



# G14179\_PRO TECHNICAL OFFER MAY 2014

HYDROCONTROL – Sofyiska Voda project

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## CONTROL UNIT - PANEL CONTROL - COMPUTER (FOR OPERATOR CABIN)

### ■ VSR65R3U control unit:

The VSR65R3U control unit is installed in 3U rack inside the operator cabin of the arranged van with its 15" LCD monitor (EVID0000288) for the visualization of the inspection video. It allows the control and the power supply of the following items:

- The VSCE150X motorized crawler equipped with the FTR80CX TV camera of the Pipe Cruiser system for the inspection of pipes from 150mm to 1200mm.
- The BVSE150 lighting system of the Pipe Cruiser system
- EVID0000348 digital recorder



*VSR65R3U control unit with its panel control and its 15" LCD monitor*

The data information displayed by the VSR65R3U control unit:

The VSR65R3U control unit displays on the video monitor the following information:

- Display of the camera position in real time on the monitor
- Display of the length of the umbilical cable in real time on the monitor
- Display of the inclination data

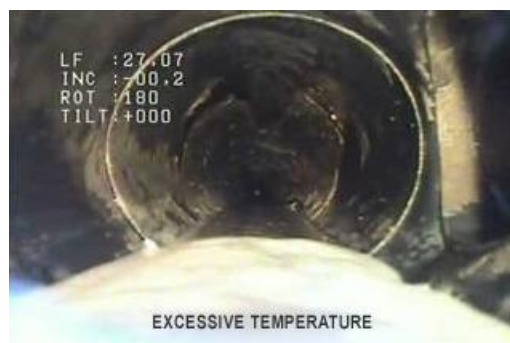


**Video picture with camera positions,  
counting length and inclination data displayed**

The alarm displayed by the VSR65R3U control unit:

Thanks to the different sensors installed inside our TV cameras and motorized crawlers, the VSR65R3U control unit permanently controls different parameters in order to warn the operator in case of any risks on the equipment:

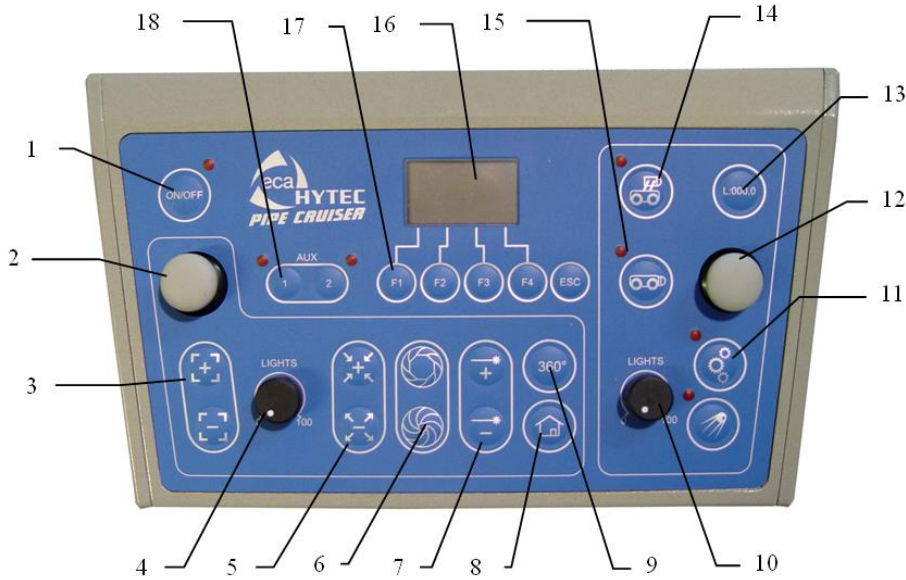
- Excessive temperature: if the internal temperatures of the crawlers or/and cameras are too high, an alarm message is automatically displayed on the video monitor
- Excessive humidity: if the internal humidity of the crawlers or/and cameras are too high, an alarm message is automatically displayed on the video monitor
- Reverse risk: if the crawler is running too highly on the sides of the pipe, the VSR65R3U control unit detects an excessive inclination and automatically displays an alarm message on the video monitor to avoid any reversing risk.



**"Excessive temperature" alarm displayed**

The control panel of the VSR65R3U control unit:

The VSR65R3U control unit is delivered with its control panel (OPTION VSR65) for the controls of the cameras:



1	On/Off key and led indicator
2	Camera joystick control
3	Focus control keys
4	Camera led potentiometer control
5	Zoom control keys
6	Iris control keys
7	Lasers control keys
8	Preset key: Axial position of the camera
9	Preset key: 360° rotation of the camera

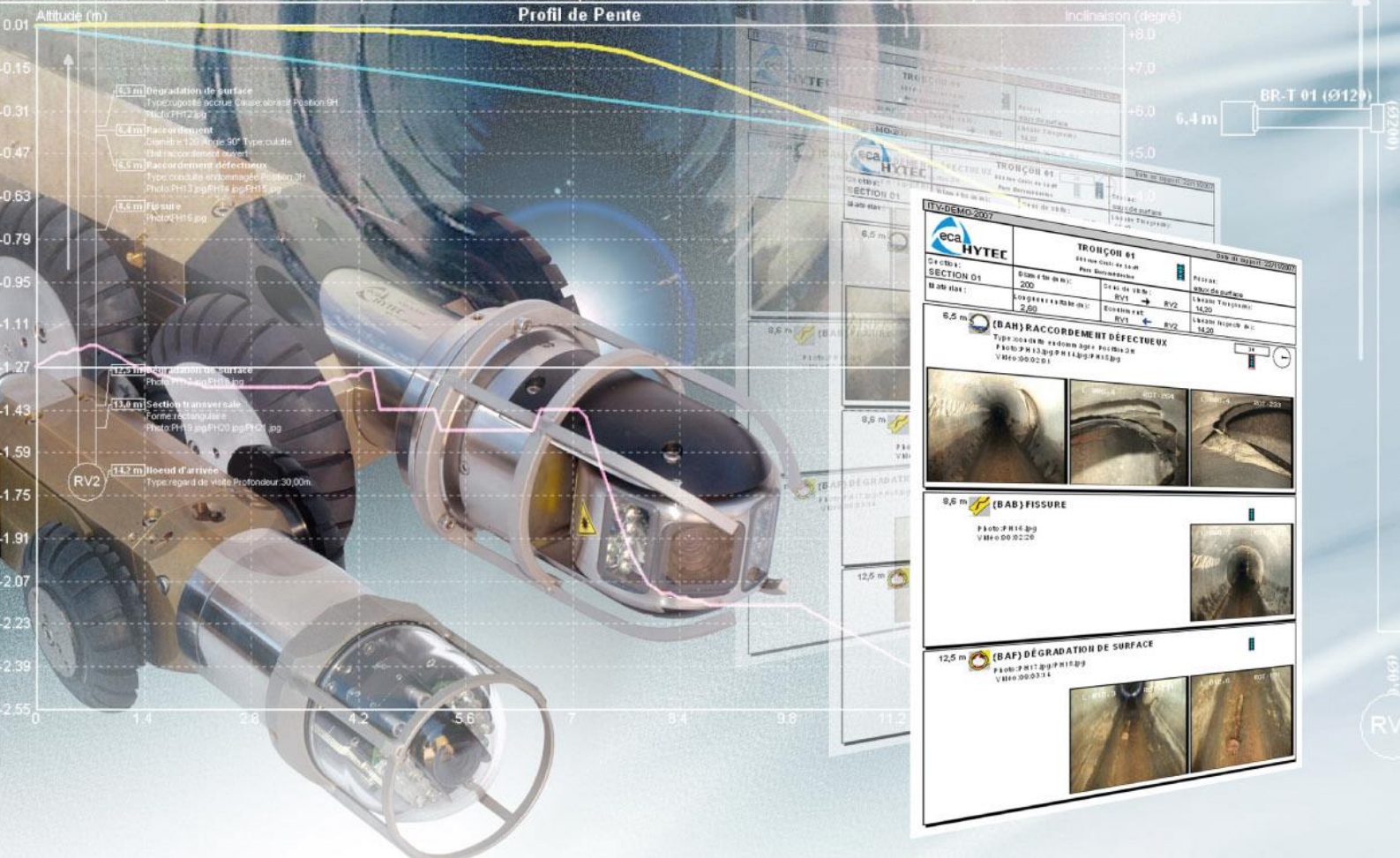
10	External lighting system potentiometer control
11	Reel synchronization mode key and led indicator
12	Crawler or pantograph control joystick
13	Counting reset key
14	Pantograph On/Off key and led indicator
15	LCD graphic display for parameters checking
16	Counting reset key
17	Preset key: 90° position of the camera
18	Backward TV camera

# CANASOFT

## INSPECTION REPORTING SOFTWARE



		<b>TRONÇON N° 01</b> Parc Euromédecine Rue Croix de Lavit MONTPELLIER		Réseau: eaux usées industrielles	
Longueur: 14.20	Diamètre(mm): 400	Sens de la visite: A101 → A102	Section: SECTION NORD	Altitude de départ: 0.00	
Longueur inspectée: 14.20	Longueur unitaire(m): 1.50	Sens de l'écoulement: A101 → A102	Matériau: Béton	Altitude d'arrivée: 0.00	



#### ■ Desktop computer – Digitizing video card:



#### Specifications of the desktop computer:

- ✦ Hard disk – min 1000 GB
- ✦ 20" Monitor min
- ✦ Digitizing video card compatible- own memory min. 1 Gb
- ✦ DVD Recorder
- ✦ Windows-based operating system
- ✦ Dual-core processor min. 2 GHz
- ✦ Communication data outlets and inlets (USB, stereo jack etc.)

A desktop computer with digitizing card will be installed in the operator cabin for the execution of CANASOFT and DIMFIS software.

This computer is connected to the VSR65R3U control unit through the CARTEPCIC digitizing video card for digitizing the videos MPEG4 format; and for recopying the video signal and information data (inclination, camera positions, length) on CANASOFT software.

Also, the operator cabin will be equipped with a colour printer for the printing of CANASOFT reports.

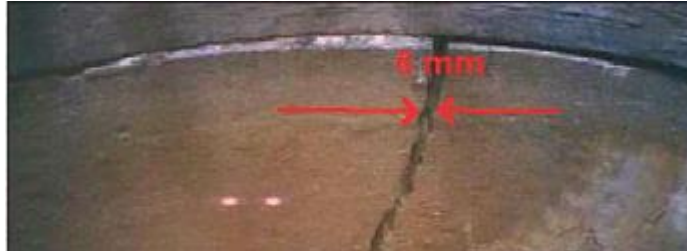
#### ■ CANASOFT Software:

Installation of CANASOFTV7 software for the edition of inspection report according to standards for encoding defects min.: EN13508-2:2003, EN13508-2:2004, MSCC (Manual of Sewer Condition Classification from WRC) as well as accumulated data of recording lengths, diameter of the pipe, Pipe slope

- ✦ BEFDSS XML (\*.xml) format for data export based on EN13508-2
- ✦ Export of video compressed files - compatible with Windows Media Player
- ✦ Insertion additional information (address etc.)
- ✦ Editing of the records
- ✦ Compatible with other systems for inspection and software
- ✦ Exchange data with GIS systems
- ✦ Connecting and management of additional documentation – drawings, texts, picture files
- ✦ Sorting in the created data base
- ✦ Cyrillization of the main menus
- ✦ Calculation of slopes
- ✦ Free software update for the time of the contract

#### ■ LA2FTR80PMMA Laser diode for crack measurement

This FTR80CX TV camera will be equipped with the two laser diodes LA2FTR80PMMA for the measurement of crack dimensioning. (Operated with DIMFIS Software)



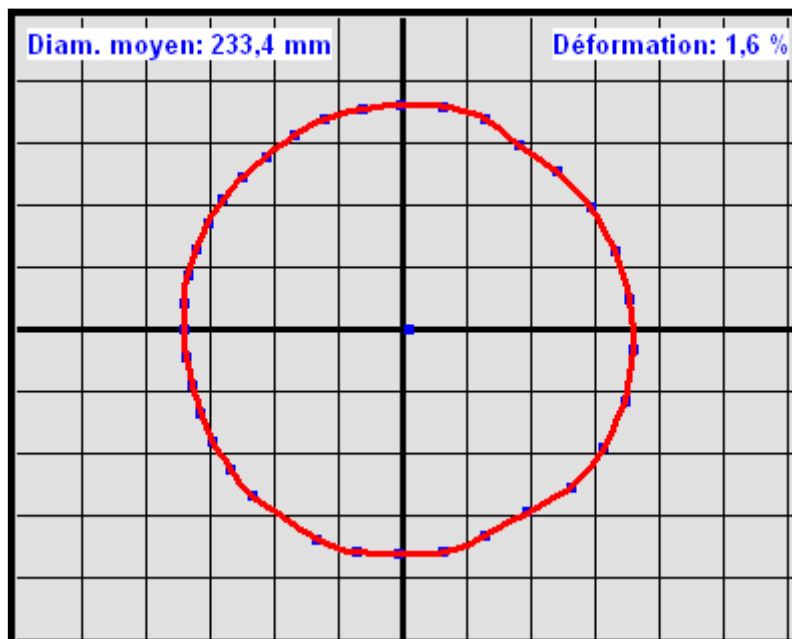
Range of operation: 150mm to 1200mm

#### ■ LA3FTR80C deflection and profile measurement system

LA3 is a laser system which, with its associated DIMFIS software, permits:

- The deflection measurement
- The distortion profile mapping
- The diameter measurement
- The cracks measurement

After a tilt of the camera head at 115°, then a 360°full rotation, the LA3 laser system records 36 laser points on the surface of the pipe. The DIMFIS crack and deflection measurement software automatically detects the various points of measurement taken by the laser, and calculates instantaneously the pipe deflection and diameter at the exact place where the operation is carried out.

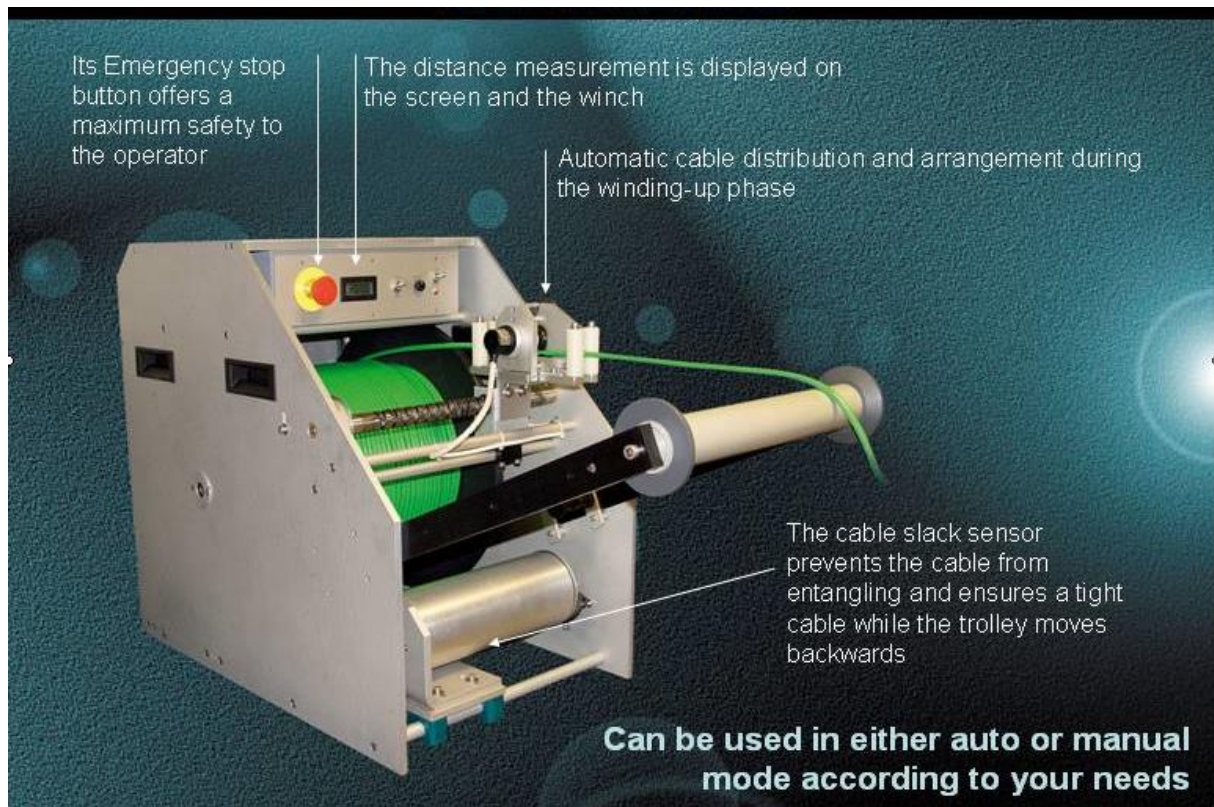


Range of operation: 150mm to 500mm

### ■ The TMO200AX motorized winch

#### Technical specifications:

- Motorized reel for umbilical cable - Slip ring
- L xW x H : 530 x 375 x 525 mm
- Connecting cable to control unit
- Weight without cable 25 kg Delivered with :
  - Motorisation
  - Automatic cable distribution system
  - Mechanical distance meter
  - Synchronous automatic system between the reel and trolley
  - Electronical counter with optical encoder 50 pulses/ round



The TMO200AX will be equipped with 200m of umbilical cable.

### ■ Umbilical cable specifications:

- 200m length umbilical equipped with 30 bars waterproof jupiter type connector – 7 cores
- Internal Kevlar braid - Polyurethane external sheath with antiabrasion lining
- Tensile strength: 2500N
- OD 7,8 mm - Weight 90g/m –
- Pulling strain relief device

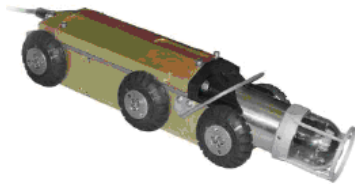
# PIPE CRUISER

INSPECTION SYSTEM FOR PIPES FROM 150MM TO 1200MM



Designed to intervene in all type of pipes, the steerable TV inspection system PIPE CRUISER avoids all obstacles, turns in curves, swivels and moves back to bring back an exceptional quality of video. Modular, the PIPE CRUISER system adapts its configuration for a centred inspection to cover the diameter range from 150 to 2000 mm.

The different configurations of the Pipe Cruiser system according to the diameter to inspect:



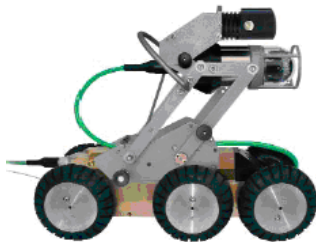
150 - 200 mm



200 - 250 mm



250 - 300 mm



300 - 500 mm



400 - 600 mm



600 - 1200 mm

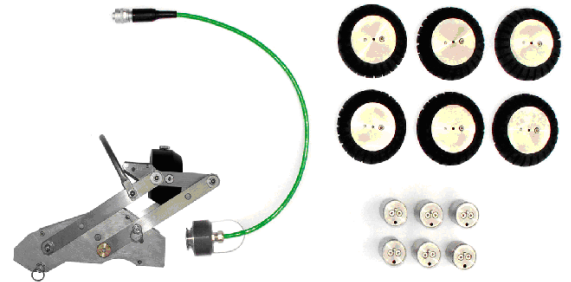
#### ■ VSCE150 motorized crawler:

##### Technical specifications:

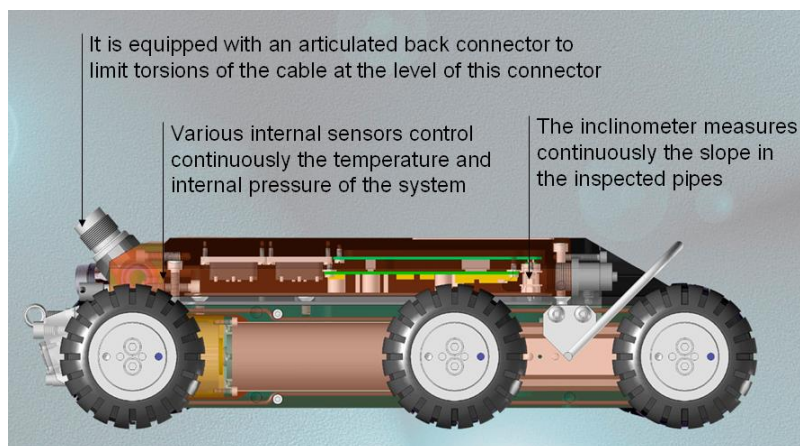
- 6 wheel multidirectional electrical trolley
- Operated with FTR80C camera
- Power 2x100 W - Adjustable speed 0-30 m/mm
- Length 385 mm - Internal control of watertightness and umbilical strain
- Weight 14 kg - Bronze and Stainless steel
- Depth rating 10m
- Bottom connector articulated up to 90°
- Equipped with black & white backward viewing camera with infrared light
- Slope indicator (INCCE150 inclinometer)

Accessories of the VSCE150 motorized crawler:

- Set of 6 wheels with grips - OD 82 mm
- Set of 6 wheels with grips - OD 125 mm
- Set of 6 expanders for wheels OD 125 mm
- Manual adjustable support to raise the camera (PANT150)
- Electric connecting box for use with pantograph (BJCV150)



Integrated sensors and articulated connector of the VSCE150 motorized crawler



■ The INCCE150 inclinometer:

The VSCE150X crawler is equipped with the INCCE150 inclination sensor for the real time measurement of the pipe slope. The X axis value is displayed in real time on the video monitor and the Y axis value is also displayed in the LCD monitor of the control panel.

CANASOFT software supplies the graphic of the slope according to the length of the inspected pipe

■ The CGR600 adaptation module for VSCE150 motorized crawler:

For the inspection of pipes larger than 600mm, the VSCE150 motorized crawler is equipped with the CGR600 large wheels module.

Thanks to its accessories, the CGR600 module permits the inspection of diameter up to 1200mm.



■ **The PANTMOT150 motorized pantograph:**

Installed on the VSCE150 crawler, the PANTMOT150 motorized pantograph permits the adjustment of the camera height during the inspection.

It is controlled by the panel control of the VSR65 control unit.



■ **The BVSE150 LED lighting system:**

Additional LED lighting system by annular ring composed of 100 LEDs.

Luminous intensity: 4000 Lm



The BVSE150 lighting system is installed on the VSCE150 crawler or on the pantograph (PANT150 or PANTMOT150)

■ **KITNITROVCSCE150 pressurizing kit**

It is offered the KITNITROVCSCE150 device for the pressurizing of the VSCE150 crawler and FTR80C by Nitrogen. It is composed with:

- 10L Nitrogen bottle on carrier
- Manometer
- Hose and fittings for crawler and camera



## ■ Swivelling head colour & zoom TV camera FTR80C

### ○ *Mechanical characteristics*

- Diameter : 85 mm (head) 65 mm (housing)
- Length : 250 mm with connector
- : 228 mm (w/o connector)
- Material : stainless steel 316L
- Connector : Jupiter T10 7 cts.
- Watertightness : IP 68 – 10 m
- Weight in air : 4,1 Kg with ADP80
- Weight in water : 3,7 Kg



FTR80C TV camera

### ○ *Electronic and optic characteristics*

- Image sensor : CCD ¼ Super HAD
- Pixels number : 752 (H) x 582 (V)
- Horizontal resolution: 460 lines TV
- Standard : PAL (option NTSC)
- Lens : 10 x Zoom f = 4.2 to 42 mm
- Zoom : 4x (Optic x Digital = 40x)
- Angle of view (H) : approx. 46 °
- Synchronisation : internal
- Minimum lighting : less than 1,5 lux (F1.8, 1/50 shutter)
- : 0.13 lux (F 1.8, 1/3 shutter speed).
- S/N ratio : > 50 dB.

### ○ *Movement of lens*

- Tilt : + 135° / -115°
- Pan: 360° infinite in both directions

### ○ *Electric characteristics*

- Power requirement: 15 to 55 V nominal (48V) with Pipe Cruiser system
- Power consumption: less than 10 Watts.

### ○ *Lighting*

- 24 white high brightness Leds (4 frontal + 20 lateral)
- Life duration : 50 000 hours.



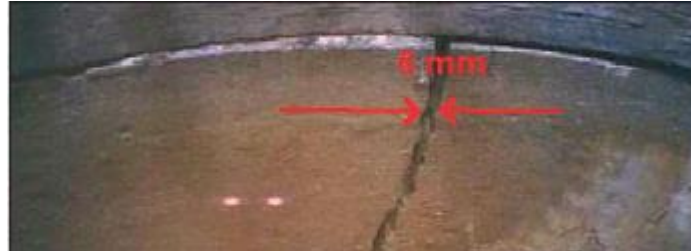
VSCE150X equipped with the FTR80C TV camera  
For 250 to 300mm diameter configuration



VSCE150X equipped with the FTR80C TV camera  
for 400 to 600mm diameter configuration

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Range of operation: 150mm to 1200mm

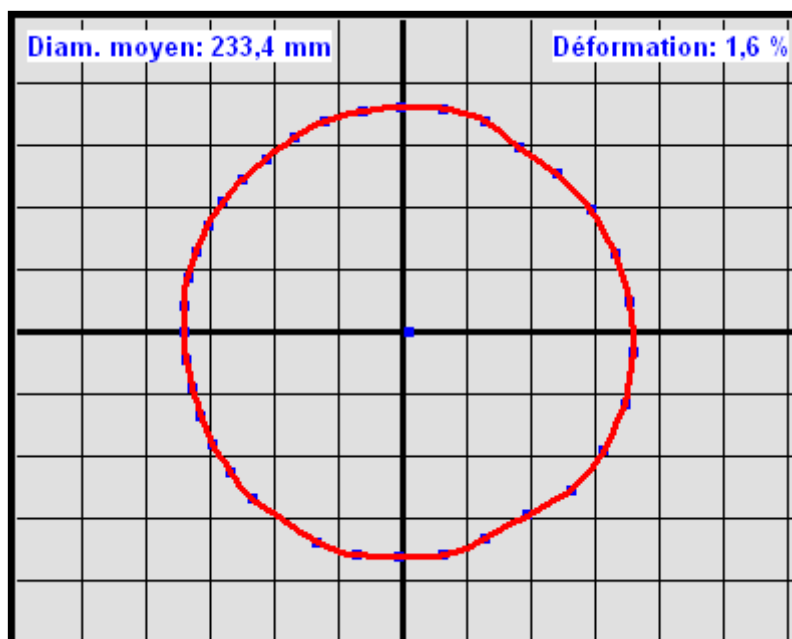
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Range of operation: 150mm to 500mm



# VAN ARRANGEMENT

## RENAULT MASTER VEHICULE AND POWER SUPPLY



**RENAULT MASTER ARRANGED VEHICLE**

**It is offered the RENAULT MASTER L2H2 F3500 vehicle:**

It is offered the RENAULT MASTER L2H2 F3500 vehicle:

- DCI - 125CV
- Traction mode
- Air conditioning system in driver cabin



### The van arrangement:

The arrangement of the RENAULT MASTER vehicle truck will be specially designed to receive all the 150 – 1200mm inspection equipment of the G14179 offer.

### Description of the arrangement:

#### CONTROL CABIN

- Installation of the VSR65R3U control unit in 3U rack with EVID0000288 LCD monitor
- Installation of the EVID0000348 digital reorder
- Installation of the desktop computer with 22" monitor with keyboard, mouse
- Installation of the 1000W uninterrupted power supply
- Ventilation for the electronic compartment and ventilation lantern
- Working desk (bench) for one operator with two drawers (lockable)
- Additional seat for a second operator
- integration of the power supply by batteries pack with mini LCD monitor for charging level displaying
- Insulated plywood with coating on roof and sides
- Plywood floor with anti slip washable coating
- Covering for the electronic racks
- Partition wall behind the control unit cabin with lockable door
- Storage spaces on the upper part of the control unit cabin and on the upper part of driver
- Four sockets of 230VAC and two sockets of 12VCC
- Ceiling lighting and intercom
- Assembly of the control unit elements, testing and fitting of the components

#### REAR PART

- Distribution cabinet with protection
- Insulated plywood with washable coating on roof and sides
- Plywood floor with anti slip washable coating
- Double floor with storage place on the lower part
- TMO200AX winch fixing on double floor
- Interphone connection with the control cabin
- 30L Water tank with electrical water pump and a 5 meters hose
- Field LED light 1800 LUM with min 10 m cable,
- Installation of the GCSF cable guide system in the back doors
- Installation of the telescopic jib crane with compact electric winch
- Installation of rain protective folding cover 150 cm long (Porch roof for rear part)
- Installation of 7" Color monitor min, displaying the signal from the camera in the pipe

The vehicle will also be equipped with the following devices:

- ✚ Signalization kit composed of flashing light, rear lighting LED ramp and reflective signalization strips
- ✚ 1000W uninterrupted power supply
- ✚ Porch roof for rear part
- ✚ Power supply installed in the vehicle by batteries set - Power: 3000W (8 hours of work)

- OPERATOR CABIN



*Integration of the VSR65R3U control unit, LCD monitor, digital recorder desktop computer and uninterrupted power supply*



*General view of the operator cabin :*

- Additional seat
- Partition wall with door
- Storage spaces



*Ventilation lantern and storage space*

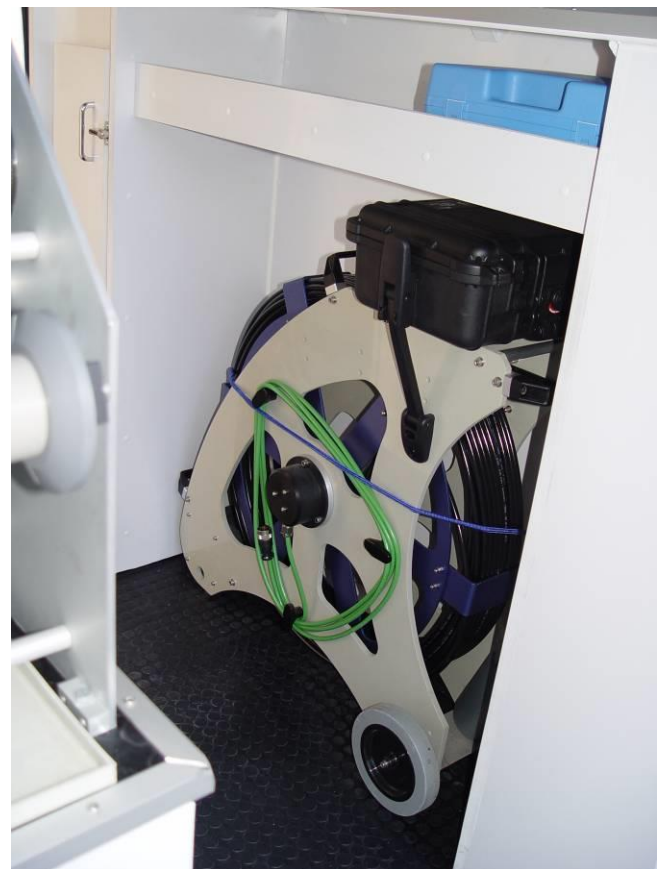
**REAR PART**



- General view of the rear part*
- TMO200AX motorized winch
  - Storage spaces and work top
  - Porch roof
  - Storage in the back door for GCSF cable guide system



*Storage spaces for crawlers and TV cameras*



*Storage for additional equipments  
(equipment on this image not included)*



*Storage spaces for TV cameras*



*Electric shower with 30L water tank*



*PTSQSP Telescopic jib crane with compact electric winch steel rope 15m*

**Power supply by integrated batteries set**

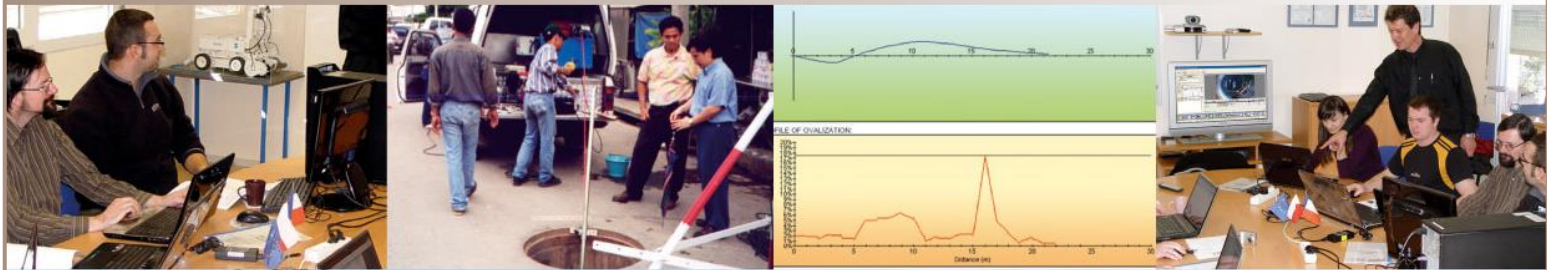


*Power supply by battery pack*



*Charging level displayed on mini LCD monitor*

# TRAINING ON SITE



It is offered 5 days of training on site in Sofyoska Voda offices by an ECA ROBOTICS specialist on the operation and first level maintenance of the PIPE CRUISER system and vehicle; and on the operation of the CANASOFTV7 and DIMFISV7 software. Please hereafter the schedule of the training:

## Day 1&2

- 1- Generalities of the TV inspection system
  - a. Technical data sheet
  - b. Various elements & Wiring diagram
  - c. Video Diagram
  
- 2- VSCE150 Electrical trolley
  - a. Assembly of various configurations (trolley/camera/ lights)
  - b. Adjustment of crawlers' tension
  - c. Pressurization by nitrogen
  - d. Cleaning and first level maintenance
  - e. Precaution of use
  
- 3- FTR80C TV camera
  - a. Structure of the camera
  - b. Pressurization by nitrogen
  - c. First level Maintenance
  - d. Precaution of use
  
- 4- Laser Measurement systems
  - a. Operation of the crack measurement system (LA2)
  - b. Operation of the profile measurement system (LA3)
  
- 5- Control Unit VSR 65
  - a. Presentation of the whole functions
  - b. Understanding of alarms
  
- 6- TMO200AX Motorized winch
  - a. Principle of operation
  - b. Greasing of various bearing
  - c. Maintenance of wire guiding and adjustment
  - d. Adjustment of the chain's tension and greasing
  - e. Fuse replacement
  - f. First level maintenance
  
- 7- BVSE150 Lighting system
  - a. Precautions of use
  - b. Tensions control
  
- 8- Umbilical cable and strain relief
  - a. Cable test
  - b. Adjustment of strain relief device
  - c. Maintenance of connectors

## Days 3&4

- 1- CANASOFT: TV inspection report software
  - a. General presentation
  - b. Parameter setting of the software
  - c. Configuration of a report
  - d. Realization of a report
  - e. Particular cases
  - f. Exporting and importing reports
  - g. Printing reports
  - h. Realization of a TV inspection
  - i. Saving the files
  
- 2- DIMFISV7: TV Measurement software for LA2 and LA3 systems
  - a. General presentation
  - b. Parameter setting of the software
  - c. Measurements
  - d. Interpretation of results

## Day 5

- 1 – Training in real conditions
  - a. Implementation of safety signs
  - b. Set up of the equipment
  - c. Implementation of the cable guide device
  - d. Introduction of the whole equipment into the manhole
  - e. Video inspection
  - f. TV inspection report
  - g. Repatriation of the equipment into the van
  - h. Report editing
  
- 3 – Summary and answers to the questions