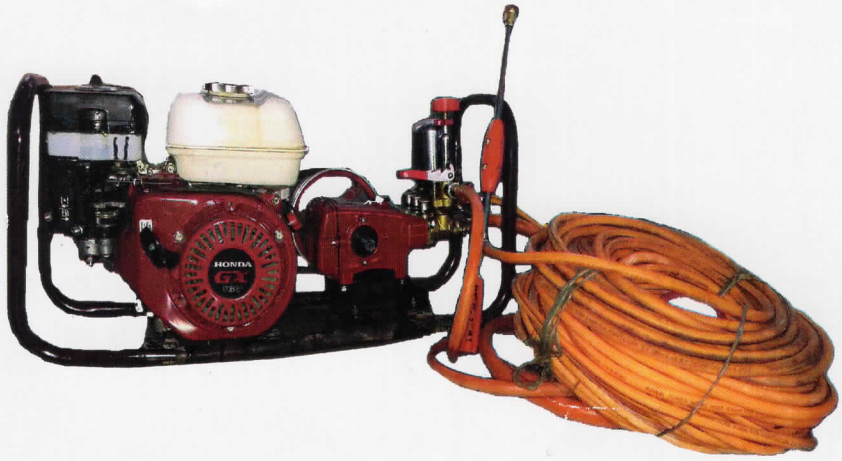
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: PS-371/2261/2018**
माह/**Month : December, 2018**

THIS TEST REPORT VALID UP TO : 31st DECEMBER, 2025



KISAN SHAKTHI KS-HTP+ENG
ENGINE OPERATED HTP SPRAYER

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
ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001
Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

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3. TEST FOR DISCHARGE RATE OF PUMP
[vide Clause 8.3 of IS- 11313: 2007]

1. Date of test : 11.12.2018
2. Atmospheric conditions :
   a) Temperature : 23° C
   b) Relative humidity : 52 %
   c) Pressure : 99.7 kPa
3. Data recorded

Speed of engine (rpm)	Working pressure (kg/cm^2)	Test No.	Delivery from the discharge line (ml/min)	Overflow (ml/min)	Average delivery from the discharge line (ml/min)	Discharge rate of pump (ml/min)	Hydraulic Power (kW)
1308	10	1	10500	10512.5	12257.5	22770.0	0.37
		2	10480				
		3	10550				
		4	10520				
1304	15	1	11400	11502.5	10700.0	22202.5	0.54
		2	11500				
		3	11600				
		4	11510				
1295	20	1	11800	12062.5	9402.5	21465.0	0.70
		2	12100				
		3	12200				
		4	12150				
1291	25	1	13650	13777.5	7375.0	21152.5	0.86
		2	13800				
		3	13900				
		4	13760				

Minimum discharge rate = 21152.5 ml/min at 25 kg/cm^2
Maximum discharge rate = 22770.0 ml/min at 10 kg/cm^2
Discharge at rated pressure = 21465.0 ml/min at 20 kg/cm^2

4. TEST FOR VOLUMETRIC EFFICIENCY OF PUMP
[vide clause 8.4 of IS: 11313-2007]

Rated pressure, kg/cm^2	:	20
Engine speed corresponding to rated pressure (rpm)	:	1295
Theoretical cubic capacity of pump, ml	:	18.26
Actual volume at rated pressure, ml	:	16.58
Volumetric efficiency, %	:	91

5. POWER REQUIREMENT

During the pump operation from minimum to maximum pressure range, the max. hydraulic power was observed as 0.86 kW against the declared net power output of engine as 2.9 kW.

6. ENGINE PERFORMANCE TEST

The applicant has submitted an attachment of license No. CM/L-8631984 vide endorsement No. 13 dated 03.10.2013 in respect of Honda GX-160 engine as per IS:7347-1974 issued by BIS, hence no further test was felt necessary to be conducted for engine.

S.No.	Parameter		Declaration
i	Engine Type	:	Over head valve, 4 stroke ,Air cooled, Horizontal shaft, single cylinder
ii	Bore,(mm)	:	68
iii	Stroke (mm)	:	45
iv	Displacement,(cc)`	:	163
v	Net power out put	:	2.9 kW@ 3600 rpm
vi	Max Torque	:	10 Nm @ 2500 rpm
vii	Compression ratio	:	8.5:1

7. PRESSURE ADJUSTMENT TEST
(Vide clause 8.7.1 of IS: 11313-2007)

1. Date of test : 11.12.2018
2. Atmospheric conditions :
   a. Temperature : 23 °C
   b. Relative humidity : 52 %
   c. Pressure : 99.7 kPa
3. Data recorded

S. No.	Working pressure(kg/cm^2)	Fluctuation range (kg/cm^2)	Pressure drop (kg/cm^2)	Ratio
1.	10	NIL	NIL	--
2.	15	NIL	NIL	--
3.	20	NIL	NIL	--
4.	25	NIL	NIL	--

4. Resistance of pressure: Yes

8. TEST FOR HYDRAULIC SPRAY GUN
[vide Clause 7.3(b) of IS- 11313: 2007 & Annex E of IS- 3652; 1995]

Date of test : 11.12.2018
Type of gun : Screw type

<table>
<tr><td>Cl.10.</td><td colspan="3">MARKING AND PACKING
(Cl.10 IS:11313-2007)</td></tr>
<tr><td>Cl.10.1
Marking</td><td colspan="3">Each sprayer shall be marked with the following particulars :-</td></tr>
<tr><td>a)</td><td>Manufacturer's name & his registered trade mark, Sl. No. and batch or code No.</td><td>KISAN SHAKTHI HTP 22A-1
POWER SPRAYER
<table><tr><td>Spraying</td><td></td><td>Irrigation</td></tr><tr><td>800-1000</td><td>RPM</td><td>1200-1400</td></tr><tr><td>16.5 - 10.5</td><td>Suction l/Min</td><td>14-22</td></tr><tr><td>1.5 - 3.5</td><td>Pressure kg/cm^2</td><td>1.0 – 1.5</td></tr><tr><td>1 - 2</td><td>Power (HP)</td><td>3.5 - 4</td></tr></table></td><td>Does not conform-in spirit and also in toto</td></tr>
</table>

15. CONFORMITY TO INDIAN STANDARDS

i) IS:11313-2007 (Reaffirmed 2012)-Hydraulic power sprayer-specification : **Does not conform in toto**

ii) Spray nozzle and spray gun as per IS:3652-1995 (Reaffirmed 2011) : **Does not conform in toto**

iii) Hose and hose connection as per IS:10134-1994 : Conforms

iv) IS: 2643-2005-Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation : Conforms

v) IS: 7347-1974 (Reaffirmed 2006)-Specification for performance of small size spark ignition engines for agricultural water pumps, sprayers, tillers, reapers and other similar applications : Conforms

16. COMMENTS AND RECOMMENDATIONS

16.1 The manufacturing year of sprayer is not specified. It should be specified.

16.2 The discharge rate for fine spray pattern and jet spray pattern of nozzle at a pressure of 300 kPa does not conform to the requirement of IS : 3652-1995. It **MUST** be looked into.

16.3 The pressure gauge marking exceeds 2.5 times the declared value of pressure. Suitable pressure gauge **MUST** be provided to ensure the compliance of the relevant Indian Standard.

16.4 The material used for different components are not declared. It **MUST** be provided.

16.5 Manufacturing year of pump is not provided. This **MUST** be provided for guidance of user.

16.6 The spray gun provided with sprayer is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.

16.7 The spray nozzle is not designated and marked by its identification mark. The identification mark as specified by relevant Indian Standard, **MUST** be provided.

16.8 The discharge rate for fine cone spray pattern and jet spray pattern of nozzle at a pressure of 600 kPa±60 does not conform to the requirement of IS:3652-1995. It **MUST** be looked into.

16.9 The diameter of connecting rod of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.

16.10 The thickness of the wall of the barrel of gun does not meet the requirement of Indian Standard. It **MUST** be looked into.

16.11 The spray nozzle provided with sprayer is not designated and marked by its identification mark as specified by relevant Indian standard, **MUST** be provided.

16.12 During the Endurance test of sprayer the breakage of main frame was observed. This **MUST** be looked into.

16.13 The engaged threaded length of outlet part does not meet the requirement of relevant Indian Standard. It **MUST** be looked into.

16.14 Labeling plate :

Not a labeling plate but only a sticker is provided on sprayer that too without mentioning all the information, thus it defeats the purpose. Hence to a suitable labeling plate (not sticker) needs to be provided with, inter alia, following information;-

i. Manufacturer's name
ii. Make
iii. Model
iv. Month & year of manufacture
v. Rated speed
vi. Rated pressure
vii. Discharge rate
viii. Power rating of engine
ix. SFC of engine

16.15 Safety provision/safety wear

i) Safety instructions regarding handling poisonous agro-chemical before, during and after spraying operation should be provided on sprayer.

17. TECHNICAL LITERATURE

The following literatures are provided with sprayer for guidance to the user.

i) Operator's manual of sprayer & engine.

ii) Part's catalogue of pump

The operator's manual should be updated as per IS : 8132-1999.

The operator manual should include safety instruction regarding handling poisonous agro chemical, before during and after spraying operation.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

18. APPLICANT'S COMMENTS

No specific comment received from applicant.