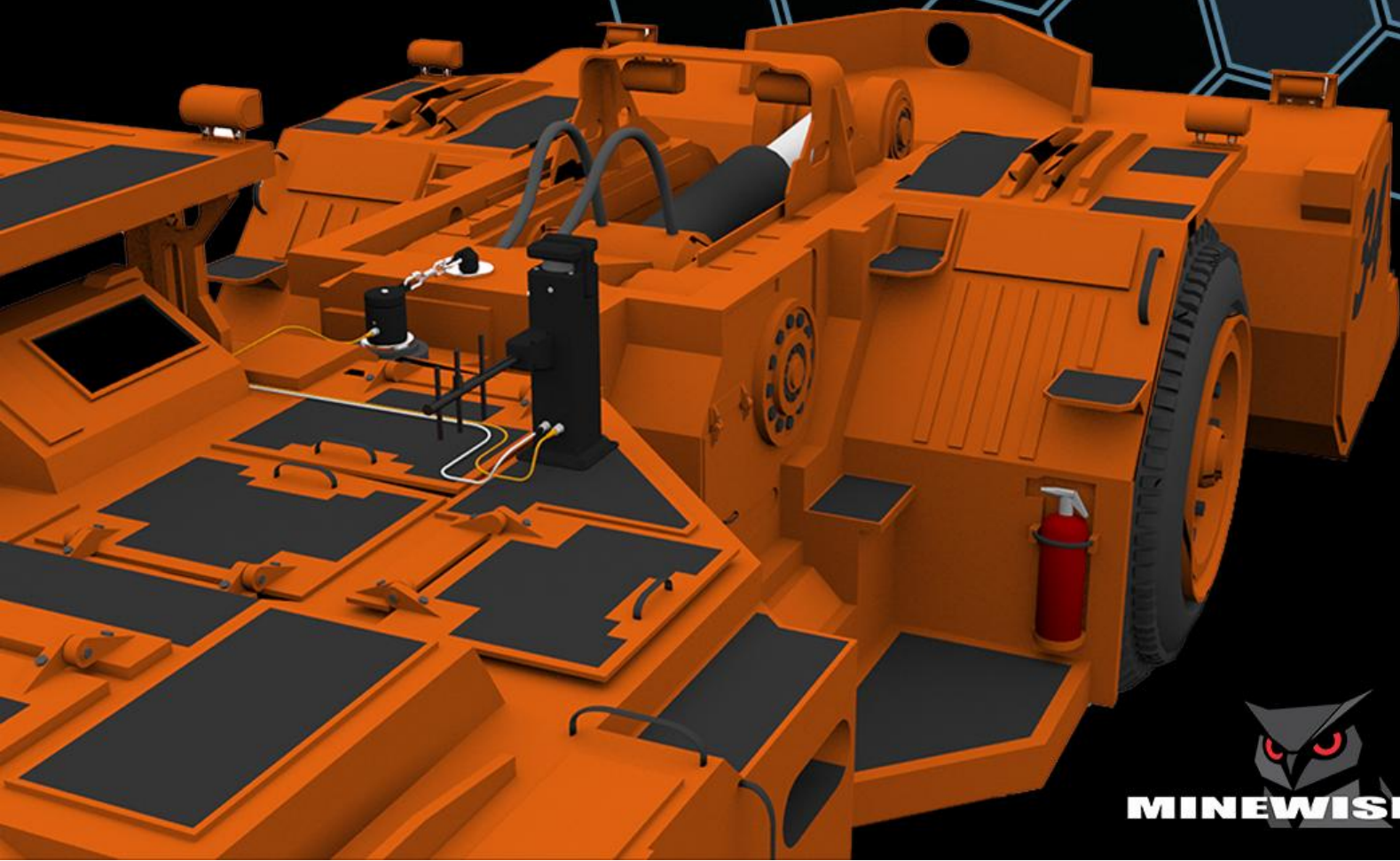


Ver 1.1

MINECAST

User Manual

**Smarter Vision
Better Mucking**



MINEWISE

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Disclaimer

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION. THIS DEVICE COMPLIES WITH INDUSTRY CANADA LICENSE-EXEMPT RSS STANDARD(S).
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NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT

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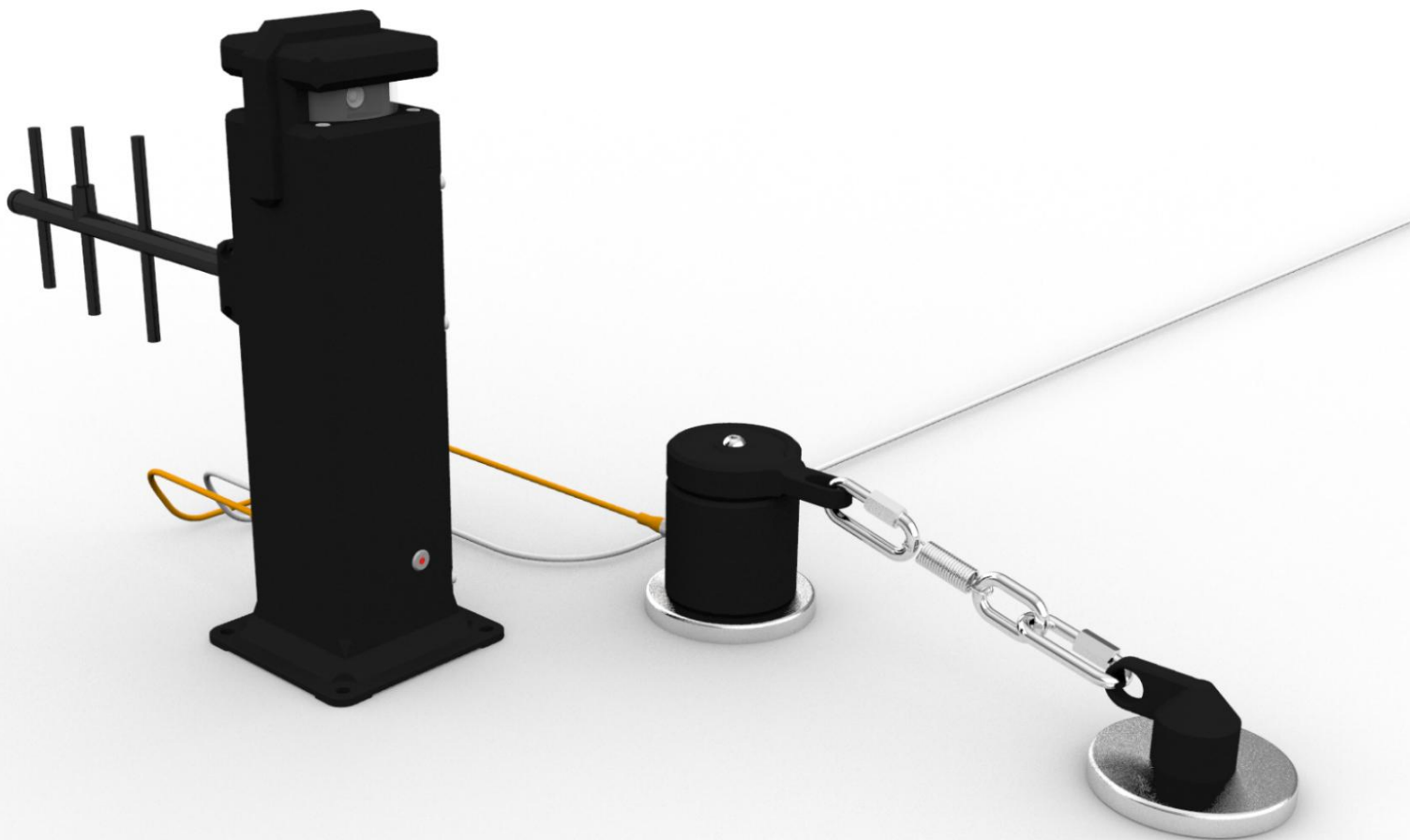
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THE ANTENNA(S) USED FOR THIS TRANSMITTER MUST BE INSTALLED TO PROVIDE A SEPARATION DISTANCE OF AT LEAST 20 CM FROM ALL PERSONS.



Description

MineCast is a rugged, wireless video system purpose-built for underground mining and remote LHD mucking. Its streamlined pedestal-mounted camera delivers real-time, high-resolution video using a robust RF transmission that outperforms traditional wireless in the most challenging underground environments. Designed for rapid deployment and relentless reliability, MineCast gives operators a clear, continuous view of the bucket — whether tramming, reversing, or digging blind. The system improves mucking precision, operator confidence, and site safety, helping you get more done with fewer risks.



1. Overview

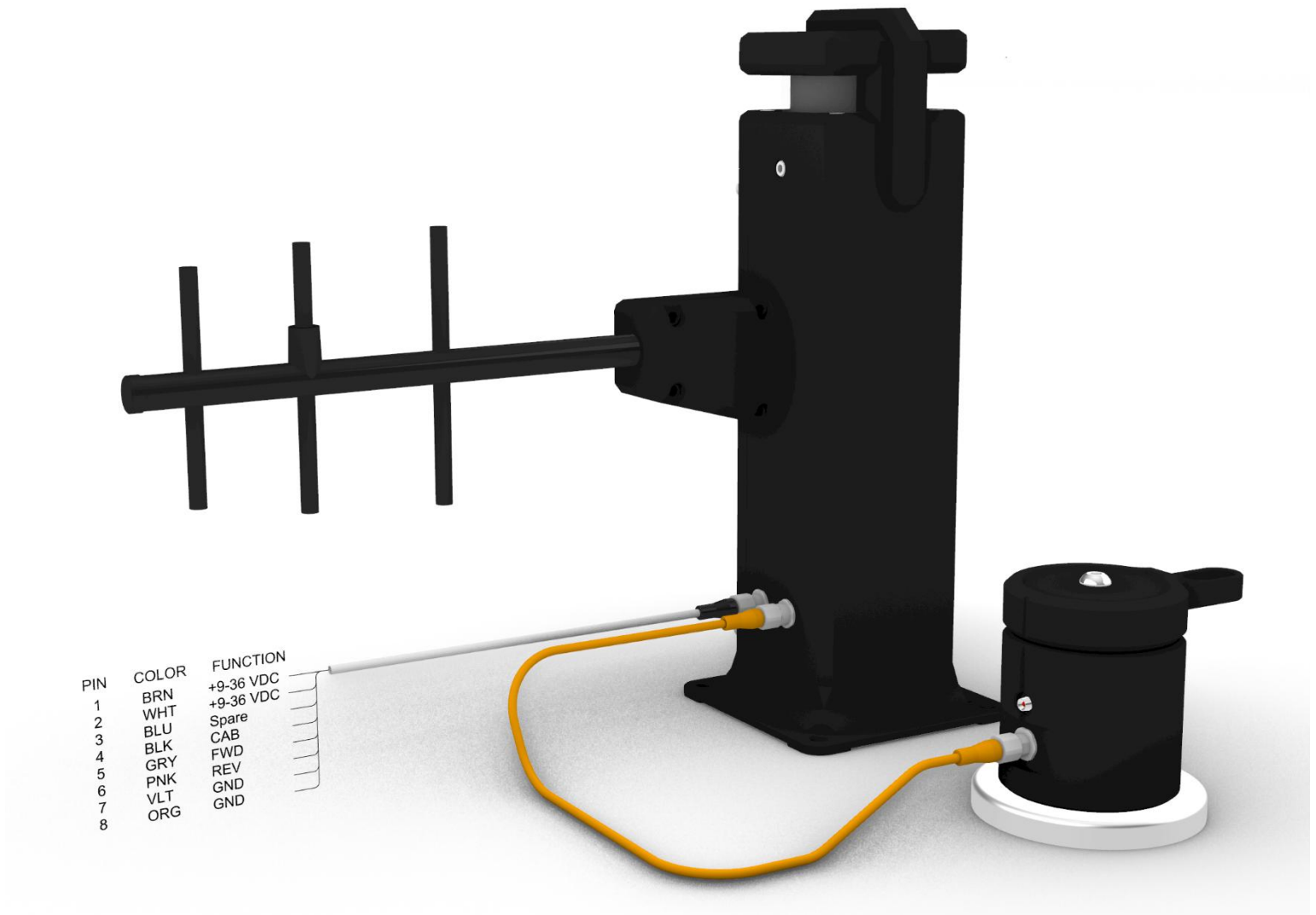
The **MineCast RF Video System** is designed for seamless integration with underground scooptrams from a variety of manufacturers. This guide outlines the installation steps for connecting the system using the provided **power harness**. Ensure that all wiring is correctly routed and secured before powering on the system.



2. Required Tools & Components

- **MineCast RF Video System**
- **Power Harness (Included)**
- **5A Fuse (Required for Power Input Protection)**
- Crimping Tool or Soldering Iron (Optional)
- Zip Ties or Cable Management Clips
- Multimeter (For Voltage Verification)

3. Connection Overview



4. Power and Ground Connections

The system operates on **9-36V DC**. Use the following wiring scheme to connect power:

Pin	Wire Color	Function
1	BRN (Brown)	+9-36V DC (Power)
2	WHT (White)	+9-36V DC (Power)
7	VLT (Violet)	Ground (GND)
8	ORG (Orange)	Ground (GND)

- Connect **BRN and WHT** to the **vehicle's positive power source (9-36V DC)** through a **5A fuse** for circuit protection.
- Connect **VLT and ORG** to the **vehicle's ground (GND)**.
- Use a **multimeter** to verify correct voltage before powering on the system.

5. Pan-Based Camera Control and Signal Logic

The MineCast system uses a **single pan-mounted camera** that automatically orients to the **forward** or **rear** position based on the scooptram's current direction of travel. Rather than switching between separate video feeds, the system pans smoothly between views, maintaining clear situational awareness without added complexity.

The directional control inputs are **latched**, meaning the camera remains in its last commanded position when the machine is in **neutral**. This prevents the system from defaulting to forward view and ensures uninterrupted visibility during gear changes.

Control Signal Overview

Pin	Wire Color	Function
3	BLU (Blue)	Spare Input (reserved for future use)
4	BLK (Black)	CAB (Optional Function / Third Position)
5	GRY (Gray)	FWD (Pan to Forward Position)
6	PNK (Pink)	REV (Pan to Reverse Position)



Connection Instructions

- **Pan to Forward View:** Connect **GRY (FWD)** to the scooptram's forward drive signal.
- **Pan to Rear View:** Connect **PNK (REV)** to the reverse drive signal.
- **Optional (CAB):** **BLK** can be used for a future camera position or custom function.
- **Spare Input (BLU):** **Pin 3** is not used in the current configuration but is available for expansion.

Latched Panning Behavior

- When shifting from **FWD to NEUTRAL**, the camera remains **facing forward**.
- When shifting from **REV to NEUTRAL**, the camera stays **facing rearward**.
- This preserves the operator's visual context and avoids automatic repositioning when direction signals are inactive.

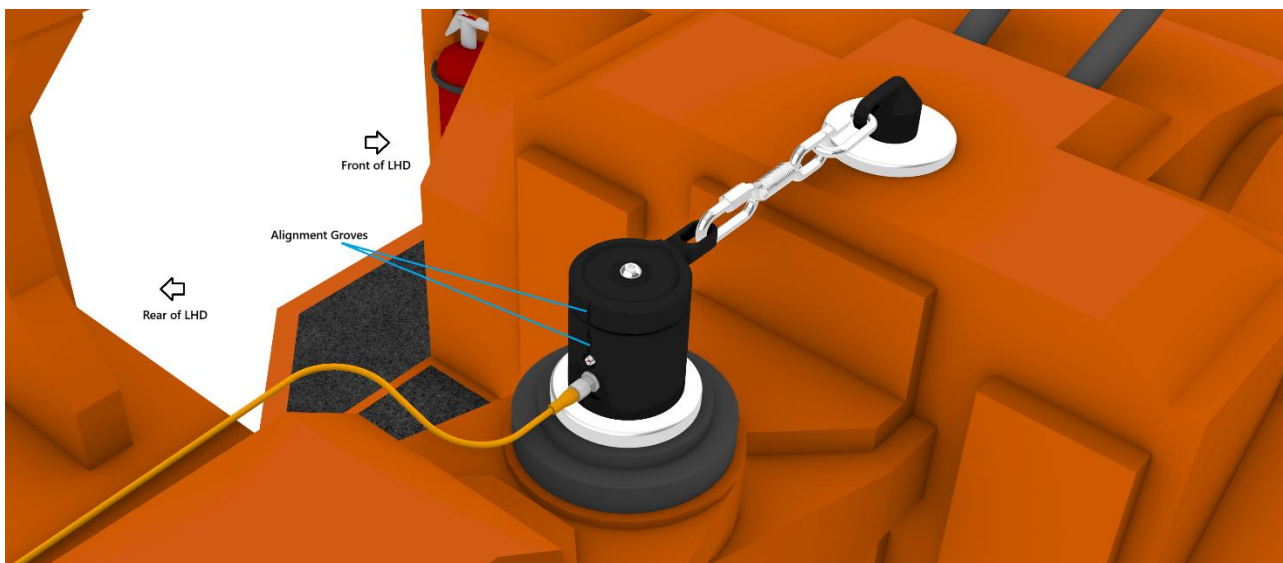
6. Mounting & Cable Routing

Steer Angle Sensor Installation

- The steer angle sensor mounts magnetically directly over the scooptram's steer hinge pin. For secure placement and repeatability:
- **Primary Mount:** Use the integrated magnetic base to position the sensor body centered over the hinge pin.
- **Secondary Anchor:** Route the included tie-line to the secondary magnetic mount to provide added stability and prevent rotation or dislodging during operation.

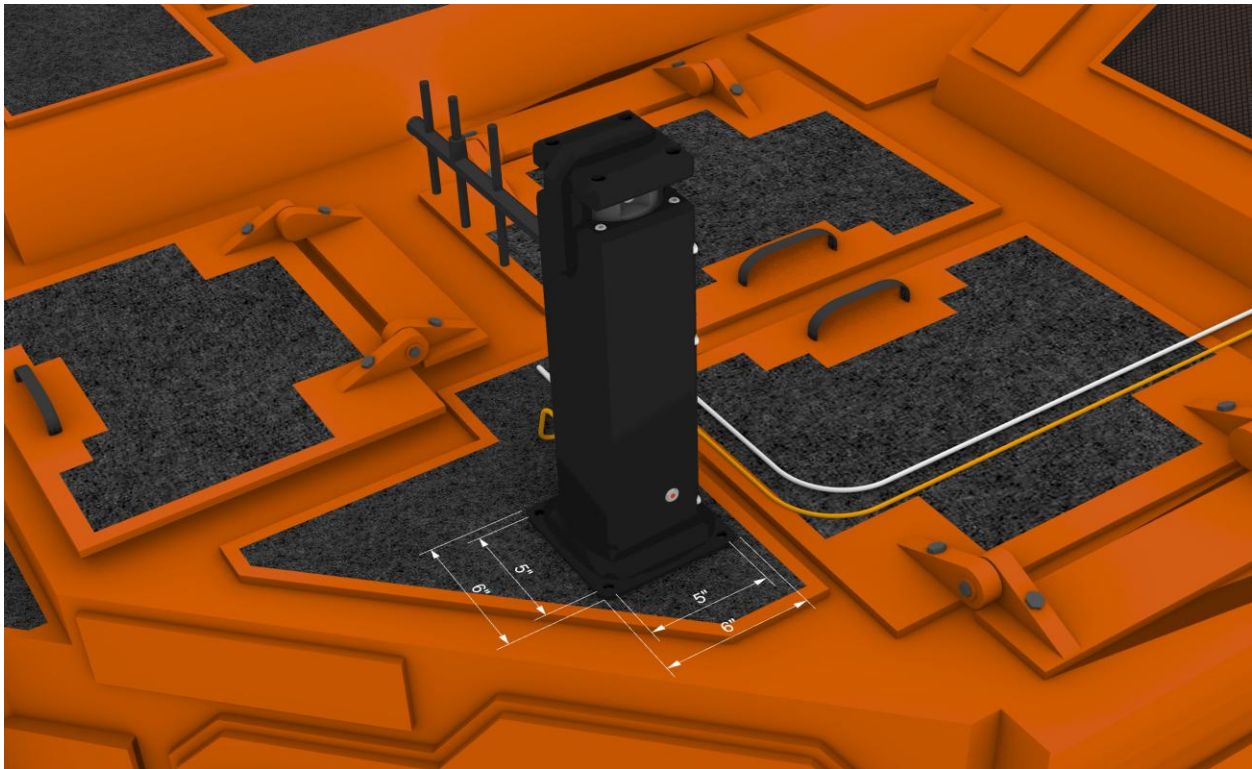
Alignment:

- The default (zero) position is with the cap tab pointing straight forward.
- Align the two grooves — one on the sensor body and one on the rotating cap — to ensure the sensor is in the neutral position before powering up.
- The base magnet should be mounted straight, aligned directly in front of the cap's tab and grooves for consistent directional reference.



Pedestal Mounting

- The MineCast camera pedestal secures to the machine using a four-bolt flange base:
- Permanent Option: Use the included weld-on tapped plate to allow for repeatable mounting and removal.
- Direct Mount Option: Bolt the pedestal directly to any suitable flat surface using the provided flange template.
- Secure Routing: Route the camera cable alongside the machine body, avoiding pinch points or moving parts. Use cable clips or zip ties to ensure it remains protected from vibration and mechanical wear.

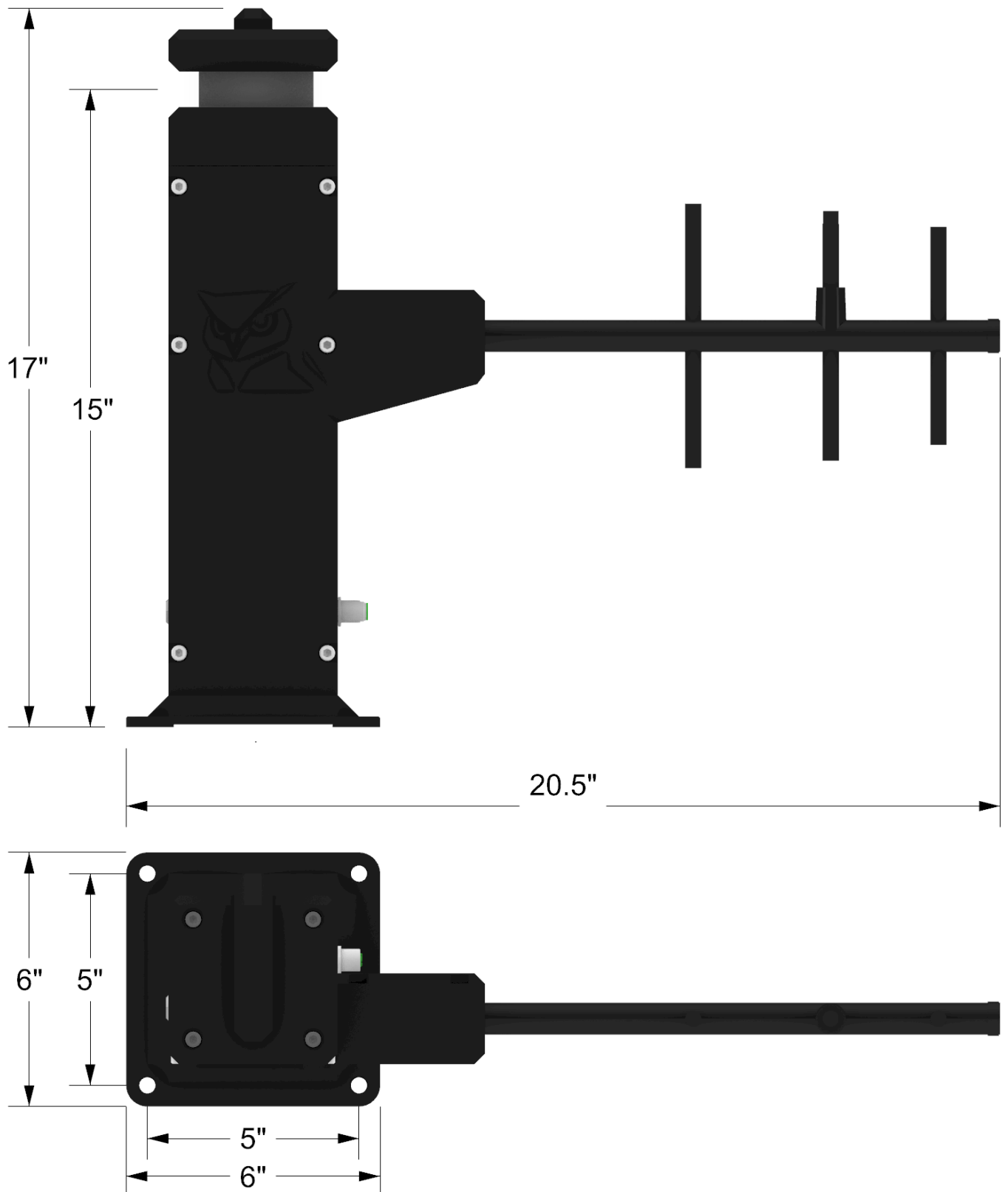


Cable Management Best Practices

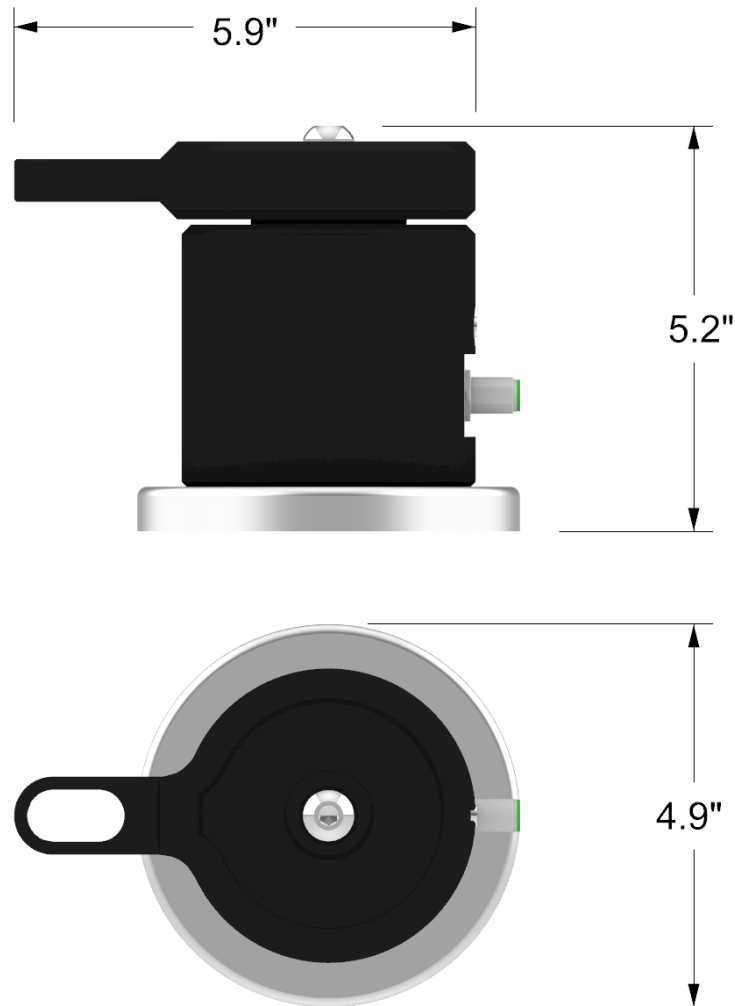
- Use zip ties or cable clips to secure all harnesses and prevent loose wires.
- Ensure proper strain relief near connectors and terminations.
- Avoid sharp bends, tension points, or areas exposed to moving parts or hydraulic action.



7. Pedestal Dimensions



8. Steer Angle Sensor Dimension



9. Camera positioning and Field of view (FOV)

Field of View & Camera Orientation

The MineCast RF Video System is designed to deliver optimal visibility for **remote scooptram operation** using a **single pan-mounted camera** on a fixed pedestal. Rather than relying on multiple fixed cameras, MineCast dynamically adjusts its **viewing direction** based on travel direction — forward or reverse — with customizable mounting flexibility to suit varying machine geometries.

Default Orientation

When the **steer axis is centered**, the camera aligns directly **forward** if the pedestal is mounted **square to the direction of travel** — that is, with the **antenna facing directly rearward**. In this configuration, the camera's **default pan position** provides a forward view that includes the bucket and path ahead, ideal for general mucking operations.

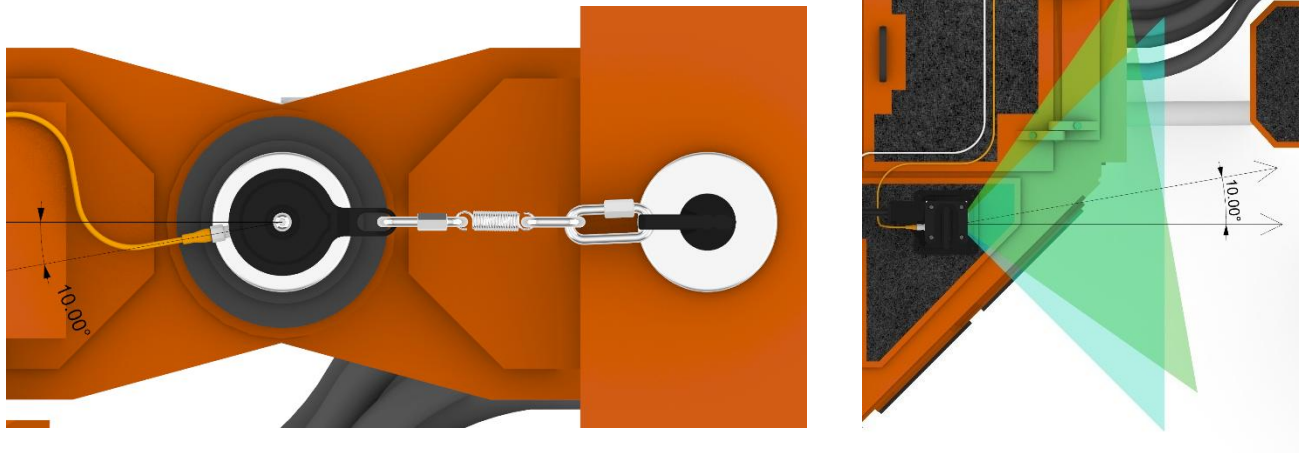


View Biasing (Optional Offset)

Operators often prefer to have the **bucket centered** more prominently in the frame, especially when the pedestal cannot be installed perfectly on the machine's centerline. To accommodate this, the camera's view can be biased using a simple rotational offset during installation:

- **Top-down clockwise rotation** of the pedestal base (viewed from above) will cause the **camera to pan slightly left** when centered.
- This bias helps compensate for **mounting asymmetry** and gives operators better visibility of the **left-side bucket edge**, which is especially useful for positioning and dumping in narrow drifts or against rib walls.

By fine-tuning the **physical mounting angle**, users can **optimize their field of view** without modifying system logic or controls.



A minor rotation of just a few degrees can significantly improve left-side coverage and center the bucket within frame for more confident loading.



10. Monitor Operation

The MineCast video receiver console is designed for field durability and ease of use in underground environments. Follow the instructions below for powering and positioning the monitor during operation.

Powering On

- Locate the momentary power button positioned on the back of the monitor, centered between the battery terminals.
- Press and release the button to power the monitor on. The system will initialize and display the active video feed once the receiver link is established.

Note: The monitor will not power on unless at least one charged battery is connected.

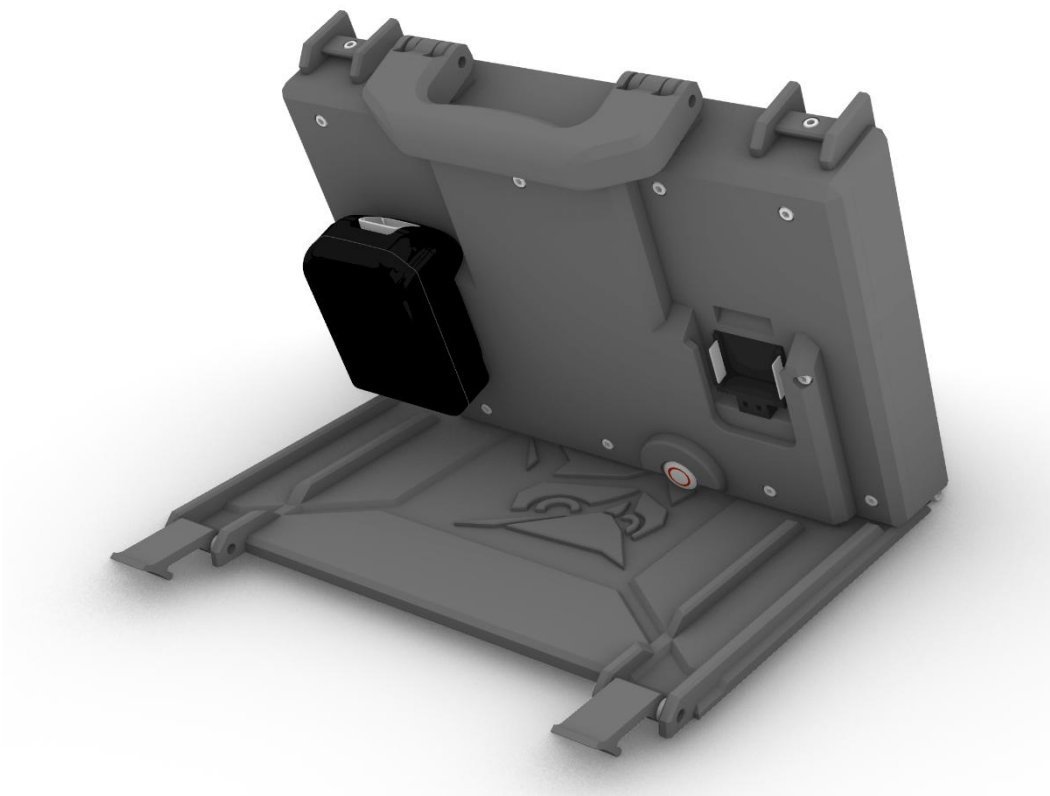
Battery Power

- The monitor is designed to operate on one or two standard 18V lithium-ion battery packs.
 - Using two batteries simultaneously will extend overall runtime, but the system will function normally with a single battery installed in either bay.
-

Integrated Stand

- The top cover of the case is hinged and can be flipped back to form a stable stand.
- Open the cover fully until it locks at approximately 290 degrees, which positions the screen at a 20-degree viewing angle for hands-free use on flat surfaces.

Tip: Always place the monitor on a stable, flat surface when using the stand to prevent tipping or disconnection from cables.



11. Lens Replacement Procedure

The MineCast pedestal is equipped with a tube-style acrylic lens, sealed with upper and lower O-rings, and secured by a removable top cap. Two replacement lenses are supplied with each system. Follow this procedure to safely change the lens when scratched, cracked, or otherwise compromised.

Tools Required

3/16" Allen key (for 1/4"-20 socket head bolts)

Clean cloth

Light lubricant or dielectric grease (optional for O-rings)

Step-by-Step Instructions

1. **Power Down the System**
Disconnect power before beginning service to prevent accidental pan movement or electrical contact.
2. **Remove Top Cap Bolts**
Using a 13/64" Allen key, remove the four 1/4"-20 socket head bolts securing the top cap. Set bolts aside in a clean place.
3. **Lift Top Cap Carefully**
Lift the top cap straight upward to avoid putting lateral force on the rotating camera mechanism or electrical harness inside. Avoid twisting or rocking during removal.
4. **Remove Old Lens**
Once the cap is off, gently lift the acrylic lens tube upward from the body. The bottom O-ring may remain seated in its groove.
5. **Inspect and Reinstall/Replace O-Rings**
Top and bottom O-rings should both be inspected for cracking, flattening, or debris.

Clean and re-lubricate if reusing. Replace if damaged or excessively worn.

Ensure the bottom O-ring is properly seated before installing the new lens.
6. **Insert New Lens**
Drop the new acrylic lens tube into place, ensuring it sits cleanly between the two O-ring grooves.
7. **Reinstall Top O-Ring**
Seat the upper O-ring on top of the lens, making sure it lies evenly in its groove.



8. Replace Top Cap

Carefully slide the top cap down vertically, aligning the spine/key on the cap with the corresponding spine/key on the pedestal body. Do not force.

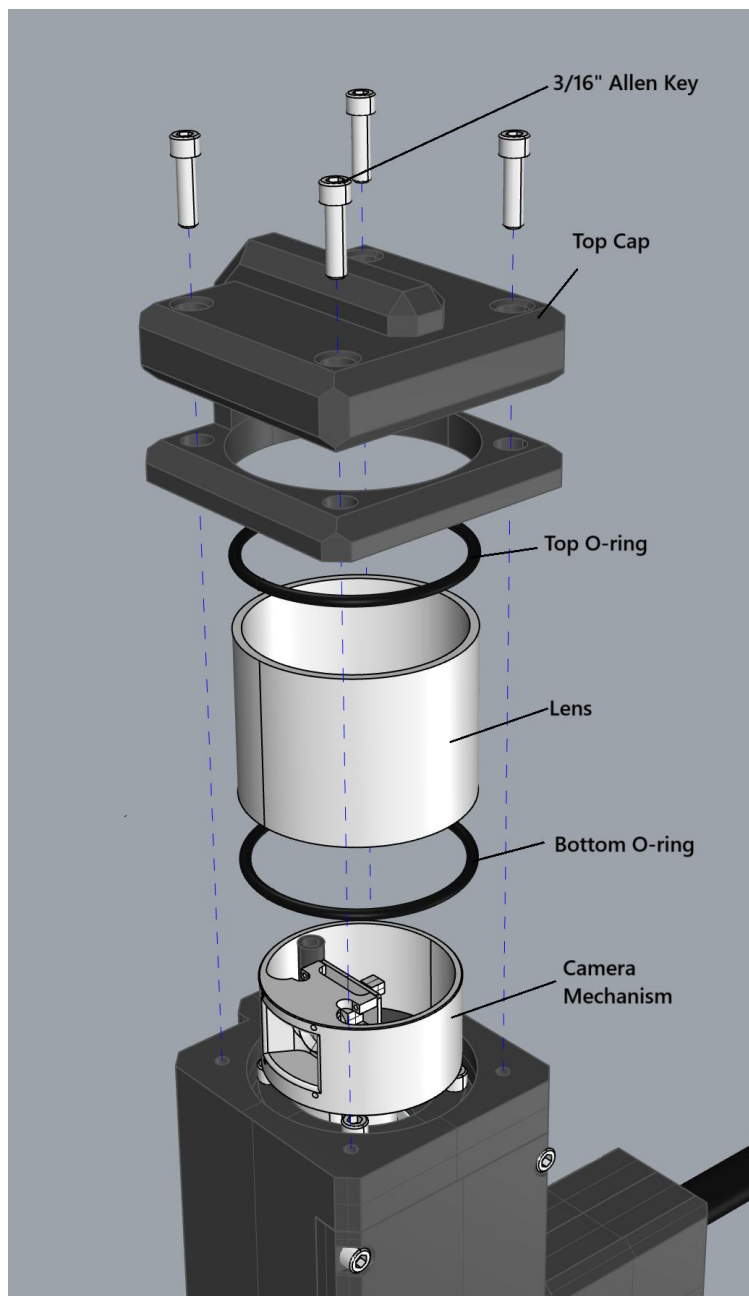
9. Reinstall and Torque Bolts

Insert the four bolts and tighten evenly in a cross pattern. Torque them firmly enough to compress the O-rings and ensure a seal, but do not over-tighten — overtightening may strip the aluminum threads or deform the cap.

Recommended torque: 30–40 in-lbs (3.4–4.5 Nm)

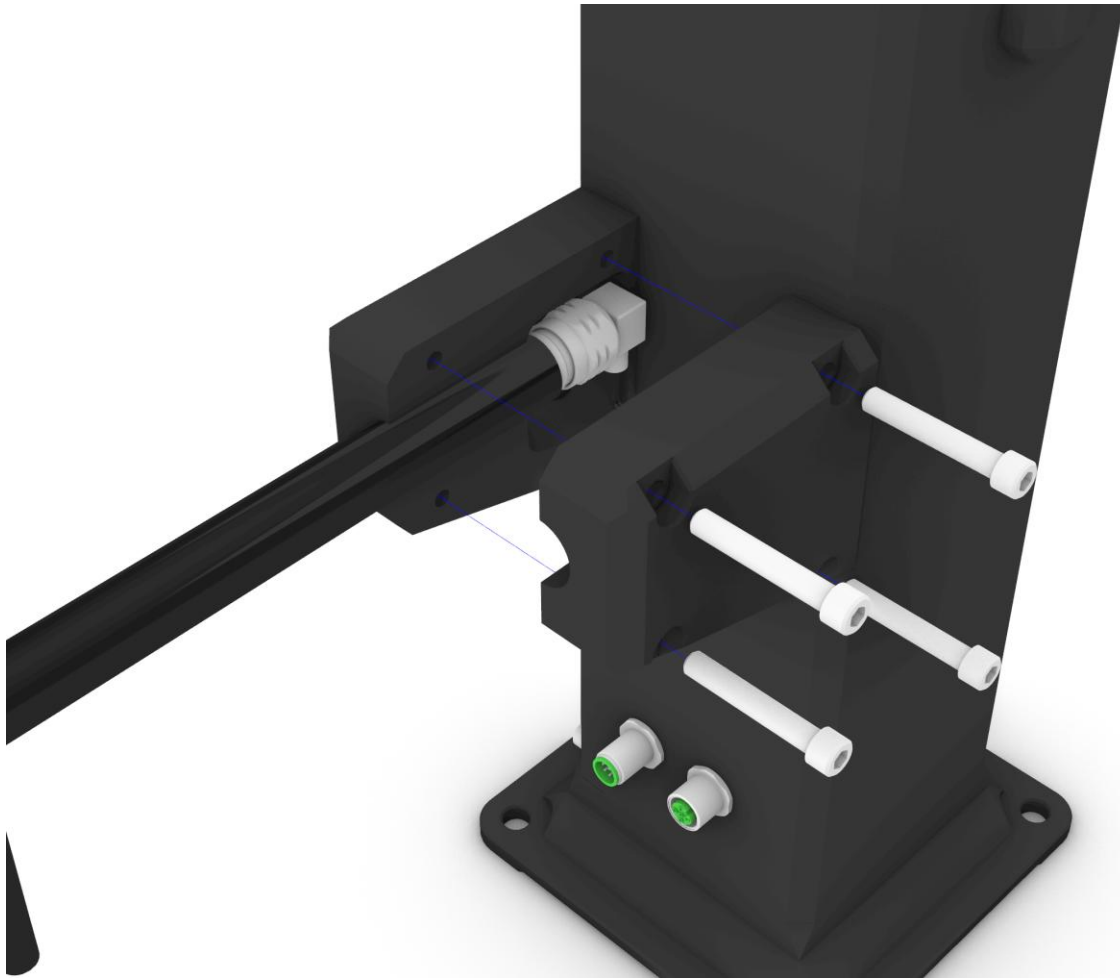
10. Final Check

Inspect for even compression around the cap. Power the system back on and verify camera function and environmental seal.



12. Replacing the Antenna

The MineCast transmitter connects to a **Yagi directional antenna** via a **90-degree N-type connector**, routed through a clamping block and sealed with a strain relief gland. Follow the procedure below to safely remove, inspect, or replace the antenna and its cable.



Tools Required

- 3/16" Allen key
- Clean cloth



Step-by-Step Instructions

1. Power Down the System

Disconnect all power to avoid signal transmission or accidental damage during service.

2. Remove Clamping Block Bolts

While supporting the antenna, use a 3/16" allen key to remove the **four socket head bolts** securing the outer cable clamp. Carefully remove the clamp and set bolts aside.

3. Disconnect the N-Type Connector

Loosen the hand-tight **90-degree N connector** from the transmitter housing. Hold the cable steady to prevent twisting at the base.

4. Withdraw the Cable'

Inspect the gland for wear or cracking.

Inspect Components

- Check for corrosion, dirt, or damage on the **connector threads and center pin**.
- Clean or replace parts if needed to maintain solid RF performance.

Reinstall Cable and Connector

- Reconnect the N-connector hand-tight — firm, but not over-torqued.
- Reattach the clamping block and tighten the **four bolts evenly**.

Ensure Correct Antenna Orientation

- The **Yagi antenna elements must be positioned vertically** (elements pointing up and down, not side to side).
- This vertical orientation is critical for proper polarization and consistent signal strength underground.
- Rotate the base mount or antenna boom as needed to achieve vertical alignment before tightening.

5. Final Check

Confirm that:

- The cable has **no excessive bend radius or strain**
- The strain relief gland is secure
- The antenna is firmly mounted and **oriented vertically**



13. Parts Breakdown

INDEX:	PART #:	DESCRIPTION:
A	N55-0580	MineCast - Main Pedestal Camera & Transmitter
B	N55-0581	MineCast - Video Receiver Console
C	N55-0582	MineCast - Steer Angle Sensor Assembly
D	N55-0583	MineCast - Steer Angle Sensor Anchor
E	N51-0322	MineCast - Power Harness 5m
F	N51-0321	MineCast - Steer angle sensor harness 2m
G	N11-0607	MineCast - Lens O-ring
H	N11-0608	MineCast - Cap retention bolt kit
J	N11-0609	MineCast replacement lens
K	N36-0273	MineCast - Replacement 900 MHz Directional Antenna
L	N55-0356	Dual Bay Lithium-Ion Battery Charger
M	N55-0461	6.0 aH 18v Lithium Ion Battery Pack

Complete System:
N55-0579 MineCast - ActiveView Wireless Video Mucking System

DWG. NO.	REFERENCE	NO.	REVISION	BY	APPD	DATE	NOTICE	PROJECT-TEAM	APPD	DATE	MINEWISE TECHNOLOGY LTD.	
		1		JH		MM/DD/YY	This document contains information as described in subsection 10.1 of The Protection of Information and Privacy Act (R.S.C. (1985), c. P-21). It is the property of MineWise Technology Ltd. and its contents may be disclosed without the express written consent of MineWise or otherwise in accordance with Part 1 of the said Act.	DATE: 20250705 DWG. BY: J. Henderson CHKD BY: APPD BY: APPD BY:			Parts Breakdown	SCALE: NTS ER No: CRO No: MW2063-P001

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J	N11-0609	MineCast - Replacement Lens
K	N36-0273	MineCast - Replacement 900 MHz Directional Antenna
L	N55-0356	Dual Bay Lithium-Ion Battery Charger
M	N55-0461	6.0 Ah 18V Lithium Ion Battery Pack



14. System Testing

After installation, follow these steps to verify proper MineCast system operation:

1. **Power On** the system — the camera will automatically perform a **homing sequence** to calibrate its pan axis.
2. Wait for the homing to complete and verify the **default forward-facing view** is active once initialization finishes.
3. **Shift into Forward** – Confirm the camera remains in the forward view position
4. **Shift into Reverse** – Confirm the camera pans smoothly to the rear-facing position.
5. **Shift into Neutral** – Ensure the camera **remains in the last commanded view** (latched behavior).
6. If using the **optional CAB input**, test that it triggers the third view position or defined behavior.
7. Verify a **stable video feed** with clear image quality and **no dropouts** throughout movement or gear shifts.

Note: The alignment grooves on the steer sensor must be properly lined up before powering on to ensure the homing sequence calibrates accurately.

15. Troubleshooting

Issue	Possible Cause	Solution
No Power	Incorrect wiring, blown fuse	Verify power input and replace the 5A fuse if necessary
No Video Feed	Loose camera, RF link, or monitor connections	Check all video signal paths, including RF and monitor input
Camera Doesn't Move at Startup	Sensor misalignment or motor fault	Ensure grooves on sensor are aligned before powering on; check motor wiring
Camera Movement is Incorrect	FWD/REV signals reversed or intermittent	Check GRY and PNK wiring; confirm signal polarity and clean transitions
Camera Returns to Forward in Neutral	Latching logic not retained	Confirm latched inputs are steady and not pulsing
Video Signal Dropouts	Interference, antenna placement	Adjust antenna orientation and ensure no obstructions in signal path
Pan Alignment is Off	Improper groove alignment at install	Power down, realign grooves, and reboot system to re-home correctly



16. Preventative Maintenance

Regular inspection and care ensure your MineCast system remains reliable, clear, and aligned in the toughest underground environments. Follow this schedule to maximize visibility, minimize downtime, and extend system life.

Daily Checks

- Clean Camera Lens: Wipe the lens gently with a non-abrasive cloth to remove dust, moisture, or buildup.
- Confirm Mounting Security: Check the pedestal and steer angle sensor are firmly fixed with no vibration or drift.
- Inspect Video Feed: Verify image clarity, pan function, and consistent signal.
- Check Cables: Ensure all cable runs are free of abrasion, strain, or loose connections.

Weekly Checks

- Inspect Power/Ground Terminals: Look for looseness or corrosion.
- Test Directional Control: Shift through Forward, Reverse, and Neutral to confirm pan response and latched behavior.
- Antenna Check: Confirm antennas are upright, unobstructed, and not shielded by nearby equipment.

Monthly Maintenance

- Full Cable Inspection: Look for wear, pinching, or insulation damage.
- Clean Camera Housing: Wipe down the camera body and steer angle sensor with a soft, damp cloth.
- Check Fuse: Inspect the 5A fuse for heat marks or fatigue.
- Inspect Lens Condition: If scratches, fogging, or impact damage are present, use one of the included replacement lenses. The lens is easily swapped by removing four mounting bolts.

Every 6 Months

- Realign Angle Sensor: Verify the groove markers on the sensor body and cap are aligned in the straight-ahead position. Re-home the system if needed.
- Signal Range Check: Test video clarity and range throughout normal operations. Adjust antenna placement if interference or dropouts occur.



Use dielectric grease on electrical connections to prevent corrosion in high-moisture underground environments!



17. Specifications

Category	Specification
Certifications	Industry Canada Approved (IC ID to be assigned)
	FCC Certified (FCC ID to be assigned)
Operating Voltage	9 - 36 VDC
Transmission Method	RF video link (918 MHz)
Construction	Anodized aluminum (pedestal & sensor); machined PVC (receiver)
Environmental	Sealed components for harsh underground use
Fasteners	Stainless steel
Video Output	1080p HD, color
Field of View	90°
Pan Range	270° (motorized)
Camera Mounting	4-bolt flange with optional weld-on tapped plate (5" x 5" pattern)
Lens	Field-replaceable acrylic lens with dual O-ring sealing
Camera Housing	Anodized aluminum, serviceable top cap
Ingress Protection	Resistant to dust, vibration, and splash
Steer Angle Sensor Type	Single-turn Hall Effect rotational sensor
Signal Output	Analog ratiometric, 10% - 90% of supply voltage
Hysteresis	< 0.3° (static)
Mechanical Travel	360° continuous
Steer Angle Sense Range	124° ± 3°
Sensor Mounting	Magnetic base with anchor; alignment grooves for calibration
Sensor Housing	Anodized aluminum, sealed
Display	1080p HD color monitor
Battery Support	Dual-bay 18V lithium-ion
Power Input	Operates on one or two packs (hot-swappable)
Receiver Enclosure	Machined PVC with hinged cover
Stand Function	Lid folds back 290° to form 20° viewing stand
Antenna Configuration	Dual antenna diversity
Receiver Mounting	Portable, surface placement on remote stands
Operating Temp	-20°C to 60°C
Shock Resistance	Drop-tolerant for field use
Cable Connections	Field-serviceable, vibration-resistant terminations
Maintenance	User-replaceable lens and serviceable access points



18. Contact Us

We're here to help with any questions about your MineCast system, support needs, or product inquiries. Reach out to us directly — we'll make sure you're taken care of.

Minewise Technology Inc.

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Canada

Phone: 705-674-3332

Web: www.minewise.com

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Managing Director

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Aida Arjona

Accounting & Administration

 aida.arjona@minewise.com

Prefer to talk in person? Give us a call — we're happy to walk through your setup, discuss upgrades, or troubleshoot in the field.



19. IC Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following

two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The term "IC: " before the certification/registration number only signifies that the Industry Canada technical specifications were met.

This product meets the applicable Industry Canada technical specifications.

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- 1) L'appareil ne doit pas produire de brouillage;
- 2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

Rev 1.1 – July 25, 2025



FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.