



TRUST. TRANSPARENCY. PERFORMANCE.

VEYRUM ROBOTICS STANDARD



VRS-ASW-110

Assistive & Wearable / Exoskeleton — Demonstration Protocol

The Assistive & Wearable sector's witnessed steps for a Certified rating — joint torque, range and misalignment on an instrumented rig, timed doffing and power-loss behaviour, perturbation response, skin temperature and runaway protection, the fitting protocol with interface pressure, wearer-data handling — run in the same session as the intrinsic protocol.

VEYRUM RESEARCH INSTITUTE

Contents

1	Introduction	
2	1 Scope	
3	2 Normative references	
4	3 Terms and definitions	
5	4 Relationship to the intrinsic protocol	
6	5 The declared envelope	
7	6 The steps	
7.1	6.1 Part 1 – Joint torque, range and misalignment	
7.2	6.2 Part 2 – Emergency doffing and entrapment	
7.3	6.3 Part 3 – Wearer-intent mismatch and stumble response	
7.4	6.4 Part 4 – Body-worn power and thermal safety	
7.5	6.5 Part 5 – Fit, adjustment and interface pressure	
7.6	6.6 Part 6 – Wearer data handling	
8	7 Worked example (informative)	
9	Annex A (normative) – Criterion coverage	
10	Bibliography	
11	Change history	

Foreword. This Test Protocol is new in the VRS 2026 edition and is the Assistive & Wearable sector’s extension of VRS-GEN-203, the intrinsic demonstration protocol. A wearable robot is the one class of machine whose user is inside it: the joint it drives is the wearer’s joint, the surface it heats is the wearer’s skin, and the fault it suffers is suffered while strapped to a person who may not be able to step away. The sector’s anchor regimes — the personal-care robot standard, the medical rehabilitation-robot particular standard for the regulated class, the battery and medical-electrical families — test those things on rigs, and so does this Protocol: every powered test is on the manufacturer’s instrumented anthropomorphic rig, and the demonstrator wears the device only unpowered or in its declared standby mode, for the doffing and fitting steps. Regulatory fit for the medical class is documentary and is scored from the pack. The Protocol carries only what the intrinsic steps do not already witness. Steps run between Parts E and F of VRS-GEN-203, in the same session, on the same feed, into the same export. Standards carry no step identifiers; every step here names the VRS-ASW-201 subclause that requires it. As a protocol it is versioned vX.Y.Z (VRS-GEN-004 §5.4). Requirements use “shall”.

1 Introduction

The Assistive & Wearable anchor set is ISO 13482 for personal-care robots (which covers the industrial and consumer exoskeleton classes), IEC 80601-2-78 for medical rehabilitation robots (the regulated class), IEC 62133 for the body-worn battery, and the general medical-electrical and usability standards for a device that is fitted to a person by a fitter. What those regimes share is the rig: joint limits, misalignment, runaway and power loss are tested on an instrumented dummy limb, because the alternative is testing them on a person. This Protocol follows that discipline exactly. The rig is the manufacturer’s, instrumented with the manufacturer’s sensors; the person appears only where the device is unpowered or in standby — to time the emergency release and to be fitted.

The steps concentrate on the moments a wearer cannot control: a stumble, a spasm, a fault at mid-step, a battery that runs out, a joint that locks or runs away. Each is produced on the rig by the manufacturer’s own input and the device’s declared response is witnessed against its torque and time limits. The fitting step matters because most wearable injuries are pressure injuries, and the data step matters because gait and force data are health-adjacent. Support for dependent users and the incident record are documentary and are scored from the pack.

2 1 Scope

This Protocol specifies the Assistive & Wearable / Exoskeleton demonstration steps by which the criteria of VRS-ASW-201 Clause 6 are demonstrated at the Certified tier, for every application class of VRS-ASW-201 §7.3 (medical exoskeleton · industrial exoskeleton · consumer/wellness wearable robot · prosthetic/orthotic powered device). It applies to every Certified Assistive & Wearable / Exoskeleton assessment, by every Certified route of VRS-GEN-003 §6.9.

It specifies: how this Protocol relates to VRS-GEN-203 (Clause 4); the envelope the manufacturer declares before the session (Clause 5); the steps (Clause 6); and a worked example (Clause 7). Annex A maps every VRS-ASW-201 criterion to its intrinsic steps, its sector steps, or neither.

It does not: repeat any session requirement, step, marking rule or record rule of VRS-GEN-203, all of which apply unchanged; define any criterion, point, ceiling or ladder (VRS-ASW-201); or define the Assistive & Wearable / Exoskeleton information pack (VRS-GEN-013). Every powered test is performed on the manufacturer's instrumented anthropomorphic rig; the demonstrator wears the device only unpowered or in its declared standby mode, for the doffing and fitting steps. Regulatory fit for the medical class is documentary and is scored from the pack.

3 2 Normative references

- **VRS-GEN-203**, Demonstration Protocol — Intrinsic — session requirements (Clause 4), step rules (Clause 5), marks and scores (Clause 7), Session Record (Clause 8), all of which apply to this Protocol.
- **VRS-ASW-201**, Assistive & Wearable / Exoskeleton — AR Assessment Protocol — the criteria whose Certified rows this Protocol serves; application classes (§7.3).
- **VRS-ASW-001**, Assistive & Wearable / Exoskeleton Sector Standard — the declared envelope and class fields.
- ○ **VRS-GEN-101**, Safety — the intrinsic safety criteria the Assistive & Wearable pool contributes to.
- ○ **VRS-GEN-103**, Serviceability & Support — the intrinsic calibration and commissioning step that serves part of VRS-ASW-201 §6.6.
- ○ **VRS-GEN-105**, Cyber Posture — the intrinsic authentication and telemetry-disclosure steps that serve part of VRS-ASW-201 §6.7.
- **VRS-GEN-003**, Governance Charter and Independence — Certified routes and route parity (§6.9).

4 3 Terms and definitions

Terms defined in VRS-GEN-001 and VRS-GEN-203 apply. In addition:

3.1 test rig — the manufacturer's anthropomorphic rig — dummy limb, torso or full-body fixture — instrumented with the manufacturer's torque, force and displacement sensors, on which every powered step is performed.

3.2 standby mode — the declared device state in which no powered assistance is delivered, in which alone the demonstrator may wear the device.

3.3 doffing — release and exit from the device by the wearer using the declared emergency release, timed.

3.4 compliant mode — the declared joint state on fault or power loss in which the limb can be moved by hand within a declared force.

3.5 misalignment — a declared offset between the device's joint axis and the rig's, in mm or degrees.

3.6 perturbation input — a declared rig-actuator or push-tool input representing a stumble, a spasm or tremor, or a wearer resisting assistance.

3.7 skin-contact surface — a declared surface of the device in contact with the wearer, with its declared temperature limit.

3.8 interface pressure — the pressure at a declared cuff, strap or socket interface, read by the manufacturer’s pressure-mapping sensor or indicator film.

3.9 fitter — the person who performs the declared fitting protocol; in this Protocol the demonstrator.

5 4 Relationship to the intrinsic protocol

4.1 This Protocol shall be run only as part of a session under VRS-GEN-203. Every requirement of VRS-GEN-203 Clause 4 applies to every step here without repetition or exception.

4.2 Position in the session. The steps of Clause 6 shall run after VRS-GEN-203 Part E and before VRS-GEN-203 Part F, so that one continuous recording and one export cover both protocols. The endurance sample opened in VRS-GEN-203 Part C continues to run through this Protocol.

4.3 Step identifiers. Steps shall carry identifiers of the form **ASW-110.nn** ; they are Session Record step identifiers under the same rules as VRS-GEN-203 §5.1 and shall never be reused.

4.4 Required by. Every step shall name the VRS-ASW-201 subclause(s) whose Certified row it serves. VRS-ASW-201 carries no reference back to this Protocol.

4.5 Classes and declared subjects. Each step lists the application classes it applies to. A step whose class is not in the assessed envelope shall not be run. A step whose subject the manufacturer has not declared shall be marked *not declared* and has no effect on any score (VRS-GEN-203 §3.10). Parts 1, 2 and 3 shall be run for every Assistive & Wearable assessment; Part 5 for every class fitted to the wearer by a fitter (VRS-ASW-201 §7.3).

4.6 Bound. The sum of step bounds for one class shall not exceed 120 min. Marks, failure, declined steps, continuation sessions and the Session Record follow VRS-GEN-203 Clauses 5, 7 and 8.

4.7 Criteria witnessed by intrinsic steps. Where a sector criterion’s Certified row is already witnessed by intrinsic steps, Annex A names them and the criterion is scored from those marks together with any sector steps listed. VRS-ASW-201 §6.1 (class anchor and regulatory fit) is documentary and has no step; nothing witnessed under this Protocol is evidence of medical clearance for the regulated class.

4.8 The rig and the person. Every step that powers a joint, applies a perturbation, cuts power under load, simulates runaway or lock, or raises temperature shall be performed on the test rig. The demonstrator shall wear the device only unpowered or in the declared standby mode and only for the doffing (ASW-110.03) and fitting (ASW-110.08) steps; no person shall wear the device under powered assistance during the session (VRS-GEN-203 §4.8). A step so performed shall be marked *not achieved* and the ground recorded.

4.9 Regulatory standing. For the medical exoskeleton and prosthetic/orthotic classes nothing witnessed under this Protocol shall be presented as evidence of, or a substitute for, medical-device clearance, and no mark shall alter the documentary scoring of VRS-ASW-201 §6.1.

4.10 Admissibility of a mark. A step’s mark shall be inadmissible, and the step shall be marked *not achieved*, where the dimension, mass, speed, force or condition it depends on was not shown on camera, or where the configuration demonstrated differs from the assessed one. The observer shall record the ground.

6 5 The declared envelope

5.1 Before the session the manufacturer shall have declared, in the information pack and per assessed application class: the application class; the test rig and its instrumentation; each powered joint's torque limit (N·m) and range of motion (degrees); the misalignment tolerance (mm or degrees) and the fault-injection means; the compliant-mode force (N); the emergency release and doffing time (s) powered-standby and unpowered; the power-loss safe state and time to releasable (s); the perturbation inputs (displacement mm, frequency Hz, opposing force N) and declared responses with times (s); the skin-contact surfaces and temperature limit (°C) with warm-up period (min); the thermal, runaway and lock test inputs; the low-energy threshold (%); the fitting protocol, size range, interfaces and pressure limit (kPa); and the captured data, destinations, consent step, second factor and deletion control.

5.2 Every apparatus in Clause 6 shall be sized from those declarations and no other source (VRS-GEN-203 §4.7). A parameter not declared makes the steps that depend on it *not declared* (4.5); a manufacturer that declares a smaller envelope demonstrates a smaller envelope and is scored against it under VRS-ASW-201.

5.3 The declared envelope shall match the one recorded for the rating (VRS-ASW-001, VRS-GEN-009); a step demonstrated at a value other than the declared one shall be inadmissible (4.10).

7 6 The steps

Columns: **ID** — Session Record step identifier · **Step** — outcome to witness · **Classes** — application classes the step applies to (4.5) · **Witness** — means (VRS-GEN-203 §3.13) · **Apparatus** — manufacturer-supplied, at declared value · **Bound** — minutes · **Required by** — VRS-ASW-201 subclause(s) served.

7.1 6.1 Part 1 — Joint torque, range and misalignment

On the manufacturer's instrumented rig: every joint to its torque limit and range stops, then misaligned, then faulted to the compliant state.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.01	Joint torque and range limits on the rig. Fitted to the manufacturer's anthropomorphic test rig instrumented with the manufacturer's torque or force sensors, each declared powered joint is commanded to its maximum; the reading is shown on camera against the declared torque limit; a command beyond the limit is clipped or refused; each joint is driven to its declared range-of-motion stops and the feed shows the limit state; the rig's own stops are outside the device's.	all	CAM+FEED+APP	Anthropomorphic test rig with torque/force instrumentation — never a person	12 min	Required by VRS-ASW-201 §6.2
ASW-110.02	Misalignment tolerance and fault to compliant mode. With the device deliberately misaligned on the rig by the declared offset (joint axis offset in mm or degrees), the	all	CAM+FEED+APP	Rig; declared misalignment fixture; force gauge	10 min	Required by VRS-ASW-201 §6.2; §6.4

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
	device detects or tolerates the misalignment as declared without exceeding its torque limit; a fault is then induced by the manufacturer’s own means and the joints enter the declared compliant or free mode, shown by moving the rig limb by hand against the manufacturer’s force gauge.					

7.2 6.2 Part 2 — Emergency doffing and entrapment

The only steps in which a person wears the device — unpowered or in standby — to time the emergency release; the power-loss case is on the rig under load.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.03	Timed doffing, powered and unpowered. The demonstrator, wearing the device in its declared safe or standby mode (no powered assistance), releases and exits it using the declared emergency release; time from video against the declared doffing time; repeated with the device fully unpowered; for a prosthetic or orthotic device, the declared quick-release of the socket or cuff is timed.	all	CAM+FEED	The device's declared release means	8 min	Required by VRS-ASW-201 §6.3
ASW-110.04	Power-loss behaviour on the rig. With the device fitted to the rig under load in a representative posture (standing, mid-step, lifted arm as declared), power is cut by the manufacturer's own means; the joints enter the declared safe state (hold, controlled release, free) without trapping the rig limb, shown by moving each joint by hand against the force gauge; the declared time to a releasable state is taken from the video.	all	CAM+FEED+APP	Rig under declared load; means of cutting power; force gauge	8 min	Required by VRS-ASW-201 §6.3; §6.4

7.3 6.3 Part 3 — Wearer-intent mismatch and stumble response

A stumble, a spasm, a wearer who resists: produced on the rig by the manufacturer’s own inputs, three times each, against the torque and time limits.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.05	Perturbation and unintended-motion response on the rig. Fitted to the rig, the device is subjected to the declared perturbation inputs from the manufacturer’s rig actuators or a push tool with force reading: a sudden limb displacement representing a stumble, an oscillating input representing spasticity or tremor, and a sustained opposing force representing a wearer resisting the assistance; each time the device performs its declared response (yield, hold, reduce assistance, alert) within the declared time and never exceeds its torque limit; repeated three times per input.	all	CAM+FEED+APP	Rig actuators or push tool with force reading	12 min	Required by VRS-ASW-201 §6.4

7.4 6.4 Part 4 — Body-worn power and thermal safety

Extends the intrinsic energy-safety step with the body-worn specifics: skin temperature after warm-up, thermal cut-off, runaway and lock protection, and a device that stays doffable when the battery runs down.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.06	Skin-contact temperature and thermal cut-off. After the device has run under load on the rig for the declared warm-up period (which may overlap other steps), the manufacturer's contact thermometer is applied to each declared skin-contact surface and the reading shown on camera against the declared limit; the declared over-temperature condition is then simulated by the manufacturer's means and the device reduces or stops assistance with the thermal alert shown.	all	CAM+FEED+APP	Contact thermometer; manufacturer's thermal-test means	8 min	Required by VRS-ASW-201 §6.5
ASW-110.07	Actuator runaway and lock protection; low-energy behaviour. A runaway condition (uncommanded motion) is simulated by the manufacturer's declared test input on the rig; the device detects it and enters its declared protected state	all	CAM+FEED+APP	Manufacturer's test inputs; rig	8 min	Required by VRS-ASW-201 §6.5; §6.3

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
	within the declared time without exceeding the torque or range limit; a motor-lock condition is simulated and the device releases to the compliant state; from the declared reduced charge, the low-energy warning leads to the declared safe state and the device remains doffable.					

7.5 6.5 Part 5 — Fit, adjustment and interface pressure

Most wearable injuries are pressure injuries. The fitting protocol is performed and the interface pressure read.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.08	Fitting protocol and interface pressure. The declared fitting protocol is performed by the demonstrator acting as fitter, on a second demonstrator or the rig, with the device unpowered or in standby: size range, adjustment points and alignment checks per the manual; the manufacturer’s pressure-mapping or indicator film is applied at each declared interface and the reading or print shown on camera against the declared pressure limit; the fitting is recorded in the device’s log or app where declared.	all	CAM+FEED+APP	Pressure-mapping sensor or indicator film; fitting kit	12 min	Required by VRS-ASW-201 §6.6

7.6 6.6 Part 6 — Wearer data handling

Extends the intrinsic authentication and telemetry steps for health-adjacent data: consent, second factor, deletion.

ID	STEP	CLASSES	WITNESS	APPARATUS	BOUND	REQUIRED BY
ASW-110.09	Capture, destinations and consent in the app. The companion app or clinician console shows what gait, force, usage and health-adjacent data the device captures, whether it is stored on the device or sent to the cloud or a clinical system, and to whom it is shared, matching the disclosure; the declared consent step is shown; the account requires the declared second factor; the declared deletion control is used and the data shown deleted.	all	FEED	Companion app or clinician console	8 min	Required by VRS-ASW-201 §6.7

6.7 Timing budget. All 9 steps sum to 86 min. Per class, with every applicable step declared: medical exoskeleton 86 min · industrial exoskeleton 86 min · consumer/wellness wearable robot 86 min · prosthetic/orthotic powered device 86 min. Every class is within the 120 min bound of 4.6.

8 7 Worked example (informative)

A manufacturer of a hypothetical industrial lift-assist exoskeleton (class: industrial exoskeleton) declares: a torso-and-hip rig instrumented with load cells; 35 N·m hip torque and a 0–110° hip range; 15 mm axis-offset tolerance; compliant mode movable at under 20 N; a two-buckle emergency release with a 10 s doffing time in standby and 15 s unpowered; power-loss free mode within 1 s; perturbations of a 50 mm sudden displacement, a 4 Hz oscillation and a 150 N opposing force with a yield within 200 ms; 41 °C skin-contact limit after a 20 min warm-up; a runaway test input with protected state within 300 ms; low-energy standby at 10 %; a fitting protocol over three sizes with a 30 kPa strap-pressure limit read by indicator film; and an app capturing lift counts and hip angles, stored on the device with optional cloud sync, second factor by authenticator, and per-session deletion.

After VRS-GEN-203 Part E the sector steps run from 12:40 at the rig. ASW-110.01: each hip driven to 33 N·m on the load cell against 35; a 40 N·m command clipped; range stops at 0° and 110° with the limit state on the feed (achieved). ASW-110.02: 15 mm offset fixture, torque stays under limit with a misalignment warning; hip-sensor disconnect, joints free, rig limb moved at 14 N (achieved). ASW-110.03: demonstrator in standby releases both buckles and steps out in 7 s; unpowered, 11 s (achieved). ASW-110.04: rig mid-lift under 20 kg, power cut, joints free in under 1 s, limb moved by hand at 12 N (achieved). ASW-110.05: displacement, oscillation and opposing force each three times; yield within 200 ms on the feed every time, torque never above 35 N·m (achieved). ASW-110.06: after 20 min, contact thermometer reads 36–38 °C on the hip pads against 41; thermal-test input, assistance reduced with the alert (achieved). ASW-110.07: runaway input, protected state in 240 ms; lock input, release to compliant; from 12 %, standby at

10 % and buckles still release (achieved). ASW-110.08: fitting on the second demonstrator in standby, three adjustment points, alignment check; indicator film at the shoulder and hip straps shows under 30 kPa; fitting logged in the app (achieved). ASW-110.09: app shows lift counts and hip angles on device, cloud sync off, consent screen, authenticator required, session deleted and gone (achieved). Sector time 86 min; VRS-GEN-203 Part F follows.

The reviewer scores VRS-ASW-201 §6.2 from ASW-110.01 and ASW-110.02 with GEN-203.16; §6.3 from ASW-110.03, ASW-110.04 and ASW-110.07 with GEN-203.07; §6.4 from ASW-110.02, ASW-110.04 and ASW-110.05 with GEN-203.11; §6.5 from ASW-110.06 and ASW-110.07 with GEN-203.07; §6.6 from ASW-110.08 with GEN-203.31; §6.7 from ASW-110.09 with GEN-203.32 and GEN-203.37; §6.1, §6.8 and §6.9 from the pack. No number in this example is a requirement; every apparatus value came from the manufacturer's own declaration.

9 Annex A (normative) — Criterion coverage

Every criterion of VRS-ASW-201 Clause 6 appears once with the intrinsic steps (VRS-GEN-203) and the sector steps (this Protocol) that witness it, or the statement that it has none.

CRITERION	SUBCLAUSE	WITNESSED BY
ASW-1 Class anchor / regulatory fit	VRS-ASW-201 §6.1	no step — documentary criterion
ASW-2 Joint torque, range and misalignment protection	VRS-ASW-201 §6.2	intrinsic GEN-203.16; sector ASW-110.01, ASW-110.02
ASW-3 Emergency doffing / egress and entrapment	VRS-ASW-201 §6.3	intrinsic GEN-203.07; sector ASW-110.03, ASW-110.04, ASW-110.07
ASW-4 Wearer-intent mismatch and stumble response	VRS-ASW-201 §6.4	intrinsic GEN-203.11; sector ASW-110.02, ASW-110.04, ASW-110.05
ASW-5 Body-worn power and thermal safety	VRS-ASW-201 §6.5	intrinsic GEN-203.07; sector ASW-110.06, ASW-110.07
ASW-6 Fit, adjustment and interface pressure	VRS-ASW-201 §6.6	intrinsic GEN-203.31; sector ASW-110.08
ASW-7 Wearer data handling	VRS-ASW-201 §6.7	intrinsic GEN-203.32, GEN-203.37; sector ASW-110.09
ASW-8 Long-term support for dependent users	VRS-ASW-201 §6.8	no step — scored at the Certified tier from the Verified evidence
ASW-9 Wearer incident record	VRS-ASW-201 §6.9	no step — scored at the Certified tier from the Verified evidence

10 Bibliography

- ISO 13482:2014, *Robots and robotic devices – Safety requirements for personal care robots*.
- IEC 80601-2-78:2019, *Medical electrical equipment – Part 2-78: Particular requirements for the basic safety and essential performance of medical robots for rehabilitation, assessment, compensation or alleviation*.
- ISO/TR 23482-1:2020, *Robotics – Application of ISO 13482 – Part 1: Safety-related test methods*.
- ASTM F3443-20, *Standard Practice for Load Handling When Using an Exoskeleton*.
- ASTM F3444-20, *Standard Test Method for Evaluating Exoskeleton Fit and Comfort*.
- IEC 60601-1:2005+AMD1:2012+AMD2:2020, *Medical electrical equipment – Part 1: General requirements for basic safety and essential performance*.
- IEC 62133-2:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary lithium cells*.
- ISO 13732-1:2006, *Ergonomics of the thermal environment – Methods for the assessment of human responses to contact with surfaces – Part 1: Hot surfaces*.
- ISO 22523:2006, *External limb prostheses and external orthoses – Requirements and test methods*.
- IEC 62366-1:2015+AMD1:2020, *Medical devices – Part 1: Application of usability engineering to medical devices*.

11 Change history

DATE	VERSION	STATUS	CHANGE	AUTHORITY
2026-09-16	1.0.0 (draft)	Draft	Created for the VRS 2026 edition (rewrite Batch D; sector demonstration protocol). 9 steps in 6 Parts extending VRS-GEN-203 for the Assistive & Wearable / Exoskeleton criteria of VRS-ASW-201: joint torque and range on an instrumented rig, misalignment tolerance and fault to compliant mode, timed doffing in standby and unpowered, power-loss behaviour under load on the rig, perturbation response (stumble, spasm, resistance) three times each, skin-contact temperature after warm-up and thermal cut-off, runaway and lock protection with low-energy doffability, fitting protocol with interface pressure, wearer-data capture, consent, second factor and deletion. No person wears the device under powered assistance (4.8). Annex A covers all 9 criteria.	Rewrite instructions §6 (VRS-XXX-110); sector traceability matrix (ASW derived demonstration steps); CEO ruling 2026-09-15 that standards carry no catalogue identifiers

About Veyrum Research Institute

Veyrum Research Institute is the research arm of Veyrum – the independent intelligence and trust layer for the robotics industry (research, ratings and registry, advisory, data, and specialist insurance & finance introductions).

Disclaimer

The opinions in this document are independent and current as of the date of publication, based on information believed reliable; they are not guarantees or warranties of safety, fitness, or compliance, and are not engineering, legal, or financial advice. This document may be revised. © 2026 Veyrum.

Contact: hello@veyrum.com · VRS-ASW-110 · Version 1.0.0