# Operating Manual

## Cowhide Dehairing Machine

CAT 157 CHD



Revision 1
MEFE

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# 1. Product Overview & Specifications

## 1.1 Intended Use

The MEFE Cowhide Dehairing Machine is a commercial-grade roller scraping unit designed for small-to-medium abattoirs and hide processing facilities. Constructed from food-grade 304 stainless steel, the machine automates hair removal from pre-scalded cowhide and sheepskin through mechanical roller action.

It replaces manual scraping to increase throughput, deliver consistent hide quality, and meet strict commercial food-processing hygiene standards.

## 1.2 Key Features

- **Hygienic Construction:** Built from heavy-duty 304 stainless steel to resist corrosion and simplify washdowns.
- **Remote Control Console:** Equipped with a separate, freestanding electrical control box to keep switches clear of the primary wet-work zone.
- **Integrated Spray System:** Features a top-mounted fresh water inlet for continuous rinsing during operation.

## 1.3 Technical Specifications

| Motor Power | Power Supply | Body & Frame | Roller Width | Max Hide Width |
|---|---|---|---|---|
| 4.5kW | 400V, 50Hz, 3-Phase | 304 Stainless Steel | 1650mm | 1400mm |

# 2. Safety Instructions

## 2.1 General Safety Rules

- **Read Before Operating:** All operators and maintenance personnel must read and understand this manual before installing, operating, or servicing the MEFE Cowhide Dehairing Machine (CAT-157-CH01).
- **Authorised Personnel Only:** Only trained, authorised staff may operate this equipment. Keep untrained personnel, visitors, and unauthorised staff clear of the work zone.
- **Personal Protective Equipment (PPE):** Operators must wear appropriate PPE at all times, including slip-resistant waterproof boots, waterproof aprons, cut-resistant gloves (where permitted around feed zones), and eye protection.
- **No Loose Clothing or Jewellery**: Do not wear loose sleeves, untied hair, rings, watches, or lanyards that could catch in the rotating scraping rollers.

## 2.2 Mechanical & Entanglement Hazards

**DANGER — ROTATING ROLLERS & CRUSH HAZARD**

- Never place hands, arms, or tools near the feed opening or rotating scraping rollers while the machine is powered on.
- Never bypass, remove, or tamper with fixed safety guards, covers, or interlocks during operation.
- Always keep your body clear of the discharge area when hides exit the machine.

## 2.3 Electrical & Wet-Area Safety

**WARNING — HIGH VOLTAGE (400V 3-PHASE) & WET ENVIRONMENT**

- **Licensed Electrician Required:** All hardwiring, plug installations, and electrical repairs must be performed by a licensed electrician in accordance with AS/NZS 3000 (Australian/New Zealand Wiring Rules).
- **Mandatory Earthing:** Ensure the machine frame and freestanding control console are properly earthed before connecting power.
- **Control Box Placement:** Keep the freestanding electrical control box positioned away from direct water spray and floor pooling.
- **High-Pressure Washdowns:** Never spray water directly onto the drive motor, electrical junction boxes, or the freestanding control console during cleaning.

## 2.4 Lockout / Tagout **(LOTO)** Procedure

**Regulatory & Safety Compliance:** This procedure is designed in accordance with Australian Work Health and Safety (WHS) requirements, **AS/NZS 4836** (Safe working on or near low-voltage electrical installations and equipment), and **AS/NZS 4024** (Safety of machinery). For international markets, it aligns with **ISO 14118** (Safety of machinery — Prevention of unexpected start-up) and **OSHA 29 CFR 1910.147** (Control of hazardous energy). Only trained and authorised personnel may carry out this procedure.

Before performing any cleaning, unjamming, blade/scraper inspection, or maintenance:

1. **Notify Personnel:** Inform all nearby operators and supervisors that the machine is being shut down for service.
2. **Stop the Machine:** Press the red Emergency Stop (E-Stop) button on the control console and turn the main power switch to **OFF**.
3. **Isolate Power:** Switch the wall isolator (or main disconnect) to **OFF** and unplug the power cord if applicable.
4. **Apply Lock and Tag:** Attach a personal Lockout/Tagout (LOTO) padlock and a completed "Out of Service / Danger" tag to the isolator switch. Each worker servicing the machine must apply their own individual lock.
5. **Release Stored Energy:** Wait for all moving parts (such as blades or scrapers) to come to a complete stop, and relieve any residual pneumatic, hydraulic, or thermal energy.
6. **Verify Zero Energy:** Press the machine's **START** button to confirm it cannot be powered on before touching any internal components. Return controls to **OFF** after testing.

**Restoring Power:** Before removing locks and tags, ensure all tools are removed, guards are securely reinstalled, and all personnel are clear of the machine.

# 3. Installation & Pre-Operation Setup

## 3.1 Positioning & Floor Mounting

- **Level Surface**: Position the **MEFE Cowhide Dehairing Machine** on a flat, level, non-slip concrete floor capable of supporting the machine's weight and dynamic operating loads.
- **Drainage Access:** Locate the unit near a floor drain or gutter system to handle continuous rinse water and hair discharge during operation.

- **Clearance:** Leave at least **1.0 metre** of unobstructed clearance around the feed side, discharge side, and drive motor for safe operator access and washdowns.
- **Control Console Placement:** Position the freestanding electrical control console within easy reach of the operator, keeping it clear of direct spray paths and wet discharge zones.

### 3.2 Electrical Connection (400V 3-Phase)

**WARNING — LICENSED ELECTRICIAN REQUIRED**
All electrical connections must be completed by a licensed electrician in compliance with AS/NZS 3000 (Australian/New Zealand Wiring Rules) and local workplace regulations.

1. **Verify Supply Voltage:** Confirm the site power supply matches the motor nameplate rating (400V, 50Hz, 3-Phase).
2. **Earth Connection:** Securely connect the protective earth (ground) conductor to the machine chassis and control console.
3. **Phase Rotation Check:** Briefly jog the motor during initial commissioning to verify that the scraping rollers rotate in the correct direction (inward toward the scraping drum). If the rollers run in reverse, have the electrician swap any two phase wires at the isolator.

### 3.3 Water Supply Connection

1. **Connect Fresh Water Line:** Attach a clean water supply hose or rigid pipe to the top-mounted water spray inlet.
2. **Install Isolation Valve:** Fit a manual ball valve near the machine inlet so the operator can easily regulate spray flow during processing.
3. **Check Spray Coverage:** Open the water valve briefly before starting the motor to confirm water distributes evenly across the full 1650 mm roller width without leaks.

### 3.4 Pre-Operation Inspection Checklist

Before every shift, the operator must perform the following checks:

- **Guards & Covers:** Verify all covers, chain/belt guards, and safety shields are securely bolted in place.
- **Roller Condition:** Inspect the scraping rollers and rubber/steel paddles for damage, cracks, or trapped debris from previous shifts.
- **Control Console & E-Stop:** Check that the freestanding control box housing is dry, cables are undamaged, and the red Emergency Stop button twists/pulls out smoothly.
- **Work Area:** Ensure the floor around the machine is free of tripping hazards, loose hoses, or excess fat/water buildup.

## 4. Operating Instructions

### 4.1 Hide Preparation (Pre-Scalding)

Proper scalding is essential for effective hair removal without damaging the hide.

- **Scalding Temperature:** Submerge the cowhide or sheepskin in hot scalding water at 60°C – 65°C until the hair follicles loosen.
- **Test Before Feeding:** Pull a small tuft of hair by hand to confirm it releases cleanly before transferring the hide to the dehairing machine.
- **Avoid Over-Scalding:** Do not exceed recommended scalding times or temperatures, as over-scalding can cook the skin surface and cause tearing during roller scraping.

## 4.2 Starting the Machine

1. **Confirm Pre-Operation Checks:** Ensure all guards are fitted, the work zone is clear, and the Emergency Stop button on the control console is released.
2. **Turn On Water Supply:** Open the fresh water supply valve so water sprays evenly across the scraping rollers.
3. **Power On:** Turn the main isolator switch to **ON**, then press the green **START** button on the freestanding control console.
4. **Warm-Up Run:** Allow the rollers to run empty with water flowing for 30–60 seconds to verify smooth rotation and listen for unusual mechanical noises.

## 4.3 Feeding & Dehairing Procedure

**DANGER — KEEP HANDS CLEAR OF ROLLERS**
Never push hides into the machine by hand past the feed lip, and never wear loose gloves that could be pulled into the rotating rollers.

1. **Position the Hide:** Lay the pre-scalded hide flat on the feed table with the hair side facing the scraping rollers.
2. **Feed Evenly:** Guide the leading edge of the hide smoothly and squarely into the feed opening until the rollers grip and draw it in automatically.
3. **Process One Hide at a Time:** Allow the hide to pass completely through the scraping rollers before feeding the next piece. Do not fold, bunch, or stack multiple hides together.
4. **Inspect & Re-Run if Necessary:** Collect the dehaired hide at the discharge side. If stubborn patches of hair remain, re-wet or re-scald briefly and feed the hide through a second pass.

## 4.4 Clearing Jams

If a hide jams or wraps around a roller during operation:

1. **Stop Immediately:** Press the red Emergency Stop button on the control console.
2. **Isolate Power:** Turn off and lock out the main power isolator (**LOTO**) before opening any cover or reaching near the rollers.
3. **Remove Obstruction:** Carefully free the hide using a hook or blunt tool—never use bare hands near scraper edges.
4. **Inspect & Restart:** Close all guards, restore power, and perform a brief empty test run before resuming production.

## 4.5 Normal Shutdown

1. **Finish Processing:** Allow the final hide to exit the discharge chute completely.
2. **Flush Rollers:** Keep the machine running with clean water spraying for **1–2 minutes** to flush loose hair and debris off the rollers.
3. **Stop Motor:** Press the red **STOP** button on the control console.
4. **Shut Off Utilities:** Close the water supply valve and turn the main electrical isolator switch to **OFF**.

# 5. Cleaning & Preventative Maintenance

## 5.1 Daily Post-Shift Cleaning Procedure

**DANGER — ISOLATE POWER BEFORE CLEANING**
Always follow the **Lockout/Tagout (LOTO)** procedure (turn off main power and lock the isolator) before removing guards or cleaning near the scraping rollers.

**WARNING — PROTECT ELECTRICAL COMPONENTS**
Never aim high-pressure water hoses directly at the drive motor, shaft seals, bearing housings, or the freestanding electrical control console.

1. **Flush Loose Debris:** Rinse the machine frame, feed table, discharge chute, and rollers with warm water (**50°C – 60°C**) to remove hair, fat, and tissue residue.
2. **Apply Food-Grade Detergent:** Spray a commercial, food-safe alkaline foaming detergent approved for 304 stainless steel across all product-contact surfaces. Allow **5–10 minutes** of contact time.
3. **Scrub Surfaces:** Use a non-metallic, stiff-bristle brush or scouring pad to scrub the scraping rollers, scraper paddles, and internal frame corners. Never use steel wool or carbon steel brushes, as they will cause rust contamination on stainless steel.
4. **Final Rinse:** Thoroughly rinse all detergent residue away with clean potable water.
5. **Sanitise & Air Dry:** Apply an approved food-grade sanitiser according to chemical supplier instructions, leave guards slightly open if safe to do so for airflow, and allow the machine to air dry completely.

## 5.2 Preventative Maintenance Schedule

| Interval | Component | Maintenance Task |
|---|---|---|
| **Daily** | Scraping Rollers and Paddles | Inspect for trapped hair, torn rubber paddles, or bent metal scrapers. Clean thoroughly after each shift. |
| **Daily** | Water Spray Bar | Check spray nozzles for blockages or uneven water flow and clear debris as needed. |
| **Weekly** | Drive Belts / Chains | Isolate power, remove drive guard, and check belt/chain tension and wear. Adjust or replace if slipping. |
| **Weekly** | Bearings & Grease Points | Lubricate all roller bearings using food-grade (NSF H1) waterproof grease. Wipe away excess grease. |
| **Monthly** | Fasteners & Frame | Check all bolts, motor mounts, and safety guard fasteners for vibration loosening and tighten securely. |
| **Monthly** | Electrical Console & Cables | Inspect power cables, glands, and the control box seal for moisture ingress, cracks, or wear. |
| **6 months** | Gearbox / Reducer | Check gearbox oil level and condition. Replace oil according to gearbox manufacturer specifications. |

### 5.3 Storage & Extended Shutdown

If the machine will be out of service for an extended period:

- Complete a full deep clean, sanitisation, and drying cycle.
- Apply a light coat of food-grade mineral oil or stainless steel protectant to unpainted mechanical shafts and chains.
- Disconnect mains power and cover the control console to protect it from dust and washdown spray from adjacent equipment.

## 6. Troubleshooting

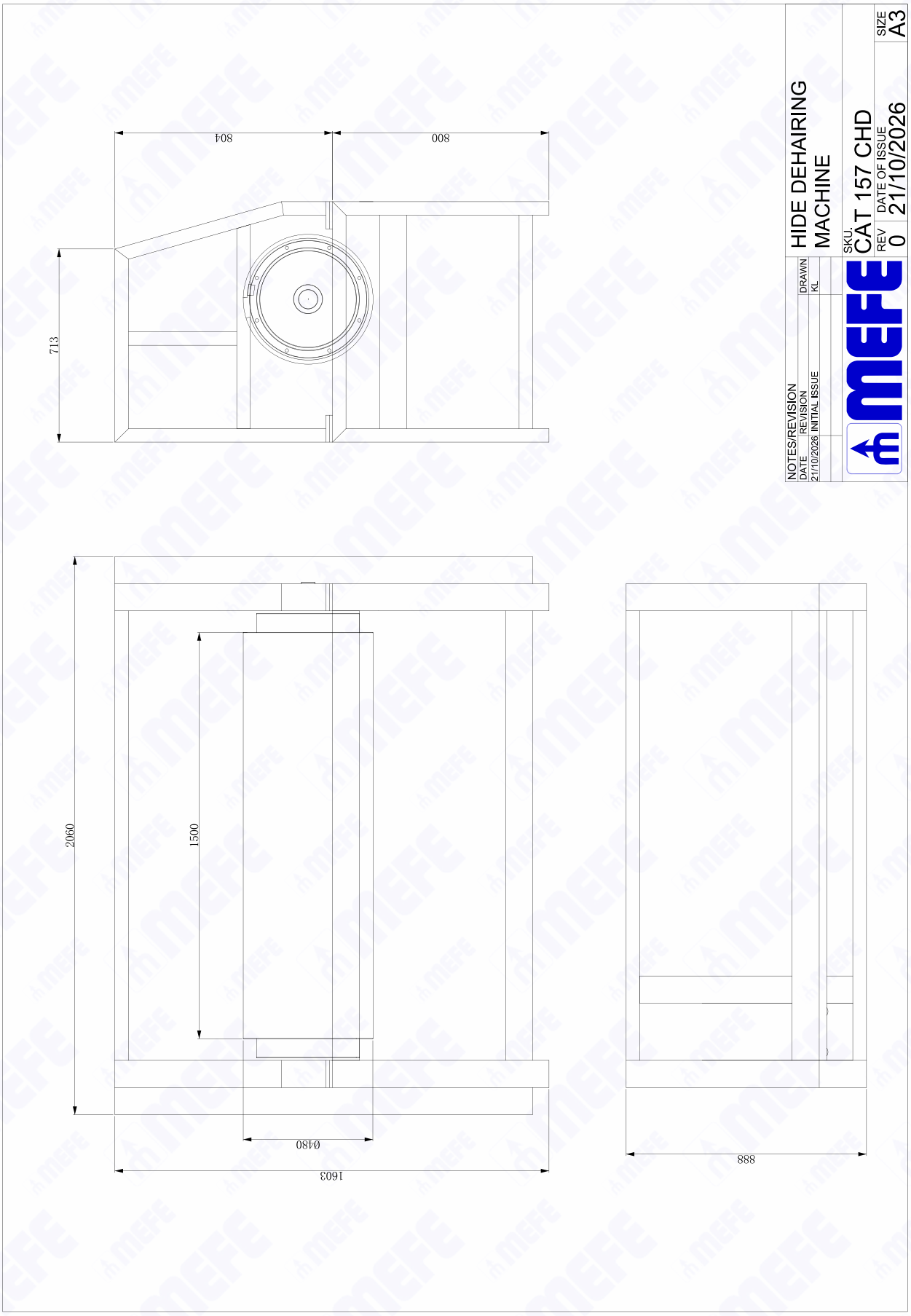
**WARNING — ISOLATE POWER BEFORE INSPECTING**
Always disconnect and lock out the main electrical power supply (LOTO) before opening guards, adjusting drive belts, or clearing jammed hides. All electrical fault-finding inside the control console must be performed by a licensed electrician.

### 6.1 Troubleshooting Guide

| Symptom / Problem | Possible Cause | Corrective Action |
|---|---|---|
| **Machine will not start when pressing START** | • Main wall isolator is turned OFF.<br>• Red Emergency Stop button is pressed in.<br>• Motor thermal overload relay has tripped.<br>• Missing phase or blown fuse in 400V supply. | • Turn the main isolator switch to ON.<br>• Twist/pull the E-Stop button to reset.<br>• Have an electrician inspect and reset the overload relay inside the control console.<br>• Have a licensed electrician check incoming 400V 3-phase power. |
| **Incomplete hair removal / patches of hair remain** | • Hide was under-scalded (water temperature too low or soak time too short).<br>• Insufficient water spray flow during scraping.<br>• Scraping paddles/blades are worn or damaged.<br>• Roller gap is out of adjustment. | • Verify scalding water is maintained at 60°C – 65°C and test hair release before feeding.<br>• Open the top water valve fully and clear blocked spray nozzles.<br>• Inspect and replace worn rubber paddles or bent metal scrapers.<br>• Adjust roller clearance to manufacturer specification. |
| **Hide tears or suffers surface damage** | • Hide was over-scalded (water too hot or soaked too long).<br>• Sharp burrs or damaged metal edges on scraping rollers.<br>• Hide fed folded or bunched into the rollers. | • Reduce scalding water temperature or immersion time.<br>• Isolate power, inspect rollers, and file smooth or replace damaged scrapers.<br>• Lay hides completely flat and feed squarely one at a time. |
| **Rollers stall or slip under load** | • Drive belts or chains are loose or worn.<br>• Multiple hides fed at once, overloading the rollers.<br>• Hair or fat buildup jamming the roller bearings. | • Isolate power, remove drive guard, and tension or replace belts/chains.<br>• Press E-Stop, lock out power, clear jam, and feed only one hide at a time.<br>• Clean roller ends thoroughly and lubricate bearings with food-grade grease. |

| | | |
|---|---|---|
| **Excessive vibration or grinding noise** | • Worn or dry roller bearings.<br>• Loose motor mounting bolts or frame fasteners.<br>• • Foreign object trapped inside the roller housing. | • Lubricate bearings with NSF H1 grease; replace noisy bearings immediately.<br>• Inspect and tighten all structural and motor mounting bolts.<br>• Isolate power and inspect the roller chamber for debris. |
| **Water leaking onto floor outside catch area** | • Blocked floor drain or discharge chute.<br>• Loose top water inlet fitting.<br>• Excessive water pressure causing overspray. | • Clear hair and debris from the discharge chute and facility drain.<br>• Tighten the hose clamp or thread sealant on the top spray inlet.<br>• Partially close the manual ball valve to regulate spray pressure. |

# 7. GA Diagram


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NOTES/REVISION
DATE REVISION
21/10/2026 INITIAL ISSUE
DRAWN
KL
HIDE DEHAIRING MACHINE
SKU.
CAT 157 CHD
REV
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DATE OF ISSUE
21/10/2026
SIZE
A3

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