REDBEE HTP-22 AK
ENGINE OPERATED SPRAYER

Government of India
Ministry of Agriculture and Farmers Welfare
Department of Agriculture, Cooperation and Farmers Welfare
Northern Region Farm Machinery Training and Testing Institute

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### PERFORMANCE REQUIREMENTS
(C1.6. IS 11313:2007)

| C1.6.1 Discharge rate/Suction capacity | When tested in accordance with the method given in 8.3, the pump shall be capable of discharging/sucking a minimum of 8000 ml. water per minute at its rated speed and rated pressure. | The pump is capable to discharge 18568 & 18720 ml/min at 10 & 20 kg/cm² pressure respectively. | Conforms |
| C1.6.1.1 The discharge rate/suction capacity shall be declared by the manufacturer. | 13 to 22 l/min declared in operator manual. | Conforms |
| C1.6.2 Volumetric Efficiency C1.6.2.1 When determined in accordance with 8.4.1, the volumetric efficiency of the piston/plunger type pump shall minimum 80 percent. | The volumetric efficiency is 90.01% which is within specified limit. | -- |
| C1.6.2.2 The volumetric efficiency requirement for roller vane type pump shall be minimum 80%. | Not applicable | -- |
| C1.6.3 Power requirement When tested in accordance with the method given in 8.5, pump shaft power requirement shall not be more than that of the value declared by the manufacturer. | Not applicable | -- |
| C1.6.4 Maximum achievable pressure When tested in accordance with the method given in 8.7, maximum achievable pressure shall not be less than that of the value declared by the manufacturer. | Maximum achievable pressure observed as 20 kg/cm² against the declaration of 10 to 50 kg/cm². The overloading of prime mover was observed beyond 20 kg/cm² pressure. | Conforms |
| C1.6.5 Endurance test Sprayer shall withstand the test endurance test specified in 8.8 and the variation in Discharge rate between first and last observation shall not be more than ± 5 Percent. | Endurance test of 50 hrs. completed without any breakdown & the variation in pressure. Percentage variation in discharge is 0.38% within specified limit (see Annexure IV for more details). | Conforms |

### OTHER REQUIREMENTS
(IS 11313:2007)

| C1.7.1 Each sprayer shall be provided with parts catalogue and manual giving detailed information about sprayer, engine, its rated speed along with operational and maintenance instructions and safety precautions. | Manuals and parts catalogue is provided by the manufacturer and found adequate in contents. | Conforms |
5. **SUMMARY OF OBSERVATION**

5.1 The discharge rate was observed as 18568 & 18720 ml/min at 10 & 20 kg/cm² pressure respectively.

5.2 Volumetric efficiency was observed as 90.01% against the minimum requirement of 80%.

5.3 Power requirement: 1.23 kW rated power was observed against 1.25 kW declared by the manufacturer.

5.4 Pressure adjustment: No fluctuation of the pressure was observed during the test.

5.5 Maximum achievable pressure was observed as 12 kg/cm², beyond this pressure the overloading of prime mover (engine) was observed.

5.6 **Endurance test**

a) The test was conducted 50 hours. The discharge rate variation is observed as 0.38%, which is within the limit of ±5%.

b) No noticeable breakdown was observed during the test.

6. **COMMENTS AND RECOMMENDATION**

6.1 **Conformity to Indian Standard**

Engine operated sprayer Redbee HTP-22 AK conforms all the clauses of IS: 11313-2007 except requirement specified in the following clause. These should be rectified and incorporated at manufacturing level:

i) Clause No. 4.1 and 4.3 IS:11313-2007, Sr. No. iii) material of construction for Sr. No. iii) pressure chamber, Sr. No. xxiv) Pump inlet port end fitting Sr. No xxvi) connecting rod not as per Indian Standard.

ii) Cl. E. 2.2 IS: 3652:1995-The diameter of connecting rod of gun is not as per IS.

iii) Cl. E. 2.4 IS: 3652:1995-The total length of the spray gun is not as per IS.

iv) Cl.E.5 IS: 3652:1995-The gun does not conform the requirement of IS: 3652-1995 Clause E-6 (a) & (b). The manufacturer name & trade mark, batch No. or code No. should be marked on gun.

v) Cl.10.1 (b) IS: 11313-2007-Manufacturer’s name & his registered trade marked, sr. No. and batch or code No. is not provided. It should be provided.

vi) The sprayer year of manufacture is not declared by applicant. It should be provided on sprayer.
vii) The prime mover (engine) make & country of origin was not declared by applicant. However, in response to draft test report, applicant went to declare ‘Redbee’ as make of prime mover. Still the country of origin is not declared by applicant which is even more ‘non-conformity’ on the part of applicant. It is therefore required with due stress to provide the information.

viii) Pump make, model, year of manufacture and country of origin was not declared by applicant. However, in response to draft test report, applicant went to declare ‘Redbee HTP-22 A’ as make & model of pump. Still the country of origin is not declared by applicant which is even more ‘non-conformity’ on the part of applicant. It is therefore required with due stress to provide the information.

6.2 The engine shall be marked with the following
i) Importer and distributor name or his trade mark
ii) Serial Number of the engine

6.3 Safety provision/safety wear
i) The accessories viz mask, hand gloves and safety goggles for operator’s safety has not been provided with sprayer for safety of users. It should be provided.
ii) Safety signs and hazard pictorials are not provided on the machine. It must be provided on the machine for safety of user.

7. TECHNICAL LITERATRUE
The operation manual of sprayer and engine was provided during the test. However, the same needs to be undated as per IS: 8132:1999.

TESTING AUTHORITY

| G. R. AMBALKAR AGRICULTURAL ENGINEER |  
| R.K. NEMA SENIOR AGRICULTURAL ENGINEER |  
| P. K. PANDEY DIRECTOR |  

8. APPLICANT’S COMMENTS
No specific comments received from applicant.