signature)
- Record test run observations and any defects noted (or "nil defects" with signature)
- Obtain client signature on EA-FORM-009 Section D (Client Acceptance)
- Submit completed form to EA Engineering via the field operations portal within 24 hours
- Retain copy of signed form on-site file for minimum 7 years (AS/NZS ISO records requirements)

10. NON-CONFORMANCES & DEFECT REPORTING

Any installation defect, near-miss, or safety incident must be reported via EA Incident Report (EA-

FORM-015) and submitted to the Engineering Division within 24 hours. The following defects require immediate work stoppage and engineering review before recommencing:

- Any panel found to be delaminating or splitting after installation
- Tension bolt shear or failure at any torque level
- Sub-deck structural damage including cracking or weld failure
- Screen performance below baseline specification after installation (throughput, blinding, carry-over)
- Any safety incident including near-miss, first aid, or medical treatment injury

11. TRAINING & COMPETENCY REQUIREMENTS

Elastomers Australia maintains a competency framework for all screen installation personnel. Training is delivered through the EA Learning Management System (LMS) and must be renewed annually. From Q3 2026, screen installation training will be supplemented by the EA VR Training Platform providing immersive simulation of all installation procedures prior to on-site deployment.

- EA-CERT-001: General Technician Induction — required before any site work
- EA-CERT-002: Screen Installation Certification — required for Lead Technician role
- EA-CERT-003: Working at Heights — required if any installation at height > 1.8m
- EA-CERT-004: Confined Space Entry — required for below-deck inspection work
- Site-specific inductions — completed per-site prior to each first visit
- Annual refresher: EA-CERT-002 renewal assessment (written + practical)

New technician onboarding follows the EA 90-Day Competency Pathway: Week 1–2 (classroom and LMS), Week 3–6 (supervised site installations — minimum 5 supervised jobs), Week 7–12 (buddy system with senior technician), Week 13 (independent competency assessment). Current average time-to-competency: 14 weeks. Target with VR-assisted training: 8 weeks.

12. REVISION HISTORY

Rev	Date	Description	Approved By
4.2	Jan 2026	Updated torque specs for M24 Grade 10.9. Added VR training reference Section 11.	D. Waller
4.1	Jun 2025	Added banana screen installation steps. Revised LOTO procedure.	D. Waller
4.0	Jan 2025	Major revision — aligned to WHS Act 2011 amendments. New form EA-FORM-011 added.	D. Waller
3.2	Aug 2024	PPE requirements updated. Torque re-check intervals revised.	D. Waller