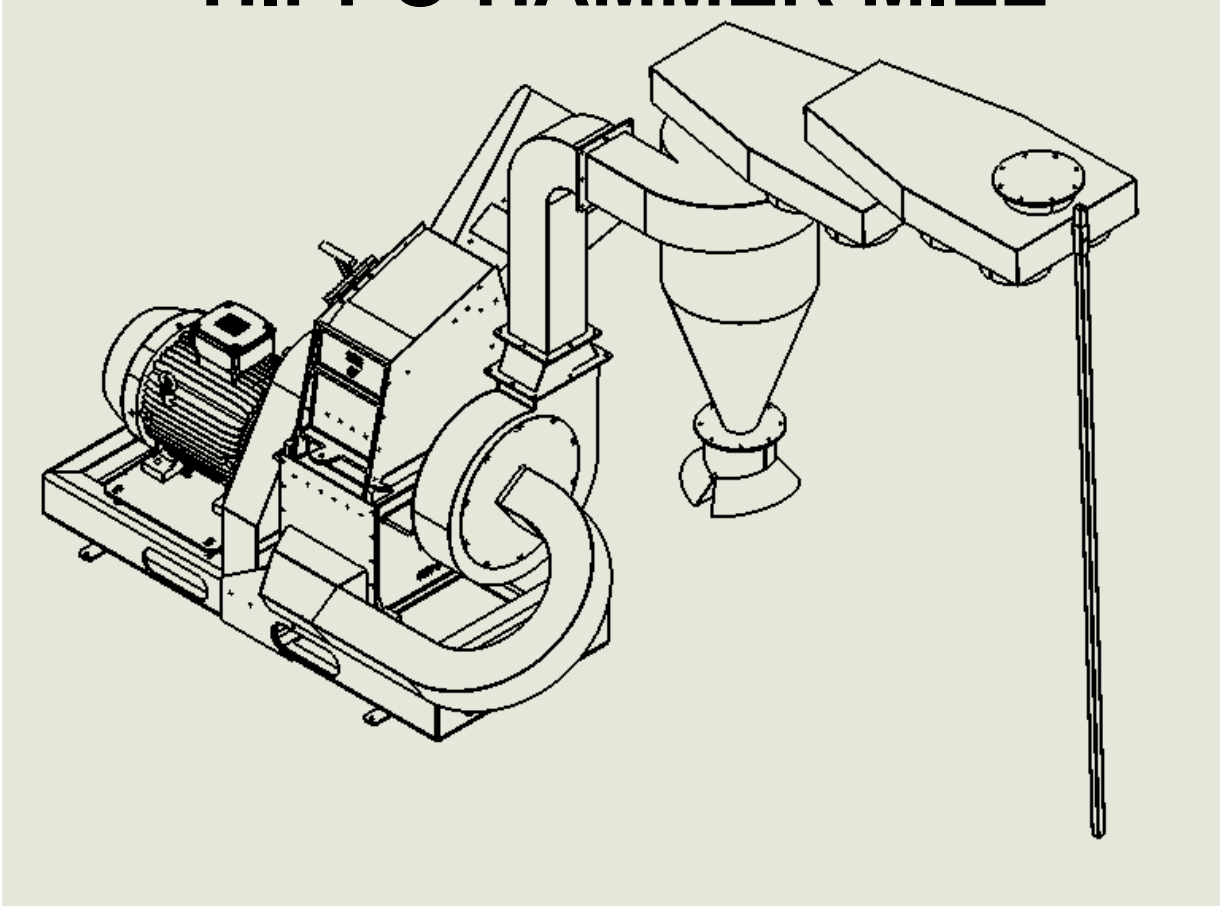


# HIPPO HAMMER MILL





This User Manual covers ABC Hansen Hippo hammer mills from models baby to Model 69 and includes use, maintenance, spare parts list for each model and warranty. Each model Hippo mill with fan discharge is constructed in exactly the same way with the same type of parts while parts sizes may differ.

In the interest of safety and machine value it is not recommended that the machine be altered in any way as this may void the warranty and performance of the machine as designed.

Operators should be trained in operation of the machine and also in all emergency aspects such as stopping the machine immediately, maintaining the machine to avoid damage and daily cleaning and operation.

This manual may not be reproduced without authorisation of the manufacturer or designated importer or agent.

This machine is manufactured by ABC Hansen Africa (Pty) Ltd in Pretoria South Africa.

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## **User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

### 1. SAFETY AND CONFORMITY

#### 1.1 Safety:

Operators and other persons working with a Hippo Mill, must be fully trained in the operation of this machine and other machines working in conjunction with this mill.

Keep an area of 2 meters around the mill free of obstacles including bagged product, raw materials, packaging materials etc. thereby ensuring a safe immediate environment.

Keep the working area clear of dust, raw material and final product spillage, vapour, water, lubricants etc.

While the mill is operating at high pitch or high noise level, it is recommended that ear protection and eye protection be used during operation.

Use respiratory protectors if there is any dust in the air or when cleaning the machine or ancillary plant.

The Hippo Mill must not be started unless all protective guards, inspection doors and hatches, safety enclosures has been mounted and is in place and closed.

During repair and maintenance, the unintentional start-up of the machine or any part of its must be locked out both at the main isolator and at the emergency isolators at each motor at the machine and the contactor / overload in the motor control centre applicable to all the motors on the machine.

Only electric motor driven mills are covered by this manual.

Contact the supplier, manufacturer or agent and read the operations manual when in doubt.

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

1.2. Conformity:



Group II, Category 3, Dust. (II 3 D)

**EEC DECLARATION OF CONFORMITY**

The undersigned

ENGSKO A/S, United Milling System

Tronholmen 10E, DK 8960 Randers Tel: +45 86426488

Herewith declare that the product:

ABC HANSEN HIPPO HAMMER MILLS MODELS, 1, 1½, 47, 57, 69, L 63, Mammoth

Design as a Grinding Hammer Mill with beater and tips in steel, and

Is constructed and manufactured in conformity with the following directives:

Directives

Directive 2006/42/EC of 17. May 2006, on machinery

Directive 2014/34/EC of 26. Feb. 2014, for use in potentially explosive atmospheres

Directive 2005/32/ regard to ecodesign requirements for electric motors.

Standards

EN 13857:2008, Safety on Machinery.

EN 12100:2001, General principles for design and risk assessment

EN 60034-2-1:2014, Rotating electrical machines

Name of signatory: \_\_\_\_\_

Signature: \_\_\_\_\_

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

## 2. INSTALLATION PROCEDURE:

The ABC Hansen range of Hippo Hammer Mills, hereafter called the ABC Hippo Mill, must be placed in a dry and frost free environment.

### 2.1. Roof Clearing

There should be sufficient space around the mill and it should have a roof clearing of:

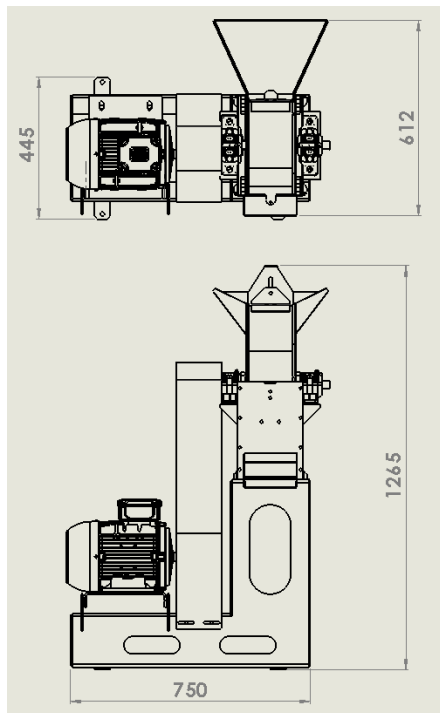
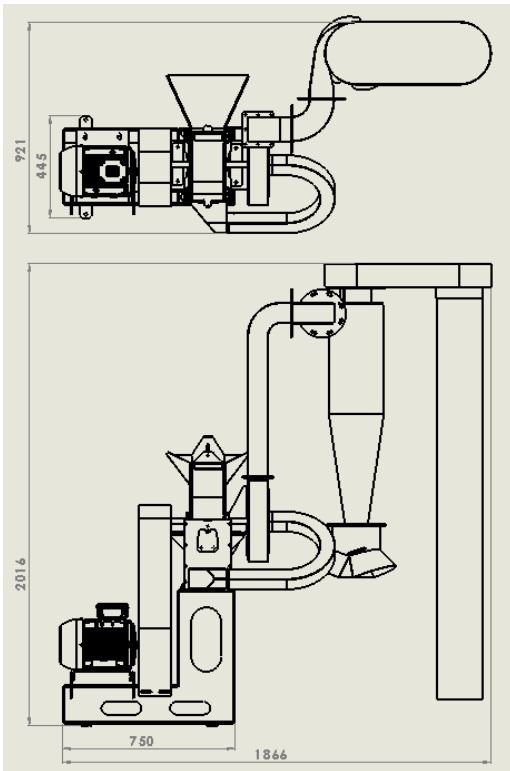
**Model:**

Baby	2.5m
1	2.7m
1 ½	2.7m
47	2.9m
57	2.9m
69	2.9m
L63	2.5m
Mammoth	2.9m

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

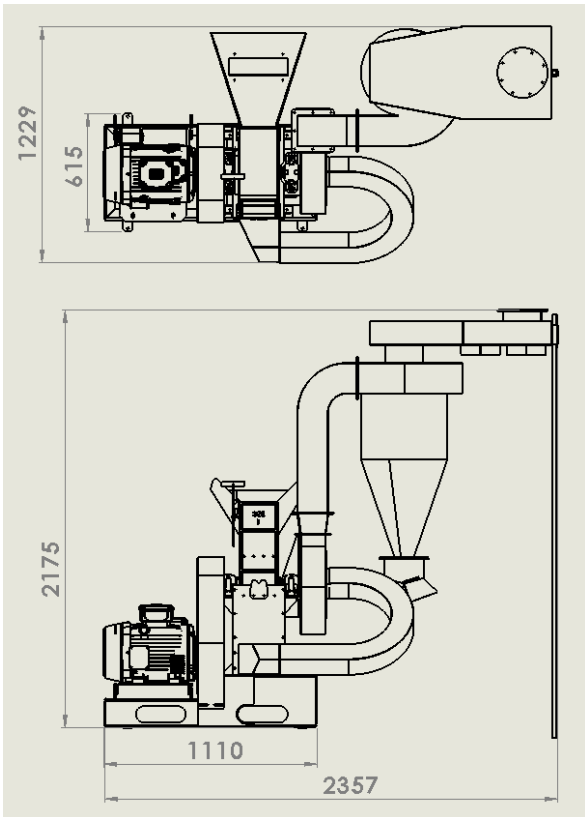
**2.2 The mill dimensions are shown below.**

Hippo Baby



**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

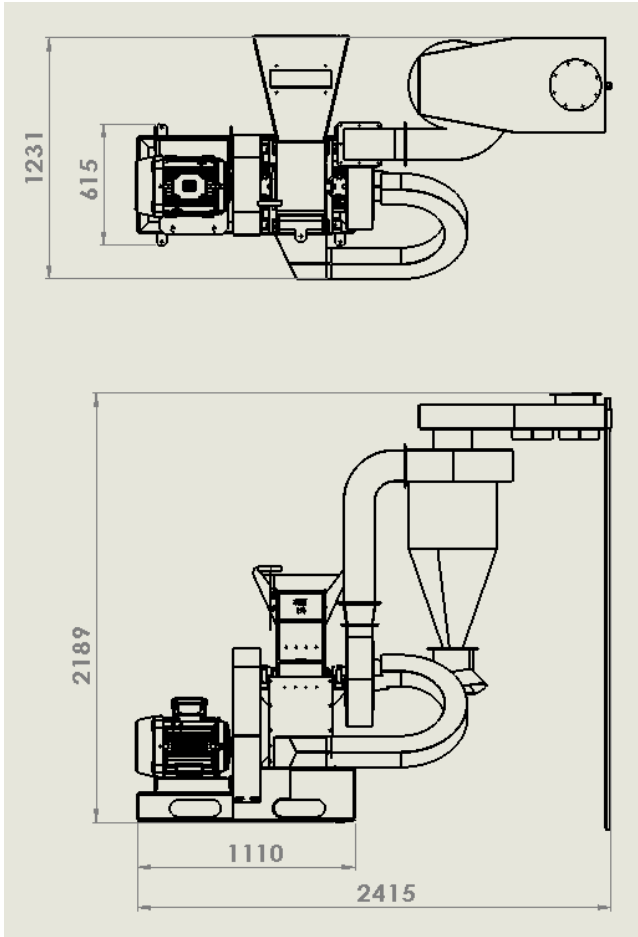
Hippo 1





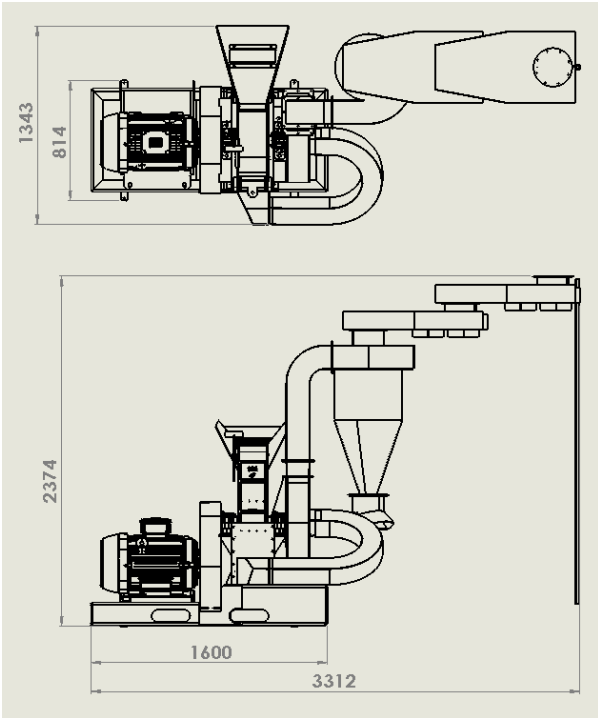
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Hippo 1 ½

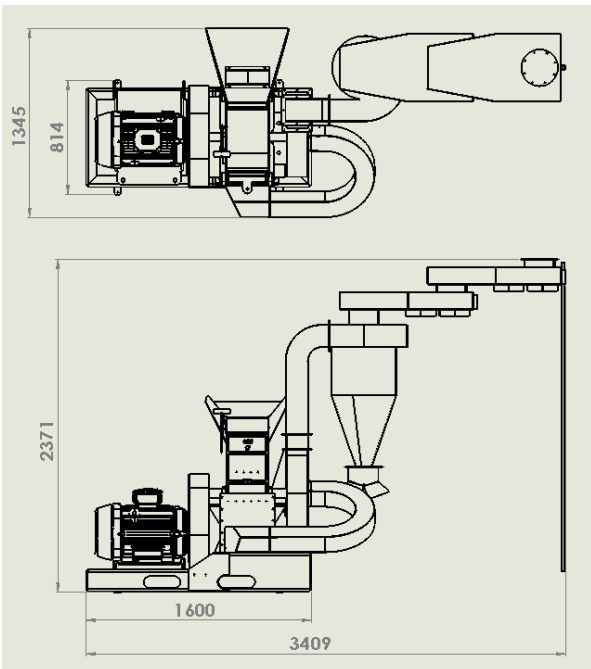


**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Hippo 47

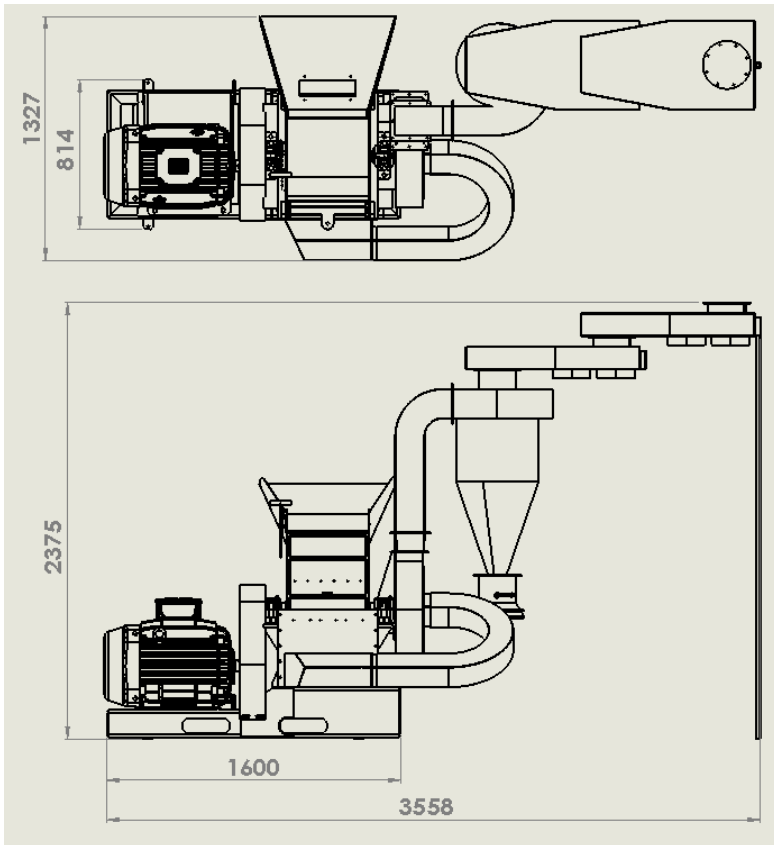


Hippo 57



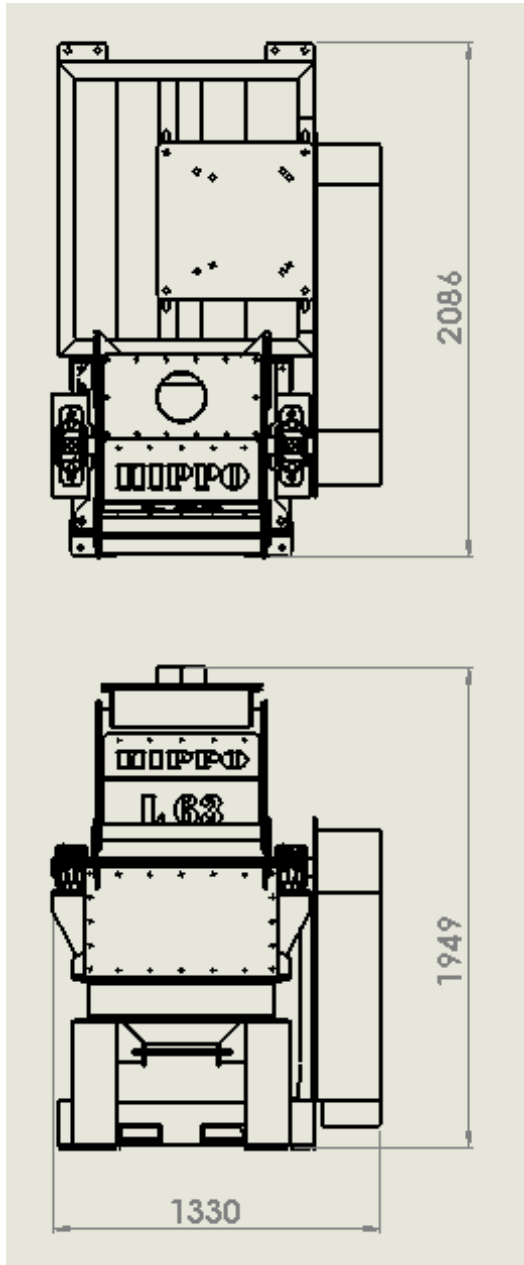
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Hippo 69



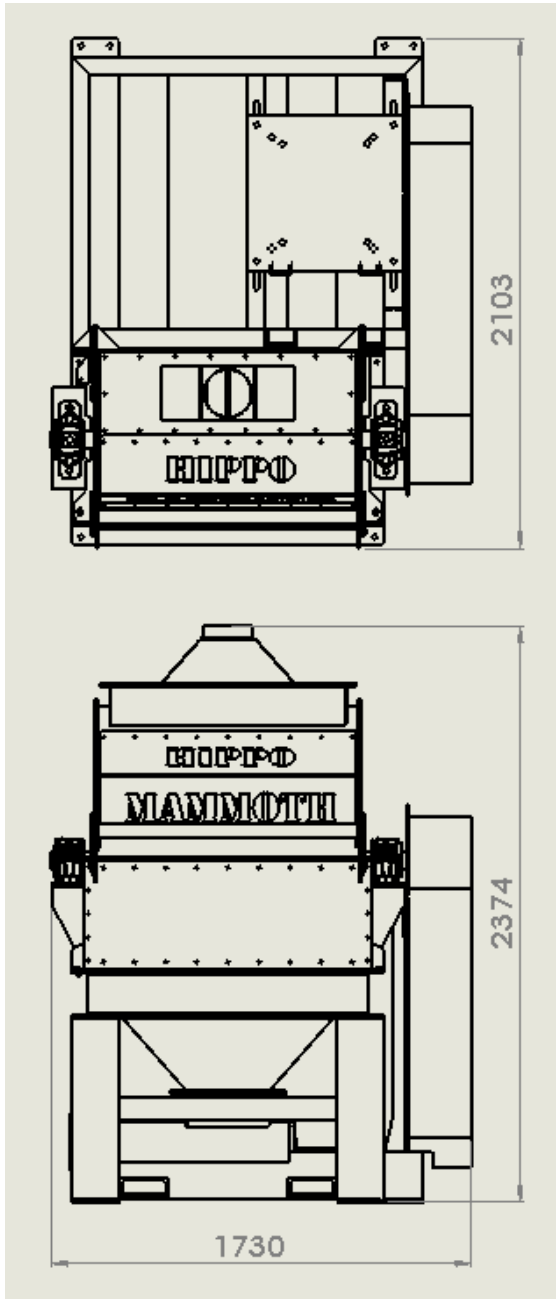
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Hippo L63



**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Hippo Mammoth



## **User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

### **2.3 Moving, assembly and installing the mill.**

The ABC Hansen Hippo Mill must be mounted on a stable and level floor, and be secured by foundation bolts. In the case of the large model L63 and Mammoth, it is suggested that chemical anchor bolts be used.

When unpacking of the ABC Hansen Hippo Mill please check that all loose parts are delivered and check for damages due to transport. Report those immediately with pictures to allow insurance claims and transport claims where applicable and to arrange shipping of any parts if short delivered or lost.

The ABC Hansen Hippo Mill size Baby to 69 may be split into several sections being:

1. The main milling body with rotor.
2. The top in-feed section with feeding tray including magnet.
3. The bottom frame for the motor mount and the main milling body.
4. The square delivery tube between the main milling body and the fan.
5. The fan mounted on the rotor with its casing.
6. The delivery tube between the fan outlet and the cyclone – one straight and one bent square tube.
7. The cyclone.
8. The dust manifold – one or two or three manifold adjoining depending on the Hippo model.
9. The dust filters – 4 – 16 filters per mill depending on the model.
10. Safety covers.

In the case of the Model L63 and Mammoth, the mill body is fully assembled with or without the electric motor, 55kW and 75 or 90kW respectively.

The rotors on these models are always shipped separate from the mill and should be mounted at site. The reason being that sudden shock in transport may effect a very slight bending of the shaft, which may cause unnecessary vibration. Always dismantle the rotor before moving the mill to another destination.

These parts should be assembled on site in accordance with the drawing below. The motor may be assembled on frame to the main mill body and the main milling body and top in-feed section may be already assembled before shipping.

# User manual: ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

## 2.4 Mill specifications:

The Hippo hammer mill range has the following specifications:

DETAIL	BABY	NO.1	NO.1½	NO.47	NO.57	No 69	NO.63	MAMMOTH
BEATERS	6	6	8	6	10	16	22	36
TIP	24	24	32	24	40	64	88	144
ROTOR RPM	4500	4500	4500	4000	4000	4000	2100	2100
FEED TRAY LENGTH	300	770	770	580	580	580	668	1084
FEED TRAY WIDTH	320	490	490	610	610	680	268	282
SCREEN AREA CM2	593	1063	1338	1760	2637	3983	5698	9169
CAPACITY KG/H through 1.6mm screen	200	500	600	900	1200	1800	3500	5000
KW NEEDED	4	7.5	11	18.5	30	45	55	75-90

## 2.5 Milling action:

Hardened steel (bennox or hardox) hammers in a specific pattern and bent to allow coverage over the full screen when milling which is attached to a beater centre with two high tensile bolts and lock nuts at specific torque of 50 NM.

## 2.6 Unpacking And Control

- Unpack and control according to the packing list. In case of defect or missing items, please contact the agent before mounting the Hammer mill.
- The following materials are to be used when mounting the Hammer mill:
  - Correct Electric cable for hammer mill. If three phase, a 3 core plus earth or 4 core cable is required.
  - Tools: Drilling machine, drill sizes as required for mounting between 12mm and 20mm. Spanners in sizes 10, 13, 17, 19, 24 mm, screwdriver, side cutting pliers.

## 2.7 Mill assembly

Assembling the Hammer mill

- The mill, blower and motor or engine is supplied on frame and the frame needs to be mounted only on the floor, as described above.
- The product dispensing square “giraffe neck” is packed separately and should be mounted to the suction box at the bottom of the milling chamber (in the case of mills with blowers). Mills without blower requires adherence to the floor only.
- The cyclone needs to be mounted to the “giraffe neck”. Ensure the pre-fabricated seals are placed between the mounting box and “giraffe neck” and between die “giraffe neck” and the cyclone. The cyclone is fastened with 8 x M10 bolts with nylock nuts, with washers placed on both the bolt head and nut sides.
- The dust box is mounted to the top of the cyclone using 8 x M10 bolts and nuts, with washers on the nut and bolt head side.

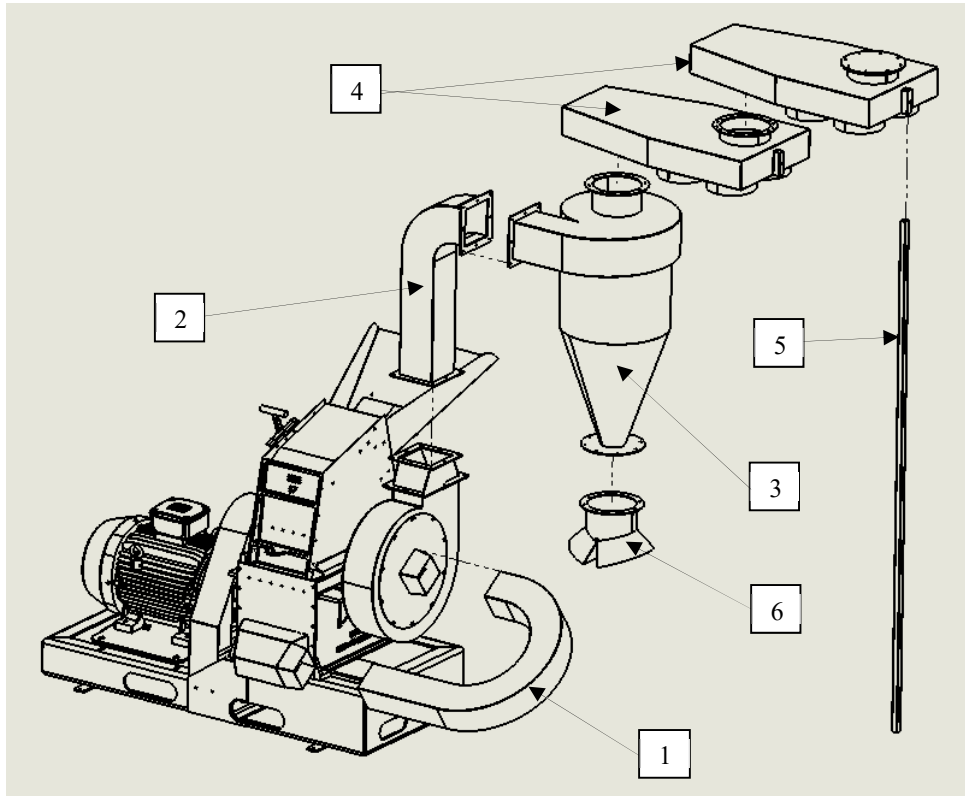
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

- If the bagging attachment is not pre-mounted, this may be mounted below the cyclone, using 8 x M10 bolts and nylock nuts, with washers at the bolt head side and the nut side.
- The Mammoth and L63 mills require integration with an existing or new air suction system. This may be a negative or positive pressure system.
  - An 11kW high pressure fan is used for the L63 and an 18kW high pressure fan is used for the Mammoth mill. If in a negative pressure system the product would be sucked through a cyclone where a rotary valve (air seal valve) is attached to. The final product is discharged here and a dust control manifold is attached to the blowing side of the fan to isolate fine particles in a set of filter bags.
  - In the case of a positive pressure system, the fan would blow through a venturi or a rotary valve at the discharge of the mill. The product is blown through the cyclone and it discharges the product at the bottom of the cyclone. The cyclone may be mounted direct on a product hopper bin with filter bags attached to avoid back pressure build-up inside the bin or a dust manifold may be attached to the top outlet of the cyclone to control dust.
  - The mill may also be mounted for a bottom drop, especially if a very coarsely milled material is used. The air suction would enhance the mill performance by clearing the milling chamber faster thus allowing less heat build-up.



**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

2.7.1 Models Baby to 69:

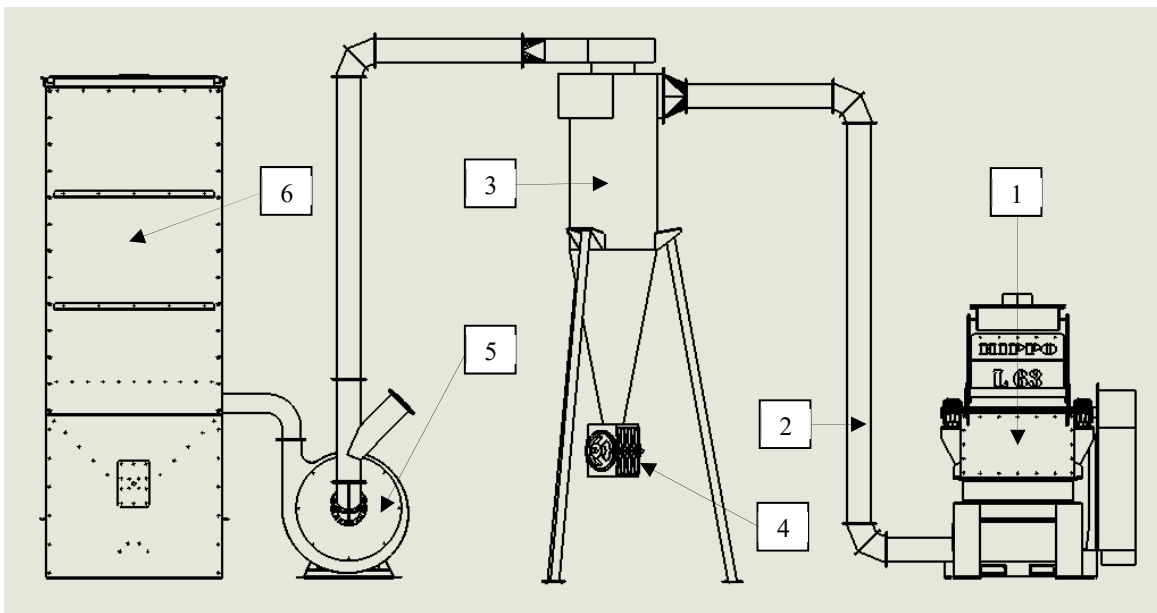


Item	Description
1	Lobster Tail
2	Giraffe Neck
3	Cyclone
4	Dust Box
5	Dust Box Support Leg
6	Bag-Off

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

2.7.2 Models L63 and Mammoth:

This Graphic shows a typical installation with negative pressure discharge system on the L63 and Mammoth mills. Only Item 1 is sold unless all other parts are separately specified. Mill outlets are supplied standard to fit to this configuration. If a different outlet is required, it must be specified.



Item	Description
1	Hammer Mill (L63/Mammoth)
2	Ducting
3	Cyclone
4	Rotary Valve
5	Fan
6	Dust Box

## **User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

### **2.8 Mounting your mill:**

- The floor on which a diesel or electric driven mill has to be mounted, should be a strong concrete floor of at least 150mm thick. If a new slab is to be placed, use minimum 25MPA strength concrete and pour to 200mm thickness. The size of the slab would differ for each Hippo mill and can vary between 800mm x 2,000mm to 2,000mm x 3,000mm. The concrete floor should be allowed to completely cure – 28 days for final curing is usually required. 15 – 20 days may be sufficient if concrete strength is right.
- Ensure the diesel engine base is properly fastened onto the floor, using chemical anchors or sleeve anchors of 12-18mm thickness x 100 to 150mm length.

### **2.9 Adjustment of the pulley on the electric motor or diesel engine.**

- Check that the V-belt pulley of the electric or diesel motor and the mill, are 100% lined by placing a straight edge along the entire diameter of both pulleys and ensure that the straight edge touches both sides of both pulleys.
- The pulley tension can be set by loosening the motor mount bolts, and pulling back on the engine or motor mount bolts again. Care should be taken to not over tension the belts, as this will damage the bearings.
- Check that the mill shaft can turn without any obstructions and easily, before starting the mill. On an electric motor, this can be done with by opening the top cover and rotating the shaft manually. On diesel models, the compression valve should be opened, so that the engine can turn freely. Refer to the diesel engine manual procedures for starting the engine
- Mount the guard plate carrier and belt guard. Ensure the correct screen has been placed inside the mill before fastening the belt cover as this fastens also to the top part of the hammer mill and has to be loosened to open the top part of the mill on older models. Models manufactured after 2011 have all parts supported to the body of the mill, and it won't be necessary to loosen any other parts to open the top of the mill.

### **2.10 Electric connection of the Star/ Delta switch if delivered.**

**NOTE: ONLY QUALIFIED ELECTRICIANS SHOULD DO ELECTRICAL INSTALLATIONS!**

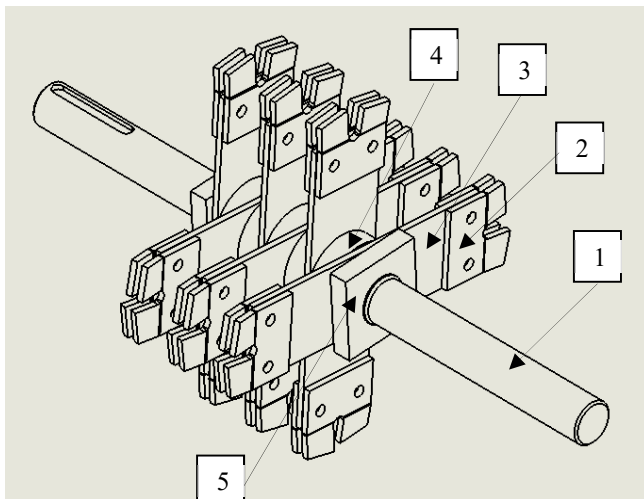
- Mount the Star/Delta switch, see electric diagram and connect to the electric main supply. ONLY FOR MOTOR SIZES 11 KW AND HIGHER. FOR SMALLER MOTORS A DIRECT ON LINE STARTER WITH OVERLOAD PROTECTION SHOULD BE USED.
- Electric connection of the panel, if delivered
  - Mount the panel and connect to the electric motor (see electric diagram of the panel), check that the thermal relay is set to nominal current and correct amps - see details on the electric motor. For the electric mill motor time relay for Star/ Delta switch must be set to approx. 8 seconds.
  - Connect to the electric main supply.

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

- Electric connection in general
  - Check the direction of rotation of the electric motor.
  - The direction of rotation is indicated on the mill. If incorrect, change L1 and L2 wiring around.

**2.11 Mounting beater centers and tips.**

- Demount the mill shaft at both plumber block bearings by unlocking the bearing locks first and the removing the entire bearing on both sides of the shaft. The pulley and taper lock must also be removed.
- Undo the lock nuts on either side of the shaft. These nuts have a left and right hand thread to ensure they remain locked during operation.
- The beater arms may now be removed by sliding them down the shaft on the key.
- Replace the beaters by following the above instructions in reverse.
- Tips may be replaced without demounting the shaft.
- Care should be taken that high tensile fasteners are used with nylock nuts.
- Tips should be fastened with a torque wrench to 50N/m using 8.8 high tensile bolts and nuts
- Hippo mills uses 3 types of tips. The Baby uses a small tip,, all other models uses medium tips and the Mammoth uses a large tips.
- Tips are standard in Bennox steel but may be specially ordered in higher Rockwell hardness types. The harder the steel, the more brittle it is but longer lifespan would be obtained.
- While tips are all lazer cut to high precision, the metal thickness may vary slightly with the result that tips may have slightly different weights. If a few tips are replaced, ensure they are positioned correctly on the shaft to avoid vibration.



Item	Description
1	Shaft
2	Tips
3	Beater Centre's
4	Spacers
5	Square Lock Nuts

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### **3. Operating procedure:**

#### **3.1 Before starting your mill:**

- Ensure the belts are tight but not over tight before starting the mill. If necessary, adjust the motor height after loosening the mounting bolts and retighten the bolts securely.
  - Always replace Belt covers.
  - Always replace V Belts in a set as belt lengths and stretching differ substantially – preferably replacement V-belts should be bought in a set, from the same supplier, to ensure that they are from the same batch, and that their lengths are the same. Belt lengths differ from batch to batch, even from the same manufacturer.
- Always:
- Keep bearings greased by removing the top half of the plumber block and packing the bearing parts. This should be done at least weekly for high performing machines – The Hippo 69, Hippo L63 and Mammoth mill has two greasing points on the two pillow block bearings. Do not overfill. Depending on the duty, greasing the bearings weekly would suffice.
  - ALL BEARINGS ARE SHIPPED DRY. BEFORE STARTING THE MACHINE MAKE SURE THAT THERE IS SUFFICIENT LUBRICATION.
  - Use only a high speed synthetic grease. Wheel bearing grease is not sufficient!
  - In the case of diesel engines, keep the engine topped up with oil. Do not over fill. Use diesel oil. Check oil daily.
  - On JD (Hippo Power) diesel engines models, (only available for sale in Africa) that are naturally aspirated, with evaporative cooling, ensure that water is always topped up when the indicator shows as much. Keep water inlet clean and free of foreign matter including flour or meal.
  - On factory fitted Yamaha air cooled petrol engine models, ensure that there is sufficient space available around the air intake, and the exhaust so that there is a free flow of air around the motor. Refer to the engines manual for maintenance instructions. Check oil daily. (Only for sale in Africa).
  - On diesel driven or petrol driven machines ensure outlet vapors are directed outside the building and that there is sufficient air flow. (only i.r.o. Africa)
  - Keep electric motor motors clean, do not let cooling fins get dirty – the motor will heat up. Avoid flour from being sucked into the fan of the motor.
- When mounting the engine of the mill, always ensure the direction of revolution of the mill is correct as indicated by an arrow on the mill housing.
  - Spares are available on order and usually are off the shelf.
  - Ensure air filters are cleaned daily when working in a dusty environment.
  - Follow separate instructions furnished for the diesel engine maintenance, giving special attention to the running and maintenance card supplied with the motor, indicating tensioning schedules and oil change schedules.
  - When an electric drive is supplied, 3 phase 400 v power must be available and connections must be made by a qualified electrician. It is recommended that a direct on line starter be used (not supplied as standard item) in accordance with the size of the electric motor. There will be no warranty on the motor if it has not been fitted with an appropriate starter and overload! This starter should consist of overload protection and a starter. The overload protects your motor from drawing too much power and burning out the motor. If the overload trips, find the reason for it.

## User manual: ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

- The Baby Hippo may be operated on single phase 220-240V power at lower capacity than indicated. All electrical safety should still be adhered to as for 3 phase power.

### 3.2 When milling:

1. Ensure a bags are placed below the cyclone and secured properly and that the bag fill director is fully moved to one side.
2. Turn on the MAIN ISOLATOR to the Motor Control Centre. If the Hippo mill operates without any other machines, a MCC is not necessarily installed. In this case ensure the main electric panel is turned on and the contactor to the applicable three phase plug is turned on and that the wall jack is in an on position and that the emergency isolator at the mill is on.
3. Then turn on the direct on line or star delta or soft starter at the machine.
4. Let the mill get to full revolutions and the star delta has switched over to delta before feeding the mill.
5. Make sure the feed adjustor to the feed hopper is in the open position.
6. The air flow will regulate the feed cover inside the top section of the mill and when air flow decreases, the cover will close thereby automatically regulate the mill against overfeeding.
7. The tightness of this air-controlled feed cover can be regulated to let the cover open and close with more or less resistance. This is done by moving the handle to the right side of the mill feeder forward or backward. Backwards for less resistance and forward for more resistance.
8. As product build up inside the milling chamber, the feed plate would close due to less airflow and thus balance the feed.
9. When fitted with an amp meter, ensure amps are running below maximum as reflected on the motor itself.
10. Open the top chamber only when the rotor has come to a complete stop

### 3.4 Stopping the Mill:

1. Retain the power ON at the MAIN ISOLATOR to the Motor Control Centre.
2. Stop feeding the mill and wait until all milled product has been discharged into the bag.
3. Stop the mill at the direct on line or star delta by pushing the red or "Off" button.
4. Put the isolator at the machine in an off position.
5. When working on the mill, isolate the power to the mill from the main MCC also.

**IMPORTANT:** After power failure turn all switches to the 'OFF' position until the power is back on. Do the same for all ancillary equipment before and after the ABC Hansen Hippo Mill.

Turn off the power at the main motor control centre's main isolator.

If a motor control centre not supplied by ABC Hansen is used, ensure that the MCC is locked out when there is a power failure and can't turn on by itself or reset automatically when power supply resumes.

**Warning:** Switch OFF main isolator on the MCC when the machine or system is not in use or during maintenance or settings.

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#### 4. Settings and adjustments

##### 4.1 Screens:

The degree of fineness of the particles milled can only be adjusted by changing the screen. In some cases when a coarser particle size is required, the mill may be operated without a screen.

Do not slow down the milling speed as it may then be too slow for the fan to lift the product through the cyclone and thus cause blocking in the cyclone or discharge ducting. If this is done for whatever reason, it reduces milling capacity drastically.

The product is discharged through the cast iron, long life fan. This would

##### 4.2 Adjusting the V-belts:

Wedge and 'V'-Belt Drives

**BELT TENSION – the most important factor in the life of Vee and Wedge Belts.**

**Belts up to 3 800mm in length are manufactured to ensure precise inherent length, to stay matched during storage and on the Drive. For belts over 3 800mm ensure that matched sets are used and coded as described under heading “Belt Matching and Length Coding”. Follow installation procedures to ensure the correct Belt Tensioning is maintained throughout Belt life.**

1. Place the Belts around the Pulleys without using force and ensuring that the belts are tight on the tight side of the Drive.
2. Using the Belt Tensioning Indicator as shown, set the Belts to the maximum appropriate tension value stated in the “Tension Force Table”.
3. Run the Drive under load for 30 min, stop the Drive, check the tension and re-set in maximum value in 2 above, if necessary.
4. After 10 – 14 days running, check the Belt Tension and if necessary re-set to maximum value.

**On a correct designed Drive there will be no need for any further attention during the life of the belts. As the performance of belts require correct tension, we recommend using A Belt Tension Indicator. Available ex-stock from most industrial V-Belt suppliers.**

##### 4.2.1 Method of belt tensioning

1. Multiply the centre distance in meters by 16 to obtain the deflection distance in mm.
2. Set the lower marker ring to the deflection distance required in mm on the lower scale.
3. Set the upper marker ring against the bottom edge of the top tube.



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4. Place the belt tension indicator on top of the belt at the centre of span and apply a force at right angles to the belt, deflecting it to the point where the lower marker ring is level with the top of the adjacent belt.
5. Read off the force value indicated by the top edge of the upper marker ring. Compare this force to the kgf value shown in the table. If the measure force falls within the values given, the drive should be satisfactory. A measured force below value indicates under-tensioning.

**A new drive should be tensioned to the higher value to allow for the normal drop in tension during the running-in period.**

TENSIONING FORCE				TAKE-OP ALLOWANCE		
Belt Section	Force required to deflect belt 16 mm per meter of span			Installation Allowance mm	Belt Pitch Length mm	Take-up Allowance Mm
	Small Pulley	Newton (N)	Kilogram-Force (kgf)			
10N (SPZ)	67 to 95	10 to 15	1,0 to 1,5	20	370 to 830	10
	100 to 140	15 to 20	1,5 to 2,0		850 to 1 160	15
13N (SPA)	90 to 132	20 to 27	2,0 to 2,7	25	1 170 to 1 500	20
	140 to 200	28 to 35	2,8 to 3,5		1 510 to 1 830	25
16N (SPB)	140 to 224	35 to 50	3,5 to 5,1	30	1 840 to 2 170	30
	236 to 315	50 to 55	6,1 to 6,6		2 180 to 2 830	40
22N (SPC)	224 to 355	60 to 80	6,1 to 9,2	50	2 840 to 3 500	50
	375 to 680	90 to 120	9,2 to 12,2		3 520 to 4 160	70
25N DELTA	335 & above	150 to 200	15,3 to 20,4	65	4 170 to 5 140	85
10 x 6 (Z)	56 to 100	5 to 7,5	0,5 to 0,8	20	5 220 to 6 150	150
13 x 8 (A)	80 to 140	10 to 15	1,0 to 1,5	25	6 180 to 5 420	115
17 x 11 (B)	125 to 200	20 to 30	2,0 to 3,1	30	7 600 to 8 390	135
22 x 14 ©	200 to 400	40 to 60	4,1 to 6,1	50	8 880 to 10 170	155
32 x 19 (D)	355 to 660	70 to 1-5	7,1 to 10,7	65	10 670 to 12 500	185



**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

#### 4.2.2 How to replace V-belts

1. Loosen the motor base center bolt A (see illustration in page 8).
2. Loosen lock nut on the tension bolt (B).
3. Turn tension bolts to slacken belts.
4. Remove damaged belts and replace with new ones.
5. Turn tension bolt B in opposite directions to tighten belts to prescribed tension.
6. Lock the lock nut on the tension bolt B and finally tighten the center bolt A on the motor base.

#### 4.2.3 How to replace bearings

**Note :** These bearings slide onto the roller shaft.

Any damage to the shaft will cause the bearing to get stuck in the shaft. This can create more damage to both the new bearing and the shaft.

1. Unscrew the taper locking device or the bearing.
2. Slide out the old bearing.
3. Clean off all marks on the shaft and lubricate the shaft slightly.
4. Slide on new bearing and insert two only bolts – use other two holes to line up the bearing.
5. Tighten the two bolts and check alignment on both the bearing to the box and the roller to the box.
6. Tighten all bolts firmly.
7. Finally tighten both taper locking devices.

#### 4.2.4 How to replace the motor

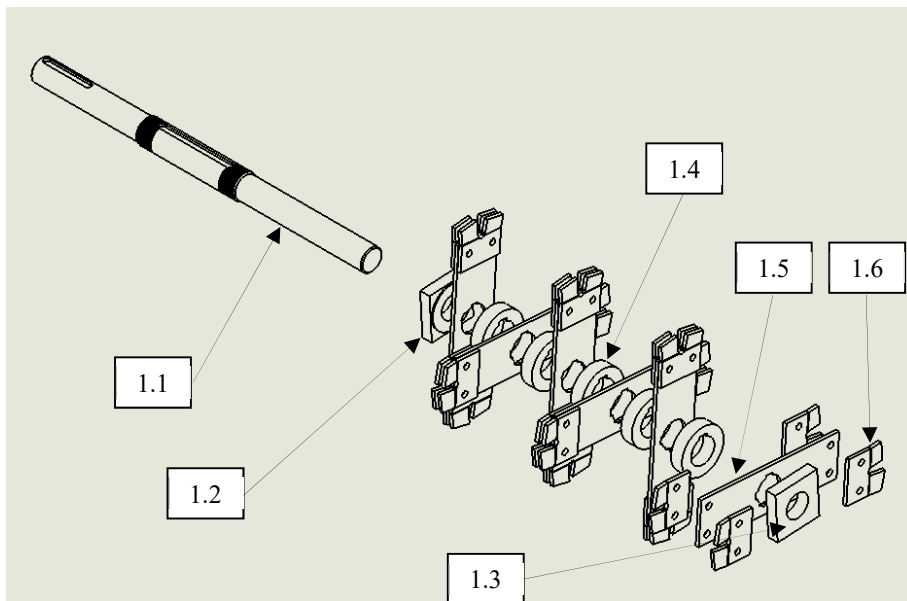
**Note :** The motor leads must be disconnected and connected by a qualified electrician.

1. Remove the V-belts as described previously.
2. Secure the motor with proper lifting equipment and unscrew the hold down bolts.
3. Fit new motors and line up properly.
4. Tighten hold down bolts.
5. Fit pulley on shaft and line up.
6. Test direction.
7. Fit V-belts and tension as described previously.

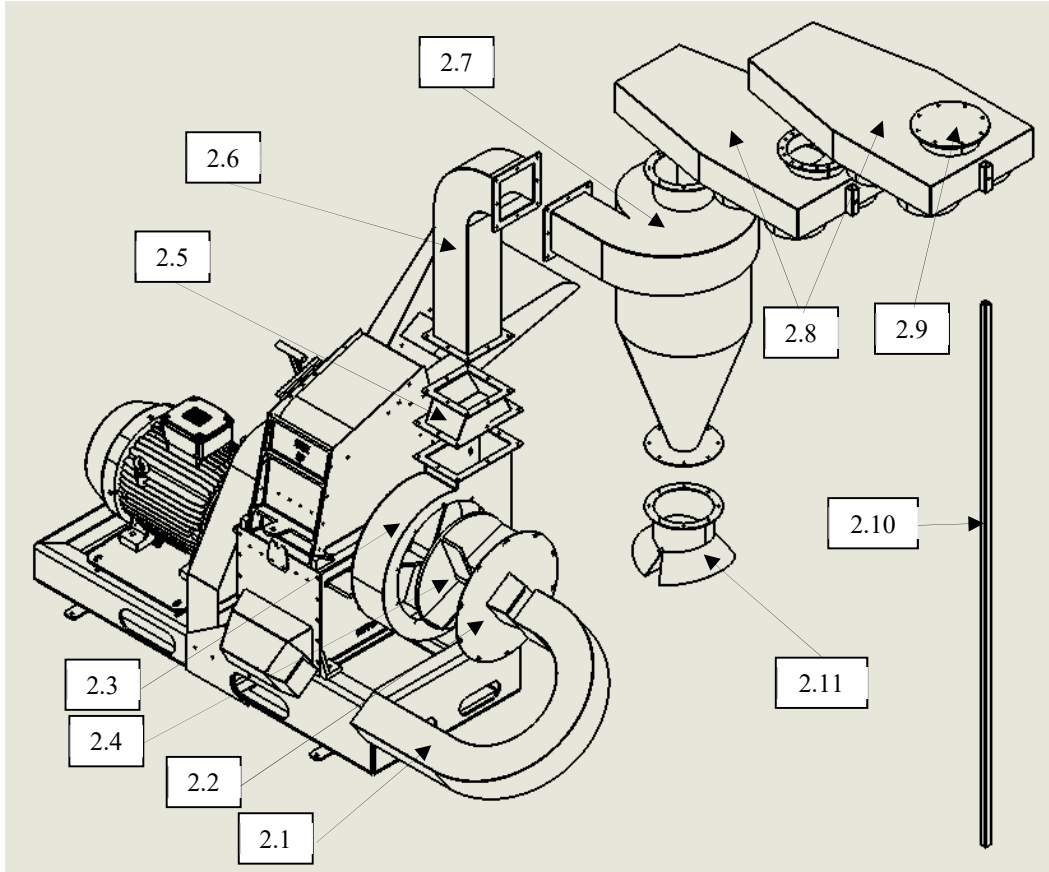
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

**5. Spare parts and Parts identification:**

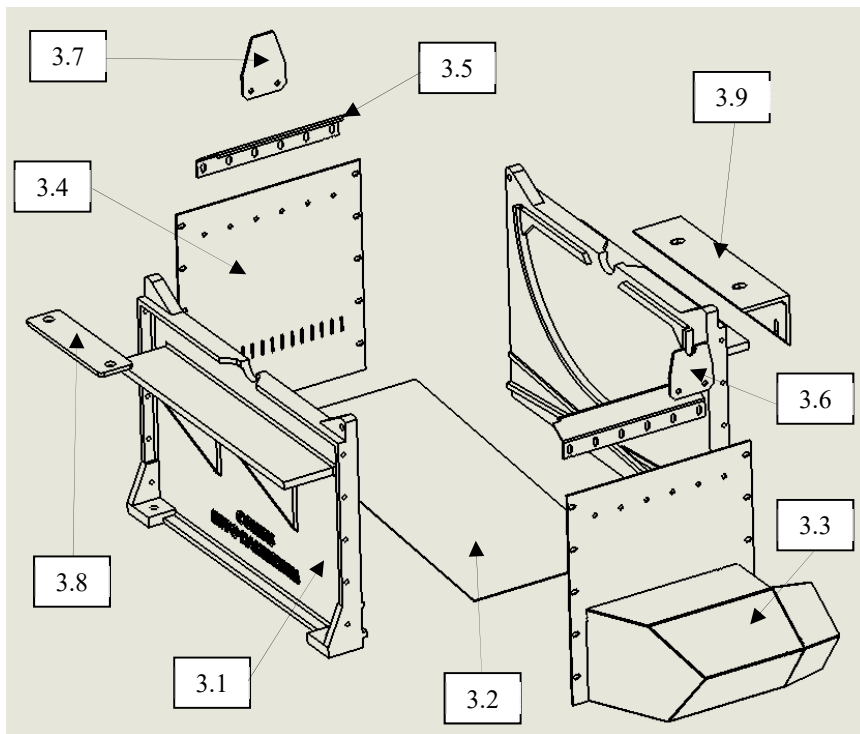
**5.1 Parts Identification**



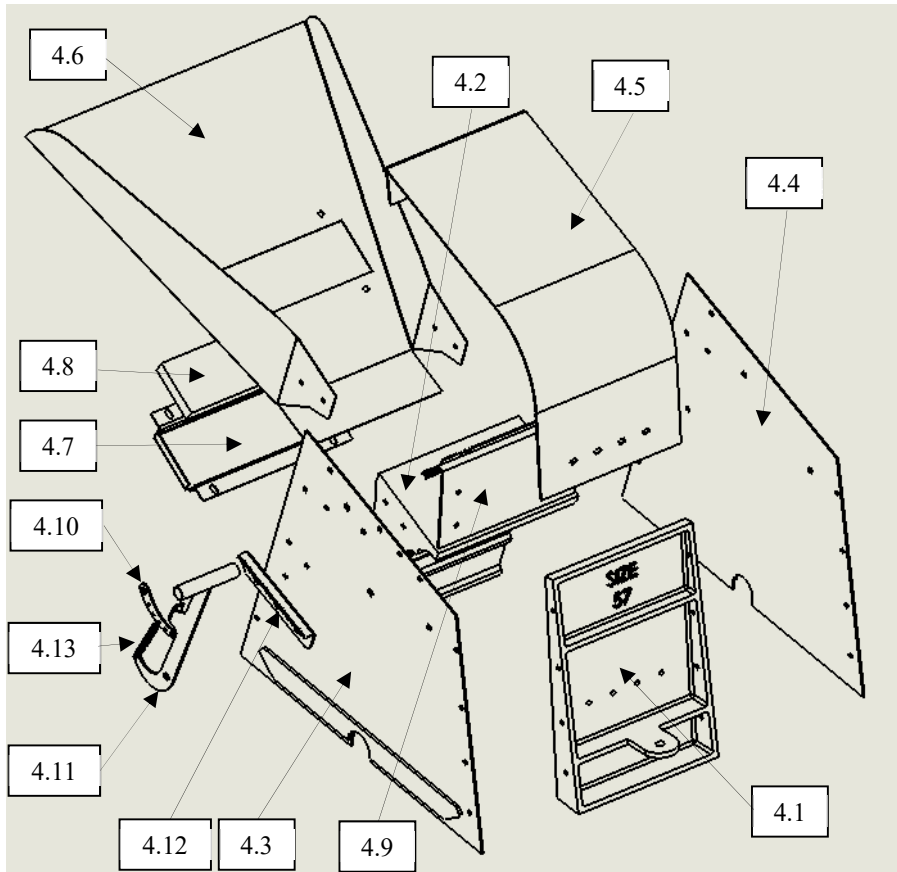
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.



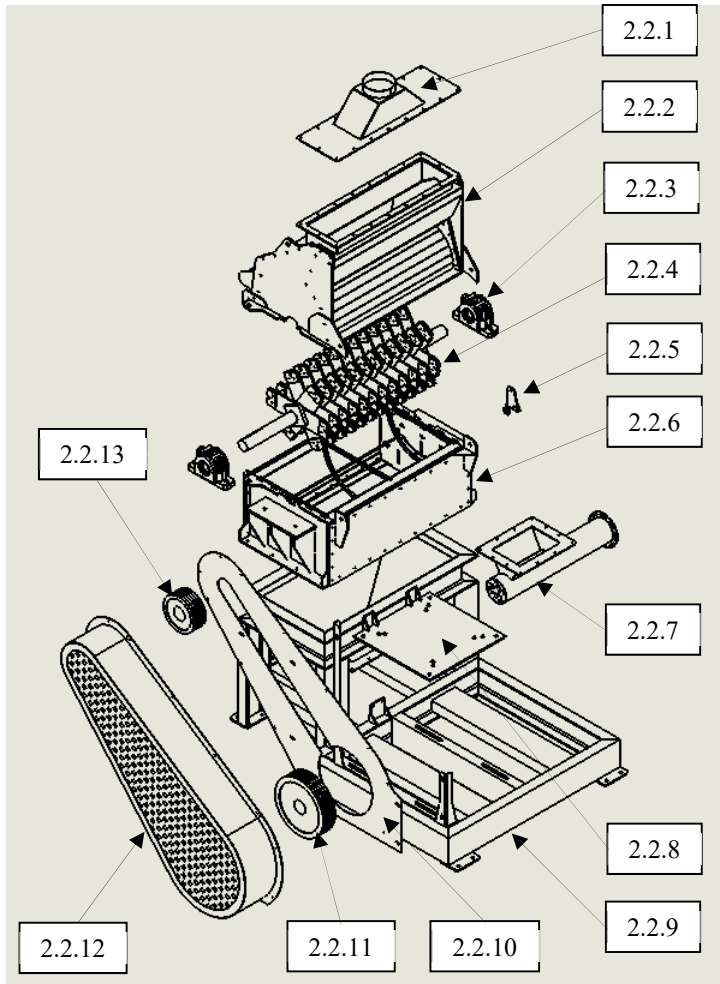
**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.



**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

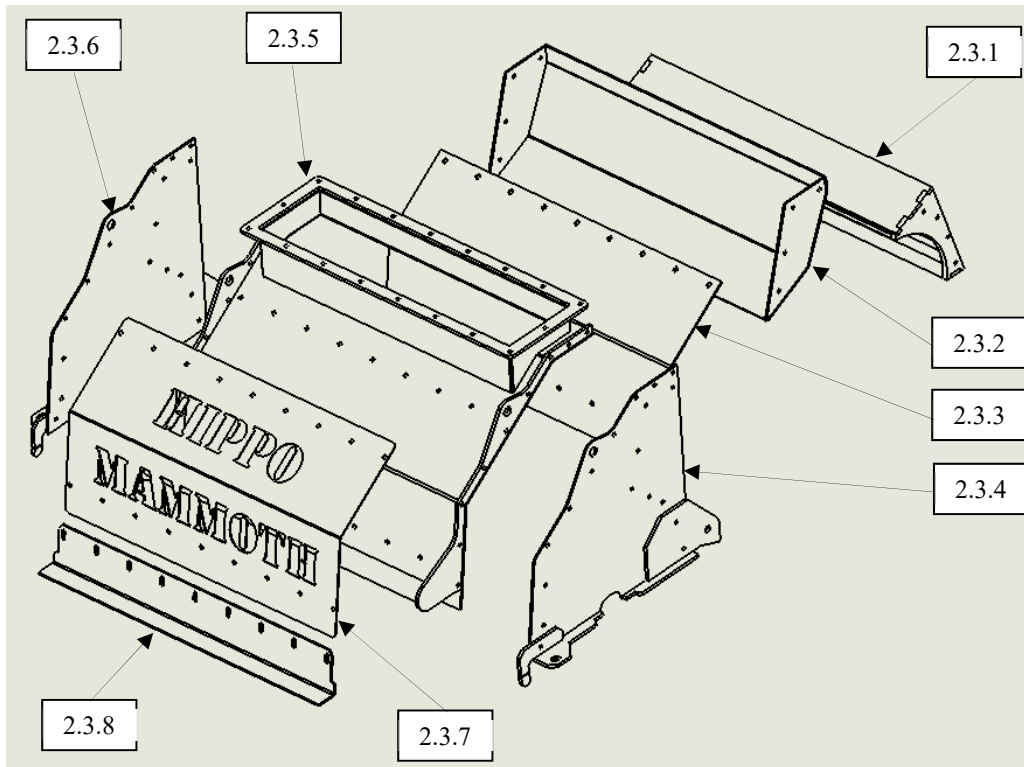


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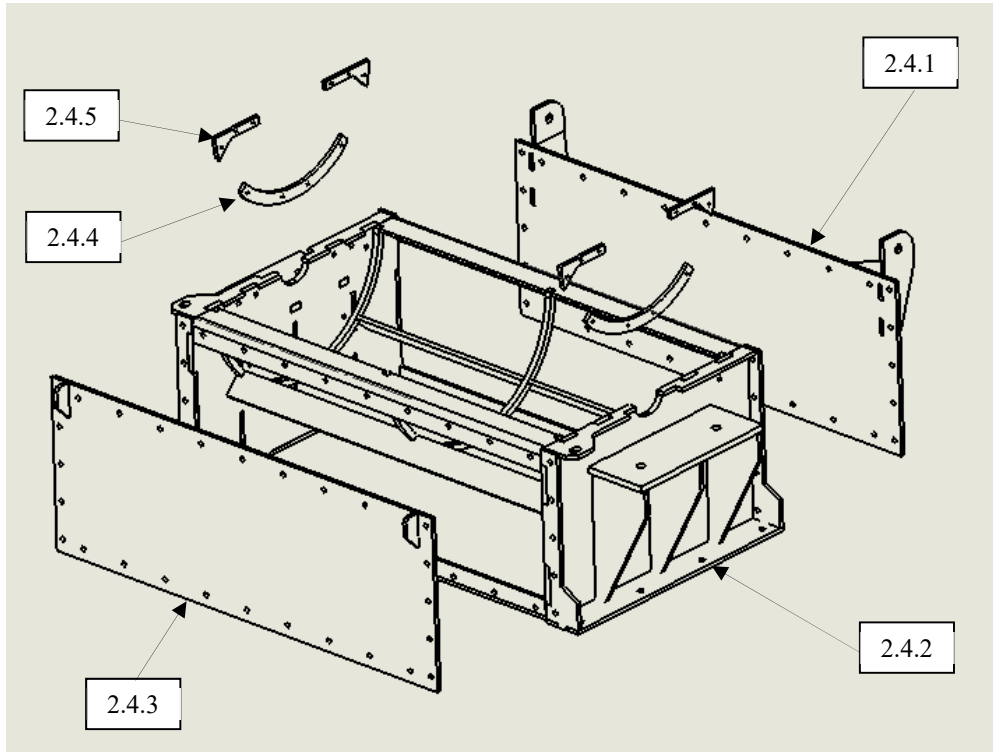




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**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.



**5.2 Spare parts List:**

Spares List – Hippo Baby, 1, 1.5							
Item	Part Description	Baby	QTY	Hippo 1	QTY	Hippo 1.5	QTY
	<b>Drive:</b>						
	Motor	4 kW, 380, 4 Pole	1	7.5 kW, 380, 4 Pole	1	11 kW, 380, 4 Pole	1
	Motor Pulley	250/2 SPZ	1	315/2 SPZ	1	315/3 SPZ	1
	Motor Taper Lock	2012/28	1	2012/38	1	2517/42	1
	Mill Pulley	71/2 SPZ	1	100/2 SPZ	1	100/3 SPZ	1
	Mill Taper Lock	1108/25	1	1610/40	1	1610/40	1
	V-Belt	1600 SPZ	2	1450 SPZ	2	1390 SPZ	3
	Bearing Housing	SNU506	2	SNU509	2	SNU509	2
	Bearing Sleeve	H206	2	H209	2	H209	2
	Bearing Locating Ring	FR8/62	2	FR 5.5/85	2	FR 5.5/85	2
	Bearing	1206 KC3	2	1209K	2	1209K	2





**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

	<b>Milling Rotor:</b>						
1.1	Shaft		1		1		1
1.2	Left hand Square Nut	Small	1	Medium	1	Medium	1
1.3	Right hand Square Nut	Small	1	Medium	1	Medium	1
1.4	Spacers	Small	5	Medium	5	Medium	7
1.5	Beater Centre	Small	6	Medium	6	Medium	8
1.6	Hammers	Small	24	Medium	24	Medium	32
	<b>Suction:</b>						
2.1	Lobster Tail		1		1		1
2.2	Fan Inlet		1		1		1
2.3	Fan Box		1		1		1
2.4	Fan Casting		1		1		1
2.5	Fan Adapter		1		1		1
2.6	Giraffe Neck		1		1		1
2.7	Cyclone		1		1		1
2.8	Dust Box		1		1		1
2.9	Dust Box Cover		---		1		1
2.10	Support Stand		1		1		1
2.11	Bag-Off		1		1		1
2.12	Dust Socks		1		4		4
	<b>Hippo Bottom:</b>						
3.1	Side Casting		2		2		2
3.2	Bottom Plate		1		1		1
3.3	Suction Box		1		1		1
3.4	Back Plate		1		1		1
3.5	Seal Plate		2		2		2
3.6	Latch		1		1		1
3.7	Hinge Stop Plate		1		1		1
3.8	Bearing Spacer		1		1		1
3.9	Fan Mounting		1		1		1
	<b>Hippo Top:</b>						
4.1	Front Casting		1		1		1
4.2	Back Casting		1		1		1
4.3	Side Plate (Left)		1		1		1
4.4	Side Plate (Right)		1		1		1
4.5	Top Plate		1		1		1
4.6	Inlet Hopper		1		1		1

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4.7	Magnet Box		----		1		1
4.8	Magnet		----		2		2
4.9	Capacity Flap		1		1		1
4.10	Capacity Flap Arm		----		1		1
4.11	Capacity Arm		----		1		1
4.12	Capacity Setting Plate		----		1		1
4.13	Capacity Arm Spring		1		1		1

<b>Spares List – Hippo 47,57,69</b>							
<b>Item</b>	<b>Part Description</b>	<b>Hippo 47</b>	<b>QTY</b>	<b>Hippo 57</b>	<b>QTY</b>	<b>Hippo 69</b>	<b>QTY</b>
	<b>Drive:</b>						
	Motor	18.5 kW, 380, 2 Pole	1	30 kW, 380, 2 Pole	1	45 kW, 380, 2 Pole	1
	Motor Pulley	224/3 SPA	1	224/4 SPA	1	224/6 SPA	1
	Motor Taper Lock	2517/42	1	3020/55	1	3020/55	1
	Mill Pulley	160/3 SPA	1	160/4 SPA	1	160/6 SPA	1
	Mill Taper Lock	2517/40	1	2517/40	1	2517/40	1
	V-Belt	1150 SPA	3	1150 SPA	4	1220 SPA	6
	Bearing Housing	SNU511	2	SNU511	2	SNU511	2
	Bearing Sleeve	H311	2	H311	2	H311	2
	Bearing Locating Ring	9.5/100	2	9.5/100	2	9.5/100	2
	Bearing	22211 K	2	22211 K	2	22211 K	2
	<b>Milling Rotor:</b>						
1.1	Shaft		1		1		1
1.2	Left hand Square Nut	Large	1	Large	1	Large	1
1.3	Right hand Square Nut	Large	1	Large	1	Large	1
1.4	Spacers	Large	5	Large	9	Large	15
1.5	Beater Centre	Large	6	Large	10	Large	15
1.6	Hammers	Medium	24	Medium	40	Medium	64
	<b>Suction:</b>						
2.1	Lobster Tail		1		1		1
2.2	Fan Inlet		1		1		1
2.3	Fan Box		1		1		1
2.4	Fan Casting		1		1		1
2.5	Fan Adapter		1		1		1
2.6	Giraffe Neck		1		1		1
2.7	Cyclone		1		1		1
2.8	Dust Box		2		2		2

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2.9	Dust Box Cover		1		1		1
2.10	Support Stand		1		1		1
2.11	Bag-Off		1		1		1
2.12	Dust Socks		8		8		8
	<b>Hippo Bottom:</b>						
3.1	Side Casting		2		2		2
3.2	Bottom Plate		1		1		1
3.3	Suction Box		1		1		1
3.4	Back Plate		1		1		1
3.5	Seal Plate		2		2		2
3.6	Latch		1		1		2
3.7	Hinge Stop Plate		1		1		2
3.8	Bearing Spacer		1		1		1
3.9	Fan Mounting		1		1		1
	<b>Hippo Top:</b>						
4.1	Front Casting		1		1		1
4.2	Back Casting		1		1		1
4.3	Side Plate (Left)		1		1		1
4.4	Side Plate (Right)		1		1		1
4.5	Top Plate		1		1		1
4.6	Inlet Hopper		1		1		1
4.7	Magnet Box		1		1		1
4.8	Magnet		2		2		2
4.9	Capacity Flap		1		1		1
4.10	Capacity Flap Arm		1		1		1
4.11	Capacity Arm		1		1		1
4.12	Capacity Setting Plate		1		1		1
4.13	Capacity Arm Spring		1		1		1



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<b>Spares List – Hippo L63 &amp; Mammoth</b>					
<b>Item</b>	<b>Part Description</b>	<b>L63</b>	<b>QTY</b>	<b>Mammoth</b>	<b>QTY</b>
	<b>Drive:</b>				
	Motor	55 kW, 380, 4 Pole	1	75/90 kW, 380, 4 Pole	1
	Motor Pulley	400/5 SPB	1	400/5 SPB	1
	Motor Taper Lock	3535/70	1	3535/70 / 3535/80	1
	Mill Pulley	250/5 SPB	1	250/5 SPB	1
	Mill Taper Lock	3535/75	1	3535/75	1
	V-Belt	3350 SPB	5	3750 SPB	5
	Bearing Housing	SNU517	2	SNU517	2
	Bearing Sleeve	H317	2	H317	2
	Bearing Locating Ring	FR 12.5/150	2	FR 12.5/150	2
	Bearing	22217CDKE4C3	2	22217CDKE4C3	2
	<b>Milling Rotor:</b>				
1.1	Shaft		1		1
1.2	Left hand Square Nut	Large	1	Large	1
1.3	Right hand Square Nut	Large	1	Large	1
1.4	Spacers	Extra Large	21	Extra Large	35
1.5	Beater Centre	Extra Large	22	Extra Large	36
1.6	Hammers	Large	88	Large	144
	<b>Mill Assembly</b>				
2.2.1	Inlet		1		1
2.2.2	Mill Top		1		1
2.2.3	Bearing		2		2
2.2.4	Mill Rotor		1		1
2.2.5	Safety Switch & Bracket		1		1
2.2.6	Mill Bottom		1		1
2.2.7	Mill Outlet		1		1
2.2.8	Motor Base		1		1
2.2.9	Mill Base		1		1
2.2.10	Belt Guard Backing Plate		1		1
2.2.11	Motor Pulley		1		1
2.2.12	Belt Guard		1		1
2.2.13	Mill Pulley		1		1
	<b>Mill Top</b>				
2.3.1	Milling Plate – Back		1		1

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2.3.2	Inlet Shute		1		1
2.3.3	Milling Plate – Front		1		1
2.3.4	Side Plate – Right		1		1
2.3.5	Mill Top Body		1		1
2.3.6	Side Plate – Left		1		1
2.3.7	Name Plate		1		1
2.3.8	Front Seal Plate		1		1
	<b>Mill Bottom</b>				
2.4.1	Mill Bottom Back Plate		1		1
2.4.2	Mill Bottom Frame		1		1
2.4.3	Mill Bottom Front Plate		1		1
2.4.4	Screen Guide - Bottom		2		2
2.4.5	Screen Guide - Top		4		4

Three sizes hammers are used. “Small hammers” for the Baby only, “Medium Hammers” for the size 1 and 1 ½ and 47 and 57 and 69. “Large hammers” for the L63 and Mammoth. Always specify which hammer are ordered and include your mill model with the order.

## **User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

### **6. Maintenance:**

Maintaining your ABC Hansen Hippo Mill ensures trouble free milling, a long life of your machine, less down time, less spare parts used.

- Greasing bearings:  
The mill has several greasing points. Ensure you know where all these points are and grease all bearings regularly. DO NOT OVERGREASE. If running two full shifts, a greasing every second week should be fine.
- Tighten V-Belts regularly. Do not over-tighten and do not keep slack belts. Slack belts induces slipping, poor power transfer and fast wear. Over tightening places stress on bearings and also reduces belt life.
- Tighten all bolts and nuts on the mill regularly. There is some lot of vibration on all mills. Bolts and nuts will loosen.
- Ensure bearings are locked and remain in place. When becoming unlocked it may damage the mill box structure.
- Ensure especially the main roller bearings are checked during operation and feel the bearing covers to detect heat build-up.
- Before every shift check that the feed roller at the intake hopper is clean, steel is removed from the magnet trap inside the hopper and thrust bearing at the back of the shaft is not heating up.
- Keep the inside of the mill clean. Remove the cover and clean the mill thoroughly. Ensure however that no water enters past the seals on the shaft tube and replace these seals when it is no longer providing absolute protection to the bearing and tubular bearing housing. This is the main cause of failure on this mill and should be well monitored. High quality sealed high speed bearings are used on the main mill shaft. These bearing should be checked by removing the shaft from the tubular housing from time to time and should be felt for heat build-up during and after each and every shift.
- Check the front bearing seals after every cleansing and ensure not water penetrates past these seals.
- Keep electric motors clean of dust to avoid heat build-up and motor bearing damage.



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**7. Trouble shooting:**

**7.1 V- Belts :**

- Tighten V-Belts and check condition. Slipping of belts is usually caused by the overfeeding. A high screeching noise may signal this. Switch off the power to the mill immediately, close the feed to the mill completely, inspect the V belts by opening the protective cover, check whether the belts are still in working condition and that the belts were not over-tightened. If they are worn or have been over-tightened, replace if necessary, tighten belts without over-tightening it.
- Ensure there is no oil or other liquids on the V belt.
- Ensure the correct type of V-belt has been retrofitted – V-belt width and depth are specified and should match the pulley type.

**7.2 Capacity drops or particle size is coarser than before:**

- Plate mill:
    - The plates are worn and should either be turned around or replaced.
    - Feed is blocked – check intake after shutting down the machine.
  - Pin mill:
    - The pins are worn and many need replacing.
    - Feed is blocked – check intake after shutting down the machine.
  - Stone mill:
    - Stones need dressing – grooves in the stones are not letting sufficient product through.
    - Stones have a film over it a result from milling oily, sugary or too moist product. Run some grit or sand through the mill to remove this film.
  - Hammer mill:
    - Screens are blocked – Clean screens before every shift.
    - Hammers are worn away – turn hammers around or replace hammers – sharp edges are required for good milling.
- In respect of all actions:
- The product has more moisture than before.
  - Power is not stable – this is usually only temporary but may damage the electric motor.
  - V-belts slip.
  - A bearing is in the process to seize. Check heat on all bearings.
  - Feed is not constant.

**7.3 Motor will not start:**

- Check that machine is turned on either at main control panel or at wall socket.
- Check main power is on and available.
- Check isolator at machine is on.
- If a single phase motor, and motor hums when switched on, the capacitor may need replacing.
- If the above is possible, call an electrician for further investigation which should include:
  - Check incoming power and outgoing power at panel and at switchgear to machine.
  - Check that all contacts in main panel are tight and wires in its place.
  - Check plug connections at wall socket.
  - Check isolator connections.

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- Check reset on overload works and overload is not burnt.
- Check contactor draws in and is not burnt.
- Check motor input voltage and voltage and amp output.

Always find mechanical reason for failure and address this which could be:

- Seized bearing.
- Blockage.
- Overload has tripped too many times due to over loading of machine or too much feed and too small milling aperture.
- Product being milled is too wet or not suitable – it may create too much heat & clog the action.

**7.4 Noises.... Can be the cause of:**

- Loose cover plates – a small problem easily fixed.
- Loose attachments – stop immediately and check all fasteners on milling actions. This is a most serious problem as milling takes place at high speed – stop and check machine immediately.
- A V-belt has moved due to a loose taper lock on the motor or mill shaft and is shaving against a cover. Stop machine and immediately repair.
- Pulleys are not aligned wearing away the belt and creating a noise. Stop machine and align pulleys.
- A bearing is in the process of seizing. Stop machine check heat on all bearings. Bearing can normally accept relatively high heat – often in excess of 80 degrees centigrade.
- Product is jamming and the V-belts are slipping – stop feed immediately and when noise disappears run at lower capacity – see top notes about losing capacity.
- The machine’s floor anchor(s) are loose.
- A stone or metal trash has found its way into the milling chamber – stop mill immediately, when safe clear away the trash and ensure trash particles has not been ground and has found its way into your final product – immediately pay attention to pre-cleaning system, install de-stoner etc.
- Motor fan is making contact with the fan cover. Stop and move cover to previous free position.

DO THIS WHEN MACHINE IS STATIONARY AND HOPPER EMPTY. ISOLATE ELECTRICAL POWER FROM MACHINE ENTIRELY BEFORE WORKING ON ANY PART OF THE MACHINE. DO NOT PLACE HANDS INSIDE HOPPER WHILE MACHINE IS WORKING.

TAKE NOTE OF WARNING SIGNS ON THE MACHINE.

**8. Warranty:**

Your mill is warranted for a period of 12 months from date of invoice to you as final user.

**8.1 Procedure for warranty claims**

Please refer to standard terms and conditions of sale and installation for exact warranty terms.

General procedure for warranty claims.

On all Southern Africa Development Community claims:

- 1) Complete the above form and return via email/fax, in reasonable time before planned delivery date of the machine.



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- 2) Do not incur the cost to ship the machine unless instructed so by the technical department at ABC Hansen in Pretoria or by your dealer.
- 3) If instructed to ship the machine to the factory, the machine must be delivery to 216 Propshaft Rd, Samcor Park, Pretoria, South Africa – at client’s cost.
- 4) No machine will be accepted at the factory without the warranty claim form having been signed by ABC Hansen in advance and written instructions have been issued to ship the machine to the factory.
- 5) All callouts and on site quotable repairs is deemed payable in full after the repair is completed. On site documentation must be accepted and signed before the work will commence.
- 6) The machine will then be inspected and a decision will be made as to whether it is a warranty claim, or not. The client will then be informed either that it is a warranty claim and that the repairs will be done for free, or a quote will be submitted for the repairs to the machine. Before any repairs will be done the quote will have to be accepted by the client. Should the client opt not to accept the quote, the machine will be prepared so that the client can arrange to pick it up within 5 working days. If the machine remains at the factory or dealer, for longer than 5 working days after the quote has been rejected, ABC Hansen or the dealer may charge storage fees at R350/US\$25 per day.
- 7) If the repairs are done under warranty, ABC Hansen will then repair the machine, at no cost to the customer, test the machine again, and then ship the machine, at ABC Hansen Africa’s cost – back to the client, or his nearest town/courier depot or dealer.
- 8) All telephonic repairs and problems can be invoiced, if not a valid warranty.
- 9) All telephonic assessments are done with utmost care. Yet telephonic pre-assessments can change when the equipment is physically checked by our qualified technicians.

**8.2 Warranty claim form**

Updated 11/26/18

- 1) Date \_\_\_\_\_
- 2) Name of person completing form \_\_\_\_\_
- 3) Name/Brand of unit \_\_\_\_\_
- 4) Name of original/invoiced customer \_\_\_\_\_
- 5) Type of unit \_\_\_\_\_
- 6) Serial number of unit \_\_\_\_\_
- 7) Invoice number for unit \_\_\_\_\_
- 8) Invoice date for unit \_\_\_\_\_
- 9) Current location of unit \_\_\_\_\_
- 10) Purpose that the unit was used for \_\_\_\_\_
- 11) Hours that the unit ran (+/-) \_\_\_\_\_
- 12) Age of machine \_\_\_\_\_ YEARS \_\_\_\_\_ MONTHS
- 13) Describe failure in as much detail as possible and if possible attach a picture of failure to this form as well as a picture of the site showing the position of the failed part in relation to other equipment feeding it and transferring it again. Describe the conditions under which machine has operated. Did the machine



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operate in the position where it was originally installed or was it moved to another position? What was the product being processed? What screens were in the machine? What was the ambient temperature that the machine was operating in?

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Electric drive units only

- 14) Type of starter: DOL/StarDelta/Softstart \_\_\_\_\_
  - 15) Factory installed starter: YES/NO \_\_\_\_\_
  - 16) Self-installed starter: YES/NO \_\_\_\_\_
  - 17) Overload protection on control panel or distribution board: YES/NO
  - 18) Rating of overload protection: \_\_\_\_\_ AMPS
  - 19) Please enclose a picture of the switchgear controlling this specific machine. If a DOL switch only, please open the switch and picture the contactor and overload clearly. No claim can be entertained without this information.
  - 20) If an electric motor has failed, please answer the following questions clearly:
    - a. Was the switchgear supplied by us? YES NO
    - b. Was the electrical installation done by us? YES NO
    - c. What is the KW size of the motor? \_\_\_\_\_ KW
    - d. What is the amperage indicated on the motor? \_\_\_\_\_ Amps
    - e. What was the amperage set on the overload? \_\_\_\_\_ Amps
    - f. Did the motor burn ie. does it smell like burning and was there smoke detected prior to failure? YES NO
    - g. Can the motor armature be turned by hand? YES NO
    - h. If the connector cavity is opened, can any signs of burning be detected ie. are there any marks inside the connector box? Please send a picture of this. YES NO
    - i. If a high level switch after a conveyor, please ensure this is not sending on/off signals to the motor continuously YES NO
    - j. Does the feed cable to the motor heat up or is it running excessively hot? YES NO
    - k. Did you or your electrician check whether the cables are tightened properly inside the control panel and on the motor itself in order not to cause single phasing on a three phase motor? YES NO
    - l. Please provide details of your electrician: Name \_\_\_\_\_  
 Mobile number: \_\_\_\_\_ (include country code)
- Kindly note, all electric motor claims shall be vetted by the supplier and his verdict shall be final. No warranty exists on switchgear. YES NO

**User manual:** ABC Hansen Hippo Mill, Model BABY, 1, 1½, 47, 57, 69, L 63, Mammoth.

Diesel/Petrol drive units only

- 21) Type of engine: \_\_\_\_\_
- 22) Hours that motor ran (+/-) \_\_\_\_\_
- 23) Was oil level checked regularly \_\_\_\_\_
- 24) Was water level checked daily \_\_\_\_\_
- 25) Was unit serviced as per instruction card? \_\_\_\_\_
- 26) Is it possible to bring the machine back to our premises? If not, please give a reason;  
\_\_\_\_\_

General

- 27) Are you willing to pay for a call-out to your premises if it is established that the claim is unwarranted?  
YES NO

(Our warranty terms state that the machine or item must be returned to our premises at the buyer's cost and the repair will then take place at our premises if the warranty claim is accepted. The return freight to the customer premises is also at the customer cost.) No other charges would be levied if the warranty claim is accepted.)

- 28) Was an operations manual provided? YES NO
- 29) Did you or your operator receive any training? YES NO
- 30) Could the failure have been caused by:
  - a. Incorrect switchgear? YES NO
  - b. Tramp steel or other foreign matter in the raw material YES NO
  - c. Incorrect operation ie. too high a load? YES NO
  - d. Different product processed than originally design YES NO
  - e. A failing pre-or post control/machine in the system YES NO

Any other reason you may think of? \_\_\_\_\_

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**9. Finally Safety again:**

NOTE: ALWAYS ENSURE COVER PLATES ARE RETURNED TO POSITION WHEN IT HAS BEEN TAKEN OFF TO MAKE ADJUSTMENTS OR TO INSTALL ANOTHER MILLING ACTION.

- Hippo mills operate with motor sizes from 2.2kW single phase up to 90 kW. Only let qualified electrician work on the electrical system.
- NEVER try to fix an electrical problem without the main power supply being isolated and off and the power socket removed if directly coupled.
- NEVER start a mill with the top cover open.
- NEVER start a mill without the V-Belt guards being in place.
- NEVER start a mill without proper electrical switchgear in place.
- NEVER start a mill without the top feeding cover at the mill chamber entrance in place.
- NEVER place any body part, especially hands or arms near the intake into the milling chamber.
- NEVER wear loose clothing when operating the mill.
- NEVER put a hand or body part near the pulley, shaft, fan or any revolving part.
- NEVER open the top cover unless the mill has been turned off and has come to a complete stop and the power properly isolated.
- NEVER introduce a product into the mill that has not been tested before and found suitable for hammer milling. Some materials may not only damage the mill, but may be toxic or poisonous when heated through milling friction. Other products may have dust particles that may be harmful to your health. Some products when milled may constitute a fire hazard.
- Always use dust masks when milling products causing dust.
- OPTIONALLY a rotary valve may be supplied to separate air and solids after the cyclone and, with filter bags, can ensure a very low dust emission from the mill.
- Change the dust filter bags supplied with every mill when it becomes clogged or blind and can't longer be cleaned through beating or vacuum sucked. Back-pressure would result in the blower not operating efficiently and not conveying the product properly. Only use filter bags supplied by your Hippo dealer.
- Mills are in standard execution NOT supplied with switchgear or cable. Ensure the correct cable in terms of size and type is used. Only have a qualified electrician work on the electrical system of the mill.

**Contact your local agent if in doubt of any procedures or instructions, or contact Hippo Mills at [info@abchansenafrica.co.za](mailto:info@abchansenafrica.co.za) or +27 12 803 0036 for any other information, or if you are unable to contact your agent**