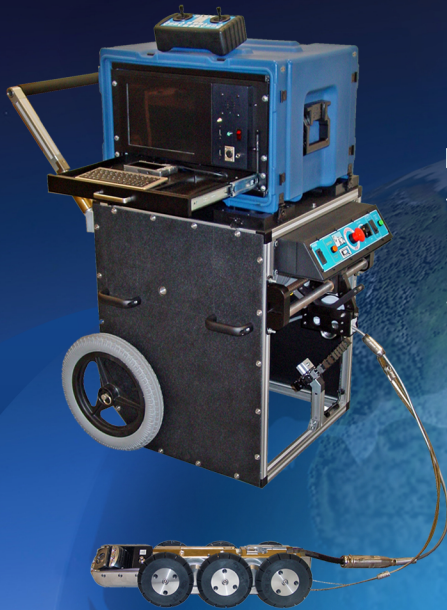


Your 1-Stop Shop

for Video Pipeline Inspection Equipment & Condition Assessment

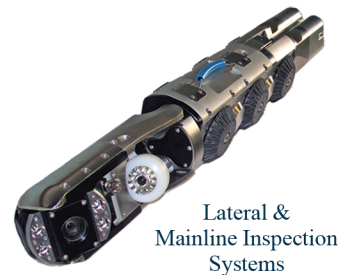
CUES provides CCTV pipeline inspection solutions by combining industry know-how, top-of-the-line equipment, and the most responsive customer service in the industry. All CUES systems are proudly made in America! CUES offers a one-stop shop for all of your pipeline inspection, rehabilitation, condition assessment software, and pipe profiling needs. Contact CUES for a discussion and demonstration.



K2 Portable Inspection System

The new K2 Series portable CCTV pipeline inspection system can be mounted in a range of vehicles, trailers, or used as a stand-alone system and includes an ergonomic hand-held control with a wireless option that operates all CUES transporters and cameras.

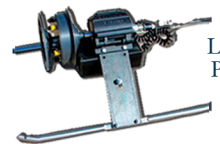
*Trucks, vans, ATVs
and trailer-mounted systems
can be modified to include the
equipment you need!*



Lateral &
Mainline Inspection
Systems

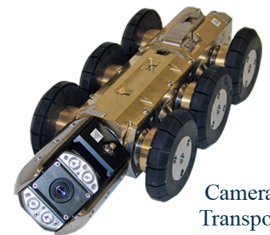


Mini
Systems

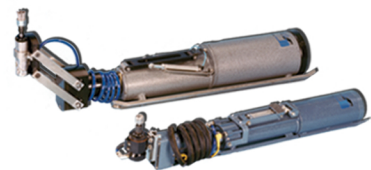


Laser & Sonar
Pipe Profilers

GRANITE^{XP} Asset Inspection / Decision Support Software



Cameras &
Transporters



Lateral
Reinstatement Cutters

"The Standard of the Industry"



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www.cuesinc.com
salesinfo@cuesinc.com



***CUES PRODUCTS ARE MADE WITH
PRIDE IN THE USA***





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FULL-CIRCLE SOLUTIONS for Pipeline Inspection & Condition Assessment

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software for sanitary and storm sewers, industrial process lines, and water lines. For over 40 years, CUES has provided innovative pipeline inspection technology and solutions to the Water/Wastewater industry to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

CUES continues to be the industry leader by designing and manufacturing a full-circle solution of products for pipe profiling, pipe rehabilitation, closed circuit television systems, and data acquisition with bi-directional interfaces to ESRI ArcGIS and asset management software such as Hansen and Azteca Cityworks

In addition to inspection equipment, CUES also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable of using a wide variety of grouting products. CUES also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser or Sonar based systems.

CUES after-sales support is a foundation of our business model. We provide professional videotapes, manuals, and CD format for system operation, safety, and maintenance. We also provide loaner equipment and full-time customer support and training by experienced industry professionals. Operator training schools with resultant certification are provided for our customers. Our emphasis on innovation and customer support has made CUES the world's largest supplier in our industry.

CUES operates its manufacturing and development operations from over 50,000 square feet of facilities in Orlando, FL. We maintain facilities for sales, service and repair in California, Georgia, Canada, and The Netherlands.

We appreciate the opportunity to serve you and look forward to hearing from you at your earliest convenience.

Your **1-Stop** Shop

www.cuesinc.com
800.327.7791
salesinfo@cuesinc.com

PROUDLY MADE IN THE USA 



step-vans

CUES truck-mounted systems can include TV inspection equipment for sewer, storm, and potable water lines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. A truck chassis can be modified to contain all or any combination of the aforementioned equipment!

hi-cubes



custom interiors

Truck-mounted Systems

"The Standard of the Industry"



Custom Vehicle & Trailer-mounted Systems

CUES proudly offers custom truck-mounted systems for all of your TV inspection and rehabilitation needs! Made to withstand the most severe conditions and ergonomically designed for comfort and efficiency, CUES truck mounted systems can include TV inspection equipment for sewer/storm/potable water lines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. A truck chassis can be specified to contain all or any combination of the aforementioned equipment!

CUES is a licensed truck dealership/truck-body converter and stocks various Ford, GMC, Chevrolet, Workhorse, International, and Freightliner chassis, ranging from 9500 GVWR to 23,000 GVWR. With our in-house, state-of-the-art Vehicle Assembly area, CUES can substantially reduce the manufacturing time required for your turn-key truck-mounted system! Customize your truck interior, cabinets, equipment, and mounting configuration to fit your unique requirements! Depending on the specific vehicle, chassis are available in diesel, gas, and natural gas configurations. Optional dry freight box mounted systems are also available.



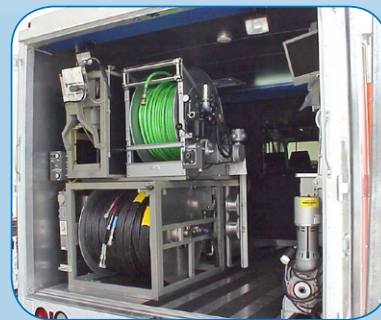
TV ONLY



TV LAMP



TV CUTTER



TV CUTTER GROUT



TV GROUT

TV Inspection Trucks - CUES offers a wide variety of chassis choices with custom interiors. Equipment can be ergonomically mounted to inspect 6" through 200" mainlines and 3" through 8" lateral services. User friendly Granite XP data acquisition software can interface with various asset management and ESRI ArcGIS systems.

TV Mainline/Lateral Inspection Trucks - Equipment can be ergonomically mounted to inspect 6" through 200" mainlines and 3" through 8" lateral services with optional equipment to inspect 3" through 8" lateral services with access from the mainline or a clean-out. The optional CUES LCS (Lateral Cleaning System) can also be supplied.

TV/Grout Inspection Trucks - This all-in-one production unit can complete TV Inspection of mainlines, laterals (optional), joint sealing of mainlines or laterals, and lateral reinstatement (cutting). Pipe inspection operations and the resultant rehabilitation action are facilitated by one integrated system.

TV/Cutter Inspection Trucks - Custom Cutter / TV inspection trucks include full capabilities for reinstating lateral services, removal of protruding taps, brush finishing existing cuts, and pre and post TV inspection.

TV/Cutter/Grout Inspection Trucks - This all-in-one production unit can complete TV Inspection of mainlines, laterals (optional), joint sealing of mainlines or laterals, and lateral reinstatement (cutting). Pipe inspection operations and the resultant rehabilitation action are facilitated by one integrated system.

Evolution Interior Series - All of the above vehicle mounted units are available with the state of the art Evolution Interior, featuring an ergonomic design to achieve ease of operation, safety, and convenient storage to produce the most efficient, rugged, and reliable system in today's market.

All-Electric Inspection Vehicle!



"The Standard of the Industry"



Introducing the NEW EIV Inspection Vehicle

General Specifications

- Travels top speed of 25 miles per hour
- Gross Vehicle Weight Rating: 3000 lbs
- Length: 156", Width: 60", Height: 70"
- Can travel a minimum of a 40 mile round trip and accomplish an 8 hours of inspection with one charge period
- 8-12 hour charge period. Can use 115 volts, but 220 volts are recommended
- Uses 9 each 8 volt lead acid batteries, for a total of 72 Volts for the system
- 72 volt DC engine

Features and Benefits:

- Zero Emissions, no pollution
- Silent operation, no generator
- Health benefits: operators not exposed to any emission or particulates
- Regenerative braking - apply the breaks and the batteries are recharged simultaneously
- Tax credits: varies from state to state
- Power efficiency and costs do not depend on highly volatile fuel price fluctuations
- Easy access to easements and alleyways
- Easy access from the side of the vehicle via storage access doors
- Can be set up to inspect 6"-200" mainlines. Uses CUES K-2 power supplies and video cable reel
- Auto payout on video cable reel with a maximum of 1200 ft. cable
- Granite XP Condition Assessment and Decision Support Software Option
- 2000 Watt inverter to power inspection equipment

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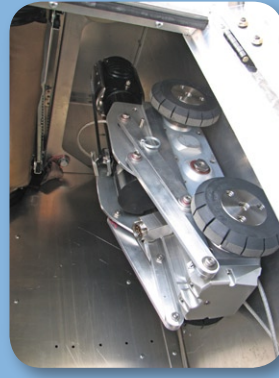
800.327.7791

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Drive Green!

Inspect Green!

SAVE GREEN!



Introducing the *NEW* ECO Inspection Vehicle

Thinking Green for Your Future



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Features and Benefits

- Zero generator emissions, reduces pollution
- Silent operation, no generator
- Health benefits: operators not exposed to generator emission or particulates
- Can be set up to inspect 6"-200" mainlines.
- Auto payout on video cable reel with a maximum of 4000 ft. cable
- Granite XP Condition Assessment and Decision Support Software Option
- Versatile choices of power: Battery or Engine
- Will operate the equipment and AC for a full days work via batteries
- Will operate the equipment from the truck engine via the inverter for infinite hours
- 3 hours charge period at 30 amps or 6 hours via standard house power
- 32" rear view LCD monitor
- 10 years warranty on interior flooring

General Specifications

- 24 volt battery system, absorbent glass mat batteries
- Amp hour battery monitor
- 4000 Watt inverter - runs equipment and roof top air conditioning
- Silent operation, no generator noise or emission
- Significant energy cost savings versus a generator based system

"The Standard of the Industry"



"The Standard of the Industry"



Evolution Series II Interior



TV REEL

Evolution Series II Interior provides an ergonomic design to achieve ease of operation, safety, and convenient storage to produce the most efficient, rugged, and reliable system in today's market. The Evolution Interior II offers the same state of the art interior as the Evolution Series I Interior, but also features additional mounting options for equipment components and enhanced lighting.

OPTIONS:

- Sliding drawer storage in rear kick plate of truck for tools and accessories
- Lockable storage cabinet in rear kick plate for camera/transporter and downhole poles
- Hazard strobe warning light system
- Front and rear directional light bars
- Rear awning for protection from the sun and rain
- Intercom system for communication between the two rooms
- Retractable water hose reel
- Side entry door
- Wireless keyboard and mouse
- Additional custom cabinetry (customer to specify)
- Custom laminate colors (customer to specify)
- 20 gallon washdown system
- Remote (Equipment room mounted) flat-screen monitor with adjustable arm
- Custom flooring patterns and colors (customer to specify)
- 12V courtesy lighting with 15 minute timer
- Electronic gear selector for reel transmission



VIEWING ROOM WITH ELECTRONIC COMPONENTS MOUNTED ABOVE THE DESKTOP & ADDITIONAL COUNTERSPACE



VIEWING ROOM FLAT SCREEN MONITORS & INDIRECT LIGHTING

Features & Benefits:

- Contemporary, ergonomically enhanced design
- "Safety Plus Visual" viewing window allows operator to see manhole/reel area plus the Equipment Room while seated comfortably at the control station
- Indirect lighting - produces even lighting, which eliminates glare on monitors
- Electronic components mounted above the desktop to increase countertop space
- Flat screen video and computer monitor on desktop increases valuable counter top space
- All Standard electronic components mounted in climate controlled cabinet
- All plywood cabinet construction
- Seamless walls and ceilings for easy cleaning
- Viewing room can be secured with locking door handles
- Rear floodlights placed inside of rear doors for quick, simple adjustments
- Certain areas of Viewing and Equipment rooms intentionally left "open" for customer
- specified cabinetry and/or storage containers
- Designed for even weight distribution from side to side
- Storage shelves in the Equipment Room



EQUIPMENT ROOM WITH LARGE VIEWING ROOM WINDOW

- An optional electronic gear selector is available for the reel transmission
- An optional retractable water hose reel is available in the Equipment Room
- Storage shelves are provided in the Equipment Room

- Includes a contemporary, ergonomically enhanced design
- Flat screen video and computer monitors are provided on the desktop to increase countertop space
- An optional wireless keyboard and mouse are available
- Electronic components are mounted above the desktop for added space
- All standard electrical components are mounted in a climate-controlled cabinet

- Includes a "Safety Plus Visual" viewing window to allow the operator to see the manhole/reel area plus the Equipment Room while seated comfortably at the control station
- An optional intercom system is available to communicate between the equipment and viewing rooms
- Includes indirect lighting to produce even light distribution and eliminate glare on the monitors
- Optional 12V courtesy lighting with a 15-minute timer is available in the Viewing and Equipment Rooms
- Viewing room can be secured with locking door handles

- Seamless walls and ceilings for easy cleaning
- All cabinets are constructed of plywood
- Certain areas of the Viewing and Equipment rooms are left "open" for optional customer-specific cabinetry and/or storage containers
- Optional custom cabinetry, laminate colors, flooring patterns / colors are available
- Rear awning provides protection from extreme weather conditions (optional)
- An optional 20-Gallon (minimum) washdown system with a 12 VDC water pump in the Equipment Room helps maintain water pressure for wash down of all cameras, transporters and other related equipment; the washdown system includes a stainless steel sink with a gooseneck faucet located on top of the plywood worktop
- An optional side entry door is available to provide easy access
- Layout is designed for even weight distribution from side to side
- Rear floodlights are installed inside of the rear doors for quick, simple adjustments
- An optional remote (equipment-room mounted) flat-screen monitor with adjustable arm is available
- Optional directional light bars are available on the front and rear of the vehicle
- An optional hazard strobe light warning system is available
- Optional sliding drawer(s) are available in the rear kickplate to store additional tools and accessories
- An optional lockable cabinet in the rear kickplate is available to store the camera/transporter and downhole poles

"The Standard of the Industry"



Custom Trailer-mounted Systems



K2 Portable Inspection System - Trailer-mounted

Another effective alternative to truck-mounted systems! CUES proudly offers custom trailer-mounted systems for all of your TV inspection and rehabilitation needs! CUES trailer-mounted systems can include TV inspection equipment for sewer/storm/potable water lines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. A variety of options can be added to expand your system, as needed. Customize your trailer interior, cabinets, equipment, and mounting configuration to fit your unique requirements!

Features & Benefits:

- Can be used with a variety of vehicles
- Save the cost of a dedicated vehicle
- Can be set up with the same equipment as conventional truck-mounted systems
- Optional configurations are available



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International Workhorse

The CUES International Workhorse provides maximum flexibility and cost savings for custom television inspection, lateral reinstatement or combination inspection and sealing vehicles.

The CUES Workhorse is a unique system that you can install within a few hours on an existing vehicle or vehicle of your choice. All interior modifications, wiring and equipment are factory installed and tested in a rugged, customized 16' aluminum truck body, ready to set on your chassis. Freight and duty costs are reduced to a minimum. Within hours the Workhorse can be working for you!



Features & Benefits:

- Television inspection unit can mount on 10.700 GWV truck chassis, television and seal combination on 14.100 GWV chassis
- Saves freight and duty expenses: can mount on existing vehicle or chassis of choice; minimizes delivery, commissioning and training time
- Complete line of high resolution low light [3 lux] cameras to meet all television pipeline inspection challenges; operative with the hemispherical scanning RVC 360, fixed view CVC 460, or P&T Pan & Tilt/Optical Zoom cameras
- Hi-resolution 450 line industrial grade multiple standard [PAL, SECAM, NTSC, Y/C Video] monitor; rugged - does not compromise the resolution of the camera
- Available with multi-conductor, fiber optic, or single conductor cable; select the cable format that is most suitable for your applications
- Contoured, ergonomically designed control console; all controls are easily accessible to the operator; increased storage and counter space above and below the console
- Optional 110V or 220V generator mounted in protective enclosure with slide-out rails, automatic shore power/generator switchover; easy serviceability; saves space in the equipment room; completely self-enclosed for noise reduction and emission control
- Special brackets to mount power winch, down-hole poles and manhole top rollers; operator convenience, efficiency and maximized open space in the equipment room
- Available with power winch and 1000' of stainless steel cable; offers speedy, reliable movement of camera and packers
- Optional [single conductor or multi conductor) camera transporters for pipes from 4" to 200"; efficiency and speed of set up, allows inspection of dead-end spaces
- Viewing room options include Armstrong flooring, padded bench/storage seat and full length closet or solid bulkhead wall. Additional workbench available in equipment room with overhead storage cabinets in hicubes and step vans; extended floor life, extra storage and seating, maximized operator work area

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Single Conductor 2000

TV Inspection System

The Single Conductor 2000 system has all the advantages of the older single conductor systems, like armored cable with 5600 lb breaking strength and abrasion resistance, coupled with UL approved digital power supplies with a five year manufacturers warranty.

One of the biggest advantages of the new power supply is that it will automatically reduce power output to zero if the cable is cut or damaged, causing no damage to the power supply. Sufficient power, light and traction to inspect 6" through 120" pipe with pan-and-tilt cameras and transporters.

...operates all CUES non-steerable wheeled and tracked transporters, including the Ultra Shorty & Pipe Ranger!



Features & Benefits:

- 10:1 optical zoom pan-and-tilt camera provides fine detail in large diameter pipe. Can see past obstructions in the pipe. Can look closely into laterals. **
- CUES transporters can pull a minimum of 1000 feet of cable in suitable pipe conditions
- Power supplies operate all single conductor cameras, to include CUES, RS Technical, CCV, and SRECO
- Operates all CUES non-steerable wheeled and tracked transporters, including Ultra Shorty and Pipe Ranger
- Operates CUES single-conductor pan-and-tilt cameras and optical zoom pan-and-tilt camera with 10:1 optical zoom with light enhancement
- Lightweight, high-strength, steel armored single conductor cable
- Digital power supplies provides adjustable voltage with universal frequencies

**Denotes optional equipment

CUES offers a variety of inspection cameras to fit every application. From portable inspection cameras to the latest technology that includes pan and tilt optical zooming capabilities, CUES has a camera for all of your pipeline inspection needs!

*CUES-IMX
Truck-mounted Camera*



OZII & Nite Lite Cameras

Mini-Cameras

(shown in the mini-mainline camera systems section)



ProScout II



ProScout III



Self-upright

"The Standard of the Industry"



OZII

Pan and Tilt Optical Zoom Camera

The OZII & Nite Lite cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes!



Available in multi or single conductor format, the OZII optical zoom pan-and-tilt camera system offers unparalleled imaging technology and built-in lighting for 6" to 72" pipe to produce clarity of picture with enhanced detail. Auxiliary lighting is available to inspect 84" through 200" diameter pipe. The OZII camera provides up to 40:1 optical/digital zoom, automatic focus, remote focus and iris control to assure the highest quality picture within varying pipe conditions. When an obstruction blocks movement in a pipe or for quick-look inspections, details can be observed from far-away distances with perfect clarity. Get the finest detailed video inspections with the CUES OZ II (Optical Zoom) Camera!

CUES "Light Enhancement Technology" eliminates the need for an external lighthouse. Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips. There's no need to remove the camera to install an external lighthouse if the pipe material or pipe diameter changes. Let the CUES "Light Enhancement Technology" do it for you!

Features & Benefits:

- ◆ 10X optical zoom and 4X digital zoom; total 40:1 zoom capability; *Enhances image details from faraway distances for inspection and assessment*
- ◆ NTSC at 470 H lines of resolution; *Higher image resolution means sharper pictures with maximum detail*
- ◆ Sensitivity: 1.5 lux (F1.8, 1/60 s) and 0.13 lux (F1.8,); PAL Version is also available. 1/4 s) Electronic shutter speed: 1/4 to 1/10,000 s; *Increased sensitivity provides brighter pictures with reduced lighting requirements*
- ◆ 360 x 285 degree pan and rotate viewing capability; *Detailed lateral inspection up to 250 feet without having to traverse the lateral*
- ◆ Four field replaceable lights (available with white LEDs or halogen lamps); *Internal lights are directional with the moving camera head for optimum illumination in various pipeline conditions*
- ◆ Back light compensation; *No spotlight reflection blooming in image*
- ◆ Auto-tracking white balance; *Perfect color under all conditions*
- ◆ Auto-focus; *Quickly focus on an area of interest*
- ◆ Manual override of focus, iris, and shutter; *Flexible for unusual or special conditions*
- ◆ Pan, rotate, zoom, and focus homing; *Quick and easy to reorient to the current location*
- ◆ Waterproof to 50 psi; *Camera can be submerged in water over 100 feet deep without compromising integrity*
- ◆ 400 degree rotation optical viewing angle; 331 degree pan viewing angle range; *View minute defects and voids around the entire diameter of the pipe wall*
- ◆ Compatible with up to 4000' multi-conductor cable and up to 2000' single-conductor cable; *Camera is compatible with existing CUES TV inspection systems with minimal modification*
- ◆ Can be used in pipelines as small as 5"
- ◆ Optical-grade sapphire camera window; *Helps prevent image distortion*
- ◆ Includes an internal diagnostic system; *Continually monitors camera functions, including run time, serial number identification, camera head temperature, humidity, light supply voltage, and camera input voltage*
- ◆ An optional built-in inclinometer is available to read and transmit pipe grade variations
- ◆ The OZII & Nite Lite II cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes



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The Nite Lite camera includes an optional sonde to accurately locate the camera in metallic and non-metallic pipes!

NITE LITE

Pan-and-Tilt TV Inspection Camera

The Nite Lite is a unique pan-and-tilt inspection camera that incorporates the latest video technology to provide up-close imaging of pipe walls and surfaces during sewer line inspections of 6” relined pipe through 200” diameter pipe. Available in multi or single conductor formats, the Nite Lite pan-and-tilt camera system offers unparalleled imaging technology to produce the clarity of pictures with enhanced detail. The Nite Lite camera is designed to pan 285 degrees and rotate 360 degrees. Remote control for iris and focus is provided to assure the highest picture quality in unusual or special conditions. An optional built-in inclinometer is available to read and transmit pipe grade variations

Easy Upgrade to the OZII optical zoom camera!

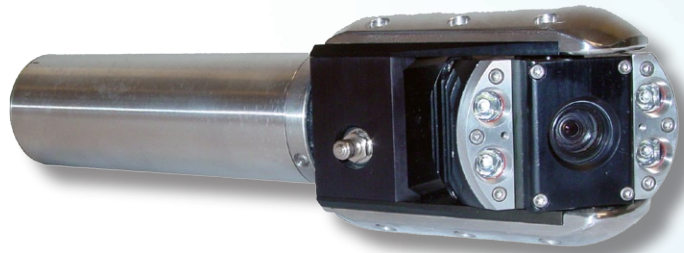
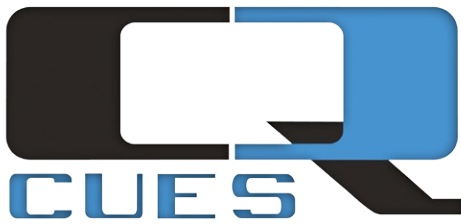
The Nite Lite can be easily upgraded to include 10x optical zoom and 4x digital zoom! Refer to the OZII information on the opposite page!



Nite Lite shown with the CUES Steerable Pipe Ranger



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OZIII

Pan and Tilt Optical Zoom Camera

The OZIII optical zoom pan-and-tilt camera system offers built-in directional field replaceable lighting for 6” to 30” pipe to produce the highest quality image to enhance the details of your CCTV inspection. The OZIII camera provides up to 40:1 optical/digital zoom, automatic focus, remote focus and iris control to assure the best quality video within varying pipe conditions. The robust design of the OZIII camera includes protective forks for the camera head to protect it during insertion and retrieval and to shield it from roots and other obstructions in the pipe. Get the finest detailed video inspections with the CUES OZ III (Optical Zoom) Camera!

This unit can be used in conjunction with the steerable Compact Pipe Ranger (CPR) to inspect 6” relined through 30” sanitary and storm sewers and connects directly to the CPR transporter with no exterior wires or cables. When the OZ III is installed on the CPR transporter, it produces a compact assembly with superior pulling power and the ability to negotiate difficult entry conditions and standard 45- and 90-degree sweeps and turns. An optional built-in inclinometer is also available to read and transmit pipe grade variations.

CUES “Light Enhancement Technology” eliminates the need for an external lighthouse! Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips! There’s no need to remove the camera to install an external lighthouse if the pipe material or pipe diameter changes! Let the CUES “Light Enhancement Technology” do it for you!

NITE LITE III

Pan and Tilt Camera

The Nite Lite III is a unique pan-and-tilt inspection camera that incorporates the latest video technology to provide up-close imaging of pipe walls and surfaces during sewer line inspections of 6” relined pipe through 30” diameter pipe. The multi-conductor Nite Lite III pan-and-tilt camera system offers unparalleled imaging technology to produce the clarity of pictures with enhanced detail. The Nite Lite III camera is designed to pan 285 degrees and rotate 360 degrees. Remote control for iris and focus is provided to assure the highest picture quality in unusual or special conditions. An optional built-in inclinometer is also available to read and transmit pipe grade variations.

Easy Upgrade to the OZIII optical zoom camera!

The Nite Lite III can be easily upgraded to include 10x optical zoom and 4x digital zoom! Refer to the OZIII information in this brochure!

The OZIII & Nite Lite III cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes!

OZIII FEATURES & BENEFITS

- ◆ 10X optical zoom and 4X digital zoom; total 40:1 zoom capability
 - *Enhances image details from faraway distances for inspection and assessment*
- ◆ NTSC at 470 H lines of resolution
 - *Higher image resolution means sharper pictures with maximum detail*
- ◆ Sensitivity: 1.5 lux (F1.8, 1/60 s) and 0.13 lux (F1.8, 1/4 s) Electronic shutter speed: 1/4 to 1/10,000 s
 - *Increased sensitivity provides brighter pictures with reduced lighting requirements*
- ◆ 360 x 285 degree pan and rotate viewing capability
 - *Pan and tilt simultaneously while the transporter moves!*
- ◆ Four long-lasting field replaceable lights with White LED Cluster Lamps
 - *Internal lights are directional with the moving camera head for optimum illumination in various pipeline conditions*
- ◆ Back light compensation
 - *No spotlight reflection blooming in image*
- ◆ Auto-tracking white balance
 - *Perfect color under all conditions*
- ◆ Auto-focus
 - *Quickly focus on an area of interest*
- ◆ Manual override of focus, iris, and shutter
 - *Flexible for unusual or special conditions*
- ◆ Pan, rotate, zoom, and focus homing
 - *Quick and easy to reorient to the current location*
- ◆ Waterproof to 50 psi
 - *Camera can be submerged in water over 100 feet deep without compromising integrity*
- ◆ 360 degree rotation optical viewing angle; 331 degree pan viewing angle range
 - *View minute defects and voids around the entire diameter of the pipe wall*
- ◆ Can be used in pipelines as small as 5" in diameter
- ◆ Optical-grade sapphire camera window
 - *Helps prevent image distortion*
- ◆ Includes an internal diagnostic system
 - *Continually monitors camera functions, including run time, serial number identification, camera head temperature, humidity, light supply voltage, and camera input voltage*
- ◆ An optional built-in inclinometer is available to read and transmit pipe grade variations
- ◆ The OZIII & Nite Lite III cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes



ZOOM-IN ON YOUR SEWER PRIORITIES!



CUES-IMX

Truck-mounted Zoom Camera

CUES has partnered with InfraMetrix to develop the CUES-IMX truck-mounted camera! Collection system owners and operators can now reduce system operation / management costs and quickly identify high-risk areas of the wastewater / stormwater system. Make the best use of your time and money by using the CUES-IMX camera to locate these critical sewer maintenance and repair requirements. The camera offers unparalleled imaging technology with a 25:1 optical zoom that is stabilized and remotely controlled via a telescopic boom to produce picture clarity with enhanced detail up to 300 ft! The zooming capabilities provide the greatest protection against sewer backups and overflows, reduces collection system operation and maintenance costs, and increases performance!

"The Standard of the Industry"



InfraMetrixSM

INFRASTRUCTURE DIAGNOSTIC SERVICES

*help prioritize and
identify sewer issues!*

Features & Benefits:

- Help prioritize and identify sewer issues
- Swiftly locate problem areas of the pipe
- Quickly identify maintenance requirements and identify structural defects to prevent sewer overflows
- Inspect storm drains with flow without the need for a float
- Pre-inspect pipelines prior to bidding jobs
- Helps you comply with CMOM & GASB34 requirements
- Determines where to begin CCTV
- Featured on the EPA website as an innovative technology
- Designed for use in pipes 6" in diameter and up with the ability to illuminate and inspect manholes and large diameter pipes at distances up to 300'
- Designed to provide close-up views of pipes during inspection and/or periodic maintenance to preclude blockages, leaks, in-line obstructions, etc
- Base unit consists of the following: boom, mast, controller, camera, and integral/external lighting
- Designed to operate optimally with any TV inspection vehicle
- Designed to perform mainline inspections without the need for a camera transporter
- Designed to prevent the need for an operator to enter the manhole to position and/or reposition the camera height
- Designed to gage the manhole depth
- Mast is designed to position the camera 25ft below the surface of the road
- Optional compass is available to support GIS systems



Specifications subject to change without prior notice.

Visit our web site at www.cuesinc.com

CUES-IMX Truck-mounted Zoom Camera System Equipment

CAMERA

- Optical Zoom Range: 25x; Digital Zoom Range: 1x through 12x
- Total effective zoom ratio: 300x
- Designed to radiate and deflect heat produced by the light head
- Remotely controlled from the control console
- The mounting fork is designed to pan the camera head 360 degrees continuously, tilt mechanically 35 degrees up, 90 degrees down, and tilt optically 166 degrees; camera forks are rounded or chamfered and do not exceed 5 inches in diameter
- The camera imager, optics, mechanics, and electronics are housed in a damage resistant, waterproof, rugged enclosure: Dimensions: 7" diameter and 16" long
- The front camera head housing includes a view port of distortion free, heat resistant glass

LIGHTING

Camera Integral HID Lighting - The camera includes (4) HID spot lights and one (1) flood light centered above the lens:

- Each of the five (5) lights are individually sealed to prevent water entry
- Four (4) HID spot lights have a total light output equivalent to 200 watts of halogen light
- One (1) HID flood light has a total light output equivalent to 50 watts of halogen light

Camera External Lighthoods - The camera includes two (2) quick disconnect external lighthood assemblies, each lighthood assembly consisting of two lighthoods on each side of the camera, that are directional with the pan and tilt movements of the camera head:

- The high performance lighthoods provide a total of 340 watts of light, 170 watts per lighthood assembly.
- Each lighthood is constructed of aluminum with a hard, anodized coating that is scratch and wear resistant.
- Each lighthood assembly is designed for easy servicing and bulb replacement in the field without having to remove the lighthood from the camera.
- External lighting is designed to move relative to the camera lens to provide directional illumination.

MAST SYSTEM

- The truck-mounted mast can position the camera 25ft below the surface of the road and is designed to achieve optimum picture stability throughout the optical zoom range of the camera
- The camera unit can be electronically raised and lowered
- The camera and mast is controlled electronically from the truck control room and can function with separate camera and mast controllers.
- The mast can be repositioned to optimize the camera alignment when inserting into the mainline pipe or during the inspection.
- Prevents the need for an operator to enter the manhole to position and/or reposition the camera height.
- Perform mainline inspections and gauge the manhole depth without the need for a camera transporter!
- Can be installed on existing TV inspection systems without the need for modifications to other existing equipment already installed on the unit

CONTROLLER – for remote control of the camera assembly

Camera Controller

- The mounting surface for the joystick, switches, and LED is angled for ease-of- use.
- RS-232 maintenance port is provided
- 360 degree camera position indicator can be displayed on video and zeroed at any position to establish a point of reference for the inspection

Controller Pushbuttons -The pushbuttons are mounted on the front, top, and rear of the controller:

- Focus: Near and Far
- Zoom: In and Out
- Iris: Open and Close
- Autofocus and Lamps
- Shutter: Fast and Slow
- Pan, Tilt, Zoom Home and Tilt Home
- Gain: Up and Down
- Autofocus: On and Off
- Autoexposure: On and Off
- Display diagnostics

Joystick

- Move the camera head in four directions: Up, Down, Left, Right
- Mounted in the middle of the controller's front panel
- Controls the movement of the camera head



"The Standard of the Industry"



SLOPEMASTER

Inclinometer

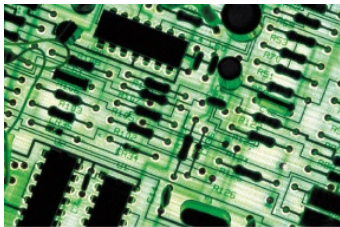


Improperly installed or sunken lines often results in rapid pipe failure. Failures may include the accumulation of dangerous materials, debris, early fatigue, fractures, and open joints. In water waste lines, it can also include the heavy accumulations of grease, increased levels of hydrogen sulfide gas, foul odors, increased bacterial growth, internal/external leakage, corrosion and reductions in flow.

The heart of the Slopemaster system is a vertical sensing, single axis, inclinometer mounted on a single internal circuit board. It's accuracy, rugged construction, reliability, and wide range environmental parameters meet the special requirements necessary for verification of slope measurement in industrial and utility pipelines.

The Slopemaster operates with CUES multi conductor or single conductor TV inspection systems. The simultaneous display of the grade information with the live television picture precludes possible misinterpretation of slope due to debris, offset joints, etc., which is a restriction that's often found with measurement-only type verification systems.

A CUES inclinometer-equipped camera has a tilt-angle measurement range of +/- 5 degrees with a typical accuracy of 0.2 degrees. It is mercury free and does not contain any hazardous materials. The Slopemaster can be used with many CUES data display and recording systems. Data systems are available for automatic slope data collection, display, recording, and plotting.



The new CUES Inclinometer has been redesigned to read and transmit pipe grade variations in the range of +/- 5 degrees (+/- 8.7% grade) from horizontal with an error of +/- 0.2 degrees (0.3 % grade) while providing greater stability over a wider range of conditions.

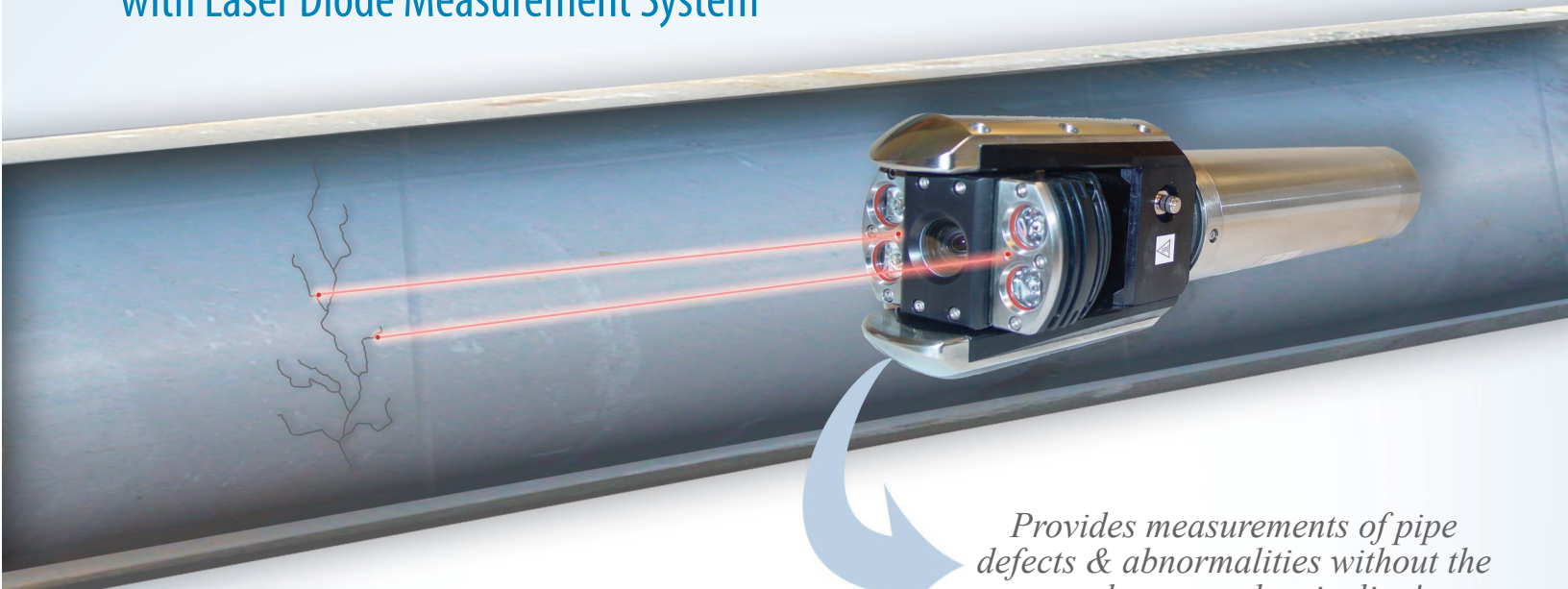
Features & Benefits:

- The system is supplied with a pipe grade verification system to detect and record variations in pipe angle from true horizontal.
- The inclinometer is able to read and transmit pipe grade variations of +/- 5 degrees from horizontal (+/- 8.7% grade) with an error of +/- 0.2 degree (0.3 % grade).
- Depending on the data system used in conjunction with the inclinometer, the data shall be able to be displayed in a numerical or graphical format, which may be printed or exported to an external database.
- The inclinometer includes a vertical sensing, single axis, precision sensor mounted internally to the camera.
- The Pipe Grade Verification System (Inclinometer) can operate with all CUES pan & tilt and pan, tilt & zoom cameras

Disclaimer:

Due to the many varying factors involved in performing an inclination assessment of a pipeline (condition of transporter, speed of inspection, pipe debris, etc.), a CUES inclinometer equipped camera is not intended to take the place of a survey tool, but to be used as a reference to identify potential problem areas during an inspection.

OZII & OZIII Pan Tilt & Optical Zoom Cameras with Laser Diode Measurement System



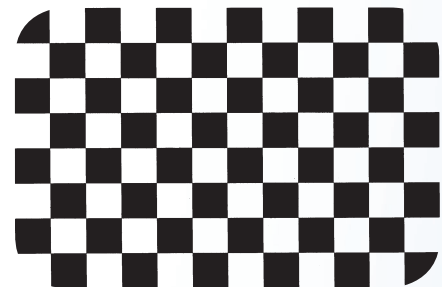
Provides measurements of pipe defects & abnormalities without the need to enter the pipeline!

The OZII & OZIII Cameras with Laser Diodes combine the latest laser beam technology with an advanced digital video caliper for measuring pipe joints, cracks, defects, debris and other abnormalities within the pipeline without the need to enter the pipeline!

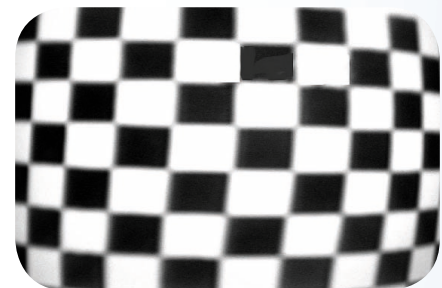
The cameras have all the great features of the CUES OZII & OZIII cameras, but include special LED lightheads that incorporate dual laser diode projectors. The two laser beams are factory-aligned to a known separation distance regardless of the distance of the object to be measured or the cameras zoom position.

The OZII & OZIII Cameras with Laser Diodes are specifically designed to eliminate *spherical distortion*, *pin cushioning*, or *barrel distortion* that's found in other pipeline inspection cameras. The optical distortions found in other cameras do not allow for accurate calibration and measurements, just as a physical measurement off of a video monitor is also inaccurate.

Eliminate Barrel/Spherical Distortions & Pin Cushioning!



Camera image - no distortion



Camera image with distortion

"The Standard of the Industry"



800.327.7791
www.cuesinc.com

The Laser Measurement System:

- Consists of an OZII or OZIII Laser Diode Camera and a Digital Video Caliper (DVC)
- Provides the ability to measure an object on any of three axis including the vertical, horizontal or diagonal axis
- Measurements can be in Metric or English units
- The numeric measurement data can be displayed in any one of eight selectable colors and located anywhere within the video image for viewing on a video monitor or recording on a VCR, CD, or DVD

CAMERA TRANSPORTERS



Ultra Shorty 21



Steerable Pipe Ranger

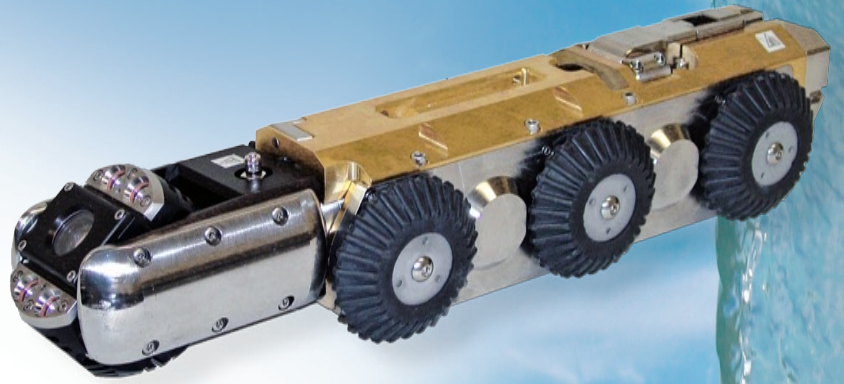


Compact Pipe Ranger

CUES provides multiple camera transporter models to accommodate varying pipe diameters and conditions found in sanitary and storm sewers, relined reduced diameter pipe, dam out falls, leach lines, potable water lines, and industrial process lines. Combining the elements of traction physics, weight distribution, and rugged mechanical design, CUES camera transporters will traverse pipe conditions where most other units will fail.



“The Standard of the Industry”



Compact Pipe Ranger

Multi-Conductor Wheeled Transporter

The Compact Pipe Ranger (CPR) is a lightweight, compact, and rugged steerable CCTV camera transporter that is used to inspect sanitary and storm sewers. It is made to traverse long distances and tough pipe conditions, and to facilitate ease of handling during insertion and retrieval.

The Compact Pipe Ranger (CPR) is designed to operate on a minimum of 1000' ft of multi-conductor TV cable to inspect 6" relined pipe through 30" diameter pipe. The Compact Pipe Ranger (CPR) includes full-proportional steering to traverse meandering pipe and 45 and 90 degree turns.

When assembled with the CUES OZIII zoom pan and tilt camera, the compact length enables the unit to negotiate most difficult entry conditions and standard sweeps. The superior pulling power of the CPR, combined with the optics and directional lighting of the compact OZ III zoom pan and tilt camera (with the ability to rotate in a 4" circle), creates video inspection quality that's unsurpassed in the industry.

Multiple wheel sets are available to maximize bottom-clearance, traction, and optimize camera position. Ease of operation is accomplished with one joystick control for all transporter and camera movements. A variable "cruise control" setting is available for transporter speed for hands-off operation!

Features/Benefits:

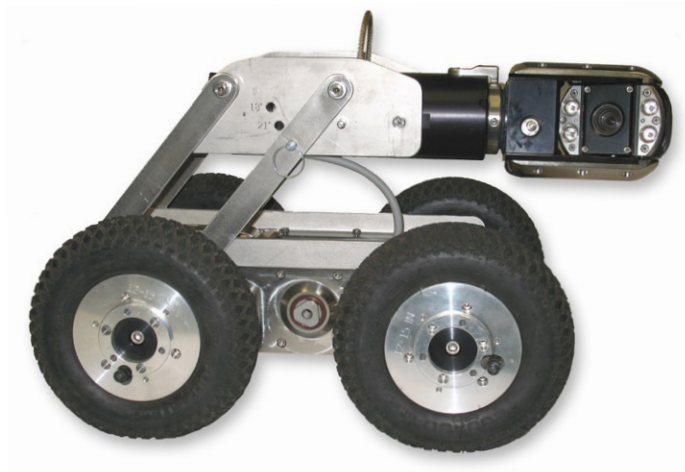
- Optional mechanical camera lift is available to prevent the need for an operator to enter the manhole to position and reposition the camera height and to optically center the camera in varying pipe diameters
- Optional rear-viewing camera, which is mounted to the CPR transporter, is available to help avoid obstacles and potential tip-overs in the pipeline by providing visibility when retrieving the transporter or driving in reverse
- Superior pulling power
- Wheels can be installed or removed from a single point of contact
- 2-speed transmission doubles the torque of the transporter for large pipe inspections
- Locking bayonet-style rear bulkhead connector - durable/stable
- Operates in 6" relined pipe through 30" diameter pipe and larger
- Full proportional steering and can complete a 360 degree turn within its own radius
- Multiple wheel sets to accommodate your needs
- High-traction wheels are available for slippery PVC pipe
- Operates with CUES OZIII & Nite Lite III cameras, multi-conductor cable



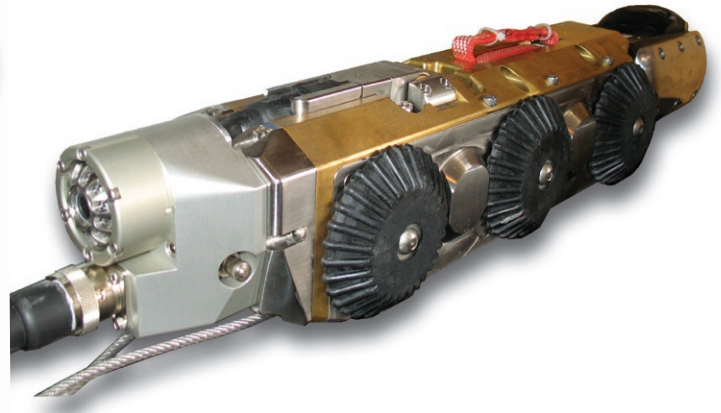
*Go the distance with the
Compact Pipe Ranger (CPR)!*

COMPACT PIPE RANGER (CPR)

Multi-conductor Wheeled Transporter



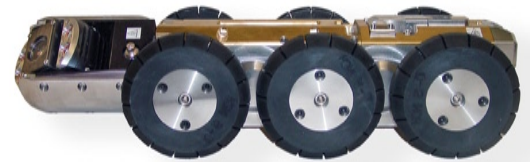
Optional Mechanical Camera Lift



Optional Rear-Viewing Camera

Specifications

- Operates with CUES multi conductor systems
- Operates with the CUES OZ III zoom pan and tilt camera
- Designed to traverse sanitary sewers, storm drains and pipe with debris and silt
- Freewheel, powered reverse, forward variable speed control, all wheel drive
- Rugged, durable and sealed to eliminate water intrusion
- Provides clearance in a 6" diameter relined pipe; can inspect up to 30" diameter pipe and larger
- Two-speed transmission doubles the torque and maximizes traction in varying pipe conditions
- Can turn 360° within its own radius; pinpoint control maximizes the ability to traverse challenging pipe conditions
- Flight stick controller to operate the transporter, optional camera lift, and camera movements with one hand; provides operational simplicity
- Multiple wheel sets for small, intermediate, and large diameter pipes; optional high-traction steel wheels are available
- Rear swivel bulkhead connector minimizes strain on the cable connection during insertion and retrieval of the unit
- Compact camera/transporter length with optical zoom pan & tilt camera (OZ III) facilitates entry into small inverts, small manholes, dead end lines, and traversal of sweeps
- Full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe



Compact Pipe Ranger in the 8" Configuration



Compact Pipe Ranger in the 6" Steel Configuration



Operates with CUES OZIII & Nite Lite III Cameras

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Steerable Pipe Ranger

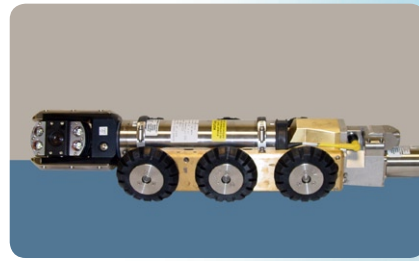
Multi and Single Conductor III Wheeled Transporters

The Steerable Pipe Ranger is a rugged and versatile low-maintenance transporter that's specially designed to traverse silt, mud and debris commonly found in storm and sanitary sewers. Three standard wheel sizes and optional manual or electric camera lifts are available to maximize performance. Optional high traction tires are available for extreme slippery conditions.

The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable to inspect 8" relined pipe through 60" diameter pipe. Its unique two (2) speed transmission doubles the torque of the unit to produce maximum pulling power in large diameter pipe when the 10.5" diameter tires are installed. The Steerable Pipe Ranger includes full proportional steering that enables you to traverse meandering pipe and 45° and 90° turns. One joystick is used to control steering, the optional remotely controlled camera lift, and a pan and tilt zoom camera. The remote controlled camera lift precludes manhole entry during insertion and retrieval.

When assembled with a pan-and-tilt camera, the reduced length of the transporter / camera assembly can negotiate most difficult entry conditions and standard sweeps. The Steerable Pipe Ranger combined with the CUES OZ II optical zoom camera offers you one of the most compact assemblies in the industry.

Operates with multi & single conductor systems!



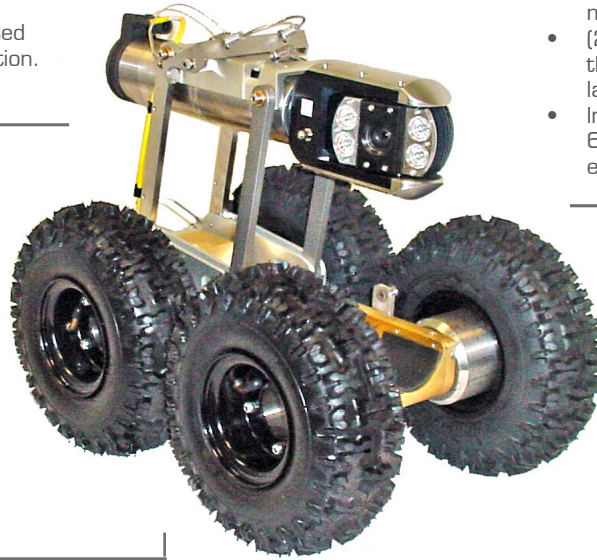
Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras: pan-and-tilt and optical zoom
- Designed to traverse storm drains and pipe with debris and silt
- Freewheel, powered reverse, forward variable speed control
- Rugged, durable and sealed to eliminate water intrusion
- Designed to provide clearance in a 7" diameter pipe; can inspect 8" relined pipe
- All-wheel drive is enclosed and sealed; all brass and stainless steel construction
- Two-speed transmission doubles the torque and maximizes traction in larger diameter pipe or in tough conditions
- Can turn 360° within its own radius; pinpoint control maximizes the ability to traverse challenging pipe conditions
- Flight stick controller to operate the transporter, optional camera lift, and camera movements with one hand; provides operational simplicity
- Three wheel sets (3.7", 5.0", and 10.5" diameter) for small, intermediate, and large diameter pipes; optional high-traction wheels for slippery pipe
- Rear tip-up bulkhead connector minimizes strain on the cable connection during the inspection and retrieval
- Compact camera/transporter length with optical zoom pan & tilt camera (OZ II) facilitates entry into small inverts, small manholes, dead end lines, and traversal of sweeps
- Full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe
- Inspection speed can be optimized to match pipe conditions and pipe size in 8" through 60" pipe



Camera Lift (optional)

- An optional manual or electric camera lift is provided for pipeline inspections ranging from 18" - 60" in diameter to prevent the need for an operator to enter the manhole during inspection and retrieval.
- Camera height varies from the collapsed position to 10.5" in the extended position.



Tires

- (6) wheels are available in various sizes to maximize traction in each pipe size
- (2) smaller diameter wheels remain affixed to the middle axle to help negotiate offsets in larger pipe configurations
- Inspections can be performed in pipes up to 60" diameter with the addition of large diameter wheels

Steerable Transporter

- Base unit includes (6) driven wheels for 8"-15" pipe; (4) driven wheels via multiple sets for 18"- 60" pipe
- Operates on 1500+ feet of multi-conductor video cable in suitable pipe conditions
- Includes a *two-speed* transmission to optimize traction by doubling the torque in difficult pipe conditions or in larger diameter pipe
- Includes full-proportional steering to traverse curved pipe, turn at 90 degree elbows within larger pipeline, turns at tees within larger pipeline, and conduct a complete 360 degree turn within its own radius
- Comes equipped with self-propelled power forward, power reverse, and free wheel capabilities
- Constructed of brass, stainless steel, and aluminum alloy
- Unit is retrieved in the free wheel mode by the video cable reel to reduce the normal wear on the drive motor by 50%
- Compatible with pan and tilt, fixed view, straight line, and optical zoom pan and tilt cameras



Joystick Camera/Transporter Controller Operations

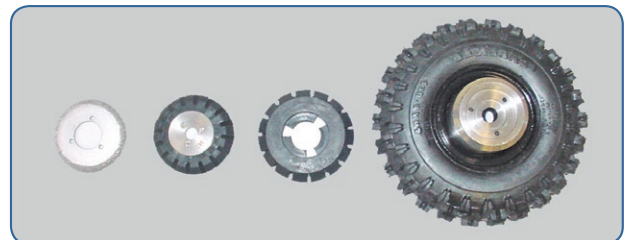
- Speed
- Direction Forward/ Reverse/Freewheel
- Steering Straight/Right/Left
- Camera Auto Center 0 degree return for horizontal / vertical axis
- Camera Rotate 360 degrees Rotate
- Camera Pan 330 degrees Optical Pan
- Camera Electric Lift Up/Down
- Transporter Cruise Control

OPTIONAL EQUIPMENT



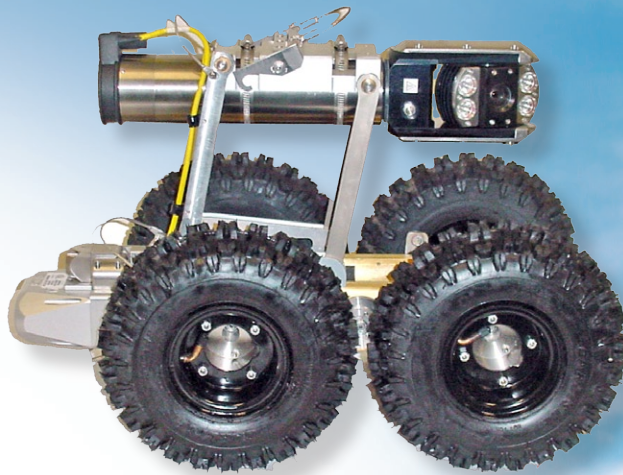
Rear-viewing Camera

- Panel-mounted or stand-alone controller
- Manual or adjustable camera lift to optically center the camera in larger pipe
- Chevron tread or knobby tread for large diameter tires
- Rear-viewing camera to avoid obstacles when pulling back or driving in reverse (for use only with the multi-conductor version and must be used in conjunction with the manual or power lift assemblies)
- Lite Ranger (Pipe Ranger with an aluminum body) for customers that require a light-weight transporter
- High-traction tires for slippery pipe



Multiple wheel sets are available to maximize bottom-clearance, traction, and optimum camera position!

"The Standard of the Industry"



Pipe Ranger

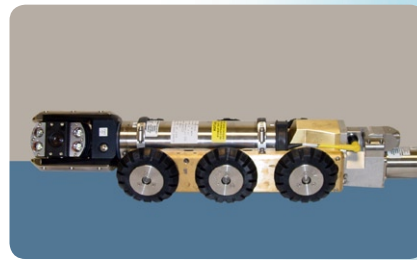
Multi and Single Conductor III Wheeled Transporters

The Pipe Ranger is a rugged and versatile low-maintenance transporter that's specially designed to traverse silt, mud and debris commonly found in storm and sanitary sewers. Three standard wheel sizes and optional manual or electric camera lifts are available to maximize performance. Optional high traction tires are available for extreme slippery conditions.

The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable to inspect 8" relined pipe through 60" diameter pipe. Its unique two (2) speed transmission doubles the torque of the unit to produce maximum pulling power in large diameter pipe when the 10.5" diameter tires are installed.

When assembled with a pan-and-tilt camera, the reduced length of the transporter / camera assembly can negotiate most difficult entry conditions and standard sweeps. The Pipe Ranger combined with the CUES OZ II optical zoom camera offers you one of the most compact assemblies in the industry. Optional steerable units with remote or manual camera lifts are also available.

Operates with multi & single conductor systems!



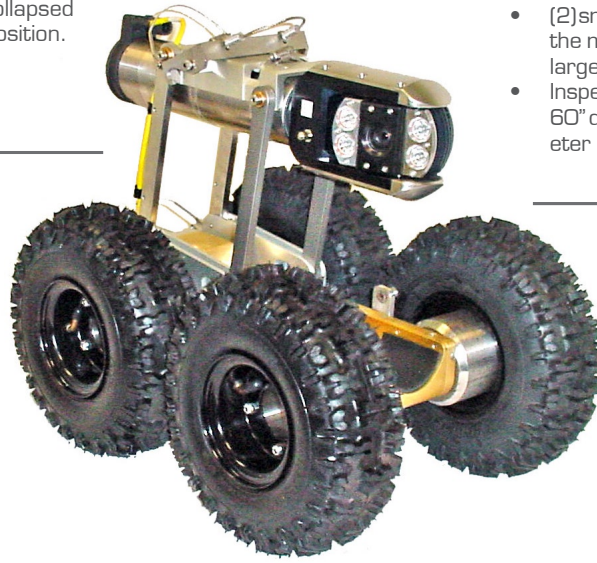
Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras: pan-and-tilt and optical zoom
- Designed to traverse storm drains and pipe with debris and silt
- Freewheel, powered reverse, forward variable speed control
- Rugged, durable and sealed to eliminate water intrusion
- Designed to provide clearance in a 7" diameter pipe; can inspect 8" relined pipe
- All-wheel drive is enclosed and sealed; all brass and stainless steel construction
- Two-speed transmission doubles the torque and maximizes traction in larger diameter pipe or in tough conditions
- Three wheel sets (3.7", 5.0", and 10.5" diameter) for small, intermediate, and large diameter pipes; optional high-traction wheels for slippery pipe
- Rear tip-up bulkhead connector minimizes strain on the cable connection during the inspection and retrieval
- Compact camera/transporter length with optical zoom pan & tilt camera (OZ II) facilitates entry into small inverts, small manholes, dead end lines, and traversal of sweeps
- Optional full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe
- Inspection speed can be optimized to match pipe conditions and pipe size in 8" through 60" pipe



Camera Lift (optional)

- An optional manual or electric camera lift is provided for pipeline inspections ranging from 18" – 60" in diameter to prevent the need for an operator to enter the manhole during inspection and retrieval.
- Camera height varies from the collapsed position to 10.5" in the extended position.



Tires

- (6) wheels are available in various sizes to maximize traction in each pipe size
- (2) smaller diameter wheels remain affixed to the middle axle to help negotiate offsets in larger pipe configurations
- Inspections can be performed in pipes up to 60" diameter with the addition of large diameter wheels

Transporter

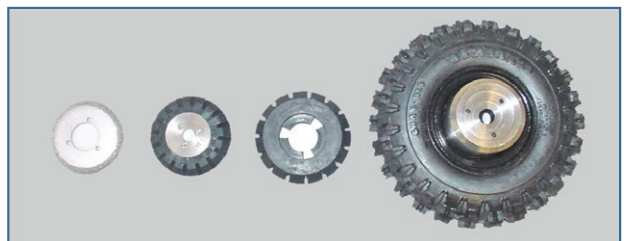
- Base unit includes (6) driven wheels for 8"-15" pipe; (4) driven wheels via multiple sets for 18"- 60" pipe
- Operates on 1500+ feet of multi-conductor video cable in suitable pipe conditions
- Includes a *two-speed* transmission to optimize traction by doubling the torque in difficult pipe conditions or in larger diameter pipe
- Comes equipped with self-propelled power forward, power reverse, and free wheel capabilities
- Constructed of brass, stainless steel, and aluminum alloy
- Unit is retrieved in the free wheel mode by the video cable reel to reduce the normal wear on the drive motor by 50%
- Compatible with pan and tilt, fixed view, straight line, and optical zoom pan and tilt cameras

OPTIONAL EQUIPMENT



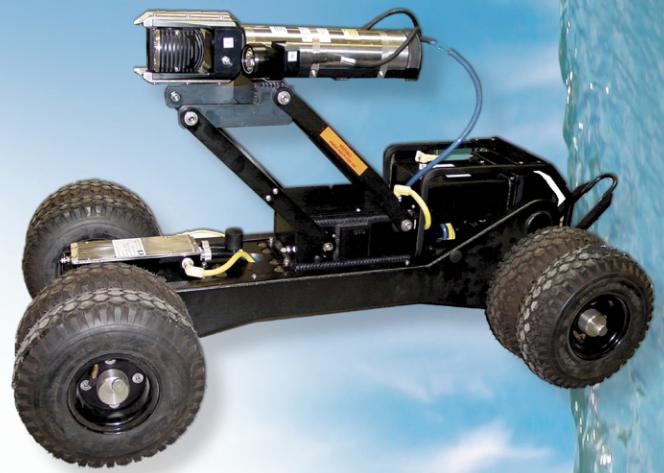
Rear-viewing Camera

- Optional full-proportional steering to traverse curved pipe, turn at 90 degree elbows within larger pipeline, turns at tees within larger pipeline, and conduct a complete 360 degree turn within its own radius
- Panel-mounted or stand-alone controller
- Manual or adjustable camera lift to optically center the camera in larger pipe
- Chevron tread or knobby tread for large diameter tires
- Rear-viewing camera to avoid obstacles when pulling back or driving in reverse (for use only with the multi-conductor version and must be used in conjunction with the manual or power lift assemblies)
- Lite Ranger (Pipe Ranger with an aluminum body) for customers that require a light-weight transporter
- High-traction tires for slippery pipe



Multiple wheel sets are available to maximize bottom-clearance, traction, and optimum camera position!

“The Standard of the Industry”



Steerable Mudmaster

Multi and Single Conductor III Wheeled Transporters

The Steerable Mudmaster is a camera transporter that's specifically designed with the necessary weight, power, high clearance, and all wheel drive for pipelines ranging from 24" to 200". The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable and combines high ground clearance with pneumatic tires to provide the traction and camera stability that's required for operation under the most adverse pipeline conditions including high flow, deep mud, sand and large amounts of debris. Optional tandem wheels are available. The Steerable Mudmaster can turn 360 degrees within its own radius and traverse pipelines with multiple 45 and 90-degree bends. The waterproof remote-operated camera lift can be inserted through a 19" diameter manhole with the camera in the lowest position to preclude the operator from confined space entry. This rugged all wheel drive robot can operate all CUES cameras, including OZ (Optical Zoom Pan and Tilt series) and Night Lite pan and tilt. The unique portable joystick controller enables the operator to control all transporter, camera, and camera lift functions with one hand! Non steerable units with remote or manual camera lifts are also available.

Operates with multi & single conductor systems!

Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras
- Four or eight (tandem) wheels provide greater traction in all types of pipe, under all conditions
- Matched weight and power to maximize efficiency and capability
- Simple dual-wheel installation and captured hardware
- Remote-operated adjustable camera lift to position the camera for best available picture; stable center of gravity when the camera lift is extended
- Inspects 24" through 200" lines
- Rugged, durable and sealed to eliminate water intrusion
- 255 watt light system, variable, adjustable, 3 lamps (2-lamps for single-conductor III units-170 watts total)
- The unit has variable speed drive, power forward, power reverse, and freewheel capabilities
- Flight stick controller to control the transporter and camera movements with one hand; provides operational simplicity
- Operates on 2000' (maximum) of single conductor cable; 1500' of multi conductor cable
- Fits through a manhole with an inside diameter of 19"
- Provide maximum traction on wet or dry surfaces through all types of sediment
- Can turn 360 degrees within its own radius and traverse curved pipe; can turn at 90 degree elbows and tees within larger pipelines; can traverse pipelines with multiple 45 and 90-degree bends
- Utilizes all-wheel drive in conjunction with a low center of gravity to traverse and steer through pipelines
- Longer wheel base to prevent accidental roll-over
- Dual motors to ensure adequate power for longer inspections
- High-clearance for operation in debris-filled pipes



Drive System

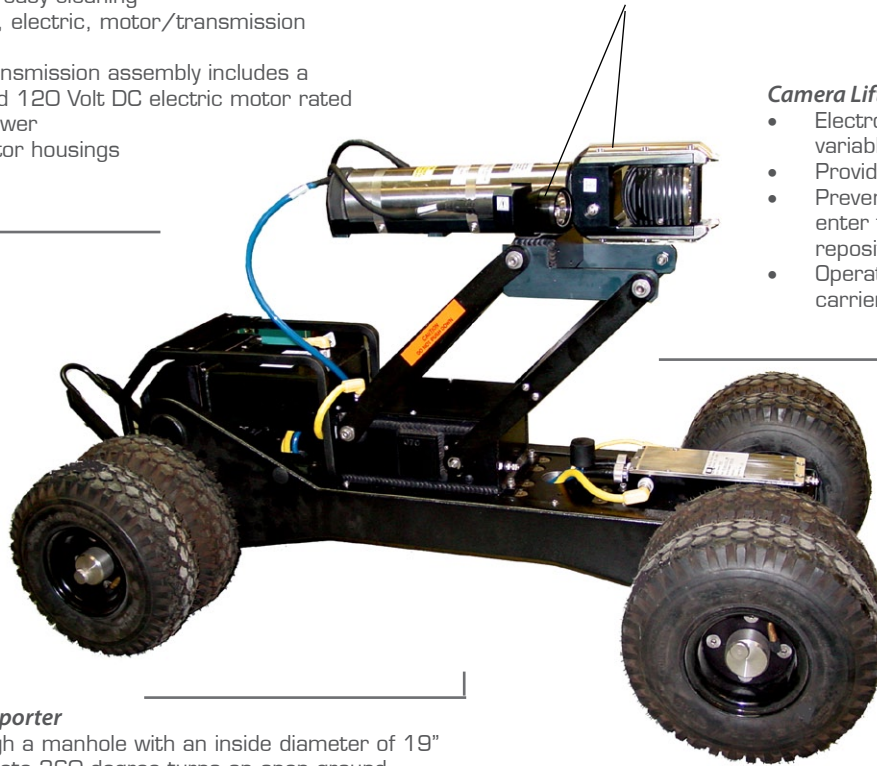
- Permanent drive self-cleaning drive sprockets with "Perfect Coat" steel chains and fiberglass chain guards
- Flush drains for easy cleaning
- (2) independent, electric, motor/transmission assemblies
- Each motor/transmission assembly includes a continuous rated 120 Volt DC electric motor rated at 1/8 horsepower
- Waterproof motor housings

Light Assembly (shown below with a SCIII single conductor unit)

- 2 each independent 85 watt long life light assemblies (170watts)
- Waterproof black anodized aluminum housing, replaceable plug-in bulb, defused lens and locking mount
- Wired to operate independently (in parallel) to preclude total light failure

Camera Lift

- Electronic, remote controlled, infinitely variable camera lift
- Provides a center-of-pipe view
- Prevents the need for an operator to enter the manhole to position and/or reposition the camera height
- Operated from the remote camera carrier controller



Steerable Transporter

- Fits through a manhole with an inside diameter of 19"
- Can complete 360 degree turns on open ground
- Retrieve the camera carrier in the free wheel mode by the video cable reel
- Steer the camera carrier in both right and left directions in adverse pipe conditions
- Includes one set of (8) 10.5" knobby tires with optional 12" chevron tread tires
- Incorporates dual four wheel drive for max traction on wet/dry surfaces through all types of sediment
- Wheelbase of 16" W x 41.5" L when using 10.5" diameter semi-pneumatic tires
- Includes full-proportional steering to traverse curved pipe, turn at 90 degree elbows within larger pipeline, and turn at tees within larger pipeline
- Includes variable speed drive, power forward, power reverse, and freewheel capabilities



Joystick Camera/Transporter Controller Operations

- Direction Forward/ Reverse/Freewheel
- Steering Straight/Right/Left
- Camera Auto Center 0 degree return for horizontal / vertical axis
- Camera Rotate 360 degrees Rotate
- Camera Pan 330 degrees Optical Pan
- Camera Electric Lift Up/Down
- Transporter Cruise Control
- * Camera functions may operate differently than stated above depending on your specific model.

OPTIONAL EQUIPMENT

- 425 watt light system, variable, adjustable with 5 lamps (multi-conductor only)
- Remote or manual camera lift to optically center the camera up to 60" diameter pipe
- Multiple wheel sizes to fit various pipe conditions; 12" diameter Chevron tires for maximum traction and ground clearance; optional liquid filled tires

"The Standard of the Industry"



Mudmaster

Multi and Single Conductor III Wheeled Transporters

The Mudmaster is a camera transporter that's specifically designed with the necessary weight, power, high clearance, and all wheel drive for pipelines ranging from 24" to 200". The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable and combines high ground clearance with pneumatic tires to provide the traction and camera stability that's required for operation under the most adverse pipeline conditions including high flow, deep mud, sand and large amounts of debris. Optional tandem wheels are available. The waterproof remote-operated camera lift can be inserted through a 19" diameter manhole with the camera in the lowest position to preclude the operator from confined space entry. This rugged all wheel drive robot can operate all CUES cameras, including OZ (Optical Zoom Pan and Tilt series) and Night Lite Pan and Tilt. Optional steerable units with remote or manual camera lifts are also available.

Operates with multi & single conductor systems!

Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras
- Four or eight (tandem) wheels provide greater traction in all types of pipe, under all conditions
- Matched weight and power to maximize efficiency and capability
- Simple dual-wheel installation and captured hardware
- Remote-operated adjustable camera lift (optional) to position the camera for best available picture; stable center of gravity when the camera lift is extended
- Inspects 24" through 200" lines
- Rugged, durable and sealed to eliminate water intrusion
- 255 watt light system, variable, adjustable, 3 lamps (2-lamps for single-conductor III units-170 watts total)
- The unit has variable speed drive, power forward, power reverse, and freewheel capabilities
- Operates on 2000' (maximum) of single conductor cable; 1500' of multi conductor cable
- Fits through a manhole with an inside diameter of 19"
- Provide maximum traction on wet or dry surfaces through all types of sediment
- Optional full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe
- Utilizes all-wheel drive in conjunction with a low center of gravity to traverse and steer through pipelines
- Longer wheel base to prevent accidental roll-over
- Dual motors to ensure adequate power for longer inspections
- High-clearance for operation in debris-filled pipes



Drive System

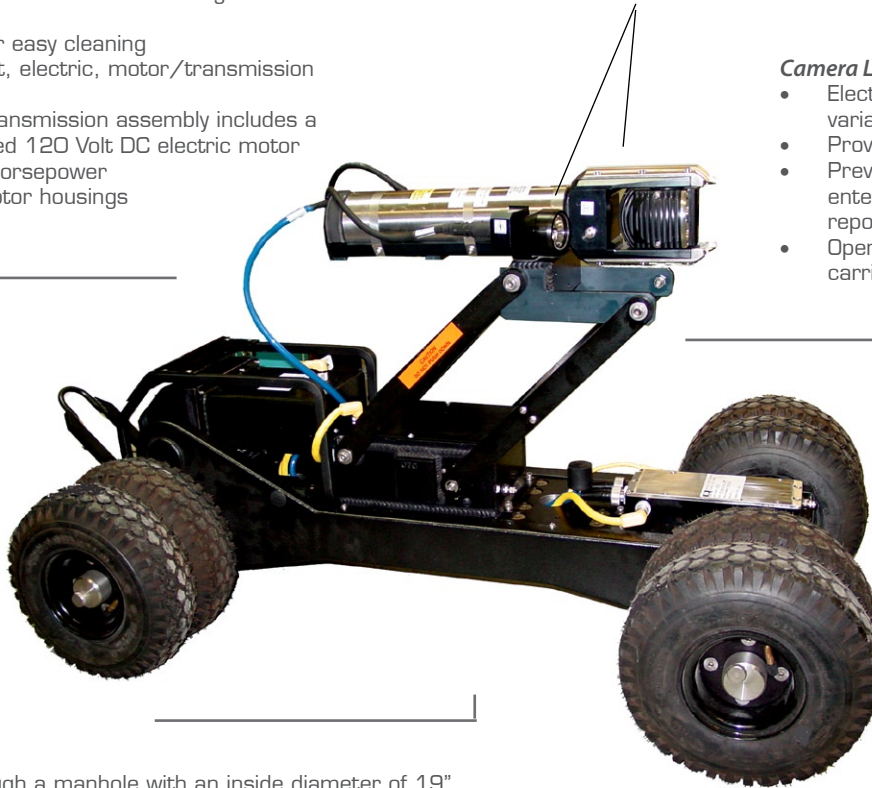
- Permanent drive self-cleaning drive sprockets with "Perfect Coat" steel chains and fiberglass chain guards
- Flush drains for easy cleaning
- (2) independent, electric, motor/transmission assemblies
- Each motor/transmission assembly includes a continuous rated 120 Volt DC electric motor rated at 1/8 horsepower
- Waterproof motor housings

Light Assembly (shown below with a SCIII single conductor unit)

- 2 each independent 85 watt long life light assemblies (170watts)
- Waterproof black anodized aluminum housing, replaceable plug-in bulb, defused lens and locking mount
- Wired to operate independently (in parallel) to preclude total light failure

Camera Lift (optional)

- Electronic, remote controlled, infinitely variable camera lift
- Provides a center-of-pipe view
- Prevents the need for an operator to enter the manhole to position and/or reposition the camera height
- Operated from the remote camera carrier controller

**Transporter**

- Fits through a manhole with an inside diameter of 19"
- Can complete 360 degree turns on open ground
- Retrieve the camera carrier in the free wheel mode by the video cable reel
- Includes one set of (8) 10.5" knobby tires with optional 12" chevron tread tires
- Incorporates dual four wheel drive for max traction on wet/dry surfaces through all types of sediment
- Wheelbase of 16" W x 41.5" L when using 10.5" diameter semi-pneumatic tires
- Includes variable speed drive, power forward, power reverse, and freewheel capabilities

OPTIONAL EQUIPMENT

- 425 watt light system, variable, adjustable with 5 lamps (multi-conductor only)
- Remote or manual camera lift to optically center the camera up to 60" diameter pipe
- Multiple wheel sizes to fit various pipe conditions; 12" diameter Chevron tires for maximum traction and ground clearance; optional liquid filled tires
- Optional full proportional steering control to traverse meandering pipe with 45 and 90 degree turns; minimizes transporter turnover in small diameter pipe

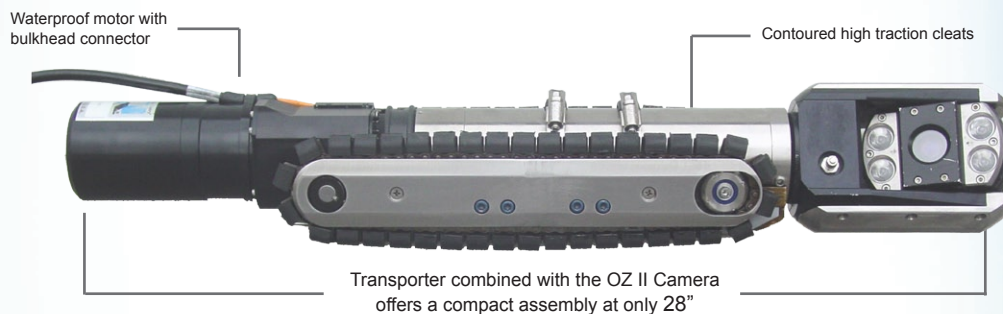
“The Standard of the Industry”



Ultra Shorty 21

Variable Weight Tracked Transporter

Ultra Shorty 21 offers the same quality and proven performance as the Ultra Shorty transporter but also provides a reduced length measuring under 21". This transporter can inspect 6" to 36" lines with major offsets and protruding laterals. Adapter blocks are available to optically center the camera in 30" to 36" lines. The Ultra Shorty 21 transporter combined with the CUES OZ II optical zoom camera offers you one of the most compact assemblies in the industry at only 28" achieving maximum clearance in 6" or 6" relined pipe. For added versatility, the Ultra Shorty 21 can be used with your Inspector General mini-system. A retro kit is available to convert the Ultra Shorty to an Ultra Shorty 21.



One of the most compact assemblies in the industry!

Features & Benefits:

- Reduced camera/tractor length to 28" with optical zoom pan & tilt camera [OZ II]; allows line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines
- Proven transmission with power forward, freewheel and power reverse; high speed retract without running over cable and easy to back out of a dropped manhole
- Weighted track extenders that lift to optically center camera; greater weight for increased traction
- Waterproof motor with bulkhead connector; protection against leaks and motor damage
- Self-cleaning drive sprockets; maximum performance in mud and sand
- Contoured high traction cleats; maximum pipe wall contact for greater traction
- Greater than 1" top clearance and 1" bottom clearance in 6" lines; navigates through offsets and protruding laterals
- Operates in 6" to 36" lines; maximum versatility and applications
- Dual track fasteners; increases track and cleat life
- Inspection speed can be optimized to match pipe size and conditions



“The Standard of the Industry”



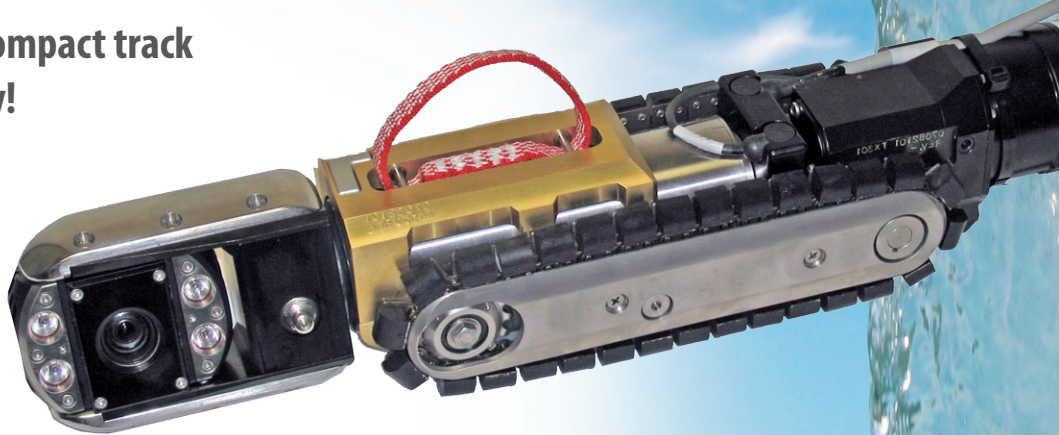
NEW! ULTRA SHORTY III

Variable Weight Tracked Transporter

Ultra Shorty III offers the most compact track transporter in the industry today!

When used with the CUES OZ III optical zoom camera, the total length of the camera / transporter assembly is only 23.5" long, with a width of 4.25" when set up to inspect 6" pipe. Maximum clearance is provided for 6" and 6" relined pipe. The Ultra Shorty III can inspect 6" relined to 24" lines with major offsets and protruding laterals.

The Ultra Shorty III is provided with a built in protective housing and bulkhead connector to accommodate the mounting and direct connection of the CUES OZ III Zoom Pan and Tilt Camera. Weighted adapter blocks are available to optically center the camera, and increase traction and bottom clearance in 8" through 24" lines. For added versatility, the Ultra Shorty III with OZ III can be used with any multi-conductor system.



Maximize your advantage in 6" relined pipe!

Features & Benefits:

- Reduced camera/tractor length to 23.5" with optical zoom pan & tilt camera [OZ III]; allows line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines
- * Built in connector and protective housing for direct insertion of the OZIII camera. No camera interface cables are required.
- * Reduced width (4.25") enables full pan and tilt / zoom capabilities in 6" relined pipe
- Proven transmission with power forward, freewheel and power reverse; high speed retract without running over the cable and easy to back out of a dropped manhole
- Weighted track extenders to optically center the camera; greater weight for increased traction, increase bottom clearance as pipe diameter increases
- Waterproof motor with bulkhead connector; protection against leaks and motor damage
- Self-cleaning drive sprockets; maximum performance in mud and sand
- Contoured high traction cleats; maximum pipe wall contact for greater traction
- Inspection speed can be optimized to match pipe size and conditions
- Operates in 6" relined to 24" lines; maximum versatility and applications
- Dual track fasteners; increases track and cleat life

"The Standard of the Industry"



NEW! WTR III

Wheeled / Tracked
Transformer Transporter

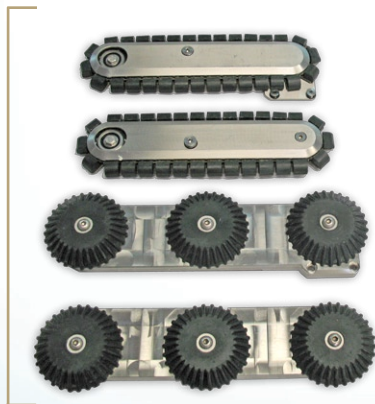
2-in-1
unit!



Transform your transporter to accommodate varying pipe conditions!

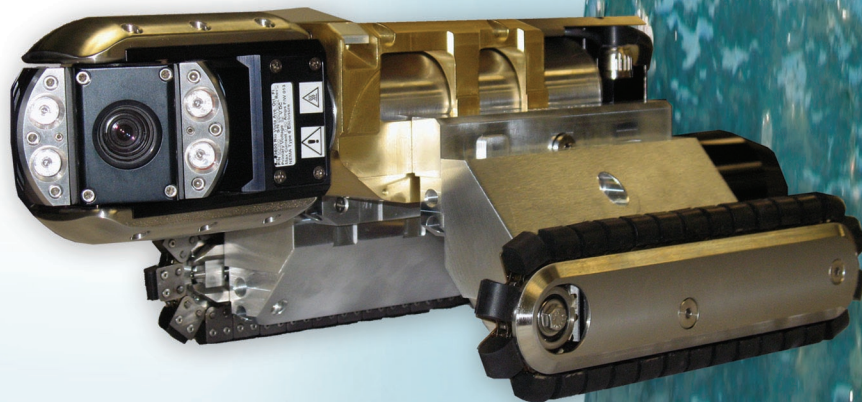
- Traverse varying pipe conditions with quick install of wheels or tracks
- Inspects 6" relined through 30" pipe
- Single point removal of wheels
- Optional high-traction tracks are available, easy to install
- Weighted adapters optically center the camera in each pipe size and increase bottom clearance
- Various wheel sets available to maximize performance in various pipe conditions
- Compact transporter enables traversal of offsets in small diameter pipe and entry into tight spaces
- Camera connects directly into transporter with protective carriage assembly
- Works with CUES OZ III pan and tilt zoom camera or CUES OZ III Nite Lite Pan and Tilt Camera
- WTR III base configuration includes wheels; optional tracks are available

*Adapt the
transporter
based on your
needs!*



Go **GREEN** with
CUES Blue!

Improving your environment one pipeline at a time.



800.327.7791
www.cuesinc.com
salesinfo@cuesinc.com

LAMP

"The Standard of the Industry"



LAMP Lateral & Mainline Probe

The self-propelled LAMP accomplishes a one-pass pan & tilt inspection of the mainline ranging from 6" through 24" diameter, with a simultaneous inspection of the adjacent lateral services up to 80 ft.! Equipped with two high resolution cameras, the LAMP picture-in-picture feature enables the operator to monitor the pan & tilt inspection of the mainline and launch a camera from the mainline to inspect the adjacent lateral service. LAMP is an essential inspection tool for identifying infiltra-

tion and inflow, solids accumulation, root infiltration, pipe defects, and the structural condition of lateral services and mainline sewers! LAMP can be used in the horizontal boring industry for precisely locating lateral services, avoiding costly damage to the existing infrastructure during the boring process. LAMP can also be used to verify the quality of rehabilitation processes such as lateral and mainline relining and spot repair. The system can be mounted in a truck or retrofitted to most existing truck-mounted CCTV systems.

Accomplish a one-pass mainline inspection with a simultaneous adjacent lateral inspection!

Features & Benefits:

Pan & Tilt Camera and Lateral Inspection Camera

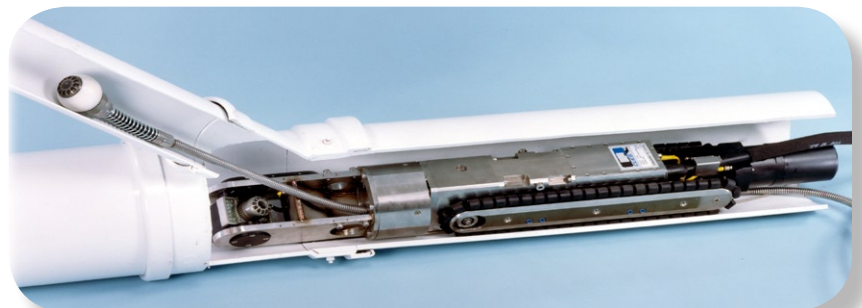
- Pan & tilt inspection of mainline with simultaneous inspection of lateral service
- Pan & tilt inspection of 6" through 24" diameter mainlines
- Lateral inspection of 2" through 6" diameter services
- Both camera dimensions = 1.5" diameter x 3.5" length
- Centering ball for lateral camera - maximizes protection and passage
- White LED lighting for both cameras, life expectancy rated at 5000 hours
- Self-propelled camera launcher contains pan & tilt camera and lateral camera
- Low lux cameras - light sensitive to .3 lux at F1.2
- High resolution cameras - great clarity of detail
- Optional sonde and camera locating receiver; optional self-leveling / auto upright lateral camera

LAMP Controller

- Variable light intensity for mainline and lateral cameras
- Rotation control for launcher
- Joystick control of extend/retract with variable speed for the lateral camera
- Joystick control of pan & tilt camera
- High voltage and over current LED indicators to protect all equipment



LAMP Controller





LAMP

Features & Benefits continued

Lateral/Mainline Self-Propelled Camera Launcher

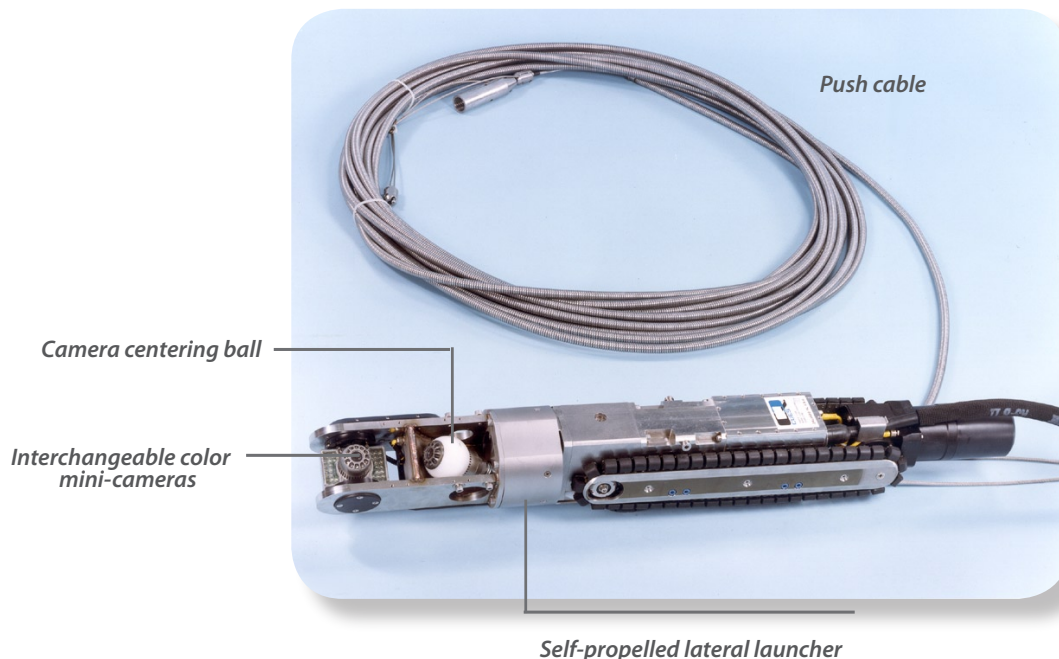
- Launcher is self-propelled with forward, freewheel, and powered reverse - 60 ft. per minute maximum forward speed
- Lateral camera launches, extends, and retracts at a maximum speed of 30 ft. per minute.
- Displays mainline and lateral footage on screen and videotape
- Launcher optically centers the camera in the pipe above most flow and debris lines
- Launcher contains variable weight extenders, which increase weight [traction] and bottom clearance as pipe diameter increases
- Launcher rotates to position lateral camera for entry, monitored by pan & tilt camera and picture-in-picture video display
- Robust 83 ft. combination push/video cable for lateral camera enclosed and protected by a stainless steel sheath
- Length of launcher with pan and tilt camera and lateral including connectors is less than 37" long

Lateral/Video Cable Reel

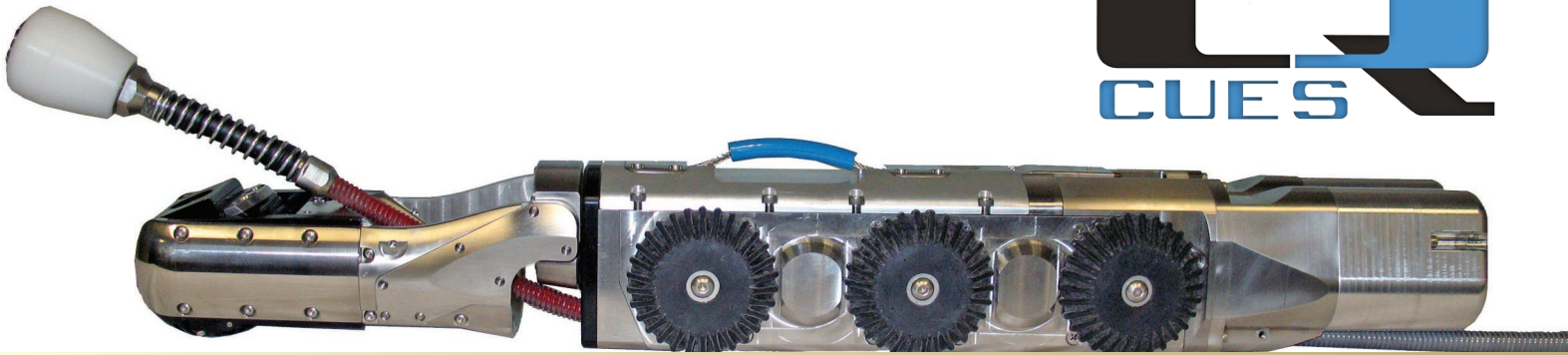
- Storage for integrated lateral/video cable
- Variable speed control with clutch for easy retrieval of integrated lateral/video cable

Optional Equipment

- Stand-alone controller
- A sonde, built into the lateral mini-camera, is available to help accurately locate the camera in metallic and non-metallic pipes. The sonde can operate with any constant tone, 512Hz locator/receiver
- ProScout III or Self-upright interchangeable color mini-cameras



"The Standard of the Industry"



LAMP II

Lateral & Mainline Probe II

ACCOMPLISH A ONE-PASS MAINLINE INSPECTION
WITH A SIMULTANEOUS ADJACENT LATERAL INSPECTION!



Inspect Mainlines and Adjacent Lateral Services
With One Inspection Run

Lightweight / Compact Wheeled Unit! Pulls 1000 ft.

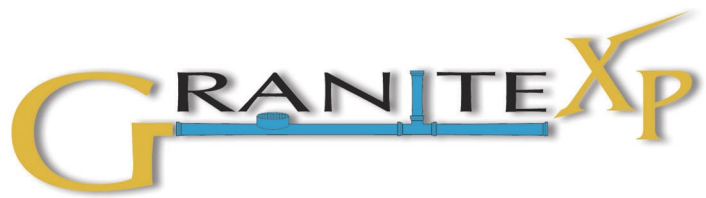
Single Point Removal of Wheels

Easily Fits Into a 6" Line

- Inspect 6"-15" mainlines and 3"-8" lateral services
- Front mounted pan and tilt zoom camera (40:1 Optical / Digital Zoom) completes mainline inspection and monitors lateral camera
- Lateral camera with built in auto upright feature keeps the image stabilized at all times
- Built-in Sonde in the lateral camera for locating
- Maximum clearance in a 6" diameter line
- Supplied with 3 sets of Wheels for 6"-15" lines
- Optional wheel sets - steel based for high traction
- Traverses 45 and 90 degree bends in lateral services
- Quick removal and insertion of wheel sets
- 80 ft. push cable
- Rear tip-up connector
- Compact length



*Maximum clearance in
a 6" mainline!*



**ASSET INSPECTION & DECISION SUPPORT SOFTWARE
FOR THE WATER, WASTEWATER, & STORMWATER INDUSTRIES**





The Software Solution for Managing Your Asset Infrastructure

For over 40 years, CUES has provided innovative pipeline infrastructure inspection technology and equipment to the global Water/Wastewater industry.

From its 70,000 sq ft facility in Orlando, Florida, CUES combines highly refined electro-mechanical engineering disciplines with proven software engineering processes to produce nearly indestructible robotic equipment that is tightly integrated to a versatile software foundation, providing unrivaled solutions to the Water/Wastewater industry globally.

With the advent of various US regulatory compliance mandates such as GASB 34, CUES is committed to enabling its customers to conform to these requirements through the use of a comprehensive infrastructure inspection software solution called Granite XP.

Granite XP is architected using contemporary Microsoft technologies and offers unmatched flexibility, customization, and ease-of-use to meet the growing needs of the industry. Granite XP has many advantages which are critical to deploying a comprehensive Capacity Assurance, Management, Operation, and Maintenance program (CMOM) that is simultaneously aligned with Federal regulations.

What's unique about Granite XP and why should I care?

The Federal Government's *Governmental Accounting Standards Board* Statement No. 34 (GASB 34), has mandated that municipal utilities report current values for their infrastructure in their annual financial reports. In the past, municipalities did not have to report on the value of all capital assets which created unacceptable levels of risk to bond underwriters who are critical to ensuring that municipal infrastructure rehabilitation projects get funded sufficiently to support EPA guidelines. Failing to comply can carry an enormous financial penalty to a municipality, and in certain conditions, criminal liability to senior managers. For these reasons, CUES proactively innovated a solution which assists municipalities with these mandates to create computerized asset inventories which allow asset values to be documented and calculated more accurately.

Deploy a Comprehensive CMOM program that conforms to GASB 34 regulations!

...the difference between **asset-based** and **inspection-based** software.

How is Granite XP different than the other available packages to meet these mandates?

Because Granite XP is designed with an asset-based architecture, the ability to view infrastructure at an asset level is possible. Unlike any of its competitors in the space, Granite XP offers 2 ways to organize and view pipeline inspections: the classic "project-based" method and the "asset-based" view of pipeline infrastructure. We think the differences are critical for a regulated entity to meet or exceed the asset-management requirements for GASB 34, CMOM and the EPA.

There are two significant limitations associated with project-based software packages that Granite XP overcomes. The first limitation occurs when a new inspection is being performed on an existing physical location, or asset. An operator in the field can create a new inspection without any visibility to previously performed inspections done on the same location. Thus, there is a chance that the operator could be entering in the wrong data associated with that asset and the project-based software would offer him no help in alerting him to this fact. Consequently, the operator could record the asset as being eight inch pipe when the previous inspections correctly recorded that the pipe was actually six inch pipe. Project-based inspection systems have no ability to link the past to the present and are unable to remind people that, for example, they are about to change an attribute of the asset which conflicts with previously completed inspections. When bad data is entered into

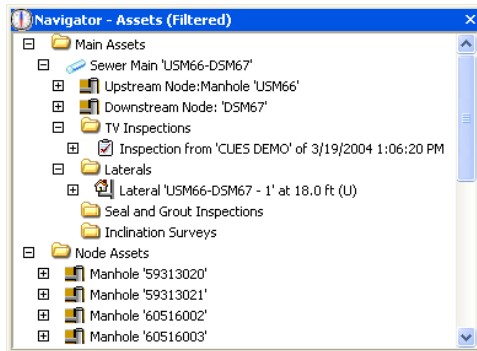


the system it is very expensive and time consuming to fix. Granite XP tracks all the history and can alert an operator to the fact that they are about to change something which was recorded differently during a previous inspection, and this reduces costly errors.

The second significant limitation associated with project-based software packages is that inspections performed on physical locations or assets are stored in multiple separate projects. Each project becomes its own separate database composed of manholes, pipe segments, laterals, etc. Thus, when the time comes to review the entire infrastructure or a particular subset such as a sub-basin, all of the associated projects created in the target area must be painstakingly reviewed and stitched together to answer frequently asked questions such as "show me all the inspection history on pipe segment XYZ or manhole ABC". Viewing historical data at the asset level becomes very difficult to accomplish with project-based inspection packages when this information is grouped into multiple separate projects. Some utilities with large systems even hire costly database administrators to merge this information on a full time basis due to this limitation. Managing infrastructure data in individual project databases complicates the process of proving to regulators that an effective CMOM program is in place. An asset-based system like Granite XP on the other hand is able to track everything at the asset level and seamlessly integrate this information to enterprise asset management and GIS systems. This feature successfully provides the granularity that decision makers, and sometimes regulators, require for an effective CMOM program.

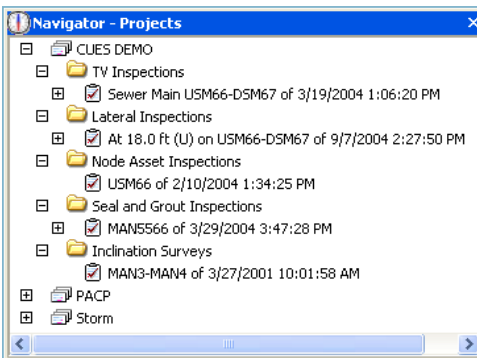
Precise Asset Data Enables Effective Regulatory Compliance!

How can you tell if a pipeline inspection package is Asset-based?



Browse/display by Assets

A
s
s
e
t
s



Browse/display by Projects

P
r
o
j
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s

Can your software import an entire asset database? In Granite XP, separate database tables are created and maintained which allow an entire GIS asset database to be imported into the software and enable the information to be constantly updated (synchronized) with 'official' asset information from the municipality or City's master GIS database. We know of no other package which can do this.

This means that people are all able to look at the same master data and able to eliminate costly manual data entry errors and avoid asset naming discrepancies often found in inspection-based systems. Imperfect information often originates out in the field in trucks which creates cascading errors and inefficiencies throughout the entire municipality to correct and translate inspection information into precise *asset* information. With Granite XP, what used to take hours of manual data entry can now be performed more efficiently and exactly, with the click of a mouse allowing enormous productivity gains by your most important assets....your employees!

Precise Asset data enables effective regulatory compliance as well as creating the foundation for a proactive maintenance program. But Granite XP can still collect data the old fashioned way using the inspection-based method, should you prefer this, while simultaneously allowing for an Asset-based approach. You decide how you'd like to view the data - and that's one of the many powerful features that Granite XP provides.

Granite XP offers two ways to organize and display pipeline inspections: the classic "project-based" method and the "asset-based" view of pipeline infrastructure. A project is defined as a set of inspections. The "Project Navigator" will display the set of inspections defined by the user, where as the "Asset Navigator" will display all of the historical inspections of a particular asset.

Granite XP Editions

Which one is right for you?

Whether you're a truck operator, an IT professional, an Engineering firm, a municipality, or a GIS administrator, the CUES Granite XP Infrastructure Management Software is a solution designed to integrate all aspects of the TV inspection process. In order to meet the needs of different users, Granite XP offers 4 different Editions to meet your infrastructure assessment needs:

Inspection Edition - allows users to perform pipeline inspections out in the field often connected to camera systems to capture, assess and store inspection data.

Office Edition - allows users to manage inspection information and create customized inspection analysis in the form of reports, videos, still pictures, and database files to meet a wide array of data requirements. Capable of running on Enterprise databases such as Oracle 9i and SQL Server, the Granite XP Office Edition offers unmatched data synchronization power to enable multi-truck environments to manage disparate data within one master database. Additionally the Office Edition can import, export and manipulate data to meet virtually any requirement from GIS to PACP.

Engineering Edition - allows users to modify inspections and observations gathered in the field, to review existing data, synchronize inspections, capture images from playback and generate reports.

Viewer Edition - allows users to review and share information gathered during inspections and generate reports.



Key Advantages Unique to Granite XP!

Granite XP makes the inspection process faster and easier with less manual error!

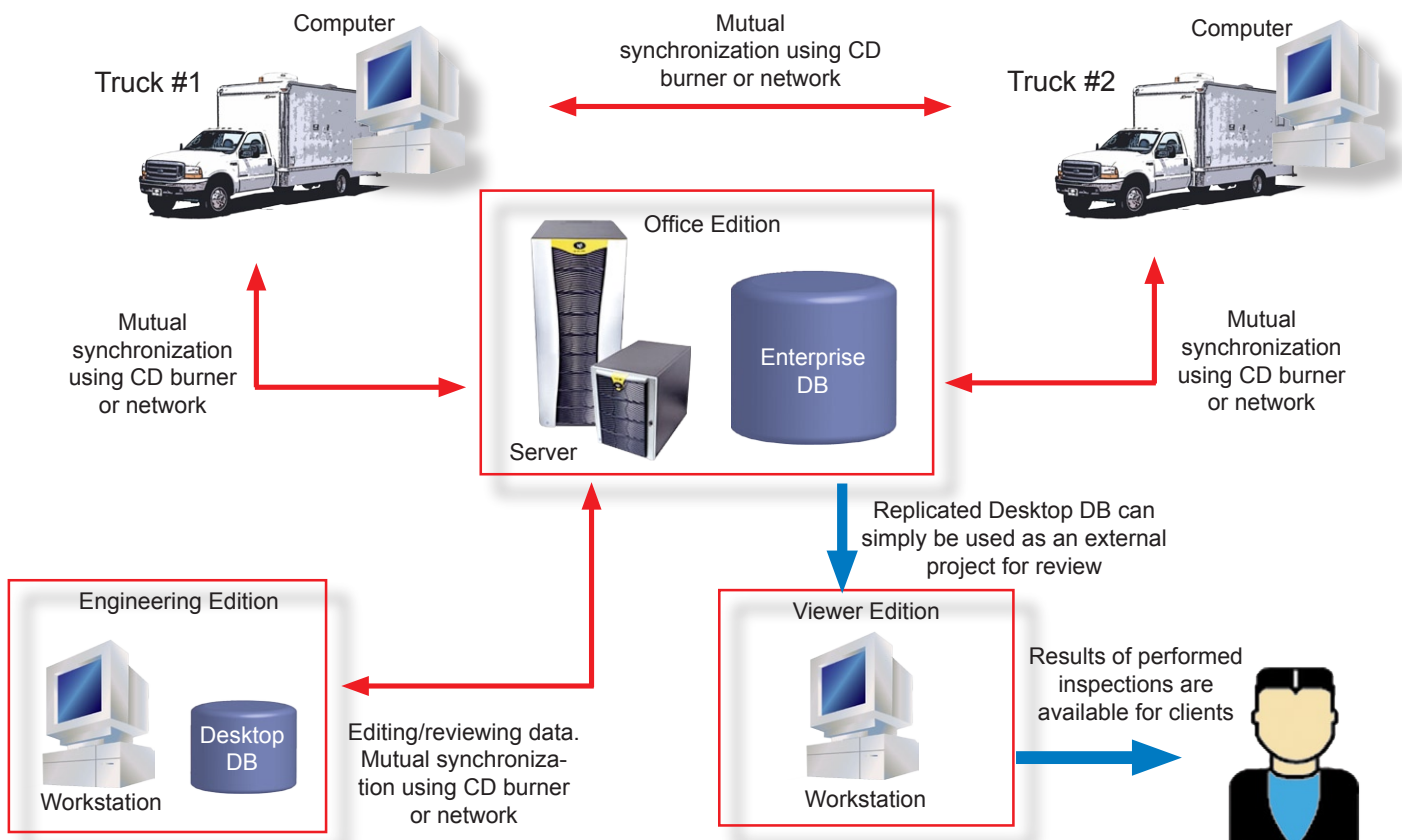
Robust Data Management Capabilities- Synchronization & Export

Granite XP has been designed from the ground up to facilitate the management of data and can support, synchronize, **and run on** multiple enterprise databases such as **Oracle** and **SQL Server** in addition to Microsoft Access.

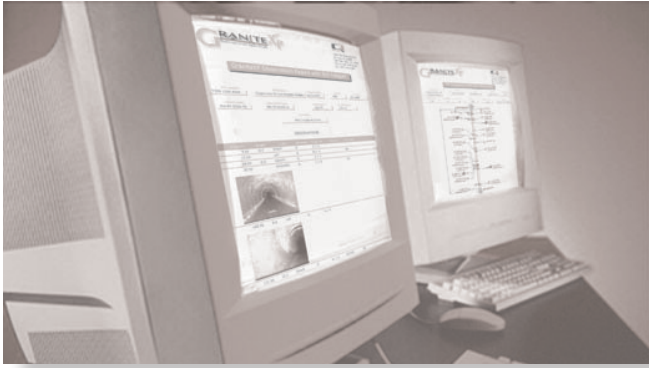
Viewing and sharing data among disparate locations is very complex. Two extremely important capabilities in any data management system are Synchronization and Export:



- **Synchronization** is the process of bringing together two separate databases comprised of data, video, and pictures to make them each identical. Users with multiple trucks or separate offices can synchronize data between one another and/or with a master database from the GIS department, to ensure local and remote databases are identical. Synchronization assures that records are not duplicated and that changes made to an inspection are transferred identically to another location. If similar but conflicting information is found during synchronization, Granite XP allows the user to determine whether to update or skip a particular record.
- **Export** is the process of selecting portions of the original data, video, and pictures, and creating a complete and independent copy of this information which can then be used by any Granite XP Edition. This is especially useful for the initial creation of truck databases. Office users can select the Assets and Projects to transfer to a particular database. All or part of a database can be replicated from Granite XP, with or without videos and pictures. This new file can be burned to a CD/DVD and brought into the office from the truck, or vice versa.



Granite XP is enterprise-enabled and has the ability to support and synchronize with multiple data sources, such as Microsoft Access, Oracle, or SQL Server.



Key Advantages Unique to Granite XP!

Granite XP offers built-in flexibility and extensibility for continuous innovation and easy upgrading!

Extensibility - Granite XP is “future-proof”!

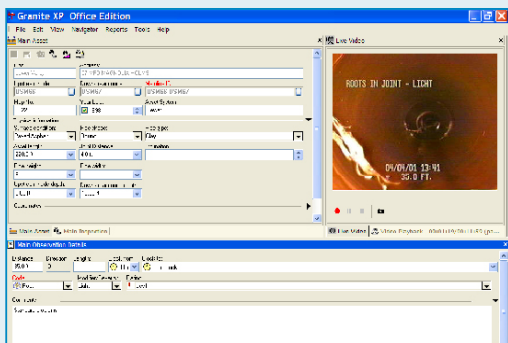
The revolutionary flexibility of Granite XP comes from the use of software plug-ins. Plug-ins provide the ability to add new features to Granite XP so that the core application can continually grow and accept new technologies from the vast spectrum of robotic devices that will enter the industry. With the use of plug-ins, third-party software, custom-designed modules, and asset infrastructure management systems can be easily integrated without rebuilding the program! What this means to our customers is that they can purchase various technology “modules” that they require on an “as needed” basis. When new equipment is purchased, a specific software module can be purchased as well when the time is right for your organization.

Multiple Compatibility Modes!

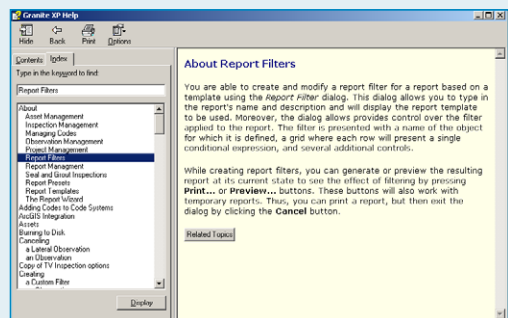
Compatibility Modes ensure that files and reports are fully compatible with other software products and standards. The Compatibility Modes that are currently available with Granite XP include Standard, Hansen, Azteca Cityworks, PACP, WRc, and WinCan. Each compatibility mode displays the correct fields and logic required for the selected system. You can activate multiple compatibility modes at the same time or change the mode without having to load different software! Contractors and Engineering firms who serve multiple customers can leverage Granite XP to accommodate the varying data format needs of their customers.

Flexible, Customizable Code Systems!

Granite XP includes a Code Editor that’s equipped with several standard code systems, including PACP, WRc, and supports user-defined code systems. Each project can have it’s own code system and measurement units based on individual inspection requirements! A code system not only includes observation codes, but also pipe types, surface condition, operators, etc. Code “hotkeys” can also be implemented per your preferences and can be linked to actions, such as “Start Lateral Inspection”. Granite XP also provides a quick and easy way to customize the fields and labels based on your specific requirements!



GRANITE XP'S SIMPLE USER INTERFACE



GRANITE XP'S INTEGRATED ONLINE HELP

Microsoft Windows™ Technology!

Granite XP uses familiar Microsoft Windows™ layout standards to provide simple, intuitive layout screens that are customizable to meet your needs depending on your preferences, including:

- Use of tool bars for operation
- Drop-down menus and auto-complete feature for quick and accurate selection and data entry
- Detailed HELP files available within the program
- Ability to create custom layouts with movable “panes” to create and save your favorite layout
- Easy navigation provided by Windows™ user-friendly tree-structure



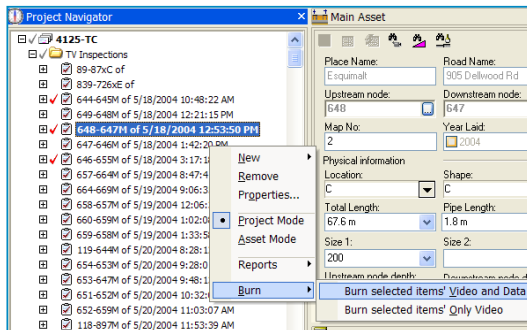
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Key Features of Granite XP!

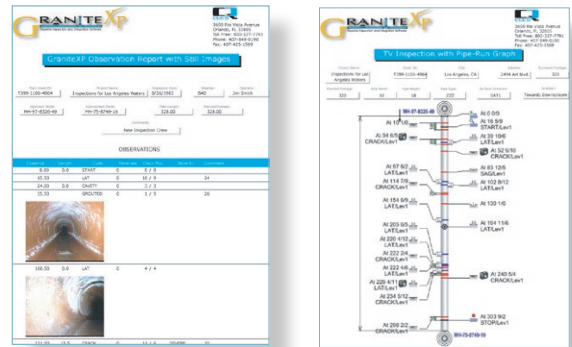
Granite XP includes special features that allow you to get the most from your infrastructure management system!

List of Key Features:

- Ability to import ESRI Asset Data into Granite XP from a Master GIS database
- “Single click” CD/DVD burning makes it simple
- “Single click” report creation and picture printing
- Create standard and custom Reports with built-in templates which include your logo and can be saved in PDF, HTML, or ASCII file format and can be emailed from Granite XP
- Export data in multiple formats including Oracle, SQL, Access, PACP, WRc Sewer.dat, Sewer1.dat, Hansen, Azteca Cityworks, WinCan and ASCII
- Powerful Search using keywords and Filtering capabilities by projects, assets, inspections, and observations
- Perform reverse setups in a single inspection, “upstream against the flow” or “downstream with the flow” to display upstream and downstream observations on the same inspection
- View live video and images simultaneously or select an observation on the Pipe Graph to access that precise point in a MPEG I, II & IV video instantly
- Software-based titling for post processing in the office
- Customize Granite XP with components of its source code to leverage your internal IT resources who maintain your existing systems
- Two Optional Annual Support Plans to choose from



GRANITE XP'S PROJECT NAVIGATOR WITH ONE-CLICK BURN



GRANITE XP'S REPORT CREATION AND PICTURE PRINTING

Generate a positive ROI!

An investment in Granite XP will generate a significant return on your investment because the software has been architected on Microsoft technology which can be leveraged for many years to come. The CUES Software Division will continue to broaden and enhance Granite XP to meet the needs of the changing Water/Wastewater industry. If you need help evaluating technology, have questions, or need solutions to maximize process efficiency gains for your organization, contact the CUES Software Division for more information at 800-327-7791 or email GXPinfo@cuesinc.com. The CUES Software Division can provide industry-specific consulting and offers a team of certified experts to help identify solutions to your specific Water/Wastewater needs. Make the investment in Granite XP today – your assets depend on it!

Optional software modules available in Granite XP:

- **ESRI Module** - bi-directional synchronization with ArcView
- **GPS Plug-in Module** - supports GPS devices (NMEA-0183 compatible), display and obtain current GPS coordinates
- **Manhole, Structure, and Nodes Module** - capture inspection and observation details, which are all linked to the structure, node or manhole
- **PACP Export Module (NAASCO certified)**
- **Inclination Module** - accurately capture and graph the slope of the pipe and evaluate pipe conditions as the inspection is performed
- **Lateral Assets Module** - capture inspection data, observation details, video, and pictures, which are all linked to the lateral structure
- **WRc Compatibility and Export Module** (Sewer.dat & Sewer1.dat)
- **Hansen Formula-Based Sewer Module** - certified bi-directional interface to all Hansen v7x
- **Hansen Storm Module** - certified bi-directional interface to all Hansen v7x
- **Azteca Cityworks Module** - bi-directional interface to Azteca Cityworks
- **WinCan Export Module** - allows data to be collected and exported to WinCan v7
- **Seal & Grout Module** - record pressure changes during air tests and graph pressure tests that show repair integrity and track grout usage
- **Scheduler Module** - allows you to schedule recurring tasks for transferring data, media files, and synchronizing databases. Plan daily, weekly or monthly schedules for automatically transfer or archive data.



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PRODATA 2000 Professional Data System



PRODATA 2000

DATA RECORDING - The CUES ProData 2000™ is designed to collect and convert cable distance, joint pressure or grade level data into electronic characters for displaying on a video monitor, recording on a video tape, and printing of a hard copy inspection report. Data can be shown in imperial or metric units.

A lighted front panel LED display shows either distance, pressure, grade, time, or date for operator confirmation and system testing. A preprogrammed on-screen pipeline data report header prompts the operator to enter the required data to precisely identify the job, the line segment, pipe and manhole conditions. A pipe or manhole observation can be inserted using either the free format screen or a built-in, pre-defined 3 letter coded defect. The program includes 200 programmable observations of which 55 are preprogrammed. An optional 5 1/2 oz., hand-held Bar Code Reader is available for quick, consistent and error free defect entry.

ON-BOARD REPORT WRITER - A standard parallel port provides the capability to print an on-board sequential inspection report using an optional ink jet or similar data printer.

COMPUTER INTERFACE - The ProData 2000™ is equipped with an RS-232 serial connector for two way communication with a computer running CUES software. In this configuration the system capabilities expand to include image capture and multiple reports.

OPERATION - Character display intensity can be adjusted from black to white providing maximum visual contrast. The character display can be positioned anywhere within the visible picture area preventing the masking of significant details. When used with chemical sealing or with the CUES Slopemaster grade level inclinometer, distance and pressure or slope (degrees) can be selected for simultaneous display and recording.

A built-in rechargeable memory backup retains the last data entered even when power is off. On power up the stored data and distance will be displayed. The ProData is an all solid state electronics system incorporating the latest state of the art processing capability. The ProData system is built into a standard 3 1/2" X 19" rack mount frame and includes a standard, mini size "QWERTY" keyboard.



PRODATA PLUS 2000

PRODATA PLUS 2000 - In situations when report writing to a floppy disk is desired instead of RS-232 computer communications, the ProData Plus 2000™ is the perfect choice. In addition to the data gathering and report printing capabilities of the ProData 2000™, the ProData Plus 2000™ records the inspection in a 3 1/2" floppy disk using ASCII text format. These text files can be read by most word processors or spreadsheet programs for re-printing or editing. Inspection files can be directly exported to other databases or GIS systems without the need for manual re-entry. The ProData Plus is built into a standard 3 1/2" X 19" rack mount frame and includes a built in 3 1/2", 1.44 Meg floppy disk drive, and mini size "QWERTY" keyboard.

MINI-MAINLINE CAMERA SYSTEMS

CUES portable systems are manufactured for rugged reliability and designed to handle rigorous field use. They are used by private contractors and municipalities for various sewer, storm drain, lateral service, and industrial inspection applications.



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K2 with Wheeled Dolly

**Rugged
Durable
Versatile**

- *Wireless control of all camera and transporter functions!*
- Integrated hand-held controller for all CUES transporters and pan and tilt cameras
- Built in video overlay unit
- Built in systems diagnostics
- Portable and compact; easy to move for easement inspection
- 10" LCD high resolution flat screen monitor
- Lightweight / compact unit
- Rugged video cable; minimum 1000 lbs break strength
- 1000 ft. video cable capacity
- Works with Granite XP Asset Inspection/Decision Support Software



An optional DV-1 Touch Digital Video Recorder (DVR) is available to digitally record the video inspection and audio to save on the included flash drive!

CUES

Toll Free: 800.327.7791

www.cuesinc.com

Email: salesinfo@cuesinc.com

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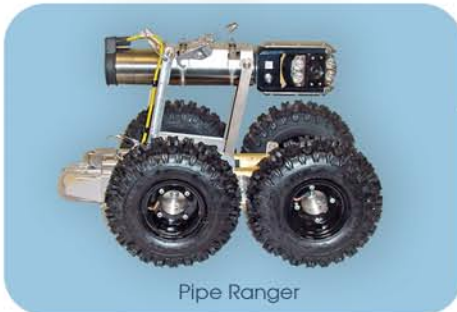


K2 Series

Versatility, durability, and reliable performance! The K2 portable Base Station can be mounted in a wide range of vehicles, trailers, or used as a stand-alone system. The compact K2 Base Station is supplied with a choice of an ergonomic wireless hand-held control or game pad control that operates all CUES transporters and pan and tilt / zoom cameras.



Compact Pipe Ranger (CPR)



Pipe Ranger

Use with your CUES multi-conductor mainline steerable and non-steerable transporters!



Choice of game pad controller or ergonomic hand-held controller!



8" Steel 10" Steel 6" Rubber (standard) 8" Rubber 12" Pneumatic

Various wheel sets are available to maximize bottom clearance, traction, and optimum camera position!



- New portable platform
- Auto payout reel
- Light, field-packable
- Runs all CUES transporters and pan/tilt/zoom cameras
- Optional transporter wheel sets for all pipe conditions
- Wireless ergonomic hand control for complete system management
- Increased cable capacity/compact reel
- K2 can be stand-alone, trailer, or vehicle-mounted
- Collapsible heavy-duty handle/plus grab handles to facilitate portability
- Optional semi-pneumatic wheels for portable cable reel - single point removal

Climb to New Heights!

Your
1-Stop
Shop

Wireless Control of Cameras, Transporters, & Reels

K2 offers various mounting options to meet your needs!

K2 Base Station features built-in diagnostics for the entire system, including the camera, transporter, and video cable. The portable K-2 video cable reel features automatic payout to minimize cable drag on the self-propelled transporter / camera to maximize pull distance in the pipe and can operate the full line of CUES transporters.

The K2 reel control console includes variable speed control, automatic levelwind, and an emergency shutoff. Increased video cable reel capacity for 1200 ft. of high strength video cable is provided to maximize distance for each inspection run. Transport handles are built into the K-2 with an option for a collapsible heavy-duty handle and semi-pneumatic wheels to facilitate portability.

The K2 Base Station can be mounted on the built-in docking port of the video cable reel or staged independent from the reel. It includes a built in video overlay unit with programmable observation codes, alpha-numeric titling, and an on-screen footage display. K2 series options include Granite XP asset inspection / decision support software and DVD or digital recorders.



*K2 Dolly-Mounted with
DV-1 Touch DVR*



K2 Truck/Trailer-Mounted



Optional Heavy-Duty Handles



K2 ATV-Mounted



Use the DV-1 Touch DVR
with the K2 System!



NEW!



more options

more flexibility

upgradeable to meet your needs

The Summit

Portable, wireless control of all camera, transporter, and reel functions!

CUES proudly introduces the Summit, a fully integrated power control system that is compatible with all CUES cameras, transporters, and the LAMP II wheeled lateral launcher. Power, system control, and video overlay functions are consolidated in the Summit system and mounted in minimal rack space to increase counter space and work area. Summit provides simplistic system initialization, operation, and shut down procedures, with an option for a wireless compact controller for all camera, transporter, reel, LAMP II lateral launcher, and camera lift functions.

- Operates all CUES pan and tilt / zoom pan and tilt cameras
- Operates all CUES steerable and non-steerable transporters
- Integrated portable controller for all camera, camera lift, transporter, video cable reel functions
- Integrated portable controller for LAMP II wheeled lateral launcher
- Optional wireless control from front and rear of unit
- Increased rack space and counter space due to consolidation of power, camera, transporter, and reel controls, and video overlay
- Simplicity: one switch enables the entire system initialization



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The Summit

The Summit can be mounted in any vehicle, including:

- Trailer
- Van
- Sprinter
- Hi-Cube
- Stepvan
- ATV

Customize your vehicle interior, cabinets, equipment, and mounting configuration to fit your unique requirements!

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K2 Summit **Wireless** Base Station Portable Video Inspection System



FEATURES & BENEFITS

- Wireless control of all camera, transporter, and reel functions
- Enables operation of the system remotely from any angle up to 100 ft.
- Compact, lightweight, rugged, weatherproof enclosure
- Can fit into a pick up truck, ATV, trailer or van
- Partition separates the video cable reel with tractor and camera storage from the power control unit, monitor, and optional computer based data acquisition system
- All controllers, TV monitor, and power control are rack mounted to maximize ergonomic operation and protected by a sealed and lockable hatch
- The racks are mounted with shock-isolators to prevent equipment damage from jarring and vibrations
- Sealed front door is hinged, supported by a gas shock, and functions as an awning in the open position
- Easy access to service and maintain the unit via removable panels
- Operates all CUES wheeled and tracked transporters to accommodate 6"- 200" pipe inspection!
- Operates all CUES pan and tilt zoom cameras with optional built in inclinometer or built-in sonde
- Available with CUES laser pipe profiling system
- The K2 Base Station is covered with protective aluminum sheets and industrial grade weather resistant paint
- Built-in camera and camera transporter storage
- Rubber seals, gaskets, and aluminum water-tight enclosure to protect all components
- Optional heavy duty welded lifting eyelets or forklift skids available for quick deployment or removal from an ATV or truck
- Optional automatic video cable payout on the reel to maximize transporter pull distance
- Optional laser-based precision measurement system to accurately measure offset joints, cracks, and joint separations in sanitary or storm sewers

Mount in an ATV, Pick-up Truck, Trailer or Van!

Provides Maximum Protection via an Enclosed Video Inspection System!

Versatile, Mobile, Rugged and Economical!

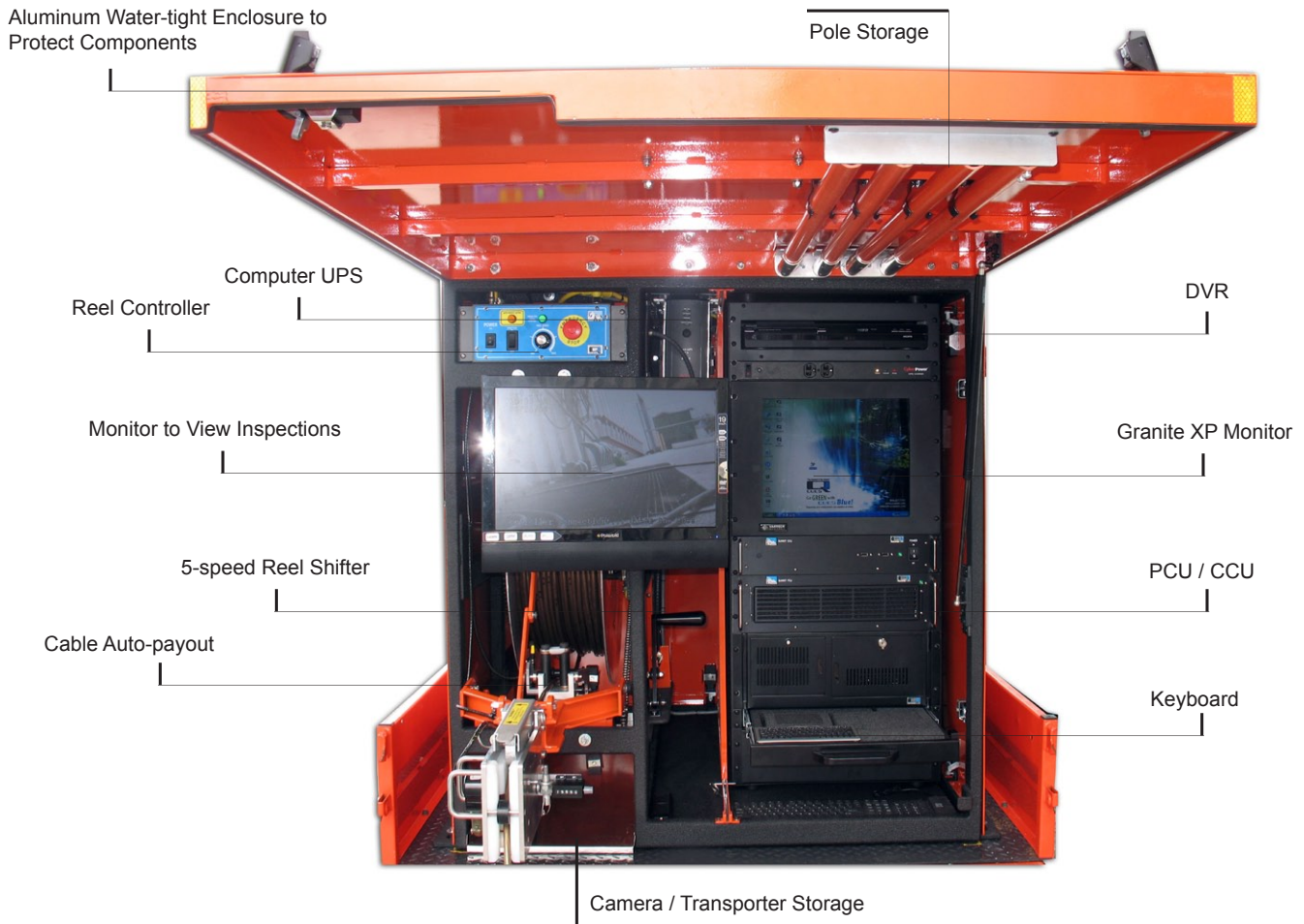


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K2 Summit **Wireless** Base Station

Portable Video Inspection System



The system equipment can be configured based on your needs!



Made in USA

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INSPECTOR GENERAL

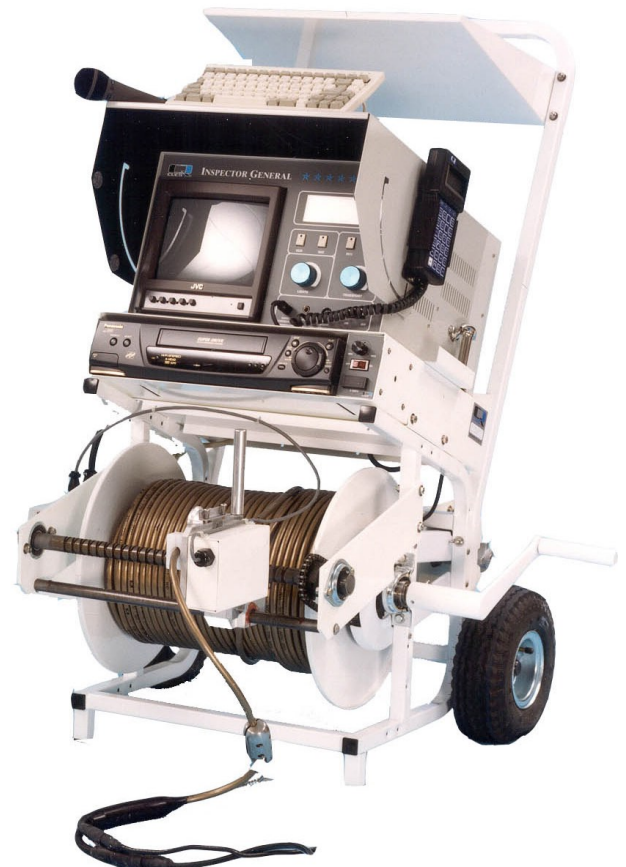
Portable Color TV Inspection System

This state of the art system integrates camera, transporter, and light controls with on board diagnostics into one single hand held user-friendly pendant. The Inspector General Power Control Center features a LCD read out with on board diagnostics, 9" color monitor, built in data acquisition system and microphone, and the ability to operate all CUES cameras and transporters. The unit can be expanded to inspect 6" through 200" pipe and inspect 3" through 6" laterals with the applicable options. Being the most compact mini-mainline system in the industry, the operator has the functions found in truck mounted systems and simultaneously achieves easement access as the entire system is self-contained and can be wheeled off road. The Inspector General system can be soft-mounted in a van to facilitate quick removal for easement access or can be operated from within the truck. This unit can be mounted in ATV's and John Deer Gators to inspect pipelines located in the most rugged and remote environments. Priced at about 1/2 the cost of vehicle mounted systems, the Inspector General provides all of the operational capabilities normally found only in dedicated vehicle systems.

...operates as a complete TV inspection system!

Features & Benefits:

- Built in Microphone and Speaker
- Operates as a complete multi-conductor inspection system
- The format and position of the on-screen data is adjustable within the video display to fit pipe conditions or operator requirements
- Character intensity is fully variable from black to white
- A standard IBM parallel printer output accommodates a hard copy, sequential printout inspection report, using a standard data printer
- The Character Generator has a minimum of 55 preprogrammed defect codes, and 70 user programmable defect information codes
- The control center operates from a 110 volt 60 Hz or 220 volt 50 Hz power source
- The built-in video display monitor is a 9" solid state color unit; the video response is in excess of 350 lines (horizontal)
- Front panel controls include light intensity, tractor speed, VCR/ Camera monitor select, crawler direction, and crawler start/stop
- Obtains distance data with the user's descriptions of defects and records them on video tape; contains a built-in data generator with hard copy printer output port
- Lightweight and compact for easy transport and handling; weight of the integrated control unit does not exceed 75 lb



Features & Benefits continued:

- The Inspector General can be controlled by a computer when running DataCAP and can interface with Granite XP, the pipeline condition assessment software, to allow the end-user to record on CD / DVD
- Multiple choices of cables and reels for push, pull, or transporter operation
- Can be used with any CUES camera or transporter including the Mudmaster, the Ultra Shorty, the Pipe Ranger, the LAMP, and more (additional equipment or system modifications may be required)
- System is available in English, French, Spanish, and Russian
- System is compatible with the following keyboards: English, French, Spanish, Canadian, and Russian
- "Hand-command" remote control provides full operational control of the camera, transporter, and lights as well as a LCD system status and diagnostic display
- Requires very little additional manhole gear when using a transporter and most jobs can be accomplished with a lifting tool, a top-hole roller assembly, and a gator tail for TV cable protection
- System can display pressure when used in a TV SEAL system or inclination when used with CUES SlopeMaster
- System has a built-in time/date clock circuit that automatically keeps track of the time and date, even when the power is off; you will not have to set the time or date on a daily basis; the date can displayed in three different formats for output
- A stopwatch is built in and can be used to time sealing operations, infiltration and flow, and other operations
- By turning on the VCR and recording the information at a specific point, you can make the video tape a complete record of the sewer inspection - its condition, specific faults, size, type and other information
- System has the ability to store up to ten reminder messages
- An optional video printer may be used to provide still pictures of specific defects
- Depending on the camera being used, the pan and tilt camera functions will be handled from the hand command unit
- Can operate Kangaroo Cutters for lateral reinstatement



Hand-field remote control

The Inspector General can be used with the following CUES equipment:

Transporters:

- Ultra Shorty
- Ultra Shorty 21
- Pipe Ranger
- Steerable Pipe Ranger
- Mudmaster
- Steerable Mudmaster

Cameras:

- PS3 mini-cam
- Self-upright mini-cam
- OZII pan, tilt, & optical zoom
- Nite Lite pan & tilt

LAMP - Lateral & Mainline Probe



DV-1 TOUCH

Digital Video Recorder



- VIDEO AND AUDIO INPUTS
- ONE_BUTTON RECORDING
- THREE VIDEO MODES
- MPEG 4 VIDEO QUALITY
- EASY TRANSFER THUMB DRIVE



The CUES DV-1 Touch Digital Video Recorder (DVR) provides a simple one button digital recording solution. The DV-1 Touch is 100% solid state with high quality Mpeg 4 digital recording. Up to 44 Hours can be recorded on a provided 16GB Thumb Drive. The Thumb drive provides easy transfer to an Office PC for reviewing. No Hard drives or failures to worry about! Three video record mode settings allow "Good, Better, Best" quality.



Press once to record, press once to stop. You're Done!

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DV-1 TOUCH

Digital Video Recorder



Use the optional DV-1 Touch with the following CUES equipment to digitally record the video inspection and audio to save on the included flash drive!



K2 with DV-1



MP2020 with DV-1



K2 Dolly-mounted with DV-1



Use the DV1-Touch with the NEW QZ2, QuickZoomCAM, and Lite Stick pole-mounted video inspection systems!

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MINI-PUSH 20/20

Portable Mini-mainline System

The CUES Mini-Push 20/20 is an all-inclusive, ready-to-use, portable, color video inspection system with a built-in battery power supply and battery charger. The Mini-Push 20/20 uses proven video technology to view and record pipelines from 2" in diameter and larger and can operate with existing CUES PS2, PS3 and self-upright cameras. The 6.4" color LCD monitor is adjustable with a fold down position for protection during transport and includes a sun shield for optimal viewing in sunlight. This lightweight system includes wheels for easy portability and a balanced footprint for stability. Manufactured for rugged reliability and designed to handle rigorous field use, the Mini-Push 20/20 is a versatile tool for any portable system user.

NEW! Use the DV-1 Touch Digital Video Recorder with the QZ2 Pole-mounted Inspection Camera.

Lightweight system for easy portability!

Features & Benefits:

- Alphanumeric video titling for on-screen footage display and comments
- 6.4" color LCD monitor with adjustable 3-axis display angle
- Universal AC power input of 85-264 VAC at 50/60 Hz
- The system operates using an internal 12-volt battery with battery charger
- Weather/water resistant aluminum electronics enclosure
- Operating instructions included on front of electronics enclosure
- Built-in connections for optional VCR
- Over voltage protection for built in camera lighting
- Reel assembly includes a footage counter on the basket hub and cable contact is not required
- 100' push cable (standard)
- PS3 standard 1.5" diameter color camera for 2" - 8" pipe
 - High resolution - 450+ lines ; high sensitivity - 0.3 lux
 - Long life LED light head with light intensity control
- Operates with a PS3, PS2, and self-upright camera
- Operates with PS2 mini/mainline camera for 3" - 15" pipes
- Operates with any constant tone, 512 Hz locator/receiver

Optional MP 20/20 Equipment:

- An optional DV-1 Touch Digital Video Recorder (DVR), mounted on the MP 2020 in a protective case, is available to digitally record the video inspection and audio to save on the included flash drive.
- Pneumatic tires are available to transport the MP2020 across rough terrain
- Mainline translator module and interface cable for operation with a standard multi-conductor truck
- VCR housed in a transport case, AC or DC option
- High-brightness, 700 nit sunlight-readable, LCD display
- Keyboard to create defect and commentary entry
- 200' push cable
- Built-in locator/receiver for accurate camera location in metallic and non-metallic pipes
- PS2 or self-upright camera

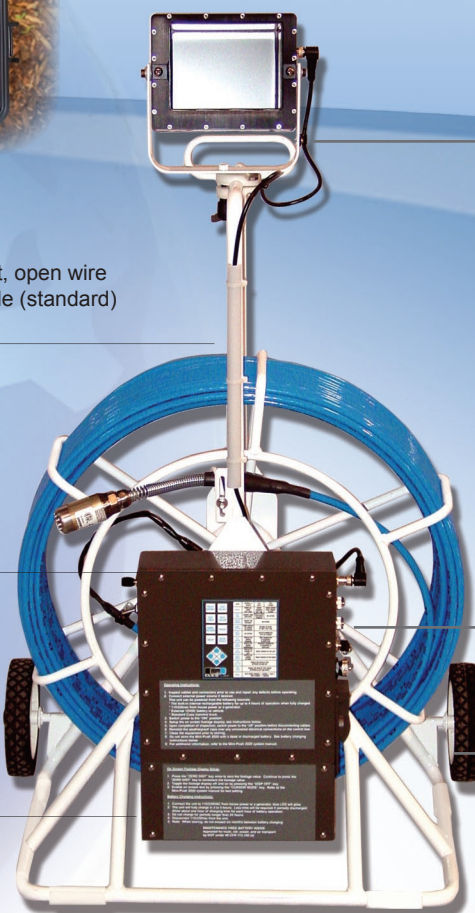


PRESET DISTANCE	TEXT ON/OFF	KEYS	NORMAL & ARROW	TEXT INPUT	FREE FORMAT
TEXT LINES	TEXT COLOR	ERASE	ERASE ALL THREE TEXT LINES	ERASE CURRENT TEXT LINE	ERASE ENTIRE FREE FORMAT SCREEN
HOME/RETURN	ERASE	TEXT LINES	CHANGE LINES DISPLAYED	DISPLAY NEXT PREVIOUS COMMENT	NO ACTION
MODE	BACK SPACE	PRESET DISTANCE	PRESET THE DISTANCE	NO ACTION	
		HOME/RETURN OR ARROW TO CENTER	HOME DISPLAY OR ARROW TO CENTER	RETURN TO START OF NEXT TEXT LINE	
		BACK SPACE	NO ACTION	DELETE CHARACTER LEFT OF CURSOR	
		UP ARROW	DISPLAY OR ARROW UPWARDS	NEXT CHARACTER IN SEQUENCE IS DISPLAYED	
		DOWN ARROW	DISPLAY OR ARROW DOWNWARDS	PREVIOUS CHARACTER IN SEQUENCE IS DISPLAYED	
		LEFT ARROW	DISPLAY OR ARROW TO LEFT	MOVE CURSOR TO THE LEFT	
		RIGHT ARROW	DISPLAY OR ARROW TO RIGHT	MOVE CURSOR TO THE RIGHT	
		TEXT ON / OFF		TOGGLE THE DISPLAY TEXT BETWEEN ON AND OFF	
		TEXT COLOR		TOGGLE THE DISPLAY TEXT COLOR BETWEEN BLACK AND WHITE	
		MODE		NEXT MODE: NORMAL-> ARROW-> TEXT-> FREE FORMAT-> NORMAL	

A distance counter and titler, built into the PCU, displays distance and comments on the video monitor!



An optional DV-1 Touch mobile digital video recorder is available!



6.4" LCD monitor with alpha/numeric data generator and video display unit

Constructed of steel in a lightweight, open wire frame design; stores 100' push cable (standard)

Includes a footage sensor located on the coiler basket

Weather/water resistant aluminum electronics enclosure. Includes power supplies, variable light intensity control, camera power switch, and video IN/OUT jacks for external connections

Includes a 12-volt battery with battery charger

Equipped with wheels for easy portability

Standard Configuration

OPTIONAL EQUIPMENT - CUSTOMER CHOICE PACKAGES

- **Sonde for Camera Location in Metallic and Non-metallic Pipe**
- **DVD or DVR to Record the Pipeline Inspection**
- **PC Style Keyboard for Data Entry**
- **High-resolution LCD Monitor with High-intensity Backlighting**
- **Coiler to Truck System Translator Module and Interface Cable**

NEW! Use the wireless packages below to create a cost-effective Lateral Inspection System!



Wireless Video to a new or existing TV unit - Includes 2.4 Ghz wireless video receiver, all cabling, A/B video switch to interface with your existing digital video capture system.



Wireless Transmitter for MP2020 - This package provides the wireless transmitter and items needed to allow the video from the MP2020 to be sent back to a wireless receiver. Note: This package requires a wireless receiver package for operation (QC913) and cannot be used at the same time as either mobile digital video recorder option.

NOTE: Additional equipment may be required based on your specific system to operate the MP2020 with the options listed above.

PROSCOUT Portable Mini-mainline System

The ProScout is a portable, light-weight, safe and easy-to-use lateral inspection system that also provides a cost-effective solution to help expand your inspection system for mainlines up to 24" in diameter. The ProScout combines high resolution, true image and exceptional depth of vision for superior picture quality in any application, including ducts, pipes, conduit, chimneys, shallow wells, and bore holes. Designed to be compact in size, the ProScout can be inserted through clean-outs or bends as small as 2". Propulsion choices include pushing, pulling, and camera transporters.



Features & Benefits

The camera information provided on this brochure pertains to the ProScout II camera. CUES offers two additional mini-cameras that can be used with the ProScout System. To learn more about the ProScout II, III, and Self-upright cameras, contact your Regional Sales Manager.

- Camera includes a lighting to illuminate pipeline interiors from 2 to 10 inches in diameter.
- Camera is able to pass through a short 90-degree turn or a single tee connection in 4" pipe with the end connector and cable in place!
- 460 lines horizontal, 400 lines vertical resolution (NTSC) 450 h x v 450 (PAL); higher resolution means sharper pictures with greater details
- 379,392 picture element solid state sensor 768 h x 494 v (NTSC); the greater number of picture elements, the more detail is displayed in the picture
- 437,664 picture element solid state sensor 752 h x 582 v (PAL); low lux sensitivity provides better pictures with less light
- 3 lux minimum sensor illumination sensitivity; no sensor distortion means clearer pictures
- 9" color monitor provides greater picture detail for more accurate problem evaluations; the monitor is a 9" solid state color unit, NTSC standard
- The combination Mini-Cam control system and color monitor is contained in a metal cabinet
- The unit includes a soft fabric (nylon) carrying case with hand and shoulder straps to easily transport the unit in the field; the carrying case is designed to store the optional video titler keyboard.
- The weight of the combination power control/monitor does not exceed 60 pounds and operates from a 120 volt AC/60Hz power source
- The unit is equipped with a low/high light switch to use the standard lighting system for small pipes and an optional lighting system for larger pipes
- The video response is in excess of 350 lines
- The front control panel contains the power switch, vertical hold, tint, color, brightness and contrast controls

PROSCOUT

Base Components and Optional Equipment

Pro Scout System Base components include:

- Inspects 3" to 6" lateral lines with multiple bends
- Power control unit with built in 9" monitor
- Color mini camera
- Built-in light ring
- Wheeled push reel with 200 ft. video /push cable
- Field replaceable bulbs
- Carrying case
- Push skids for 3" through 6" lateral inspection

Optional Equipment:

- Can be expanded as a push or pull system for mainlines
- Skids (pull), skates (push), and lighting for 6" through 30" mainlines
- Mechanical footage meter
- ProData on screen footage, titler, report print
- Report generation on disk with programmable defect codes
- Expandable to operate pan and tilt cameras
- Expandable to operate with all CUES Ultra Shorty / Ultra Shorty 21 Transporter models
- Wheeled Dolly / 500 ft. / 1000 ft. video cable for pull inspection
- Wheeled push reel can contain up to 400 ft. push cable
- Industrial 6 head VCR
- Camera can be mounted in the optional large pipe adapter to inspect pipe diameters over 6 inches.
- CUES offers an optional built-in locator/receiver to help expand the role of your portable system.
- The Pro Scout III camera and auto-upright cameras offer an optional built in sonde to determine camera location in metallic and non-metallic pipes. The sonde can operate with any constant tone, 512Hz locator/receiver.



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PROSCOUT II & III, SELF-UPRIGHT Portable Mini Cameras



ProScout II



ProScout III



Self-upright

The CUES ProScout II, III, and self-upright cameras can be utilized in various system configurations (refer to the Mini-camera Matrix). Designed to be compact in size, the mini-cameras can be inserted through clean outs as small as 2" in diameter. The camera and configuration you select depends on pipeline size, construction, conditions and the equipment available with your system. Propulsion choices include pushing, pulling, transporters and crawlers. The mini-cameras versatility and reliability have firmly established it as the "Industry Standard" for portable pipe inspection systems.

Features & Benefits: ProScout II & III Cameras

- Color cameras include lightrings to illuminate pipeline interiors from 2 to 10 inches in diameter.
- Cameras are able to pass through a short 90-degree turn or a single tee connection in 4" pipe with the end connector and cable in place!
- 460 lines horizontal, 400 lines vertical resolution (NTSC) 450 h x v 450 (PAL); higher resolution means sharper pictures with greater details
- 379,392 picture element solid state sensor 768 h x 494 v (NTSC); the greater number of picture elements, the more detail is displayed in the picture
- 437,664 picture element solid state sensor 752 h x 582 v (PAL); low lux sensitivity provides better pictures with less light
- 3 lux minimum sensor illumination sensitivity; no sensor distortion means clearer pictures
- Interchangeable color or black and white camera heads; interchangeable camera heads provide the "best picture" possible for any application
- PS3 Diameter: 1.5" x 3.5" long
The ProScout III unit is equipped with a centering ball skid for use 4 inch to 6 inch pipe that mounts directly to the camera housing; the skids are designed for easy removal and replacement. The PSIII unit also includes a lighthead containing 12 light emitting diodes equaling 78 foot candella to illuminate pipeline interiors from 2" to 10"
- PS2 Diameter: 2.25" x 3.8" long
The ProScout II unit is equipped with a stainless spring steel skid set for 3 inch to 6 inch pipe that mounts directly to the camera housing; the skids are designed for easy removal and replacement. The PSII unit also includes a front lightring with 4 lamps. The lamps are the incandescent-type to illuminate pipelines from 3 inches to 10 inches in diameter; the individual lights are field replaceable.
- Minimum pipe size: 2"

Features & Benefits: Self-Upright Camera

The self-upright small diameter pipe color television camera is specifically designed to operate in 2" to 10" pipe and negotiate multiple bends while maintaining an upright camera position.

- Camera is able to pass through a short 90-degree turn or a single tee connection in 4" pipe with the end connector and cable in place!
- The unit is equipped with a centering ball skid for use 4 inch to 6 inch pipe that mounts directly to the camera housing; the skids are designed for easy removal and replacement.
- The unit is sealed at the factory to prevent damage or leakage.
- Includes a lighthouse containing 12 light emitting diodes equaling 78 foot candella to illuminate pipeline interiors from 2" to 10"
- Diameter: 1.5" x 2.75" long without the connector assembly

OPTIONAL EQUIPMENT

- Optional large pipe adapter to inspect pipe diameters over 6 inches.
- Optional built-in locator/receiver to help expand the role of your portable system. A sonde, built into the mini-camera, is available to help accurately locate the camera in metallic and non-metallic pipes. The sonde can operate with any constant tone, 512Hz locator/receiver.
- Optional external light for 15" through 30" mainlines
- Adapter to use with self propelled transporter
- Adapter to use as push camera with truck mounted system
- Skates for push inspection and skids for towing



ProScout III & Self-upright cameras can be used on the Inspector General, MP2020 and LAMP units!

ProScout II, III, & Self-upright Camera Matrix

Type of System / Equipment	ProScout II Camera	ProScout III Camera	Self Upright Camera
Mini Push 20/20	Yes	Yes	Yes
Inspector General	Yes	Yes, with translator	Yes, with translator
LAMP (Lateral and Mainline Probe)	No	Yes	Yes
ProScout System	Yes	Yes	Yes
Skids	Yes	Yes	Yes
Light Bulbs	Field Serviceable -qty. 4	Long-life white LED lighting	Long-life white LED lighting
Lens	Manual Focus	Fixed focus	Fixed Focus
Construction	Black anodized aluminum	Stainless steel & aluminum	Stainless Steel and aluminum
Over-voltage Protection	No	Yes	Yes

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CUSTOM PLATFORM SYSTEM

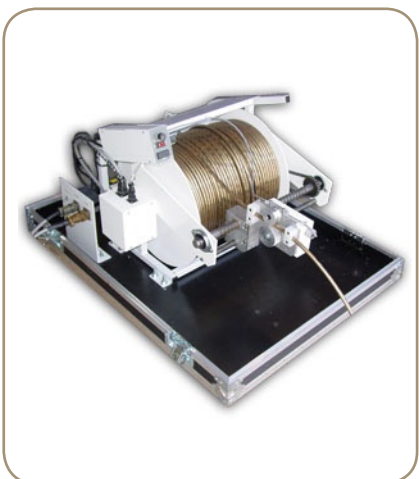
The new CUES Custom Platform System is a fully integrated portable color TV inspection system! Housed in durable, air-transportable, weather resistant enclosures, the all-inclusive system comes complete with everything you need to perform remote visual inspections of pipes, conduits, access ways, etc. Each special piece of equipment, consisting of a Steerable Pipe Ranger wheeled transporter, OZII pan-tilt-zoom color camera, rear view camera, cable reel, and all necessary electronics, is designed to withstand inclement weather and rugged environments. CUES has once again used proven video technology to provide a versatile tool for internally confined space/entry inspections.



...provides portability, reliability, & ease of use!



STEERABLE PIPE RANGER The steerable Pipe Ranger is a six-wheeled transporter especially designed for use where large amounts of debris and silt have accumulated. The Pipe Ranger features a two-speed transmission to produce superior pulling power in lines up to 48". As the name suggests, the transporter is also designed with two (2) separate motor clutch sets that enables the unit to be "steered", much in the same way as a tracked vehicle. Three wheel sizes are provided for maximum performance and optional manual or electric lifts are available to raise the camera position to provide a 'center-of-pipe' view in lines up to 36" in diameter.



CABLE REEL The portable, motorized cable reel is able to store up to 1000 feet of cable and is specifically designed for the Custom Platform System.

The reel comes equipped with a (12) conductor slipring to carry the necessary current and signals through the reel and a levelwind cable handling system to evenly pay out or rewind the cable to prevent pile-ups and entanglements. A mechanical brake is included to prevent a cable spill during discharge.

CUSTOM PLATFORM SYSTEM

Base Components continued



ELECTRONICS SHIPPING AND STORAGE CONTAINERS

All of the electronics and operating controls for the transporter, camera, PCU, VCR, cable reel and data acquisition system are supplied in (2) heavy-duty reusable storage containers. Additional shelves can be provided if more space is needed for accessories.

This unique storage system provides the ability to customize the electronics and controls based on the equipment purchased and each customer's inspection requirements.

The containers were made to resist damage while protecting the contents with impact-absorbing materials. The internal frame is constructed of a plywood frame, covered with thick laminate, tapered with aluminum edges, and accessorized with recessed hardware and spring loaded handles.

The containers are waterproof and built to meet some of the toughest standards for durability and protection, making them ideal for shipping and transporting!



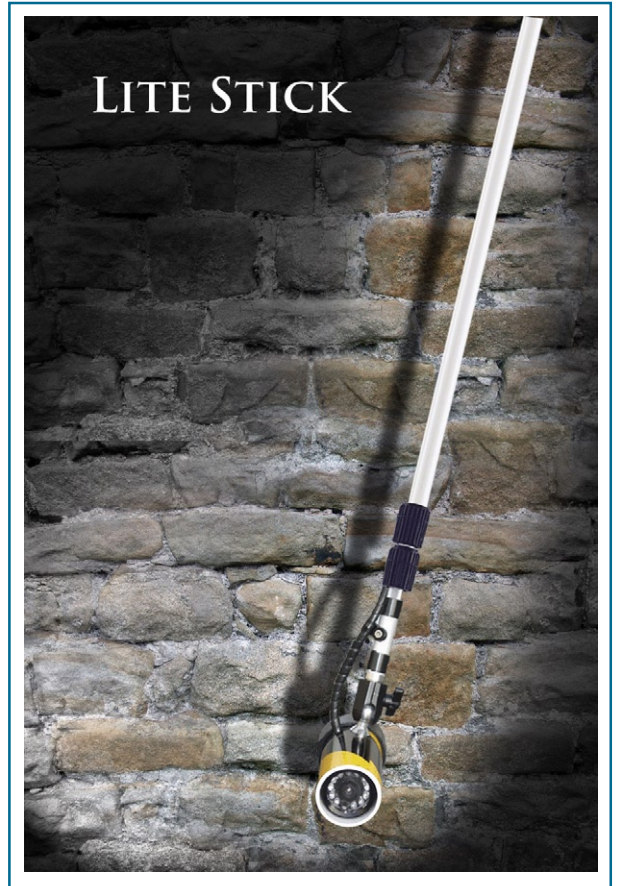
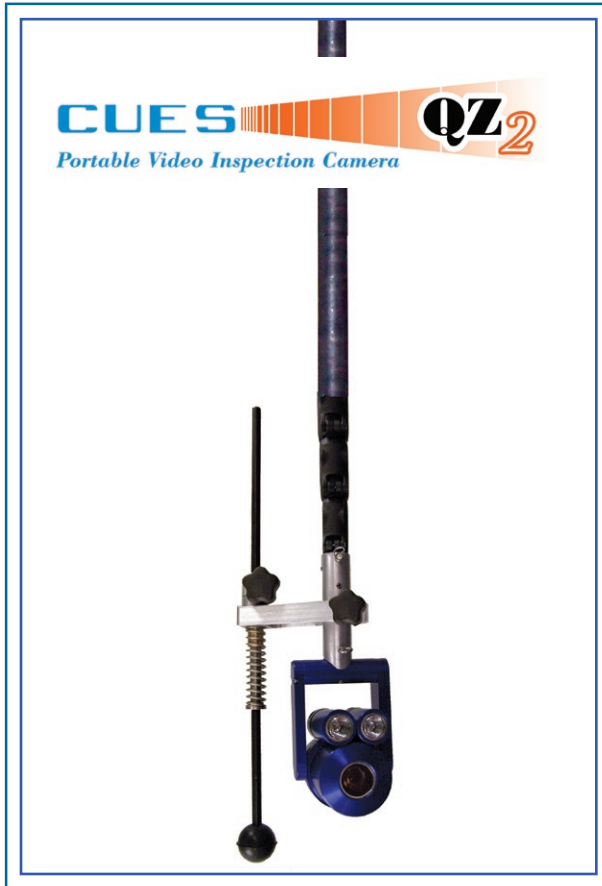
OZII COLOR CAMERA The OZII camera (PAL or NTSC) is a unique pan, tilt, and zoom inspection camera designed to enhance image details from faraway distances for inspection and assessment. 10x optical zoom and 4x digital zoom, automatic focus, remote focus, and iris controls are all included to ensure the highest quality picture within varying conditions. The camera pans 285 degrees and rotates 360 degrees to provide total up/down and side to side views throughout the inspection. A built-in 48 watt camera lighting system is also included for optimum illumination.



NEW FEATURE! The Custom Platform System includes a unique, infrared illuminated, rear viewing camera that's mounted to the power lift assembly! This camera allows you to avoid obstacles when pulling back or driving in reverse. You'll be able to monitor image details from either direction and quickly focus on an area of interest without having to manipulate the position of the transporter!

A compass and inclinometer has also been included to facilitate directional tracking of the unit and detect and record variations in the slope from true horizontal.





CUES offers two complete hand held portable video inspection cameras for swift inspection of difficult to reach areas. Accomplish safe viewing in industrial or environmental areas with no man entry. Lite-Stick is the lightest and most economical portable inspection system in the market. QZ2 features a 420:1 (35 optical/12 digital) zoom with automatic focus and self-contained waterproof lighting for enhanced detailed viewing of cracks, breaks, pipe separations, scale, and various defect conditions. Both units can operate as stand-alone systems or can be easily connected to any existing TV system. Start with the base unit and configure your system the way you want it.



CUES

Portable Video Inspection Camera

QZ²

CUES

QZ²

Portable Video Inspection Camera

- Zoom
- Video Image Stabilization
- Digital Video and Audio
- ANSI Class 2 "Hi-Vis" Vest
- Light Weight
- Calibrated HID Lighting
- Single-Person Operation
- Meets or Exceeds IP68



Dual HID Lights

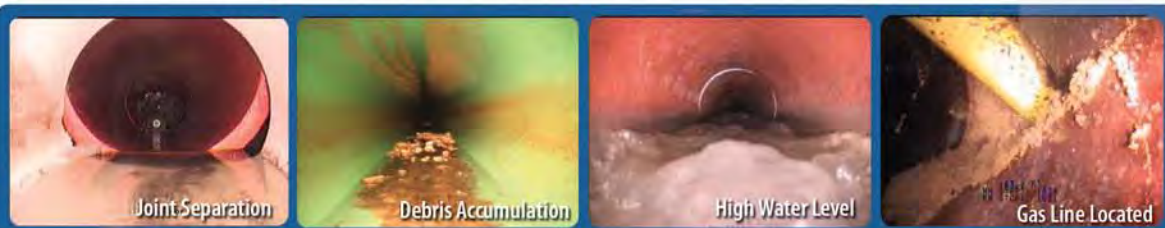
The QZ2 is a lightweight, portable, video inspection system that can be operated by one person! Perform swift inspections and surveys of pipelines, wet wells, manholes, sewer treatment plants, steam generators, tanks, vessels, and other areas that are difficult to reach. Accomplish safe-viewing in industrial or environmental areas with no man entry! The QZ2 is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24' (an optional 34' pole is available). It features a 420:1 (35 optical/12 digital) zoom with automatic focus and self-contained waterproof lighting for enhanced detailed viewing of cracks, breaks, pipe separations, scale, and various defect conditions from hundreds of feet away! QZ2 can be used to locate lateral services or to identify a blockage at a manhole, access port, or other entry point without entering the line or structure. NEW! The QZ2 now includes (2) dual wattage (9.5w and 14w), high-intensity discharge lights to provide maximum lighting capabilities in all pipe conditions. The HID brightness has (2) user-selectable settings. The HID lights generate less heat, require lower power consumption, and provide brighter, more intense light!

"Hi-Vis" Safety and Battery Vest



Fast...Zoom...Focus

Fast & Accurate Pipeline Inspection & Condition Assessment



800.327.7791
www.cuesinc.com
salesinfo@cuesinc.com

"The Standard of the Industry"





Video Media Center with Storage Case

- 6.4" LCD Screen with Padded Media Case with adjustable Sunshade
- Audio microphone with ON/OFF Switch
- Optional DV-1 Touch unit with MPEG 4 recording (shown in picture)
- 3 recording modes: Good, Better, Best

Carbon Fiber Pole

- Light weight
- Low profile lock handles
- One-hand pole adjustment
- Spring suspension
- Calibrated diameter guide

Hi-Visibility Safety & Battery Vest

- ANSI Class II visibility rating
- Padded shoulder supports
- Digital media case with sun shade
- Fully adjustable



What's Included:

- Video Media Storage Case
- Carbon Fiber Pole
- Hi-Visibility Safety & Battery Vest
- Vest
- Hand-held Controller
- Dual HID Lights
- Adjustable Custom Sun-shade & Storage*



Hand-held Controller

- On-screen menu for easy set-up
- Joy pad control ZOOM / FOCUS
- Iris control with light enhancement
- Battery level

Dual HID Lights

- HID lights with HI / LOW modes



CUES

Portable Video Inspection Camera

QZ²

EZ Flip Dual Color LCD Screens with audio

The "EZ Flip" design allows the operator to view the inspection using the 6.4" color LCD screen and flip down the DV recorder for easy touch use.

DV Recorder with touch screen controls

Quick and easy touch screen for digital video/audio recording

Audio with built-in microphone

The CUES exclusive audio capture has a built-in microphone with on/off switch. The operator's comments are recorded to the digital video/audio file.

Wireless operation (optional) with simultaneous viewing

This option allows the video image to be transmitted wireless to a remote video monitor while at the same time the operator is viewing the video on the dual LCD monitors.



Optional Equipment

- Hard-wired system
- Wireless system
- Choice of video options:
 - Digital video recorder with DV tapes
 - Dual video with touch screen
- Optional pole lengths

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Lite Stick

Portable Video Inspection Camera

NEW! Optional DV-1 Touch
Digital Video Recorder!



The CUES Lite-Stick inspection camera is the only 100% wireless system on the market offering a built-in wireless video transmitter and battery in the pole assembly for easy handling and operation.

Lite-Stick is the lightest and most economical portable inspection system in the market! This complete hand held video inspection camera provides high quality video as a stand-alone system or can be used in conjunction with any TV inspection unit's monitor, VCR or digital capture unit, saving you even more money!

...the lightest and most economical portable inspection system in the market!

Features & Benefits:

- Operates with your TV unit's existing monitor, VCR, and data system or as a stand-alone wireless unit
- Inspect pipelines, manholes, vessels, tanks, or other entries
- Record distance and pipeline information on a videotape if utilizing an optional VCR
- Full color/infrared video module design allows inspection with low wattage LED lighting
- Infrared lighting provides illumination in larger vessels
- High quality Sony video module with 92-degree lens
- Capture digital photos if utilizing an optional digital capture system
- Operate with a standard multi- or single conductor TV truck
- Transport and store easily
- Customer choice packages allow you to choose the right package for your needs

Basic system includes:

- Color/IR camera module with auto switching
- Built-in LED infrared lighting
- Fiberglass extendable telescoping pole, 6'-18' depth
- Power/video interconnect cable





Lite Stick

Customer Choice Package Options

The CUES Lite-Stick easily connects to any existing TV system. The stand-alone capability and wireless video options allow the customers to choose the packages that are best suited for them. Start with the base unit and configure your system the way you want it.

LITE STICK BASE UNIT

The Lite-Stick base package includes a built-in wireless video transmitter and battery assembly, a color/IR camera, built-in LED lighting with IR lamps, a lightweight telescopic inspection pole for 6.5' to 18.5' and a camera head tilting assembly that allows the operator to adjust the head to any angle for variable inspection requirements.

CUSTOMER CHOICE PACKAGES

The base Lite-Stick unit must be used in conjunction with at least one of the Customer Choice packages listed below for operation.



6.4" Color LCD screen, Class 2 ANSI Safety Vest, Battery package with 10AH IMH battery and charger.



Sony DVR with 4" LCD Screen - Includes the high quality Sony DVR (Digital Video Recorder) with a 4" LCD screen, a custom LCD sun screen with neck strap, battery belt and wireless video receiver for a great stand-alone system



Wireless Video to new or existing TV unit - Includes 2.4 Ghz wireless video receiver, all cabling, A/B video switch to interface with your existing digital video capture system



6.4" LCD Screen with Padded Media Case with adjustable Sunshade Audio microphone with ON/OFF Switch including DV-1 Touch unit with MPEG 4 recording, 3 recording modes Good, Better, Best



USB video capture to laptop - Adds the USB interface with video capture and editing software to allow the camera's video to be captured to a laptop computer.

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Kangaroo and Giant Kangaroo Lateral Reinstatement Cutters



CUES introduces NEW and improved air cutter motor for the small Kangaroo cutter line!

These conventional towed cutters are rugged, waterproof, and built to withstand shock and vibration. The cutters are proven and reliable with hundreds of units in daily use. The Kangaroo cutters are equally effective in CIPP or Fold and Form liners. They can be installed on any CCTV manufacturer's truck mounted system. Both cutter systems operate optimally with 1000-1500' of cable and include the Dual Cutter Controller!

Small Kangaroo Cutter

- For 6" through 12" diameter relined pipe
- 110 or 220 VAC
- Recommended minimum air requirements: 38 CFM @ 125psi
- Controls, electrical: 360-degree rotate, up/down, in/out, on/off, and polarity
- Controls, pneumatic: cutter motor, cutter locking brake
- Includes (3) electrical drive motors assembled into a waterproof housing. Each motor has an operating range of 0.2 amps +/- 20%
- Includes metal skids mounted to the housing, low profile skids for 6" pipe, and extenders for 8' pipes
- Includes two (2) router bits and pipe lock assembly
- Includes a NEW .9hp air motor to provide more power, increased productivity, and a smoother cut when operating in 8" - 12" relined pipe.

Giant Kangaroo Cutter

- For 12" through 30" diameter relined pipe
- 110 or 220 VAC
- Recommended minimum air requirements: 38 CFM @ 125psi
- Controls, electrical: 360-degree rotate, up/down, in/out, on/off, and polarity
- Controls, pneumatic: cutter motor, cutter locking brake
- Requires 8 conductors: six for the cutter and two for the remote air valve
- Removes protruding lateral services
- Includes (3) electrical drive motors assembled into a waterproof housing. Each motor has an operating range of 0.2 amps +/- 20%
- Includes two (2) router bits and pipe lock assembly

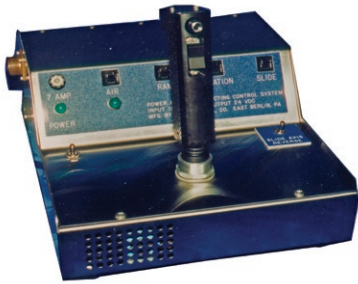
KANGAROO CUTTER CONTROLLERS

The functions of the small and large Kangaroo Cutters can be performed with the Dual Kangaroo Cutter controller or optional Infinite controller!



Dual Kangaroo Cutter Controller

- Includes all switches, potentiometers, controls, and meters required to operate and monitor the Giant Kangaroo and Compact Kangaroo Cutter
- Controls the Cutter head movements in (6) directions: IN / OUT, RIGHT / LEFT ROTATION, and UP / DOWN
- A rotary potentiometer is provided to adjust the speed of each control motor
- A milliamp meter is provided to display the current draw by each motor
- The ON / OFF switch opens and closes the air flow of the remote air solenoid while simultaneously activating or deactivating the pipe lock system and Cutter air motor



Infinite Kangaroo Cutter Controller

- Includes all switches, potentiometers, controls, and meters required to operate and monitor the Giant Kangaroo and Compact Kangaroo Cutter
- Controls the Cutter head movements in (6) directions: IN / OUT, RIGHT / LEFT ROTATION, and UP / DOWN
- Operates on 120 VAC; voltage output is 0-30 VDC
- Includes infinite variable speed control to expedite lateral cutting time
- Designed for easy one-hand operation utilizing the anti-fatigue joystick grip
- Designed with a removable joystick module within the control console to prevent fatigue during operation
- Designed to produce precise, smooth radial cuts simultaneously in 2 axes utilizing variable rotation axis speed

OPTIONAL EQUIPMENT

- Desktop control unit for both cutters
- Protruding lateral cutter attachments
- 12" extenders for small Kangaroo cutter
- Air Hose Reel with speed control / retrieve with 500 ft. 1/2" or 3/4" ID air hose
- Automatic level wind for Air Hose Reel

Lateral Reinstatement / TV Truck and Trailer-Mounted Systems

- High Cubes, Step Vans, and Medium Duty Chassis
- Trailer-mounted
- Dry freight box mounted for export
- Can be mounted with joint and lateral sealing equipment in a self-contained unit
- Compressor can be mounted inside the truck or towed behind



TV Cutter Truck

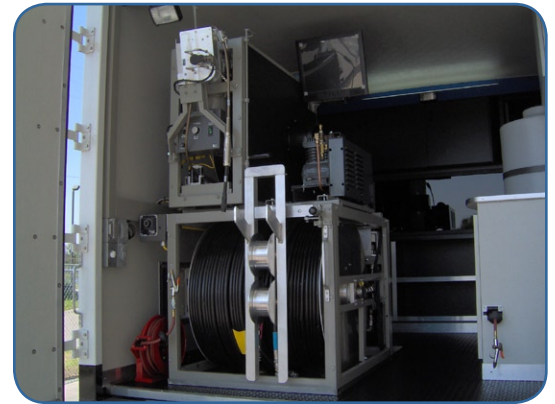


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CHEMICAL SEALING SYSTEMS

CUES offers a full line of portable and truck-mounted grout rehabilitation systems. Truck-mounted grout rehabilitation systems are available for mainline joint sealing/lateral sealing and can be equipped with the latest CCTV equipment for television inspection! Applications include joint testing and sealing of mainline and lateral joints, manholes, junction boxes, large diameter pipes, or any other low pressure waterproofing application. All systems can be configured to run Urethane, Acrylimide and Acrylate grouts. Dry freight box (for export) and trailer-mounted systems are also available. Grout packers are available for mainline and lateral sealing.



Features & Benefits:

- Both water and air-testing capabilities
- Operates with all common chemical grouts, including urethane
- Air-driven stainless steel chemical pumps
- Non-corrosive chemical tanks
- Mainline packers from 8" - 42"
- Lateral packers
- Automated for maximum production
- Economical low void packers
- Custom systems to meet your requirements
- Full line of accessories
- Worldwide training and service



Air-driven Pumps



Chemical Tanks



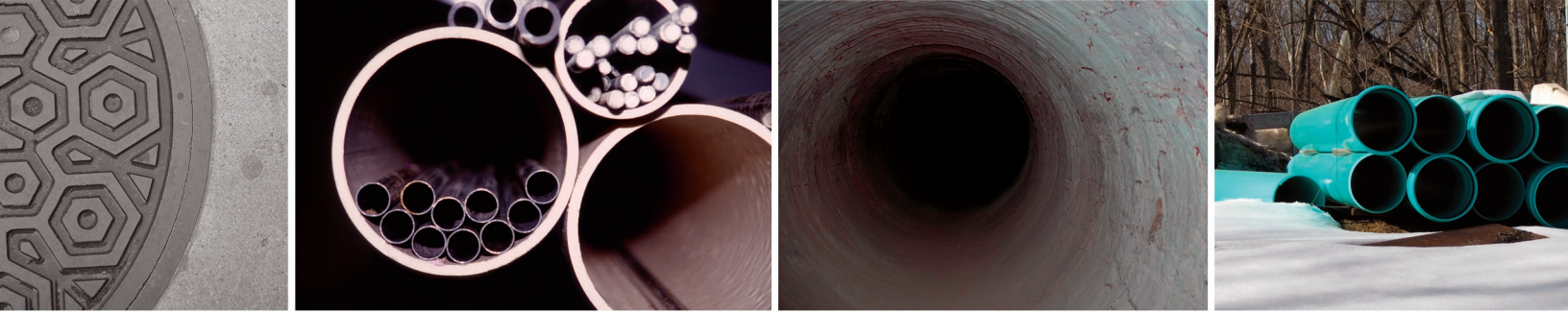
Cable & Hose Reels



Packers



Power Winches

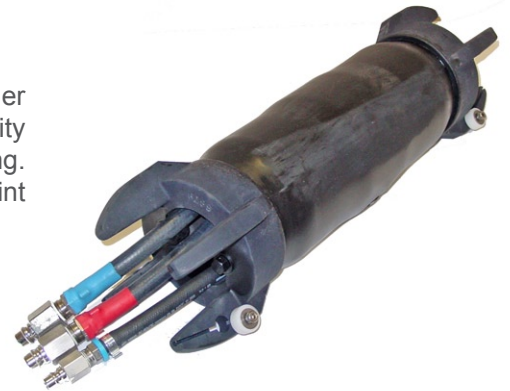


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LOW VOID PACKER

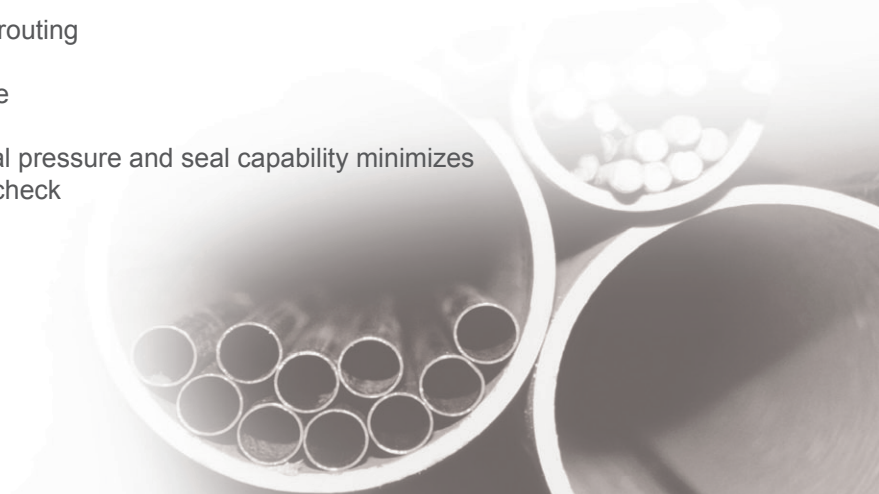
The LV Packer is a low volume chemical injection multi-grout packer. It is fully compatible to and intended to be used with acrylamides, urethane and other common chemical grouting materials. Other design features include the ability to air or water pre-test, grout seal, and re-test without the need for repositioning. Its low profile design insures a minimum grout ring residue remaining at the joint with maximum dispensing efficiency of the grout material.



...low volume packer works with acrylamides, urethane, and other common chemical grouting materials !

Features & Benefits:

- Fully compatible for acrylamides, urethane and other chemical grouts; multi compatibility saves the cost of different packers for different grouts
- Minimum residual grout ring remaining in sewer after grouting; low volume operation provides cost effective use of grout with up to \$25 a joint savings
- Field replaceable rubber sleeves
- Minimum grout ring assures maximum flow after grouting
- Operates with existing grout systems
- Field replacement sleeves cut repair and downtime
- Available for 8" thru 42" pipe size
- Combination pressure test and seal efficiency; dual pressure and seal capability minimizes operational time required for inspection, seal and check





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LOW PRESSURE SEALING CART

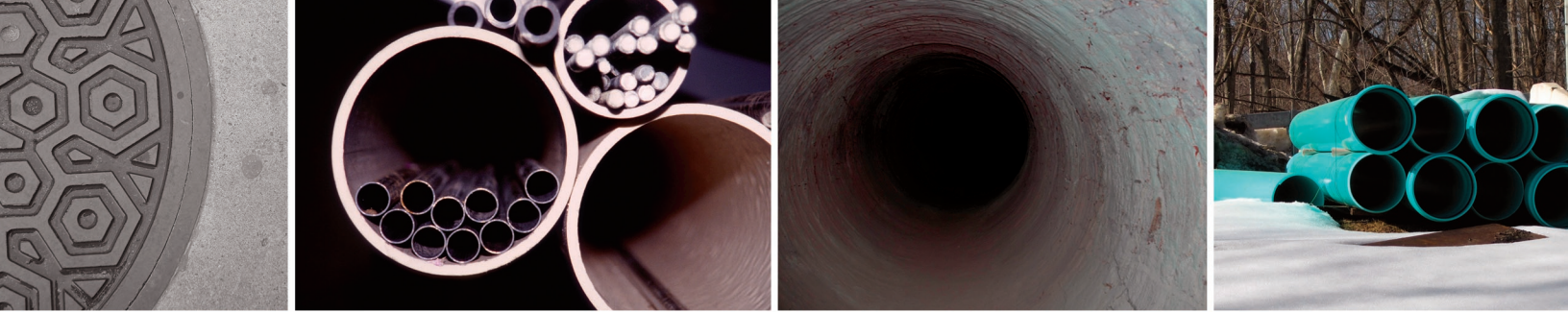
The CUES/BUCHEN Low Pressure Sealing Cart is a portable sealing system designed to be used in areas when a dedicated dual TV Inspection & Chemical Sealing system is not needed. Ideal applications include large diameter pipelines, manholes, junction boxes, and reservoirs where ever waterproofing and sealing applications are needed. Two systems are available: One for pumping Urethane grouts only. One for grouts with a corrosive nature requiring stainless steel wetted pumps. Both systems come mounted on a rigid steel framework with wheels. A dual hose assembly is supplied for use between the pumps and hand held probe assembly which is also supplied. A combination air filter/regulator manages the input air to both pumps. Pump outputs are regulated through metering valves to provide exact dispensing ratios.



...a portable sealing system that's mounted on a steel framework with wheels !

Features & Benefits:

- 25' [8m] dual probe supply hoses
- Probe with dual ball valves
- Quick disconnect suction assembly
- Output of up to 7 GPM [total of both pumps)
- Capability of 200 PSIG output pressures
- Individual pump regulation
- Mounted on a mobile two wheel cart
- Small size at 48" x 20" x 18"
- Requires only 10 CFM air
- All parts are easily serviced
- Dual suction hose inputs
- Capability of infinite pumping ratios



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PORTAPUMP & PORTAPUMP II

Portable Chemical Sealing Systems

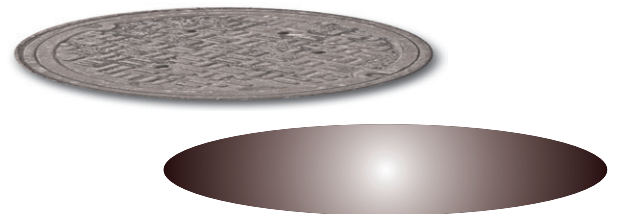
The CUES/Buchen Portapump and Portapump II are portable chemical sealing systems designed to be used in confined spaces that are difficult or impossible to take the chemical grout or catalyst into the working area. The systems are engineered for sealing manholes and any low pressure waterproofing application. The Portapump is designed for Urethane grout applications. The Portapump II is designed to be used for all other types of chemical grouts where corrosion is a problem. Both units incorporate dual rotary pumps mounted on a rigid steel stand with dual hose connections for the grout and catalyst hoses. A 25' dual hose assembly is supplied for use between the pumps and the hand-held probe assembly.



...use in confined spaces that are difficult to access!

Features & Benefits:

- 25' (8m) dual probe hose
- Probe with dual ball valves
- Quick disconnect suction assembly
- Output of up to 4.8 GPM (total of both pumps)
- All stainless steel wetted parts on Vari-Seal unit
- Lightweight at 28 pounds
- Small size 26" x 11" x 11"
- Requires only 5 CFM air
- All parts are easily serviced
- Output pressures up to 125 PSI





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LATERAL SEALING CART

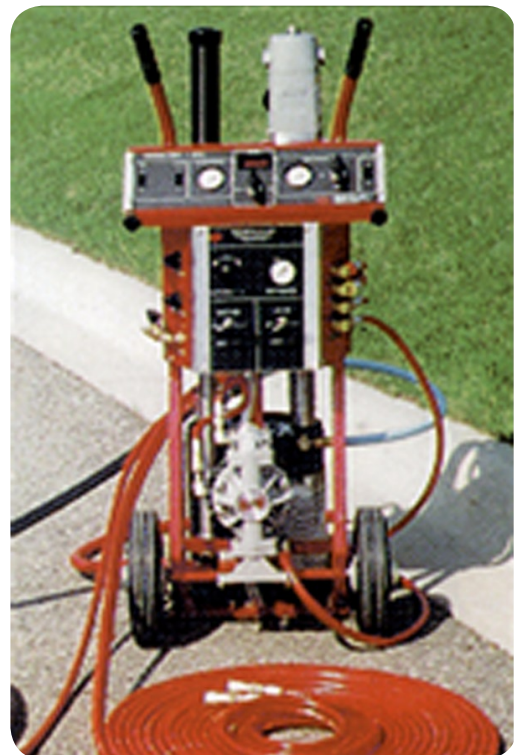
Portable Grouting System

The CUES/BUCHEN Lateral/Mainline Sealing Cart is used with standard chemical sealing packers to seal leaking joints in laterals (house to street) and mainlines. It can be used with packers ranging from 4” through 120”. Joint integrity can be tested with water or air pressure. The unit has an output of up to 7 GPM (total of both pumps), maximum 200 PSIG output pressures, and individual pump regulation with capability of infinite pumping ratios.

The Lateral Sealing Cart consists of two individual pumps for pumping the chemical grout and the catalyst in their correct proportions and a manual sealing control panel conveniently mounted on a wheeled cart. An air or water test system is incorporated to provide for the selection of the preferred or specified test media through the simple turn of a valve. Two systems are available: One for urethane based grouts only, and one for acrylimide and acrylate based grouts. An air compressor (5-10 SCFM), chemical grout, a water tank and a catalyst tank (plastic container) are the ancillary items required for this system.

Features & Benefits:

- Selectable air or water test system
- Dual probe and 25’ hose
- Output of up to 7 GPM (total of both pumps)
- Capability of 200 PSIG output pressures
- Mounted on a mobile 2-wheel cart
- Economical
- Requires only 5 CFM air
- All parts are easily serviced
- Capable of infinite chemical mixing ratios





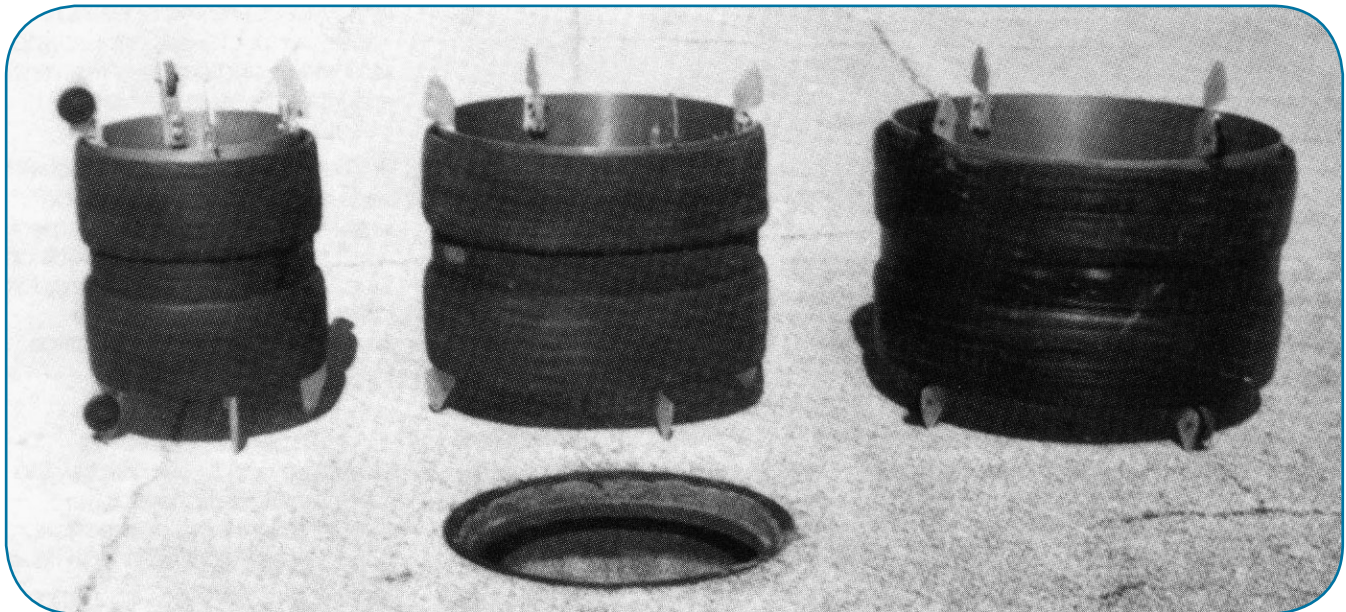
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COMPACT COLLAPSIBLE PACKERS

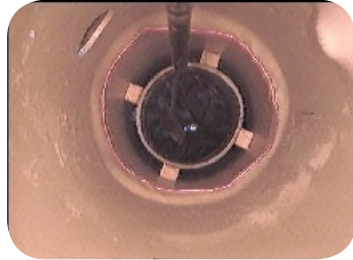
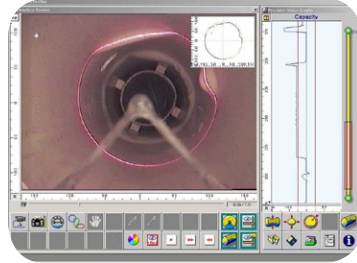
CUES offers the most advanced line of joint sealing packers for large sized sewers - the CUES compact/collapsible packer. All CUES packers, beginning with the 18 inch size, are compact with the maximum width being 19.5 inches. The packers beginning with the 24 inch size are collapsible. These packers can be quickly disassembled to provide easy insertion into the manhole. The compact feature along with the collapsible feature means any of the CUES large pipe sized packers can be inserted through a minimum 21 inch standard manufactured manhole without having to remove the ring or cone. The savings in time, labor and money are significant over conventional style packers. The CUES compact/collapsible packers are ruggedly built, but lightweight for easy handling. The cylinder is aluminum to minimize corrosion. The single sleeve is made of multi-ply rubber for increased strength and flexibility. The 3/4 inch rubber thickness means the sleeve will not easily stretch out of shape, which so often occurs with some of the thin type sleeves available. The multi-ply wrap resists cuts and abrasions while in the sewerline.

...save time, labor, and money with the compact/collapsible packers!

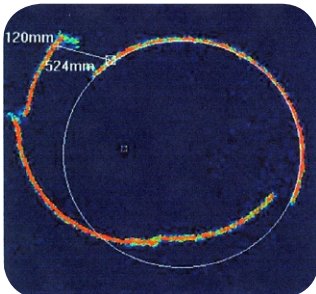
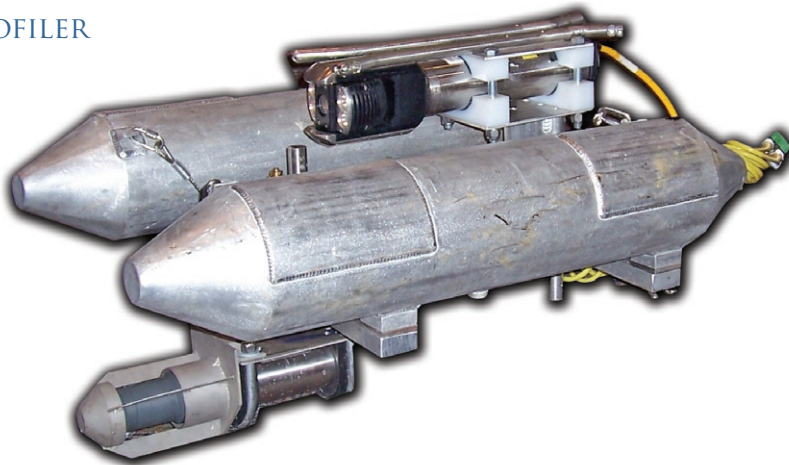


While CCTV is the standard acceptable method of visually inspecting pipelines above the waterline, it cannot provide visual information on internal pipe conditions below the waterline. CUES offers the Sonar Profiler System to provide accurate dimensional data on silt level, grease accumulation, pipe deformation, offsets, etc, below the waterline. The Laser Profiler is designed to provide the contractor, municipality, or consulting engineer with the ability to determine internal pipeline conditions prior to and/or after rehabilitation.

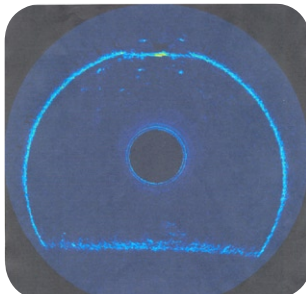
LASER PROFILER



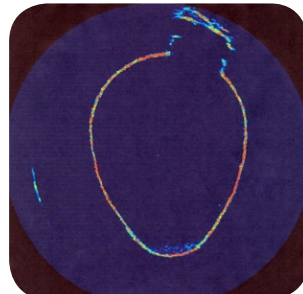
SONAR PROFILER



Broken Pipe w/ Circle & Measurement



40 Inch Siphon

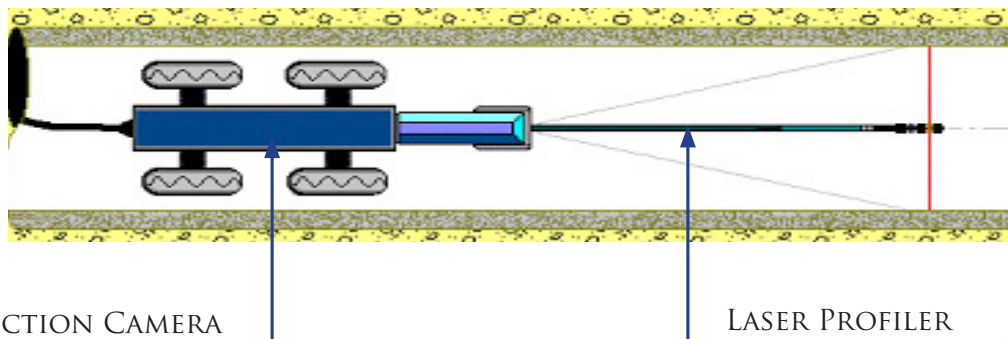


Pipe Image with Lateral Opening

Laser Profiler

LASER PROFILER SYSTEM

The Laser Profiler is designed to provide the contractor, municipality, or consulting engineer with the ability to determine internal pipeline conditions prior to and/or after rehabilitation. The Laser Profiler is a stand-alone, snap-on tool for use with a CUES CCTV survey system and CUES camera to collect survey data and create pipeline reports containing the measurement of faults and other features inside the pipeline. This includes measurements of pipe size, laterals, water levels and other features, as well as automatic analysis of pipe ovality and capacity up to 30 times per second. The Laser Profiler simply attaches to your existing CCTV Camera and the resulting CCTV images are analyzed using innovative machine vision software.



The concept - simple and easy:

- A ring of laser light is projected onto the internal pipe surface
- Laser image is in the field of view of the camera while the camera moves through the pipe
- Analysis is performed on the ring of light using the Laser Profiler software to build a digital pipe profile
- For use with live or pre-recorded to video (tape, CD, or DVD)

Features & Benefits:

- Can operate in pipe sizes ranging from 6" through 72"
- High-strength carbon fiber and aluminum construction
- Internally battery powered (rechargeable); no electrical connections are required; no moving parts
- Software can be used on a TV inspection vehicle or on a remote computer
- Can capture a single frame of video from videotape, previously stored file, CD, DVD, etc, when utilized on a remote computer
- Designed to project a laser light in a radial plane perpendicular to the CCTV camera's line of sight and create a red line on the inside wall of the pipe; laser is designed to provide sufficient intensity to view the video image with normal CCTV camera lighting
- Easily attaches to your existing CUES CCTV Camera or Transporter
- Designed to capture and display a single frame on the data monitor for measurement and analysis in industry standard formats to include JPEG, BMP, or TIFF formats
- Text can be placed anywhere within the captured video image
- A line graph displays the cross-sectional amplitude over the entire length of the pipe run from entry to exit access
- Designed to obtain the actual degradation of the pipe by utilizing the laser profiling and measurement tools
- Certified by WRc

Laser Profiler Base System includes the following:

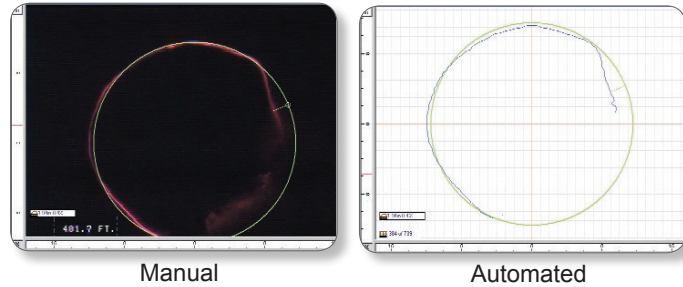
For 6"-15" pipe: Camera mounting assembly, single laser head, battery charger, 3-D measuring software, rod extension for 10", 12", 15", barrel distortion target, calibrator target, AC adapter, and hardware case

For 8"- 42" pipe: Laser wand, triple laser head, battery charger, 3-D measurement software, barrel distortion target, calibrator target, AC adapter, camera skid assembly 8"-30", skid plate assemblies for 36" and 42", skid adapter plate, and hardware case

THE SOFTWARE -

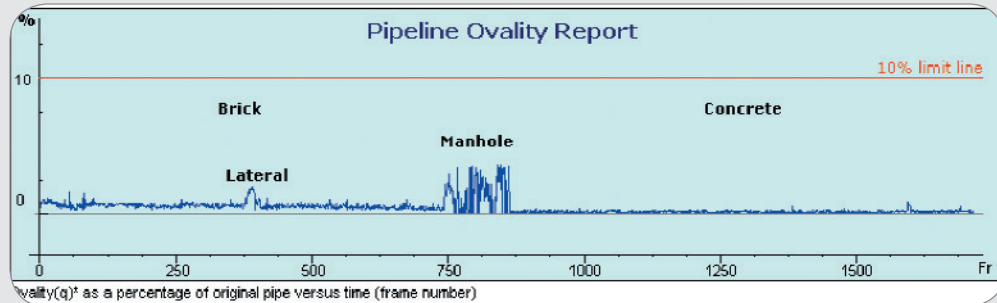
Manual Measurements - Precise measurements can be taken from a single frame captured from the prerecorded or live video. This includes pipe size verification, size of laterals, water levels, holes, and off-set joints. The captured frame, with its measurement data, can then be stored as a JPEG or BMP file. Manual measurements can be performed on the captured digital profile to an accuracy of 1mm*.

Examples of quantifying lift in liner using both the manual and the automated digital measurement methods. The 3-D model can be seen below.



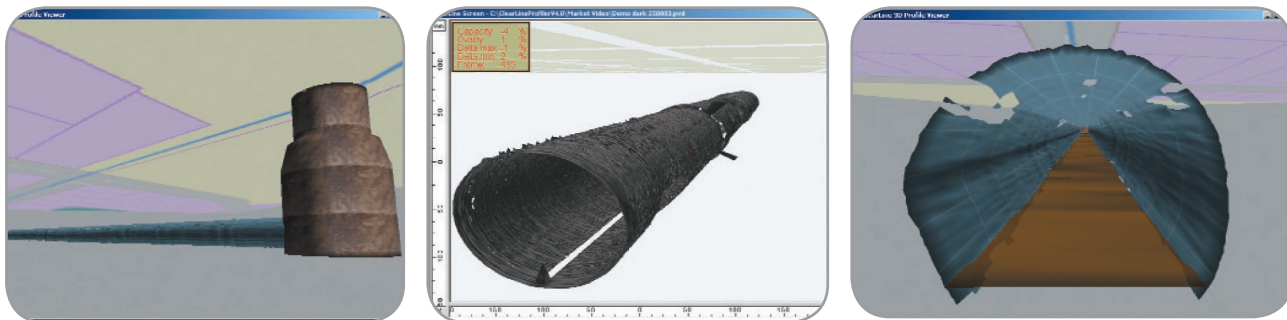
Automated Analysis- The software uses machine vision. Machine vision is used to find the video image of the laser profile (red laser line). Each frame of the inspection video is analyzed to build a digital profile of the pipe. From this profile, the Laser Profiler built-in functions display the following:

Ovality analysis in a 30" brick and concrete pipe



- Ovality - The Ovality function calculates the "q" (as per ASTM F 1216, the internationally recognized standard for CIPP rehabilitation).
- Capacity - The Capacity (X-sectional Area) function calculates the cross-sectional area for each profile and normalizes the results against the expected internal pipe area.
- Interfaces with CUES software
- Delta - The Delta calculation finds the maximum and minimum pipe radius for each profile.

THE LASER PROFILER 3D DEVELOPMENTS



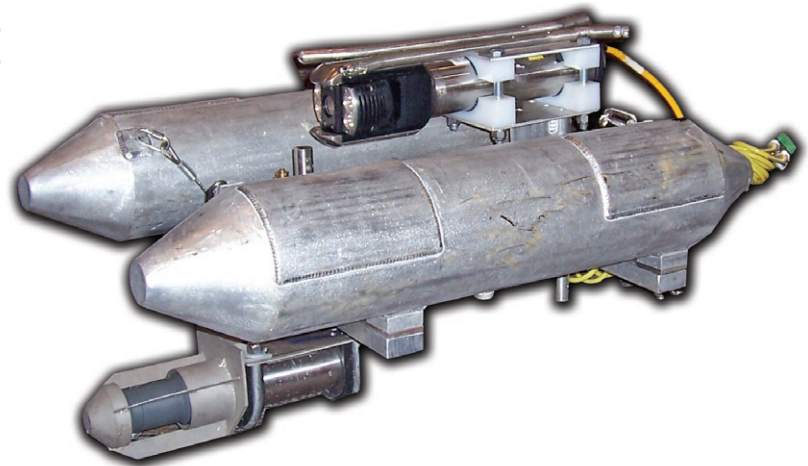
3D Modeling- Using the digital profile, the Laser Profiler creates a fully interactive 3D model of the pipe. This allows the user to navigate through the selected pipe within its local environment, thereby providing a new perspective to traditional CCTV inspections.

SONAR PROFILER SYSTEM for Submerged and Semi-submerged Pipes

While CCTV is the standard acceptable method of visually inspecting pipelines above the waterline, it cannot provide visual information on internal pipe conditions below the waterline. The Sonar Profiler System is designed to provide accurate dimensional data on silt level, grease accumulation, pipe deformation, offsets, etc, below the waterline. In charged lines or siphons, the Sonar Profiler System provides the visual profile, profile comparison, and dimension data of significant items or defects. A sonar inspection of a fully or partially charged line provides a two-dimensional profile of the interior pipe wall similar to a medical MRI. Using the sonar software, a circle overlay is projected, sized, and moved anywhere within the image for checking erosion or remaining wall thickness. Accurate measurements can be made between any two points within the sonar image. Thus, offset, debris level, size of blockage,

grease level, defects and so forth can be quantified. In partially charged lines, the Sonar can be combined with CCTV to provide a simultaneous composite image of the pipe both above and below the waterline! Two (2) different sonar systems, (1) for submerged pipelines and (1) for semi-submerged pipelines, are available to survey pipelines measuring 12" up to 18' in diameter. Both systems provide 'real time' cross-sectional views of the pipe by utilizing high resolution/short range sonar. For semi-submerged pipelines, the non-submerged portion of the pipe is displayed on the video monitor as a standard video image.

...provides a two-dimensional profile of the interior pipe wall similar to a medical MRI!



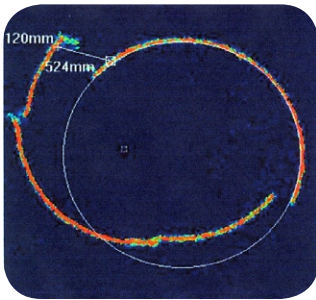
Features & Benefits:

- Operates with CUES Standard CCTV to provide underwater profiles of pipe interior and conditions
- Operates in pipes, lines or siphons from 12" through 18' without flow interruption
- PAL or NTSC outputs for recording on standard VHS or S-VHS recorders
- Real time continuous interior scanning over full 360 degrees in under 1 second
- Direct image capture to hard disk for recording still frames on CD at full resolution
- Screen display of distance location from entry point for positive location confirmation
- Operates both in fully charged and partially charged lines
- Analysis can be performed in a CCTV inspection vehicle or on a remote computer
- Collects, stores, and prints pipeline inspection data (footage count and inclinometer data) & video images for display/report generation
- Stores inspection files on disk to be exported into other computers
- Surveys approximately 4 inches/per second
- Includes an inclinometer designed to collect pitch and roll data
- User can display distance measurements and/or draw a circle around the pipe image to determine pipe diameter
- User can add titling information to the video or to a computer report while printing
- Operates off of 115 or 240 volts AC current
- Underwater Scanner Unit provides communications with the scanner, sampling of the acoustic signals, and interfacing to the cable counter for each Sonar System

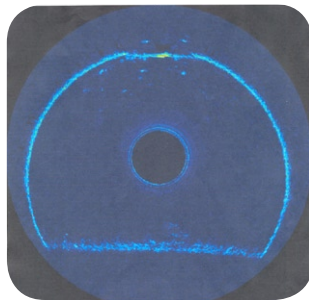
"The Standard of the Industry"



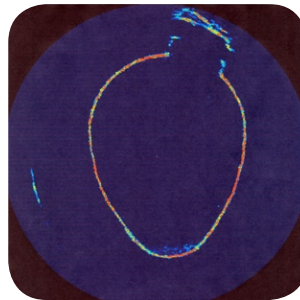
SONAR PIPE PROFILES



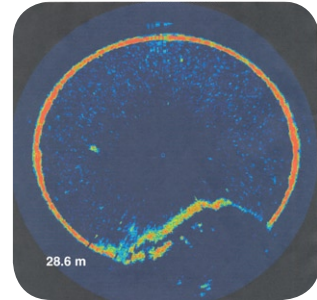
Broken Pipe w/ Circle & Measurement



40 Inch Siphon



Pipe Image with Lateral Opening



GRP Pipe w/ Debris

SONAR SYSTEM for SUBMERGED PIPE

- Base system includes the following equipment: Underwater Scanner Unit, Collapsible Sonar Siphon Float, Sonar Processor/Monitor, Skid Set, and all necessary interconnect cables
- Specifically designed to survey fully submerged (all water, no air) pipelines and/or pipelines containing heavy silt without disrupting the service
- Capable of inspecting fully submerged pipelines from 24" to 18' in diameter
- Includes a collapsible Sonar Siphon Float with slightly positive buoyancy designed to accommodate different pipe sizes; the Float is designed to position the sonar in the center of the pipeline to ensure accurate measurements
- Includes a specially designed skid set to align the Sonar System in 12"-60" submerged pipelines
- Designed to operate as a multi-conductor 'stand-alone' system

SONAR / TV SYSTEM for SEMI-SUBMERGED PIPE

An optional system is available as an integrated Sonar with video for use in submerged and large semi-submerged pipelines

- The base system includes the following equipment: Underwater Scanner Unit, Sonar Processor/Monitor, Picture in Picture system, and all necessary interconnect cables
- Designed to survey large semi-submerged (part air/part water) pipelines without disrupting the service
- Capable of inspecting large semi-submerged pipelines from 24" up to 18' in diameter.
- For use in conjunction with a camera transporter float and pan & tilt camera in larger pipelines; the float is designed to position the camera above the waterline and the sonar below the waterline
- Designed to display live television pictures of the pipeline and the sonar image with the Picture in Picture (PIP) display
- Uses the USATI (United Sonar and TV Inspection) survey method for semi-submerged pipelines greater than 24 inches in diameter. With USATI, the camera is positioned above the waterline and the sonar is positioned below the waterline to provide a 360-degree survey of the pipeline. The sonar image is superimposed on the picture to display views above & below the waterline on one monitor!
- Designed to operate as part of a multi-conductor TV Inspection System

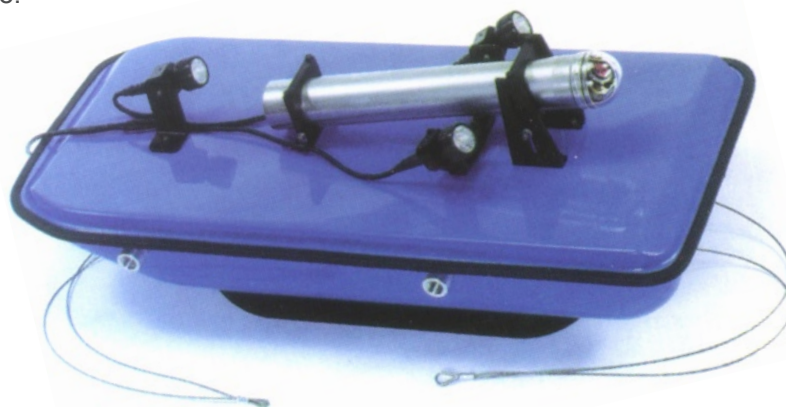
"The Standard of the Industry"



FLOAT

Floating Platform for Television Camera/Lighting

The float is designed to provide a stable floating platform for the television camera and its associated lighting when inspecting pipes ranging from 24" to 200". Built with a rugged polyurethane filled fiberglass hull and catamaran style metal keel, the Float can operate in virtually any drain, through sand and debris, without the need to divert or reduce flows. Measuring only 18 ½" wide x 42" long, can be inserted in a manhole without the need for the operator to enter a confined space.



...works in large pipes, regardless of tides, flows, water level, or debris!

Features & Benefits:

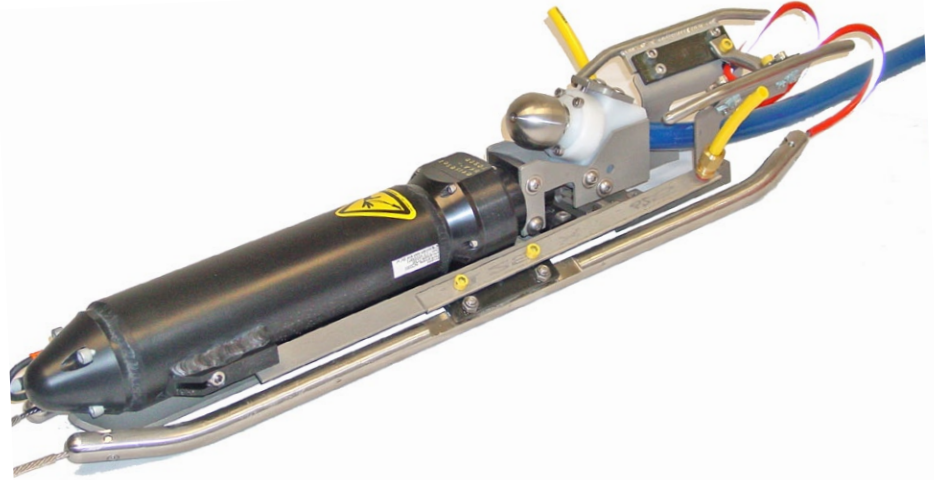
- Usable in large pipes regardless of tides, flows, water level, or debris
- Flow does not have to be diverted or shutdown; inspections can be made regardless of tide level
- Will pass through a 19" manhole ring
- Can be placed in operation without the need for the operator to enter the manhole
- Three built-in high intensity lights
- Sufficient lighting for pipes 24" through 200"
- Operates with all CUES low light, high resolution cameras
- Low light sensitivity and high resolution means "best picture" results under all conditions. Camera choices ensure operational flexibility including downstream inspection
- Catamaran style metal keel and skid
- Metal keel slides over sand and debris while protecting hull
- Built-in rugged tow brackets for front and rear winching or tethering
- Can be operated upstream and downstream
- Molded fiberglass hull with closed cell polyurethane fill
- Fiberglass hull provides maximum life with low maintenance
- Adjustable camera platform
- Camera viewing angle can be adjusted for pipe size and flow prior to inspection

Lateral Cleaning System

"The Standard of the Industry"



LCS Lateral Cleaning System



The Lateral Cleaning System (LCS) is the choice for high-pressure lateral cleaning! When used with your mobile sewer cleaner and a standard TV inspection system, the LCS pipeline inspection system can clean and remove debris from lateral pipelines from within the mainline pipe! For added versatility, the LCS can also transport your CUES camera through 8" diameter or larger pipe to view the service connection from the mainline during the operation. With a complete line of cleaning accessories, from pointed nozzles for difficult blockages to various hose lengths, the LCS is sure to surpass your lateral cleaning inspection needs!

Use with your mobile sewer cleaner and standard TV inspection system to clean and remove debris from lateral pipelines from within the mainline pipe!

Features & Benefits:

Specifications:

- ◆ Weight: 30.5 lbs. (with 1/2" hose assembly)
- ◆ Dimensions: 28 L X 5.9 W X 5.5 H in (8" pipe configuration)
- ◆ Maximum hose assembly pressure rating: 4000psi
- ◆ 70W, 48 VDC Gear Driven System with voltage protection circuitry
- ◆ Sewer Cleaning Hose: 1/2" ID flow line

Features:

- ◆ Self-cleaning "open" hose guide design
- ◆ Clutch to mechanically protect the gear motor
- ◆ Adjustable hose stop to control entry length into service lateral and to provide visual verification that LCS hose is fully into the service lateral
- ◆ Blunt-nose nozzle and two-position launch angles optimizes entry into the service lateral
- ◆ Easy removal/installation tow cables on the skid runners

- ◆ Standard package provides accessories for operation in 8"-15" pipe; includes a 25' sewer cleaning hose, skids, adjustable hose stop, and blunt-nose cleaning nozzle
- ◆ Rear lift strap aids in retrieving the LCS
- ◆ LCS location feelers to aid in the positioning of the LCS unit
- ◆ Operates in 8"-15" diameter mainline sewer pipes and 4"-6" diameter lateral pipes
- ◆ Operates in 8" - 15" diameter relined sewer pipes
- ◆ Optional hose lengths are available
- ◆ Stainless steel and aluminum construction
 - Heavy-duty stainless steel skid assembly
 - Waterproof, sealed, heavy-duty, aluminum motor housing
- ◆ 25' launching capability into the service lateral
- ◆ Interchangeable cleaning nozzles
- ◆ Operates with multi or single conductor systems

Contact **CUES**

CUES has the most locations and dealers available to serve you! To find a local CUES facility, find the operating hours for a particular location, or to contact us at your most convenient stocking location, please log onto our website at www.cuesinc.com or call CUES' Corporate Headquarters in Orlando, Florida for more information.

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