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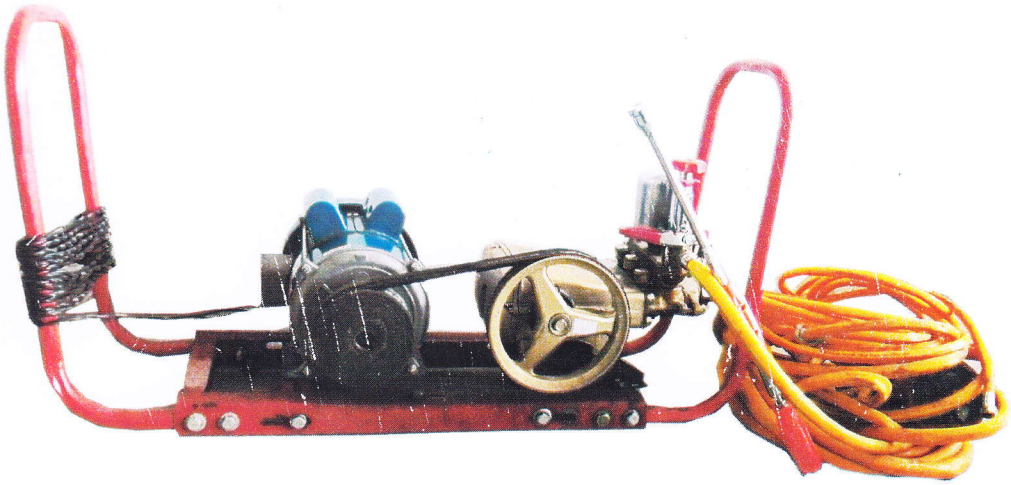
व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No. : PS-245/1926/2016**

माह/**Month : August, 2016**



KISAN KRAFT KK-33 CI3
ELECTRIC MOTOR OPERATED SPRAYER

सत्यमेव जयते

भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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Cl.5.14.2	The metallic nut if provided shall have the internal thread size, minimum of designation G¼B IS: 2643-2005 Part I. The clamp shall consist of ferrule or clip. Other thread sizes if used shall be of standard pipe threads IS: 2643-2005.	Metallic nut of internal thread size $G^5/_8$ is provided.	conforms
Cl.5.14.3	The hose and hose connection shall with stand the test prescribed in 7.2 of IS:10134-1994. A minimum hydrostatic pressure of 1.5 MPa, using water as a liquid, shall be developed in the Hose assembly and the pressure shall be retained for a period of 5 minutes.	There was no leakage, crack and breakage in hose & hose connection during testing.	Conforms
Cl. 5.15 **Nozzle**	Unless otherwise specified by the purchaser, the nozzle shall conform to the requirement of Annexure F of IS:3652-1995.	Fixed straight solid cone nozzle.	Conforms
Cl.5.16	The electric motor shall conform to the requirements as given in IS:325-1996.	Single phase electric motor, 2.24 kW provided without BIS marked.	**Does not conform**
Cl.5.16.1	The exhaust outlet of the engine shall be so positioned that the smoke does not directly affect the operator or crop. A guard shall be provided on or near the exhaust pipe for the protection of the operator.	Not applicable	--
Cl. 5.17	The fuel and chemical discharge controls shall be in easy access of the operator.	Not applicable as chemical tank not provided.	--
Cl.5.18	Air pressure chamber shall with stand the test prescribed in 8.7 without any deformation or damage.	No damage found in air pressure chamber during test.	Conforms
Cl.6 IS 11313:2007 PERFORMANCE REQUIREMENTS			
Cl.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 suction capacity of pump is 42621 & 37933 ml/min at 7.0 & 28 kg/cm^2 pressure respectively.	Conforms
Cl.6.1.1	The discharge rate/suction capacity shall be declared by the manufacturer.	Declared as on ID plate of pump 30 to 40 l/min.	Conforms
Cl.6.2 **Volumetric Efficiency** Cl6.2.1	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 89.13% & with in specified limit.	Conforms
Cl.6.2.2	The volumetric efficiency requirement for roller vane type pump shall be minimum 80 %.	Not applicable	--

Cl.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.	Max. pump shaft power requirement is observed as 1 & 2.8 kW at 7 & 28 kg/cm^2 pressure against the declared value of 2.27 to 4.47 kW.	Conforms
Cl.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 is observed as 28 kg/cm^2 against the declaration of 10 to 40 kg/cm^2.	Conforms
Cl.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 0.668% with in specified limit (see annexure IV for more details).	Conforms
Cl. 7	**IS 11313:2007 OTHER REQUIREMENTS**		
Cl. 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.	Manual and parts catalogue is provided by the manufacturer and found adequate in contents.	Conforms
Cl. 7.2	Each sprayer shall be provided with a set of necessary tools, suction strainer having aperture size of 300 µm to 425 µm and a measuring jar for lubricating oil.	One set of gaskets & tools kit is provided with sprayer.	Conforms
Cl. 7.3	On the option of the purchaser, the following accessories shall be supplied		
a)	A set of spray nozzles (conforming to Annexure E of IS:3652-1995) for different discharge rates, and	Not applicable	--
b)	Spray gun conforming to Annexure – I of IS: 3652-1995	Provided	Conforms
Cl. E 1 **TYPES IS:3652: 1995**	The spray guns shall be of the following two types:		
	a) Trigger type	N.A	--
	b) Screw type	Screw type	Conforms
Cl. E 2 **DIMENSIONS** Cl. E 2.1	The thickness of the wall of the barrel shall be minimum of 0.63 mm.	0.65 mm	Conforms
Cl. E 2.2	The diameter of the connecting rod shall be minimum of 5 mm.	4.25 mm	**Does not conform**

5. SUMMARY OF OBSERVATION

5.1 The discharge rate was observed as 42621 & 37933 ml/min at 7 & 28 kg/cm^2 pressure respectively.

5.2 Volumetric efficiency was observed as 89.13% against the minimum requirement of 80%.

5.3 Power requirement: 1.0 & 2.8 kW at 7 & 28 kg/cm2 pressure against the declaration of 3 to 6 Hp (2.24 to 4.47 kW) by the applicant.

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

5.5 Maximum achievement pressure was observed as 28 kg/cm^2.

5.6 **Endurance test**

a) The test was conducted 50 hours the discharge rate variation is observed as 0.668% which in within the limit of ±5%.

b) No noticeable breakdown was observed during the test.

6. COMMENTS AND RECOMMENDATION

6.1 **Conformity to Indian Standard**

Electric motor operated sprayer Kisan Kraft, KK-33 CI3 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) Pressure gauge reading scale is not as per requirements of Indian Standard. It should be improved.

ii) The electric motor provided is not BIS marked. The electric motor with BIS mark should be provided on sprayer.

iii) The spray gun is not designated by its identification mark. It should be designated as per requirement of Indian Standard.

iv) The diameter of connecting rod is not as per requirement of Indian Standard. It should be improved.

v) The gun does not conform the requirement of Indian Standard. The batch No. or code No. should be marked on marked gun.

vi) The prime mover (electric motor) power is not specified by applicant. It should be specified.

vii) Pump make & model is not specified by applicant. It should be specified.

viii) The prime mover (electric motor) model & year of manufacture is not specified. It should be specified.

ix) The labeling plate (metallic) of permanent nature should be provided on sprayer. The sticker provided as labeling plate does not serve the purpose.

x) The power requirement of sprayer is specified as 3 to 6 Hp on sticker. The exact power requirement should be mentioned on sprayer for the proper guidance of user.

6.2 The country of manufacturer/origin is not provided on labeling plate and packing. It may be provided.

6.3 **Safety provisions/safety wear**

i) The accessories viz mask, hand gloves and safety goggles for operator's safety are not provided. It should be provided with sprayer for safety of user.

ii) Safety signs and hazard pictorials are not provided on the machine. It must be provided on the machine for safety of user.

iii) Safety instructions regarding handling poisonous agrochemical and first aid may also be added in operator's manual.

7. **TECHNICAL LITERATURE**

The operation manual of sprayer was provided during the test which found adequate however, the literature should be updated as per IS: 8132-1999

TESTING AUTHORITY

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

8. **APPLICANT'S COMMENTS**

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We agree to all comments and recommendations.
We will improve in it at the production level.