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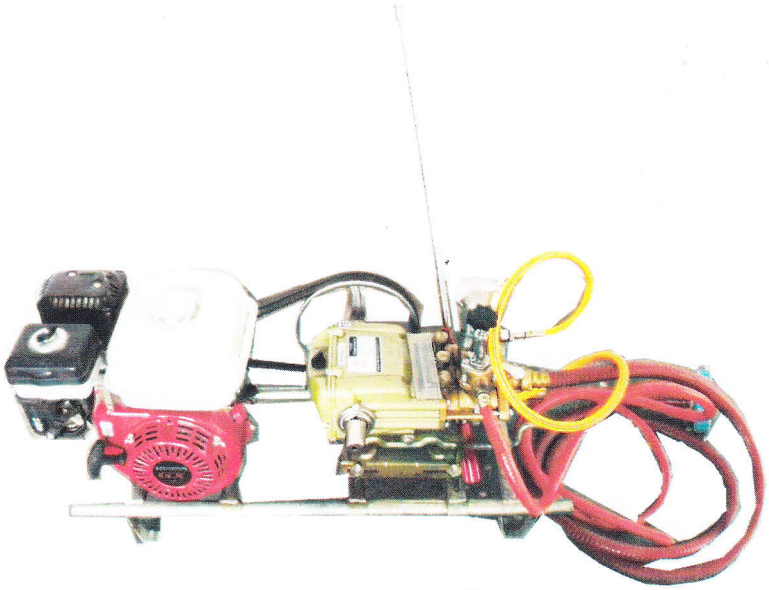
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No. : PS-234/1901/2016**
माह/**Month : July, 2016**



TANONG PRECISION TECHNOLOGY CO. LTD., DIAMOND BRAND TS-60, HYDRAULIC POWER 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
Northern Region Farm Machinery Training and Testing Institute
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Cl.5.16	The engine and electric motor shall conform to the requirements as given in IS:7347-1974 (Reaffirmed 2006) and IS:325-1996 (Reaffirmed 2007) respectively.	As per test report No. PT-020 dated 01.12.2015 issued by NSIC, Rajkot, which is accredited by NABL, the engine has been tested by NSIC Lab. Rajkot. Therefore, engine was not subject to test at this Institute, and the test data from above referred report is reproduced in chapter 3.13.	Conforms
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.	The exhaust outlet is away from the operator and covered with guard.	Conforms
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 pump is capable to discharge 37990 ml/min at 35 kg/cm^2 pressure.	Conforms
Cl.6.1.1	The discharge rate/suction capacity shall be declared by the manufacturer.	Declared as on ID plate of pump 33 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 89.04 %, which is within the 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.	Not applicable	--

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 35 kg/cm^2 against the declaration of 20 to 35 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 0.408%, which is within the specified limit (see Annexure III 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 not provided by the manufacturer.	**Does not conform**
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 O ring & 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 (Reaffirmed 2006) for different discharge rates, and	Not applicable	--
b)	Spray gun conforming to Annexure – E of IS:3652-1995 (Reaffirmed 2006).	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.	0.64 mm	Conforms
Cl. E 2.2	The diameter of the connecting rod shall be minimum of 5 mm.	3.90 mm	**Does not conform**
Cl. E 2.3	The annular clearance between the barrel and the connecting rod shaft be not less than 2.5 mm.	The annular clearance between the barrel and the connecting rod is 3.76 mm.	Conforms

Cl. E 4.3	The total mass of the spray gun having a length upto 1000 mm shall not exceed 1.6 kg.	Total mass of the gun provided is 0.365 kg.	Conforms
Cl. E 5 **DESIGNATION** Cl. E 5.1	The gun shall be designated by its identification mark AG-C-J for fine cone spray and jet spray pattern, spray angle and discharge at a nominal pressure of 600 kPa.	Not marked	**Does not conform**
Cl. E 6 **MARKING**	Each gun shall be marked with the following particulars		
	a) Manufacturer's name or recognized trade mark, and	Marked, Rekha	Conforms
	b) Batch or code no.	Not marked	**Does not conform**
Cl.9	**IS : 11313-2007 WORKMANSHIP AND FINISH**		
Cl. 9.1	All the components of the sprayer shall be free from burrs, pits and other visual defects which may be detrimental for their use.	Finishing and workman ship is good.	Conforms
Cl. 9.2	The exposed metallic parts shall have a protective coating to prevent surface deterioration.	Exposed metallic parts have the protective coating.	Conforms
Cl.10.	**IS:11313- Dec. 2007 MARKING AND PACKING**		
Cl.10.1 **Marking**	Each sprayer shall be marked with the following particulars :-		
a)	Manufacturer's name & his registered trade mark	Marked, Tanong Precision Technology Co. Ltd.	Conforms
b)	Sl. No. and batch or code No.	P-97080936	Conforms

5. SUMMARY OF OBSERVATION

5.1 The discharge rate was observed as 37990 ml/min at 35 kg/cm^2 pressure.

5.2 Volumetric efficiency was observed as 89.04% against the minimum requirement of 80%.

5.3 Power requirement: 2.9 kW as declared by the manufacturer. The engine provided on sprayer found adequate power to spray.

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

5.5 Maximum achievable pressure was observed as 35 kg/cm^2.

5.6 **Endurance test**

a) The test was conducted 50 hours. The discharge rate variation is observed as 0.408%, which is within the limit of ±5%.

b) No noticeable breakdown was observed during test.

6. COMMENTS AND RECOMMENDATION

6.1 Conformity to Indian Standard

Hydraulic power sprayer 'Tanong Precision Technology Co. Ltd., Diamond Brand TS-60' 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) Cl. 4.1 IS: 11313-2007 Table-I-The material of construction of various components of pump (i) pump cylinder (xxiv) pump inlet part end fitting is not as per IS.

ii) Cl. 4.3 IS: 11313-2007-Material of construction of various components.

iii) Cl. E-5 IS: 3652-1995-The spray gun is not designated by its identification mark. It should be designated.

iv) The gun does not conform the requirement of IS: 3652-1995 Clause E-6. The batch No. or code No. should be on marked gun.

v) Cl. E 2.2 IS: 11313-2007-The diameter of connecting rod of gun is not as per IS.

vi) The year of manufacture of sprayer is not declared by applicant. It should be provided on sprayer.

6.2 The country of manufacturer/origin is not provided on labeling plate and packing and/or in operator's manual. 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 with sprayer. It should be provided 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

No literature was provided during the test. It should be brought out 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

We accept the above report in full.