



QUALITY MANUALS | FIRST EDITION

IAF MOBILE SERVICE AND REMOTE DIAGNOSTICS MANUAL

Controlled remote diagnosis
and safe field service delivery

STABLE RELEASE

Document No. IAF-MAN-MRD-001 | Revision 01

Telemetry quality and diagnostic decisions
Mobile equipment and technician competence
Field repair verification and customer handover

International Automotive Federation

English master text | 15 September 2026

iaf.com

Publication identity and use

IAF Mobile Service and Remote Diagnostics Manual

This manual defines how service organisations use vehicle telemetry to support diagnosis and deliver authorised mobile repair. It covers remote access, evidence quality, dispatch, technician competence, field equipment, safe work boundaries and verified handover, including escalation when a workshop or recovery service is required.

Control	Publication record
Document	IAF-MAN-MRD-001 IAF Mobile Service and Remote Diagnostics Manual
Edition and revision	First Edition Revision 01 Stable Release
Text issue	15 September 2026 English master text
Document owner	IAF Quality function and the relevant automotive technical committee
Custodian	IAF Secretariat and Document Controller
Institutional authority	Competent authority under IAF-CON-001. Publication does not amend the Constitution.
Operational adoption	Accountable operating director and competent technical leads record the actual approval, markets, scope and effective date.
Classification	Public core manual. Completed customer, technical and financial records follow their assigned access controls.

Application of requirements

“Shall” identifies a requirement when this manual is adopted by an organisation or agreement. “Should” identifies a recommendation. Worked examples are illustrative and supply no universal legal deadline, product limit or completed approval. Annexes provide record structures for controlled local implementation.

Publication and operational release

Stable Release identifies the completed publication text. Actual operating approvals, market obligations, technical validation and role authorisations shall be established by the responsible organisation. Mandatory law, applicable customer rights, approved product requirements and safe work instructions remain controlling for the specific operation.

IAF recognition

Using this manual does not itself confer membership, Corporate Recognised status, accreditation, certification or permission to use IAF marks. Those decisions follow the applicable IAF guides, independent evaluation and recorded scope.

Contents

Entries link to their sections and include the cover in page numbering.

1 Purpose and service boundaries	7
2 Terms and service modes	8
3 Accountability and independent release	9
4 Local adoption and market readiness	10
5 Approved task catalogue	11
6 Customer intake and case creation	12
7 Immediate safety triage	13
8 Identity and authority to act	14
9 Permissions and customer information	15
10 Telemetry inventory and minimisation	16
11 Signal quality and freshness	17
12 Time alignment and event reconstruction	18
13 Fault codes and diagnostic evidence	19
14 Connected platform and network controls	20
15 Session access and audit trail	21
16 Remote observation procedure	22
17 Hypothesis driven diagnosis	23
18 Automated and assisted decisions	24
19 Validation and monitoring of diagnostic models	25
20 Technical escalation and case conference	26

Contents continued 2

Entries link to their sections and include the cover in page numbering.

21 Remote actions that change vehicle state	27
22 Controlled software service procedure	28
23 Power support and verified safe state	29
24 Interrupted sessions and recovery	30
25 Customer assisted observations	31
26 Dispatch and service route decision	32
27 Job planning and resource confirmation	33
28 Routing and arrival communication	34
29 Site acceptance and work area control	35
30 Roadside and private site distinctions	36
31 Weather and environmental limits	37
32 Lone working and personal security	38
33 Technician competence matrix	39
34 Training and practical authorisation	40
35 Mobile service vehicle configuration	41
36 Load restraint and materials transport	42
37 Tools calibration and equipment readiness	43
38 Protective equipment and energy control	44
39 Electric vehicle field work scope	45
40 Battery abnormal conditions and escalation	46

Contents continued 3

Entries link to their sections and include the cover in page numbering.

41 Lifting and access beneath vehicles	47
42 Low voltage electrical service	48
43 Mechanical repair quality in the field	49
44 Fluids waste and environmental protection	50
45 Parts identification and traceability	51
46 Mobile repair execution procedure	52
47 Unexpected findings and stopped work	53
48 Remote specialist support to technicians	54
49 Postrepair verification and release	55
50 Road tests and controlled functional checks	56
51 Customer handover and service explanation	57
52 Recovery and workshop transfer	58
53 Repeat concerns and unresolved diagnosis	59
54 Billing warranty and financial evidence	60
55 Field devices and customer data	61
56 Cybersecurity incidents affecting service	62
57 Continuity during platform or network outage	63
58 Performance measures and denominators	64
59 Audit exercises and improvement	65
60 Document interfaces and controlled revision	66

Contents continued 4

Entries link to their sections and include the cover in page numbering.

Annex A Operational adoption record	67
Annex B Intake and safety triage record	68
Annex C Remote authority and permission record	69
Annex D Telemetry signal dictionary	70
Annex E Remote diagnostic session report	71
Annex F Diagnostic decision worksheet	72
Annex G Dispatch decision and job pack	73
Annex H Field site acceptance assessment	74
Annex I Service vehicle readiness checklist	75
Annex J Technician competence and authority record	76
Annex K Equipment register and impact review	77
Annex L Mobile repair traveller	78
Annex M Verification and handover record	79
Annex N Recovery and workshop transfer record	80
Annex O Worked service performance example	81
Annex P Case exercise stale telemetry and misdiagnosis	82
Annex Q Case exercise battery concern at an unsafe site	83
Annex R Management review and improvement record	84

Using the operational annexes

Create a separate controlled record for each case. Expand the editable worksheets as needed and enter actual values, evidence links, responsible names and dates. Blank fields and worked examples are not proof of a completed activity.

1 Purpose and service boundaries

1.1 The organisation shall operate remote diagnostics and mobile service as a controlled extension of its authorised service network. The scope includes connected vehicle observations, diagnostic reasoning, dispatch, approved field work and verified handover. It applies to owned operations, dealers, contractors and remote technical support providers handling the same case.

1.2 A remote observation shall not be represented as a complete physical inspection. The service catalogue shall identify which concerns can be resolved remotely, which require attendance and which require recovery to an equipped facility. Customer convenience, travel reduction and first visit completion targets shall remain subordinate to safe and technically supported decisions.

1.3 Each case shall have a unique identifier connecting the customer request, vehicle identity, permissions, telemetry, decisions, field activity, parts and final outcome. A change of operator or channel shall preserve the case history and the reason for any changed diagnosis.

1.4 The accountable service director shall approve the operating scope and resources. Quality shall verify implementation through case sampling and practical observation. Marketing descriptions shall match the available service territory, vehicle compatibility, opening hours and actual limitations of the operation.

2 Terms and service modes

2.1 Remote diagnostics means collection and interpretation of vehicle information without a conventional workshop visit. Telemetry means transmitted measurements and events. A diagnostic trouble code is an observation requiring context; it is not, by itself, proof that a named component must be replaced. A diagnostic session is a bounded, attributable access period.

2.2 Read access retrieves information. Write access changes a configuration, stored value, software state or actuator state. Clearing a fault record is a write operation. Remote assistance to a technician shall be distinguished from instructions directed to an untrained customer, because competence, tools and physical safeguards differ.

2.3 Mobile service means approved work at a verified field location using an equipped vehicle and authorised personnel. Roadside recovery moves a vehicle under a separate recovery plan. A safe stop, an attempted repair and a verified repair are different outcomes and shall use different status codes.

2.4 The case dictionary shall define unresolved, awaiting evidence, dispatched, on site, work stopped, transferred, repaired and closed. Closure shall require an outcome and customer communication, including any remaining restriction. Administratively closed cases shall remain distinguishable from technically resolved cases in performance reporting.

3 Accountability and independent release

3.1 The service director owns capacity and commercial delivery. The technical authority approves task instructions and diagnostic methods. The field safety lead approves site acceptance criteria. The connected services owner controls remote platforms and access. Quality reviews evidence and recurring failures. Named deputies shall cover out of hours operations.

3.2 Dispatchers may allocate resources only within the approved catalogue. They shall not override a technician refusal based on unsafe access, equipment limitations or uncertain vehicle condition. Remote specialists may recommend a task but cannot expand the attending technician's authority or substitute a video call for required physical safeguards.

3.3 The technician controls the immediate work area and records actual conditions. A person competent for the affected system shall verify safety significant work according to the task release plan. Where independent verification is required, scheduling shall provide it before vehicle release rather than retrospectively approving the record.

3.4 Sales incentives, route utilisation and warranty reimbursement shall not determine technical conclusions. Conflicts involving a contractor, supplier or disputed diagnosis shall be disclosed. An alternative reviewer shall decide contested technical matters, while customer assistance and necessary containment continue through their assigned owners.

4 Local adoption and market readiness

4.1 Before launch in a territory, the organisation shall record the operating entity, vehicle coverage, permitted activities, customer rights, privacy responsibilities, worker protections and applicable roadside restrictions. Competent local reviewers shall identify obligations, evidence and review dates. This manual does not supply a universal permission to work on public roads.

4.2 The adoption record shall name emergency escalation channels, recovery partners, accessible customer support, waste destinations and authorised workshops. It shall confirm insurance scope for driving, customer property, repair work and contractors. An unverified coverage assumption shall block the affected service offering until resolved.

4.3 The technical authority shall release instructions for each supported vehicle variant and task. These shall specify prerequisites, tools, parts, competence, acceptance criteria and stop conditions. Generic information may support triage but shall not replace a vehicle specific repair method or a verified safe work plan.

4.4 Launch approval shall include a simulated remote case, a field demonstration and evidence that the customer can receive assistance when connectivity fails. Changes to territory, subcontractor, vehicle platform or service type shall trigger a proportionate readiness review and an updated adoption record.

5 Approved task catalogue

5.1 The service catalogue shall assign each task a controlled identifier, vehicle applicability and delivery mode. For each entry, define symptoms accepted for triage, information required before booking, exclusions, expected work duration, equipment, technician competence and verification. Publish customer descriptions that accurately reflect these conditions.

5.2 Tasks involving structural damage, uncontrolled energy, specialist lifting, battery internal repair or uncertain roadworthiness shall be assessed against facility needs. Inclusion of one low voltage task shall not authorise all electrical work. A supported model name shall not imply that every powertrain or software variant is eligible.

5.3 The catalogue shall identify tasks requiring a second person, local technical supervision, specialist recovery or workshop testing. It shall state when a remote action is prohibited and when a customer may only observe and report. Safety limits shall be available to booking systems and dispatchers as enforceable rules.

5.4 The catalogue owner shall review failed visits, new technical instructions and incident findings. A task shall be suspended when its assumptions are invalid or acceptance criteria cannot be achieved reliably in the field. Reinstatement requires documented correction, practical validation and communication to affected personnel.

6 Customer intake and case creation

6.1 The intake operator shall capture the vehicle identifier, customer contact route, location, reported symptoms, onset, recent work, warning messages and whether the vehicle is moving. Ask for the customer description before offering a diagnosis. Avoid leading questions that force an early component choice or minimise a safety concern.

6.2 Immediate safety questions shall precede commercial qualification. Establish whether there is injury, smoke, unusual heat, collision damage, flooding, loss of control or exposure to moving traffic. The operator shall use the approved emergency routing script and avoid keeping a person near a hazardous vehicle to complete administrative fields.

6.3 Record mobility needs, language, accessibility requirements and whether children or vulnerable occupants require assistance. Collect only information needed to provide the service. If the customer cannot safely photograph a warning or identify the exact location, arrange an alternative rather than demanding evidence that increases exposure.

6.4 Read the core facts back to the customer and record unknowns explicitly. Assign a case owner and next contact commitment. A provisional appointment shall not be described as a guaranteed repair; explain that diagnostic findings, site suitability and parts availability determine the final service route.

7 Immediate safety triage

7.1 Triage shall distinguish an ordinary service concern from a potential emergency or unsafe vehicle. Reports of smoke, abnormal battery heat, electric shock, fluid release, collision damage or braking and steering loss shall trigger the defined safety escalation. Lack of a matching telemetry alert shall not downgrade a credible physical report.

7.2 The operator shall prioritise people reaching a safe position through the applicable local emergency guidance and arrange professional assistance. Customers shall not be asked to touch damaged electrical parts, investigate under a vehicle, open a battery enclosure or repeatedly energise a vehicle showing signs of a hazardous condition.

7.3 A qualified person shall decide whether further remote observation is appropriate after immediate danger has been addressed. Record the facts, uncertainties, restrictions and receiving service. A suspected hazardous vehicle shall not receive a routine mobile repair appointment solely because that route is cheaper or available sooner.

7.4 The case shall retain the original safety flag through transfer and shift change. Only the designated competent authority may revise it using new evidence. Record the reason and communicate changed instructions clearly; an automated timeout or a cleared dashboard warning shall never remove the restriction by itself.

8 Identity and authority to act

8.1 Before accessing vehicle data or changing vehicle state, verify the requester identity and authority for that purpose. Possession of a registration number, access to a public vehicle identifier or knowledge of a previous appointment shall not establish authority. Use the approved customer account and an independent verification route appropriate to the risk.

8.2 Ownership, leasing, fleet operation and temporary use can involve different decision makers. The service record shall distinguish the driver reporting a fault, the party authorising repair, the party controlling connected services and the payer. Resolve incompatible instructions before optional data access or billable work proceeds.

8.3 Customer identity checks shall collect the minimum necessary evidence and protect document images. A technician shall not retain identity papers in a personal photo gallery. Where a representative acts for an organisation, record the delegation and its scope rather than assuming that any employee can approve vehicle programming.

8.4 An emergency report can be accepted without completing every identity check. Assistance to protect people shall follow the emergency process, while access to protected information or controlled vehicle functions remains restricted. Suspected impersonation shall trigger specialist review without revealing account details to the requester.

9 Permissions and customer information

9.1 The organisation shall distinguish the lawful basis for processing information, the authority to instruct a repair and permission for a particular remote operation. These are separate decisions. A marketing preference shall not be treated as repair authorisation, and agreement to diagnosis shall not automatically permit software installation or component actuation.

9.2 Before an optional remote session, explain its purpose, expected data, duration, likely outcomes and any required vehicle conditions. The customer shall know whether the session can change vehicle state and how it will end. Record the notice version, authorising person, permitted actions and any limitations.

9.3 Where consent is the chosen basis, the process shall record how it can be withdrawn and the effect on future activity. Other justified processing, including required repair records, shall be explained separately. Do not promise immediate deletion of information that must legitimately remain under a documented retention requirement.

9.4 The platform shall enforce the authorised scope. A new objective, additional data category or state changing task shall trigger the applicable review and renewed instruction where required. Customer acceptance cannot authorise an unsafe procedure, remove technical prerequisites or override another person's rights in shared vehicle data.

10 Telemetry inventory and minimisation

10.1 The connected services owner shall maintain a signal dictionary linking each collected field to a diagnostic purpose. Record its source controller, unit, expected range, update behaviour, transformation, quality flag and vehicle applicability. Distinguish direct measurements, calculated values, estimated states and customer entered observations.

10.2 Location, trip history, cabin related information and driver behaviour data shall be limited to what the case requires. Prefer a bounded diagnostic period to unrestricted historical retrieval. Collection settings shall be tested to confirm that a narrow request does not silently export unrelated occupants or journeys.

10.3 Raw and transformed data shall remain traceable. Preserve the transformation version and source timestamp so another competent reviewer can reproduce the interpretation. A dashboard rounded value shall not be the only retained evidence when a diagnostic decision depends on a narrow threshold or a short transient.

10.4 An absent field, unsupported variant or disabled service shall be marked as unavailable. The system shall not replace missing safety relevant values with a reassuring default. Diagnostic screens shall expose data quality and applicability beside the value, and export files shall carry the same qualifiers.

11 Signal quality and freshness

11.1 Before interpreting telemetry, the analyst shall verify vehicle identity, source status, acquisition time, units and expected operating conditions. A measurement may be technically valid but unsuitable for the current question because it was captured before the reported event, under a different load or while the vehicle was offline.

11.2 Each diagnostic use shall have an approved freshness requirement based on the phenomenon being assessed. Slowly changing service information and fast changing operating states shall not share one universal age limit. Screens shall show the age of evidence and stop a state dependent action when current conditions cannot be established.

11.3 Quality checks shall detect impossible values, stuck signals, unexpected unit conversion, counter resets and inconsistent relationships between channels. Suspect data shall be quarantined from automated conclusions. Analysts shall document whether the issue is a sensor fault, transport problem, transformation defect or an unresolved discrepancy.

11.4 A decision record shall state the evidence quality and remaining uncertainty. If available data cannot support a safe conclusion, choose physical inspection or specialist review. Repeated attempts to refresh a dashboard shall not be treated as validation, and a successful network connection shall not prove sensor accuracy.

12 Time alignment and event reconstruction

12.1 The diagnostic record shall retain the original device timestamp, receipt timestamp and the time basis used for analysis. Identify clock drift, time zone conversion and daylight changes where relevant. A cloud receipt time shall not be presented as the exact occurrence time when messages were buffered during a connectivity outage.

12.2 When correlating vehicle events, customer reports and workshop activity, construct a sequence with uncertainty intervals where timing is imprecise. Do not infer causation solely from nearby timestamps. Record the sampling rate and whether a brief event could occur between observations without appearing in the available data.

12.3 Counter rollover, controller replacement and software updates can alter time or sequence references. The analyst shall verify continuity before comparing records across such changes. Preserve raw identifiers and make any corrected timeline reproducible through a documented transformation rather than overwriting the source.

12.4 The session report shall distinguish confirmed sequence, probable sequence and unknown ordering. A reviewer shall be able to identify which conclusion depends on clock assumptions. Cases involving loss of vehicle control or recurring safety symptoms shall be escalated when the available timing prevents a defensible reconstruction.

13 Fault codes and diagnostic evidence

13.1 The technician or analyst shall preserve applicable trouble codes, status, occurrence counters and associated event snapshots before clearing information. Record the controller identification and software version. A code may identify a circuit, operating condition or communication problem rather than a failed replaceable part.

13.2 The diagnostic plan shall relate the customer symptom to candidate causes and discriminating tests. Include power supply, connectors, communications, environmental conditions and recent interventions where relevant. Replacing the component named in a code without supporting tests shall not be the default workflow.

13.3 Historic, intermittent and active observations shall be separated. Explain when a missing code is inconclusive, including unsupported controllers, expiring storage or limited remote access. Preserve relevant negative findings, because a complete diagnostic record includes tests that weakened a hypothesis as well as findings that supported it.

13.4 Clearing records shall require an approved purpose and retained pre-clear evidence. After repair, the verification method shall demonstrate the required function under defined conditions. An empty fault list immediately after a reset shall not, on its own, establish repair effectiveness or permission to return a vehicle to use.

14 Connected platform and network controls

14.1 Remote access shall use an approved service platform with authenticated endpoints, protected communications and controlled integration interfaces. The architecture shall identify trust boundaries between the vehicle, telematics service, diagnostic provider and dealer. Each connection shall have an owner and a defined permitted purpose.

14.2 Credentials and cryptographic material shall be issued, stored, rotated and revoked through managed processes. Shared permanent workshop passwords and embedded secrets in service scripts shall be prohibited. Platform administrators shall not automatically obtain authority to execute vehicle commands; operational permissions shall remain separately assigned.

14.3 The platform shall verify message integrity, vehicle association and replay protection before accepting controlled actions. Access through an unexpected device or integration shall be blocked or escalated. Security monitoring shall identify unusual session volumes, repeated failures and access outside approved case scope.

14.4 Changes to gateways, diagnostic interfaces or third party providers shall undergo compatibility and security review. Test failures shall not be bypassed by temporarily opening unrestricted network access. Outage procedures shall provide a safe service alternative and preserve evidence for reconciliation when the trusted platform becomes available.

15 Session access and audit trail

15.1 Every session shall identify the case, vehicle, named operator, access purpose, privileges and permitted duration. Grant the minimum scope required and terminate it when the task ends. Strong authentication shall protect privileged actions, with additional confirmation for changes that can affect vehicle availability or safety.

15.2 The audit trail shall capture session start and end, requested and executed actions, relevant responses, errors, approvals and vehicle state checks. Logs shall distinguish a command request from confirmed execution. They shall be protected from alteration by the operator whose activity they describe.

15.3 Sessions shall expire after the approved inactivity condition and shall not remain available for future unrelated work. Transfer between specialists shall record acceptance and preserve accountability. Concurrent sessions shall be coordinated to prevent conflicting commands or one operator invalidating another operator's test conditions.

15.4 Quality and security shall sample access records against actual service cases. Orphan sessions, unexplained exports and privileges retained after role changes shall be investigated. A platform log shall complement the diagnostic conclusion; technical reasoning and customer communication still require a readable case record.

16 Remote observation procedure

Use this sequence for a nonintrusive diagnostic session. The approved task shall remain read only; discovery of a need to change state starts a separate authorisation path.

Step and owner	Required action and retained evidence
1 Case owner	Confirm the customer concern, vehicle identity, authority and safe communication circumstances. Record the diagnostic question and intended data scope.
2 Remote analyst	Check compatibility, platform identity, operator privileges and notice requirements. Open a bounded session linked to the case.
3 Analyst	Verify timestamps, freshness, units and quality flags. Capture relevant codes and snapshots without clearing or changing stored state.
4 Analyst	Compare evidence with approved diagnostic logic. Record competing causes, contradictions and tests unavailable through remote access.
5 Technical reviewer	Select remote resolution, additional observation, mobile attendance or workshop recovery. Escalate safety uncertainty rather than returning an unsupported reassurance.
6 Case owner	End access, retain the report and explain the next action in plain language. Record restrictions, ownership and the promised follow up.

Acceptance requires attributable evidence and a justified service decision. A connected session with no usable diagnostic data shall be recorded as inconclusive, not as a successful diagnosis.

17 Hypothesis driven diagnosis

17.1 The diagnostic record shall begin with a precise problem statement: what occurred, under which conditions and with what effect. Separate the observed symptom from the proposed cause. Identify what evidence would support or reject each credible hypothesis before authorising replacement or software change.

17.2 Tests shall be ordered to control risk and avoid destroying evidence. Prefer a safe, discriminating observation to repeated resets or broad replacement. Record test prerequisites and interpretation rules so that a normal result under irrelevant conditions is not mistaken for proof that the fault cannot occur.

17.3 When evidence conflicts, the analyst shall document the contradiction and seek additional information or specialist review. Confidence shall be described in terms of evidence strength and limitations. Numerical probability shall be used only when the underlying method has been validated for the relevant vehicle and fault population.

17.4 The final recommendation shall connect findings to action and verification. If no cause is confirmed, state that explicitly and define the next diagnostic route. Customer pressure for an immediate answer shall not justify invented certainty, and unresolved cases shall remain available for trend analysis.

18 Automated and assisted decisions

18.1 Rules, predictive models and language based assistants may support triage and evidence review only within an approved use case. The owner shall define permitted inputs, outputs, prohibited recommendations and the point at which a competent person must review a result. The system shall expose uncertainty and missing information.

18.2 An automated component suggestion shall not directly create a safety significant repair instruction or a customer invoice. The responsible specialist shall verify vehicle applicability, diagnostic evidence and approved service information. Generated explanations shall be checked against actual records; fluent wording shall not be accepted as technical proof.

18.3 Automation shall not suppress a customer report because it is rare, poorly phrased or inconsistent with historic labels. Provide an accessible human escalation route and record overrides. Sensitive attributes and unrelated behaviour data shall not determine service priority or access to a justified repair.

18.4 The case shall retain model or rule version, relevant inputs, output and human disposition. Material errors shall trigger containment of the affected use case and review of previous decisions. A model update shall not silently reinterpret already closed cases or alter evidence without a traceable review.

19 Validation and monitoring of diagnostic models

19.1 Before release, the model owner shall define the intended vehicles, fault classes, operating environments and decision consequences. Use independently labelled evaluation data separated from development data, and document label quality. Coverage shall include missing telemetry, communication faults, uncommon variants and symptoms that require escalation.

19.2 Performance shall be reported by relevant subgroup and failure type. A high overall accuracy can conceal missed rare hazards or unnecessary component replacements. Set use case specific acceptance criteria for false reassurance, incorrect escalation and unresolved cases; this manual supplies no universal diagnostic accuracy threshold.

19.3 After deployment, monitor changes in vehicle software, sensor behaviour, usage conditions and outcome quality. Compare recommendations with confirmed repairs and subsequent repeat concerns. Define triggers for restricted operation, rollback or suspension, including loss of input integrity even when headline performance appears unchanged.

19.4 Revalidation shall follow significant changes to features, model logic, labels or platform coverage. The release record shall identify the evaluator, test population, limitations and monitoring plan. Training on customer records shall follow the approved data purpose and access controls, with retention and deletion managed separately from model performance.

20 Technical escalation and case conference

20.1 Escalation shall be mandatory when safety is uncertain, diagnostic results conflict, the case exceeds authorised competence or a previous repair has failed. The case owner shall provide a concise evidence package rather than forwarding an unexplained collection of screenshots. Include the symptom, vehicle configuration, actions taken and current restriction.

20.2 The receiving specialist shall acknowledge ownership and identify the next decision, evidence required and expected response. An unresolved transfer shall remain visible in the originating queue. Urgent physical assistance shall continue while the technical question is reviewed; customer safety shall not depend on a specialist replying to an email.

20.3 Case conferences shall separate facts, hypotheses and commercial considerations. Record who can approve an additional test, mobile task, recovery or engineering investigation. If a proposed test changes vehicle state, apply the relevant remote action controls before execution rather than treating conference agreement as sufficient authorisation.

20.4 The outcome shall update both the technical case and customer plan. Where multiple vehicles show related symptoms, notify the warranty and product safety functions. Closure of the individual appointment shall not close a potential fleet issue or remove the evidence needed for a later investigation.

21 Remote actions that change vehicle state

21.1 A state changing action shall require a released task, verified vehicle applicability and explicit operational authority. The record shall identify the exact command or package, expected effect, prerequisites, prohibited conditions and recovery method. General permission to diagnose shall not authorise coding, actuator tests, key changes or software installation.

21.2 The responsible specialist shall confirm that the vehicle is in the required safe state using evidence appropriate to the action. A stale cloud status or a customer assumption that the ignition is off shall not establish isolation or safe actuation conditions. Local competent attendance shall be provided wherever the task requires it.

21.3 Remote brake, steering or propulsion actuation shall not be performed on a vehicle in live public road use. Commands capable of unexpected movement or energisation shall remain blocked unless the approved controlled environment and physical safeguards have been verified. Customer agreement cannot waive these restrictions.

21.4 The platform shall bind the action to one vehicle, one authorised session and the approved scope. Unexpected responses, state changes or loss of confirmation shall trigger the defined stop and recovery route. A successful transmission acknowledgement shall not be recorded as proof that the intended vehicle function is correct.

22 Controlled software service procedure

Apply this procedure only to software operations expressly approved for the service mode. The software quality manual controls package release; this procedure controls service execution and customer continuity.

Step and owner	Required action and retained evidence
1 Technical lead	Confirm the released package, target vehicle configuration, campaign applicability and required dependencies. Reject unknown or modified files.
2 Case owner	Explain expected downtime and service consequences. Verify repair authority, appointment conditions and a usable customer assistance route.
3 Authorised technician	Establish the specified vehicle state, power support and communication conditions using the approved instruction. Record actual readiness checks.
4 Session operator	Execute the controlled sequence and monitor checkpoints. Preserve logs; do not improvise repeated restarts after an unexpected interruption.
5 Technical verifier	Confirm installed identities, configuration and required functional tests. Distinguish download, installation and validated service completion.
6 Case owner	Close access, remove temporary equipment and explain the outcome. If verification fails, retain the restriction and arrange the approved recovery path.

No package shall be installed merely to see whether a symptom disappears without an authorised diagnostic or campaign purpose. Retain prechange evidence and the final release decision.

23 Power support and verified safe state

23.1 The task instruction shall specify the power supply conditions required for diagnosis or programming, including approved equipment and vehicle connection method. Limits shall come from validated product requirements. The operator shall record the actual checks instead of applying a generic voltage or current setting to all vehicles.

23.2 Power support equipment shall be suitable for the vehicle and environment, maintained and inspected before use. Cables shall be protected against damage, weather and unintended disconnection. Where a stable supply cannot be assured, postpone the operation or transfer the vehicle to an appropriate facility.

23.3 Safe state checks shall cover movement prevention, occupancy, charging connections, nearby persons and task specific energy sources. Dashboard darkness, a removed key or an app showing parked shall not establish absence of hazardous electrical energy. Tasks requiring isolation shall follow the competent technician isolation and verification instruction.

23.4 The operator shall monitor readiness throughout a state dependent task. An unexpected wake event, changed connection, unstable supply or person entering the controlled area shall trigger the specified pause or abort response. Resume only after rechecking the prerequisites and recording the decision.

24 Interrupted sessions and recovery

24.1 Each remote write task shall have a validated interruption plan covering network loss, power failure, operator disconnect and unavailable backend services. Define which states can safely wait, which need local intervention and who authorises recovery. The plan shall be available before execution begins.

24.2 On interruption, preserve the last confirmed checkpoint and distinguish unknown execution from confirmed failure. Do not automatically replay a command that may already have taken effect. The operator shall follow the task specific recovery sequence and avoid uncontrolled cycling of vehicle power or repeated programming attempts.

24.3 The customer shall receive a clear status and assistance route through a channel that does not depend on the failed platform. If vehicle availability or safety is uncertain, retain the restriction and arrange competent attendance or recovery. An estimated restoration time shall be identified as an estimate.

24.4 After recovery, reconcile command logs, installed identities and functional verification. Record lost information and investigate the initiating fault. Recurrent interruptions shall trigger platform or task suspension when reliable execution cannot be maintained, even if previous vehicles were eventually recovered successfully.

25 Customer assisted observations

25.1 Customer assisted checks shall be limited to low risk observations explicitly approved for an untrained person. Examples include describing a displayed message while safely parked or confirming whether a supplied document matches the vehicle. The script shall state when the customer should stop and request professional assistance.

25.2 The operator shall first confirm that the customer can act safely, understands the instruction and is not driving. Instructions shall be short and checked for understanding. Customers shall not be asked to remove protective covers, reach near moving parts, touch damaged cables or enter beneath the vehicle.

25.3 Photographs and video shall be optional when taking them would create traffic, personal safety or privacy risk. Request only the relevant view and avoid bystanders, home security details and unrelated personal documents. Never ask for passwords, full payment credentials or an image of a secret recovery code.

25.4 An observation reported by the customer shall retain its source and limitations. It shall not be relabelled as a technician measurement. If the customer is uncomfortable, cannot access the item or gives inconsistent information, move to professional attendance rather than repeating the request with increasing pressure.

26 Dispatch and service route decision

The dispatcher shall select a delivery route from evidence and capability. A mobile booking requires a plausible authorised task and a location that can be assessed safely.

Step and owner	Required action and retained evidence
1 Triage operator	Check immediate hazards and current vehicle restrictions. Route emergencies and unsafe roadside situations through the approved response process.
2 Diagnostic specialist	State the likely task, evidence strength, unresolved causes and whether further remote work can materially change the decision.
3 Dispatcher	Match the vehicle and task to technician authority, equipment, parts, territory and site requirements. Identify any second person or specialist need.
4 Customer coordinator	Confirm location access, contact arrangements, expected cost basis and service limitations. Explain that arrival includes a final site assessment.
5 Field technician	Review the case before departure. Reject unsupported task assumptions and request missing information or a different service route.
6 Case owner	Record remote resolution, mobile attendance, workshop appointment or recovery, with reason and handover owner. Communicate the next confirmed commitment.

An unavailable mobile slot shall not cause an unsafe vehicle to be advised to drive. Capacity constraints shall change the assistance plan, not the technical restriction.

27 Job planning and resource confirmation

27.1 Before dispatch, the planner shall assemble the current job pack: concern, diagnostic evidence, restrictions, vehicle configuration, approved instruction, estimated duration and customer authority. Confirm that the technician can access it securely at the destination. A booking description alone is insufficient for a technical assignment.

27.2 Parts shall be checked against the actual vehicle and task revision, with required consumables, one time use items and return packaging. Equipment shall be reserved by identity where calibration or capacity matters. A substitute tool or component shall require technical approval rather than an informal van stock decision.

27.3 The plan shall account for travel, safe setup, verification, documentation and waste handling. It shall include contingency for an inconclusive diagnosis or a job that cannot be completed. Avoid scheduling consecutive tasks on the assumption that every field condition will be ideal.

27.4 The technician shall acknowledge the assignment and identify gaps before departure. Changes after dispatch shall be transmitted clearly and confirmed. If the task changes materially, revisit competence, parts, time and customer authorisation rather than treating the additional work as an automatic extension.

28 Routing and arrival communication

28.1 Route planning shall consider service priority, realistic travel, working time, weather, access restrictions and safe parking for the service vehicle. Dispatch systems shall not reward speeding or skipping rest. Estimated arrival windows shall reflect known uncertainty and shall be updated when conditions change.

28.2 The customer shall receive the technician identification method, contact route and preparation requirements. Do not disclose the technician's personal telephone or home location. Location sharing shall be limited to the service purpose and shall not expose unrelated customer addresses along the route.

28.3 If arrival is delayed, the case owner shall contact the customer with a revised plan and alternatives where available. A delay affecting a stranded or vulnerable customer shall trigger a welfare review. Automated messages shall not repeatedly promise an imminent arrival when the dispatch state remains uncertain.

28.4 On arrival, the technician shall confirm the vehicle and requester through the approved process before work or data access. A mismatch, unavailable customer or inaccessible site shall be recorded accurately. A failed attendance shall not be converted into a completed service merely to meet utilisation targets.

29 Site acceptance and work area control

29.1 The technician shall assess actual conditions before unloading tools. Evaluate traffic exposure, ground condition, slope, lighting, weather, public access, overhead hazards, ventilation and space for the planned operation. Customer photographs may support planning but shall not replace the on site assessment.

29.2 Establish a work boundary appropriate to the hazards and keep occupants, children and bystanders outside it. The service vehicle shall be positioned without creating a new traffic or access hazard. Emergency access and an unobstructed escape route shall remain available throughout the job.

29.3 The site shall support the approved equipment and all verification steps. If lifting stability, controlled energy work, contamination prevention or safe testing cannot be assured, stop and arrange a suitable facility. Permission from the property owner shall not make an unsuitable surface or location acceptable.

29.4 Record the go or no go decision, material conditions and controls. Reassess when weather, traffic, public activity or task scope changes. A technician shall be able to stop work without commercial penalty when the approved site conditions no longer exist.

30 Roadside and private site distinctions

30.1 Private driveways, fleet yards, car parks and public roads present different controls. The adoption plan shall define which locations the operation accepts and what additional authority is required. A routine mobile repair vehicle shall not be assumed to provide adequate protection for work beside moving traffic.

30.2 At a hazardous roadside location, prioritise the approved emergency or recovery route. Traffic management shall be planned and delivered by competent authorised personnel where required. The technician shall not improvise lane closures or rely on the service van body as a sufficient protective barrier.

30.3 Private premises shall be checked for owner permission, site rules, other operations and safe customer waiting arrangements. A closed car park may still contain vehicle movements, poor lighting or unstable surfaces. Coordination with the site controller shall identify who can stop conflicting activity.

30.4 The case record shall explain any relocation requirement and how the vehicle can be moved safely. A vehicle with an unresolved safety restriction shall not be driven to a better working place simply to make the appointment easier. Recovery capability shall match the vehicle condition and access constraints.

31 Weather and environmental limits

31.1 The technical and safety leads shall define task specific environmental limits for outdoor work. Consider rain, standing water, heat, cold, wind, lightning, visibility and contamination. Product and equipment requirements shall determine acceptance; this manual does not impose one weather threshold for all repairs.

31.2 The technician shall assess both personal exposure and the effect on repair quality. Moisture can affect electrical work, wind can destabilise covers and poor light can hide damage or assembly errors. Temporary shelters shall be used only when their stability, ventilation and suitability have been established.

31.3 Conditions shall be monitored during the job, especially before opening a system or lifting the vehicle. If the work can no longer be completed safely, make the vehicle secure through the approved instruction and arrange transfer or rescheduling. Do not rush a verification step to finish before worsening weather.

31.4 The report shall record weather related postponement separately from a technical repair failure. Service performance reviews shall not penalise justified stops. Repeated cancellations in a territory shall lead to better facilities, seasonal planning or a revised task catalogue rather than pressure to accept unsafe conditions.

32 Lone working and personal security

32.1 The operation shall assess tasks and locations for lone working suitability. Define which work requires two people or direct supervision, considering energy hazards, lifting, customer environment and emergency response. Remote video availability shall not automatically satisfy a physical second person requirement.

32.2 The dispatch system shall record check in points and a missed contact escalation procedure. Technicians shall have a reliable communication method and an alternative for poor coverage. The response plan shall identify who acts on a missed check in and how location information is used proportionately.

32.3 Technicians shall be trained to recognise threatening behaviour, unsafe premises and signs that they should withdraw. They shall not enter an isolated area or remain in a confrontation to secure payment or complete a sales target. Customer disputes shall transfer to the case owner through an established support route.

32.4 Working time, fatigue and welfare shall be included in scheduling. A technician reporting reduced fitness for a task shall receive an adjusted assignment or assistance. Security incidents and near misses shall be recorded without exposing unnecessary personal details and reviewed to improve location screening and support.

33 Technician competence matrix

33.1 The organisation shall maintain a person specific competence matrix by vehicle system, task, delivery mode and authorisation level. Separate observation, diagnosis, repair, electrical isolation, programming, lifting and final verification. A general job title or years of employment shall not demonstrate competence for every listed activity.

33.2 Each matrix entry shall identify the required knowledge, practical skill, assessment method, authorising person and review trigger. Vehicle variants and tool families shall be included where they materially change the task. Restrictions shall be visible to dispatch and enforced when assigning work.

33.3 Remote specialists shall demonstrate diagnostic reasoning, data interpretation, platform security and clear communication. Field technicians shall additionally demonstrate site assessment, equipment setup, customer protection and recovery decisions. Supervisors shall be competent to evaluate the actual tasks they authorise.

33.4 IAF membership or organisational recognition shall not itself qualify an individual for electrical, lifting or software work. The employer shall retain practical evidence and current task authority. Expired, suspended or unverified competence shall block assignment until the required assessment or supervised development has been completed.

34 Training and practical authorisation

34.1 Training shall combine controlled instruction, supervised practice and assessment under representative conditions. Attendance at a course is an input, not proof of independent competence. Assessment shall include both successful task execution and recognition of conditions in which the technician must stop or choose another service route.

34.2 The assessor shall observe preparation, evidence capture, safe setup, correct tools, technical execution, verification and customer handover. Use vehicle and task variations relevant to the intended authority. Record errors, corrective coaching and whether reassessment is required before independent work.

34.3 Authorisation shall be explicit, dated and limited to the assessed scope. Define supervision during development and a route for technicians to declare unfamiliarity with a variant. A busy dispatch schedule shall not convert supervised status into unrestricted authority.

34.4 Reassessment shall follow significant technical changes, extended absence, incidents or performance evidence suggesting a competence gap. Maintain a training needs plan linked to new vehicle introductions and recurring case findings. Contractors shall meet the same evidence requirements and shall not rely solely on an unverified external certificate.

35 Mobile service vehicle configuration

35.1 Each service vehicle shall have a controlled equipment specification matched to its authorised task range. Define storage zones, working surfaces, lighting, power provision, diagnostic connectivity, spill response materials and waste containers. The design shall allow safe retrieval without unloading unsecured items into a public area.

35.2 The fleet owner shall verify vehicle condition, usable payload, axle loading and safe mounting of equipment. Additions such as power units, cabinets and spare parts shall be included in the load assessment. Available storage volume shall not be mistaken for permission to exceed a mass or axle limit.

35.3 Electrical installations and onboard power systems shall be suitable for their intended use and inspected by competent personnel. Ventilation and separation requirements shall follow the equipment and material risks. Improvised charging arrangements or loose extension leads shall not become permanent operating features.

35.4 A daily readiness check shall confirm vehicle roadworthiness, equipment availability, housekeeping and emergency communications. Defects affecting safety or the planned task shall block dispatch. Configuration changes shall be approved and reflected in the inventory, load plan, inspection schedule and technician familiarisation.

36 Load restraint and materials transport

36.1 Tools, parts and containers shall be secured for the forces expected during normal driving and foreseeable emergency manoeuvres. The load plan shall identify restraint points, maximum allocations and items needing dedicated holders. Heavy equipment shall not be stored where it can fall onto a person during door opening.

36.2 Clean parts, used components, fluids and contaminated waste shall be segregated. Containers shall be closed, compatible with their contents and labelled clearly. A part returned for analysis shall retain its case identity and condition without being mixed with ordinary scrap or exposed to uncontrolled leakage.

36.3 Dangerous or damaged batteries and other hazardous materials shall follow the specialist classification, packaging and transport route. A routine van return box shall not authorise their carriage. If the material condition exceeds the approved transport scope, secure the situation and arrange competent collection.

36.4 The technician shall reconcile load changes after each job and before travel. Returned parts and waste add mass and may change restraint needs. Record rejected transport requests and arrange an alternative; customer pressure or a desire to clear the site shall not justify an unsuitable load.

37 Tools calibration and equipment readiness

37.1 The tool register shall identify equipment requiring calibration, verification, inspection or service. Record identity, range, accuracy or capacity requirements, status and due dates. A tool shall be selected because it is suitable for the task, not simply because it fits into the available space.

37.2 Before use, the technician shall inspect condition, accessories and status. Measuring equipment shall be checked against the required range and resolution. Electrical test equipment shall follow the approved verification sequence for its safety function. A visible calibration label shall not excuse damage or an unsuitable configuration.

37.3 Out of tolerance, damaged or overdue equipment shall be quarantined. Quality shall assess work performed since the last reliable condition was established and determine whether reinspection or customer action is required. Record the affected cases and decision rather than only replacing the tool.

37.4 The field inventory shall include task critical consumables and approved software interfaces. Offline instruction access shall remain controlled and current. Missing specialist equipment shall trigger replanning; improvised adapters, substitute torque methods or unapproved diagnostic software shall not be accepted as equivalent.

38 Protective equipment and energy control

38.1 The task assessment shall define protective equipment, isolation requirements and protective boundaries for the actual hazards. Selection shall consider electrical energy, moving parts, chemicals, noise, sharp edges and hot surfaces. Protective equipment shall supplement a safe method and shall not justify an otherwise unacceptable field location.

38.2 The technician shall inspect protective equipment, confirm suitability and follow storage and replacement requirements. Equipment used for electrical protection shall have traceable status and the required checks. Contaminated or damaged items shall be removed from service promptly and replaced before the affected task proceeds.

38.3 Energy control shall identify all relevant sources and stored energy, prevent unexpected activation and verify the required safe condition through the approved vehicle instruction. Remote access and nearby keys or devices shall be managed where they can wake or command the vehicle.

38.4 Only authorised competent personnel shall perform hazardous energy work. The job record shall capture the isolation and restoration checkpoints required by the task. A remote specialist verbal assurance shall not replace local verification, and removal of protective controls shall occur only after the work area is ready.

39 Electric vehicle field work scope

39.1 Electric vehicle tasks shall be classified by actual system exposure and required competence. Work near a high voltage system shall be assessed even when the planned repair concerns a low voltage component. Vehicle architecture, damage and access route shall determine the control level.

39.2 The approved mobile catalogue shall define permitted inspections and repairs, isolation prerequisites and workshop only tasks. Internal traction battery work, uncertain isolation and operations requiring specialised containment or heavy lifting shall not be improvised in a driveway or roadside location. A mobile technician may arrange recovery without attempting repair.

39.3 Isolation and verification of the electrical state shall follow the vehicle specific method using suitable equipment and authorised personnel. A displayed state of charge, an open service switch or a vehicle that will not start shall not establish absence of hazardous energy at the work point.

39.4 After authorised work, restoration and functional verification shall confirm the required system condition and remove temporary controls in the correct sequence. Unresolved insulation, thermal, charging or crash related concerns shall remain restricted and transfer with a clear technical record to the receiving facility.

40 Battery abnormal conditions and escalation

40.1 Reports or observations of abnormal heat, smoke, swelling, unusual odour, leakage, impact or flooding involving a traction battery shall trigger the defined incident assessment. Treat uncertainty conservatively and consider delayed deterioration. Normal telemetry shall not overrule credible signs of physical battery damage.

40.2 The technician shall stop routine work, protect people through the applicable emergency plan and contact the designated response service. Do not open the enclosure, attempt improvised cooling or move a suspect battery using ordinary service equipment. Emergency intervention shall be led by competent responders with suitable resources.

40.3 Recovery and quarantine arrangements shall identify the battery condition, vehicle restrictions, receiving facility and communication to the transport provider. The mobile operation shall not promise that a battery is safe for transport merely because visible smoke has stopped or a fault code was cleared.

40.4 Record observations from a safe position and preserve relevant remote data without delaying immediate assistance. The case shall remain linked to the incident and product safety investigation. Return to normal service requires the designated technical release and the required evidence, not the expiry of a generic waiting period.

41 Lifting and access beneath vehicles

41.1 A mobile lifting task shall require an approved method covering vehicle mass and configuration, lifting points, equipment capacity, ground condition and movement prevention. The technician shall inspect the proposed support area and confirm that the task can be completed without unstable positioning or unsupported access.

41.2 No person shall work beneath a vehicle supported only by a jack. The approved method shall provide suitable support and account for air suspension, self levelling, load changes and other systems that can alter clearance. Incorrect support points shall not be accepted to avoid removing a cover or relocating the vehicle.

41.3 The work boundary shall exclude customers and bystanders. Tools and removed assemblies shall be positioned so they cannot destabilise supports or obstruct escape. If required clearances, lighting or support conditions cannot be achieved, transfer the work to an equipped facility.

41.4 Before lowering, the technician shall verify that people, equipment and connections are clear and that reassembly is complete. Record required checks and any limitations discovered. Lifting incidents, unexpected movement and near misses shall trigger equipment and method review before similar assignments continue.

42 Low voltage electrical service

42.1 Low voltage work shall follow the supported vehicle instruction and shall account for interactions with connected and high voltage systems. Define the approved diagnostic sequence, battery support, component registration and postrepair checks. A low nominal voltage shall not be taken to mean that all related hazards are negligible.

42.2 Before disconnecting or replacing a component, preserve necessary diagnostic information and assess effects on security, stored settings and software state. Use the correct polarity, rated equipment and connection points. Improvised boosting or a generic procedure for an unfamiliar vehicle shall not be permitted.

42.3 Replacement batteries, fuses and electrical components shall match the approved specification and vehicle configuration. Repeated fuse failure or unexplained discharge shall prompt diagnosis of the cause rather than repeated replacement. Wiring repairs shall use released methods and shall remain traceable to the affected circuit.

42.4 Verification shall cover the repaired function, charging or power management behaviour where relevant, and any affected settings or entitlements. Explain legitimate customer actions after service without requesting secret credentials. If the required adaptation or verification cannot be performed in the field, keep the job open and arrange the next service route.

43 Mechanical repair quality in the field

43.1 Permitted mechanical tasks shall have released instructions identifying replacement criteria, torque requirements, consumables and functional tests. The technician shall confirm the actual configuration before disassembly. An online parts description shall not establish fitment or prove that a field repair is within the approved scope.

43.2 Cleanliness and part protection shall match the system. Protect open connections and prevent dust, moisture or mixed fasteners entering the repair. One time use items and specified tightening sequences shall be followed. A tool reading shall be recorded where the control plan requires objective evidence.

43.3 Unexpected corrosion, damaged threads, seized parts or additional defects shall trigger a scope review. The technician shall not expand the job beyond competence, available equipment or customer authority. Temporary measures shall be permitted only through a released instruction with explicit limitations and a follow up plan.

43.4 Final verification shall address the original concern and the systems disturbed during repair. Safety significant fasteners, wheel installation and fluid connections shall receive the required confirmation. A vehicle shall not be released on the assumption that a short uneventful movement proves all affected functions are correct.

44 Fluids waste and environmental protection

44.1 The job plan shall identify fluids and materials to be used, removed or stored. Provide compatible labelled containers, spill prevention and a lawful disposal route. The technician shall prevent mixing fluids that require separate handling and shall protect customer surfaces and drains before opening a system.

44.2 Fluid specification, quantity and filling method shall come from the approved vehicle instruction. Record the actual product and batch where traceability is required. A similar colour or a supplier general compatibility statement shall not replace technical approval for a different material.

44.3 Spills shall be controlled through the trained response appropriate to the substance and site. Where the release exceeds mobile capability or threatens people or the environment, stop work and activate specialist assistance. Contaminated absorbents and parts shall enter the correct waste stream, not the ordinary customer refuse.

44.4 Removed fluids, used consumables and returned parts shall be reconciled at the depot with transport and disposal records as applicable. Repeated losses or unexplained quantities shall be investigated. A clean looking work area shall not be the only evidence that all waste has been handled correctly.

45 Parts identification and traceability

45.1 Every fitted part shall be linked to the job, vehicle and approved part identity. Check revision, serial or batch information where relevant, packaging condition and storage history. A substitute shall require an approved equivalence decision and any necessary customer disclosure before installation.

45.2 Van inventory shall distinguish usable, reserved, returned and quarantined stock. Protect sensitive components from electrostatic, moisture, temperature or impact damage according to their requirements. An opened package with uncertain history shall not be returned to available stock without a controlled assessment.

45.3 The technician shall record the removed part identity and reason for replacement. Where analysis or supplier recovery is required, preserve its condition and custody. Do not clean, dismantle or discard evidence contrary to the return instruction, especially in repeated or safety related cases.

45.4 After the visit, reconcile consumed parts, unused items, cores and waste with the inventory and warranty records. A stock adjustment shall have a reason and authorisation. Traceability gaps shall trigger containment of affected work until the organisation can establish what was installed and whether further action is needed.

46 Mobile repair execution procedure

The field traveller shall connect each step to the current instruction and actual evidence. Work begins only after the task and location have passed their acceptance gates.

Step and owner	Required action and retained evidence
1 Attending technician	Confirm vehicle identity, customer authority, concern and restrictions. Perform the site assessment and establish the work boundary.
2 Technician	Check instruction revision, parts, equipment status and personal authorisation. Complete required isolation, support and protective controls.
3 Technician	Perform the approved operation, preserving diagnostic and part evidence. Record critical measurements and checkpoints at the time of work.
4 Technician and case owner	Pause for unexpected conditions or scope changes. Obtain technical disposition and customer authority before additional work; arrange transfer if needed.
5 Competent verifier	Perform required assembly, functional and safety checks. Record actual results and resolve failures before release.
6 Technician	Restore the site, reconcile parts and waste, close temporary access and hand over the vehicle with clear outcome and any follow up.

Electronic completion shall require the mandatory evidence fields. A technician signature confirms the recorded scope; it shall not imply that unrelated vehicle systems received a complete inspection.

47 Unexpected findings and stopped work

47.1 The technician shall stop when the actual condition invalidates the approved method, including incompatible parts, concealed damage, unsafe access, uncertain energy state or unavailable verification. Secure the vehicle and work area through the appropriate instruction. Record what remains dismantled, isolated or incomplete.

47.2 The technical authority shall review the new evidence and decide whether a revised mobile plan is permissible. A dispatcher may coordinate assistance but shall not approve an improvised technical workaround. Additional customer payment authority shall be obtained where required without presenting an unresolved diagnosis as a confirmed repair need.

47.3 If transfer is required, prepare a handover describing vehicle state, removed parts, open connections, keys, restrictions and the receiving contact. Do not reassemble merely to create the appearance of a driveable vehicle. Recovery personnel shall receive information needed to choose suitable handling.

47.4 The case owner shall explain the reason, options and next commitment to the customer. A justified stop shall remain visible as a controlled decision. Quality shall review recurring stops to improve predispatch diagnosis, task boundaries and inventory rather than encouraging technicians to conceal them.

48 Remote specialist support to technicians

48.1 Remote support shall connect named specialists to an identified field case through an approved channel. The attending technician shall retain control of the physical work area. The specialist shall confirm the technician competence and available equipment before recommending an observation or task.

48.2 Video and screen sharing shall be used with clear limits. A camera view may omit hazards, labels or vehicle state and shall not replace local inspection. The specialist shall ask the technician to verify critical facts through the prescribed method and record the evidence rather than inferring safety from an image.

48.3 Instructions shall identify the applicable controlled procedure and be repeated back when misunderstanding could affect safety or quality. New technical guidance outside the released method shall require the authorised engineering route. Informal chat messages shall not become unreviewed permanent repair instructions.

48.4 The support record shall capture participants, advice, evidence and final responsibility for each decision. Relevant recordings shall follow the stated purpose and retention controls. If communication quality prevents reliable coordination, stop the dependent activity and choose a safer support or transfer arrangement.

49 Postrepair verification and release

49.1 The verification plan shall identify the original symptom, systems disturbed by the repair and any safety significant release conditions. Each required check shall have an acceptance criterion, method and responsible person. Record measured results where specified rather than a blanket statement that everything was checked.

49.2 Confirm correct assembly, removed tools, restored connections, fluid condition and the absence of unintended changes. Diagnostic checks shall distinguish old retained evidence from new faults and shall follow the approved sequence. Clearing a warning or achieving one successful start shall not substitute for the required functional verification.

49.3 Where a test cannot be completed at the field location, determine whether transfer is necessary before release. A customer promise to monitor a potentially unsafe condition shall not replace an essential check. Any permissible deferred noncritical item shall have a clear owner, restriction and completion arrangement.

49.4 The release decision shall identify the verified scope and remaining observations. Failed tests shall keep the technical case open and trigger diagnosis or escalation. Customer acknowledgement shall document communication and receipt; it shall not convert a failed technical result into an acceptable repair.

50 Road tests and controlled functional checks

50.1 A road test shall occur only when authorised, necessary and safe for the vehicle condition. The plan shall define the diagnostic objective, route, driver competence, insurance arrangements and required pretest checks. Unresolved conditions affecting safe control shall block public road testing.

50.2 The driver shall obey applicable road rules and shall not operate diagnostic screens or communicate through distracting channels while driving. Where data capture requires interaction, use a safe alternative such as preconfigured logging or a suitable second person arrangement. The test shall not reproduce hazardous customer behaviour.

50.3 Any unusual noise, warning or functional deterioration shall trigger the approved stop response and reassessment. The driver shall not continue until a fixed distance is reached merely to complete a form. Adverse conditions or a route unsuitable for the required test shall lead to replanning.

50.4 Record the conditions, duration or distance where relevant, observations and relation to the acceptance criteria. A road test confirms only what it actually evaluated. If the symptom is intermittent and was not reproduced, state the limitation and define follow up rather than claiming conclusive elimination.

51 Customer handover and service explanation

51.1 The technician shall explain the reported concern, work performed, verification and current vehicle status in language the customer can understand. Distinguish confirmed findings from unresolved possibilities. Demonstrate relevant controls only in a safe stationary condition and allow questions without rushing to the next appointment.

51.2 The handover shall identify any restrictions, pending parts, follow up appointment and route for renewed symptoms. Provide a durable service record with the case identifier and charges or warranty treatment. Avoid technical abbreviations that obscure whether the customer may use the vehicle.

51.3 Remove temporary access, tools and protective materials, and confirm the customer has the intended keys and account access. Do not retain credentials or personal device pairings created for the job. Return property and explain the disposition of removed parts under the agreed service and evidence requirements.

51.4 Customer acknowledgement shall record receipt of information, not a waiver of rights or acceptance of undisclosed defects. If the customer is absent or cannot understand the explanation, use the authorised alternative handover method. Essential restrictions shall reach the person responsible for the vehicle before the case is administratively closed.

52 Recovery and workshop transfer

52.1 A transfer shall be planned as a controlled continuation of the case. Select a recovery provider capable of handling the vehicle type, condition, location and restrictions. Confirm the receiving workshop can accept the work and any special battery or damaged vehicle requirements before dispatching transport.

52.2 The handover pack shall include vehicle identity, condition, current isolation or disassembly state, keys, removed parts, diagnostic evidence and prohibited actions. Information shall be concise enough to support immediate handling, with detailed records available securely. Do not require the recovery operator to infer hazards from a generic fault description.

52.3 Custody changes shall record time, parties, visible condition and items transferred. Customer property shall be protected and documented. If the receiving destination changes, the case owner shall verify its suitability and notify the customer through an authenticated contact route.

52.4 The originating case shall remain open until the receiving party acknowledges technical ownership and customer arrangements. Track transport damage or lost evidence separately from the original concern. Completion of towing shall not be reported as repair completion or as proof that the vehicle is safe to return to use.

53 Repeat concerns and unresolved diagnosis

53.1 A repeated concern shall be linked to earlier remote sessions, visits and replaced parts. Review whether the same symptom, operating condition and vehicle configuration are involved. Do not require the customer to restart the history at each channel or treat each appointment as an unrelated first occurrence.

53.2 The technical lead shall assess the adequacy of previous tests, evidence quality and verification. Repeated parts replacement without a confirmed cause shall trigger a revised diagnostic plan and specialist review. Consider intermittent conditions, software interactions and faults in the diagnostic information itself.

53.3 The case owner shall provide a consolidated customer plan, including mobility arrangements and a clear escalation contact. Warranty and product safety functions shall receive relevant patterns. A goodwill payment may address inconvenience but shall not close an unresolved technical or safety question.

53.4 Quality shall review repeat cases within the defined observation window and beyond it when credible links emerge. Performance reports shall identify reopened cases and transfers rather than counting every initial closure as permanent success. Corrective actions shall address the diagnostic and service process, not only the individual technician.

54 Billing warranty and financial evidence

54.1 Before chargeable work, the customer shall receive the scope, price basis, travel or diagnostic charges and conditions for additional approval. Distinguish an attendance fee from a guaranteed repair outcome. If warranty coverage is uncertain, explain the review route without using uncertainty to pressure an unnecessary paid replacement.

54.2 The invoice shall correspond to actual authorised work, time rules, fitted parts and agreed third party charges. Separate diagnosis, repair, recovery and optional items. Evidence shall link charges to the field traveller and shall avoid duplicate billing when remote and attending staff work on the same controlled operation.

54.3 Warranty submissions shall follow the warranty claims manual, including coverage decisions, repair evidence, parts custody and dispute handling. A rejected reimbursement shall not retrospectively change the technical report. Safety related assistance and customer rights shall be handled through their applicable obligations rather than a commercial shortcut.

54.4 Financial reviews shall compare invoices, stock movements, technician records and customer approvals. Flags indicate a need for review, not proof of misconduct. Corrections and refunds shall be traceable, and the customer shall receive a clear explanation of any change to the originally stated charges.

55 Field devices and customer data

55.1 Diagnostic laptops, tablets and phones shall be managed devices with approved software, protected storage and controlled access. The organisation shall define offline working limits and synchronisation procedures. Customer records shall not be stored in personal messaging accounts, unapproved cloud drives or unmanaged removable media.

55.2 Local records shall contain only the information needed for the assignment and shall be removed according to the retention and synchronisation policy. Confirm successful secure transfer before deleting the only evidential copy. Device loss shall trigger the incident process, including access revocation and assessment of exposed information.

55.3 Photographs and recordings shall be labelled with case purpose and access classification. Avoid unrelated occupants, home interiors and personal documents. Customer location shall not be reused for marketing or employee monitoring beyond the approved and communicated purpose.

55.4 When a device is reassigned, repaired or retired, remove service credentials and residual customer data through a verified process. Technicians shall receive practical training on secure customer communication. Convenience shall not justify asking customers to send passwords, financial secrets or unrestricted account access.

56 Cybersecurity incidents affecting service

56.1 Suspected unauthorised access, altered diagnostic output, stolen credentials or unexpected vehicle commands shall trigger security incident escalation. The operator shall stop affected remote activity through the safe response plan and preserve evidence. Avoid actions that could worsen vehicle state or erase the only useful logs.

56.2 The incident lead shall coordinate technical containment with customer and vehicle safety decisions. Revoking access or isolating a platform shall be planned so that vehicles in an active state changing task receive a controlled recovery route. A security action shall not leave an interrupted repair without operational ownership.

56.3 Identify affected sessions, vehicles, data and service decisions. Reassess previous conclusions if evidence integrity is uncertain. Notify appropriate parties through the applicable obligations and approved communications, separating confirmed facts from investigation hypotheses.

56.4 Return to service shall require restored trust, corrected access, verified platform behaviour and completion of affected vehicle checks. Lessons shall update architecture, training and task controls. Commercial pressure to restore remote capacity shall not replace the technical and security release evidence.

57 Continuity during platform or network outage

57.1 The continuity plan shall identify services that can continue safely without live cloud access and those that must stop. Offline instructions and records shall be controlled, current and limited to authorised use. A connectivity outage shall not permit bypassing identity checks or using an untrusted diagnostic platform.

57.2 Dispatch shall maintain an alternative communication route and visibility of active field assignments. Prioritise customers with mobility or safety needs and provide realistic updates. Where customer history or vehicle configuration cannot be verified, choose a conservative service route rather than guessing applicability.

57.3 Offline work shall capture case identity, time, technician, approvals and results for later reconciliation. Prevent duplicate work orders and conflicting software actions when connectivity returns. The reconciliation owner shall resolve differences before financial or technical closure.

57.4 Exercises shall test loss of telematics, dispatch, authentication and customer communications separately and in combination. Record actual recovery performance and gaps. Continuity success means safe, traceable service outcomes; the number of appointments completed during an outage is insufficient on its own.

58 Performance measures and denominators

58.1 The service dashboard shall define each measure, population, observation window, owner and source. Separate remote only cases, attended jobs and recovery transfers. A short remote conversation shall not inflate the denominator for mobile first visit completion or conceal an unsuccessful attended repair.

58.2 First visit completion shall require the intended authorised work and verification at the first attendance, with repeat concerns assessed over the defined period. Report no access, unsafe site, parts shortfall and changed diagnosis as distinct reasons. Exclusions shall be explicit and consistently applied.

58.3 Monitor safety stops, repeat concerns, diagnostic reversals, data quality failures, unauthorised access, appointment reliability and customer understanding alongside productivity. A target shall not encourage unsafe field work, premature closure or avoidance of difficult customers.

58.4 Review trends by task, vehicle variant, territory and provider using sufficient context for fair comparison. Small samples and changing case mix shall be identified. Corrective actions shall specify the process change, owner and evidence of effectiveness rather than simply raising the target for the next period.

59 Audit exercises and improvement

59.1 Quality audits shall follow cases from intake through telemetry, permissions, dispatch, field work, invoice and final outcome. Sample both successful and stopped jobs, including transfers and complaints. Verify that the recorded task matches what the technician and customer experienced.

59.2 Practical exercises shall include stale telemetry, wrong vehicle identity, a failed write session, an unsafe site and a technician outside authorised scope. Observe whether personnel stop, escalate and preserve evidence. A completed training quiz shall not substitute for testing the operational response.

59.3 Findings shall distinguish isolated execution errors from weaknesses in catalogues, software, scheduling or supervision. Containment shall protect affected customers while corrective action is developed. Verify effectiveness using new cases and direct observation rather than only confirming that a procedure was rewritten.

59.4 Management review shall assess competence, equipment, provider performance, platform reliability and customer outcomes. Record decisions on resources and service scope. Significant recurring failures shall trigger restricted operation or suspension of the affected task until the corrected process has been demonstrated.

60 Document interfaces and controlled revision

60.1 This manual operates within IAF-QM-001 and the IAF Documents and Records Guide. The authorised service manual IAF-MAN-ASM-001 governs workshop practice; the software quality manual IAF-MAN-SDV-001 governs released software and configuration evidence. Field service shall preserve those controls when work moves outside the workshop.

60.2 Warranty and recall decisions follow IAF-MAN-WCR-001. Parts and stock controls connect to IAF-MAN-ASI-001 and logistics to IAF-MAN-SCL-001. Incident and battery escalation connect to IAF-MAN-IRB-001, while worker protection and ergonomics connect to IAF-MAN-IHE-001.

60.3 Customer handover and account continuity connect to IAF-MAN-DCS-001. Platform and operational network controls shall be coordinated with IAF-MAN-OTC-001 and the IAF Data Protection and Privacy Policy. Conflicts and complaints shall use the relevant IAF policies without interrupting urgent technical containment.

60.4 The document owner shall review lessons, technical changes and market adoption needs. Revisions shall identify affected tasks, systems, training and forms, with controlled communication and implementation evidence. A new publication revision shall not retroactively alter completed records or imply that earlier field work met newly introduced requirements.

Annex A Operational adoption record

Complete this record before opening a service territory or adding a material delivery capability. Attach actual evidence and record unresolved conditions as launch holds.

Record field	Required entry and evidence
Identity	Operating entity, territory, launch scope, supported vehicles and accountable director.
Task authority	Catalogue revision, remote and field permissions, workshop only exclusions and approving technical lead.
Local obligations	Obligation owner, market review date, required permissions and evidence of compliant operating arrangements.
People	Named dispatch, technical, safety, privacy and security owners; deputies and out of hours coverage.
Resources	Technician matrix, service vehicles, equipment, recovery partners and receiving workshops.
Readiness tests	Remote case, interrupted session, field demonstration and customer communication exercise results.
Open actions	Unresolved issue, risk, owner, due date and activity blocked pending closure.
Release	Actual adoption date, approving roles, evidence locations and next review triggers.

A publication status is not a substitute for this operational release. Retain the initial decision and subsequent scope changes as separate versions.

Annex B Intake and safety triage record

Use at first contact and update when new physical information changes the concern. Record customer statements accurately, including uncertainty.

Record field	Required entry and evidence
Case and vehicle	Case identifier, vehicle identity, reported location and contact route.
Reported concern	Customer words, onset, warning messages, recent work and whether the vehicle is moving.
Immediate conditions	Injury, traffic exposure, smoke, heat, collision, flooding, loss of control or other urgent concerns.
People needs	Occupants, accessibility, language and safe assistance needs; collect only necessary details.
Triage decision	Emergency route, safety restriction, ordinary diagnostic route or information still needed.
Instructions	Approved information communicated, time, operator and customer understanding.
Transfer	Receiving service, acknowledgement, case owner and next contact commitment.
New evidence	Changed facts, reviewer, revised restriction and communication record.

Do not delay urgent assistance to complete missing administrative entries. An unresolved safety flag shall remain visible through all subsequent handovers.

Annex C Remote authority and permission record

Use for each bounded diagnostic purpose. This form separates operational authority from the basis for processing information.

Record field	Required entry and evidence
Requester	Verified identity method and relationship to the vehicle; avoid retaining unnecessary document copies.
Authority	Owner, fleet or delegated repair authority, permitted scope and evidence route.
Processing purpose	Diagnostic question, required data categories, approved lawful basis and notice version.
Session scope	Read only or defined state changing task, intended duration and vehicle applicability.
Customer explanation	Expected effect, downtime, limitations and alternative assistance route explained.
Restrictions	Actions excluded, customer limitations and circumstances requiring renewed instruction.
Recorded decision	Authorising person, date, channel and any required separate task approval.
Closure	Session ended, privileges removed and applicable retention or withdrawal handling.

Consent to receive marketing shall not populate this record. Permission for one vehicle or task shall not be copied to another without verification.

Annex D Telemetry signal dictionary

Create one controlled entry for every signal used in a released diagnostic decision. Expand the editable form for additional fields.

Record field	Required entry and evidence
Signal identity	Canonical name, source controller, supported vehicle variants and software applicability.
Meaning	Measured or estimated quantity, diagnostic purpose and known limitations.
Representation	Unit, scaling, resolution, expected range and transformation version.
Timing	Sampling behaviour, source timestamp, receipt timestamp and clock assumptions.
Quality	Validity flags, missing value representation, stale data rule and plausibility checks.
Decision use	Approved test or model input, freshness requirement and disallowed interpretations.
Protection	Access classification, collection scope, retention class and sharing restrictions.
Approval	Technical owner, validation evidence, release date and change history.

Unknown values shall remain distinguishable from valid zero values. A display label change shall not silently change the physical meaning or decision threshold.

Annex E Remote diagnostic session report

Retain a readable report alongside protected machine logs so that another specialist can reproduce the diagnostic reasoning.

Record field	Required entry and evidence
Session	Case, vehicle, platform, operator, start and end time, purpose and privileges.
Configuration	Controller identities, software versions and supported interface scope.
Evidence quality	Data freshness, source status, units, clock issues and unavailable channels.
Observations	Codes, snapshots, customer reports and relevant normal or negative findings.
Actions	Requests and confirmed executions, with any state changing action separately authorised.
Interpretation	Candidate causes, supporting evidence, contradictions and unresolved questions.
Disposition	Remote resolution, additional test, mobile task, specialist review or recovery.
Closure	Restrictions, customer explanation, next owner and access termination evidence.

A report with successful connection but insufficient evidence shall explicitly state that the diagnosis remains inconclusive.

Annex F Diagnostic decision worksheet

Use when more than one cause is plausible or a repeated concern requires structured review.

Record field	Required entry and evidence
Problem statement	Observable symptom, affected function, conditions, timing and customer impact.
Candidate causes	Distinct hypotheses with an explanation of how each could produce the symptom.
Discriminating tests	Safe test, prerequisites, expected result for each hypothesis and available method.
Evidence	Actual result, source, quality, date and controlled instruction used.
Contradictions	Evidence that weakens a hypothesis and reasons further testing may be needed.
Decision	Confirmed cause, most supported next step or explicitly unresolved conclusion.
Repair link	Authorised action and the verification that will show whether it addressed the concern.
Review	Specialist decision, limitations, escalation and follow up owner.

Do not assign a numerical confidence simply to make the form appear complete. Record evidence strength and uncertainty in defensible terms.

Annex G Dispatch decision and job pack

Complete before committing the field resource. Recheck when the task, vehicle condition or destination changes.

Record field	Required entry and evidence
Case route	Reason for mobile attendance and alternatives considered.
Task match	Catalogue task, vehicle applicability, instruction revision and exclusions checked.
People	Assigned technician authority, second person or remote specialist requirements.
Site information	Address, access, parking, customer description and conditions requiring on site confirmation.
Equipment and parts	Reserved identities, status, fitment, consumables and return arrangements.
Customer agreement	Arrival window, price basis, limitations, permissions and communication needs.
Contingency	Unavailable parts, unsafe site, incomplete repair and recovery or workshop plan.
Dispatch release	Planner, technician acknowledgement, release time and outstanding conditions.

A planned task remains provisional until the attending technician confirms actual site and vehicle conditions.

Annex H Field site acceptance assessment

Use before unloading task equipment and repeat after a material change. Photographs may support the record when safe and proportionate.

Record field	Required entry and evidence
Location	Site type, permission, controller contact and vehicle identification.
Traffic and access	Movement exposure, safe parking, emergency access and customer waiting position.
Ground and space	Surface, slope, support suitability, working clearance and escape route.
Environment	Lighting, weather, ventilation, contamination and nearby activities.
People control	Bystander exclusion, children, lone working suitability and communication availability.
Task needs	Lifting, energy control, equipment setup and verification feasibility.
Decision	Accepted with defined controls, postponed, relocated through an approved route or transferred.
Reassessment	Changed condition, time, decision and responsible technician.

Customer permission and a signed waiver shall not override an unsuitable work location or a missing essential safeguard.

Annex I Service vehicle readiness checklist

Complete the applicable checks at the start of duty and after changes affecting readiness. Identify defects by equipment or vehicle identity.

Record field	Required entry and evidence
Vehicle condition	Required roadworthiness checks, fuel or charge planning and reported defects.
Load plan	Payload and axle allocations, restraints, cabinet security and clear access.
Task equipment	Required tools, calibration or inspection status and approved diagnostic device.
Materials	Correct parts, consumables, labelled fluids, segregation and return packaging.
Protection	Task protective equipment, spill materials and required emergency resources.
Communications	Managed device, dispatch access, alternative contact and secure offline capability.
Housekeeping	Waste containers, clean work surfaces and separation of quarantined items.
Release	Ready, restricted task scope or unavailable; defect owner and correction evidence.

A missing item shall affect the permitted assignment scope. A checklist marked complete shall not conceal a known defect awaiting replacement.

Annex J Technician competence and authority record

Maintain a separate record for each person and task family. Link dispatch permissions to the current approved status.

Record field	Required entry and evidence
Person and role	Identity, employer, supervisor and intended delivery modes.
Task scope	Vehicle systems, variants, tools and operations included or excluded.
Knowledge evidence	Training content, diagnostic understanding and controlled instruction familiarity.
Practical evidence	Observed preparation, execution, stop decisions, verification and handover.
Assessment	Assessor competence, date, results, gaps and reassessment requirements.
Authority	Independent, supervised, restricted or suspended, with explicit scope and authoriser.
Maintenance	Review triggers, changed technology, inactivity and performance findings.
System update	Dispatch matrix updated, affected assignments checked and technician informed.

Course attendance, organisational membership and a job title shall not replace practical evidence of competence for the authorised task.

Annex K Equipment register and impact review

Use for measuring, lifting, electrical and other task critical equipment. Retain history when an item is replaced.

Record field	Required entry and evidence
Identity	Asset number, description, manufacturer details as applicable and assigned vehicle.
Capability	Range, accuracy, capacity, accessories and tasks for which it is approved.
Control schedule	Calibration, verification, inspection or service method and due status.
Preuse check	Actual condition, functional check, date and technician.
Defect	Damage, overdue status, suspect result or out of tolerance finding.
Containment	Quarantine, replacement and tasks blocked.
Impact assessment	Jobs since last reliable status, risk review and required reinspection or customer action.
Return to use	Repair or calibration evidence, competent release and register update.

Equipment replacement alone does not resolve uncertainty about earlier work. The impact assessment shall have its own documented closure.

Annex L Mobile repair traveller

Create one traveller for the actual job and preserve changes. This record supports technical release and financial reconciliation.

Record field	Required entry and evidence
Identification	Case, vehicle, location, technician and actual attendance times.
Preparation	Customer authority, concern, site acceptance, task instruction and vehicle applicability.
Safety controls	Required isolation, support, boundaries and readiness evidence.
Execution	Operations performed, measurements, critical checkpoints and deviations.
Parts	Fitted and removed identities, quantities, condition and custody requirements.
Scope changes	Unexpected finding, technical approval, revised estimate and customer instruction.
Verification	Required tests, actual results, verifier and unresolved items.
Completion	Release or transfer, site restoration, waste reconciliation and customer communication.

Enter records when the work occurs. Later corrections shall preserve the original entry, the reason for change and the person making the correction.

Annex M Verification and handover record

Use after technical work and before customer release. Separate the technical result from acknowledgement of information.

Record field	Required entry and evidence
Repair objective	Original concern and the authorised work intended to address it.
Assembly checks	Affected fasteners, connections, covers, fluids and tool removal as required.
Functional tests	Method, conditions, acceptance criteria and actual outcomes.
Diagnostic state	Postrepair observations, retained evidence and any unresolved codes or limitations.
Digital closure	Temporary sessions, credentials, device pairings and customer access checked.
Customer explanation	Work, costs, restrictions, follow up and route for repeat symptoms.
Release decision	Released within stated scope, held for further work or transferred, with competent authority.
Acknowledgement	Recipient, channel, time and durable record supplied.

Customer acknowledgement shall not override a failed test or serve as a general waiver of service quality obligations.

Annex N Recovery and workshop transfer record

Use when the service route changes to transport or an equipped facility. The receiving party shall acknowledge the technical handover.

Record field	Required entry and evidence
Transfer reason	Unsafe site, unsupported task, failed verification, battery concern or other stated reason.
Vehicle state	Movement restrictions, isolation, disassembly, open connections and known hazards.
Recovery plan	Provider capability, equipment, access, handling instruction and destination.
Evidence pack	Diagnostic report, work traveller, photographs where appropriate and instruction history.
Custody	Keys, parts, customer property, visible condition, parties and times.
Receiving capability	Workshop acceptance, specialist needs and named technical owner.
Customer arrangements	Transport status, mobility support, contact route and next commitment.
Reconciliation	Arrival confirmed, discrepancies resolved and originating case linked to continuing work.

A completed transport record is not a repair release. Any remaining vehicle restriction shall continue until the competent receiving function resolves it.

Annex O Worked service performance example

Illustrative exercise only. The organisation shall define its own reporting period and repeat concern observation window before using the measures.

Record field	Required entry and evidence
Attended population	100 eligible attended jobs in the period; remote only cases are kept in a separate population.
First attendance	82 jobs complete the intended work and verification on the first attendance.
Other outcomes	10 need a later attendance and 8 transfer to a workshop. Total reconciles to 100.
Initial measure	First visit completion is 82 divided by 100 multiplied by 100, equal to 82 percent.
Repeat review	If 4 of the 82 reopen for the same unresolved concern within the defined window, retain both original and adjusted results.
Adjusted measure	Sustained first visit completion becomes 78 divided by 100, equal to 78 percent, under this stated definition.
Remote population	20 additional remote only cases shall not be added to the attended denominator to improve the percentage.
Management action	Analyse revisit causes, transfer reasons and evidence quality without penalising justified safety stops.

The example defines its own measure for illustration. Reports shall preserve denominator versions and shall not silently replace initial results with revised values.

Annex P Case exercise stale telemetry and misdiagnosis

Scenario: a customer reports an intermittent no start concern. The cloud screen shows normal supply information, but the last sample predates the event.

Record field	Required entry and evidence
Initial trap	Treating the old value as current and reassuring the customer that the electrical system is normal.
Required check	Verify source timestamp, receipt delay, signal validity and the vehicle configuration.
Evidence gap	Current supply condition and event snapshot are unavailable; identify this explicitly.
Diagnostic plan	Consider supply, connection, communication and component causes with discriminating approved tests.
Service route	Choose qualified attendance or workshop diagnosis according to site suitability and available capability.
Customer message	Explain that the available remote evidence is insufficient and state the next confirmed action.
Review questions	Was any code cleared, part ordered or charge approved before evidence supported that decision?
Expected record	Session report, uncertainty, route decision, preserved evidence and follow up owner.

The exercise passes when the team recognises the evidence limit and chooses a controlled next step, not when it guesses the eventual failed component.

Annex Q Case exercise battery concern at an unsafe site

Scenario: a vehicle has stopped beside moving traffic after an impact. The driver reports an unusual smell near the battery area, while the app displays no warning.

Record field	Required entry and evidence
Immediate priority	Use the applicable emergency guidance to protect people and arrange appropriate professional assistance.
Remote limitation	Do not use the absence of an app alert to declare the battery or roadside location safe.
Prohibited shortcut	Do not ask the driver to inspect damaged cables, restart repeatedly or move the vehicle to simplify the repair.
Service decision	Suspend routine mobile repair and engage the competent incident and recovery route.
Information transfer	Report impact, observed symptoms, location hazards, vehicle identity and known restrictions.
Receiving capability	Confirm specialist handling and a suitable receiving facility before routine transport is assumed.
Case continuity	Maintain the safety flag and customer support through all handovers.
Evaluation	Assess timely escalation, clear ownership, preserved evidence and avoidance of unsupported reassurance.

This is a decision exercise, not a substitute for emergency responder training or a vehicle specific battery handling instruction.

Annex R Management review and improvement record

Use to connect operating evidence to resource and scope decisions. Assign measurable follow up for every material action.

Record field	Required entry and evidence
Review period	Territories, providers, task catalogue revision and case population covered.
Customer outcomes	Repeat concerns, complaints, accessibility issues, missed commitments and transfer experience.
Technical performance	Diagnostic reversals, data quality failures, verification gaps and task suspensions.
Safety and security	Stops, incidents, near misses, access exceptions and exercise findings.
Capability	Competence coverage, equipment readiness, van configuration and specialist support.
Process changes	Approved changes to catalogue, platform, instructions, scheduling or supplier arrangements.
Action control	Owner, due date, required evidence and effectiveness measure for each action.
Closure	Actual results, independent review where needed and residual limitations communicated.

Record decisions to maintain, restrict or expand service scope. A completed meeting shall not close actions whose effectiveness remains unverified.