



उत्पाद मैनुअल

फसल संरक्षण उपकरण - हस्त-चालित पीठ पर लादा जाने वाला फुहारा, पिस्टन प्रकार
भारतीय मानक 3906: 2024 के अनुसार

**PRODUCT MANUAL
FOR
CROP PROTECTION EQUIPMENT - HAND-OPERATED KNAPSACK
SPRAYER - PISTON TYPE
ACCORDING to IS 3906: 2024**

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 3906: 2024
	शीर्षक Title	: फसल संरक्षण उपकरण - हस्त-चालित पीठ पर लादा जाने वाला फुहारा, पिस्टन प्रकार Crop Protection Equipment - Hand-Operated Knapsack Sprayer - Piston Type.
	संशोधनों की संख्या No. of amendments	: 01
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	: 1. The material of construction of various components of the sprayer shall be selected from col (3) of Table 1 of IS 3906. 2. The brass casting components shall conform to chemical composition of IS 292 (grade to be declared by the manufacturer). 3. The material used for different components shall be declared by the manufacturer in the manual (see 7.1). 4. The engineering plastics used for manufacturing various components as given in Table 1 shall be co-polymer plastics or reinforced high density

		polyethylene or reinforced polypropylene. <i>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.</i>
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Please refer to Annex-A .
c)	नमूने का परिमाण Sample Quantity	1. 01 set of Hand-Operated Knapsack Sprayer with complete kit of Manual, Spare parts and safety along with optional Items, if any. 2. Additional sets of gaskets/pistons/springs as required under Cl. 12.3 of IS 3906. <i>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 (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)</i>
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	1. The material used for various parts. 2. Tank Capacity 3. Optional items 4. Average/Normal working pressure in kPa. 5. Cut-off Device a. Type b. Inlet end-fitting type 6. Spray Lance a. Type b. Tube material 7. Spray Nozzle a. Spray Distribution type b. Attachment type c. Discharge rate of nozzle d. Discharge rate of adjustable nozzle for extreme adjustment for cone and jet spray pattern at a pressure of 300 kPa e. Spray angle of the nozzle f. With or without strainer <i>Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.</i>

3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to <u>Annex-B</u> .
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to <u>Annex-C</u> .
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	Discharge Rate, Volumetric Efficiency, Endurance Test (Routine) and Constructional Requirement. <i>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.</i>		
6.	लाइसेंस का दायरा/Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 3906: 2024 with amendment no. 1 with the following scope:		
	Name of the product	Crop Protection Equipment - Hand-Operated Knapsack Sprayer - Piston Type	
	Cut off Device	Trigger type (Type A) / Knob type (Type B)	
	Spray Nozzle	Hollow cone type / Fan type / Adjustable type	

**BUREAU OF INDIAN
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**MANAK BHAVAN,9, BAHADUR SHAH
ZAFAR MARG,NEW DELHI-110002**

ANNEX - A

GROUPING GUIDELINES

1. IS 3906 classifies following components of Product, Crop Protection Equipment - Hand-Operated Knapsack Sprayer - Piston Type as below:
 - A. Cut off Device:
 - i. Trigger type (Type A)
 - ii. Knob type (Type B)
 - B. Spray Nozzle:
 - i. Hollow cone type
 - ii. Fan type
 - iii. Adjustable type
2. Owing to their distinct types and specific tests and performance requirements under Annexes D and F of IS 3906: 2024, respectively, following shall be applicable for Grant of Licence (GOL)/ Change in Scope of Licence (CSOL):
 - A. Hand-Operated Knapsack Sprayer shall be tested with a particular type of cut-off device and spray nozzle, to cover those particular types in the scope of the licence.
 - B. Other types of Cut-off devices and spray nozzles may be tested separately as components for inclusion through change in scope of the licence.
3. However, while considering grant of licence/change in scope of licence, it will be ensured that the applicant/licensee has got the complete manufacturing and testing facilities, as applicable for all the types intended to be covered.
4. During operation of the licence, BOs shall ensure that all the samples are tested for all applicable requirements on the product, and types covered in the licence are tested in rotation.

ANNEX - B
LIST OF TEST EQUIPMENT
(INDICATIVE LIST, FOR GUIDANCE ONLY)

<i>Clause</i>	<i>Test</i>	Test Facilities
5	Performance Requirement	1. Test bench as per Fig. 5 2. Timer
6	Constructional Requirements	1. Measuring Taper 2. Vernier Calliper
6.4.1, 6.5, 6.9.2. 3	Pump Cylinder, Pressure Chamber, Delivery hose and hose connections	1. Hose 2. Pneumatic test arrangement 3. Hydraulic test arrangement 4. Immersion vessel 5. Timer
6.4.2 and 6.10	Piston and Gaskets	1. Immersion vessel 2. Kerosene 3. Benzene 4. Toluene 5. Xylene 6. Timer 7. Arrangement for temperature range of 27 °C to 33 °C with air-drying.
6.6	Threaded Connections	1. Gauges
6.9.3	Cut-off Device and Lance	1. Appropriate arrangement of Trigger actuation test (see Fig 8) 2. Appropriate arrangement for Leakage and Reliability test (see Fig 9, 10 and 11)
6.9.4	Spray Angle	1. Test rig (see Fig 23)
6.9.4	Nozzle	1. Patternator apparatus as per F-8 2. Timer
6.11	Total Mass	1. Weighing balance

The above list is indicative only and may not be treated as exhaustive.

ANNEX - C
SCHEME OF INSPECTION AND
TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *all Hand-Operated Knapsack Sprayers of the same type 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. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made 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 Hand-Operated Knapsack Sprayer, provided always that the material so marked, conform to every requirement of the specification.

3.1 Packing and marking shall be done as per the provision of the Indian Standard. In addition, each Hand-Operated Knapsack Sprayer shall also be marked with the following additional requirement:

a) BIS Licence No. CM/L _____.

b) BIS website details: "For BIS certification details please visit www.bis.gov.in"

3.2 A kit of Manual, Spare parts and Safety, shall be provided as per the provision of the Indian Standard.

4. REJECTION - 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
(Recommended Levels of Control by BIS - For Guidance Only)

(1)				(2)	
Test Details				Levels of Control	
Clause	Requirement	Test Methods		No. of Sample	Frequency
		Clause	Reference		
4	Materials	Table 1 and Annex C	IS 3906	One	Each consignment of each material *
Performance Requirements					
5.1	Discharge rate	11.1	IS 3906	One	Each sprayer
5.2	Volumetric Efficiency	11.2	IS 3906	One	Each sprayer
Construction Requirements					
6.1	Tank	6.1	IS 3906	One	Each tank
6.2	Skirt/Stand	6.2	IS 3906	One	Each control unit
6.3	Straps	6.3 and 11.3	IS 3906	One	Each sprayer
6.4	Filling Hole	6.4	IS 3906	One	Each control unit
6.5	Pressure Chamber	12.1	IS 3906	One	Each chamber
6.6	Pump Cylinder	12.1	IS 3906	One	Each cylinder
6.7	Piston	12.3	IS 3906	One	Each piston
6.8	Threaded Connections	-	IS 2643	One	Each connection
6.9	Operating Lever, Handle and Piston Rod	12.2	IS 3906	One	Each control unit
6.10	Discharge Outlet	6.10	IS 3906	One	Each control unit
6.11	Gaskets	12.3	IS 3906	One	Each consignment
6.12	Delivery Hose	6.12	IS 3906	One	Each control unit
6.12	Suction Hose	12.1	IS 3906	One	Each consignment
6.12	Hose connection	12.4	IS 3906	One	Each Hose connection
6.13	Cut-off Device	Annex D	IS 3906	One	Each device
6.13	Lance	Annex E	IS 3906	One	Each lance
6.14	Nozzle	Annex F	IS 3906	One	Each nozzle
6.15	Lifting Arrangements	6.15	IS 3906	One	Each control unit
6.16	Mass	6.16	IS 3906	One	Each control unit
6.17	Endurance	11.4	IS 3906	One	Once a month
6.17	Endurance (Routine)	11.4	IS 3906	One	Each control unit
Other Requirements					
7	Manual, Spare parts and Safety along with Optional items	7	IS 3906	One	Each sprayer
8	Workmanship and Finish	8	IS 3906	One	Each sprayer and all components

* No testing is required, if material is accompanied with suppliers' Test Certificate.