

TRAINING ON ANTAM STANDARD CODE For TESTING OF KNAPSACK MISTERS CUM DUSTERS

PART -4 : GENERAL TEXTS, SUBMISSION AND RUNNING-IN OF TEST SAMPLES

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**2nd Training of Trainers on ANTAM Codes
Organized by ANTAM and CAMTC**

A – GENERAL TEXTS, SUBMISSION AND RUNNING-IN OF TEST SAMPLES ANTAM
STANDARD CODE THE TESTING OF PORTABLE MISTERS CUM DUSTERS

BY

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A. GENERAL TEXTS

1.1 SCOPE

- covers the **terminology, general guidelines and tests** to be conducted on powered knapsack mister cum duster fitted with a **small < 4.5 kW gasoline engine** coupled with a centrifugal fan.
- covers methodology for checking on machine specifications, materials, noise, vibration, safety and inspection of components and applications, labels, packing, transportation and storage.
- prescribes the **performance and other requirements** of powered knapsack type pneumatic mister cum duster for **spraying chemicals in liquid form** and **convertible into duster for dusting the chemicals in powder form**.

1.2 REFERENCES

The Standards listed in **Annex A** contain provisions which through reference in this text, constitute provision of this draft standard incorporating existing international standards (ISO) and national standards practiced by China and India. The selection of publications, the editions indicated were provided by the various national representatives on test standards.

Typical engine power for powered knapsack mister cum duster is 3 kW, current relevant standards for 3 kW and below small gasoline engines in the Chinese JB/T 5135-1991 (for engine less than 30 kW) and the Indian IS: 7347-1974 (for engine less than 20 kW) are referred. The ISO 8178-4:2007 standard is also referred. Specific references selected are the Chinese JB/T 7723-2014 and the Indian IS: 7593.1-1986.

All selected standards are subjected to revision and considered recent as per documents provided. There is the possibility of applying the most recent editions of the standards indicated. All documents provided from the various national standards agency are copyrighted.

ANNEX A

LIST OF CITED CHINESE STANDARDS

Standards No.	Title	Referred ISO standards
JB/T 5135.1-2013	General utility small gasoline engine -- Technical specification	
JB/T 5135.2-2013	General utility small gasoline engine -- Performance test method	
JB/T 5135.3-2013	General utility small gasoline engine -- Test and evaluate method of reliability and durability	
JB/T 7723-2014	Power-operated knapsack air-blast sprayer-duster	ISO 10988: 2011
JB/T 7723.2-2005	Power-operated knapsack air-blast sprayer-duster, Part 2 - Test method	
JB/T 5673-1991	Agricultural and forestry tractor and machinery paint work -- General technical requirements	

LIST OF CITED INDIAN STANDARDS

Standards No.	Title	Referred ISO standards
IS: 7347-1974	Specification for performance of small size spark ignition engines	
IS: 7593.1-1986	Specification for power-operated pneumatic sprayer-cum duster. Part 1 knapsack type	
IS: 8132-1999	Tractors and machinery for agriculture and forestry: power lawn and garden equipment - operator's manual: content and presentation.	ISO 3600: 1998
IS: 443-1975	Methods of sampling and tests for rubber hoses	
IS: 3400 (Part 4)-2012	Methods of Test for Vulcanized Rubbers, Part 4: Accelerated Ageing and Heat Resistance	
IS: 460 (Part 1) -1985	Test Sieves: Part-I Wire Cloth Test Sieves	

LIST OF CITED VIETNAMESE STANDARDS

Standards No.	Title	Referred ISO standards
TCVN 8745: 2011	Agricultural and forestry machinery -- Knapsack combustion-engine-driven mist blowers - Safety requirements	ISO 28139: 2009

LIST OF CITED ISO STANDARDS

Standards No.	Title	
ISO 8178-4: 2007	Reciprocating internal combustion engines -- Exhaust emission measurement - Part 4: Steady-state test cycles for different engine applications	
ISO 11684: 1995	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment -- Safety signs and hazard pictorials -- General principles	
ISO 9357: 1990	Equipment for crop protection -- Agricultural sprayers -- Tank nominal volume and filling hole diameter	

LIST OF CITED AMERICAN STANDARDS

Standards No.	Title	
ANSI /OPEI B175.2-2012	American National Standard for Outdoor Power Equipment: Internal Combustion Engine-powered Handheld and Backpack Blowers and Blower-vacuums-- : Safety Requirements and Performance Testing Procedures	

JB

中华人民共和国机械行业标准

JB/T 7723.1—2005
代替JB/T 7723.1—1995

背负式喷雾喷粉机
第1部分：技术条件

Power-operated knapsack air-blast sprayer-duster
—Part 1: Technical requirements

JB

中华人民共和国机械行业标准

JB/T 7723.2—2005
代替JB/T 7723.2—1995

背负式喷雾喷粉机
第2部分：试验方法

Power-operated knapsack air-blast sprayer-duster
—Part 2: Test methods

IS : 7593 (Part 1) - 1986

Indian Standard (Reaffirmed - 2012)

SPECIFICATION FOR
POWER-OPERATED PNEUMATIC
SPRAYER-CUM-DUSTER

PART 1 KNAPSACK TYPE

(*First Revision*)

First Reprint OCTOBER 1990

UDC 631.348.45/.46-85

ICS 65.060.40

B 91

备案号：47358—2014

JB

中华人民共和国机械行业标准

JB/T 7723—2014

代替 JB/T 7723.1—2005、JB/T 7723.2—2005

背负式喷雾喷粉机

Power-operated knapsack air-blast sprayer-duster

© Copyright 1987

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 1987

1.4 SUBMISSION OF TEST SAMPLES

- Under current production, selected by the manufacturer from the production line, complete with its standard accessories and in a condition as generally offered for sale.
- New and should not be given any special treatment or preparation for test.
- At least 3 units of current year production, new and unused qualified machine are to be submitted. An additional unit of a similar machine with the engine removed is to be supplied complete with the fan and housing assembly.

Annex C-1



•Name of the manufacturer:

•Address:

•Submitted for test by :

•Sample model and serial number:

Sample 1:

Sample 2:

Sample 3:

Sample 4 (additional unit without engine):

•Date of manufacture:

•Place of running-in:

•Duration and schedule of running in (6 hrs each for 4 times):

•Repairs and adjustments made during running-In:

•Received by:

date:

•Signatures and chop (manufacturer)

•Signature and chop (test center):

List of spare parts provided :

1.3 SPECIFICATIONS

1.3.1 TECHNICAL DETAIL(s) - Manufacturer/applicant shall complete the specification sheet given in Annex B-1 for the power operated knapsack mister cum duster along with schematic drawing of the equipment and any other information required by the testing authority to carry out the tests. The manufacturer/applicant should also supply technical literature such as operation and maintenance manual, service manual and parts catalogue.

1.3.2 MATERIAL - The material for construction of different components of powered knapsack mister cum duster except gasoline engine is given in B-2 Annex B. All components coming in contact with the chemicals shall be of good quality chemical resistant materials.

Note: The specification data sheet for tests of powered knapsack mister cum duster for China JB/T 7723.1-2005, JB/T 7723.2-2005 and India IS 7593 (Part 1)-1986 has been referred.

ANNEX B

**B-1 DETAILED TECHNICAL SPECIFICATION OF POWERED KNAPSACK
MISTERS-CUM-DUSTERS**

1.0	GENERAL	PLEASE INDICATE
1.1	Name & address of manufacturer (If more than one give details of manufactures. Separate sheets may be used)	
1.2	Name and address of the applicant for test	
1.3	Make/Type/Model	
1.4	Serial number	
1.5	Year of manufacture	
	Overall packing dimensions (Width x height x length)	
	Net Weight (kg)	
2.0	ENGINE	
2.1	Make/Type/Model/Country	
2.2	Serial number	
2.3	<p>Engine (manufacturer's recommended settings)</p> <p><i>No test necessary if a certified test report is provided by the manufacturer (according to either one of the following standard: IS 7374-1974, JB/T 5135.1 -2013 or ISO 8178.4: 2007)</i></p> <p><i>If no engine test certification provided the equipment might be rejected</i></p> <ul style="list-style-type: none"> - Rated power, kW - Maximum torque, Nm - Speed at the rated power at no load, rpm - Speed at max. torque, rpm - Specific fuels consumption, g/ kWh - Specific oil consumption, g/ kWh 	
2.4	Type of fuel used (octane number)	

2.5	Capacity of fuel tank (litre)	
2.6	Presence of strainer at engine tank inlet, yes/no	
2.7	Type of fuel filter	
2.8	<p>Starting system:</p> <ul style="list-style-type: none"> - Type - Aids for cold starting, if any - Any other device provided for easy starting 	
2.9	Noise level at maximum speed, dB(A)	
3.0	FRAME	
	Material of Construction	
	Size (Width x height x length)	
4.0	TANK	
	Shape (Trapezoidal/Cylindrical/ Any other)	
	Size (In case of Trapezoidal : Width x height x depth, In case of cylindrical: Diameter x length), mm	
	Capacity, litre	
	Material of construction	
	Size of Liquid filling hole, mm	
	Strainer or filter Mesh (< 2 mm)	
	Marking on the tank, if any	
5.0	BACK REST	
	Size (Width x height x thickness)	
	Material	
6.0	STRAP	
	Material of strap	
	Material of strap buckle	
	Width and thickness of strap	

	Minimum and Maximum strap length can be used	
7.0	MISTING DUCT	
	Type of misting duct	
	Misting duct internal diameter and length	
	Misting duct discharge at recommended pressure, ml/min	
	Misting range (m)	
8.0	BLOWER	
	Fan type : Fully enclosed / partially enclosed	
	Fan blade type : Forward bent / radial / backward bent	
9.0	DUSTING	
	Dusting width, m	
	Dusting discharge rate (horizontal), kg/min	
10.0	TOTAL MASS (without liquid/dust), kg	
11.0	DETAILS OF AGITATING DEVICE PROVIDED (if any)	
12.0	LIST OF STANDARD ACCESSORIES/PARTS PROVIDED WITH EQUIPMENT (provide as annex)	
13.0	PUBLICATIONS Operator's manual Service Manual Parts catalogue Safety Precautions	

ANNEX B-2

MATERIAL OF CONSTRUCTION OF VARIOUS COMPONENTS

No.	Component	Material	Please Indicate
1.	Tank	Fiber glass reinforced plastics Plastics HDPE	
2.	Lid or cap	Fibre glass reinforced plastics Plastics HDPE	
3.	Frame	Mild steel Engineering Plastics	
4.	Impeller	Mild steel Galvanized plain steel Aluminum alloy Fibre glass reinforced plastics Plastics	
5.	Casing	Mild steel Galvanized plain steel Aluminum alloy Fibre glass reinforced plastics Plastics	
6.	Air bent outlet	Galvanized plain steel Plastics	
7.	Air hose	Rubber, fabric braided Rubber, synthetic Plastics	
8.	Strap	Leather, vegetable tanned Woven web cotton Yarn, synthetic	
9.	Strap buckle	Mild steel Galvanized plain steel Aluminum Engineering Plastic	
10.	Cushion	Foam rubber Foam plastics	
11.	Gasket	Rubber, synthetic PVC Leather Fiber	
12.	Air pressure regulating device	Brass Plastics	
13.	Air pressure pipe	Plastics	
14.	Liquid or dust regulating device	Brass Plastics	
15.	Hose clip	Mild steel Galvanized plain steel	
16.	Air duct (misting or dusting)	Stainless steel Plastic	

1.	Valve assembly	Brass Stainless steel Plastics	
2.	Pipe for agitator	Galvanized iron Brass Polyvinyl chloride (PVC)	

1.3.3 Manual

Manufacturer can prepare operators and service manual separately or as a single document.

Operational and maintenance manual should contain :

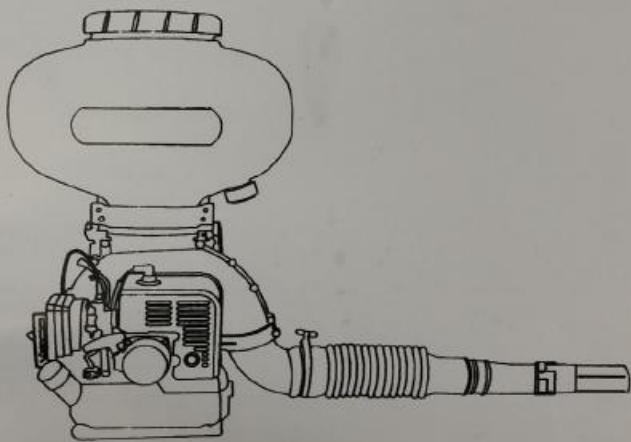
- complete list of regular and optional parts,
- method of converting the mister into duster,
- instruction on adjustments,
- assembly and disassembly for cleaning
- routine inspection and replacement of parts
- safety precautions to be taken during operation and handling.

Manuals shall comply with the ISO 3600: 1998 or IS 8132:1999 standards and contain information on: main technical details of engine, rated speed, tank capacity, misting/dusting rate at recommended pressure, recommended pressure range, horizontal spray range, starting and stopping instructions, safety, common faults and repairs, safe chemical handling, cleaning, maintenance, storage, forbidden chemical/liquid to be used, manufacturer and supplier contact details

OPERATOR AND SERVICE MANUAL (By Applicant)

	Yes	No
Operator manual		
Service manual		
Main technical details of the engine		
Engine rated speed		
Tank capacity		
Misting and dusting rate adjustment		
Misting and dusting range		
Starting and stopping instructions		
Safety during operation		
Common defaults and repairs		
Safe chemical handling		
Cleaning		
Maintenance		
Storage		
Forbidden chemical/liquids		
Manufacturer/supplier contact details		
List of regular and optional parts		
Method to convert mister into duster		
Remarks :		

KNAPSACK MIST DUSTER USER'S MANUAL



3WF-700

Precautions After Operation

- Discharge all of the chemical and fertilizer in the tank so that nothing remains in the tank when spraying is completed.
- Remove all of the chemical remaining in the tank and return it to the original container or bag and store the bag or container out of the reach of children. Also wipe off any chemical that has stuck to the machine. Any chemical remaining in the machine might cause rusting or equipment failure.
- Remove all of the premixed fuel.
- If there is any damage, repair it before storing the equipment. In this case, parts or consumable supplies should be replaced with the parts specified by the company.
- The equipment must be stored in a place with low humidity where it will not get covered by dust and debris.

Premixed Fuel

Do not run the machine on gasoline only. Be sure to mix the fuel as instructed on Page 21.

Filling of pre-mixed fuel shall be made after the engine has been stopped and has cooled sufficiently. If the fuel is spilled, wipe it off.

When starting the engine, make sure it is at least 3 meters away from the pre-mixed fuel supply tank.

Follow the 2-cycle engine oil mixture ratio.

⚠ DANGER Keep away from flame and heat when filling or handling the pre-mixed fuel.

Gasoline	:	Oil
50	:	1

Engine

⚠ WARNING

- Do not run the engine in a room as this may cause carbon monoxide poisoning.
- Do not inhale the engine exhaust gas.

⚠ CAUTION

- When starting the engine, make sure the shutter lever is at the "0"-position and that the shutter is closed.
- The engine is hot during and directly after running. Touching the muffler, cylinder fins, or other hot parts will cause a burn.
- Do not touch the spark plug while the engine is operating.

Blower

⚠ CAUTION

The chemical is discharged at high speed from the spray nozzle, so do not spray it on oneself or other people.

People with long hair should take measures to ensure their hair does not become entangled in the equipment.

⚠ WARNING

The blower is running at high speed and is very dangerous. Never put your hand in front of the suction port or discharge port during operation.

1. ⚠ For Safe Operation

The following persons shall not conduct spraying work.

- Persons who cannot conduct normal spraying work due to overwork, sickness, effects of medication, etc.
- Persons who are intoxicated.
- Persons who are pregnant.
- Persons who are not spray workers.



Wear Proper clothing for the Work.

Spray worker wearing proper clothing



Always check and maintain protective equipment so that it functions properly, and use it properly.

Precautions During Operation

Purpose of use

- Spraying of powder or liquid chemical for disease and pest prevention of rice fields, crop fields, fruit trees, and other trees and plants.
- Spraying of granular fertilizer for rice fields, crop fields, fruit trees, and other trees and plants.
- Spraying of seeds for rice fields, crop fields, pastures, etc.
- Spraying of herbicide for weeds.
- Spraying of liquid

When transporting on vehicles, place the throttle lever and shutter lever in the lowest positions to keep the machine from rolling over.

Chemicals

• Carefully read the label attached to the chemicals or fertilizer to be sprayed to well understand the method of use and application.

Use the chemicals directly after opening the package. Chemicals left for a long time after the package is open may cause poor spraying due to moisture absorption.

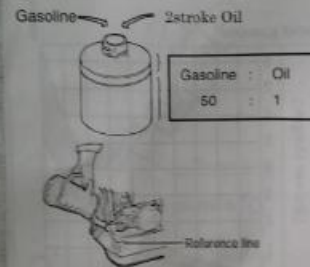
CAUTION Mistaking the spray quantity or category of chemicals may cause damage.

CAUTION Do not leave the chemicals in the chemical tank for a long time. The machine might malfunction.

- Chemicals and fertilizers shall be stored in a safe place, and check for bags damaged during transport.
- Dispose the used chemical or fertilizer bags in a manner that will not cause injury.
- Pay careful attention to the handling of chemicals and fertilizers, and if they get into the eyes or mouth, directly flush with water and immediately receive the care of a physician.
- Change the spraying method in response to changes in wind direction to avoid spraying on workers of residences. Spray in the direction of the wind taking care that the spray does not get on other crops, fish ponds, or residences.

Supplying Premixed-fuel

- Always use premixed fuel. Do not run the machine on gasoline only. Use the oil specified for 2-stroke engines.



⚠ DANGER


The premixed fuel may catch fire. Fire, such as cigarettes, is strongly prohibited. Do not fill beyond the reference line. Fill the oil after stopping the engine. Take care not to spill the fuel. If the fuel is spilled, wipe it off completely.


⚠ CAUTION


Use unleaded gasoline. Use the oil specified for 2-stroke engines. Use at a predetermined mixing ratio.

Supply the Chemical

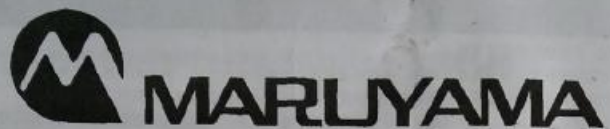
Use chemicals that do not contain foreign matter, such as dust, lump, and that are dried well.

- 

Align the shutter lever with "0".
- 

Be careful not to spill the chemical on the outside.
- 

Check the chemical tank cover packing and securely close the cover.



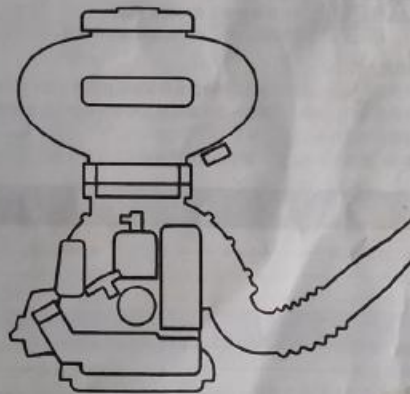
/使用説明書/

OWNER'S/ OPERATOR'S MANUAL

背負式噴霧噴粉機

BACKPACK DUSTER

MD6080-26



株式会社 丸山製作所

MADE IN JAPAN

FOREWORD

Thank you very much for purchasing this product.

This manual contains the correct handling method, simple inspections, and maintenance method to allow you to use the product safely and comfortably.

Please read through the operation manual before using the machine and well understand the contents, and follow the instructions in this manual so that the product will continue to exhibit its excellent performance.

Please take care of the manual and conduct maintenance to ensure the long life of the product. Please be aware that the product may partly differ from the description in this manual due to constant changes made to improve the product.

The "Safety Operation Manual", an extraction of safety points which should be observed for safe operation, is included as a separate publication in the same package, so please also use this.

- **Take good care of this operation manual.**
- **If you lose it, please buy another one at the nearest dealer or business office of this company.**
- **Do not attempt to modify the product, because modification of the product might not only prevent the safe and comfortable use of this product, but also results in great danger.**

■ On the Matter of Caution.

The following symbols are used in this manual to denote items that require extra care.


DANGER --- Not following this instruction will result in death or serious injury.

WARNING --- Not following this instruction might result in death or serious injury.

CAUTION --- Not following this instruction might result in injury.

CAUTION --- Not following this instruction might result in damage to the machine.

■ When lending the machine to others, or letting others operate the machine

Explain the method of operation in advance, especially the meaning of each of the warning labels. 

Hand over the Operation Manual and Safety Operation Manual with the machine and instruct the other party to read and understand it well before use.

Especially explain about the prohibited items.

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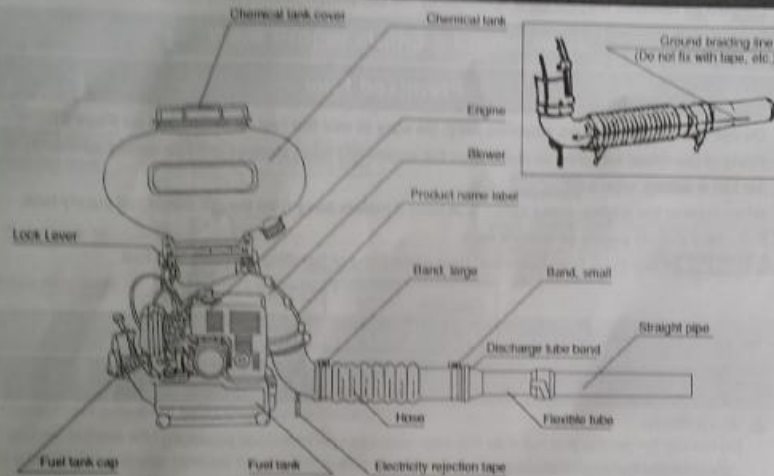
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2. Names of the Components and Warning Label

Locate and identify all the components (see sketch)

When the box is opened, please check to make sure all the accessories are included. If any are missing or damaged, please tell the sales

Name of components and Accessories



Static electricity builds up in the chemical spray depending on the type of chemical, temperature, and humidity and this could generate a strong static electric charge. To prevent this, use the electricity rejection tape and ground braided line attached to the machine.






The electricity rejection tape and ground braided line are located in the machine, so pass the ground braided line to the inside of the hose and discharge tube.

Accessories



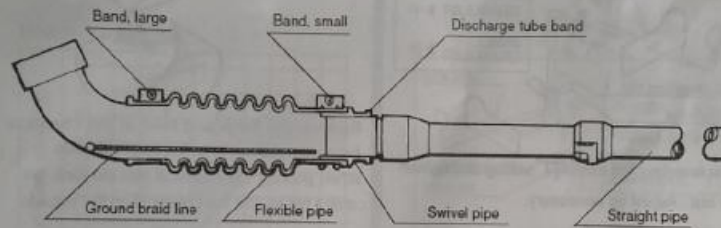
Warning Label

- Always keep the equipment clean by removing debris and mud so that the contents can be clearly seen.
- When the warning label is damaged, replace it with new one.
- When a component attached with a warning label is replaced, do not fail to attach the warning label in the same place it was attached to the previous component.

	Read operation manual thoroughly.		Wear a protector.
	Prohibition of fire		Cautions for high temperatures
	Cautions for exhaust gas.		

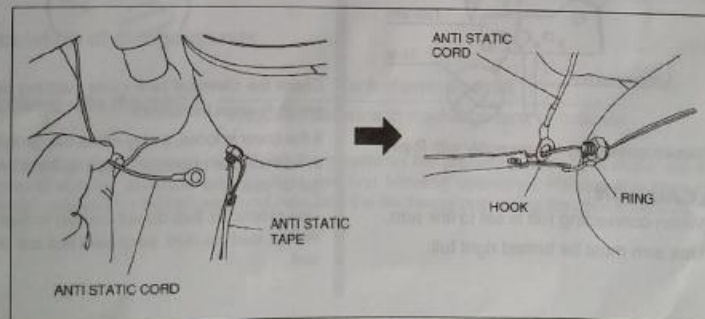
3. Method of Handling and Operation

Assembly of the Discharge Tube



Attach the hose to the operation machine, core tube band to the flexible pipe using a band, and connect this to the hose.

Connect the straight pipe to the flexible tube.



8 . After Service

- If you find a bad condition during the starting inspection or operation, immediately perform the proper maintenance.

Please contact to the shop where you purchased this machine.

- Subjects to be informed:

Name of machine type

Manufacturing No.

Details of the failure

Please explain in detail about what part experienced the problem, what caused the problem, and what action was taken.

- To use the machine safely, correct operation and periodical maintenance are indispensable. Please ask the dealer where you purchased the product to inspect and maintain it at least once a year. Roution maintenance is not covered by warranty.

9 . Specification

List of Specifications: ● These specifications may be changed without prior notice.

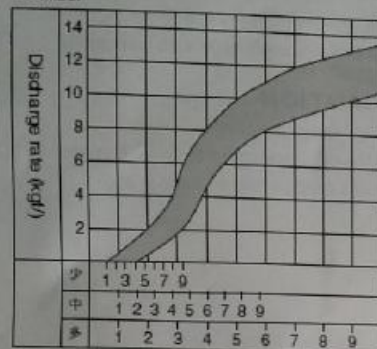
MACHINE		
Dimension (Length x width x Height)		800x560x400
Standard equipped weight		12.6
Chemical tank capacity		26
Fuel tank capacity		2.0
BLOWER		
Fan Type		Turbo fan
Engine RPM		6,800rpm
Discharge volume	Powder	7kg/min
	Fertilizer	11 ~ 12kg/min
ENGINE		
Model		TK053D
Engine type		Air-cooled 2-stroke
Displacement		53.2cc
Fuel mixture ratio		50(gasoline):1(oil)
Carburetor		All position diaphragm
Ignition system		Electric
Spark plug		NGK BPMR8Y
Starting system		Recoil starter

Discharge Quantity

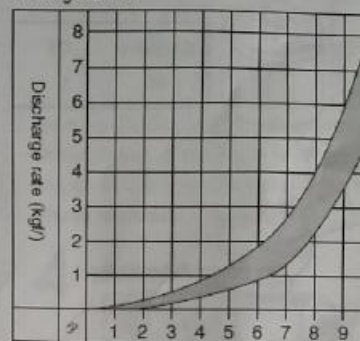
Walking speed

$$\text{Walking speed (m/sec)} = 16.7 \times \frac{\text{Discharge rate (kg/min)}}{\text{Blowing volume (kg) per } 10764\text{ft}^2 \text{ (} 1000\text{m}^2\text{)} \times \text{Blow width (m)}}$$

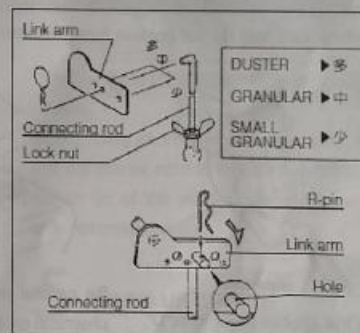
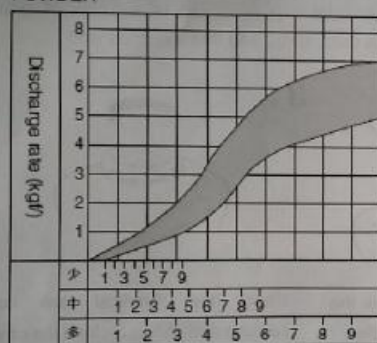
Fertilizer



Small granular



POWDER



Calculation of discharge rate

$$\text{Discharge rate (kg/min)} = \frac{\text{Tank chemicals} \times 60}{\text{Required seconds to discharge tank chemicals}}$$

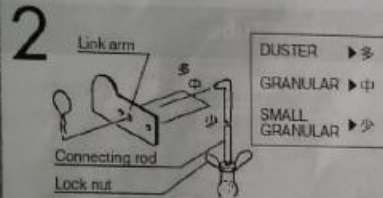
How to decide the discharge rate: Using the graphs on the preceding page as a scale, set the degree of shutter aperture and perform the first blowing operation. Record the time (by seconds) required for that blowing and calculate the discharge rate, using the above formula.

Inspection before Starting

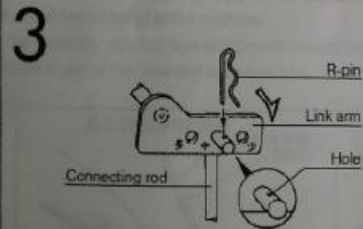
Setting Shutter



Shutter lever position is "0".



Set connecting rod into "中" setting and tighten lock nut. Adjust as necessary.



Secure connecting rod assembly with R-pin.

CAUTION

When connecting rod is set to link arm.
Link arm must be turned right full.

Supply the Chemical



Align the shutter lever with "0".



Remove the lump and feed in the chemical being careful not to spill it on the outside.
When pouring the chemical into the tank, be careful not to spill the chemical on the outside.



Check the chemical tank cover packing and securely close the cover.

If the cover is loose, it may effect the spraying.
In addition, the chemicals might spill out and get on you.

Use chemicals that do not contain foreign matter, such as dust, lump, and that are dried well.

4. Starting the Engine

Starting the Engine

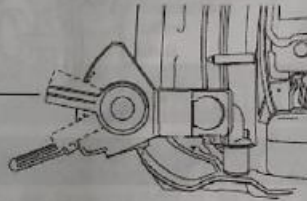
CAUTION Method of pulling the starting rope.

Grip the starting rope with your right hand.
Press against the chemical tank with your left hand.
Pull the starting rope slowly until you feel resistance.
Pull the starting rope in the direction straight from the inlet and outlet of the starter.
Do not pull the starting rope all the way out.
Keep hold of the starting rope and return it all the way to the original position before letting it go.

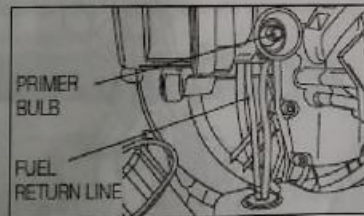
1 THROTTLE

Set the throttle lever 3 to 4 notches.

3 to 4 notches

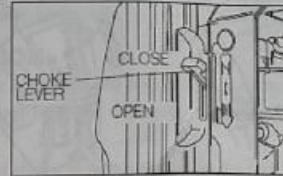


2 PRIMER PUMP



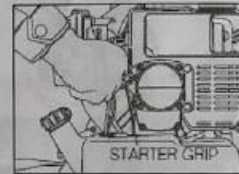
Pump the "PRIMER BULB" under of the carburetor until fuel can be seen flowing through the "FUEL RETURN LINE".

3 CHOKE



Move the "CHOKE LEVER" fully up ward to the closed position. If the engine is already warm, only a partial or open (no choke) choke setting may be required.

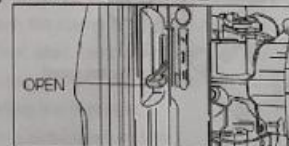
4 START



Pull the "STARTER GRIP" briskly to start the engine.

NOTE: Only short pulls are necessary. Do not pull the starter cord to its fullest extension. Do not let go of the starter grip until it is at the fully returned position.

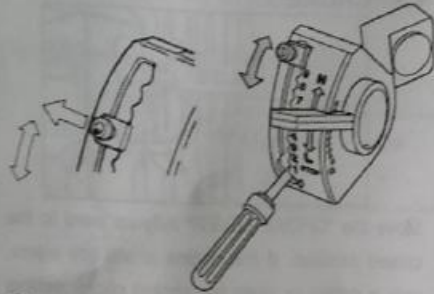
5 WARM UP ENGINE



When the engine has started, slowly move the "CHOKE LEVER" fully upward to the open position. Allow the engine to "WARM-UP" at less than 1/2 speed.

Starting to Spray

1. Move the shutter lever stopper and align it with necessary opening.

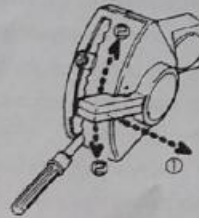


2. Shoulder the machine on your back.

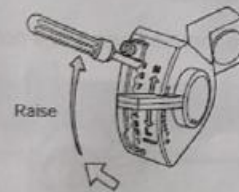


3. Operate the throttle lever and align it with the discharge nozzle.

The lever is operated by pushing lightly to wards the outside.



4. Raise the shutter lever to begin spraying. Begin spraying by pulling the shutter lever lightly to the inside.

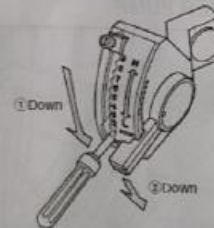


Stop

1. Push down the shutter-lever to the lowest stage and stop spraying.



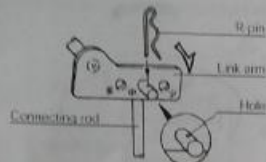
2. Move the throttle to the lowest stage keeping the shutter closed and then stop the engine.



After spraying

Wear vinyl gloves before starting cleaning.

1. Remove the chemical tank.
Take out the P-pin and pull out the intermediate rod.



2. Open the tank shutter, remove the chemicals in the tank, and clean the tank.
Turn lock lever and remove the tank.



3. Install the chemical tank.
Tightening shall be made alternately to hold both sides (Lower than horizontal).

Tighten Lock Lever



CAUTION

When fertilizer is sprayed, the shutter may become stuck or metal parts may corrode, therefore, careful cleaning is required.

If the removed chemical tank is placed on the floor, place it with the cover facing down.

Install the chemical tank.

Tightening shall be made alternately to hold both sides (Lower than horizontal).



4. Empty the fuel tank.

5. Maintenance

Before each use, the mist duster should be inspected for proper assembly and fitness of all components. All fasteners should be checked for correct tightness. Always inspect for fuel leaks.

WARNING

Do not attempt to start or operate this product that indicates a fuel leak.

AIR FILTER



The air filter should be inspected each time the mist duster is used (or more often with extreme conditions).

To inspect, remove the air filter cover and remove the filter from the case.

Clean air filter(s) by gently tapping element or cleaning with a suitable solvent the filter should be completely dry before using again.

FUEL FILTER



The fuel filter should be cleaned and inspected for damage after each twenty (20) hours of use.

The fuel filter is attached to the fuel pick-up tube inside the fuel tank. Loosen the clamp and take out the fuel filter.

To clean the fuel filter, remove it from the fuel tube and wash it with safety solvent. Inspect and clean the fuel tank before re-installing the fuel filter.

Always replace a defective fuel filter.

Main Body

Remove the chemicals and clean also keeping the main body clean.

Lubricate the shutter shaft bearing and move the shutter lever up/down several times.

Inspect for defects and loose screws.



7. Trouble shooting

The facts in the following table relate to when the engine is difficult to start or malfunctions.

For the facts marked with ☆, request adjustment and repair from the sales agent from which you purchased the product or the sales office of this company.

If the machine does not work well in spite of the countermeasures described below, notify the sales agent from which you purchased the product or the sales office of this company.

	Condition		Cause	Disposition		
Engine	Premixed fuel exists but is not ignited by the spark plug.	Electricity is conducted up to the plug cap.	Too much premixed fuel was sucked in. The gap of the ignition plug is wrong. The insulation of the ignition plug is wrong.	Dry Adjust, Change Inspect, Clean, Change	☆	
		Electricity is not conducted up to the plug cap.	Disconnection or short circuit of the ignition coil.	Replace		
	Premixed fuel exists, and ignition plug fires.	Case of good compression	Premixed fuel is bad.	Use formal fuel.	☆ ☆ ☆	
		Case of bad compression	Wrong packing or wrong tightening Wrong tightening of spark plug Piston ring is sticking.	Inspection, Adjustment, Replacement Tightening Inspection, Replacement		
	When the premixed fuel does not come into the carburetor		No premixed fuel in the fuel tank. Vent port of the fuel tank is clogged. Passage within the carburetor is clogged. Bent or broken pipe	Supply Inspection, Cleaning Inspection, Cleaning Inspection, Correction, Replacement	☆	
	Power is less.	Compression is good and no misfires.	Clogging of air cleaner element Air exists in fuel pipe joint, etc. Choke lever is closed (half open). Accumulation of carbon within cylinder or muffler.	Inspection, Clean Remove Inspection, Adjustment Inspection, Remove	☆	
		Compression is wrong	Insufficient tightening of spark plug Wrong Gasket, insufficient tightening Worn cylinder or piston ring Flaw on cylinder interior, Crack of piston head	Inspection, Cleaning. Replacement Inspection, Replacement Inspection, Replacement Inspection, Replacement	☆ ☆ ☆	
	Engine overheat		Wrong premixed fuel, Insufficient mixing, Wrong mixture ratio. Accumulation of carbon, Overload operation Wrong spark plug, Cylinder or cooling fin is clogged with dust.	Use regular fuel Inspection, Removal Inspection, Replacement Cleaning	☆	
	Erratic operation, Misfire		Too little premixed fuel (Clogging of fuel passage) Wrong spark plug Ignition coil	Inspection, Clean Inspection, Replacement Inspection, Replacement	☆ ☆ ☆	
	Engine noisy		Cylinder overheated Abnormal contact of rotating part Internal defect of engine	Inspection, Adjustment Inspection, Adjustment Inspection, Replacement	☆ ☆ ☆	
	Impossible to accelerate quickly		Fuel passage clogging Bad mixing of gasoline and oil Accumulation of carbon	Inspection, Adjustment Use regular fuel Inspection, Remove	☆ ☆	
	Main body part	Powder or grain does not discharge.		Shutter clogged. Clogging within discharging case Intermediate rod is disconnected	Remove clogging Remove clogging Connect the intermediate rod to the shutter arm.	☆
		Too little discharge quantity		Much, Middle, Few position of shutter arm is wrong. Powder/grain is wet. Powder/grain is clogged. Wrong meshing of double shutter gear Cover of chemical tank is not closed completely. Mixing in of foreign material	Match to the correct position. Dry Loosen the clogging. Match the meshing. Close completely. Remove	

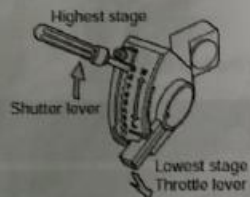
6. Storage

Strictly observe the following when storing the machine.

- 1 Extract the fuel



- 2 Make the positions of the throttle lever and shutter lever as shown in the drawing at following.



- 3 Maintenance of cylinder

① Remove the spark plug.



② Several drops of oil



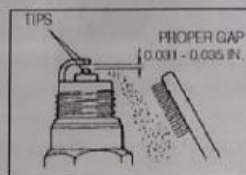
③ Pull 2 to 3 times.

④ Insert the spark plug

- 4 Leave the cover of the chemical tank loosened.



- 5 The spark plug should be removed from the engine and checked after each fifty (50) hours of use. The tips can be cleaned with a stiff brush. Adjust the gap to 0.031 - 0.035 inches (see sketch). Replace the spark plug if it is oil-fouled or damaged.



1.5 RUNNING-IN

1.5.1 The manufacturer/applicant shall run-in the powered knapsack mister cum duster before the test, under his responsibility and in accordance with his usual instructions.

The running-in shall be carried out in collaboration with the testing authority.

If this procedure is impracticable due to the powered knapsack mister cum duster being an imported model, the testing authority may itself run-in the powered knapsack mister cum duster in accordance with the procedure prescribed or agreed to with the manufacturer/applicant.

1.5.2 The place and duration of the running-in shall be reported in the pro-forma given in Annex C-2.

A device for the suction and the evacuation of exhaust gases shall be used when a mister cum duster is tested inside the testing facility

ANNEX C-2

RUNNING IN

Pro-forma for Running-In (samples 1 and 2):

1.Name of the manufacturer:

2.Address: :

3.Sample model and serial number:

4.Place of running-in :

5.Duration and schedule of running in (at rated speed for a total of 24 hr)

6.Repairs and adjustments made during running-In

7.Signatures (manufacturer)

8.Signature (test centre):



1.6 SERVICING AND PRELIMINARY SETTING AFTER RUNNING-IN

1.6.1 Servicing – After completion of running-in, servicing and preliminary settings should be done according to the printed literature supplied by the manufacturer/applicant.

The following may be carried out, wherever applicable:

- a) Change of the engine oil;
- b) Change of oil and fuel filters (if required);
- c) Greasing/oiling of all the lubricating points;
- d) Tightening the nuts and bolts;
- e) Checking and adjustment of safety devices, if any;
- f) Any other checking or adjustment recommended by the manufacturer after the running-in period, and included in the printed literature of the powered knapsack mister cum duster.

1.6.2 Preliminary setting

The manufacturer/applicant may make adjustments in any other adjustments during the period the powered knapsack mister cum duster is prepared for tests.

These adjustments should conform to the values specified by the manufacturer/applicant for agricultural use in the printed literature/specification sheet.

No adjustment shall be made, unless it is recommended in the literature. All the parts replaced shall be reported in the test report.

1.7 REPAIRS AND ADJUSTMENTS DURING TESTS

1.7.1 Repairs - All repairs made during the tests shall be reported, together with comments on any practical defects or shortcomings in Annex C-2.

This shall not include those maintenance jobs and adjustments which are performed in conformity with the manufacturer's recommendations

1.8 DEFINITION AND VOCABULARY

A portable mister cum duster is commonly used to apply crop protection products or fertilizers under liquids, dust, powders or micro granules forms.

Compared to a traditional knapsack sprayer, the misting and dusting is achieved with the help of air assistance provided by a blower.

