

ISO 14625:2023-01 (E)

Space systems - Ground support equipment for use at launch, landing or retrieval sites - General requirements

Contents		Page
	Foreword	vi
	Introduction	vii
1	Scope	1
2	Normative references	1
3	Terms and definitions, symbols and abbreviated terms	2
	3.1 Terms and definitions.....	2
	3.2 Symbols and abbreviated terms.....	4
4	General	4
5	Functional designations	4
	5.1 General.....	4
	5.2 Servicing GSE.....	5
	5.3 Checkout and test GSE.....	5
	5.4 Handling and transportation GSE.....	5
	5.5 Auxiliary GSE.....	5
	5.6 Umbilical GSE.....	5
6	Characteristics	5
	6.1 Performance characteristics.....	5
	6.1.1 Operability.....	5
	6.1.2 Interfaces.....	5
	6.1.3 Producibility.....	5
	6.2 Physical characteristics.....	6
	6.2.1 Limited life.....	6
	6.2.2 Useful life.....	6
	6.2.3 Protective coating.....	6
	6.2.4 Colours.....	6
	6.2.5 Metric system.....	6
	6.2.6 Redundancy.....	6
	6.3 Reliability.....	6
	6.4 Maintainability.....	7
	6.5 Environmental conditions.....	7
	6.5.1 General.....	7
	6.5.2 Natural environment.....	7
	6.5.3 Launch-induced environment.....	7
	6.5.4 Controlled interior environment.....	7
	6.5.5 Controlled clean environment.....	7
	6.5.6 Uncontrolled interior environment.....	7
	6.5.7 Fire/explosion hazard environment.....	7
	6.5.8 Environmental test methods.....	8
	6.5.9 Seismic environment.....	8
	6.6 Transportability.....	8
7	Documentation	8
	7.1 Drawings and specifications.....	8
	7.2 Technical documentation.....	8
	7.3 Operations and maintenance documentation (OMD).....	8
8	Supply support	8

9	Personnel and training	8
10	Qualification	9
11	Quality assurance	9
	11.1 General.....	9
	11.2 Responsibility for verification.....	9
	11.3 Testing.....	9
	11.3.1 General.....	9
	11.3.2 Load test.....	10
	11.3.3 Non-destructive test (NDT).....	10
	11.3.4 Test reports.....	10
	11.3.5 Instrumentation calibration.....	10
	11.4 Quality conformance verification.....	10
	11.5 Checkout and maintenance.....	10
	11.6 Quality problems management.....	11
12	Packaging	11
	12.1 Preservation and packaging.....	11
	12.2 Shipping containers.....	11
	12.3 Weight and size.....	11
	12.4 Parts protection.....	11
	12.5 Precision clean parts.....	11
	12.6 Marking.....	11
	12.7 Environmental recording instruments.....	11
	12.8 Transportation and storage.....	11
13	Design and construction requirements	12
	13.1 Structural design.....	12
	13.1.1 Structural steel and other structures.....	12
	13.1.2 Safety factor.....	12
	13.1.3 Critical weld.....	12
	13.2 Mechanical design.....	12
	13.2.1 Pneumatics.....	12
	13.2.2 Cryogenics.....	12
	13.2.3 Hypergols.....	12
	13.2.4 Hydrocarbons.....	13
	13.2.5 Liquid oxidizers.....	13
	13.2.6 Hydraulics.....	13
	13.2.7 Environmental control system (ECS) and coolant servicing systems.....	13
	13.2.8 Life support.....	13
	13.2.9 Lifting devices.....	13
	13.2.10 Springs.....	13
	13.2.11 Umbilical design.....	13
	13.2.12 Torque limits.....	13
	13.2.13 Tethers.....	13
	13.2.14 Jacks.....	14
	13.2.15 Transportation equipment.....	14
	13.2.16 Pressure vessels.....	14
	13.3 Electrical/electronic design.....	14
	13.3.1 Electrical control and monitor equipment.....	14
	13.3.2 Pneumatic and hydraulic mechanical components.....	14
	13.3.3 Internal wiring.....	14
	13.3.4 Pyrotechnic systems.....	14
	13.3.5 Electrical power.....	14
	13.3.6 Bonding and grounding.....	14
	13.3.7 Hazard-proofing.....	15
	13.3.8 Lightning protection.....	15
	13.3.9 Software.....	15
	13.3.10 Firmware.....	15
	13.4 Materials, parts and processes.....	15
	13.4.1 Materials.....	15
	13.4.2 Parts.....	17
	13.4.3 Processes.....	19
	13.5 Electromagnetic compatibility (EMC).....	21
	13.6 Identification markings and labels.....	21

13.6.1	Systems and equipment.....	21
13.6.2	Load test.....	21
13.6.3	Piping systems.....	21
13.6.4	Compressed gas cylinders.....	21
13.6.5	Load capacity.....	21
13.6.6	Test weights.....	21
13.6.7	Electrical cable assemblies.....	22
13.6.8	Serial numbers.....	22
13.7	Workmanship.....	22
13.8	Interchangeability.....	22
13.9	Safety.....	22
13.10	Human performance.....	23
13.10.1	General.....	23
13.10.2	Operating characteristics.....	23
13.10.3	Personnel force limits.....	23
13.10.4	Propellant handlers ensemble (PHE) operators.....	23
13.11	Security.....	23
13.12	Redundancy.....	23
14	Checkout and maintenance requirements.....	23
14.1	General requirements.....	23
14.2	Checkout and maintenance items.....	24
	Bibliography.....	26