ANTAM code on POWER Tiller

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Content of the ANTAM code in 2015

1. Specification.
2. Engine performance.
3. Drawbar Performance.
4. Turning ability.
5. Parking brake test.
6. Noise measurements at operator’s ear level.
7. Repairs.
8. Remarks.

Feedback received from member countries India

MB	Test Code 1	Clause/ Subcla-use	Paragraph Figure/ Table/	Type of Comm-ent2	Comm-ents	Proposed change
	PT	3.1	--	Te	--	The existing definition of power tiller may be replaced with the following. “An agricultural machinery used for soil preparation having a single axle in which the direction of travel and its control during field operation is performed by the operator. The equipment may be walk-behind or riding attachment type and when coupled to a trailer, can be used for transportation of goods. The maximum speed of the power tiller when coupled to a trailer shall not exceed 22 kmIh. The maximum haulage capacity of the power tiller coupled to a trailer shall not exceed 1.5 tons.'

Cont.

	PT	3.5	2nd line	Ed	Symbol “ð”	The symbol “ð” may be replaced with the symbol “π”.
	PT	3.5	3rd line	Ed	“ ,” after the word drawbar.	The “,” may be deleted.
	PT	4.1.1	2nd line	Te	Word “lug”	The word “lug” may be replaced with the word “tread bars”.
	PT	4.1.3	3rd line	Ed	Word “will”	The word “will” may be replaced with the word “shall”.
	PT	4.4	5th line	Te	Word “lowest”	The word “lowest” may be replaced with the word “top”.
	PT	2.1	2nd Para, 2nd line	Te	2^0	
	PT	2.2.5	2nd line	Te	80	The figure “80” may be replaced with the figure “90”.
	PT	5.1.2	1st line	Te	The words “rotary, plough etc.”	
	PT	6.1.5	1st line	Te	-5^0C to 35^0C	

	PT	--	--	Te	--	The following tests may be added in the power tiller test code. (1) High ambient test (as per para 8.1.2 of IS 9935-2002), (2) Ten hour test (as per para 10.3 of IS 9935-2002), (3) rotary shaft test (as per para 9 of IS 9935-2002), (4) air cleaner oil pull over test (as per para 13 of IS 9935-2002), (5) vibration measurement (as per para 14 of IS 9935-2002), (6) Noise measurement (as per para15, 15.1 & 15.2 of IS 9935-2002), (7) The field test (for the duration as specified in para 7 of IS: 13539 - 2008) and haulage test as per IS: 9980-1988. (8) component / assembly inspection (as per para 16 of IS 9935-2002

	PT	**3.2**	**--**	**Te**	**After 2nd para**	After the second para, a following para may be added. "If the manufacturer / applicant recommends bailasting of the power tiller, the test shall be conducted both at ballasted and unballasted condition of the power liller and the results shall be reported separately."
	PT	5.2	--	Te	After the clause 5.2.2	After the clause 5.2.2, a following new clause 5.2.3 may be added. ""The force, necessary to apply at the control of the parking braking device to hold a vehicle combination comprising the unballasted power tiller and an unbraked trailer of the same mass of the power tiller or 1 tonne whichever is less, stationary when facing up and down on 12 percent gradient, shall be measured."

	PT	--	--	Te		The Indian Standard IS: 13539-2008 (Power Tiller – Recommendations on selected performance characteristics) may be accepted in total to evaluate the performance of the power tiller for acceptance of the product.

Comments of Malaysia

	PT					
		4.2		Ed	360 degree, should be shown using degree symbol	Change to 360^{o}
		5.2.1		Ed	18% shown in subscript form	Change to normal text
		3.1.8		Ed	Shall, be	Shall be
		All text		Ed	Should be consistent in using either percent or the symbol %	
		III 3.6		Ed	Equation not very clear	Equations should be typed using Microsoft Word
		III 3.5		Ed	(that is, this distance divided by 2?)	Not sure
		III 4.5		Ed	…those maintenance jobs	Remove those
		III 5.0	k		No symbol unit for degree	Add symbol
		D-6		Ed	Crank Shaft Torque unit , N-m	Should be Nm or N.m
		D-7	19	Ed	No unit for relative humidty	Add unit %
		D-8		Ed	No numbering reference for Drawbar Pull	

Comments of Indonesia

PT	**2.2.5 Five Hours Engine Rating Test**		**Te**	**For continuous loading test, 5 hours testing is not enough. The strength of main component will not able to detected in only 5 hours testing. We do for 25 hours test in Indonesia.**	**25 hours for continuous loading test such as conducted in Indonesia**
PT	Field PerfomanceTest		Te	Add new point about the field performance test. Field performance test is should be conducted in which area the tractor will be used and should be tested by the laboratorium of agricultural machinery in the related country. In order to know the tractor performance, it should be test on at least 3 different condition of soil of rice field.	The components of field performance test are : a. Tractor performance test using plow implement b. Tractor performance test using rotary implement The testing parameters that will be tested are : a. Effective Field Capacity (Ha/h) b. Field Efficiency (%) c. Optimum Field Operation Speed (Km/h) d. The depth of plowing/rotary (mm) e. Slip

PT	Field Performance Test		Te		In Indonesia, the value of parameter standard of those standar are : a. Effective Field Capacity Minimum : - 0.050 Ha/h (Power ≤ 4.0 kW) - 0.059 Ha/h (4.0 < Power < 6.0 kW) - 0.066 Ha/h (Power ≥ 6.0 kW) a. Field Efficiency (%) - 70 % (Power ≤ 4.0 kW) - 70 % (4.0 < Power < 6.0 kW) - 70 % (Power ≥ 6.0 kW) a. Optimum Field Operation Speed (Km/h) Plow implement : - 2.5 – 3.0 Km/h (Power ≤ 4.0 kW) - 2.5 – 3.0 Km/h (4.0 < Power < 6.0 kW) - 2.5 – 3.0 Km/h (Power ≥ 6.0 kW)

					Rotary implement : - 2.0 – 2.5 Km/h (Power ≤ 4.0 kW) - 2.0 – 2.5 Km/h (4.0 < Power < 6.0 kW) - 2.0 – 2.5 Km/h (Power ≥ 6.0 kW) a. The depth of plowing/rotary (mm) Plow implement : - 130 – 170 mm (Power ≤ 4.0 kW) - 130 – 170 Km/h (4.0 < Power < 6.0 kW) - 130 – 170 Km/h (Power ≥ 6.0 kW) Rotary implement : - 50 – 150 mm (Power ≤ 4.0 kW) - 50 – 150 mm (4.0 < Power < 6.0 kW) - 50 – 150 mm (Power ≥ 6.0 kW) a. Slip - 25 % (Power ≤ 4.0 kW) - 25 % (4.0 < Power < 6.0 kW) - 25 % (Power ≥ 6.0 kW)

Comments of Rasia

PT	**3.0**	**3.1.1 (page 22)**	**ed**	**The requirement «The test shall be conducted without ballast» can often diverge from the manufacturer's recommendations.**	**The test shall be conducted in running state corresponding to the manufacturer's recommendations.**
PT	5.0	5.1 (page 24)	ge	**There is not indicated the requirement for the presence of the parking brake system of power tiller.**	**Power tillers with the operating weight of over 150 kg, shall be equipped with its own parking brake system.**

PT			**ge**	**It is necessary to supplement the code chapter of THE VIBRATION TEST.** **During the test, the effect of vibrations felt much stronger than the effect of noise. Moreover, it's easier to protect the operator from noise by headphones, however it's very difficult to protect the operator from vibrations.**
PT	3.0	3.1.1	Ed.	Power tiller manufacturer/applicant want to add some ballast mass to improve the drawbar performance of power tiller. AS a testing agency we should give him opportunity to test at ballast condition. In this case we have to test drawbar performance in two conditions i.e. At standard ballast and Ballast. Result may be tabulated in separate sheet.

PT	5.0	5.1.1	ge	The parking brake test on power tiller is compulsory for all power tiller. It should have its own parking brake for the safety of operator.

Comments of Bangladesh

Test Report Page number 8	2.2 Drawbar Performance Test Test data sheet column 9	Te	Fuel consumption unit to be changed kWh/l	Fuel consumption l/kWh

Addition /Modification made in 2016

- **Vibration test**

- TWG members have decided to include the vibration test as compulsory. The test will check only the following points:

- The steering handle
- Operator seat

Addition /Modification made in 2016

- **Rotary Shaft test**

- TWG members have agreed to:

  Specify in the general part that if the power tiller has rotary shaft, the test is compulsory and if the power tiller has no rotary shaft the column regarding this test can be left blank in the test report.

Addition /Modification made in 2016

- **Water Proof test**

- The water proof test is generally approved.

Outstanding issue to be resolved

- Vibration Test-

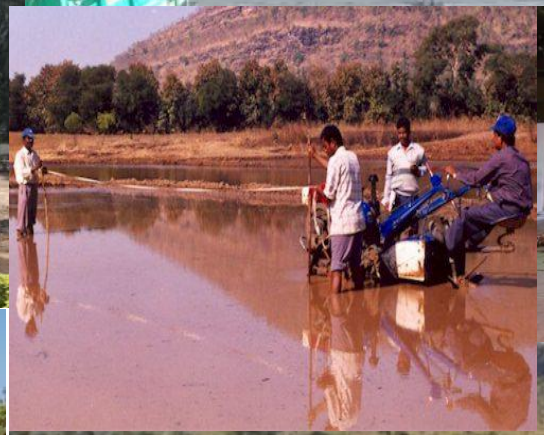
  In Bangkok, TWG members cam discuss whether to test more points.

- Water proof test-

  TWG members have to find an agreement on clause 3.1. 1

Future addition to the code

The high ambient test shall not be included in the 2016 version of the Codes due to big difference of opinion among TWG members. Nonetheless, the Secretariat will record the discussion about high ambient test and put it forward for discussion in 2017.




Thank You