S. K. ENGINEERING WORKS

Latest Automatic Dal Mill Machinery Manufacturer & Contractor

3 HP MINI DAL MILL MACHINE

OPERATION & PARTS MANUAL

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Company's GSTIN No.: 27CPDPK8716H1ZO

Dal Mills, Besan Mills, Roller Mills, Spices Plants, Mini Floor Mills (Chakki), Seeds Cleaning Plants, Wheat Cleaning Plants, Food Processing Plants

INTRODUCTION

Mini Dal Mill

Avail from us, our range of mini dal mills is use for making carrying different processes cleaning & grading, pitting, pre-treatment with oil & water, conditioning, de-husking & splitting.
S. K. Engineering Works offer mini dal mill. This mini ddal mill is simple in construction, easy to operate & maintain. It consist of horizontal tapered roller is covered with emery coating, surrounded by a screen through which the husk is discharged. The Shelled dal passes through an aspirating fan on the oscillating sieve unit, where apropriate grading of dal is done. It is run only 3 H.P. Automatc arrangement are made for collection of husked and split dal, un de husked & split dal, un de husked dal, brackens, husk in separate containers and bags. This machine offers dust free operation, does not cause pollution, retains proteins, natural shine etc. Motor is provided with a pully and is mount at the bottom of the stand with V-Belt to drive it. The motor requirement is 3 H.P. Single / Three Phase.

Key Feature Of Mini Dal Mill

- Easy to install & required less space.
- Suitable for making all type of pulses.
- Also use for peel removing of all types of grains.
- High recovery rate of pulses from grains.
- Also use for wheat filteration.
- Automatic separation of husk/ powder/ brokens/ dehusking pulses
- Automatic oil/water smearing facility is provided.
- Easy to operate & installation.
- Dustless Process.
- Additional income through sale of seed coats as cattle feed.

Mini Dal Mill Machine can process all type of pulses in an automatic mode with minimal labours. The safety and efficiency of the working process is high with high quality. Neverthless, read all the manual we provided throughly. Do not try to use this machine unless you understand how to operate and stop the machine and all the safety matters concerned. Details about how to operate this machine as followed.

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CHAPTER 7 DRIVE TRAIN PART LIST

CHAPTER 1

HEALTH AND SAFETY

PLEASE READ CAREFULLY BEFORE
OPERATION OF YOUR MACHINE

1.0 HEALTH AND SAFETY

1.1 OPERATOR SAFETY

Safety devices are installed in this machine to protect the operator from injury. However, this machine is light fast that can be dangerous if used under improper circumstances.

Please raed the following health and safety guidence notes and understands how to operate the machine before using the machine.

WARNING !!!

This machine is equipped with safety devices. Do not change any safety devices on this machine. If changes to these safety devices are made, S.K. ENGINEERING WORKS will not be responsible for any ensuring issue of product liability.

1.2 HEALTH AND SAFETY AT WORK

In accordence with requirement of the Health and Safety at Work, this manual contains the necessary information to insure that the machine tool can be operated properly with safety. It is assume that the operator has een properly trained, has the requisite skill and is authorised to operate the machine.

1.3 VARIABLE SPEED DRIVE

Note that these machine are design to allow semi-fast rotating counter shaft. Take care to ensure that the counter shaft is secure and the maximum safe speed for any operation are not exceeded.

1.4 POTENTIAL DANGER AREAS

Keep away from those areas having moving or rotating machine parts. Do not touch or reach over moving or rotating objects. Although the moving or rotating parts are designed to be shielded by gaurding covers, if possible, they still might cause serious accident if not used in properly. Fully understand all the safety procedures before starting to use th machine. Beaware of potential dangerous area warning and dangerous awareness to avoid any injury and accidents.

1.5 OPERATING SAFETY PRECAUTIONS

1. Never use the machine without adequate lightning area.

2. The floor could become slippery because of the split water or oil and cause accident. Ensure the floor is clean, dry and orderly.

3. Keep the machine and work area clean and orderly.

4. Always provide an ample working space.

5. Keep all machine gaurds and cover plates in place & closed.

6. Never lay anything on the working surfaces of the machine, where it may be fouled with rotating or moving parts.

7. Do not touch or reach over moving or rotating machine parts.

8. Do not operate the machine in excess of its rated capacity.

9. Stop the machine immediately if anything unexpected happens.

10. Ensure that you know how to stop the machine before starting it.

1.5 GENERAL PRINCIPLES CONCERNING SAFETY OPERATION

1. Do not wear ties or sleeved clothing.

2. Ensure the machine is stopped and the power is off before replacing the fuse.

3. Do not touch the switch with wet hand that could result in electric shock.

4. Do not hold components that are too heavy for the machine.

5. Always choose the proper hand tool and appropriate grip position on the lever handles

6. Do not run the machine unattended.

7. Check the cleaning grader pipe connections slates before machine cleaning grader run for proper grading of raw material.

8. For required grading size kindly check, ON and OFF the grader pipe connection slates.

9. Check the elevator bottom slate before applying the raw material in elevator hopper.

10. Check the elevator internal belt is properly tight or not before run the machine.

11. If machine is get vibrating kindly check nut bolts of each parts individualy and tight it properly. before run the machine.

12. Check the round cleaning grader jali is fit or not as per required pulses size that you have.

1.6 SIGN


DANGER
ROLLING
Keep hands and head away when operating machine.
Power off when maintnance.


WARNING
Exposed Screw Conveyors Can Cause Severe Injury.
Lock Out Power Before Removing Cover or Inspection Door.


DANGER
Moving parts can crush and cut.
Do not operate with guard removed.
Follow lock-out procedures before servicing.


S. K. ENGINEERING WORKS
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Plot No.TI-14, Transport Nagar, MIDC No.3, Shivani, Akola(MH.)
Email:sk.engineeringworks1984@gmail.com Mob.: +91-9673079330
Model Name PKV MINI DAL MILL
Serial No. SKEAPKVMDM123
Mfg. Year 2022-23
Motor 3 HP
Voltage 230V
Phase SINGLE
Made In India
Visit at: www.skengi.com
Mfg. By: DESIGN X

CHAPTER 2

INSTALLATION

PLEASE READ CAREFULLY BEFORE
INSTALLATION THIS MACHINE

2.0 INSTALLATION

Read and undersatnd this entire installation section before beginning the installation procedure.

2.1 FLOOR PLAN, LAYOUT & SPACE REQUIREMENTS

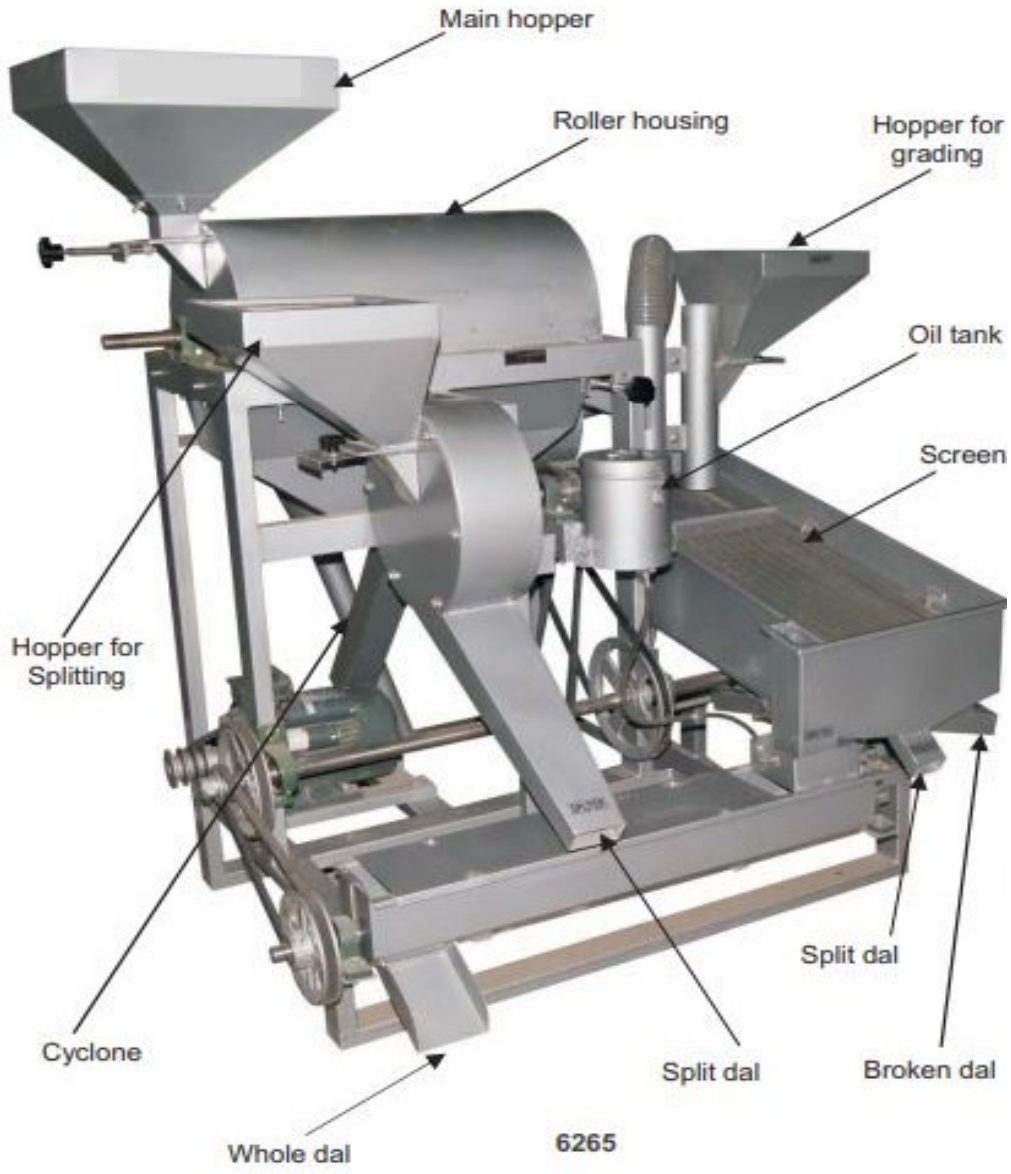


Fig: 3HP MINI DAL MILL MACHINE

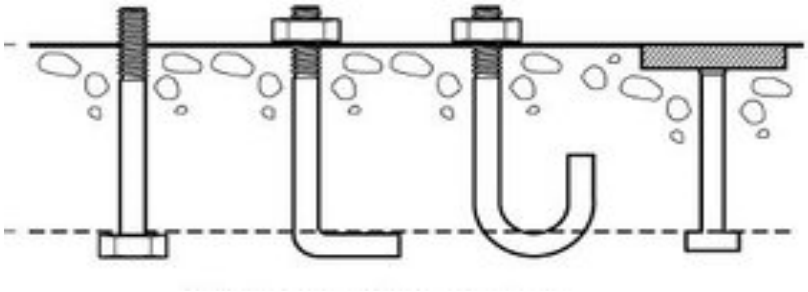


Fig: Anchor Bolt Specifications

The required layout area for **3HP MINI DAL MILL MACHINE** is 6.3ft x 4.5ft that is C-Channel base frame dimensions and 5 ft width x 5.6 ft length x 6 ft height that is overall outer dimensions including inbuilt pipe connections and hoppers of machine. The total weight of **3HP MINI DAL MILL MACHINE** is 400 kg - 425 kg approximately.

The required area to establish buisiness and run properly is 20ft x 20ft as per production range & capacity of machine.

2.2 SHORTAGES : INVENTORY CHECKLIST

3HP MINI DAL MILL MACHINE PART LIST

Sr. No.	Machine Parts	Quantity
1	Round Cleaning Grader	1
2	Emery Roller (Roll size: 8''x24'')	1
3	Bucket Elevator (Elev. Qty is as per the type of machine that is Automatic Or Semi-Automatic)	–
4	Worm (Screw Conveyor)	1
5	Seller (Chakki)	_
6	Fan (Dust Collector)	1
7	Machine Foundation Frame	1
8	Grader Pipe Connections	1
9	Elevator pipe connections	_
10	Fan Pipe Connections	1

2.3 INSTALLATION INSTRUCTIONS & CHECKLIST

Installer: Use this checklist to assure a complete set-up of the AK-SUPRIMO

1 Shut off power to the machine.

2 Visually inspect the 415V going into the electrical panel. Visually verify the wiring is correct or not. Have the customer repair any wiring dicrepances. Note: Machine can only be wired for 415V AC supply.

3 Clean the machine if needed and remove any ramainig pulse from pipe connectons before processing of new type pulse production.

4 Check the cleaning grader pipe connections slates before machine cleaning grader run for proper grading of raw material.

5 For required grading size kindly check, ON and OFF the grader pipe connection slates.

6 Check the elevator bottom slate before applying the raw material in elevator hopper.

8 If machine is get vibrating kindly check nut bolts of each parts individualy and tight it properly. before run the machine.

7 Check the elevator internal belt is properly tight or not before run the machine.

9 Check the round cleaning grader jali is fit or not as per required pulses size that you have.

10 Ensure the site space and the path width is large enough to install and transport the whole machine at least 30 working days or may be more days before the arriving of this machine.

11 If understand for space, be inform us as soon as possible, we will provide the suggestion and information service for you.

12 Please clear the space in advance for the machine to move in and install.

2.4 MACHINE SPECIFICATION

SR. NO.	3HP MINI DAL MILL SPECIFICATIONS	
1	Capacity	Running - 150-200 kg / hour
2	Operation Mode	Manual
3	Type of Pulses	All kind of pulses
4	Electrical Connection	Single PHASE
5	Motor Power	3 HP (Crompton)
6	Voltage	220 Volt
7	Power Type	AC
8	RPM	1440
9	Material used	Mild Steel
10	Design	Standard
11	Color	(peacock green) & yellow
12	Brand	PKV MODEL
13	Power Required	15 KVA
14	Pollution Control Requirel	No
15	Quality	A-One Quality Depends on Pulses Category
16	Recovery of Head Pulses	78 % - 80 %
17	Driven Type	Pully & V-Belt
18	Size	5 x 5.6 x 6 (W x L x H)
19	Condition	New

2.5 CLEANING

1. Remove all rapping paper before moving any machine parts.

2. Be certain the stoppers slates, all hopper slates and elevator lever move freely and smoothly over the entire machine.

3. Clean all rust from the pipe connections and parts of machine that can jam and get corrosible.

4 Keep clean the production processing area that can cause danger to accident like slippery

2.6 ELECTRICAL CONNECTION

3HP MINI DAL MILL can be wired for 220V and 415V, single phase & 3 phase electricity. The incoming power is wired to the machine is single phase or 3 phase cabinet board. It is very simple electric connection given to the mounted electric motor which is connected to the main counter shaft through pully and v- belts. Plug in the pin of electric motor to board or pannel.

DANGER!

The 220 or 415V AC, Single phase 3 phase electricity should be wired only by a qualified electrician.

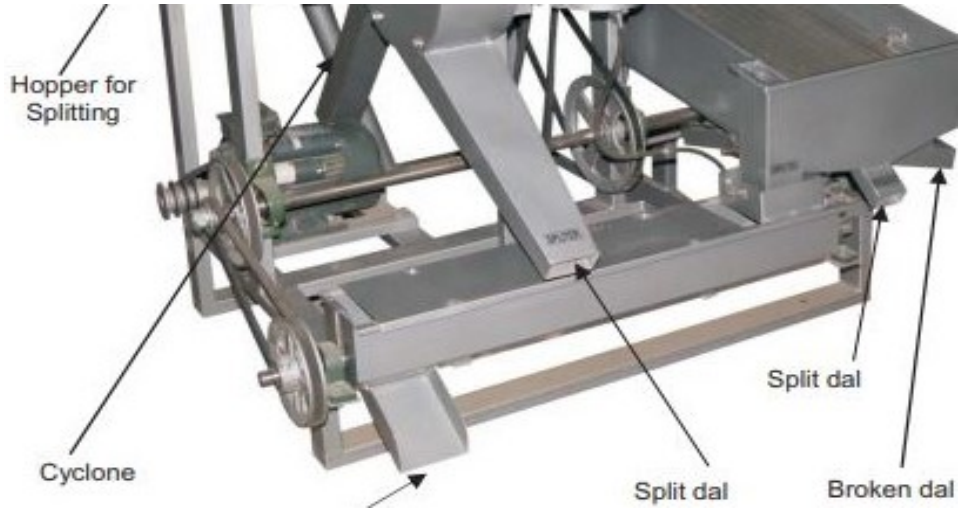


Fig: Simple munted Electric Motor

2.6.1 CONNECTION CHECKLIST

1. Ensure power supply is grounded.
2. Ensure proper earthing.
3. Ensure the equipment is fused and isolated correctly.
4. Ensure all the covers are fitted and interior.
   of terminal box is clean & free of cable residues.
5. Seal unused cable entries.
6. Check connection diagram & ensure correct terminal arrangement.
7. Ensure all the connections are tight & clean.
8. Check driven equipment is free.
9. Check rotation, uncoupled.

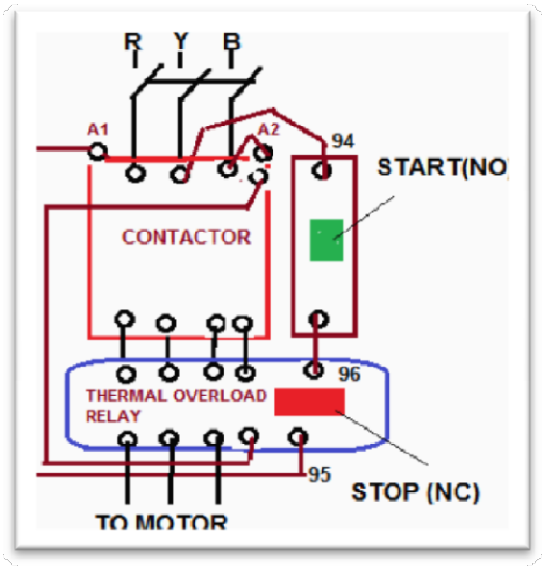


Fig: Electric Motor terminal box circuit diagram

2.6.2 PROBLEMS

1. Noisy	Refer to supplier of electric motor company with **motor number**
2. Vibrating	
3. Tripping	
4. Overheating	
5. Not starting	

2.7 RUN MOTOR FOR PART TEST

Ensure the motor electrical connection is proper for testing the motor and machine parts. All machine parts to run are inter-connected on counter shaft by v-belt and pullys. So it is very issential to run electric motor for testing purpose.

CHAPTER 3

OPERATIONAL PROCEDURE

PLEASE READ CAREFULLY BEFORE
OPERATE THIS MACHINE

3.1 MACHINE

This machine could be operated under manual or automatic mode. This information about about how to operate this machine is given below. Please read carefully before starting to operate this machine.

3.2 BEFORE START UP

Ensure all the wires and cables are insulated properly before starting up this machine, otherwise might happen electric leakage and shock.

3.2.1 INSPECTION BEFORE TURNING ON THE POWER

1. Ensure there is no loose wiring or connector.

2. Ensure the electrical cabinet, electric terminal box of motor, cleaning grader doors, emery roll doors and other safety guarding doors are closed.

3. Ensure all the machine parts are secured and fix properly.

4. Ensure all machine parts are tighten by nut and bolts.

3.2.2 WARNING

1. Ensure you know how to use this machine before starting it.

2. Always wear the correct protection outfit, such as safety goggles if necessary, oil-proof safety shoes, safety uniform, etc.,before starting the machine.

3.2.3 NOTICES

1. Ensure the power supply of this machine is enoughto run all the units of this machine easily before starting up the machine.

2. All the cables should be protected from contacting oil and water at worm section which might result in an electric short.

3. Always clean and lubricate all the bearing pedestal before starting up the machine if the machine is just unpacked or has not been used for longtime. Ensure to run the lubrication system for a while until all the rotating parts are lubricated adequately before starting up this machine.

4. Check all switches, push buttons and operating levers to make sure they could be operated smoothly.

5. To turn on the main power, the procedure below must be following:
Turn on the factory's main power supply → switch "on" the circuit breaker of the machines main power supply → press on the push buttons on the operating panel to turn on the electric motor & machine.

3.3 START AND STOP THE MACHINE

3.3.1 START PROCEDURE

1. Connect the power supply.

2. Turn on the main power supply switch.

3.3.2 EMERGENCY STOP PROCEDURE

If any emergency conditions are happened, push down the emergency stop button on the main operation panel to stop the machine immediately. Pull upward to release the emergency stop button.

3.3.3 NORMAL STOP PROCEDURE

1. Push the power "OFF" button of panel board.

2 Turn off the main power supply switch.

CHAPTER 4

PREPARATION OF RAW MATERIAL

PLEASE READ CAREFULLY PREPARATION OF RAW MATERIAL BEFORE START THIS MACHINE

4.1 GRAIN OUTPUT WITH WEIGHT RATIO QUALITY

All grain materials which process by **3HP MINI DAL MILL** is in fine quality. The grading of raw material into finish & semi finish good is given in 100 Kg ratio for each grain is as following:

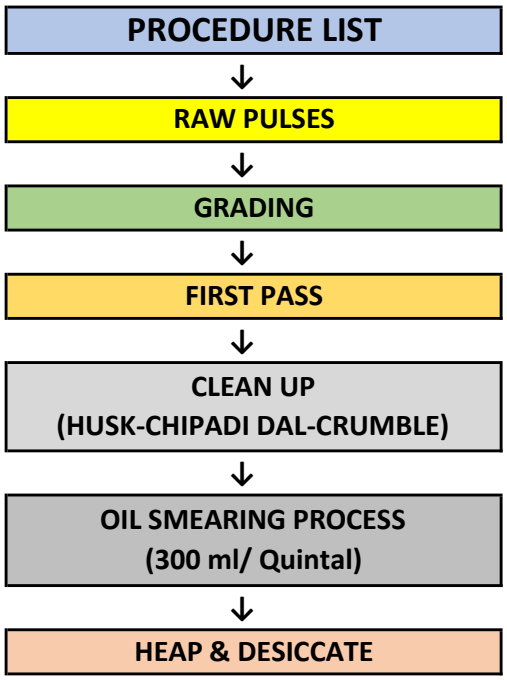
Sr. No.	Material Grade (for 100Kg)	Pigeon Pea (Tur)	Benal Gram (channa)	Green/Black Gram (Moong/Urid)
1	Fataka Dal (Grade I)	45-50 Kg	60 Kg	45-50 Kg
2	Sawwa Number (Grade II)	20-25 Kg	20 Kg	20-25 Kg
3	Crumble (choori)	2-3 Kg	5 Kg	6 Kg
4	Husk & Powder (Bhushi)	20-22 Kg	15 Kg	20-22 Kg

Recovery of grain material is given in percentage as follow:

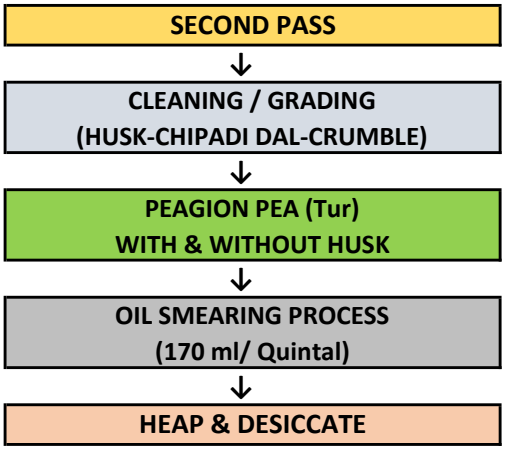
Sr. No.	Grain	Recovery
1	Pigeon Pea (Tur)	75 to 80 %
	A. Fatka Dal (1st Quality Dal)	55 to 60 %
	B. Sawwa Number (2nd Quality Dal)	15 to 20 %
2	Benal Gram (Channa)	80 to 82 %
3	Green/Black gram (Moong/Urid)	80 to 82 %

4.2 LIST OF RAW MATERIAL PROCEDURE

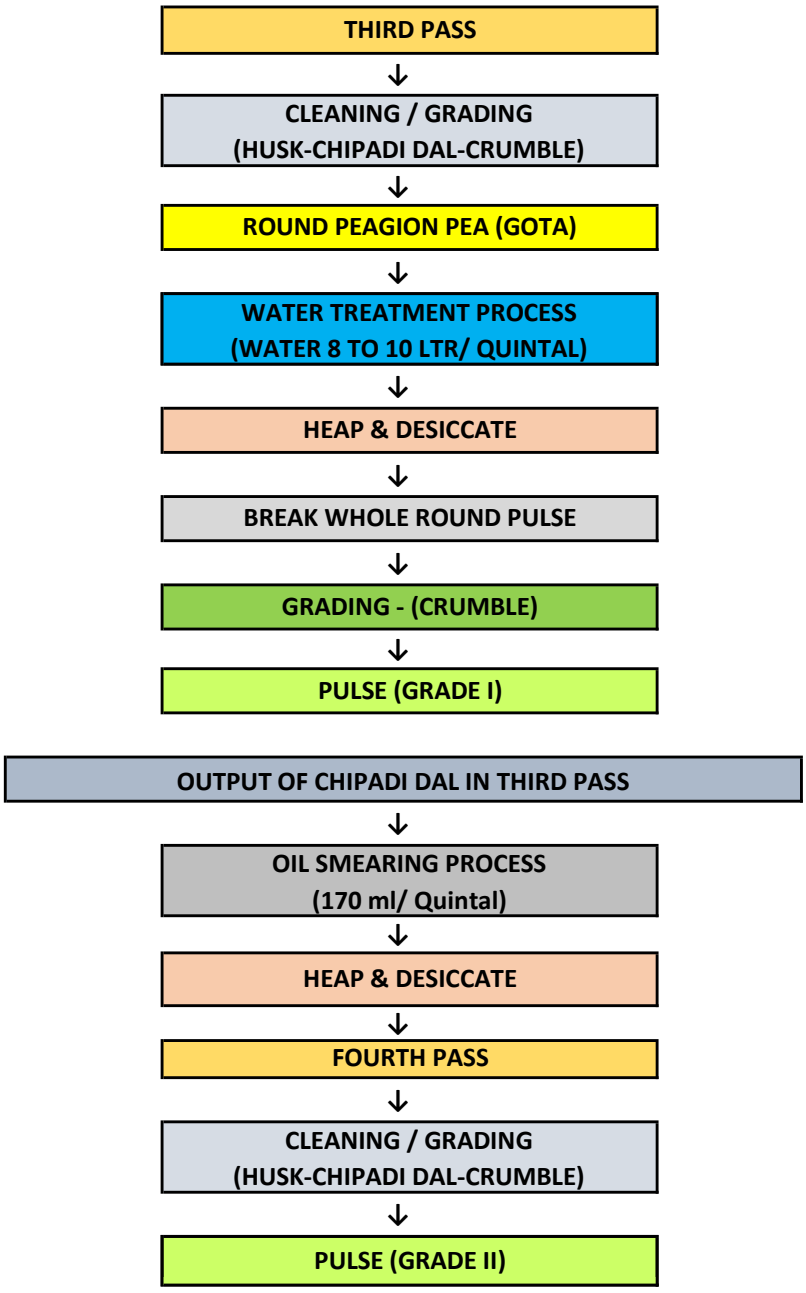
4.2.1 FIRST PASS



4.2.2 SECOND PASS



4.2.3 THIRD PASS



CHAPTER 5

PRODUCTION PEOCEDURE WITH PARTS FUNCTION

PLEASE READ CAREFULLY PRODUCTION PROCCEDURE
& PARTS FUNCTION BEFORE START MACHINE

5.1 INTRODUCTION

Pulses are the major source of protein in Indian vegeterian diet. There protein content varies between 19-20%. Generally, pulses are consumed in dehusking and splitting pulses is term as dal. The operation of dehusking and splitting pulses is termed as dal millng. The hard seed coat remains tightly glued to kernal with a natural gum which makes it difficult to remove the seed coat. It is necessary to loosen this bondage before dehusking as otherwise the kernal may get damaged during milling result in reduced recovery of dal. However, it is easy to split the kernal in two halves after the removal of seed coat. When this kernal is splitted in two halves, the loosely attached embryo is detached and is lost along with the husk. The method of dal milling which are going to explain you in the following text.

5.2 METHOD OF PULSES MILLING

In home scale as well as commercial practice, there are two methods of milling:

1. Wet method
2. Dry method

Wet method : In this method, pulses are soaked in water for 2 to 8 hours prior to drying. In different to dehusk pulses like arhar (pigeon pea, tur), urad (black gram) and moong (green gram), the soaked pulses are treated with red earth before it is dried. After drying, the pulses are subjected to dehusking and splitting.

Dry method : Here, in cleaning and grading chaff, dust, clay, stone pieces, immature grains, other seeds are clean. After this, the pulses are subjected to pitting. Operation 'pitting' means producing scratches, dents and cracks on the hard seed coatby passing the pulse through Roller Dehusker. Now, the pitted pulses are smeared with 150-250/ml of oil per quintal of pulses, stored for 12 hours to 3 days. During this period, oil diffuses in between the husk and cotyledon which loosen the husk. To further loosen the seed coat, it is trated with 8 to 10 ltr of water per quintal of pulses and stored overnight. Next day, after drying and cooling, it is subjected to dehusking and splitting.

5.3 COMMERCIAL SCALE METHOD OF MILLING

The basic principle for processing is same but the procedure for preconditioning treatment and dehusking varies. In general, the pulses have to undergo following unit operation for milling.

i. Cleaning and grading
ii. Drying
iii. Loosening of husk
iv. Dehusking
v. Splitting
vi. Polishing

5.3.1 CLEANING GRADER

This is an important unit operation in pulse milling industry. The raw plant needs to be clean and size graded for getting good quality dal and higher recovery. Also after every dehusking operation. The grain lot has to be subjected to separate out husk, brokens, splits, gota and whole (unhusked) pulses.

The reel screens are better than reciprocating screen cleaners due to the following reason.

a) Flat screen cleaners operate at low noise levels.
b) It requires insignificant repair and maintanace expendature.
c) Its power requiremnt is almost half as compared to reciprocating cleaners.
d) Its causes less dust pollution.

The flat screen cleaners mainly cosist of 2-3 compartments of different size. The machine is fitted at an inclination of 2-3 degree. The flat screen of khatkhata oscillate at low speed. The frame of the machine is made of M.S. sheet.

5.3.2 DRYING OF PULSES

In pulse milling industry, drying of pulses is an important unit operation. The pulses received from farmers mandis' or traders generally have higher moisture and thus some degree of drying is essential before it is considered fit for storage and milling. Also loosening of husk, the pulses need to be dried after it has been treated or stepped in water and stored overnight. For the splitting operation too, drying becomes essential to bring about the separation of cotyledons. Due to economical reasons, all the mills adopt sun drying during the dry season. For this, mills have cemented floor located generally at the backyards of the mill. At place where space is the limiting factor, roofs are used for the purpose. The sun drying is done for 1-5 days as per the requirement. The pulses are spread over floor in 5 to 7.5 cm thick layer which are stirred manually with the help of rakes or tuming by foot.

In rainy season, generally dal mills remain closed for 3 to 4 months due to unpredictable sunshine. lately with growing economic awareness, you can started adopting mechanical heated air dryers. These dryers are either batch type or continuous flow type. The temperature of heated air for drying varies from 60 to 120^0

5.3.3 SCREW CONVEYOR (WORM)

The machine part screw conveyor (worm) function is to smearing oil and water through screw type worm for the purpose of loosening of husk. This is the most important unit operation in pulse milling. Effectiveness of this operation decides the total recovery and quality of milled dal. In general loosening of husk is done by two ways.

a) Wet Method
b) Dry Method

a) **Wet Method:** The wet method, being highly weather dependent due to longer periods of sun drying and affecting the cooking quality of dal, is practiced only in few pockets of south India.

b) **Dry Method:** Dry method for loosening of husk is in vogue in most of dal mills of the country. In this method, husk is loosened by oil smearing, water application, tempering and sun drying. Pulses can be devided into two general catogories according to the difficulty faced in dehusking viz.(i) hard to dehusk namely arhar, urad and moong and (ii) easy to dehusk namely channa (Begal gram), masoor (Lentil) and field pea.

In general, the cleaned and graded pulses are initially passed through the Emery Roller (roller dehusker) to impart scratches, cracks and dents on its hard seed coat. This operation is termed as 'Pitting'. This facilitates the easy migration/diffusion of oil and water in between the husk and cotyledons which in turn weakens the gum bonding and thus loosens the husk adhering to the cotyledons.

The pitted pulse grains are passes through the cleaning round grader to separate out the splits, husk, and powder and later smeared with oil at the rate of 100-500 gram per quinal in worm screw conveyor.

5.3.4 SINGLE EMERY ROLLER (ROLL PETI)

The main function of the single emery roller is subjected to dehusking the pulses. This roller is coated with carborandum. The carorandum number varies for different pulses. However, there is no standard fixed for any pulse grains.

The Roller used in this machine are of two types, viz. cylindrical and tapered. In case of tapered roller, foundation is perfectly horizontal. The diameter of roller increase from feeding side to discharge side. This is done to increase pressure gradually on the pulse grains which helps in gradual dehusking. The cylindrical roller machines are installed at an inclination of 10-15^0 to help the forward movement of pulse grains inside the machine. Due to this, in general, in hard-to-dehusk pulses, the recovery is between 70-75% while for easy to dehusk pulses, it varies in between 78-85%.

5.3.5 SHELLER (CHAKKI)

The splitting pulses grain operation is done by a disc sheller machine. This operation comprises of two steps namely loosening the bond between the cotyledons and splitting. For loosening of bonds between two catyledons, water at the rate of 8 to 10 ltr per quintal is applied to dehusked pulse grain (gota) and is store for 2-12 hoursand later sun-dried for 4-8 hours. At this stage, gota when hit against hard surface, split in two, thus giving an indication that the lot is ready for splitting.

In 3HP MINI DAL MILL for 3 HP capacity of machine size 12 inch sheller is used and for 5 HP capacity of machine size 14 inch sheller is used.

5.3.6 DUST COLLECTOR (FAN)

Dust collector (fan) which operates on a counter shaft with help of comman connection of v-belt & pully

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The main function of this fan is to remove chaffs, dust, husk and other components from grain pulses. The discharge of pulses from a Round Cleaning Grader next flow to the pipe connections. At that place fan is installed. Dust collector fan is very useful to improve the quality of grain pulses.

5.3.7 DEHULLING PROCESS

Pulses are dehulled particularly to improve their appearance, texture, cooking quality palatability and digestibility. The split pulses are not affected by insect pests during storage but grains are much suspectible for their attack. Thus, dehulling of pulses are not only convenient for daily consumption but also increase the storage life.

5.3.8 PIGEONPEA

Pigeonpea grain is considered to be the most difficult to mill due to firm attachment of seed coat with cotyledons. It requires pretreatment for loosening of seed coat before dehulling. The steps involved in dry method are cleaning/grading, scarification, oil application, curing for some period, drying, partial dehulling, separation, and splitting. The dehulling operation should be done in such a way that it should result in the maximum pearled grain (gota) yielding maximun grade-I dal which fetches good price in the market. The whole process is enumerated. The wet method comprises of few operations like cleaning/grading, scarification, soaking in water for 30-45 min, drying & splitting.

5.3.9 MILLING OF INDIVIDUAL PULSES

To give further clear picture of commercial milling, a flow diagram of milling of two pulses namely arhar and bengal gram (channa) by dry method is shown as below respectively.

B) MILLING OF CHANNA DAL

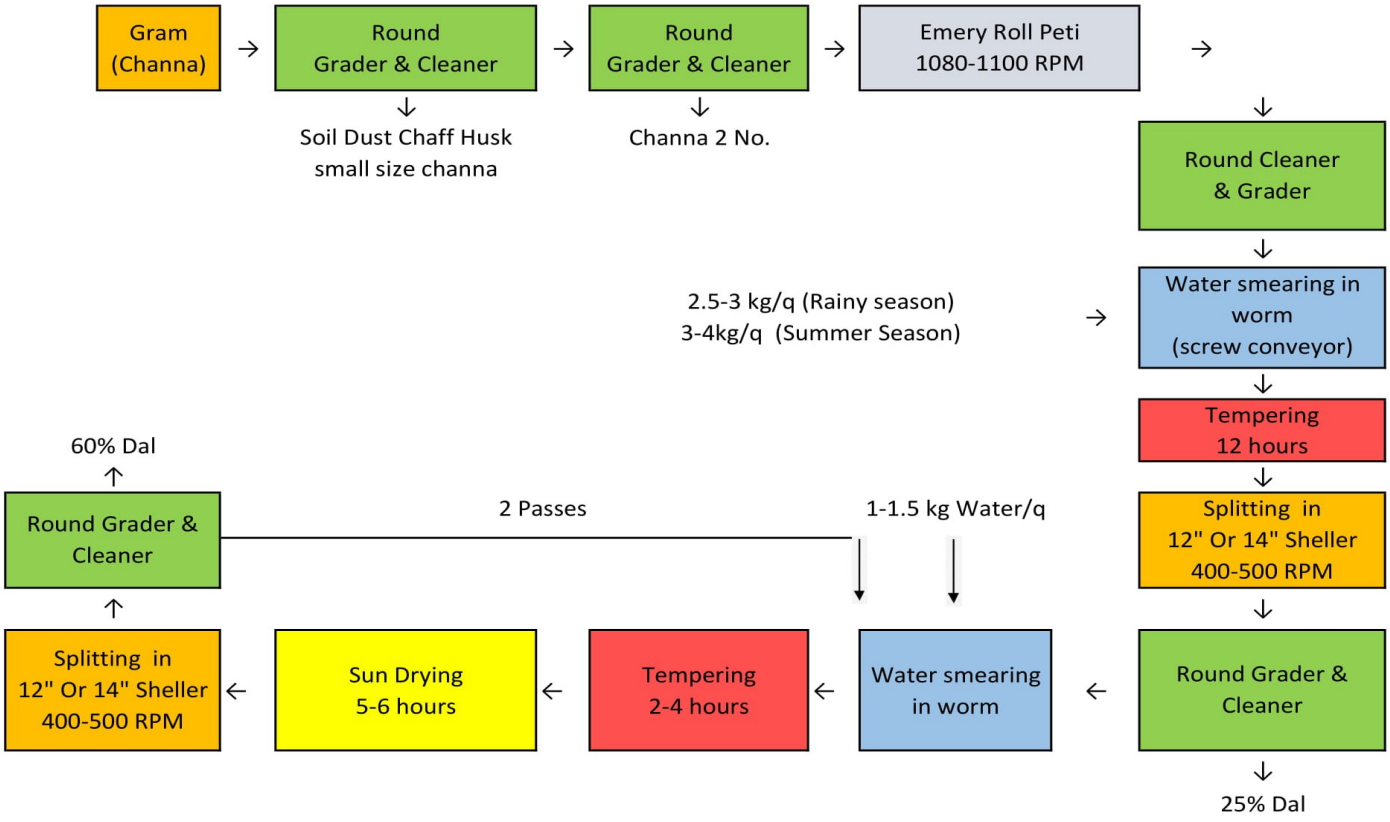

Fig : Flow Diagram of Channa Dal Milling

B) MILLING OF ARHAR DAL

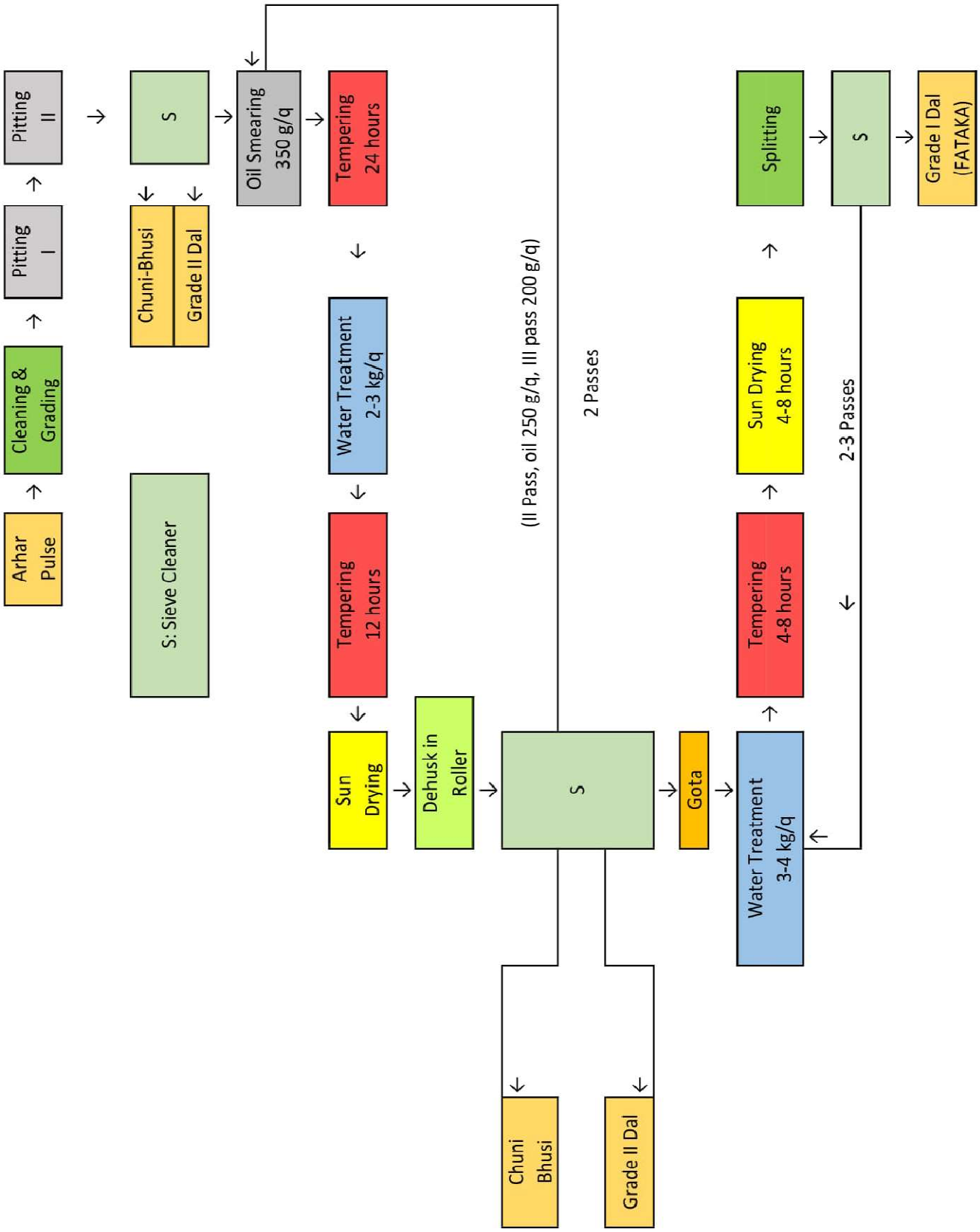

Fig : Flow Diagram of Arhar Dal Milling

5.3.10 POLISHING

This is the last operation before packaging. In this operation, dal is imparted with a glazing appearance to improve its consumer's acceptance and market value. Depending upon the need, different material likes water, oil,soapstone powder and 'SELKHARI' powder are uplied to dal surface. In some cases, removal of sticking powder from dal surface is considered sufficient to improve its surface glaze.

● **Buff Polish:** In this 2-2.5 kg of water along with 200-250 gram of oil per quintal of dal is applied with polisher. This type of dal is prefered in Madhya Pradesh, Uttar Pradesh, Bihar, Maharashtra and Delhi.

UN-POLISHED TOOR DAL

POLISHED TOOR DAL

5.4 CHUNI BHUSI AS ANIMAL FEED

The chuni-bhusi is the mixture of broken dal and husk which is obtained during milling of pulses. As explain earlier, husk remains tightly glued to the kernel, in the pulse grain. If the husk is not properly loosen the kernel is more abrased resulting in breakage of kernel in a form of small brokens and powder. It mixed with husk and the mixture is termed as chuni-bhusi. As the mixture is not fit for human consumption, it is used as animal and poultry feed.

3.4.1 KEY WORDS

English Nme	Botanical Name	Hindi Name
Bengal Gram	Cicer arictinum	Channa
Black Gram	Vignamungo	Urad
Chicking Vetch	Lathyrus sativus	Kesari
Green Gram	Vigna radiate	Mung
Kidney Bean	Vigna aconitifolia	Moth
Peas	Pisum sativum	Matar
Redgram (Pigeion pea)	Cajanus cajan	Tur, arhar
Soyabean	Glucine wax	Soyabean

CHAPTER 6

TROUBLESHOOTING BY SYMPTOMS

PLEASE READ CAREFULLY TROUBLESHOOTING BY SYMPTOMS

6 TROUBLESHOOTING BY SYMPTOMS

Use this section to begin the process of resolving a service problem. Each problem type is describe in a few words and then more fully described is as follow.

6.1 VIBRATION IN MACHINE

Possible Cause	Check This
Binding or loosening in the Drive Train	Check Repeatability using the Repeatability and Positional Accuracy Procedure. Check the torque reading of the Drive Train. Step by step, carefully inspect the Drive Train for any binding or looeness. It may be necessary to desassamble and then reassemble the drive train.
Axis Motor belt too tight	Loosen Belt
Looseness in Nut & Bolts	Check all Nut & Bolts are properly tighten or not.
Foundation and leveling of machine	Please check the foundation and level at machine area is proper or not

6.2 COUNTER SHAFT STALL OR TURNS OFF DURING PROCESSING

During milling the grain pulses, the motor and counter shaft turns off and loses power. First check incoming voltage.

Possible Cause	Check This
Motor drive belt is slipping	Check the alignmet, condition, and tension of the Drive Belt
Load more than the machine is capable	Check the feed rate of bucket elevator and grader to remove the excessive load.

6.3 MOTOR AND COUNTER SHAFT RUNS BACKWARD

Motor and Counter shaft runs in the opposite direction.

Possible Cause	Check This
3-Phase wires backwards	Need to switch any 2 of the 3 wires either coming out of the motor drive (T1,T2 and T3) or going into motor (U,V, and W). Caution: Be sure to shut off all power to the machine before attempting to switch any wires.

6.4 MOTOR AND COUNTER SHAFT HUMS OR WILL NOT RUN

The motor makes a constant humming noise during operation or will not turn on.

Possible Cause	Check This
Wrong voltage	Check the 415V voltage to the machine.
Poor wiring connections	Check all the wiring connections to the electric box.
Defective cable connections	Check all cable connections

Spindle motor is bad	Check the resistance of the motor windings on the machine motor between L1 & L2, L2 & L3, And L1 & L3, using an Ohmmeter. The resistance should range from "7 to 1.8 Ohm". If the ohmmeter reads "0 Ohms" or "OL", then replace Machine Motor. Next, check the resistance between L1 & ground, L2 & Ground, and L3 & Ground, using an Ohmmeter. The resistance should read "OL". If not then replace machine motor

6.5 SLIPPAGE OCCUR AT DRIVE PARTS

Possible Cause	Check This
Looseness in V-Belt	Check the alignmet, condition, and tension of the Drive Belt

6.6 DEHUSK IS NOT PROPER

Dehusking process in emery roll machine is not proper

Possible Cause	Check This
Emery roll life is over or carborandum material of roll is damage	Check life duration of emery roll is about 3000 to 5000 quintal of dehusking pulses is over or not. If some damages is occurred then replace whole emery roll.

6.7 STUCK PADESTAL BEARING

Possible Cause	Check This
Pedestal Bearing not being lubricated properly, worn bearings	Remove top lid and check to make sure oil is overflowing freely to the pedestal bearings. If worn out then change the padestal bearings.

CHAPTER 7

DRIVE TRAIN PART LIST

PLEASE READ CAREFULLY DRIVE TRAIN PART LEAST

7 DRIVE TRAIN PART LIST

7.1 PART LIST AND SPECIFICATION

LIST OF PULLY USED				
SR. NO.	PULLY FROM	PULLY SIZE	PULLY TO	PULLY SIZE
1	Motor	3 X 3 B	Counter	10 X 1 B
2	Motor	4 X 3 B	Roll Peti	5 x 2 B
3	Counter	3 X 1 B	Worm	12 X 1 B
4	Counter	6 x 1 B	Fadfada	3 X 1 B
5	Counter	12 X 2 B	Fan	3 X 1 B

NUMBER OF PADESTAL (PILLOW BLOCK) LIST			
SR. NO.	PADESTAL USE FOR	PADESTAL SIZE	QUANTITY
1	Fan (Dust Collector)	UCP-205-16	2
2	Worm (Screw Conveyor)	UCP-205-16	2
3	Fadfada	UCP-205-16	2
4	Flat Grader (Khatkhata)	UCP-204-12	9
5	Emery Roll Peti	UCP-206	2
6	Counter Shaft	UCP-206	2

Thank You !!!