

Power Tiller Making Plant

To produce power tiller, first of all, all the fields of machine industries must be developed at similar level.

Various component parts of power tiller are similar to those of auto-mobile industry in that speed control of power, various connections, and equipments are divided at mission part with engine being installed on the power tiller.

This power tiller is useful for agricultural uses such as smashing soil, tilling soil, and carrying on a land less than 5 ha.

Power tiller has three types which are traction use, driving use and traction-driving use according to the drive type.

Power tiller may be classified into walking type tiller and riding type tiller according to the use method.

According to fuel of engine, power tiller is classified into gasoline type, kerosene type and diesel type.

And, according to the horse power, power tiller is classified from 2-3 H.P to 14-15 H.P.

Usually, 5-10 H.P power tiller is used for preparing soil and 3-5 H.P. power tiller is used for cultivation and administration.

Because there are so many kinds of power tillers like above, to produce power tiller, first of all, cultivation method, cultivation type and size of cultivating land should be considered carefully.

In case of improper conditions, cultivation method should be promoted according to working type of the machine.

And so, the most important thing is to decide what kind of machine to produce. Once a type of power tiller is decided, first of all, you should decide to produce what company's model in what country, and after negotiating about technology introduction with technical staff of concerned country and company, production should be led toward promotion localization.

Power tiller should be produced under precise plan because power tiller is assembled 2,000 components by 1,000 kinds of components.

Manufacturing facilities are casting facility, forging facility, cutting facility, press facility, welding facility,

processing facility such as drilling, grinding and cutting, heat treatment facility, plating facility, painting facility and inspection facility.

Besides, bearing injection pump, nozzle and electric devices of magnetic should be made by existing facilities or should be imported.

Moreover, raw materials and semi-manufactures must be easy to purchase, and to start manufacture economically it should be a market of 500 power tillers a month at least.

In all respects of economy, 1000-2000 power tillers a month should be sold.

Power tiller has various type according to classification methods.

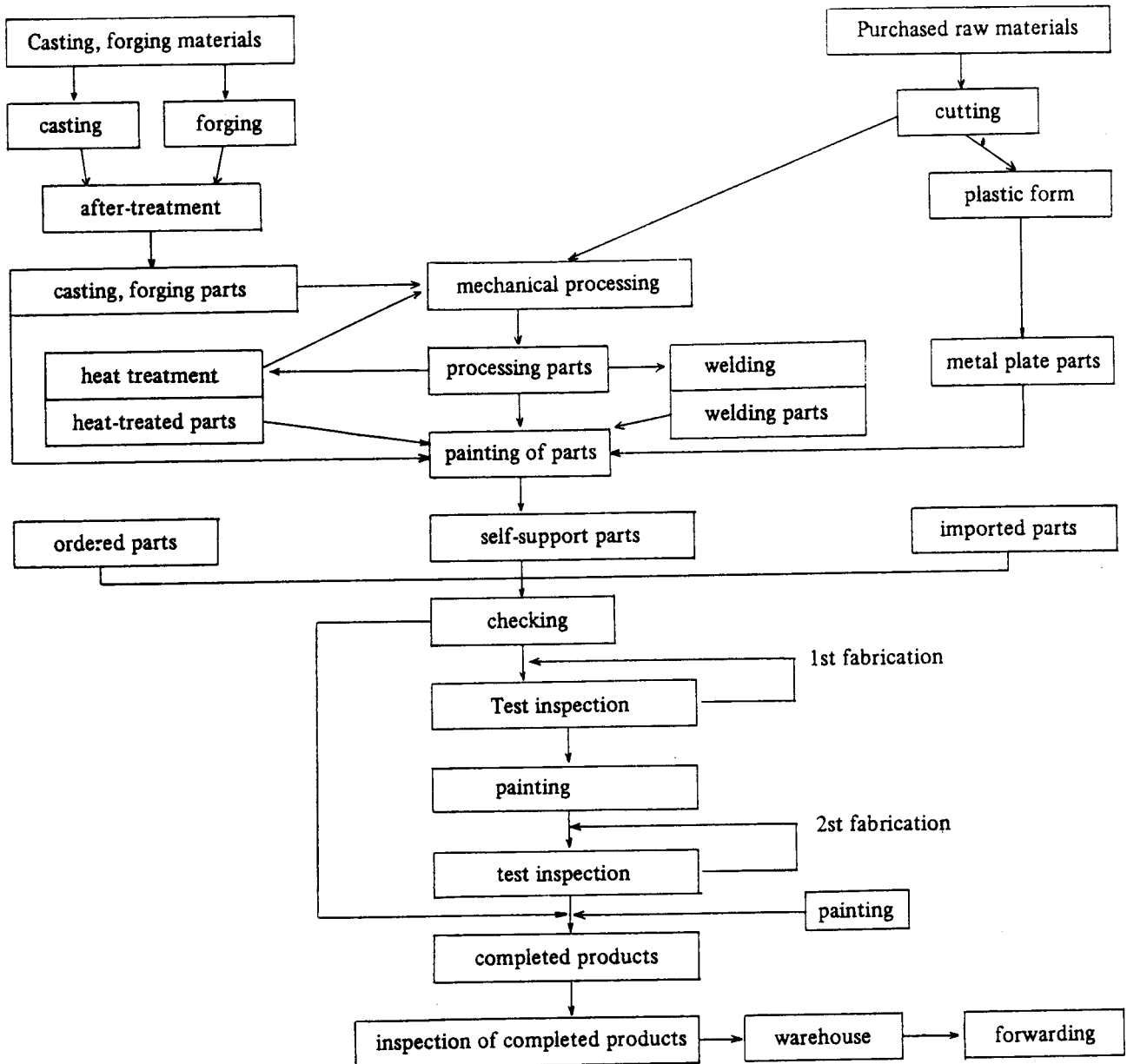
- (a) Classification according to fuel of engine
 - Gasoline type
 - Kerosene type
 - Diesel type
- (b) Classification according to engine cycle
 - 2 Cycle engine type
 - 4 Cycle engine type
- (c) Classification according to cooling method
 - Air cooling type
 - Water cooling type
- (d) Classification according to horse power
 - 2 H.P Type
 - 5 H.P Type
 - 6 H.P Type
 - 8 H.P Type
 - 10 H.P Type
- (e) Classification according to use method
 - Walking Type
 - Riding Type
- (f) Classification according to usage
 - Tilling Type
 - Cultivation and Administration Type
 - Carrying Type
- (g) Classification according to drive type
 - Traction Type
 - Traction and driving type
 - Driving type



Specifications

Division	8 H.P	10 H.P	6 H.P	8 H.P	10 H.P
○ Engine					
Type	water cooling kerosene	water cooling kerosene	water cooling Diesel	water cooling Diesel	water cooling Diesel
Normal capacity (ps/rpm)	8/2,000	10/2,000	6/2,200	8/2,200	10/2,200
Max. capacity (ps/rpm)	9.3/2,000	13/2,200	8.5/2,200	10.6/2,200	13.5/2,200
Fuel consumption rate (g/hr)	300	296	214	218.3	228
Weight (Kg)	118	124	102	124.5	156
○ Main body					
Type	Traction-driving Type	Traction-driving Type	Traction-driving Type	Traction-driving Type	Traction-driving Type
Length x width x height (mm)	2,450 x 1,000 x 1,360	2,450 x 920 1,350	2,230 x 875 1,215	2,340 x 985 1,300	2,360 x 960 1,340
Weight (Kg)	403	408	352	410	465
Max. Speed (Km/hr)	11.1	11	11	11.9	12.2
Transmission stage	Forward 6 Backward 2	Forward 6 Backward 1	Forward 6 Backward 1	Forward 6 Backward 2	Forward 6 Backward 2
○ Plough					
Weight (Kg)	34	41	40	42	42
Plough width (mm)	280	275	240	280	280
Tilling width (Cm)	25	25	24.7	24.2	25
Tilling depth (Cm)	14	14	14	14	14
○ Rotary					
Weight (Kg)	81	80	66	83	82
Number of blades	18	18	14	18	18

Manufacturing Process



Process Description

To produce power tiller, its component parts are divided into self-support parts, ordered parts and imported parts. According to the component parts, processing method and raw material should be considered and decided. After self-support parts are made through various manufacture progressions using various raw materials such as round bar, steel pipe, steel plate, forging and casting materials, first assembly parts are checked, second assembly and semi-products are completed and painting is carried out finally. Completed products must pass idling operation test and loading operation test.

Besides, above mentioned casting and forging materials are divided into casting part and forging part respectively. As for casting products, after making

wooden mould required and making space in casting sand, melted iron is poured into the space, and then remove casting sand after the melted iron to be hardened, and finally casting product is produced by removing various slags attached on the surface. Forging products are made by pressing heated materials in metal mould to be the same shape or by hammering heated materials to be the shape required.

Once casting products and forging products are produced, some parts are painted after heat treatment, and others are painted after mechanical working in machine industrial plant. Besides, purchased raw materials are cut to transfer to mechanical processing directly, or worked to be metal plate form which is a component part itself, or metal plate are welded to be a complete component part.

Production and Export of Korean Power tiller (1981)

Year	Production (HP)	Export (\$US1,000)
1979	506,808	71
1980	550,535	45
1981	653,832	458

Required plant site

Factory Area	4 ha (10 Acre)
Building Area	1 ha (2.5 Acre)

Required Manpower (Person)

Technician	300
Officer & Engineer	100

Export of Korean power tiller for every continent (1981)

Asia.	Europe.	N. America.	S. America.	Africa.	Oceania.	Total
73	1	78	14	130	10	306

Required Facilities (No. of Machine)

Machine Tool	100
Metal working machine	100
Inspection & Testing Equipments	40
Painting Line	1
Heat-treatment facility	2

Example of Plant Capacity and Construction Cost

- 1) Plant capacity : 1,000 sets/month
* Basis : 8 hours/day, 330 days/year

- 2) Estimated Equipment Cost
 - o Manufacturing machinery : US\$1,500,000
 - o Utility facility : US\$ 300,000
 - o Installation cost : US\$ 200,000

Total	: US\$1,500,000
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- 3) Required Space
 - o Site area : 16,200 m²
 - o Building area : 4,050 m²

Total	: 20,250 m ²
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- 4) Personnel Requirement
 - o Manager : 15 persons
 - o Engineer : 85 persons
 - o Operator : 300 persons

Total	: 400 persons
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