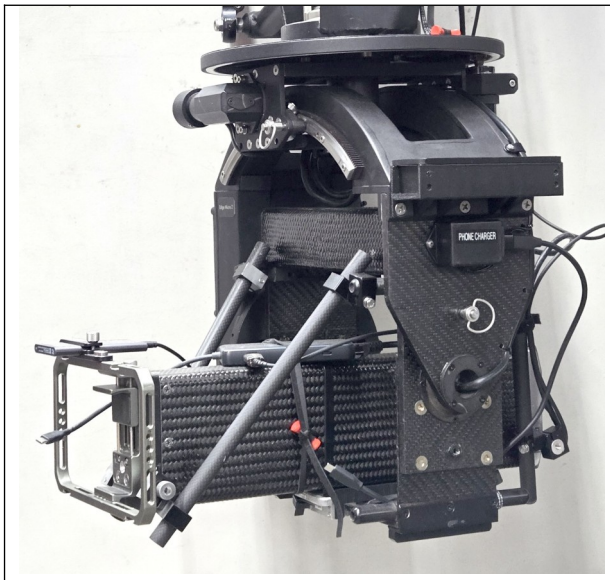
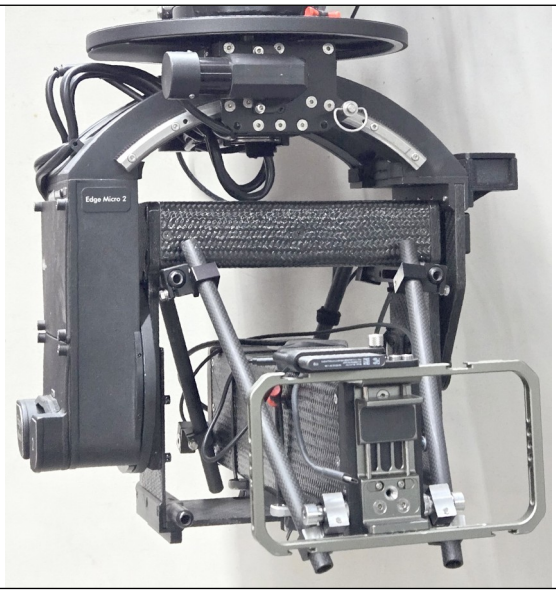
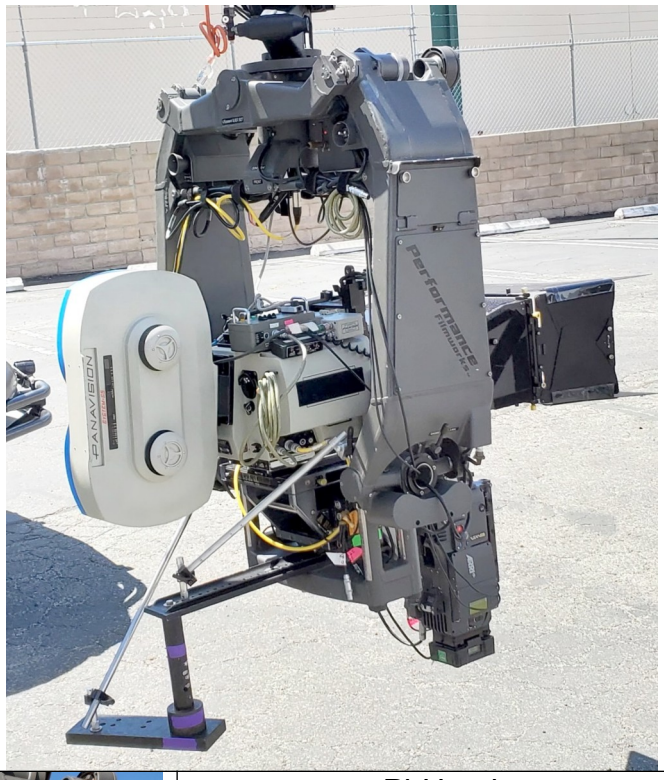
Roles:	Challenges and Achievements:
• Technical Lead, • Concept Development • Technical Requirements Definition • Systems Integration • Prototype Evaluation • Field Testing and Refinement • Production Deployment Support • Over 2,000 production days on feature films and automotive commercials worldwide.	• Academy Award-winning camera systems. • Fully articulated remote-operated camera cranes. • Gyro-stabilized systems for film and digital cinema • Camera platforms ranging from compact mobile rigs to IMAX (3-D and Camera Arrays) payload systems. • For cars, cranes, helicopters, cablecams e t c. • Developed camera systems optimized not only for technical performance, but also for usability, operator confidence, and production reliability





Micro-head 4.

- 3-axis remote camera head.
- Inertially stabilized.
- For small camera or mobile phones.
- Small 12” x 16” x 18in and light 20 lbs.
- Body-mount, motorcycle, boat,… capable.
- Mountable on person, …
- Instant start and stop Pan, Dutch and Tilt.
- Stable operation at vehicle speeds up to 60 mph
- Horizon accuracy better 1 degree during any maneuvers.
- Control without distracting the operator for switching.
- Used in 2019 – 2026.



Pi-Head.

- Heavy-payload stabilized camera head.
- IMAX, Panavision 65-system, 3D camera assembly.
- Compatible with camera cranes and suspension mounts.
- For a car, canes and boats.
- Horizon accuracy better 1 degree during any maneuvers.
- Control without distracting the operator for switching.
- Major feature film production 2019 – 2025 in USA, Africa and Europe.

- Developed compact stabilized heads suitable for crane-tip installation without sacrificing multi-axis stability or payload capability.
- Designed lightweight inertially stabilized camera systems capable of precision control from near-zero angular velocity to high-speed vehicle operation.
- Achieved stable imaging with low-mass crane-mounted gyro systems where conventional helicopter-class stabilizers were too heavy or impractical.
  - Combined low inertia, compact size, and multi-axis stabilization for dynamic and stationary cinematography applications.
  - Enabled precision camera control during starts, stops, low-speed tracking, and high-speed filming.

- Precision control without reliance on high-speed inertial averaging.

Gyro Vertical Reference Unit

The most critical sensor in any stabilized camera head is the gyro vertical reference. It maintains an accurate horizon regardless of pan duration and despite arbitrary motions of the vehicle carrying the head.

All components are commercially available off the shelf.

This hybrid digital-analog instrument provides bandwidths of up to 150 Hz. A built-in diagnostic mode allows filming to continue even in the event of a failure of the digital section.

The unit can be installed on virtually any stabilized head with analog electronics.

Cased version:

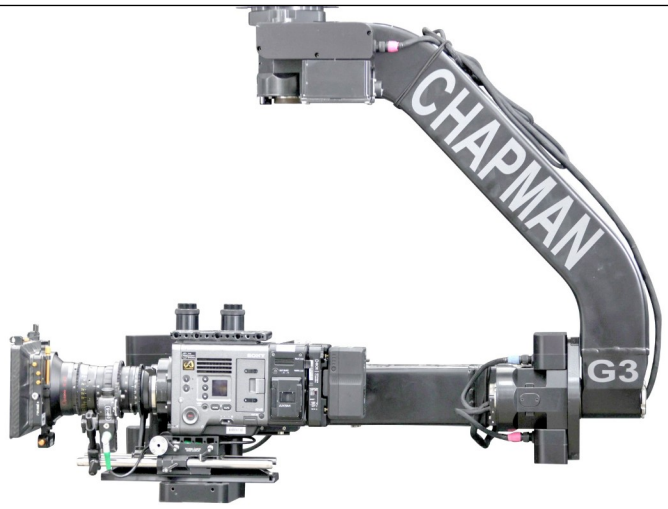
Weight: 1 lb 10 oz (0.68 kg)

Dimensions:

4.7 in (L) × 3.3 in (H) × 1.7 in (W)

Edge Heads

1. Continuous roll-axis rotation
2. 90° upward pitch range
3. Wide/Narrow frames choice
4. Heat, frost, dust, moisture
5. Since 1994
6. A concept replicated by many makers
7. For a car, canes and boats.
8. Horizon accuracy better 1 degree during any maneuvers.
9. Control without distracting the operator for switching.



“3G” Gyro-Stabilized 3-Axis Head (2000)

For heavy-duty Leonard Chapman camera cranes, minimizing head weight was not a priority. The 3G head was designed to carry cameras of virtually any weight, with no restrictions on camera width.

The design provides exceptionally simple camera access and straightforward lateral balancing.

Its analog electronics allow fast and easy troubleshooting and repair down to the component level. All settings, modifications, and upgrades can be performed in-house without dependence on third-party suppliers.

Universal Control Console

The control system provides an operating speed range from 1 degree per minute to 150 degrees per second. Proprietary joystick designs cover this entire range without requiring the operator to switch modes or change settings.

Traditional handwheel controls are included as standard package with the stabilized heads.

The Gimbal-to-Joystick cable, available in lengths from 15 ft to 150 ft, can be replaced by a “RadioLine” wireless link, allowing the operator to work at distances of up to 0.5 miles from the camera, even in dense urban environments.

The **key attributes** of the control electronics are instant readiness, a straightforward user interface (one switch – one function), clear operation, and fast troubleshooting and repair.

These principles are fundamentally incompatible with the digital "black box" approach of "try this and see if it works," endless resets, reboots, and navigating through menus and submenus.

For this reason, the electronics are intentionally kept simple and predominantly analog. Unnecessary conversions from analog to digital and back to analog are avoided whenever possible. The result is a system that is easy to understand, easy to diagnose, and easy to maintain in the field.

“ESU” 3-axis gyro stabilizer for Camera Arrays

- Multiple cameras up to 60 pounds.
- No operator needed.
- The head tracks the carrier, eliminating camera vibrations and jerks.
- "Blackbird" project.
- Filming virtual cars.
- Captures natural environmental reflections.
- Gimbal mass < 30 lbm.
- Used from 2016 to 2023.

Series of three-axis, inertially stabilized heads "Arch Head" and “ProLite”

- Arched gimbals mount.
- Enhanced stabilization precision achieved through mechanical symmetry.
- Horizon accuracy better 1 degree during any maneuvers.

- Control without distracting the operator for switching
- Controllable via cable <150’ or radio link <1mile.
- Gimbal weight from 40 to 80 pounds
- Camera weight up to 150 pounds
- Virtual reality and camera arrays.
- Used from 2011 to current time on countless commercials and movies .

Camera Crane “Edge Crane 8” with gyro head AH-7. Mad Max, Australia 2022.

- 26’ Inertially stabilized camera crane
- Installation on a locally manufactured carrier.
- Flexible boom for absorbing carrier vibrations and additional camera hight.
- Crane movement speed: 0.5–312 in/sec.
- Dusty and rainy filming environment.
- Used from 2010 – 2026.

Camera Crane “Edge Crane 6” with gyrostabilized head AH-6.

- Multi-axis stabilized crane system incorporating 13 gyroscopes, 4 accelerometers, and 11 servo motors for high-speed vehicle cinematography.
- High-speed operation from 0 to 100 mph without stops foe any adjustments.
- Salt flats, ocean, snow and dusty filming environment.
- Continuous operation without onboard battery limitations.
- Flexible boom for absorbing carrier vibrations.
- From 10’ to 26’ boom length.

Camera Crane “Ultimate Arm - 6”. James Bond chase sequences

- Gyro stabilized, remotely controlled flexible camera crane arm.
- Stabilized filming under conditions of severe pitching and high G-forces.
- High-speed boat for lakes, seas and ocean.
- Brush-less DC servos.
- Years in use: 2004 – 2020.

The need to test gyro stabilizers—and to verify the theory developed at the university—arose long before the era of commercial film making with it (1991). To this end, a simple three-axis shock absorber was designed using parts readily available in retail stores. It subsequently saw use in film productions in Russia, and later in Hollywood. This family of devices eventually came to be known as the "Spring Mount."

Sophisticated, high-tech gyrostabilized camera systems proved to be of limited practical use without protecting the lens from water, snow, dust, and mud.

In 1999, I initiated the development of a lightweight, gearless Spray Deflector for gyrostabilized camera systems.

Designed in collaboration with the Flight Research Institute (LII) near Moscow, the device provided reliable lens protection from water, snow, dust, and mud while remaining smaller and lighter than competing solutions.

Over the next 25 years, Spray Deflectors based on this concept became widely adopted throughout the film and broadcast industry.

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Early Gyrostabilization Development (USSR 1980-1990)

Working prototype inertially stabilized camera platform “3 GSP” developed for “chain road”, cars and spring mounts.

Film and Video cameras.
3-axis stabilization and control with speeds of up to 60 deg/sec.
Field used 1991 in Ukraine and Russia. ShowBis Expo New York 1991.
Light weight internal gimbal mount, balanced by an electronics module with instant access for diagnostics and repair.
Developed by Bauman Moscow State Technical University. Manufactured at a military aerospace facility in Moscow.
Years in use: 1980 – 2000.

Working prototype inertially stabilized camera platform “2 GSP” developed for helicopter, car and marine cinematography applications.
25-250mm zoom lens, ARRI-3 camera.

Early field testing of ship-mounted stabilization systems under real maritime operating conditions at Olympic games 1980 (Tallinn, USSR)

This work marked the beginning of my long-term specialization in compact motion-picture camera stabilization systems.

Years in use: 1980 – 2000.

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