



उत्पाद मैनुअल
फसल संरक्षण उपकरण - हस्त चालित स्टिरप-प्रकार फुहारा -विशिष्ट
IS 1971:2023 के अनुसार

PRODUCT MANUAL
FOR Crop Protection Equipment – Hand-operated Stirrup-Type Sprayer— Specification
ACCORDING TO IS 1971:2023

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या IS No.	:	IS 1971:2023
	शीर्षक Title	:	Crop Protection Equipment – Hand-operated Stirrup-Type Sprayer— Specification
	संशोधनों की संख्या No. of amendments	:	NIL
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Material for various parts shall be as per Cl. 4 of IS 1971:2023. The manufacturer shall declare the materials used for different components to BIS and maintain a record thereof. Raw Material conformity shall be established through raw material supplier's test certificate, or test report from BIS recognized/empaneled laboratory or test report from any other NABL accredited laboratory or in-house testing or combination thereof. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope

		of Licence/Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Each type of sprayer for each application shall be tested
c)	नमूने का परिमाण Sample Quantity	: 1 Sprayer Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/Factory Surveillance (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex- A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex- B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	Discharge Rate, Volumetric Efficiency, dimensional requirements (height, total mass and other dimensional requirements) Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	“Licence is granted to use Standard Mark as per IS 1971:2023 with the following scope:	
	Name of the product	Crop Protection Equipment – Hand-operated Stirrup-Type Sprayer
	Sprayer Type	Brass Sprayer/Plastic Sprayer
	Application	Agricultural Application/Public Health Application

**BUREAU OF INDIAN STANDARDS
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ANNEX – A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Discharge rate, 6.1, 12.1	Test benches as per Fig. 3 with motor, hoses, pressure regulator, extension tube, pressure gauge, tachometer/suitable device to measure cycles per minute, flow meter or measuring cylinder to measure discharge rate
2	Volumetric Efficiency, Cl. 6.2, 12.2	Equipment for discharge rate measurement, measuring tape/calipers to measure piston displacement, diameter etc.
3	Endurance, Cl. 6.3, 12.3	Equipment for discharge rate measurement
4	Test for leakage and deformation of pressure chamber, pump cylinder and pressure tank, Cl. 7, Cl. 13.1	Setup for pneumatic and hydraulic pressurization of pressure chamber or pump cylinder or tank, pressure gauges
5	Test for gasket and piston, Cl. 7, Cl. 13.2	Test mixture of 60 percent kerosene, 5 percent benzene, 20 percent toluene and 15 percent xylene Test chamber capable of being maintained at a temperature of 27 °C to 33 °C, with temperature indicator/thermometer
6	Test for Handle, Piston Rod, Foot Rest and Stirrup, Cl. 7, Cl. 13.3	Setup for pressurization, pressure gauges
7	Test for Hose and Hose Connection Cl. 7, Cl. 13.4	Setup for hydraulic pressurization, pressure gauges
8	Test for torque of cutoff device, Cl. 7.13.3, Annex C	Trigger Actuation test setup as per Fig. 6, standard weights, measuring tape/calipers
9	Strength test of cutoff device, Cl. 7.13.3, Annex C	Setup for hydraulic pressurization, pressure gauges
10	Leakage and reliability test, Cl. 7.13.3, Annex C	Trigger type cutoff device durability tester as per Fig. 7, test apparatus for knob type cutoff as per Fig. 9, test liquid consisting of a 5 percent suspension of any commercially available water dispersible powder, pressure gauges, setup for pressurization, tachometer/suitable device to measure cycles per minute
11	Tests on Nozzle	Discharge test - Supply of clean water or spray materials which are equal in density, surface tension and viscosity of water, Arrangement of spraying at controlled pressure, pressure gauges Spray distribution test – Patternator as per Fig. 17, compressed air supply or small pump giving a steady

		output, with a liquid supply line from the reservoir of capacity two litres or more, a constant pressure regulator and a pressure gauge, A test tube rack so made that the collecting tube can be inserted in the flow when constant flow has been achieved, and retracted after a predetermined period. Spray Angle test – Test rig as per Fig. 21, pressure gauge Test for variation in discharge and distribution due to abrasion and corrosion – Test liquid: Clean water with the addition of 20 g/l of abrasive or corrosive material as per E-10
11	Dimensions	Measuring tapes, micrometers, thickness gauges, scales, calipers, angle protractors as required

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : All sprayers of the same type and application assembled in a day.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each sprayer and on its packaging provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: The material shall also be marked with the following additional requirement on each sprayer or on the manual supplied with the sprayer.

a) “For BIS certification details please visit www.bis.gov.in”

3.3 Manual, Spare parts and optional items – Manual and spare parts shall be supplied with each sprayer as per Cl. 8.1 and Cl. 8.2 shall be supplied with each sprayer. Optional item as per Cl. 8.3 may also be supplied at the option of purchaser.

3.4 Safety - Each sprayer shall be provided with set of mask, hand gloves and safety goggles and apron as per Cl. 8.4

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or)S:Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods Clause Reference			No. of Sample	Frequency	Remarks
4	Material	4	IS 1971:2023	S	One	Each consignment	The manufacturer shall declare the materials used for different components to BIS and maintain a record thereof. Raw Material conformity shall be established through raw material supplier's test certificate, or test report from BIS recognized/empaneled laboratory or test report from any other NABL accredited laboratory or in-house testing or combination thereof.
6	PERFORMANCE REQUIREMENTS						
6.1	Discharge Rate	12.1	IS 1971:2023	R	Each sprayer		
6.2	Volumetric Efficiency	12.2	IS 1971:2023	R	Each sprayer		
6.3	Endurance						
i)	Routine and acceptance check (5 min.)	12.3	IS 1971:2023	R	Each sprayer		
ii)	Endurance test (48 h)	12.3	IS 1971:2023	R	One	Every 20 th control unit	
7	CONSTRUCTIONAL REQUIREMENTS						
7.1	Height	7.1	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the		

					requirement of standard and maintain records thereof		
7.2	Total Mass	7.2	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof		
7.3	Pump Cylinder inner diameter	7.2	IS 1971:2023	R	-do-		
7.3	Test for Leakage and Deformation of pump cylinder	13.1	IS 1971:2023	R	5	Each control unit	
7.4	Height of the straight portion of the piston	7.4	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof		
7.4	Leakage test for piston made out of rubber	13.2	IS 1971:2023	R	5	Each control unit	
7.5	Diameter of piston rod	7.5	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof		
7.5.1	Buffer device on piston rod	7.5.1	IS 1971:2023	R	-do-		
7.5.2	Travel limiting device	7.5.2	IS 1971:2023	R	-do-		
7.5.3	Pressure test for piston	13.3	IS 1971:2023	R	5	Each control unit	
7.6	Handle	7.6	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof		
7.7	Guide and Gland Packing	7.7	IS 1971:2023	R	-do-		
7.8	Foot valve	7.8	IS 1971:2023	R	-do-		
7.8.1	Strainer	7.8.1	IS 1971:2023	R	-do-		

7.8.2	Hydraulic Agitator	7.8.2	IS 1971:2023	R	-do-	
7.9	Stirrup and Foot Rest	7.9	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof	
7.10	Threaded Connections	7.10	IS 1971:2023	R	-do-	
7.11	Delivery Spout	7.11	IS 1971:2023	R	-do-	
7.12	Synthetic rubber and PVC gaskets leakage test	13.3	IS 1971:2023	R	5	Each control unit
7.13	Discharge Line					
7.13.1	Delivery Hose	7.13.1	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof	
7.13.2	Hose Connection	7.13.2	IS 1971:2023	R	-do-	
7.13.2	Hydrostatic pressure test for hose and hose connection	13.4	IS 1971:2023	R	5	Each control unit
7.13.3	Cut-off Device and Lance	Annex C and D	IS 1971:2023	R	5	Each control unit
7.13.4	Nozzle	Annex E	IS 1971:2023	R	5	Each control unit
9	WORKMANSHIP AND FINISH	9	IS 1971:2023	R	Manufacturer shall put in place adequate in process controls and inspections to ensure conformity to the requirement of standard and maintain records thereof	