Abbreviation: A: As Required M: Mandatory | Note: This procedure is not applicable if a client procedure is available. However, if the client's requirements fall below SPIE standards, the SPIE standards for Dropped Object Prevention, Tool Tethering, PPE and training must be followed.

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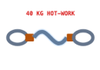
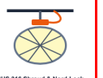
OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

Dropped Object Prevention & Tool Securing Matrix (ANSI/ISEA 121-2023 · DROPS · G+ EI 3387 · GWO HTDO · ATEX · VDE 1000V)

Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
						ANSI/ISEA 121-2023 Sec. 5 CE · SWL 0.9–2.5 kg (2:1)	ANSI/ISEA 121-2023 Sec. 5 SWL 1.4–4.5 kg · Coated Wire	ANSI/ISEA 121 Sec. 5 · DROPS SUS 316 · SWL 5–10 kg	ANSI/ISEA 121-2023 Sec. 4 & 6 SWL ≤ 1.0–1.5 kg · Wrist Tier	ANSI/ISEA 121-2023 Sec. 6 SWL 4.5–10 kg · Trisafe™ 316	ANSI/ISEA 121-2023 Sec. 6.3.4 SWL 0.9–5.0 kg · Zero-Slack	IEC 60900 VDE 1000V AC ANSI/ISEA 121 · Metal-Free	ANSI/ISEA 121 · DROPS SUS 316 Cable · SWL 15–40 kg	ATEX 2014/34/EU Zones 0/1/2 BAM · Cu-Be / Al-Br Alloy	DROPS · GWO HTDO 2:1 Proof-Tested & Serialized	ANSI/ISEA 121 Sec. 4 · EN 795 23 kN · SUS 316 Structural	ANSI/ISEA 121-2023 Sec. 7 5:1 Static · 2:1 Inverted Closure	DROPS · G+ EI 3387 SUS 316 Mesh · SWL ≤ 1.0 kg	ANSI/ISEA 121 Sec. 7 · IOGP 376 5:1 Static · SWL 50–100 kg	DROPS Sec. 4.2 · G+ p.47 ISO 12944 CX · SUS 316 / RFID	ABS DOPP+ · EN 13374 OSHA 1910.29(k) · Red Zone
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
1	Offshore Wind	Marine Transfer & Access	Crew Transfer Vessel (CTV) to WTG boat-landing ladder climb & equipment transfer	1. Vessel heave / wave slam 2. Dropped tool bags into sea or onto deck crew 3. Salt spray corrosion (ISO 12944 CX) 4. Ladder slip / fall from height	LSR 3, 5, 6, 9 & 10					A						M		M	M		M
2	Offshore Wind	Mechanical & Bolting	Transition Piece (TP) & internal tower section structural flange bolting / tensioning	1. Dropped M24–M36 nuts/washers down tower shaft (>65 J) 2. Unpinned impact socket ejection 3. Heavy hydraulic torque wrench drop (>15 kg) 4. Hand pinch points	LSR 3, 4, 9 & 10			M			A		M			M	M		M		
3	Onshore Wind	Mechanical & Bolting	Ascending & working from narrow internal tubular tower ladders (60–120 m)	1. Lanyard loop snagging on ladder rungs 2. Falling hand tools onto lower climbers 3. Loose bolts spilling from open pockets 4. Vertical shaft deflection	LSR 3, 4, 9 & 10	A			A		M					M	M		A		
4	Offshore Wind	Mechanical & Bolting	Nacelle main gearbox, main bearing & generator mechanical overhaul	1. Heavy spanners/pullers dropped through nacelle floor hatches 2. Harmonic rotor vibration 3. Gearbox oil fouling wrist straps 4. Overhead crane SIMOPS	LSR 3, 4, 5, 6, 9 & 10			M	A	M			A		M	M					M
5	All Sectors (O&G / Wind)	Electrical & HV	Live / near-live LV & HV switchgear, wind turbine converter & transformer servicing	1. Arc flash & electrocution (1000V AC / 1500V DC) 2. Conductive wire tether bridging live busbars 3. Dropped screwdrivers inside energized cabinets	LSR 1, 2, 3, 9 & 10							M					M	A			A
6	Offshore Wind	Electrical & HV	Offshore Substation (OSS) HVDC / HVAC cable termination & busbar torqueing at height	1. Electrical shock & induced voltage 2. Dropped calibrated torque wrenches over open cable basements 3. Marine CX salt condensation	LSR 1, 2, 3, 4, 9 & 10	A						M				A	M				M

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OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

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Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
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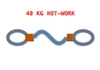
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
	Sector	Discipline	Activity	Risk	LSR	EQ-01	EQ-02	EQ-03	EQ-04	EQ-05	EQ-06	EQ-07	EQ-08	EQ-09	EQ-10	EQ-11	EQ-12	EQ-13	EQ-14	EQ-15	EQ-16
7	All Sectors (O&G / Wind)	Rope Access & Blade	IRATA / GWO rope-access external wind rotor blade composite repair & leading-edge erosion work	1. Unobstructed 80–130 m drop to ground/vessel (>100 J fatal impact) 2. Mid-air tool hand-off between technicians 3. High wind gusts & composite dust	LSR 3, 4, 9 & 10	M	M		M	M						M	M				M
8	Onshore Wind	Mechanical & Bolting	Rotor hub pitch-cylinder, hydraulic accumulator & blade-root stud replacement	1. Confined rotating hub cavity 2. Hydraulic oil contamination 3. Heavy stud tensioners (>20 kg) slipping 4. Crushing & dropped fasteners	LSR 1, 2, 3, 9 & 10			M	M				M		M	M	M				
9	Offshore Wind	Lifting & Rigging	Nacelle service crane & davit hoisting of tool bags and spare actuators up turbine tower	1. Load drop through open nacelle hatch (>1,000 J) 2. Uncertified bag seam failure 3. Pendulum swing in offshore wind 4. Personnel standing in Red Zone	LSR 3, 4, 5, 6, 9 & 10											M			M	A	M
10	Offshore Wind	Mechanical & Bolting	Heavy offshore turbine actuator / yaw-drive precision positioning & replacement (≤ 250 kg)	1. Loose sub-assembly components falling during disassembly 2. Gravitational freefall during bolt removal 3. Vessel-to-nacelle crane transfer	LSR 3, 5, 6, 9 & 10			M					M			M			M	M	M
11	All Sectors (O&G / Wind)	Instrumentation & Telecom	Nacelle roof anemometer, wind vane, aviation obstruction light & lightning receptor servicing	1. External nacelle roof leading edge (>100 m drop) 2. High wind chill (-35 °C) & gloved hands 3. Dropped multimeters, VHF radios & small wrenches	LSR 1, 2, 3, 9 & 10	M			M	M		A				M	M	M		M	
12	Onshore Wind	Lifting & Rigging	Internal service lift operation & manual pull-rope bucket hoisting inside wind tower	1. Field-tied rope knot slippage 2. Open bucket tipping and spilling hardware 3. Snagging on ladder brackets or platforms	LSR 3, 4, 5, 6, 9 & 10						A					M	A		M		M

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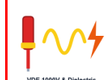
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
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13	Offshore Wind	Inspection & Commissioning	GWO pre-commissioning QA walkdown, torque audit & FOD / Tools Aloft reconciliation	1. Forgotten loose tools left in nacelle/tower prior to energization 2. Dropped inspection mirror, tablet, camera, or VHF radio	LSR 3, 9 & 10				M			A			M		A	M			
14	Offshore Wind	Civil & Structural	Transition-piece external walkway, boat-landing & stair guardrail installation / upgrade	1. Objects rolling under open handrails onto CTV deck 2. Severe marine CX corrosion 3. Hot-work prohibition on coated offshore steel	LSR 3, 4, 9 & 10					M					A	M	M			M	M
15	Oil & Gas	Derrick & Drilling	Drilling derrick monkeyboard & crown-block servicing above active drill floor (30–55 m)	1. Lethal drop energy onto drill crew (>500 J) 2. Severe top-drive jarring & vibration 3. Drilling mud fouling wrist/velcro straps 4. Dropped tong dies & shackles	LSR 3, 4, 5, 6, 9 & 10			M	M	M			A		M	M	M			M	M
16	Oil & Gas	Derrick & Drilling	Top-drive, swivel, travelling block & kelly hose maintenance + Post-Jarring DROPS inspection	1. Loosened bolts, split pins & shackles after drilling jarring 2. Heavy hydraulic tools (>15 kg) 3. Grease/oil slip hazards	LSR 1, 3, 5, 6, 9 & 10			M					M			M	M	M		M	M
17	Oil & Gas	Derrick & Drilling	Tubular handling, casing stabbing board & drill-pipe elevator rigging aloft	1. Falling crossover lifting subs (45 kg) or elevator pins 2. Pinch & crushing hazards 3. Suspended tubular swing	LSR 3, 5, 6, 9 & 10			M		M			M			M			M	M	M
18	Oil & Gas	Mechanical & Bolting	ATEX Zone 0 / 1 / 2 hydrocarbon flange breaking, valve overhaul & live pipe-rack maintenance	1. Explosive gas atmosphere ignition from steel impact sparks 2. H2S toxic release 3. Tools/bolts dropping through multi-tier open grating	LSR 1, 3, 4, 9 & 10				A					M		M	M	M			M

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19	Oil & Gas	Mechanical & Bolting	Blowout Preventer (BOP) stack bolting, hydraulic torqueing & cellar deck work at height	1. Heavy hydraulic torque wrenches (15–35 kg) 2. High-pressure hydraulic oil injection 3. Dropped impact sockets & 2 kg tong dies	LSR 1, 3, 5, 6, 9 & 10			M					M	A		M	M				M
20	Oil & Gas	Mechanical & Bolting	Flare stack, derrick mast & telecom tower structural inspection and tip replacement	1. Extreme elevation (60–120 m) & wind sway 2. Thermal radiation / hot surfaces 3. Wide lateral bounce/deflection radius on ground	LSR 3, 4, 9 & 10		M			M			M			M	M	M		M	M
21	Oil & Gas	Mechanical & Bolting	FPSO / Offshore platform multi-deck SIMOPS over open steel bar grating	1. M16–M24 bolts, clamps & sockets falling through 30×30 mm grating onto lower deck crew 2. Marine CX salt spray corrosion 3. Hydrocarbon vapours	LSR 3, 4, 9 & 10					M				A	A		M	M			M
22	Oil & Gas	Mechanical & Bolting	Overhead manual/actuated valve handwheel, actuator & pipe-hanger servicing	1. Corroded primary valve handwheel stem shearing (2.5 kg steel wheel) 2. Vibration loosening actuator bolts 3. Awkward overhead reach	LSR 1, 3, 9 & 10			A		M				A		M	M			M	A
23	All Sectors (O&G / Wind)	Electrical & HV	Overhead Ex floodlight, luminaire, aviation beacon & emergency lighting installation / relamping	1. Corroded bracket or hinged glass lens falling (>5× SWL dynamic shock) 2. Banned plastic zip-ties snapping under UV/salt 3. Electrical shock	LSR 1, 2, 3, 9 & 10				M			M				M	M			M	A
24	All Sectors (O&G / Wind)	Instrumentation & Telecom	Overhead PAGA speaker, CCTV camera, H2S/fire detector & junction box installation	1. Fixture detachment under harmonic vibration & gale wind 2. Dropped calibration tools, ferrules & cable glands 3. Live 24V/230V circuits	LSR 1, 2, 3, 9 & 10	M			M			A				M	M			M	

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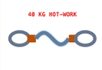
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 40 KG HOT-WORK SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 2:1 INVERT Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 100 KG Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
25	All Sectors (O&G / Wind)	Electrical & HV	Overhead cable tray erection, armored cable pulling & stainless cable-hook securing	1. Sharp sheet-metal tray burrs cutting nylon tethers 2. Falling strut nuts, spring channel nuts & couplers 3. Heavy cable-crimping tools (>5 kg)	LSR 1, 3, 4, 9 & 10		M	M		M						M	M			M	A
26	All Sectors (O&G / Wind)	Electrical & HV	Meggering, insulation resistance testing, thermography & live multimeter troubleshooting aloft	1. Arc flash / electric shock 2. Dropped multimeter, clamp meter or IR camera lacking OEM tether eye 3. Metal clip short-circuit risk	LSR 1, 2, 3, 9 & 10							M					A	M			
27	Oil & Gas	Instrumentation & Telecom	Portable 4-gas detector (H2S/LEL/O2/CO) & VHF/UHF ATEX radio carriage on derricks & platforms	1. Plastic belt clips snapping on ladder cages 2. 0.4 kg radio dropped 25 m = 98 J (twice hard-hat limit) 3. Blocked gas sensor ports if improperly taped	LSR 3, 9 & 10				A									M			
28	All Sectors (O&G / Wind)	Scaffolding & Access	Scaffolding erection, modification & dismantling over live process units or turbine bases	1. Dropped 1.2 kg scaffold couplers (294 J @ 25 m), spanners, levels & tubes 2. Incomplete toeboards or deck gaps 3. High-frequency tool switching	LSR 3, 4, 9 & 10	M			M	M						M	M		M		M
29	All Sectors (O&G / Wind)	Scaffolding & Access	Mobile Elevating Work Platform (MEWP) / scissor-lift / articulated boom-basket operations	1. Unapproved drilling of basket lip 2. Tools rolling off basket floor during SIMOPS 3. Dangerous cross-tethering between worker body and basket hook	LSR 3, 4, 7, 9 & 10					M	A					M	M				M
30	All Sectors (O&G / Wind)	Welding & Hot Works	Structural welding, oxy-cutting, gouging & portable angle-grinding at height	1. Incandescent slag & sparks melting synthetic nylon/bungee lanyards instantly 2. Tape softening on hot grinder housings 3. Fire & explosion below	LSR 1, 3, 4, 9 & 10		M	A					M			M				A	M

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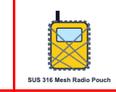
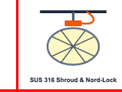
OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

Dropped Object Prevention & Tool Securing Matrix (ANSI/ISEA 121-2023 · DROPS · G+ EI 3387 · GWO HTDO · ATEX · VDE 1000V)

Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
						ANSI/ISEA 121-2023 Sec. 5 CE · SWL 0.9–2.5 kg (2:1)	ANSI/ISEA 121-2023 Sec. 5 SWL 1.4–4.5 kg · Coated Wire	ANSI/ISEA 121 Sec. 5 · DROPS SUS 316 · SWL 5–10 kg	ANSI/ISEA 121-2023 Sec. 4 & 6 SWL ≤ 1.0–1.5 kg · Wrist Tier	ANSI/ISEA 121-2023 Sec. 6 SWL 4.5–10 kg · Trisafe™ 316	ANSI/ISEA 121-2023 Sec. 6.3.4 SWL 0.9–5.0 kg · Zero-Slack	IEC 60900 VDE 1000V AC ANSI/ISEA 121 · Metal-Free	ANSI/ISEA 121 · DROPS SUS 316 Cable · SWL 15–40 kg	ATEX 2014/34/EU Zones 0/1/2 BAM · Cu-Be / Al-Br Alloy	DROPS · GWO HTDO 2:1 Proof-Tested & Serialized	ANSI/ISEA 121 Sec. 4 · EN 795 23 kN · SUS 316 Structural	ANSI/ISEA 121-2023 Sec. 7 5:1 Static · 2:1 Inverted Closure	DROPS · G+ EI 3387 SUS 316 Mesh · SWL ≤ 1.0 kg	ANSI/ISEA 121 Sec. 7 · IOGP 376 5:1 Static · SWL 50–100 kg	DROPS Sec. 4.2 · G+ p.47 ISO 12944 CX · SUS 316 / RFID	ABS DOPP+ · EN 13374 OSHA 1910.29(k) · Red Zone
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
	Sector	Discipline	Activity	Risk	LSR	EQ-01	EQ-02	EQ-03	EQ-04	EQ-05	EQ-06	EQ-07	EQ-08	EQ-09	EQ-10	EQ-11	EQ-12	EQ-13	EQ-14	EQ-15	EQ-16
31	Oil & Gas	Surface Prep & Coating	Offshore ultra-high-pressure (UHP) hydro-blasting, grit blasting & ISO 12944 CX painting aloft	1. High reaction nozzle kickback 2. Abrasive grit severing textile cords 3. Paint/solvent fouling carabiners 4. Wet slippery scaffolding	LSR 1, 3, 4, 9 & 10		A		A				M			M			A		M
32	Oil & Gas	Mechanical & Bolting	Thermal & acoustic insulation cladding (sheet-metal jacketing, rivets & banding) on elevated pipes	1. Aviation snips & cordless drills with small slots 2. Sharp stainless cladding panels catching wind 3. Loose pop-rivets & screws spilling	LSR 3, 4, 9 & 10		M		M		A						M				M
33	All Sectors (O&G / Wind)	Lifting & Rigging	Overhead chain-block, lever-hoist, snatch-block & temporary pad-eye rigging aloft	1. Missing split cotter pins on 4-part safety bow shackles 2. Heavy lever hoists (10–30 kg) rigged mid-air 3. Suspended load drop	LSR 3, 5, 6, 9 & 10			A					M			M			M	M	M
34	Oil & Gas	Lifting & Rigging	Offshore pedestal crane boom inspection, wire-rope lubrication & sheave pin maintenance	1. Removable clevis/sheave pins dropped during disassembly 2. Severe grease contamination 3. Exposed boom lattice at 40+ m over sea/deck	LSR 3, 5, 6, 9 & 10				M	M					M	M	M			M	
35	Offshore Wind	Aviation & Marine Deck	Offshore substation / platform helideck perimeter safety net, lighting & tie-down maintenance	1. Rotor wash uplift & FOD ingestion into helicopter turbines 2. Leading-edge fall hazard 3. Extreme CX marine salt corrosion	LSR 3, 4, 9 & 10				M						M	M	M			M	M
36	All Sectors (O&G / Wind)	Civil & Structural	Deck grating removal, temporary floor penetrations & open hatch access works	1. Unsecured grating clamps (0.5 kg) & tools falling through open floor penetrations 2. Personnel stepping into unguarded openings	LSR 3, 4, 9 & 10		A			M						M	M				M

Abbreviation: A: As Required M: Mandatory | Note: This procedure is not applicable if a client procedure is available. However, if the client's requirements fall below SPIE standards, the SPIE standards for Dropped Object Prevention, Tool Tethering, PPE and training must be followed.

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OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

Dropped Object Prevention & Tool Securing Matrix (ANSI/ISEA 121-2023 · DROPS · G+ EI 3387 · GWO HTDO · ATEX · VDE 1000V)

Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
						ANSI/ISEA 121-2023 Sec. 5 CE · SWL 0.9–2.5 kg (2:1)	ANSI/ISEA 121-2023 Sec. 5 SWL 1.4–4.5 kg · Coated Wire	ANSI/ISEA 121 Sec. 5 · DROPS SUS 316 · SWL 5–10 kg	ANSI/ISEA 121-2023 Sec. 4 & 6 SWL ≤ 1.0–1.5 kg · Wrist Tier	ANSI/ISEA 121-2023 Sec. 6 SWL 4.5–10 kg · Trisafe™ 316	ANSI/ISEA 121-2023 Sec. 6.3.4 SWL 0.9–5.0 kg · Zero-Slack	IEC 60900 VDE 1000V AC ANSI/ISEA 121 · Metal-Free	ANSI/ISEA 121 · DROPS SUS 316 Cable · SWL 15–40 kg	ATEX 2014/34/EU Zones 0/1/2 BAM · Cu-Be / Al-Br Alloy	DROPS · GWO HTDO 2:1 Proof-Tested & Serialized	ANSI/ISEA 121 Sec. 4 · EN 795 23 kN · SUS 316 Structural	ANSI/ISEA 121-2023 Sec. 7 5:1 Static · 2:1 Inverted Closure	DROPS · G+ EI 3387 SUS 316 Mesh · SWL ≤ 1.0 kg	ANSI/ISEA 121 Sec. 7 · IOGP 376 5:1 Static · SWL 50–100 kg	DROPS Sec. 4.2 · G+ p.47 ISO 12944 CX · SUS 316 / RFID	ABS DOPP+ · EN 13374 OSHA 1910.29(k) · Red Zone
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
37	All Sectors (O&G / Wind)	Confined Space & Vertical	Vertical vessel, monopile foundation, sump caisson & surge-tank internal entry via tripod/SRL	1. Tools/monitors dropped down vertical manhole onto entrant below 2. Explosive/toxic atmosphere (ATEX / H2S) 3. Wet washdown corrosion (IP69K)	LSR 1, 3, 4, 5, 9 & 10						M			A		M	M	M	A		M
38	All Sectors (O&G / Wind)	Inspection & Commissioning	Non-Destructive Testing (NDT — UT, MPI, Eddy Current, Radiography) on welds at height	1. Smooth couplant-covered probes & UT flaw detectors slipping from hands 2. Cable entanglement on ladders 3. ATEX restrictions in live units	LSR 3, 9 & 10	M			M		A						M	M			
39	All Sectors (O&G / Wind)	Mechanical & Bolting	General light hand-tool maintenance aloft ≤ 1.0 kg (screwdrivers, spanners, pliers, allen keys)	1. Repetitive hand switching causing fumble drops (>39 J @ 4 m) 2. DIY duct-tape wraps peeling in heat/oil 3. Exceeding wrist cuff SWL	LSR 3, 9 & 10	M			M		A				A		M				
40	All Sectors (O&G / Wind)	Mechanical & Bolting	Medium hand & cordless power-tool work aloft 1.0 – 2.7 kg (club hammers, torque wrenches, drills)	1. Peak dynamic shock arrest tearing unrated clips 2. Musculoskeletal wrist injury if wrist-anchored 3. Battery pack detachment on drop	LSR 3, 9 & 10	A	M			M	A				A	M	M				
41	All Sectors (O&G / Wind)	Mechanical & Bolting	Heavy rotary, pneumatic & hydraulic tool operations aloft > 2.7 kg up to 40 kg	1. Severe operator fall/jerk hazard if anchored to body (>2.7 kg / Cenovus >2.0 kg) 2. High impact energy (>340 J @ 10 m) 3. Socket ejection	LSR 3, 5, 6, 9 & 10			M		A			M			M			M		M
42	Onshore Wind	Rope Access & Blade	Winter de-icing, blade inspection & cold-climate turbine maintenance (-35 °C ambient)	1. Brittle failure of uncertified plastics at -35 °C (ANSI Cond. C) 2. Thick insulated gloves unable to operate tiny screw-gates 3. Falling ice/tools	LSR 3, 4, 9 & 10	M				M					A	M	M				M

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OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

Dropped Object Prevention & Tool Securing Matrix (ANSI/ISEA 121-2023 · DROPS · G+ EI 3387 · GWO HTDO · ATEX · VDE 1000V)

Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 40 KG HOT-WORK SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	23kN Anchor & Trisafe 316	2:1 INVERT Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 100 KG Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
43	Oil & Gas	Mechanical & Bolting	**Heat-exchanger bundle pulling, fin-fan air cooler maintenance & elevated condenser cleaning**	1. Congested multi-level pipe-rack below 2. Wet sludge & chemical cleaner exposure 3. Heavy flogging spanners & plug wrenches	LSR 1, 3, 5, 6, 9 & 10			M	A				M	A		M	M				M
44	Oil & Gas	Derrick & Drilling	**Wireline, slickline & coiled-tubing lubricator rigging on wellhead Christmas tree**	1. Tall vertical pressure lubricator assembly (12 kg downhole tools) 2. Live well pressure & hydrocarbon Ex zone 3. Overhead crane & man-riding	LSR 1, 3, 5, 6, 9 & 10			M					M	M		M		M	M	M	M
45	Offshore Wind	Mechanical & Bolting	**Subsea cable hang-off platform, J-tube bellmouth & monopile internal platform installation**	1. Open monopile sump drop into water 2. Heavy pulling clamps, shackles & chain hoists 3. High humidity & CX salt condensation	LSR 3, 4, 5, 6, 9 & 10			M		M			M			M	M		M	M	M
46	All Sectors (O&G / Wind)	Mechanical & Bolting	**HVAC ductwork, exhaust stack damper & utility blower installation at elevation**	1. Sheet-metal screws, pop rivets & snips falling 2. Vibration loosening damper linkages & fan bolts 3. Pinch points & electrical isolation	LSR 1, 2, 3, 9 & 10		M		A	M						M	M			M	
47	Oil & Gas	Inspection & Commissioning	**3-Year Independent DROPS Survey, Picture-Book verification & RFID secondary retention audit**	1. Corroded carbon-steel strops or broken zip-ties on overhead fixtures 2. Unrecorded third-party temporary equipment aloft 3. Derrick/nacelle climb	LSR 3, 9 & 10				M							M		M		M	
48	Onshore Wind	Lifting & Rigging	**Main crane nacelle/hub/blade erection & tag-line / rigging hardware handling at tower top**	1. Dropped shackles, tag-line carabiners, alignment pins & torque sockets from 100+ m 2. High wind gusts & suspended mega-loads	LSR 3, 4, 5, 6, 9 & 10			M		M			M			M	M		M	M	M

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						ANSI/ISEA 121-2023 Sec. 5 CE · SWL 0.9–2.5 kg (2:1)	ANSI/ISEA 121-2023 Sec. 5 SWL 1.4–4.5 kg · Coated Wire	ANSI/ISEA 121 Sec. 5 · DROPS SUS 316 · SWL 5–10 kg	ANSI/ISEA 121-2023 Sec. 4 & 6 SWL ≤ 1.0–1.5 kg · Wrist Tier	ANSI/ISEA 121-2023 Sec. 6 SWL 4.5–10 kg · Trisafe™ 316	ANSI/ISEA 121-2023 Sec. 6.3.4 SWL 0.9–5.0 kg · Zero-Slack	IEC 60900 VDE 1000V AC ANSI/ISEA 121 · Metal-Free	ANSI/ISEA 121 · DROPS SUS 316 Cable · SWL 15–40 kg	ATEX 2014/34/EU Zones 0/1/2 BAM · Cu-Be / Al-Br Alloy	DROPS · GWO HTDO 2:1 Proof-Tested & Serialized	ANSI/ISEA 121 Sec. 4 · EN 795 23 kN · SUS 316 Structural	ANSI/ISEA 121-2023 Sec. 7 5:1 Static · 2:1 Inverted Closure	DROPS · G+ EI 3387 SUS 316 Mesh · SWL ≤ 1.0 kg	ANSI/ISEA 121 Sec. 7 · IOGP 376 5:1 Static · SWL 50–100 kg	DROPS Sec. 4.2 · G+ p.47 ISO 12944 CX · SUS 316 / RFID	ABS DOPP+ · EN 13374 OSHA 1910.29(k) · Red Zone
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▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
49	Oil & Gas	Mechanical & Bolting	Offshore living-quarters (LQ) exterior facade, lifeboat davit & muster walkway maintenance	1. Dropped tools over sea or lifeboat embarkation decks 2. Marine CX salt spray 3. Sheave pin & shackle security on launch davits	LSR 3, 4, 5, 6, 9 & 10				A	M					A	M	M			M	M
50	Oil & Gas	Electrical & HV	Battery room, UPS cabinet & emergency generator switchgear maintenance on elevated decks	1. DC arc-flash & short-circuit hazard (1500V DC / battery banks) 2. Corrosive electrolyte mist 3. Dropped insulated spanners	LSR 1, 2, 9 & 10							M					M	A			
51	Offshore Wind	Rope Access & Blade	External tower cleaning, weld inspection & corrosion touch-up repair via rope access	1. Dropped scrapers, paint pots, brushes & grinders over transition piece 2. Wet soapy lines & gloved hands 3. Dual-tool transfer aloft	LSR 3, 4, 9 & 10	M	M			M						M	M		M		M
52	Oil & Gas	Mechanical & Bolting	Shutdown / Turnaround (TAR) blind-flange spading, valve changeout & pipefitters work aloft	1. High contractor density (multi-tier SIMOPS) 2. Heavy flange spreaders, wedges & slogging hammers in Ex zones 3. Dropped gaskets/bolts	LSR 1, 3, 4, 5, 6, 9 & 10			M					M	M		M	M		M		M
53	Onshore Wind	Electrical & HV	Down-tower power cable saddle cleating, fiber-optic splicing & busbar inspection along tower wall	1. Repetitive vertical ladder/lift stops 2. Hundreds of loose M10/M12 cleat bolts & washers 3. Dropped crimpers, strippers & torque wrenches	LSR 1, 2, 3, 9 & 10	M					M	M				M	M		A		
54	Oil & Gas	Civil & Structural	Structural fireproofing (PFP) repair, concrete chipping & anchor-bolt drilling on pipe racks	1. Heavy SDS rotary hammer drills & chisels (>5 kg) under percussion 2. Falling concrete/PFP debris onto lower walkways 3. Dust & vibration	LSR 3, 4, 9 & 10		A	M		M						M	A				M

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OIL & GAS OFFSHORE WIND (CX) ONSHORE WIND

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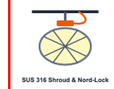
Sno	Sector	Main Discipline	Activities at Height	Hazard & Risk	Related LSR	EQ-01 Self-Vulcanizing Tape & D-Ring Tails	EQ-02 Wire Choke Loops & Power Tool Brackets	EQ-03 SUS 316 Clamp Collars & Socket Locks	EQ-04 Short Coil Lanyards & Wrist Anchors	EQ-05 Shock-Absorbing & Twin-Leg Lanyards	EQ-06 Anti-Snag Retractable Tool Reels	EQ-07 Dielectric Lanyards & VDE 1000V Tools	EQ-08 Heavy-Duty Heat-Proof Wire Slings	EQ-09 ATEX Non-Sparking Tether-Ready Tools	EQ-10 OEM Tether-Ready Tools (Shadow Foam)	EQ-11 Harness Loops, MEWP Hooks & Anchors	EQ-12 Self-Closing Bolt & Tool Pouches	EQ-13 SUS 316 Radio & Gas Detector Holster	EQ-14 Certified Hoist Buckets & Lift Bags	EQ-15 SUS 316 Fixture Nets, Slings & Nord-Lock	EQ-16 Guardrail Barriers, Drop Mats & Nets
						ANSI/ISEA 121-2023 Sec. 5 CE · SWL 0.9–2.5 kg (2:1)	ANSI/ISEA 121-2023 Sec. 5 SWL 1.4–4.5 kg · Coated Wire	ANSI/ISEA 121 Sec. 5 · DROPS SUS 316 · SWL 5–10 kg	ANSI/ISEA 121-2023 Sec. 4 & 6 SWL ≤ 1.0–1.5 kg · Wrist Tier	ANSI/ISEA 121-2023 Sec. 6 SWL 4.5–10 kg · Trisafe™ 316	ANSI/ISEA 121-2023 Sec. 6.3.4 SWL 0.9–5.0 kg · Zero-Slack	IEC 60900 VDE 1000V AC ANSI/ISEA 121 · Metal-Free	ANSI/ISEA 121 · DROPS SUS 316 Cable · SWL 15–40 kg	ATEX 2014/34/EU Zones 0/1/2 BAM · Cu-Be / Al-Br Alloy	DROPS · GWO HTDO 2:1 Proof-Tested & Serialized	ANSI/ISEA 121 Sec. 4 · EN 795 23 kN · SUS 316 Structural	ANSI/ISEA 121-2023 Sec. 7 5:1 Static · 2:1 Inverted Closure	DROPS · G+ EI 3387 SUS 316 Mesh · SWL ≤ 1.0 kg	ANSI/ISEA 121 Sec. 7 · IOGP 376 5:1 Static · SWL 50–100 kg	DROPS Sec. 4.2 · G+ p.47 ISO 12944 CX · SUS 316 / RFID	ABS DOPP+ · EN 13374 OSHA 1910.29(k) · Red Zone
						 Silicone Tape + D-Ring	 Wire Loop & Tool Bracket	 316 Collar & Socket Pin	 Wrist Cuff & Short Coil	 Shock Bungee / Twin-Leg	 Retractable Tool Reel	 VDE 1000V & Dielectric	 SUS 316 Wire Tool Sling	 ATEX Cu-Be Non-Sparking	 OEM SLS/TAH Shadow Foam	 23kN Anchor & Trisafe 316	 Self-Closing Bolt Pouch	 SUS 316 Mesh Radio Pouch	 Certified Hoist Bucket	 SUS 316 Shroud & Nord-Lock	 DOPP+ Barrier & Drop Mat
▾	Sector ▾	Discipline ▾	Activity ▾	Risk ▾	LSR ▾	EQ-01 ▾	EQ-02 ▾	EQ-03 ▾	EQ-04 ▾	EQ-05 ▾	EQ-06 ▾	EQ-07 ▾	EQ-08 ▾	EQ-09 ▾	EQ-10 ▾	EQ-11 ▾	EQ-12 ▾	EQ-13 ▾	EQ-14 ▾	EQ-15 ▾	EQ-16 ▾
55	Offshore Wind	Instrumentation & Telecom	SCADA cabinet, Condition Monitoring System (CMS) accelerometer & yaw-sensor replacement	1. Tiny terminal screwdrivers, hex keys & M6 sensors dropped into yaw ring teeth 2. Energized 24V/400V control panels	LSR 1, 2, 3, 9 & 10	A			M			M					M	A			
56	Oil & Gas	Lifting & Rigging	Pre-shipping onshore yard inspection of offshore baskets, CCUs & modular skids before sail-away	1. Loose tools/debris sitting on top of container roofs ('Forklift/Crane Roof FOD') 2. Unsecured shackles or missing secondary nets prior to offshore lift	LSR 5, 6, 9 & 10										A				M	M	A
57	All Sectors (O&G / Wind)	Emergency & Rescue	High-angle technical rescue, injured-technician hub/tower evacuation & stretcher lowering	1. Panic/rush tool or hardware drop onto casualty below 2. Tangled lanyards impeding EVAC-R rescue device 3. Harsh offshore weather	LSR 3, 5, 6, 9 & 10						M					M	M	M			M
58	Oil & Gas	Mechanical & Bolting	Reciprocating gas compressor, turbine skid & mud-pump overhead canopy / piping maintenance	1. Continuous high-amplitude machine vibration loosening standard nuts 2. Explosive gas Zone 1/2 3. Oily handrails & grating	LSR 1, 3, 9 & 10			M	M					M		M	M			M	A
59	Onshore Wind	Mechanical & Bolting	Yaw brake caliper pad replacement, yaw gear greasing & yaw-ring bolt re-torqueing	1. Heavy hydraulic caliper tools & grease guns 2. Slippery synthetic yaw grease fouling standard velcro 3. Narrow yaw deck edge	LSR 1, 3, 9 & 10			M	M				M		M	M	M				A
60	All Sectors (O&G / Wind)	General Work at Height	Ground-level & lower-deck SIMOPS Red Zone / No-Go Zone setup beneath active overhead work	1. Lateral trajectory widening from mid-level pipe/tower deflection 2. Unauthorized personnel walking beneath suspended loads or climbers 3. Inadequate hazard tape	LSR 3, 4, 5, 9 & 10													A	A		M

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Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
1		101361	NLG® (Never Let Go)	Tool Attachments	**Small D-Ring Webbing Tool Tether Tail** Non-destructive retrofit D-ring webbing strap bonded onto small hand tools using NLG Tether Tape™ without drilling, welding, or voiding OEM tool warranties.	**1.0 kg (2.2 lbs)** 2:1 Dynamic (3rd-Party Lab Tested)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5, CE Marked (EU DoC), NLG ID™ Serialized **Materials:** High-visibility green structural synthetic webbing + welded metal D-ring	**Never install with standard PVC electrical tape or duct tape; bond strictly with certified self-fusing silicone tape.**
2		101355	NLG® (Never Let Go)	Tool Attachments	**Tether Tape™ Self-Vulcanizing Silicone Wrap** Adhesive-free self-fusing silicone tape that molecularly bonds to itself when stretched over D-ring tool tails, resisting oil, salt spray, UV, and thermal cycling.	**Up to 2.5 kg (5.5 lbs) system-dependent** 2:1 Dynamic (with matching D-Ring Tail)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5, CE Marked **Materials:** High-vis green fibreglass-reinforced self-amalgamating silicone elastomer (zero adhesive)	**Do not wrap over moving triggers, dead-man switches, or calibrated micrometer collars on torque wrenches.**
3		SQUIDS-3704	Ergodyne	Tool Attachments	**Squids® Coated Wire-Rope Choke Loop Attachment** Ultra-thin coated steel cable choke loop engineered for hand tools with small factory hang holes or narrow slotted frames where webbing tails cannot pass.	**1.4 kg (3.0 lbs)** 1:1 Dynamic × 3 Drops (ANSI 121 Table 1)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5 **Materials:** Orange PU-coated aircraft steel wire cable, crimped barrel stop, stitched ID rating tab	**Never drill aftermarket holes into hardened hand tools to fit a wire loop—micro-cracks cause sudden tool fracture under load.**
4		SQUIDS-3705	Ergodyne	Tool Attachments	**Squids® Threaded-Collar Captive Wire Loop** Semi-rigid coated wire cable ring closed by a knurled threaded barrel nut, forming a permanent closed captive ring on box-end wrenches and diagnostic instruments.	**1.4 kg (3.0 lbs)** 1:1 Dynamic × 3 Drops (ANSI 121)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5 **Materials:** Coated stainless/galvanized wire cable + knurled black screw-locking barrel collar	**Do not substitute consumer keyrings or split-rings—they deform and uncoil at < 0.2 kg dynamic shock.**
5		SQUIDS-3755	Ergodyne	Tool Attachments	**Squids® Bolt-On Power Tool Trap Bracket** Rigid stamped metal bracket mounting directly beneath an angle grinder or cordless drill side-handle port where heat and vibration destroy tape-on attachments.	**4.5 kg (10.0 lbs)** 1:1 Dynamic × 3 Drops (ANSI 121)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5 **Materials:** Brushed corrosion-resistant stamped steel bracket + fasteners + load-rating tag	**Must never compromise OEM housing bolts or safety guards; verify fastener thread engagement length.**
6		SQUIDS-3700/3713	Ergodyne	Tool Attachments	**Squids® Webbing D-Ring Tool Tail + Silicone Tape System** Proven retrofit attachment tail validated in NATE dropped-object trials on standard and mini torque wrenches, spud wrenches, and hand hammers.	**0.9 kg (2.0 lbs)** 1:1 Dynamic × 3 Drops (ANSI 121)	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 5 **Materials:** High-tenacity nylon webbing, plated D-ring, self-fusing silicone tape (#3750)	**Respect 0.9 kg (2.0 lbs) published cap—weakest-link rule reduces any higher-rated attached lanyard to 0.9 kg.**
7		H01010	GRIPPS®	Tool Attachments	**V-Gripp™ Self-Fusing Tape & Tool Catch Pack** Higher-capacity 2.5 kg retrofit tool connector kit designed for solid-handle club hammers, podger spanners, and heavy combination wrenches.	**2.5 kg (5.5 lbs)** ANSI 121 Dynamic Certified	TOOL	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 5 **Materials:** Molded reinforced nylon D-ring catch + V-Gripp™ high-friction silicone fusion tape	**Inspect tape edges before each shift for cuts, oil swelling, or slippage.**

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Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
8	 316 Collar & Socket Pin	REF-TA-316C	Industrial Reference Spec (DROPS / Offshore)	Tool Attachments	**SUS 316 Hinged Clamp Collar w/ Prevailing-Torque Locknut** Rigid marine-grade stainless steel clamp collar with prevailing-torque locknut engineered for heavy pneumatic, hydraulic, and rotary impact tools under intense vibration.	**5.0 – 10.0 kg (11 – 22 lbs)** 2:1 Dynamic / Positive Mechanical Clamp	TOOL	M	M	M	**Standards:** ANSI/ISEA 121 Sec. 5, DROPS Reliable Securing, ISO 12944 C5-M / CX **Materials:** Marine-grade SUS 316 (A4) stainless steel collar, captive swivel eye, locknut screw	**Tools > 2.7 kg (6 lbs) fitted with this collar MUST be anchored to a fixed structural anchor—never to wrist or harness.**
9	 316 Collar & Socket Pin	REF-TA-PLOCK	DROPS / G+ Mandatory Spec	Tool Attachments	**Positive-Locking Impact Socket Pin & Ring Retention System** Positive through-hole mechanical locking pin and elastomer ring securing impact sockets and extensions onto square-drive torque and impact wrenches.	**Up to 5.0 kg (Socket Retention)** Positive Through-Bore Mechanical Lock	TOOL	M	M	M	**Standards:** DROPS Recommended Practice, G+ Offshore Wind Reliable Securing, GWO HTDO **Materials:** Hardened alloy / SUS 316 retaining pin + polyurethane elastomer security O-ring or integrated plunger lock	**DROPS STRICT BAN: Standard friction ball-detent sockets and unpinned adapters are strictly prohibited at height.**
10	 Wrist Cuff & Short Coil	101364	NLG® (Never Let Go)	Tool Lanyards	**Short Coil Tool Lanyard w/ Dual Quick Clip™ Swivels** Ultra-compact zero-snag coiled lanyard for light hand tools, keeping slack close to the wrist or waist cuff while providing full arm reach.	**1.0 kg (2.2 lbs)** 2:1 Dynamic (3rd-Party Tested)	WRIST	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 6, CE Marked, NLG ID™ Serialized **Materials:** High-vis green PU memory coil over structural core + dual 360° swivel trigger clips + heat-shrink ferrules	**Quarantine immediately after arresting any drop event—never return a shock-loaded coil to service.**
11	 VDE 1000V & Dielectric	101710	NLG® (Never Let Go)	Tool Lanyards	**GO™ Non-Conductive Dielectric Coil Lanyard (3 kg)** Completely metal-free, non-conductive 3 kg coil tool lanyard engineered for live electrical cabinets, wind turbine converters, HV switchgear, and offshore substations.	**3.0 kg (6.6 lbs)** 2:1 Dynamic (ANSI 121)	WAIST	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 6, GWO High Voltage / CoHE Compatible, CE Marked **Materials:** 100% metal-free PU coil + high-tenacity aramid/nylon climbing cord choke loops	**Keep clean of conductive carbon dust, metal filings, and salt-crust buildup to preserve dielectric integrity.**
12	 VDE 1000V & Dielectric	101376	NLG® (Never Let Go)	Tool Lanyards	**Short Non-Conductive Dielectric Coil Lanyard (1 kg)** Wrist-compatible metal-free short coil tether for VDE insulated screwdrivers, terminal wrenches, and voltage testers in live electrical panels.	**1.0 kg (2.2 lbs)** 2:1 Dynamic (ANSI 121)	WRIST	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 6, CE Marked **Materials:** Metal-free polyurethane coil + engineered dielectric polymer swivel connectors	**Do not exceed 1.0 kg load rating; inspect polymer gate return springs prior to every shift.**
13	 VDE 1000V & Dielectric	H01065 / H01063	GRIPPS®	Tool Lanyards	**Dielectric Coil E-Tether w/ Poly Clamp / Swivel Clip** Ultralight non-conductive tether securing multimeters, anemometers, inspection cameras, and calibration styluses near energized equipment.	**0.5 kg (1.1 lbs)** ANSI 121 Dynamic Certified	WRIST	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 6 **Materials:** Industrial polyurethane memory coil + 100% metal-free engineered poly clamp/clip	**Strictly limited to light electronics and instruments ≤ 0.5 kg.**
14	 Shock Bungee / Twin-Leg	SQUIDS-3100	Ergodyne	Tool Lanyards	**Squids® Shock-Absorbing Bungee Tool Lanyard (Single Carabiner)** Industry-standard shock-absorbing bungee tether dissipating peak arrest force on dropped hand tools up to 4.5 kg (10 lbs).	**4.5 kg (10.0 lbs)** 2:1 (1st Drop) / 1:1 (Drops 2–3) per ANSI 121	WAIST	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 6 **Materials:** 1680D tubular nylon webbing + internal energy-absorbing elastomer core + anodized locking carabiner	**Account for 107 cm stretched length + elastic elongation when calculating clearance above lower-level workers.**

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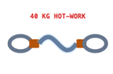
Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
15	 Shock Bungee / Twin-Leg	SQUIDS-3110 / REF-BUNG-2C	Ergodyne / NLG / GRIPPS Reference	Tool Lanyards	**Dual Captive-Carabiner Energy-Absorbing Bungee Tether** Rapid-swap shock-absorbing lanyard equipped with captive-eye auto-locking carabiners at both ends for fast tool exchange at height.	**4.5 kg (10.0 lbs)** 2:1 (1st Drop) / 1:1 (Drops 2–3)	WAIST	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 6 **Materials:** Tubular high-tenacity nylon webbing, elastomer shock core, dual double/triple-action captive-eye carabiners	**Never clip carabiner back onto the lanyard webbing itself unless manufacturer-rated for choke configuration.**
16	 Retractable Tool Reel	SQUIDS-3001	Ergodyne	Tool Lanyards	**Squids® Compact Retractable Tool Lanyard (SS Carabiner)** Low-profile self-retracting tool reel keeping zero slack line while climbing narrow wind turbine internal ladders or scaffolding.	**0.9 kg (2.0 lbs)** 2:1 Dynamic (ANSI 121)	WAIST	M	M	M	**Standards:** ANSI/ISEA 121-2023 Sec. 6.3.4 **Materials:** Cut-resistant Dyneema®/UHMWPE cord in polycarbonate housing + stainless steel locking carabiner	**Do not release extended cord to snap back uncontrolled into the housing.**
17	 Retractable Tool Reel	REF-TL-RET50	Industrial Reference Spec (NLG / GRIPPS / Python)	Tool Lanyards	**Heavy-Duty Automatic Anti-Snag Retractable Tool Reel (5 kg)** Centrifugal-braking retractable reel (mini tool-SRL) that pays out smoothly during use and locks instantly upon sudden drop acceleration.	**2.5 – 5.0 kg (5.5 – 11.0 lbs)** 2:1 Dynamic Brake Arrest (ANSI 121 Sec. 6.3.4)	STRUCTURE	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 6.3.4, DROPS Recommended Practice **Materials:** SUS 316 stainless wire or UHMWPE braided line in impact-modified ABS/alu housing + centrifugal pawl brake	**Inspect cable exit nozzle for fraying or broken strands before each climb.**
18	 Shock Bungee / Twin-Leg	DL100021	KStrong®	Tool Lanyards	**Single-Leg Heavy Elasticated Tool Lanyard (10 kg)** High-capacity 10 kg elasticated webbing lanyard built for cordless impact wrenches, medium drills, and structural bolting tools.	**10.0 kg (22.0 lbs)** Offshore Wind Rated	STRUCTURE	M	M	M	**Standards:** KStrong Offshore Wind Series, DROPS / G+ Guidelines **Materials:** Heavy-duty red/black elasticated polyester webbing, cord choke loop w/ barrel lock, screw-gate carabiner	**NEVER attach > 2.7 kg tools to wrist or waist—falling 10 kg tools can pull a technician off balance or cause severe musculoskeletal injury.**
19	 Shock Bungee / Twin-Leg	DL100022	KStrong®	Tool Lanyards	**Twin-Leg 100% Tie-Off Elasticated Tool Lanyard (10 kg)** Y-configuration twin-leg tool lanyard enabling simultaneous dual-tool security or continuous 100% tie-off during mid-air tool hand-offs between technicians.	**10.0 kg (22.0 lbs)** Offshore Wind Rated	STRUCTURE	M	M	M	**Standards:** KStrong Offshore Wind Series, DROPS 100% Tie-Off Protocol **Materials:** Twin red/black elasticated webbing legs + central screw-locking carabiner + dual barrel-lock choke loops	**Do not exceed 10 kg combined load across the shared central carabiner.**
20	 Shock Bungee / Twin-Leg	DS-TT-316	Dropsafe®	Tool Lanyards	**Offshore Handheld Tool Tether w/ Trisafe™ SUS 316 Carabiner** Purpose-built marine tool tether integrating Dropsafe's patented Trisafe™ triple-action auto-locking carabiner operable with thick offshore rig/wind gloves.	**Up to 5.0 kg (Range Dependent)** Marine Offshore Rated	WAIST	M	M		**Standards:** DROPS Recommended Practice, G+ Offshore Wind Guidelines, OSHA 1910/1926 **Materials:** Marine-grade SUS 316 stainless steel Trisafe™ triple-action carabiner + heavy-duty offshore tether line	**Anchor tools > 2.7 kg strictly to structural pad eyes or handrails.**
21	 40 KG HOT-WORK SUS 316 Wire Tool Sling	REF-TL-HD40 / NLG-HD	NLG® / Offshore Reference Spec	Tool Lanyards	**Heavy-Duty PU-Sheathed SUS 316 Wire Tool Sling (15–40 kg)** Extreme-duty cut-, spark-, and heat-resistant stainless steel wire tether engineered for hydraulic torque wrenches, bolt tensioning jacks, and hot-work grinding.	**15.0 – 40.0 kg (33 – 88 lbs)** 2:1 Dynamic / Swaged Thimble Eyes	STRUCTURE	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023, DROPS Reliable Securing, ISO 12944 CX **Materials:** 7×19 marine SUS 316 stainless steel wire rope + transparent PU/PVC protective sheath + swaged ferrules & thimbles	**MANDATORY FIXED STRUCTURAL ANCHORAGE ONLY (≥ 23 kN anchor strap or certified pad eye). Never attach to technician body.**

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Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
22	 Wrist Cuff & Short Coil	101365	NLG® (Never Let Go)	Anchors & Connectors	**Adjustable Breathable Mesh Wristband Anchor** Ergonomic ventilated wrist anchor providing short-drop-distance tethering for light screwdrivers, spanners, and inspection gauges up to 1.0 kg.	**1.0 kg (2.2 lbs)** 2:1 Dynamic (3rd-Party Tested)	WRIST	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 4, CE Marked, NLG ID™ Serialized **Materials:** 3D breathable polyester mesh, industrial hook-and-loop cuff, welded rigid load-rated D-ring	**Do not wear near unguarded rotating machinery/lathes where entanglement risk overrides drop risk.**
23	 Wrist Cuff & Short Coil	DA300401	KStrong®	Anchors & Connectors	**Padded Wristband Tool Holder w/ Integrated Choke Tether** All-in-one padded wrist cuff with permanently stitched short elastic choke tether for rapid attachment of light maintenance tools.	**0.9 kg (2.0 lbs)** Offshore Wind Rated	WRIST	M	M	M	**Standards:** KStrong Offshore Wind Catalog **Materials:** Padded synthetic cuff + red/black elasticated webbing tail + adjustable barrel-lock cord loop	**Strictly capped at 0.9 kg (2.0 lbs) maximum tool mass.**
24	 Wrist Cuff & Short Coil	H01086 / H01085	GRIPPS®	Anchors & Connectors	**Grease- & Dust-Repellent Industrial Wrist Anchor** Heavy-duty wrist cuff engineered with specialized hook-and-loop fasteners that resist fouling from drilling mud, gearbox grease, and composite blade dust.	**2.5 kg Rated Cuff (Recommend ≤ 1.5 kg Ergonomic Wrist Cap)** ANSI 121 Dynamic Certified	WRIST	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 4 **Materials:** Oil/grease-repellent industrial hook-and-loop closure + tactical webbing + tactical load ring (H01085 slip-on variant available)	**Clean hydrocarbon buildup periodically and verify full hook engagement before climb.**
25	 23kN Anchor & Trisafe 316	1500161	3M™ DBI-SALA®	Anchors & Connectors	**DBI-SALA® Fall Protection Harness Webbing Tool Anchor** Dedicated low-profile harness webbing attachment providing an independent 2.3 kg (5 lb) tool anchor point while keeping personal fall-arrest D-rings 100% clear.	**2.3 kg (5.0 lbs)** 1:1 Dynamic × 3 Drops (ISO 17025 Lab Certified)	WAIST	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 4, ISO 17025 Accredited Lab Tested **Materials:** Black corrosion-coated high-strength alloy steel clip + captive triangular tethering eyelet	**NEVER clip tools to personal fall-arrest D-rings—interferes with SRL/lanyard gate function during a fall.**
26	 23kN Anchor & Trisafe 316	2410 / 2410T	Buckingham Mfg.	Anchors & Connectors	**Lattice-Reinforced Polymer MEWP / Aerial Bucket Hook** Non-conductive over-the-lip aerial basket hook featuring internal/external staging hooks plus an integrated bottom ANSI 121 tethering eyelet.	**6.8 kg (15.0 lbs) + Bottom Tether Eye** 1:1 Dynamic × 3 Drops (ANSI 121)	STRUCTURE	M		M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 4, NATE Approved Guide **Materials:** High-visibility green glass-reinforced dielectric polymer with structural lattice ribs	**Never drill holes into MEWP handrails or fiberglass buckets to improvise anchor points.**
27	 23kN Anchor & Trisafe 316	AFA930001SS	KStrong®	Anchors & Connectors	**Stainless Steel Bolt-On Structural Anchor Point** Permanent marine stainless steel structural D-ring anchor pad for securing heavy hydraulic tools (> 2.7 kg up to 40 kg), hoist buckets, and SRLs.	**Structural Anchor (≥ 12–23 kN Ultimate; Supports ≤ 40 kg Tool Slings)** Structural Fall/Tool Anchorage	STRUCTURE	M	M	M	**Standards:** EN 795, KStrong Offshore Wind Series, ISO 12944 CX **Materials:** Forged/cast corrosion-resistant marine stainless steel bracket + pivoting D-ring	**Verify host steel thickness and bolt torque specification with structural engineer before loading.**
28	 23kN Anchor & Trisafe 316	AFA921515(1.5M)	KStrong®	Anchors & Connectors	**23 kN Structural Webbing Choke-Loop Anchor Strap (1.5 m)** Portable high-strength structural beam and tower-frame choke strap creating an instant certified fixed anchor point without hot work.	**23 kN Minimum Breaking Strength (Supports Heavy Tool Slings ≤ 40 kg)** 23 kN Structural Rated	STRUCTURE	M	M	M	**Standards:** EN 795 Type B, KStrong Offshore Wind Series **Materials:** 45 mm heavy-duty abrasion-sleeved polyester webbing + forged alloy D-ring	**Never choke around process instrumentation tubing, cable trays, or unrated handrails.**

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Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
29	 23kN Anchor & Trisafe 316	DS-TRISAFE-316	Dropsafe®	Anchors & Connectors	**Trisafe™ SUS 316 Triple-Action Auto-Locking Carabiner** Patented marine 316 stainless steel triple-action auto-locking carabiner engineered for one-handed operation in thick offshore gloves while resisting vibration unlatching.	**> 5:1 SWL Factor on Fixture Nets & Tool Tethers** > 5:1 Working Load Factor	STRUCTURE	M	M	M	**Standards:** DROPS Recommended Practice, G+ Reliable Securing, ANSI/ISEA 121 Captive-Locking Compliant **Materials:** 100% Marine-grade SUS 316 (A4) stainless steel + captive eye geometry	**Non-locking snap hooks and carabiners without captive eyes are non-compliant under ANSI/ISEA 121.**
30	 OEM SLS/TAH Shadow Foam	FACOM-SLS-SERIES	Facom®	Tether-Ready Tools	**SLS® (Safety Lock System) Factory Tether-Ready Hand Tools** Factory-engineered Tools-at-Height featuring permanently swaged stainless steel cable rings individually proof-tested and laser-serialized with an inspection certificate.	**Individually Dynamometer Tested (2× Tool Mass)** 2:1 Individual Proof-Load Tested & Serialized	TOOL	M	M	M	**Standards:** Facom SLS Individual Proof Certificate, DROPS Compliant **Materials:** Chrome-vanadium forged steel tools + swaged stainless steel rotating cable ring	**Never modify or grind the swaged SLS ferrule; pair ratchets strictly with positive-locking sockets.**
31	 OEM SLS/TAH Shadow Foam	BAHCO-TAH-WIND	Bahco®	Tether-Ready Tools	**TAH (Tools at Height) Wind Turbine Maintenance Tool Range** OEM tether-ready wrenches, adjustable spanners, torque wrenches, and pliers fitted with permanent stainless captive rings and supplied in two-color FOD shadow foam.	**DROPS Dynamic Drop-Tested per Tool** DROPS / TAH Dynamic Certified	TOOL	M	M	M	**Standards:** DROPS Best Practice, GWO HTDO Aligned **Materials:** High-performance alloy steel + stainless steel captive rings / shackle plates	**Missing tool in shadow foam triggers immediate DROPS Stop-Work until located.**
32	 VDE 1000V & Dielectric	REF-VDE-1000V-TAH	Facom SLS VDE / Bahco TAH Ergo™ / Knipex Tethered	Tether-Ready Tools	**IEC 60900 VDE 1000V Insulated Tether-Ready Hand Tools** Dual-certified 1000V insulated hand tools with integrated non-conductive tethering slots for wind turbine converters, transformers, and offshore HVDC platforms.	**≤ 1.5 kg (1000V AC / 1500V DC Dielectric)** 10,000V Dielectric Routine Test + Integrated Tether Eye	TOOL	M	M	M	**Standards:** IEC 60900 / VDE 1000V AC / 1500V DC, ANSI/ISEA 121, GWO High Voltage **Materials:** Dual-layer injection-molded VDE elastomer insulation + non-conductive integrated tether loop	**Never attach conductive wire lanyards or metal D-rings onto VDE 1000V live-working tools.**
33	 ATEX Cu-Be Non-Sparking	REF-ATEX-CUBE-TAH	Ampco® / Facom ADF / Bahco Non-Sparking	Tether-Ready Tools	**ATEX Non-Sparking Cu-Be / Al-Br Tether-Ready Tools** Explosion-proof non-ferrous hand tools with OEM captive tether points preventing both mechanical impact sparks and dropped-object ignition in hydrocarbon Ex zones.	**0.3 – 5.0 kg (Ex Zone 0, 1, 2 & 20, 21, 22)** ATEX Directive 1999/92/EC & 2014/34/EU Compliant	TOOL	M			**Standards:** ATEX 2014/34/EU (Ex Zones 0/1/2), BAM Certified, DROPS Compliant **Materials:** Copper-Beryllium (Cu-Be) or Aluminum-Bronze (Al-Br) non-ferrous non-sparking, non-magnetic, corrosion-resistant alloys	**Pair with non-sparking / coated connectors in Zone 0/1; avoid Copper-Beryllium contact with acetylene (use Al-Br instead).**
34	 Self-Closing Bolt Pouch	ARSENAL-5517 / 5527	Ergodyne	Containers & Hoisting	**Arsenal® Zippered & Cinch-Top At-Height Tool Pouches** Belt- or harness-mounted tool pouch certified to retain contents under full 180° inversion and fitted with rated exterior D-rings for tool lanyard tie-off.	**9.1 kg (20.0 lbs)** 5:1 Static / 2:1 Dynamic / 2:1 Inverted Closure (ANSI 121)	CONTAINER	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 7 **Materials:** Heavy-duty ballistic synthetic canvas, reinforced puncture-resistant base, dual exterior steel D-rings, heavy top zipper (5517)	**Close top zipper/cinch completely during vertical ladder ascents and rope-access descents.**
35	 Self-Closing Bolt Pouch	1500119 / ARSENAL-5528	3M™ DBI-SALA® / Ergodyne	Containers & Hoisting	**Self-Closing Flange-Bolting Small-Parts & Fastener Pouch** Engineered small-parts pouch whose self-closing baffle allows a gloved hand in and out freely while automatically trapping loose nuts, bolts, and washers if inverted.	**Up to 11.3 kg (25 lbs) — Self-Trapping Mouth** 5:1 Static & 2:1 Inverted Ball-Bearing Test (ISO 17025)	CONTAINER	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 7, ISO 17025 Lab Certified **Materials:** Heavy-duty canvas + flexible overlapping neoprene/spring-baffle self-closing mouth + belt loops & D-rings	**Never carry loose bolts, washers, or tong dies in open coverall pockets at height.**

SPIE

Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
36	 SUS 316 Mesh Radio Pouch	DS-POUCH-316	Dropsafe®	Containers & Hoisting	**SUS 316 Stainless Wire Mesh Radio & Gas Detector Pouch** Open-weave marine 316 stainless steel mesh holster encapsulating portable ATEX radios and multi-gas detectors that lack OEM tether eyes without blocking speakers or gas sensors.	**0.5 – 1.0 kg (1.1 – 2.2 lbs)** Marine SUS 316 Full Enclosure	WAIST	M	M		**Standards:** DROPS Recommended Practice, G+ Offshore Wind Booklet, ISO 12944 CX **Materials:** 100% Marine-grade SUS 316 braided stainless steel mesh + tether lanyard & belt/harness clip	**Verify gas-detector sensor ports remain unobstructed after seating inside mesh.**
37	 Self-Closing Bolt Pouch	ARSENAL-5555 / 5560	Ergodyne (NLG / GRIPPS Equivalents)	Containers & Hoisting	**Padded At-Height Tool Belt & Load-Distributing Suspenders** Dedicated waist-and-shoulder load distribution belt system providing rated holster/pouch mounting independent of the technician's life-safety harness.	**Waist Anchor Platform (≤ 2.7 kg / 6 lbs per Tether)** ANSI 121 Ecosystem	WAIST	M	M	M	**Standards:** ANSI/ISEA 121 System Compatible **Materials:** Ventilated EVA foam waist pad, heavy nylon webbing, nickel-plated hardware, 4-point suspender harness	**Never use a tool belt as a work-positioning or fall-arrest belt.**
38	 Certified Hoist Bucket	101360 / 101425	NLG® (Never Let Go)	Containers & Hoisting	**Ascent™ Heavy-Duty Certified Hoist Bucket (100 kg)** Flagship 100 kg ANSI-certified hoisting bucket combining sealed inverted-spill containment with integrated internal 5 kg D-rings for 100% tool tie-off at the workstation.	**100.0 kg (220 lbs) Hoist SWL + Internal 5 kg Anchor Rings** 5:1 Static (500 kg Proof) / 2:1 Dynamic / 2:1 Inverted Closure	CONTAINER	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 7, LOLER / IOGP 376 Lifting Ready, NLG ID™ Serialized **Materials:** Heavy-duty waterproof tarpaulin, composite armored base plate, continuous load-bearing webbing harness, locking storm hood	**Maintain Red Zone exclusion area directly beneath active vertical lifts—never walk under a suspended hoist bucket.**
39	 Certified Hoist Bucket	DB00052	KStrong®	Containers & Hoisting	**55 kg Offshore Wind Heavy-Duty Tool Hoisting Bucket** Cylindrical 55 kg rigid-base hoisting bucket engineered for hauling torque equipment, rigging shackles, and flange bolts up wind turbine towers.	**55.0 kg (121 lbs) SWL** Offshore Wind Hoisting Rated	CONTAINER	M	M	M	**Standards:** KStrong Offshore Wind Catalog, IOGP 376 Lifting Aligned **Materials:** Heavy-duty black ballistic fabric, molded impact-resistant polymer base, red continuous lifting straps, screw-lock carabiner	**Domestic plastic painter's buckets and canvas bags without certified SWL tags are strictly banned.**
40	 Certified Hoist Bucket	REF-CONT-HB50 / MULE	NLG / GRIPPS Mule Bag Reference Spec	Containers & Hoisting	**Waterproof PVC Reinforced Hoist Bag w/ Roll-Top / Storm Flap** Weather-sealed offshore transfer and hoisting bag protecting tools from wave spray during Crew Transfer Vessel (CTV) boat-landing climbs and tower lifts.	**25.0 – 50.0 kg (55 – 110 lbs) SWL** 5:1 Static / 2:1 Dynamic / 2:1 Inverted Closure (ANSI 121)	CONTAINER	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023 Sec. 7, DROPS / G+ Transfer Guidelines **Materials:** Marine-grade waterproof PVC-coated tarpaulin, rigid polymer base tray, mechanical buckle/zipper storm closure	**Never exceed stamped WLL/SWL; inspect bottom stitching and lifting eye before every hoist.**
41	 Certified Hoist Bucket	CEN-364-ROPE	Cenovus Standard 0003-000115 Sec. 3.6.4 Spec	Containers & Hoisting	**Braided Nylon Hoist Pull Rope w/ Factory Eye Splice & Thimble** Pre-terminated manual hoisting line with permanent factory eye splice, metal thimble liner, and locking carabiner eliminating improvised field knots on hoist buckets.	**Task-Rated Lifting Line (≥ 5:1 Hoist Factor)** Factory Spliced Eye + Metal Thimble + Locking Carabiner	STRUCTURE	M	M	M	**Standards:** Cenovus Standard 0003-000115 Sec. 3.6.4, DROPS Working at Height **Materials:** Low-stretch braided nylon kernmantle/double-braid rope + galvanized/SS316 thimble eye + auto-locking carabiner	**Establish ground Red Zone barricade below hoist path even when using certified pull ropes and buckets.**
42	 SUS 316 Shroud & Nord-Lock	DS-NET-316	Dropsafe®	Secondary Retention	**SUS 316 Wire Mesh Safety Shroud w/ RFID Choke Plate** Gold-standard 360° marine 316 stainless steel mesh shroud enclosing overhead floodlights, Ex luminaires, CCTV cameras, PA speakers, and horns to catch both failed brackets AND shattered lens/housing fragments.	**Tested > 5× Fixture Mass (> 5:1 SWL across 100+ Sizes)** > 5:1 Dynamic & Static Retention	STRUCTURE	M	M	M	**Standards:** DROPS Recommended Practice Sec. 4.2, G+ Reliable Securing Booklet (p. 47), ISO 12944 CX **Materials:** 100% Marine-grade SUS 316 (A4) braided stainless steel wire mesh, RFID choke plate, installation toggles, Trisafe™ carabiner	**PLASTIC ZIP-TIES (SERFLEX) ARE STRICTLY BANNED—UV and salt spray embrittle nylon ties within months.**

SPIE

Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

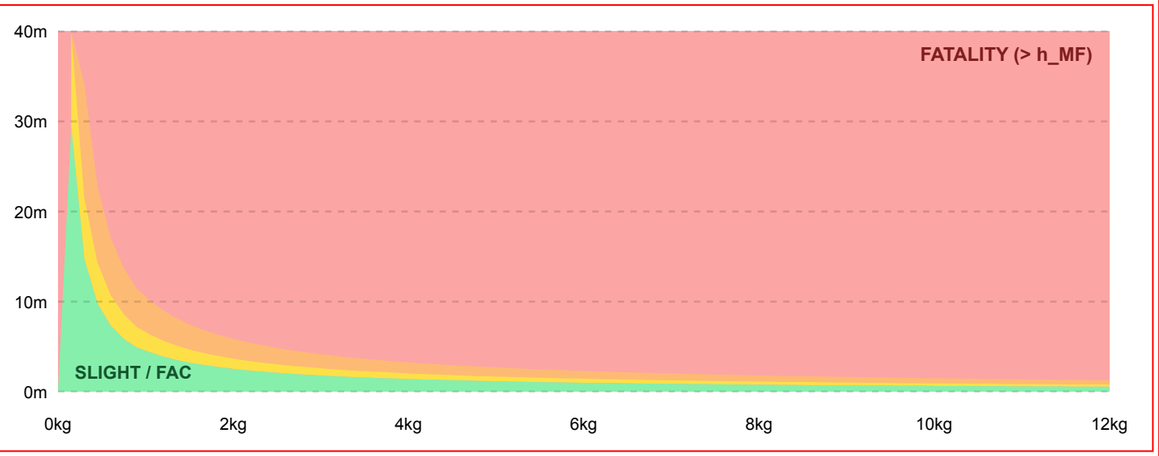
Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
43	 SUS 316 Shroud & Nord-Lock	DS-SLING-316	Dropsafe® / DROPS Reference Spec	Secondary Retention	**SUS 316 Secondary Retention Safety Wire Strop / Sling** Engineered stainless steel secondary retention strop linking overhead valves, pipe actuators, cable hooks, and monolithic housings directly to structural steelwork.	**Fixture-Matched SWL (5:1+ Safety Factor)** > 5:1 Secondary Arrest	STRUCTURE	M	M	M	**Standards:** DROPS Reliable Securing Sec. 4.2 (Tier 3), ISO 12944 C5-M / CX **Materials:** Marine SUS 316 stainless steel wire rope (bare or UV-sheathed) + crimped thimbles + SUS 316 safety-pinned bow shackles	**Never use galvanized carbon steel wire offshore—galvanic coupling with stainless bolts accelerates corrosion > 200 µm/yr in CX marine air.**
44	 SUS 316 Shroud & Nord-Lock	NL-A4 / NL-254SMO	Nord-Lock®	Secondary Retention	**Wedge-Locking Washers (A4 Stainless / 254 SMO Super-Austenitic)** DROPS Tier-2 secondary retention washer pair using geometric wedge tension—not friction—to make spontaneous bolt loosening physically impossible under severe vibration.	**Maintains Full Bolt Preload (M4 – M130)** Geometric Tension Lock (Cam Angle α > Thread Pitch β)	STRUCTURE	M	M	M	**Standards:** DROPS Reliable Securing Tier 2, ISO 898-1, DNV / ABS Certified **Materials:** EN 1.4404 (316L / A4) stainless steel or 254 SMO® (EN 1.4547) super-austenitic alloy for severe saltwater	**Standard split spring washers (Grower washers) flatten and lose locking effect under dynamic vibration—do not treat as DROPS secondary retention.**
45	 SUS 316 Shroud & Nord-Lock	REF-SEC-316PINS	DROPS Reliable Securing Hardware	Secondary Retention	**SUS 316 Split Cotter Pins, Lockwire & Captive Keeper Wires** Positive mechanical locking hardware preventing nut back-off on overhead lifting shackles, derrick pins, sheave blocks, and flange bolting.	**Positive Mechanical Fastener Retention** DROPS 4-Point Shackle & Pin Securing	STRUCTURE	M	M	M	**Standards:** DROPS Reliable Securing Handbook, IOGP Report 376, ISO 12944 CX **Materials:** Marine SUS 316 / A4 annealed stainless lockwire (Ø 0.8–1.6 mm) & pre-formed split cotter pins	**NEVER reuse bent split pins, and NEVER substitute soft iron wire or twisted welding rods—they rust through rapidly offshore.**
46	 DOPP+ Barrier & Drop Mat	DS-BARRIER-DOPP	Dropsafe®	Passive Containment	**Polymer Guardrail Infill Barrier System (ABS DOPP+ Approved)** Permanent or reusable temporary guardrail screening barrier blocking loose tools, bolts, and Ice/FOD from rolling off elevated walkways, stairs, and offshore boat landings.	**Impact & Wind-Load Engineered (ABS Type Approved DOPP+)** 5-Year Structural Warranty / > 50 lb OSHA Load	PASSIVE	M	M	M	**Standards:** ABS Type Approval (DOPP+), G+ Offshore Wind Booklet (p. 40), EN 13374, OSHA 1910.29(k) / 1926.502(j) **Materials:** UV-stabilized impact-resistant marine polymer honeycombed/mesh panels + universal SUS 316 guardrail clamps	**Ensure bottom edge sits ≤ 6 mm (0.25 in) above deck plate per OSHA 1910.29(k) toeboard clearance rule.**
47	 DOPP+ Barrier & Drop Mat	NLG-SPACENET	NLG® (Never Let Go)	Passive Containment	**Spacenet™ Rapid-Deployment Overhead Catch Net** Rapid-rigging suspended collective catch net deployed directly beneath under-deck, pipe-rack, or turbine tower maintenance zones to intercept dropped items before accelerating.	**Engineered Multi-Layer Catch Containment** DROPS Passive Collective Arrest	PASSIVE	M	M	M	**Standards:** DROPS Hierarchy (Passive Collective Control), EN 1263 Aligned **Materials:** Fine-aperture Debris liner + high-tenacity structural catch net + quick-tension corner straps	**Clear accumulated debris immediately and inspect corner anchor straps after any impact.**
48	 DOPP+ Barrier & Drop Mat	DS-MAT / GRIPPS-MAT	Dropsafe® / GRIPPS®	Passive Containment	**Non-Slip Open-Grating Drop Mat & Helideck Netting** High-traction workstation matting rolled over open steel bar grating and scaffolding planks to stop nuts, pins, and sockets dropping onto lower deck levels.	**Blocks 100% of Fasteners Over Open Deck Grating** Passive Floor Containment	PASSIVE	M	M	M	**Standards:** DROPS Recommended Practice, Cenovus 0003-000115 SIMOPS **Materials:** Oil/UV-resistant high-grip elastomer or fine-mesh matting + positive grating tie-downs	**Always latch grating mats down before offshore squalls—unsecured mats become wind-borne hazards.**
49	 DOPP+ Barrier & Drop Mat	REF-OSHA-REDZONE	Regulatory Passive Kit (OSHA / DROPS / Cenovus)	Passive Containment	**Toeboards, CSSS Hole Covers, MEWP Netting & Red Zone Barricades** Standardized passive floor-edge, floor-penetration, SIMOPS MEWP basket enclosure, and ground-level No-Go Red Zone exclusion infrastructure.	**≥ 22.7 kg (50 lbs) Outward/Downward Toeboard Force** OSHA 1910.29(k) / DROPS Sec. 2.7 Mandatory	PASSIVE	M	M	M	**Standards:** OSHA 1910.29(k)(1)-(3) & 1926.502(j), DROPS Sec. 2.7 Red Zones, Cenovus 0003-000115, IOGP CSSS **Materials:** SUS 316 / structural toeboards (≥ 89 mm / 3.5 in), CSSS stamped plywood hole covers, SIMOPS MEWP rail mesh, rigid Red Zone barriers	**Plastic hazard tape fluttering in the wind is NOT an acceptable Red Zone barrier—use rigid barricades + PTW entry control.**

SPIE

Detailed Equipment Specifications, Part Numbers (SKUs), SWL Capacities, Materials & Mandatory Safety Constraints

Sno	Visual	SKU / Ref	Manufacturer	Category	Equipment Designation & Function	Rated SWL / Factor	Anchor Tier	Oil & Gas	Offshore Wind	Onshore Wind	Standards & Metallurgy	Mandatory Safety Rule
		SKU	Brand	Cat	Designation	SWL	Tier	O&G	Off	On	Norms	Safety
50	 OEM SLS/TAH Shadow Foam	101558	NLG® (Never Let Go)	Kits & Wind Systems	**Small Hand Tool Tethering Kit (4-Piece Ready System)** Pre-matched 4-piece NLG 123 System™ starter kit eliminating weakest-link calculation errors—every included component is certified to 1.0 kg (2.2 lbs) at a 2:1 safety factor.	**1.0 kg (2.2 lbs) Matched System SWL** 2:1 Dynamic (All 4 Components Matched)	KIT	M	M	M	**Standards:** ANSI/ISEA 121-2018 / 2023, CE Marked, NLG ID™ Digital Certificate **Materials:** Includes: 1× Small D-Ring (101361), 1× Tether Tape™ (101355), 1× Short Coil Lanyard (101364), 1× Adjustable Wristband (101365)	**Retire and quarantine the entire affected assembly immediately if a drop arrest occurs.**
51	 OEM SLS/TAH Shadow Foam	101616 / 101619	NLG® / Alotech	Kits & Wind Systems	**Complete Wind Technician's Tool Tethering Kit** Comprehensive multi-tool wind turbine technician kit curated by NLG & Alotech to outfit an entire personal tool bag for tower, nacelle, hub, and blade rope-access service.	**Multi-Tier Kit (1 kg Wrist to 10 kg+ Structural Components)** 2:1 Dynamic Certified Components	KIT		M	M	**Standards:** ANSI/ISEA 121-2018 / 2023, GWO HTDO Aligned, NLG ID™ Serialized **Materials:** Assorted D-ring tails, Tether Tape™, coil & bungee lanyards, belt/harness anchors, and ANSI 121 storage bag	**Verify individual SWL tag on each lanyard within the kit—do not assume highest kit rating applies to lighter attachments.**
52	 OEM SLS/TAH Shadow Foam	OSE-3AXIS-250	Oseteam	Kits & Wind Systems	**250 kg 3-Axis Offshore Wind Maintenance Handling Fixture + Certified Pallet Bag** Custom 3-axis (X, Y, Z) mechanical positioning and handling fixture driven by hand or cordless drill, engineered to hold 250 kg turbine components securely during disassembly and shipped in a drop-proof lifting bag.	**250.0 kg (551 lbs) CMU / SWL** Load-Tested by Approved Inspection Body (2006/42/EC)	STRUCTURE		M		**Standards:** EU Machinery Directive 2006/42/EC, DROPS Elimination / Engineering Control **Materials:** Welded & post-machined zinc-plated structural steel + integrated X/Y/Z screw jacks + certified heavy lifting pallet bag	**Inspect lifting pallet bag straps and screw-jack travel stops prior to offshore mobilization.**
53	 OEM SLS/TAH Shadow Foam	AFS570020 / AFH300404	KStrong®	Kits & Wind Systems	**BRUTE™ Sealed IP69K ATEX Offshore SRL & EPIC Wind Harness w/ Tool Loop** Integrated offshore wind & Oil/Gas personal fall-protection and tool-carrying ecosystem combining hermetically sealed IP69K/ATEX stainless SRLs with a wind harness featuring dedicated non-fall-arrest tool loops.	**140 kg Personnel SRL (IP69K / ATEX) + Dedicated Harness Tool Loop** EN 360 / ATEX / IP69K / IEC 60068-2-6 Vibration Certified	WAIST	M	M		**Standards:** ATEX Certified, IP69K (ISO 20653), IEC 60068-2-6:2007 Vibration, EN 360:2002 / EN 361 / EN 358 **Materials:** Sealed marine housing, stainless steel wire & ANSI swivel hook (BRUTE SRL 10/20/30 m); AirLite harness w/ dedicated tool loop (AFH300404)	**Attach tools ONLY to the designated harness equipment tool loops (respecting ≤ 2.7 kg cap)—never to EN 361 A-marked fall-arrest points.**

DROPS Empirical Consequence Curve & 12 Reference Objects (≥40 J Injury | ~49 J Hard-Hat Limit)



#	DROPS Reference Object	Mass	Drop Ht	Impact Energy
1	M20 Structural Bolt + Nut	0.25 kg	25 m	61 J
2	VHF/UHF Handheld ATEX Radio	0.4 kg	20 m	78 J
3	Adjustable Spanner (250 mm)	0.5 kg	15 m	74 J
4	Deck Grating Panel Clamp	0.5 kg	15 m	74 J
5	Scaffold Coupler Clamp	1.2 kg	12 m	141 J
6	Engineer's Hand Hammer	1.5 kg	10 m	147 J
7	Medium Lifting Bow Shackle	1.5 kg	15 m	221 J
8	Drilling Tong Die Insert	2.0 kg	12 m	235 J
9	Overhead Valve Handwheel	2.5 kg	10 m	245 J
10	Cordless / Pneumatic Impact Wrench	3.5 kg	18 m	618 J
11	Downhole Survey Tool	12.0 kg	15 m	1,765 J
12	Crossover Lifting Sub	45.0 kg	10 m	4,413 J

7 Strictly Prohibited Field Practices vs. SPIE Mandatory Controls

#	Banned Makeshift Practice	Approved Compliant Solution
1	Plastic Zip-Ties (Cable Ties / Serflex) on Overhead Fixtures or Tools	Use SUS 316 braided Dropsafe® Safety Mesh Nets (DS-NET-316) or SUS 316 Wire Strops (DS-SLING-316) with RFID choke plates.
2	Duct Tape, PVC Electrical Tape, or String as Tool Attachments	Bond load-rated D-Ring Webbing Tails (101361) exclusively with adhesive-free Self-Vulcanizing Silicone Tape (101355 / V-Gripp).
3	Standard Ball-Detent Sockets & Unpinned Extensions Aloft	Mandate Positive-Locking Through-Pin & Elastomer Ring Sockets (REF-TA-PLOCK) or captive-plunger square drives.
4	Domestic Plastic Buckets, Open Canvas Bags & Field-Knotted Ropes	Hoist strictly with ANSI 121 Sec. 7 Buckets (NLG Ascent 100 kg / KStrong 55 kg) + Thimble-Spliced Pull Ropes (CEN-364-ROPE).
5	Drilling Holes or Welding Lugs onto Hardened Hand Tools or MEWPs	Use OEM Tether-Ready Tools (Facom SLS / Bahco TAH), Bolt-On Brackets (SQUIDS-3755), or Over-Lip MEWP Hooks (Buckingham 2410).
6	Body-Anchoring Heavy Tools (> 2.7 kg / 6 lbs) or Clipping to Fall-Arrest D-Rings	Anchor tools > 2.7 kg strictly to Fixed Structural Anchors (AFA930001SS / AFA921515) and use independent Harness Tool Loops (1500161) for light tools.
7	Non-Locking Snap Hooks, Keyrings & Galvanized Carbon Wire Offshore	Specify Captive-Eye Triple-Action SUS 316 Carabiners (Dropsafe Trisafe™) and 100% A4 / 254 SMO stainless hardware.

PTW "Tools Aloft Register" — Asset/WTG: _____ PTW #: _____ Date: ___/___/2026

#	Tool Description	Serial / NLG ID	Tether SKU & SWL	Out	In
1				☐	☐
2				☐	☐
3				☐	☐
4				☐	☐
5				☐	☐
6				☐	☐
7				☐	☐

Sign-Off: Technician: _____ | Supervisor: _____ | PTW Issuer: _____ **(Missing Tool = Immediate Stop-Work)**

LIFE SAVING RULES

ELECTRICITY AND OTHER FORMS OF ENERGY

1. I will always ensure that electrical and all hazardous energy sources have been isolated, locked and tagged.
2. I will always check the absence of voltage before working on electrical parts.

WORKING AT HEIGHT

3. In the absence of guarded areas, I will always wear my harness and stay attached to an approved anchor point when there is a risk of falling.
4. I will always ensure created openings and excavations are physically secured to prevent falls.

LIFTING ACTIVITIES

5. I will never walk or stand under a suspended load.
6. I will always use lifting equipment that is capable of lifting the load safely and I will always inspect them before use.

WHILE DRIVING

7. I will always wear the seat belt and respect the speed limit when operating any type of vehicle.
8. I will always ensure I am physically able and alert when I drive.

PREPARATION

9. I will always conduct a risk assessment and ensure the required safety precautions are implemented and understood before starting any work.

IMPLEMENTATION

10. I will always STOP work and inform my manager if I don't feel safe.

SPIE	Mandatory 9-Point Pre-Climb Tool Tethering & DROPS Verification
☐ 1	Verify legible ANSI/ISEA 121 / CE label showing published Max Weight Capacity (SWL) and serial / NLG ID™.
☐ 2	Confirm Weakest-Link Rule: min(Tool Attachment SWL, Lanyard SWL, Anchor SWL) ≥ actual weighed mass of tool + accessories.
☐ 3	Confirm Body-Anchoring Cap: Tools > 2.7 kg / 6 lbs (or > 2.0 kg Cenovus site rule) are anchored strictly to Fixed Structure, never wrist or harness.
☐ 4	Inspect webbing, stitching, and bungee sleeves for cuts, UV fading, chemical glazing, fraying, or broken load threads.
☐ 5	Inspect self-vulcanizing silicone tape wraps for edge peeling, oil swelling, cuts, or rotational slip on tool shaft.
☐ 6	Test carabiner locking gates (double/triple-action) for crisp spring return, zero salt seizure, and intact captive eye pin.
☐ 7	Verify all square-drive impact/torque sockets use positive through-pin & ring retention (zero friction ball-detent sockets).
☐ 8	Confirm zero prior drop-arrest history (any component that has arrested a falling load MUST be quarantined and destroyed).
☐ 9	Log every tool and tether ID onto the Permit-to-Work (PTW) Tools Aloft Register prior to ascending and reconcile 100% before PTW closure.

Golden Rules for Oil & Gas, Offshore Wind (CX) & Onshore Wind

1. Anchoring Hierarchy: Fixed Structural Anchor (1st Priority) > Waist / Independent Harness Tool Loop (≤ 2.7 kg / Cenovus ≤ 2.0 kg) > Wrist Cuff (≤ 1.0–1.5 kg). **NEVER** clip tools to EN 361 fall-arrest D-rings.
2. Weakest-Link Rule: Total assembly capacity equals the lowest-rated component: `min(Attachment SWL, Lanyard SWL, Anchor SWL)`.
3. Offshore Marine CX Metallurgy: Specify 100% SUS 316 (A4) or 254 SMO stainless hardware; plastic zip-ties and galvanized carbon wire straps are strictly prohibited.
4. Special Atmospheres: Use Cu-Be / Al-Br ATEX non-sparking tethered tools in Ex Zones 0/1/2, metal-free dielectric lanyards with VDE 1000V tools in HV cabinets, and PU-sheathed SUS 316 wire slings for hot works.
5. Post-Drop Quarantine: Any tether, tail, pouch, or net that arrests a falling load must be immediately removed from service and quarantined.